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Red Seal Occupational Standard

Landscape Horticulturist

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Landscape Horticulturist

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Foreword

The Canadian Council of Directors of Apprenticeship (CCDA) recognizes this Red Seal Occupational Standard (RSOS) as the national 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) funds 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 occupational standards

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
Skilled Trades and Workforce Mobility Directorate
Employment and Social Development Canada
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Gatineau, Quebec K1A 0J9

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Special thanks are offered to the following representatives who contributed greatly to the original draft of the standard and provided expert advice throughout its development.

The following lists these participants and the province/territory or organization that nominated them to attend the national development workshop.

- Liane Cook – Ontario
- Leslie Cornell – Saskatchewan
- Guy Dowhy – Manitoba
- Jessica Flundra – New Brunswick
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- Peter Guinane – Ontario
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- Guy Laliberté – Quebec
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- Jackson Mitchell – Manitoba
- Chelsey Morck – Alberta
- Steven O'Neill – Newfoundland and Labrador
- Liddy Wallace – Nova Scotia
- Terry Warke – Alberta

This standard was prepared by the Skilled Trades and Workforce Mobility Directorate of ESDC. The coordinating, facilitating and processing of this standard 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

This standard contains the following sections:

Methodology: an overview of the process for development, review, validation and weighting of the standard

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

Skills for Success Summary: an overview of how each of the skills for success (formerly called 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 of Red Seal Examination Weightings: a graph which depicts the national percentages of exam questions assigned to the major work activities

Task Matrix and Weightings: a chart which outlines graphically the major work activities, tasks and sub-tasks of this standard and the national percentages of exam questions assigned to the major work activities and tasks

Harmonization of Apprenticeship Training: the aspects of apprenticeship training that participating provinces and territories have agreed upon to substantively align apprenticeship systems across Canada

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

- **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
    - **Range of Variables:** elements and examples (not all-inclusive) that provide a more in-depth description of a term used in the performance criteria and evidence of attainment

- **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 of Variables:** elements and examples (not all-inclusive) that provide a more in-depth description of a term used in the learning outcomes and learning objectives

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

- **Appendix B – Tools and Equipment / Outils et Équipement:** a bilingual non-exhaustive list of tools and equipment used in this trade

- **Appendix C – Glossary / Glossaries:** bilingual definitions or explanations of selected technical terms used in the standard

Methodology

Development of the Standard

A draft standard is developed by a broad group of trade representatives, including tradespeople, instructors and employers at a National Workshop led by a team of facilitators. This draft standard breaks down all the tasks performed in the occupation and describes the knowledge and abilities required for a tradesperson to demonstrate competence in the trade.

Harmonization of Apprenticeship Training

An analysis of all provinces' and territories' apprenticeship programs is performed, and recommendations are made on harmonizing the name of the trade, the hours of training required and the number of levels of training. Provinces and territories consult with their respective industry stakeholders on these elements and revisions are discussed until consensus is reached. Following the development of the workshop draft of the RSOS, participants discuss and come to consensus on the sequence of training topics, as expressed in the new standard. Their sequencing recommendations are reviewed by stakeholders in participating provinces and territories, and further discussions are convened to reach consensus and to identify any exceptions.

Online Survey

Stakeholders are asked to review and validate the activities described in the new standard via an online survey. These stakeholders are invited to participate in this consultation through apprenticeship authorities, as well as national stakeholder groups.

Draft Review

The RSOS development team forwards a copy of the standard to provincial and territorial authorities who consult with industry representatives to review it. Their recommendations are assessed and incorporated into the standard.

Validation and Weighting

Participating provinces and territories also consult with industry to validate and weight the document for the purpose of planning the makeup of the Red Seal Interprovincial Examination for the trade. They validate and weight the major work activities (MWA), tasks and sub-tasks of the standard, as follows:

- MWA - Each jurisdiction assigns a percentage of questions to each MWA for an examination that would cover the entire trade.
- Tasks - Each jurisdiction assigns a percentage of exam questions to each task within a MWA.
- Sub-tasks - Each jurisdiction indicates, with a "yes" or "no", whether or not each sub-task is performed by skilled workers within the occupation in its jurisdiction.

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

The validation of the RSOS is used to identify common core sub-tasks across Canada for the occupation. If at least 70% of the responding jurisdictions' industry performs a sub-task, it shall be considered common core. Interprovincial Red Seal Examination questions are limited to the common core sub-tasks identified through this validation process.

Definitions for Validation and Weighting

yes	sub-task performed by qualified workers in the occupation in that province or territory
no	sub-task not performed by qualified workers in the occupation in that province or territory
NV	standard Not Validated by that province or territory
ND	trade Not Designated in a province or territory
Not Common Core (NCC)	sub-task, task or MWA performed less than 70% of responding jurisdictions; these will not be tested by the Interprovincial Red Seal Examination for the trade
National Average %	average percentage of questions assigned to each MWA and task in Interprovincial Red Seal Examination for the trade

Provincial/Territorial Abbreviations

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

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.

Landscape horticulturists survey and assess landscapes, prepare designs and interpret plans. They construct and maintain gardens, parks, golf courses, greenhouses, nurseries, retail facilities and other landscape environments. In addition, landscape horticulturists construct and maintain hard landscape elements, such as patios, walkways and walls, as well as install and maintain components and elements of green infrastructure. 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.

Landscape horticulturists are at the forefront of environmentally responsible practices, integrating specialized skills in sustainable landscape management utilizing their expertise in water conservation, employing techniques such as xeriscaping, rainwater harvesting systems, efficient irrigation technologies, and application of native and adapted plant species, vital for promoting regional biodiversity and reducing the demands for excessive maintenance and resources. They are increasingly leveraging technological advancements to enhance sustainable outcomes in their projects.

Landscape horticulturists 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, plant health products 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 tradespeople. They also require strong analytical, decision making and organizational abilities. The trade has a strong foundation in sciences such as botany, plant physiology and morphology, soil properties and building science principles.

Most of the work such as landscape construction and maintenance, and snow and ice management is performed outdoors in all types of weather. Indoor work may involve greenhouse production, interior landscaping, and the sale of plants, landscape materials and supplies. The work may be strenuous and may involve activities such as lifting, climbing, carrying and bending. Employment in this trade can vary from workplace to workplace and may be seasonal and based on weather. Deadlines and efficient production are an important part in the trade and landscape horticulturists must manage their time effectively.

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

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

Trends in the Landscape Horticulturist Trade

Technology

Digital tools and software are more common in the landscape horticulture industry. Applications that track fleets and manage landscape care are in use. Software and digital devices also are used in productivity tracking and business applications such as scheduling and invoicing.

Some landscape horticulturists are utilizing artificial intelligence (AI) tools for writing business documents, marketing products and services, producing social media content, and helping with site design and preparation tasks.

Geographic Information System (GIS) and drone technology are increasingly utilized for surveying, mapping, and detailed site analysis, contributing to more informed planning and execution of sustainable landscape projects.

Health and Safety

Landscape horticulturists need to stay aware of different health and safety hazards in the trade. There is a greater awareness of health risks from repetitive movements, working with hazardous chemicals, and exposure to silica dust. Consequently, there are improvements in personal protective equipment (PPE) and tools that are designed for better ergonomics such as exoskeleton material handling equipment.

There are risks that come with maintaining and disposing of battery-powered equipment and their batteries; dealing with electrical fires with these components require specialized procedures for prevention and suppression.

It is crucial for experienced workers to pass on their skills and mentor a new and diverse workforce on safe work practices and accident prevention strategies. Many workplaces have adopted healthy workplace policies and practices that are intended to be more inclusive, accessible and supportive of all workers.

Because it is common for landscape horticulturists to work most of the time outdoors, more extreme weather conditions have a significant effect on their health and safety. Workers and employers need to be aware of how to manage and mitigate these risks and protect themselves accordingly.

Tools and Equipment

Technological advances are improving the tools and equipment in this trade. Examples include an increasing prevalence of battery-operated tools and equipment. There is a greater use of digital and laser measurement tools and advanced layout instruments and equipment used in pre-construction activities. Smart controls for irrigation and lighting, as well as robotic mowers and technology continue to evolve and improve.

Plant production equipment is changing to reduce labour burden in all tasks including production, management of the environment, maintenance and harvesting. Material handling equipment such as vacuum lifting equipment and exoskeleton material handling equipment are becoming more common.

Products/Materials

There are newer vertical wall systems – both indoor and outdoor that are more adaptable to varied sizes, for example smaller places like condos.

There are also new and improved hardscape and green infrastructure products and materials, that landscape horticulturists need to continue to learn about.

There is also an increasing prevalence of over-structure green space construction, including green roofs and landscaping over concrete structures.

Legislative and Regulatory

The landscape horticulture industry must continuously adapt to legislative and regulatory changes, particularly as they relate to safety, environmental stewardship, conservation and integrated pest management (IPM).

For example, some municipalities are implementing or considering by-laws restricting the use of internal combustion engines and timeframe of use.

Environmental regulations are emerging to address issues such as site alteration and topsoil regulations, as well as mandating a percentage of use of native species and locally grown products in green spaces.

Environmental

Fire-resistant landscaping has emerged as a significant trend within the landscape horticulturist trade, driven by the increasing frequency and severity of wildfires across many regions. Landscape horticulturists are increasingly integrating fire prevention practices into their projects, not just as a safety measure but as a value-added service for clients. This includes the use of low-flammability plant species, strategic vegetation zoning, and non-combustible hardscaping materials to create defensible spaces around homes and buildings. As awareness grows among homeowners, municipalities, property insurers and landscape horticulturists are finding that these practices are not only environmentally responsible but also marketable, aligning with broader movements toward sustainable and climate-adaptive landscaping. This shift is influencing training programs, certification standards, and even municipal bylaws, as fire-resistant design becomes more and more important in modern landscape horticulture. There is an increased trend towards establishing native and non-invasive plants in landscape design. An emphasis on “right plant, right place” can help to promote plants that are more likely to thrive in the environment, be more pest-resistant, support biodiversity of the local ecosystem, and reduce external input requirements.

Growing concerns around pests, diseases and invasive species have led to vigilance in monitoring these concerns. This growing awareness has encouraged nurseries and greenhouse growers to increase their production and selling of native and non-invasive plants.

Many municipalities are demonstrating commitment to improved environmental stewardship – this is demonstrated by a higher emphasis on including living green infrastructure and naturalization in municipal planning. These strategies support the transition to a low-carbon future and can have a significant impact on communities and health.

Landscape horticulturists play a vital role in addressing climate change through both adaptation and mitigation strategies. Their expertise in designing, installing and maintaining landscapes resilient to extreme weather events, such as drought, flooding, and heat waves, is crucial for building sustainable environments. Their ability to implement practices that enhance carbon sequestration within landscapes directly contributes to mitigating the impacts of climate change.

Stormwater management is also becoming an important consideration in landscaping. Many urban infrastructure projects are incorporating permeable systems in their stormwater management plan. In some regions, there are growing considerations for sustainability along maintaining riparian zones and natural drainage patterns.

At the homeowner level, there is an increase in strategies that collect and use rainwater to support landscaping. Residential clients are starting to demand the design, installation and maintenance of low impact development (LID) landscapes that preserve and recreate natural landscape features, minimize hard features and improve site drainage.

Urban areas have seen a significant increase of landscape projects that take place around high density housing and communal living type buildings (condos, town homes). Many of these projects must be designed within limited green space and this can present unique restrictions.

Skills for Success Summary

Skills for Success are needed in a quickly changing world for work, learning and life. They are foundational for building other skills and important for effective social interaction. Everyone benefits from having these skills as they help individuals get a job, progress at their current job and change jobs. They also help individuals become active members of their community and succeed in learning.

Through extensive research and consultations, the Government of Canada launched the new Skills for Success model renewing the previous Essential Skills framework to better reflect the needs of the current and future labour market.

The summary presented here is based on existing Essential Skills profiles and will be updated to align with the new Skills for Success model over time.

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, legal documentation, field-level hazard assessments, plans (grading, lighting, irrigation, planting and drainage), tables, regulations, standards (e.g., Canadian Landscape Standard [CLS]) 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 landscaping and horticultural topics.

Oral Communication

Oral communication is a very important skill for landscape horticulturists. A substantial amount of communication is done 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, engineers and fellow crew members 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. They must be familiar with Imperial and metric systems of measurement.

Thinking

Decision-making, critical thinking and problem-solving 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. They need to be able to understand plant identification and nomenclature.

Working with Others

Working in teams is often a significant part of the job for landscape horticulturists. They coordinate work with others, including fellow crew members, supervisors, architects, clients, homeowners, surveyors, engineers, bylaw officers, contractors, landscape architects, other tradespeople and other landscape horticulturists. Landscape horticulturists mentor other employees and work respectfully and collaboratively.

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, recording and tracking, and global positioning systems (GPS). They use digital video and photography equipment to record and communicate information. 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.

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 are encouraged 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 and the environment is an important issue for many Canadians, and the skilled trades play a large role in implementing solutions.

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

Here are a few examples:

- **Construction** tradespeople need to consider the materials they are using, building methods, and technological improvements to mechanical and electrical installations. Efficiency upgrades and advanced materials are changing the construction industry in Canada. Improvements to energy-efficiency in building structures and systems are continual, and codes, specifications and designs such as Leadership in Energy and Environmental Design (LEED) and the Zero Carbon Building (ZCB) standards outline how the construction trades can improve the efficiency and sustainability of the industry.

- **Automotive and mechanical** trades are seeing shifts to more efficient vehicles and advanced materials, including alternate fuels and electric vehicles. With the continual and rapid evolution of technology in this sector, there is a need for skilled workers to always be learning.

- **Manufacturing** sectors face global competition resulting in a move towards increased efficiency and automation. Many industrial and commercial facilities are being upgraded to improve efficiency in areas such as lighting systems, building envelope air tightness, mechanical insulation, heat pumps and new production processes and technologies. New control technologies allow better monitoring of processes resulting in less waste and higher-quality products.

- **Industrial** trades are being encouraged to reduce greenhouse gas and carbon emissions by supporting development of carbon capture, utilization and storage (CCUS) and renewable energy generation such as solar, wind, hydro, geothermal and nuclear generation, as well as upgrades to transmission and distribution infrastructure. Systems designed to recover natural gas (RNG) produced by landfill, digester, and biogas facilities, and hydrogen production and utilization provide many opportunities for future projects.

- **Landscape horticulturists** will have opportunities to design and develop biodiverse ecosystems to mitigate the effects of climate change. Concerns such as erosion, species diversity and ecosystem health can be addressed through the use of green infrastructure systems.

- **Service sector trades** may also need to be aware of responsible sourcing, and the efficient use of products and materials. The increasing popularity of eco-tourism will provide opportunities in new areas.

There are fast-moving changes in guidelines, codes, regulations, international agreements, and manufacturers' specifications implemented for the purpose of energy efficiency and mitigating climate change. Tradespeople need to continually stay on top of new and changing requirements to stay competitive.

Apprentices and tradespeople need to increase their climate literacy and reinforce their own understanding of current climate change, energy conservation and environmental practices. Most trades are encouraged to use ecologically friendly products and follow requirements related to the reuse, recycling or disposal of materials. While individual tradespeople and apprentices may not be able to choose certain elements (like the architectural design of buildings, building material selection, regulatory requirements, or use of electric vehicles and technologies), understanding the impact of using these elements and how to apply them in their work is still important. This helps ensure that energy and environmental specifications are fully met.

In apprenticeship training, 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.

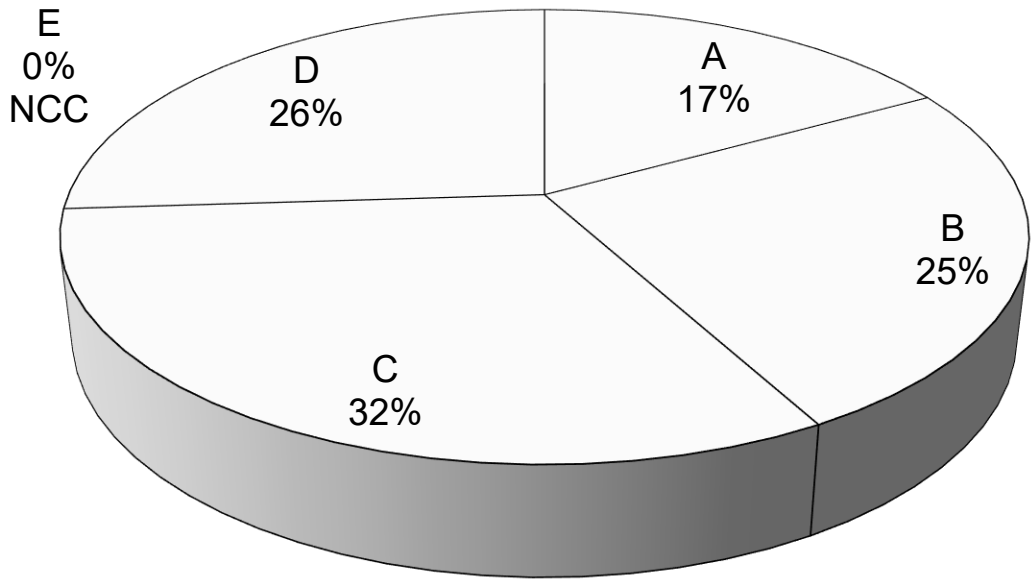
Industry Expected Performance

All tasks must be performed according to the applicable jurisdictional codes and standards. All health and safety standards must be respected and observed. Work should be performed efficiently and to a high quality without material waste or environmental damage. All requirements of employers, engineers, designers, manufacturers, clients and quality control policies must be met. At a journeyperson level of performance, all tasks must be done with minimal direction and supervision. Landscape horticulturists must be prepared to meet the physical demands of the trade and perform tasks in a variety of weather conditions. They should also be aware of environmental factors and adjust their work practices accordingly. As a journeyperson progresses in their career there is an expectation they continue to upgrade their skills and knowledge to maintain pace with industry and promote continuous learning in their trade through mentoring of apprentices.

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 and Weightings



Major Work Activity	Percentage
A - Performs common occupational skills	17%
B - Uses horticultural principles	25%
C - Performs landscape construction	32%
D - Performs landscape maintenance	26%
E - Works in production of plant material (Not Common Core)	0%

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. The Interprovincial examination for this trade has 120 questions.

Task Matrix and Weightings

Major Work Activity A – Performs common occupational skills 17%

Task A-1 Maintains safe and healthy workplace 23%	Sub-task A-1.01 Uses personal protective equipment (PPE) and safety equipment	Sub-task A-1.02 Maintains safe work environment	Sub-task A-1.03 Participates in healthy and respectful workplace practices
Task A-2 Uses tools, equipment and vehicles 37%	Sub-task A-2.01 Uses hand tools	Sub-task A-2.02 Uses power tools	Sub-task A-2.03 Uses measuring equipment
	Sub-task A-2.04 Uses vehicles, motorized equipment, trailers and attachments		
Task A-3 Organizes work 27%	Sub-task A-3.01 Performs site assessments	Sub-task A-3.02 Uses documentation and reference material	Sub-task A-3.03 Maintains records
	Sub-task A-3.04 Participates in job planning activities	Sub-task A-3.05 Orders materials	Sub-task A-3.06 Organizes materials and equipment
	Sub-task A-3.07 Transports materials	Sub-task A-3.08 Transports equipment	
Task A-4 Participates in marketing and sales 13%	Sub-task A-4.01 Controls inventory	Sub-task A-4.02 Sells products and services	Sub-task A-4.03 Maintains customer relations
	Sub-task A-4.04 Prepares estimates		

Task A-5 Maintains continuous learning 0%	Sub-task A-5.01 Upgrades in new trade practices and procedures	Sub-task A-5.02 Upgrades in emerging technologies
Task A-6 Uses communication and mentoring techniques 0%	Sub-task A-6.01 Uses communication techniques	Sub-task A-6.02 Uses mentoring techniques

Major Work Activity B – Uses horticultural principles 25%

Task B-7 Applies horticultural practices 63%	Sub-task B-7.01 Practices plant science	Sub-task B-7.02 Identifies plants	Sub-task B-7.03 Manages plant health, soil and growing conditions
	Sub-task B-7.04 Prunes plant material	Sub-task B-7.05 Propagates plant material	Sub-task B-7.06 Manages pests, diseases and invasive species
Task B-8 Applies environmental practices 37%	Sub-task B-8.01 Practices environmental stewardship	Sub-task B-8.02 Practices biodiversity enhancement	Sub-task B-8.03 Practices soil stewardship
	Sub-task B-8.04 Practices water stewardship	Sub-task B-8.05 Practices fire safety and prevention in landscaping	

Major Work Activity C – Performs landscape construction 32%

Task C-9 Performs pre-construction activities 19%	Sub-task C-9.01 Participates in landscape design activities	Sub-task C-9.02 Prepares construction site	Sub-task C-9.03 Performs grading
	Sub-task C-9.04 Installs drainage systems		
Task C-10 Installs hardscape 34%	Sub-task C-10.01 Installs landscape structures	Sub-task C-10.02 Installs surface materials	Sub-task C-10.03 Installs steps and retaining walls
	Sub-task C-10.04 Installs irrigation systems	Sub-task C-10.05 Installs water features	Sub-task C-10.06 Installs extra-low voltage landscape lighting and other extra-low voltage electrical systems
Task C-11 Installs softscape 29%	Sub-task C-11.01 Installs growing media	Sub-task C-11.02 Installs exterior landscape plants	Sub-task C-11.03 Transplants plants
	Sub-task C-11.04 Installs mulch	Sub-task C-11.05 Installs turf from seed	Sub-task C-11.06 Installs sod
	Sub-task C-11.07 Installs interior landscape plants		

Task C-12 Installs green infrastructure systems 18%	Sub-task C-12.01 Participates in green infrastructure design strategies	Sub-task C-12.02 Installs green roofs	Sub-task C-12.03 Installs green walls
	Sub-task C-12.04 Installs rainwater and stormwater management systems	Sub-task C-12.05 Installs erosion control	Sub-task C-12.06 Installs biodiverse plantings and natural areas

Major Work Activity D – Performs landscape maintenance 26%

Task D-13 Maintains hardscape 31%	Sub-task D-13.01 Maintains drainage systems	Sub-task D-13.02 Maintains landscape structures	Sub-task D-13.03 Maintains surface materials
	Sub-task D-13.04 Maintains steps and retaining walls	Sub-task D-13.05 Maintains irrigation systems	Sub-task D-13.06 Maintains water features
	Sub-task D-13.07 Maintains extra-low voltage landscape lighting and other extra-low voltage electrical systems	Sub-task D-13.08 Practices snow and ice management within landscaping	Sub-task D-13.09 Repairs hardscape
Task D-14 Maintains softscape 49%	Sub-task D-14.01 Maintains exterior softscape	Sub-task D-14.02 Maintains interior softscape	Sub-task D-14.03 Maintains turfgrass
	Sub-task D-14.04 Repairs softscape		
Task D-15 Maintains green infrastructure systems 20%	Sub-task D-15.01 Maintains green roofs	Sub-task D-15.02 Maintains green walls	Sub-task D-15.03 Maintains rainwater and stormwater management systems
	Sub-task D-15.04 Maintains erosion control	Sub-task D-15.05 Maintains biodiverse plantings and natural areas	

Major Work Activity E – Works in production of plant material 0% Not Common Core (NCC)

Task E-16 Operates and maintains growing facilities **Not Common Core**	Sub-task E-16.01 Installs growing facility components NCC	Sub-task E-16.02 Operates growing facility structures and amenities NCC	Sub-task E-16.03 Maintains sanitary environments NCC
	Sub-task E-16.04 Operates climate control systems NCC	Sub-task E-16.05 Operates irrigation and fertigation systems NCC	
Task E-17 Manages greenhouse crops **Not Common Core**	Sub-task E-17.01 Develops greenhouse crop production plan NCC	Sub-task E-17.02 Propagates greenhouse crops NCC	Sub-task E-17.03 Transplants greenhouse crops NCC
	Sub-task E-17.04 Grows greenhouse crops NCC	Sub-task E-17.05 Harvests greenhouse crops NCC	Sub-task E-17.06 Ships greenhouse crops NCC
Task E-18 Manages nursery crops **Not Common Core**	Sub-task E-18.01 Develops nursery crop production plan NCC	Sub-task E-18.02 Propagates field and container crops NCC	Sub-task E-18.03 Transplants field and container crops NCC
	Sub-task E-18.04 Grows field and container crops NCC	Sub-task E-18.05 Harvests field and container crops NCC	Sub-task E-18.06 Ships field and container crops NCC
	Sub-task E-18.07 Winterizes field and container crops NCC		

Harmonization of Apprenticeship Training

Provincial and territorial apprenticeship authorities are each responsible for their respective apprenticeship programs. In the spirit of continual improvement, and to facilitate mobility among apprentices in Canada, participating authorities have agreed to work towards harmonizing certain aspects of their programs where possible. After consulting with their stakeholders in the trade, they have reached consensus on the following elements. Note that implementation of these elements may vary from jurisdiction to jurisdiction, depending on their own circumstances. For more information on the implementation in any province and territory, please contact that jurisdiction's apprenticeship authority.

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 four (4).

3. Total Training Hours

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 and Health Related Functions	Safety and Health Related Functions	Safety and Health Related Functions
			Tools, Equipment and Vehicles
		Organizes Work	Organizes work
	Communication		
		Horticultural Practices (7.01 Practices plant science)	Horticultural Practices (7.01 Practices plant science)

Level 1	Level 2	Level 3	Level 4
		Pre-Construction Activities	Pre-Construction Activities
Safety and Heath Related Functions 1.01 Uses personal protective equipment (PPE) and safety equipment 1.02 Maintains safe work environment 1.03 Participates in healthy and respectful workplace practices			
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 3.05 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

Level 1	Level 2	Level 3	Level 4
			Marketing and Sales 4.01 Controls inventory 4.02 Sells products and services 4.03 Maintains customer relations 4.04 Prepares estimates
			Continuous Learning 5.01 Upgrades in new trade practices and procedures 5.02 Upgrades in emerging technologies
Communication 6.01 Uses communication techniques			Mentoring 6.02 Uses mentoring techniques
Horticultural Practices 7.01 Practices plant science 7.02 Identifies plants 7.03 Manages plant health, soil and growing conditions 7.04 Prunes plant material	Horticultural Practices 7.01 Practices plant science 7.02 Identifies plants 7.03 Manages plant health, soil and growing conditions 7.05 Propagates plant material 7.06 Manages pests, diseases and invasive species	Horticultural Practices 7.02 Identifies plants 7.04 Prunes plant material 7.06 Manages pests, diseases and invasive species	Horticultural Practices 7.02 Identifies plants 7.06 Manages pests, diseases and invasive species

Level 1	Level 2	Level 3	Level 4
Environmental Practices 8.01 Practices environmental stewardship	Environmental Practices 8.01 Practices environmental stewardship 8.03 Practices soil stewardship	Environmental Practices 8.01 Practices environmental stewardship 8.04 Practices water stewardship	Environmental Practices 8.01 Practices environmental stewardship 8.02 Practices biodiversity enhancement 8.05 Practices fire safety and prevention in landscaping
Pre-Construction Activities 9.03 Performs grading* 9.04 Installs drainage systems*	Pre-Construction Activities 9.02 Prepares construction site 9.03 Performs grading* 9.04 Installs drainage systems*		Pre-Construction Activities 9.01 Participates in landscape design activities
	Hardscape Installation 10.02 Installs surface materials* 10.03 Installs steps and retaining walls	Hardscape Installation 10.01 Installs landscape structures 10.02 Installs surface materials* 10.04 Installs irrigation systems 10.05 Installs water features 10.06 Installs extra-low voltage landscape lighting and other extra-low voltage electrical systems	

Level 1	Level 2	Level 3	Level 4
	Hardscape Maintenance 13.01 Maintains drainage systems 13.03 Maintains surface materials** 13.04 Maintains steps and retaining walls 13.08 Practices snow and ice management within landscaping	Hardscape Maintenance 13.02 Maintains landscape structures 13.03 Maintains surface materials** 13.05 Maintains irrigation systems 13.06 Maintains water features 13.07 Maintains extra-low voltage landscape lighting and other extra-low voltage electrical systems 13.09 Repairs hardscape	
Softscape Installation 11.01 Installs growing media 11.05 Installs turf from seed 11.06 Installs sod	Softscape Installation 11.02 Installs exterior landscape plants 11.03 Transplants plants 11.04 Installs mulch	Softscape Installation 11.07 Installs interior landscape plants	
Softscape Maintenance 14.01 Maintains exterior softscape*** 14.03 Maintains turfgrass***	Softscape Maintenance 14.01 Maintains exterior softscape*** 14.03 Maintains turfgrass***	Softscape Maintenance 14.02 Maintains interior softscape 14.04 Repairs softscape	

Level 1	Level 2	Level 3	Level 4
			Green Infrastructure Installation 12.01-Participates in green infrastructure design activities 12.02 Installs green roofs 12.03 Installs green walls 12.04 Installs rainwater and stormwater management systems 12.05 Installs erosion control 12.06 Installs biodiverse plantings and natural areas
			Green Infrastructure Maintenance 15.01 Maintains green roofs 15.02 Maintains green walls 15.03 Maintains rainwater and stormwater management systems 15.04 Maintains erosion control 15.05 Maintains biodiverse plantings and natural areas

Level 1	Level 2	Level 3	Level 4
		Growing Facilities Operation/ Maintenance (NOT COMMON CORE) 16.01 Installs growing facility components 16.02 Operates growing facility structures and amenities 16.03 Maintains sanitary environments 16.04 Operates climate control systems 16.05 Operates irrigation and fertigation systems	
			Greenhouse Crops (NOT COMMON CORE) 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

Level 1	Level 2	Level 3	Level 4
			Nursery Crops (NOT COMMON CORE) 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 Ships field and container crops 18.07 Winterizes field and container crops.

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

**Generally, L2 would cover non-masonry surface materials and L3 would cover masonry surface materials

*** Maintenance of exterior softscape and turfgrass, while split in 2 levels, could be weighted differently in course design depending on regional and employer requirements

Major Work Activity A - Performs common occupational skills

Task A-1 Maintains safe and healthy workplace

Task Descriptor

Landscape horticulturists participate in ensuring a healthy and inclusive workplace. They must be able to protect themselves, others, property, and the environment. The use and maintenance of personal protective equipment (PPE) and safety equipment are essential to every job.

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

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
A-1.01.01P	select and use **PPE**	**PPE** required for tasks, tools, equipment, machinery and environment is selected according to company policies, jobsite or client specifications, 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 according to manufacturers' specifications to maintain its integrity

Reference Code	Performance Criteria	Evidence of Attainment
A-1.01.04P	inspect operation and condition of **PPE** and **safety equipment**	**PPE** and **safety equipment** are inspected regularly and prior to use according to jurisdictional regulations, manufacturers' specifications and schedule to ensure safety is current
A-1.01.05P	determine **PPE** supply and **safety equipment** inventory	**PPE** and **safety equipment** inventory is complete with a ready supply according to Authority Having Jurisdiction (AHJ)
A-1.01.06P	recognize damaged and expired **PPE** and **safety equipment**, and remove from service and dispose of	damaged and expired **PPE** and **safety equipment** are removed from service and disposed of according to manufacturers' specifications
A-1.01.07P	check and replace **PPE** components	**PPE** components are checked and replaced according to manufacturers' specifications, workplace requirements and jurisdictional regulations

Range of Variables (include, but not limited to)

PPE: ear, eye, hand, foot, head and respiratory protection; high visibility clothing; cold weather clothing/gear; fall protection equipment; site-specific equipment (e.g., personal floatation devices [PFD])

safety equipment: ventilation fans, spill kits, fire extinguishers, safety barriers, first aid kits, signage, guards

Knowledge

Reference Code	Learning Outcomes and Objectives
A-1.01.01L	demonstrate knowledge of **PPE** and **safety equipment**, their characteristics and applications
a.	identify types of **PPE** and **safety equipment** and describe their characteristics and applications
b.	interpret information for **PPE** and **safety equipment** found in manufacturers' specifications

Reference Code	Learning Outcomes and Objectives
A-1.01.02L	demonstrate knowledge of procedures to use and maintain **PPE** and **safety equipment**
a.	describe procedures to inspect, use and maintain **PPE** and **safety equipment**
b.	describe procedures to recycle and dispose of **PPE** and **safety equipment**
A-1.01.03L	demonstrate knowledge of training and certification requirements to use **PPE** and **safety equipment**
a.	identify training and certification requirements to use **PPE** and **safety equipment**
A-1.01.04L	demonstrate knowledge of regulatory requirements for **PPE** and **safety equipment**
a.	identify **jurisdictional workplace safety and health regulations** for **PPE** and **safety equipment**

Range of Variables (include, but not limited to)

PPE: ear, eye, hand, foot, head and respiratory protection; high visibility clothing; cold weather clothing/gear; fall protection equipment; site-specific equipment (e.g., personal floatation devices [PFD])

safety equipment: ventilation fans, spill kits, fire extinguishers, safety barriers, first aid kits, signage, guards

jurisdictional workplace safety and health regulations: Workplace Hazardous Material Information System (WHMIS), Transportation of Dangerous Goods (TDG), Pest Management Regulatory Agency (PMRA), federal, provincial, territorial, municipal, Occupational Health and Safety (OHS)

A-1.02 Maintains safe work environment

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
A-1.02.01P	identify and assess **hazards**	**hazards** are identified and assessed according to jurisdictional regulations and company safety policies
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 jurisdictional regulations and company policies are followed
A-1.02.04P	maintain an organized and tidy work area	an organized and tidy work area is maintained to reduce risk of injury to self and others
A-1.02.05P	comply with lock-out/tag-out procedures	lock-out/tag-out procedures are followed when working with/on equipment according to jurisdictional regulations, manufacturers' specifications and company policies and procedures
A-1.02.06P	coordinate tasks with other workers	tasks with other workers are coordinated to avoid injury to self and others
A-1.02.07P	place **safety barriers** in work areas	**safety barriers** are placed according to jurisdictional regulations and company policies
A-1.02.08P	handle **hazardous materials** and batteries	handling of **hazardous materials** and batteries are done in accordance with jurisdictional regulations and **WHMIS procedures**

Reference Code	Performance Criteria	Evidence of Attainment
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 OHS and company policies
A-1.02.11P	recognize **safety symbols** and **warning signals**	**safety symbols** and **warning signals** are recognized to ensure 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 (include, but not limited to)

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

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

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

safety barriers: flagging, pylons, barricades, signage

hazardous materials: pesticides, herbicides, fertilizers, debris, potential contaminants in soil, silica dust

WHMIS procedures: disposal, labelling, use of PPE and safety data sheets (SDS)

safety symbols: workplace and jobsite safety signage, truck signage

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

emergency response teams: emergency response services, spill response, fire, utilities, poison control

Knowledge

Reference Code	Learning Outcomes and Objectives
A-1.02.01L	demonstrate knowledge of maintaining safe work environment
a.	identify **safety barriers** and describe their characteristics and applications
b.	describe **WHMIS procedures** and describe their characteristics and applications
A-1.02.02L	demonstrate knowledge of situational **hazards**, risks and mitigation measures
a.	identify situational **hazards**, assess risk and recommend mitigation measures
A-1.02.03L	demonstrate knowledge of training and certification requirements to maintain safe work environment
a.	identify training and certification requirements to maintain safe work environment
A-1.02.04L	demonstrate knowledge of regulatory requirements for safety
a.	identify pertinent **jurisdictional workplace safety and health regulations**
A-1.02.05L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	identify practices that contribute to reducing carbon emissions

Range of Variables (include, but not limited to)

safety barriers: flagging, pylons, barricades, signage

WHMIS procedures: disposal, labelling, use of PPE and SDS

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

jurisdictional workplace safety and health regulations: WHMIS, TDG, PMRA, federal, provincial, territorial, municipal, OHS

A-1.03 Participates in healthy and respectful workplace practices

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
A-1.03.01P	identify personal responsibilities, attitudes and professional ethics that contribute to on-the-job success	personal responsibilities, attitudes and professional ethics that contribute to on-the-job success are identified
A-1.03.02P	perform self-assessment of physical and mental health	self-assessment of physical and mental health is performed, and health concerns are identified
A-1.03.03P	identify **supports and resources** for personal mental and physical health	**supports and resources** for personal mental and physical health are identified
A-1.03.04P	perform self-assessment of physical ability	self-assessment of physical ability is performed
A-1.03.05P	identify **techniques to manage health and wellness**	**techniques to manage health and wellness** are identified
A-1.03.06P	assess **personal job satisfaction**	**personal job satisfaction** is assessed, and concerns are discussed with management
A-1.03.07P	create plan to manage work-life balance	plan is created to manage work-life balance and discussed with supervisors
A-1.03.08P	support and promote anti-**harassment** and anti-**discrimination** practices in workplace	**harassment** and **discrimination**-free workplace is maintained

Range of Variables (include, but not limited to)

supports and resources: professional networks and associations, collaboration with colleagues and community members, counselling, mentoring, peer support groups, paramedical services, employee assistance plans (EAP), crisis helplines (e.g., suicide crisis helpline [9-8-8]), OHS

techniques to manage health and wellness: practicing techniques for remaining physically, mentally and emotionally "fit for work"; managing personal and work life; recognizing effects and consequences of alcohol, over-the-counter drugs, prescription drugs or illegal drugs before, during and after work; using personal hygiene habits

personal job satisfaction: financial, hours, flexibility, supports, working conditions

harassment: as defined by the Canadian and jurisdictional Human Rights Commissions

discrimination: as defined by the Canadian Human Rights Act and jurisdictional human rights laws

Knowledge

Reference Code	Learning Outcomes and Objectives
A-1.03.01L	demonstrate knowledge of personal health and well-being
a.	describe how personal health and well-being impacts professional practice and healthy work environments
b.	identify and describe physical and emotional requirements of trade
c.	identify workplace stressors
d.	describe elements of healthy organizational cultures and importance of sense of collaboration and community
e.	identify **behaviours** that affect physical and mental health
A-1.03.02L	demonstrate knowledge of **techniques to manage health and wellness**
a.	describe stress and time management techniques
b.	identify supports to manage personal health and wellbeing
c.	describe **techniques to manage health and wellness**
A-1.03.03L	demonstrate knowledge of professionalism and **professional ethics**
a.	identify characteristics and purpose of professionalism and **professional ethics**
b.	describe **factors** that impact professionalism
c.	identify **elements of codes of ethics, codes of conduct and other professional standards**, and describe their characteristics and applications

Reference Code	Learning Outcomes and Objectives
A-1.03.04L	demonstrate knowledge of value of diversity, equity, inclusion and belonging in workplace
a.	define diversity and differences between individuals
b.	define equity and importance of individual's access to opportunities and resources
c.	define inclusion and creation of respectful workplace practices
d.	identify conduct that constitutes **harassment** and **discrimination**

Range of Variables (include, but not limited to)

behaviours: diet, fitness, sleep, managing stress and emotions

techniques to manage health and wellness: practicing techniques for remaining physically, mentally and emotionally "fit for work"; managing personal and work life; recognizing effects and consequences of alcohol, over-the-counter drugs, prescription drugs or illegal drugs before, during and after work; using personal hygiene habits

professional ethics: personal and/or corporate standards of behavior expected by professionals, values and guiding principles to guide individuals in performing job functions

factors: presentation of self (appearance, hygiene), communication (verbal, written, body language, social media profile), conduct

elements of codes of ethics, codes of conduct and other professional standards: professional obligations; signal accountability to public; maintain public trust and credibility of profession; define misconduct; support and promote anti-harassment and anti-discrimination practices

harassment: as defined by the Canadian and jurisdictional Human Rights Commissions

discrimination: as defined by the Canadian Human Rights Act and jurisdictional human rights laws

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 these in a safe and productive manner to increase their longevity, while practicing environmental stewardship and sustainability.

A-2.01 Uses hand tools

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
A-2.01.01P	select hand tools	hand tools are selected according to task
A-2.01.02P	clean and disinfect hand tools	hand tools are cleaned and disinfected to ensure safe and effective operation and 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 when 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 when required

Knowledge

Reference Code	Learning Outcomes and Objectives
A-2.01.01L	demonstrate knowledge of hand tools, their components, characteristics and applications
a.	identify types of hand tools and describe their characteristics and applications
b.	interpret information for hand tools found in manufacturers' specifications
A-2.01.02L	demonstrate knowledge of procedures to use hand tools
a.	identify hazards and describe safe work practices to use hand tools
b.	describe procedures to use hand tools
c.	describe procedures to inspect, maintain and store hand tools

A-2.02 Uses power tools

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
A-2.02.01P	select power tools	power tools are selected according to 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 when required

Reference Code	Performance Criteria	Evidence of Attainment
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, transport, store, charge or replace/dispose of batteries on power tools	power tool batteries are operational, charged, transported and stored properly, and replaced or disposed of as needed
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 and batteries	power tools and batteries are stored for organization, safety and security according to manufacturers' specifications

Range of Variables (include, but not limited to)

power tools that can be adjusted: chainsaws, mowers, pressure washers, lawn maintenance equipment

power tool components: filters, mufflers, blades, power cords, attachments, batteries, chains, belts

power tool components that need sharpening: chainsaws, hedge shears, lawn mowers

Knowledge

Reference Code	Learning Outcomes and Objectives
A-2.02.01L	demonstrate knowledge of power tools and equipment, their components, characteristics, applications and operation
a.	identify **types of power tools and equipment**, and describe their applications and limitations
b.	describe operating principles of power tools and equipment
c.	interpret information for power tools and equipment found in manufacturers' specifications
A-2.02.02L	demonstrate knowledge of procedures to use power tools and equipment
a.	identify hazards and describe safe work practices to use power tools and equipment
b.	describe daily and seasonal operating procedures used to inspect, maintain and store power tools and equipment
A-2.02.03L	demonstrate knowledge of training and certification requirements to use power tools and equipment
a.	identify training and certification requirements to use power tools and equipment
A-2.02.04L	demonstrate knowledge of regulatory requirements to use power tools and equipment
a.	identify codes, standards and regulations to use power tools and equipment
b.	describe implications of power tool selection and use on practice of environmental stewardship

Range of Variables (include, but not limited to)

types of power tools and equipment: electric, battery, air compressed, gas (two-cycle engine, four-cycle engine)

A-2.03 Uses measuring equipment

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

Skills

Reference Code	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 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 in measuring equipment	batteries in measuring equipment are checked, charged and replaced when required
A-2.03.05P	inspect measuring equipment	measuring equipment is inspected for damage, excessive wear and proper operation, and removed from service when required
A-2.03.06P	store measuring equipment	measuring equipment is stored for organization, safety and security according to manufacturers' specifications

Knowledge

Reference Code	Learning Outcomes and Objectives
A-2.03.01L	demonstrate knowledge of measuring equipment, their components, characteristics and applications
a.	identify types of measuring equipment and describe their characteristics and applications

Reference Code	Learning Outcomes and Objectives
b.	interpret information for measuring equipment found in manufacturers' specifications
A-2.03.02L	demonstrate knowledge of procedures to use measuring equipment
a.	identify hazards and describe safe work practices to use measuring equipment
b.	describe procedures to use measuring equipment
c.	describe procedures to inspect, clean, maintain and store measuring equipment

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

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

Skills

Reference Code	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 manufacturers' specifications, company policies and jurisdictional regulations
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 **defects**, damage and wear, and document findings according to company policies and jurisdictional regulations

Reference Code	Performance Criteria	Evidence of Attainment
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 they meet manufacturers' specifications
A-2.04.07P	check and replace **components**	**components** are checked and replaced when required according to manufacturers' specifications
A-2.04.08P	check and adjust air pressure levels in tires	air pressure levels in tires are checked and adjusted to 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 according to company policies, manufacturers' specifications and jurisdictional regulations
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

Reference Code	Performance Criteria	Evidence of Attainment
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 company policies and jurisdictional regulations
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 (include, but not limited to)

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

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

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

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

fluids: oil, coolant, hydraulic, fuel types

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

Knowledge

Reference Code	Learning Outcomes and Objectives
A-2.04.01L	demonstrate knowledge of **vehicles, motorized equipment, attachments and trailers**, their **components**, characteristics, applications and operation
a.	identify types of **vehicles, motorized equipment, attachments and trailers**, and describe their characteristics and applications
b.	describe operating principles of **vehicles, motorized equipment, attachments and trailers**
c.	interpret information for **vehicles, motorized equipment, attachments and trailers** found in manufacturers' specifications

Reference Code	Learning Outcomes and Objectives
d.	identify **basic vehicle systems and components** and describe their characteristics and operation
e.	identify **engine systems** and describe their characteristics and operation
A-2.04.02L	demonstrate knowledge of procedures to operate and use **vehicles, motorized equipment, attachments and trailers**
a.	identify hazards and describe safe work practices to operate and use **vehicles, motorized equipment, attachments and trailers**
b.	describe procedures to operate and use **vehicles, motorized equipment, attachments and trailers**
c.	describe **daily and seasonal operating procedures** used to inspect, maintain and store engines, **vehicles, motorized equipment, attachments and trailers**
A-2.04.03L	demonstrate knowledge of training and certification requirements to operate and use **vehicles, motorized equipment, attachments and trailers**
a.	identify training and certification requirements to operate and use **vehicles, motorized equipment, attachments and trailers**
b.	identify type of license required to operate **vehicles, motorized equipment, attachments and trailers**
A-2.04.04L	demonstrate knowledge of regulatory requirements to operate and use **vehicles, motorized equipment, attachments and trailers**
a.	identify codes, standards and regulations for **vehicles, motorized equipment, attachments and trailers**
A-2.04.05L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	identify practices that contribute to reducing carbon emissions
c.	describe implications of **vehicles, motorized equipment, attachments and trailer** selection and use on practice of environmental stewardship

Range of Variables (include, but not limited to)

vehicles and motorized equipment: trucks, turfgrass maintenance machines, skid steers, excavators, ATVs, tractors, hydro seeders

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

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

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

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

daily and seasonal operating procedures: 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, while practicing environmental stewardship and sustainability. They use documents, reference materials and maintain records to effectively plan future work. Landscape horticulturists order and transport materials and equipment in coordination with the job schedule and verify quantities.

A-3.01 Performs site assessments

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
A-3.01.01P	assess site access points	access points are assessed to identify **site restrictions and limitations**
A-3.01.02P	perform visual inspection of site and neighbouring properties	visual inspection is documented to identify existing damage and surrounding landscape

Reference Code	Performance Criteria	Evidence of Attainment
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 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, protection 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 from damage	site elements are protected from damage

Range of Variables (include, but not limited to)

site restrictions and limitations: overhead and underground utilities or obstructions, easements, root protection, limited vehicle and equipment access, fragile hardscape, environmentally sensitive protected areas, parking, on-site storage

private and public utilities: cable, power, telephone, water and sewer, irrigation lines, drainage systems, landscape lighting components, gas lines, electrical cables

soil tests: percolation, core sampling, texture tests, fertility values, pH

Knowledge

Reference Code	Learning Outcomes and Objectives
A-3.01.01L	demonstrate knowledge of procedures to perform site assessments
a.	identify tools and equipment used to perform site assessments and describe their procedures for use
b.	identify hazards and describe safe work practices to perform site assessments
c.	describe methods and procedures used to perform site assessments
d.	interpret and verify **documentation** for site assessments
A-3.01.02L	demonstrate knowledge of regulatory requirements for site assessments
a.	identify codes, standards and regulations for site assessments
A-3.01.03L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	identify practices that contribute to reducing carbon emissions

Range of Variables (include, but not limited to)

documentation: plans, specifications, contracts, surveys, site locates, SDS

A-3.02 Uses documentation and reference material

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

Skills

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

Range of Variables (include, but not limited to)

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

WHMIS procedures: usage of PPE, SDS and labels; storage requirements; spill response and containment; usage and cleanup of hazardous materials

information resources: pesticide labels, supplier catalogues, online resources, textbooks, field books, operator equipment manual (OEM), Canadian Landscape Standard (CLS)

Knowledge

Reference Code	Learning Outcomes and Objectives
A-3.02.01L	demonstrate knowledge of trade-related **documentation**, their characteristics and applications
a.	identify types of trade-related **documentation** and describe their characteristics and applications
b.	interpret information on specifications
A-3.02.02L	demonstrate knowledge of landscape drawings and associated documentation, their characteristics and applications
a.	interpret **information on landscape drawings** and **design principles**
A-3.02.03L	demonstrate knowledge of legislative requirements for **documentation**
a.	identify codes, standards and regulations for **documentation**
A-3.02.04L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection

Range of Variables (include, but not limited to)

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

information on landscape drawings: title block, legend, scale, symbols, elements, details, plant list, easements, grade points

design principles: unity, balance, emphasis, order, rhythm, sequence, scale, visual weight, line, form, texture, colour

A-3.03 Maintains records

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
A-3.03.01P	complete **safety records** and **work records**	**safety records** and **work records** are completed according to company policies and jurisdictional regulations
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 (include, but not limited to)

safety records: accident reports, incident reports, lock-outs/tag-outs, safety meeting records, hazard assessment records

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

shipping and receiving information: inventory adjustments, regulatory documentation, Phytosanitary Certificates, waybills

Knowledge

Reference Code	Learning Outcomes and Objectives
A-3.03.01L	demonstrate knowledge of **safety records** and **work records**, their characteristics and applications
a.	identify types of **safety records** and **work records**, and describe their characteristics and applications
A-3.03.02L	demonstrate knowledge of procedures to prepare **safety records** and **work records**
a.	describe procedures to prepare **safety records** and **work records**
b.	explain importance of accurate record keeping and describe associated procedures
A-3.03.03L	demonstrate knowledge of training and certification requirements for record keeping
a.	identify training and certification requirements for record keeping
A-3.03.04L	demonstrate knowledge of regulatory requirements for record keeping
a.	identify codes, standards and regulations for record keeping
A-3.03.05L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection

Range of Variables (include, but not limited to)

safety records: accident reports, incident reports, lock-outs/tag-outs, safety meeting records, hazard assessment records

work records: 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

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

Skills

Reference Code	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 and organize labour expertise, and allocate production hours	labour expertise is identified and organized, and production hours are allocated according to specifications and in consultation with project manager
A-3.04.03P	organize materials, **tools and equipment**	materials, **tools and equipment** are organized according to **project requirements**
A-3.04.04P	select and schedule sub-contractors	sub-contractors are selected 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 daily planning
A-3.04.06P	review safety requirements	safety requirements are reviewed to ensure safe completion of project
A-3.04.07P	locate private and public utilities	safe initiation and 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

Reference Code	Performance Criteria	Evidence of Attainment
A-3.04.10P	plan **site-specific staging**	**site-specific staging** is planned to ensure 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 (include, but not limited to)

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

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

practices: safe work, horticultural, construction

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

Knowledge

Reference Code	Learning Outcomes and Objectives
A-3.04.01L	demonstrate knowledge of procedures to plan jobs and job tasks
a.	describe procedures and **practices** used to plan jobs and job tasks
b.	identify **project requirements** to be considered when planning jobs and job tasks
c.	identify hazards and describe safe work practices to consider when planning jobs and job tasks
A-3.04.02L	demonstrate knowledge of regulatory requirements for job planning activities
a.	identify codes, standards and regulations for job planning activities
A-3.04.03L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	identify practices that contribute to reducing carbon emissions

Range of Variables (include, but not limited to)

practices: safe work, horticultural, construction

project requirements: site assessments, weather assessment, 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

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

Skills

Reference Code	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 contract documents, CLS and jurisdictional regulations
A-3.05.02P	use botanical nomenclature when ordering plant material	botanical nomenclature is used when ordering plant material to ensure accuracy of orders
A-3.05.03P	confirm **documents** are completed	**documents** are completed according to company policies and jurisdictional regulations
A-3.05.04P	verify and record **material information**	**material information** is verified and recorded

Range of Variables (include, but not limited to)

documents: movement certificates, import permits, plans, specifications, jurisdictional regulations, purchase orders

material information: order number, tracking number, time and date of delivery or pick up, name of supplier representative

Knowledge

Reference Code	Learning Outcomes and Objectives
A-3.05.01L	demonstrate knowledge of procedures to order plants and materials
a.	describe procedures to order plants and materials
b.	describe importance of using botanical nomenclature when ordering plant material
c.	identify necessary **documents** and **material information** to be recorded

Reference Code	Learning Outcomes and Objectives
A-3.05.02L	demonstrate knowledge of regulatory requirements as relevant to materials being ordered
a.	identify codes, standards and regulations as relevant to materials being ordered
A-3.05.03L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	identify practices that contribute to reducing carbon emissions

Range of Variables (include, but not limited to)

documents: movement certificates, import permits, plans, specifications, jurisdictional regulations, purchase orders

material information: order number, tracking number, time and date of delivery or pick up, name of supplier representative

A-3.06 Organizes materials and equipment

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

Skills

Reference Code	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

Reference Code	Performance Criteria	Evidence of Attainment
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 company policies and jurisdictional regulations
A-3.06.05P	quarantine, reject and dispose of **substandard plants**	**substandard plants** are quarantined, rejected and disposed of according to CLS and jurisdictional regulations
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 (include, but not limited to)

materials: mulch, soil, aggregates, lumber, pavers, fertilizers, pond and irrigation materials, electrical supplies

designated areas: jobsite, hot house, shaded area, heeling-in bed

hazardous materials: fertilizers, contaminated soils, pesticides, fuels

substandard plants: damaged, diseased, infested, unhealthy, undersized

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

Knowledge

Reference Code	Learning Outcomes and Objectives
A-3.06.01L	demonstrate knowledge of procedures to receive, organize and store **materials**, plants and equipment
a.	interpret documentation about receiving, organizing and storing **materials**, plants and equipment
b.	identify hazards and describe safe work practices to receive, organize and store **materials**, plants and equipment

Reference Code	Learning Outcomes and Objectives
c.	explain process for verifying and accepting **materials**, plants and equipment shipments
d.	describe procedures to receive, organize and store **materials**, plants and equipment
A-3.06.02L	demonstrate knowledge of regulatory requirements for organizing **materials** and equipment
a.	identify codes, standards and regulations for organizing **materials** and equipment
A-3.06.03L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	identify practices that contribute to reducing carbon emissions

Range of Variables (include, but not limited to)

materials: mulch, soil, aggregates, lumber, pavers, fertilizers, pond and irrigation materials, electrical supplies

A-3.07 Transports materials

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
A-3.07.01P	identify types of transportation required	types of required transportation are identified
A-3.07.02P	protect plant material	**protective items** and procedures are used to protect plant material and ensure plant health according to CLS

Reference Code	Performance Criteria	Evidence of Attainment
A-3.07.03P	secure **materials**	**materials** are secured using appropriate load bearing tie downs according to company policies and jurisdictional regulations, and loose **materials** are loaded and secured in a manner to prevent spillage and damage
A-3.07.04P	load and 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	transport **material**	**material** is transported according to weight restrictions, company policies, manufacturers' specifications, load distribution requirements 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 company policies and jurisdictional regulations

Range of Variables (include, but not limited to)

protective items: tarps, anti-desiccants, enclosed trailers, trunk guards, cargo nets, dunnage

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

Knowledge

Reference Code	Learning Outcomes and Objectives
A-3.07.01L	demonstrate knowledge of **procedures to transport materials**
a.	identify tools and equipment used to transport **materials** and describe their procedures for use
b.	identify hazards and describe safe work practices to transport **materials**

Reference Code	Learning Outcomes and Objectives
c.	identify and interpret documentation about transportation of **materials**
d.	identify documentation about **material** weights
e.	describe **procedures to transport materials**
A-3.07.02L	demonstrate knowledge of training and certification required for transportation of **materials**
a.	identify training and certification requirements for transportation of **materials**
A-3.07.03L	demonstrate knowledge of regulatory requirements for transportation of **materials**
a.	identify codes, standards and regulations for transportation of **materials**
A-3.07.04L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	identify practices that contribute to reducing carbon emissions

Range of Variables (include, but not limited to)

procedures to transport materials: loading, securing, protecting, unloading
materials: plants, mulch, soil, aggregates, lumber, pavers, pond and irrigation materials, electrical supplies, hazardous materials (fertilizers, contaminated soils, pesticides, fuels)

A-3.08 Transports equipment

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
A-3.08.01P	select vehicle/trailer type	vehicle/trailer type is selected according to equipment, weight restrictions, class of license and required use
A-3.08.02P	secure equipment	equipment is secured according to jurisdictional regulations

Reference Code	Performance Criteria	Evidence of Attainment
A-3.08.03P	determine start/finish route for heavy hauling	route for heavy hauling is planned for efficiency and according to jurisdictional regulations
A-3.08.04P	attach/confirm signage to vehicle/trailer for oversized loads	signage is attached/confirmed 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 placed 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, company policies, manufacturers' specifications, load distribution requirements and jurisdictional regulations

Knowledge

Reference Code	Learning Outcomes and Objectives
A-3.08.01L	demonstrate knowledge of procedures to transport equipment
a.	identify hazards and describe safe work practices to transport equipment
b.	interpret documentation about transportation of equipment
c.	describe procedures to transport equipment
A-3.08.02L	demonstrate knowledge of training and certification requirements for transportation of equipment
a.	identify training and certification requirements for transportation of equipment
A-3.08.03L	demonstrate knowledge of regulatory requirements for transportation of equipment
a.	identify codes, standards and regulations for transportation of equipment

Reference Code	Learning Outcomes and Objectives
A-3.08.04L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	identify practices that contribute to reducing carbon emissions

Task A-4 Participates in marketing and sales

Task Descriptor

Landscape horticulturists sell products and services that meet client expectations while considering environmental stewardship and sustainability.

Establishing and maintaining customer relations is a critical component of the marketing and sales strategy, as well as industry awareness and sustainability.

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

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

Skills

Reference Code	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 and quality to ensure safety, efficiency and sustainability

Reference Code	Performance Criteria	Evidence of Attainment
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

Range of Variables (include, but not limited to)

inventory: plants, equipment, tools, landscape material, vehicles

Knowledge

Reference Code	Learning Outcomes and Objectives
A-4.01.01L	demonstrate knowledge of procedures to control **inventory**
a.	describe procedures to control **inventory**
b.	interpret information and documents for **inventory** control
A-4.01.02L	demonstrate knowledge of regulatory requirements for plant inventory
a.	identify codes, standards and regulations for plant inventory
A-4.01.03L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	identify practices that contribute to reducing carbon emissions

Range of Variables (include, but not limited to)

inventory: plants, equipment, tools, landscape material, vehicles

A-4.02 Sells products and services

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

Skills

Reference Code	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	upsell additional products and services to clients and advise them 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 are 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

Reference Code	Learning Outcomes and Objectives
A-4.02.01L	demonstrate knowledge of products and services
a.	explain importance of advising clients about products and services
b.	interpret information related to products and services found on plans, drawings, specifications and contracts
A-4.02.02L	demonstrate knowledge of sales techniques
a.	describe **procedures** associated with sales
b.	identify **marketing principles**

Reference Code	Learning Outcomes and Objectives
c.	identify components of contracts
A-4.02.03L	demonstrate knowledge of training and certification requirements for sale of products and services
a.	identify training and certification requirements for sale of products and services
A-4.02.04L	demonstrate knowledge of regulatory requirements for sale of products and services
a.	identify codes, standards and regulations for sale of products and services
A-4.02.05L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	identify practices that contribute to reducing carbon emissions

Range of Variables (include, but not limited to)

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

A-4.03 Maintains customer relations

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
A-4.03.01P	follow customer service **practices**	customers are served with integrity and respect by providing knowledge and acknowledging clients' needs to promote positive customer relations
A-4.03.02P	maintain **customer record information**	**customer record information** is up-to-date and accurate, and maintained according to company policies, jurisdictional regulations and privacy legislation

Reference Code	Performance Criteria	Evidence of Attainment
A-4.03.03P	address clients' concerns	clients' concerns are addressed with respect and in timely manner
A-4.03.04P	provide follow-up services	follow-up services are provided to ensure customer satisfaction

Range of Variables (include, but not limited to)

practices: qualifying customers, customer education, up-selling products and services, conflict resolution, after service follow-up

customer record information: names, address, phone number, email address, other personal information, product and service preferences

Knowledge

Reference Code	Learning Outcomes and Objectives
A-4.03.01L	demonstrate knowledge of procedures to maintain customer relations
a.	describe **practices** associated with maintaining customer relations
A-4.03.02L	demonstrate knowledge of regulatory and privacy legislation about **customer record information**
a.	identify jurisdictional regulations and privacy legislation about **customer record information**

Range of Variables (include, but not limited to)

practices: qualifying customers, customer education, up-selling products and services, conflict resolution, after service follow-up

customer record information: names, address, phone number, email address, other personal information, product and service preferences

A-4.04 Prepares estimates

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
A-4.04.01P	interpret **site information/documents** to determine **components for estimate**	**site information/documents** are interpreted to determine **components for estimate**
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 are calculated according to job requirements, historical data and safe work procedures
A-4.04.04P	estimate equipment requirements	estimates for equipment 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 (include, but not limited to)

site information/documents: drawings, specifications, tendering documents, client instructions, digital mapping, limitations, permits

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

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

logistical issues: skill requirements, scheduling, vehicle and equipment availability

Knowledge

Reference Code	Learning Outcomes and Objectives
A-4.04.01L	demonstrate knowledge of procedures to calculate and estimate **operational cost requirements**
a.	identify and interpret **site information/documents** related to **components for estimate**
b.	describe procedures used to calculate **components for estimate**
c.	identify **operational cost requirements**
d.	calculate and estimate **operational cost requirements**
A-4.04.02L	demonstrate knowledge of regulatory requirements for preparing estimates
a.	identify codes, standards and regulations for preparing estimates
A-4.04.03L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	identify practices that contribute to reducing carbon emissions

Range of Variables (include, but not limited to)

operational cost requirements: overhead costs, general conditions, profit margins

site information/documents: drawings, specifications, tendering documents, client instructions, digital mapping, limitations, permits

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

Task A-5 Maintains continuous learning

Task Descriptor

Landscape horticulturists must stay current on landscaping and horticultural information and practices, and emerging technologies being introduced in the trade. They need to keep informed about new and changing codes and regulations, as well as types of equipment, energy sources, materials and sustainable horticulture practices.

A-5.01 Upgrades in new trade practices and procedures

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
A-5.01.01P	apply **continuous learning methods**	**continuous learning methods** are applied
A-5.01.02P	develop and maintain personal and professional development plan	personal and professional development plan is developed and maintained with established learning goals (short and long term) and time frames
A-5.01.03P	identify available **supports and resources** for learning	available **supports and resources** for learning are identified
A-5.01.04P	identify **supports and resources** required for tasks outside of trade scope	required **supports and resources** are identified for tasks outside of trade scope

Range of Variables (include, but not limited to)

continuous learning methods: actively engaging in performance review processes and taking action to address feedback, seeking out and actively participating in and embracing learning opportunities (seminars, webinars, training courses, podcasts, independent research), maintaining all required certifications and training, upgrading and maintaining computer and technology skills, sharing learning outcomes and concepts with others, transferring knowledge into practice

supports and resources: professional networks and associations, manufacturers' specific training, collaboration with colleagues and community members, counselling, mentoring, peer support groups, online resources, trade shows, language supports, accommodations, licensed trades, seminars, webinars, training

Knowledge

Reference Code	Learning Outcomes and Objectives
A-5.01.01L	demonstrate knowledge of upgrading in new trade practices and procedures
a.	identify **continuous learning methods**
b.	explain importance of staying current on new trade practices and procedures
c.	identify **supports and resources** for learning
A-5.01.02L	demonstrate knowledge of personal and professional development plan
a.	identify **elements of professional portfolio**
b.	identify link between professionalism and **continuous learning methods**
c.	describe how to assess personal learning needs
d.	identify **factors** that may impact learning needs and goals

Range of Variables (include, but not limited to)

continuous learning methods: actively engaging in performance review processes and taking action to address feedback, seeking out and actively participating in and embracing learning opportunities (seminars, webinars, trainings, podcasts, independent research), maintaining all required certifications and training, upgrading and maintaining computer and technology skills, sharing learning outcomes and concepts with others, transferring knowledge into practice

supports and resources: professional networks and associations, manufacturers' specific training, collaboration with colleagues and community members, counselling, mentoring, peer support groups, online resources, trade shows, language supports, accommodations, licensed trades, seminars, webinars, training

elements of professional portfolio: resume, certificates, licenses, diplomas, degrees, transcripts, marketable skills, professional accomplishments, work samples, awards, references

factors: new technology, sector trends and practices, legislative and regulatory changes, barriers to learning

A-5.02 Upgrades in emerging technologies

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
A-5.02.01P	interpret **information** about latest advancements and **emerging technologies**	**information** about latest advancements and **emerging technologies** is interpreted to stay informed
A-5.02.02P	participate in seminars, webinars and **information** sessions	seminars, webinars and **information** sessions organized by manufacturers, suppliers, unions and employers are attended
A-5.02.03P	share **information** on **emerging technologies** with colleagues and management	**information** on **emerging technologies** is shared with colleagues and management, and advantages and disadvantages are explained

Range of Variables (include, but not limited to)

information: manufacturers' literature, online resources, trade journals and magazines, trade shows, conferences

emerging technologies: battery technologies, software, drones, robotic equipment

Knowledge

Reference Code	Learning Outcomes and objectives
A-5.02.01L	demonstrate knowledge of upgrading in **emerging technologies**
a.	identify types of **information** on **emerging technologies**
b.	identify types of **emerging technologies**
c.	describe potential applications of **emerging technologies**

Range of Variables (include, but not limited to)

emerging technologies: battery technologies, software, drones, robotic equipment
information: manufacturers' literature, online resources, trade journals and magazines, trade shows, conferences

Task A-6 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, which is learning workplace skills and passing them onto others. Because of the importance of this to the trade, this task covers the activities related to communication in the workplace and mentoring skills.

A-6.01 Uses communication techniques

Skills

Reference Code	Performance Criteria	Evidence of Attainment
A-6.01.01P	demonstrate communication techniques with individuals or in a group	instructions and messages are interpreted by all parties involved in communication
A-6.01.02P	listen using **active listening** techniques	**active listening** techniques are used
A-6.01.03P	speak clearly using industry terminology to confirm understanding	use **strategies** to confirm message is understood
A-6.01.04P	receive and respond to instructions	response to instructions indicates understanding
A-6.01.05P	receive and respond to feedback on work completed or performed	response to feedback indicates understanding and any corrective measures required
A-6.01.06P	explain and provide feedback	explanation and feedback is provided, and task is carried out as directed

Reference Code	Performance Criteria	Evidence of Attainment
A-6.01.07P	communicate understanding and comfort level in performing trade tasks	opportunities for practice and gradual exposure to new tasks is offered and understanding is confirmed
A-6.01.08P	use questions to improve communication	questions are used to enhance understanding, on-the-job training and goal setting
A-6.01.09P	participate in safety and information meetings	meetings are attended, information is relayed to employees, and is applied
A-6.01.10P	send and receive **electronic messages**	**electronic messages** are sent and received using plain language, clear statements and demonstrating professionalism, according to company policies and procedures
A-6.01.11P	use **online tools**	**online tools** are used to communicate, using plain language, clear statements and demonstrating professionalism, according to company policies and procedures

Range of Variables (include, but not limited to)

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

strategies: body language, eye contact, visual cues, actively showing interest, verbal confirmation from others

electronic messages: email, text messages

online tools: video conferencing, teleconferencing, apps

Knowledge

Reference Code	Learning Outcomes and Objectives
A-6.01.01L	demonstrate knowledge of trade terminology
a.	define terminology used in trade
A-6.01.02L	demonstrate knowledge of effective communication practices
a.	describe importance of using effective verbal and non-verbal communication with **people in workplace**
b.	describe importance of teamwork

Reference Code	Learning Outcomes and Objectives
c.	identify **sources of information** used to effectively communicate
d.	identify communication and **learning styles**
e.	describe effective listening and speaking skills
f.	describe how to receive and give instructions effectively
g.	identify **personal responsibilities and attitudes** that contribute to on-the-job success
h.	identify value of equity, diversity and inclusion in workplace
i.	identify verbal and non-verbal communication that constitutes bullying, **harassment** and **discrimination**
j.	identify communication styles for different applications of **electronic messages** and **online tools**

Range of Variables (include, but not limited to)

people in workplace: other tradespeople, colleagues, apprentices, supervisors, clients, jurisdictional representatives, manufacturers, office administrators

sources of information: regulations, codes, occupational health and safety requirements, jurisdictional requirements, prints, drawings, specifications, company and client documentation, manuals

learning styles: visual, auditory, kinesthetic

personal responsibilities and attitudes: asking questions; working safely; giving/accepting constructive feedback; time management and punctuality; respect for authority; good stewardship of materials, tools and property; efficient work practice

harassment: as defined by the Canadian and jurisdictional Human Rights Commissions

discrimination: as defined by the Canadian Human Rights Act and jurisdictional human rights laws

electronic messages: email, text messages

online tools: video conferencing, teleconferencing, apps

A-6.02 Uses mentoring techniques

Skills

Reference Code	Performance Criteria	Evidence of Attainment
A-6.02.01P	identify and communicate learning objectives and purpose	apprentice or learner can explain objectives and purpose
A-6.02.02P	link lesson to other lessons and practical application	lessons and practical applications are defined and unplanned learning opportunities are identified
A-6.02.03P	demonstrate performance of skill to apprentice or learner	**steps required to demonstrate skill** are performed
A-6.02.04P	set up conditions required for apprentice or learner to practice skill	**practice conditions** are set up so that skill can be practiced safely by apprentice or learner
A-6.02.05P	set up conditions where apprentice or learner feels comfortable communicating and asking questions	conditions are such that apprentice or learner feels comfortable communicating and asking questions
A-6.02.06P	recognize and discuss multiple techniques for performing trade tasks and options that may be best for apprentice or learner	multiple techniques for performing trade tasks and options that may be best for apprentice or learner are recognized and discussed
A-6.02.07P	assess apprentice or learner's ability to perform tasks with increasing independence	performance of apprentice or learner improves with practice to point where task can be done with little supervision
A-6.02.08P	give supportive or constructive feedback	apprentice or learner adopts best practice after receiving supportive or constructive feedback
A-6.02.09P	support apprentices or learners in pursuing technical training opportunities	technical training is completed within timeframe prescribed by apprenticeship authority

Reference Code	Performance Criteria	Evidence of Attainment
A-6.02.10P	support accommodations and alternate work practices that are appropriate for apprentice or learner	accommodations and alternate work practices that are appropriate for apprentice or learner are supported
A-6.02.11P	assess apprentice or learner suitability to trade during probationary period	apprentice or learner is given constructive feedback that helps them identify their own strengths and weaknesses and suitability for trade

Range of Variables (include, but not limited to)

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

practice conditions: guided, limited independence, full independence

Knowledge

Reference Code	Learning Outcomes and Objectives
A-6.02.01L	demonstrate knowledge of strategies for learning skills in workplace
a.	describe importance of individual experience
b.	describe shared responsibilities for workplace learning
c.	determine one's own learning preferences and explain how these relate to learning new skills
d.	describe importance of different types of skills in workplace
e.	describe importance of **skills for success (essential skills)** in workplace
f.	identify different **learning styles**
g.	identify different **learning needs** and strategies to meet them
h.	identify **strategies to assist in learning skills**
A-6.02.02L	demonstrate knowledge of strategies for teaching workplace skills
a.	identify different roles played by workplace mentor
b.	describe **teaching skills**
c.	identify context for learning skills
d.	describe considerations in setting up opportunities for skill practice
e.	explain importance of providing feedback
f.	identify techniques for giving appropriate feedback

Reference Code	Learning Outcomes and Objectives
	g. describe a skills assessment
	h. identify methods of assessing progress
	i. explain how to adjust lesson to different situations

Range of Variables (include, but not limited to)

skills for success (essential skills): adaptability, collaboration, communication, creativity and innovation, digital, numeracy, problem solving, reading, writing

learning styles: visual, auditory, kinesthetic

learning needs: learning disabilities, learning preferences, language proficiency

strategies to assist in learning skills: understanding basic principles of instruction, developing coaching skills, being mature and patient, providing appropriate feedback, practicing through repetition

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

Major Work Activity B - Uses horticultural principles

Task B-7 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-7.01 Practices plant science

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
B-7.01.01P	assess **plant type**, health and vigour to determine requirements	**plant type**, health and vigour are identified based on observed **plant characteristics**, and requirements are determined
B-7.01.02P	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 (include, but not limited to)

plant types: 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

plant characteristics: form, foliage and foliage pattern, stems and bark, bud, fruit, flower, seeds, size, colour, plant life cycle, growth pattern and habits, root type, hardiness

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

Knowledge

Reference Code	Learning Outcomes and Objectives
B-7.01.01L	demonstrate knowledge of plant growth and development
a.	identify **factors** which impact plant growth and development
b.	identify **plant anatomy** and differences in **plant characteristics**
c.	explain **biological processes** of a plant
B-7.01.02L	demonstrate knowledge of plants, their characteristics and cultural requirements
a.	identify principles of **basic plant science**
b.	define terminology associated with **basic plant science**
c.	identify **plant characteristics**
d.	describe **cultural requirements of plants**
e.	identify **plant types**
B-7.01.03L	demonstrate knowledge of plant nutrient requirements
a.	identify plant nutrients and describe impact of nutrient deficiency/excess on plants and plant growth
B-7.01.04L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection

Range of Variables (include, but not limited to)

factors: temperature, growing medium, air quality (carbon dioxide, oxygen, humidity), light, water, pests and disease, environmental stresses, symbiotic relationships, companion planting, competition between plants

plant anatomy: cell types, tissues, organs

plant characteristics: form, foliage and foliage pattern, stems and bark, bud, fruit, flower, seeds, size, colour, plant life cycle, growth pattern and habits, root type, hardiness

biological processes: reproduction, photosynthesis, respiration, transpiration, hormonal communication, dormancy, compartmentalization of decay in trees (CODIT)

basic plant science: physiology, morphology, anatomy

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

plant types: 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

B-7.02 Identifies plants

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
B-7.02.01P	examine and compare **plant characteristics**	**plant characteristics** are examined and compared through visual, touch and other senses
B-7.02.02P	confirm **plant characteristics** with **reference material** to determine classification and identification for specific uses	plant classification and identification are confirmed for specific uses using **reference material**

Range of Variables (include, but not limited to)

plant characteristics: form, foliage and foliage pattern, stems and bark, bud, fruit, flower, seeds, size, colour, plant life cycle, growth pattern and habits, root type, hardiness

reference material: regional identification keys, supplier catalogues, plant databases, apps, books

Knowledge

Reference Code	Learning Outcomes and Objectives
B-7.02.01L	demonstrate knowledge of International Code of Nomenclature for plants and its use in **plant identification**
a.	interpret use of dichotomous keys to classify plants
b.	use **plant characteristics** to categorize plants on list to family, genus and species level
B-7.02.02L	demonstrate knowledge of plants, their characteristics and cultural requirements
a.	identify **plant characteristics**
b.	describe cultural requirements of plants
c.	identify considerations for selection of plants based on **specific uses**
d.	identify **plant types**
e.	explain purpose of Plant Hardiness Zone Map

Reference Code	Learning Outcomes and Objectives
B-7.02.03L	demonstrate knowledge of regulatory requirements about identification of plants
a.	identify jurisdictional regulations about plant importation and establishment
B-7.02.04L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection

Range of Variables (include, but not limited to)

plant identification: family, genus, species, variety/cultivar

plant characteristics: form, foliage and foliage pattern, stems and bark, bud, fruit, flower, seeds, size, colour, plant life cycle, growth pattern and habits, root type, hardiness

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

plant types: 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

B-7.03 Manages plant health, soil and growing conditions

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
B-7.03.01P	identify **growing media** and their properties that affect interior and exterior plant growth and development	**growing media** and properties that affect interior and exterior plant growth and development are identified
B-7.03.02P	determine plants' exposure to **environmental conditions**	plants' exposure to **environmental conditions** is determined
B-7.03.03P	determine **biotic** and **abiotic factors** that lead to plant stress	**biotic** and **abiotic factors** that lead to plant stress are determined by inspecting plants

Reference Code	Performance Criteria	Evidence of Attainment
B-7.03.04P	identify signs and symptoms of plant stress	signs and symptoms of plant stress are identified
B-7.03.05P	collect **growing media** and water samples	representative **growing media** and water samples are collected by using various techniques according to industry practices
B-7.03.06P	test **growing media** and water samples manually or by lab analysis	**growing media** and water sample **properties** are identified through sample testing
B-7.03.07P	examine plant tissue samples to identify nutrient deficiencies, diseases and pests	plant health and nutrient deficiencies, diseases and pests are identified based on plant tissue samples using reference materials, resources and test results
B-7.03.08P	interpret test results	plan of action is determined based on test results
B-7.03.09P	identify air quality conditions that affect interior and exterior plants	air quality conditions that affect interior and exterior plants are determined
B-7.03.10P	adjust plant selection and placement	plant selection and placement are adjusted according to **growing conditions**
B-7.03.11P	develop plan for implementing **corrective measures**	plan for **corrective measures** is put in place according to findings and plant requirements
B-7.03.12P	amend **growing conditions** to meet plant requirements	**growing conditions** are amended according to plant requirements
B-7.03.13P	select, measure and apply **fertilizer, other amendments and biostimulants**	**fertilizer, other amendments and biostimulants** are selected, measured and applied according to plant requirements and test results
B-7.03.14P	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 (include, but not limited to)

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

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

biotic factors: diseases, insects, animals

abiotic factors: temperature, light, mechanical damage, nutrition, chemical injury

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

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

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

fertilizer, other amendments and biostimulants: foliar feed, injection, liquid and granular applications, compost, mycorrhizae, humic acid, beneficial bacteria

Knowledge

Reference Code	Learning Outcomes and Objectives
B-7.03.01L	demonstrate knowledge of **growing media** conditions and **properties**
a.	identify **growing media** conditions and **properties**
b.	apply tests such as pH, air quality and nutrient tests
c.	identify treatment methods
B-7.03.02L	demonstrate knowledge of soil types and soil amendments
a.	identify **physical soil characteristics** to consider when determining suitability for plant growth
b.	identify types of **growing media** and describe their characteristics and applications
c.	identify **soil characteristics that impact soil chemical and biological properties**
d.	explain procedures used for taking soil samples
e.	identify types of soil tests and describe their characteristics and applications
f.	identify **types of soil amendments** and describe their characteristics and applications
g.	identify considerations when selecting **types of soil amendments**
h.	describe procedures used to apply and incorporate soil amendments

Reference Code	Learning Outcomes and Objectives
i.	describe procedures for storing, transporting and disposing of soil, soil amendment products and packaging according to jurisdictional regulations
j.	interpret soil test results
B-7.03.03L	demonstrate knowledge of plant health
a.	define characteristics of normal plant growth
b.	identify signs and symptoms of plant stress
c.	identify Canadian and regional landscape standards and jurisdictional regulations
B-7.03.04L	demonstrate knowledge of characteristics of fertilizers
a.	identify types of fertilizers and describe their characteristics and applications
b.	define terminology associated with fertilizers
c.	describe analysis and formulation of fertilizers
d.	identify hazards and describe safe work practices to use fertilizers
e.	describe implications of fertilizer management on practice of environmental stewardship
B-7.03.05L	demonstrate knowledge of regulations about fertilizers
a.	describe jurisdictional regulations about fertilizers
B-7.03.06L	demonstrate knowledge of procedures and equipment used for application, handling, transport, storage and disposal of fertilizers
a.	describe procedures and equipment used, and calibration for application of fertilizers
b.	describe procedures and equipment used to store, dispose of and transport fertilizers

Range of Variables (include, but not limited to)

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

properties (of growing media): texture, structure, drainage capacity, pH, nutrients, organic matter, pore space, bulk density, EC, contaminants

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

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

types of soil amendments: organic, inorganic

B-7.04 Prunes plant material

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
B-7.04.01P	establish **pruning objectives**	**pruning objectives** are established by assessing plant species, structure, health and environment
B-7.04.02P	select **pruning method** and **pruning cut**	**pruning method** and **pruning cut** are selected according to **factors**
B-7.04.03P	sanitize **tools and equipment**	**tools and equipment** are sanitized according to industry practices
B-7.04.04P	select and use **tools and equipment**	**tools and equipment** are selected and used according to size of limb and task
B-7.04.05P	prune plant material	plant material is pruned according to **pruning objectives, pruning method** and industry practices
B-7.04.06P	organize and dispose of pruned material	pruned material is piled with cut stems facing same direction for efficient removal and disposed of according to sanitation and jurisdictional regulations

Range of Variables (include, but not limited to)

pruning objectives: providing clearance, reducing shade, managing dynamic and static loads, maintaining health, influencing flower or fruit production, improving view, improving aesthetics, training structure

pruning methods: cleaning, thinning, raising, reduction, restoration/rejuvenation, shearing, heading, specialty pruning (e.g., espaliers, pollarding)

pruning cuts: thinning, reducing, heading, three-cut method

factors (for pruning methods and cuts): plant morphology, anatomy, physiology, maturity, time of year, type of plant material

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

Knowledge

Reference Code	Learning Outcomes and Objectives
B-7.04.01L	demonstrate knowledge of procedures to prune plant material
a.	identify **tools and equipment** used to prune plant material and describe their procedures for use
b.	identify hazards and describe safe work practices to prune plant material
c.	describe **pruning objectives**
d.	describe **pruning methods** and **pruning cuts**
e.	identify **factors that affect pruning times**
f.	describe methods to organize debris for efficient handling
B-7.04.02L	demonstrate knowledge of procedures for disposal of plant parts, and diseased and infested plant parts
a.	describe procedures for removing plant parts and disposal of diseased and infested plant parts
B-7.04.03L	demonstrate knowledge of training and certification requirements for pruning plant material
a.	identify training and certification requirements for pruning plant material
B-7.04.04L	demonstrate knowledge of regulatory requirements about pruning and disposal of plant material
a.	identify jurisdictional regulations about pruning and disposal of plant material
B-7.04.05L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	identify considerations in anticipated weather and environmental conditions and evaluate their impact on timing, method, and safety of pruning tasks

Range of Variables (include, but not limited to)

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

pruning objectives: providing clearance, reducing shade, managing dynamic and static loads, maintaining health, influencing flower or fruit production, improving view, improving aesthetics, training structure

pruning methods: cleaning, thinning, raising, reduction, restoration/rejuvenation, shearing, heading, specialty pruning (e.g., espaliers, pollarding)

pruning cuts: thinning, reducing, heading, three-cut method

factors that affect pruning times: dormancy, flower period, growth response, wind and frost damage, scorch, disease life cycle, wildlife nesting

B-7.05 Propagates plant material

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
B-7.05.01P	select and use tools and equipment	tools and equipment are selected and used according to task and manufacturers' specifications
B-7.05.02P	harvest and divide **underground storage organs**	**underground storage organs** are harvested and divided according to plant requirements and **considerations**
B-7.05.03P	select and perform **propagation method**	**propagation method** is selected and performed according to time of year and plant requirements
B-7.05.04P	maintain propagated plants	propagated plants are maintained in controlled and sanitary environments according to **propagation method** and plant type

Range of Variables (include, but not limited to)

underground storage organs: rhizomes, tubers, bulbs, corms, tuberous roots
considerations: type of plant, vigor, health, timing, true to type
propagation methods: layering, dividing, cutting, seeding, grafting, budding

Knowledge

Reference Code	Learning Outcomes and Objectives
B-7.05.01L	demonstrate knowledge of procedures to propagate plant material
a.	identify tools and equipment used to propagate plant material and describe their procedures for use
b.	identify **underground storage organs** and describe their characteristics and applications
c.	identify hazards and describe safe work practices to propagate plant material

Reference Code	Learning Outcomes and Objectives
d.	describe procedures and **methods** used to propagate plant material
e.	identify **considerations** when selecting stock/parent plants for propagation purposes
B-7.05.02L	demonstrate knowledge of regulatory requirements about propagation of plant material
a.	identify codes, standards and regulations about propagation of plant material

Range of Variables (include, but not limited to)

underground storage organs: rhizomes, tubers, bulbs, corms, tuberous roots
methods (for propagation): layering, dividing, cutting, seeding, grafting, budding
considerations: type of plant, vigor, health, timing, true to type

B-7.06 Manages pests, diseases and invasive species

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
B-7.06.01P	determine environmental and site conditions that lead to plant stress	conditions that lead to plant stress are determined by inspecting site
B-7.06.02P	inspect plants visually	plants are inspected visually to identify pest population and **damage**
B-7.06.03P	identify pests, diseases, invasive species and beneficial organisms	pests, diseases, invasive species and beneficial organisms are identified by using **resources**
B-7.06.04P	determine course of action for managing pests and invasive species	course of action for managing pests and invasive species is determined and complies with jurisdictional regulations
B-7.06.05P	monitor and document pest populations, spread of disease and **damage** characteristics	pest populations, spread of disease and **damage** characteristics are monitored and documented

Reference Code	Performance Criteria	Evidence of Attainment
B-7.06.06P	monitor and document biological control populations	biological control populations are monitored and documented
B-7.06.07P	establish injury and action thresholds	injury and action thresholds are established according to economics, aesthetics and plant health
B-7.06.08P	select treatment and control methods	treatment and control methods are selected according to **factors**
B-7.06.09P	identify and calibrate pesticide application equipment	pesticide application equipment is selected and calibrated according to required application and manufacturers' specifications
B-7.06.10P	deter infestation of pests, diseases and invasive species	infestation of pests, diseases and invasive species is deterred by using **prevention strategies**
B-7.06.11P	apply **management and treatment methods**	**management and treatment methods** are applied in compliance with jurisdictional regulations
B-7.06.12P	document use of pest and disease control products	use of pest and disease control products is documented according to company policies and jurisdictional regulations
B-7.06.13P	monitor results of treatment	results of treatment are monitored to evaluate efficacy
B-7.06.14P	identify **quarantine protocols**	**quarantine protocols** are identified according to jurisdictional regulations and industry practices
B-7.06.15P	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 (include, but not limited to)

damage: leaf disfiguration, notching, stippling, discoloration, frost cracking, sunscald

resources: online publications, laboratories, microscopes

factors: types of pests, diseases and environment that minimizes negative impact on native or existing ecosystem; jurisdictional regulations

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

management and treatment methods: regulatory, physical/mechanical, cultural, biological, chemical

quarantine protocols: 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

Reference Code	Learning Outcomes and Objectives
B-7.06.01L	demonstrate knowledge of types of pests and diseases, and procedures used to manage them
a.	identify **considerations** for selecting and applying pest and disease management measures
b.	define components of an IPM program
c.	identify pest and disease symptoms
d.	identify **management and treatment methods** used for pest and disease management and treatment
e.	identify **common types of pests** and describe their characteristics and life cycles
f.	identify **common types of diseases, disorders and damage**, and describe their characteristics and life cycles
g.	identify **causes of diseases**
h.	identify **pathogens**
i.	identify **biotic factors**
j.	identify **abiotic factors**
k.	identify **factors for selecting and applying pest and disease management measures**
l.	describe **procedures used to implement pest and disease management measures**

Reference Code	Learning Outcomes and Objectives
B-7.06.02L	demonstrate knowledge of jurisdictional regulations and **documentation** about pest and disease management
a.	identify jurisdictional regulations about pest and disease management
b.	describe **documentation** about pest and disease management
B-7.06.03L	demonstrate knowledge of pest control products, formulations and application equipment
a.	identify tools, equipment and products used for pest and disease management, and describe their applications and procedures for use
B-7.06.04L	demonstrate knowledge of procedures used to handle, transport, apply, store and dispose of pest and disease management products and tools
a.	identify hazards and describe safe work practices for pest and disease management
b.	describe procedures to handle, transport, store and dispose of pest and disease management related products and materials
c.	describe how to select, apply and record pest and disease management measures
B-7.06.05L	demonstrate knowledge of training and certification requirements to sell, apply and store regulated pesticide products
a.	identify training and certification requirements to sell, apply and store regulated pesticide products
B-7.06.06L	demonstrate knowledge of regulatory requirements about pests, diseases and invasive species
a.	identify codes, standards and regulations about pests, diseases and invasive species
B-7.06.07L	demonstrate knowledge of sustainability and environmental stewardship practices
b.	describe implications of IPM on environmental stewardship

Range of Variables (include, but not limited to)

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

management and treatment methods: regulatory, physical/mechanical, cultural, biological, chemical

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

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

causes of diseases: pathogens, nematodes, nutrient deficiencies, environmental stress, viruses

pathogens: viruses, bacteria, fungi

biotic factors: diseases, insects, weeds, animals

abiotic factors: temperature, light, mechanical damage, nutrition, salt, chlorine

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

procedures used to implement pest and disease management measures: management techniques, preparation, equipment selection, equipment calibration, application techniques

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

Task B-8 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-8.01 Practices environmental stewardship

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
B-8.01.01P	select and use sustainable **horticultural and landscaping materials**	**horticultural and landscaping materials** that minimize **negative impact on environment** and ecosystems are selected and used
B-8.01.02P	select and use sustainable plant health products	plant health products that minimize **negative impact on environment** and ecosystems are used according to IPM principles
B-8.01.03P	select and use recycled and recyclable materials	recycled and recyclable materials are used for operations when possible
B-8.01.04P	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-8.01.05P	source local materials and equipment	materials and equipment from local sources are used when possible
B-8.01.06P	select permeable surfaces and maximize green space	landscape projects are implemented to reduce impermeable surfaces and maximize green space

Reference Code	Performance Criteria	Evidence of Attainment
B-8.01.07P	perform on-site recycling/composting	soil and plant parts are recycled/composted on site using **eco-methods** based on environmental stewardship principles
B-8.01.08P	organize workflow	workflow is organized in manner that minimizes **negative impact on environment**
B-8.01.09P	incorporate on-site **elements** into naturalized green spaces	naturalized green spaces include on-site **elements**

Range of Variables (include, but not limited to)

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

negative impacts on environment: compaction, emissions, noise pollution, contamination of water, soil and other habitats

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

ecosystems: meadows, ponds, parks, urban landscape, grasslands, tundra, wetlands

eco-methods: mulching, composting, chipping, recycling leaves

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

Knowledge

Reference Code	Learning Outcomes and Objectives
B-8.01.01L	demonstrate knowledge of sustainability and environmental stewardship concepts and principles
a.	describe types, function, purpose and structure of natural **ecosystems**
b.	describe preservation, conservation and regeneration principles and applications about plant life, habitat, water table and water quality
c.	describe impact of environment and landscapes on psychosocial and physical health
d.	identify practices that contribute to environmental protection
e.	identify practices that contribute to reducing carbon emissions

Reference Code	Learning Outcomes and Objectives
B-8.01.02L	demonstrate knowledge of landscaping practices that support environmental stewardship
a.	describe methods of increasing biodiversity and stormwater mitigation
b.	identify **environmental waste management best practices**
c.	identify **site protection**
d.	identify products and practices for reducing harm and positively impacting environment
e.	describe practices for maximizing green space and permeable surfaces
B-8.01.03L	demonstrate knowledge of regulatory requirements about environmental stewardship
a.	identify codes, standards and regulations about environmental stewardship

Range of Variables (include, but not limited to)

ecosystems: meadows, ponds, parks, urban landscape, grasslands, tundra, wetlands

environmental waste management best practices: reduce, reuse, recycle, conservation, preservation, design for low impact

site protection: silt fencing, erosion control, amending native soil, compaction control, leaving materials (e.g. leaves, clippings, healthy garden debris) to decompose naturally, adjusting mowing height

B-8.02 Practices biodiversity enhancement

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
B-8.02.01P	select plants that ensure diversity within landscapes	plants are selected based on their attractiveness to variety of macro- and micro-organisms, pest-resistance, their suitability to **environmental conditions** and according to jurisdictional regulations

Reference Code	Performance Criteria	Evidence of Attainment
B-8.02.02P	select **bio-diverse enhancement strategies**	**bio-diverse enhancement strategies** are selected according to jurisdictional regulations
B-8.02.03P	select edible plants to be included in landscapes	edible plants are used in landscape to enhance biodiversity and engage public
B-8.02.04P	create variety of habitats to support range of species	variety of habitats to support range of species are created to enhance biodiversity
B-8.02.05P	select pest and disease control methods that are compatible with variety of organisms	control methods that are compatible with variety of organisms are selected

Range of Variables (include, but not limited to)

environmental conditions: soil type, light, pH, humidity and moisture availability, wind, exposure, native habitat

bio-diverse enhancement strategies: 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 spring, creating habitat and structures, encouraging moss growth

Knowledge

Reference Code	Learning Outcomes and Objectives
B-8.02.01L	demonstrate knowledge of biodiversity concepts and principles
a.	define biodiversity
b.	describe value and purpose of biodiversity
c.	list **benefits of plants**
d.	describe value of environmental, economic and social impact of tree canopy
e.	explain inter-relationships between species
B-8.02.02L	demonstrate knowledge of practice of biodiversity
a.	identify native species, plant varieties and organisms that ensure diversity within landscapes
b.	identify differences between invasive and native species
c.	describe **bio-diverse enhancement strategies**

Reference Code	Learning Outcomes and Objectives
d.	describe purpose and procedure for including edible plants in landscapes
e.	define variety of habitats to support range of species
f.	describe pest and disease control methods that are compatible with variety of organisms
g.	explain benefits of and risks of not including biodiversity within landscape design and development process
B-8.02.03L	demonstrate knowledge of regulatory requirements about biodiversity
a.	identify jurisdictional regulations about biodiversity
B-8.02.04L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	identify practices that contribute to reducing carbon emissions

Range of Variables (include, but not limited to)

benefits of plants: climate change mitigation, carbon capturing, symbiotic relationships
bio-diverse enhancement strategies: 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 spring, creating habitat and structures, encouraging moss growth

B-8.03 Practices soil stewardship

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
B-8.03.01P	select **soil stewardship methods**	**soil stewardship methods** that minimize impact on native soils are selected
B-8.03.02P	assess **growing media** composition based on **conditions**	**growing media** composition is assessed for **conditions** using various **test methods**

Reference Code	Performance Criteria	Evidence of Attainment
B-8.03.03P	determine requirements for **soil testing**	requirements for **soil testing** are determined
B-8.03.04P	collect and label **growing media** samples, and send to lab	**growing media** samples are collected, labelled and sent to lab
B-8.03.05P	interpret test results	test results are interpreted to determine requirements for **growing media** according to environmental practices
B-8.03.06P	select and apply fertilizers and amendments	fertilizers and amendments that support plant health and minimize environmental impacts are selected and applied according to manufacturers' specifications
B-8.03.07P	cultivate soil based on situation	soil is cultivated while minimizing **environmental impact on soils**

Range of Variables (include, but not limited to)

soil stewardship methods: no-till, natural decomposition, cut and fill, appropriate use of plant health products, increasing organic matter input, lasagna gardening, compaction prevention, covering soil for erosion control

growing media: native soil, soilless media, manufactured soil, compost, mineral soil (sand, silt, clay)

conditions: texture, moisture levels, porosity, soil microbiome

test methods: visual, ribbon tests, probes

soil testing: pH, nutrient levels, microbial levels, organic content, contaminants, permeability

environmental impact on soils: 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

Reference Code	Learning Outcomes and Objectives
B-8.03.01L	demonstrate knowledge of soil stewardship concepts and principles
a.	describe elements of soil stewardship
b.	identify types of **growing media** and describe their characteristics and applications

Reference Code	Learning Outcomes and Objectives
B-8.03.02L	demonstrate knowledge of **soil stewardship methods**
a.	identify **types of soil amendments and fertilizers** and describe their characteristics, and procedures used to apply and/or incorporate them
b.	identify types of soil tests and describe their characteristics and applications
c.	explain procedures used for taking soil samples
d.	interpret test results
e.	explain how to develop recommendations based on test results
f.	describe procedures used to apply and/or incorporate soil amendments and fertilizers
B-8.03.03L	demonstrate knowledge of minimizing harm to soil structure, health and microbiome
a.	describe difference between good soil structure and poor soil structure
b.	describe impact of cultivation on soil structure, health and microbiome
c.	identify situations in which cultivating is required
d.	describe how minimum tillage and/or methods of cultivation minimize harm to soil structure, health and **soil organisms**
B-8.03.04L	demonstrate knowledge of conserving soil and preserving soil health
a.	explain economic and **environmental reasons** for conserving soil and preserving soil health
b.	describe methods to prevent soil erosion and siltation
c.	explain reasons for using cut and fill method
B-8.03.05L	demonstrate knowledge of regulatory requirements about soil stewardship
a.	identify codes, standards and regulations about soil stewardship
B-8.03.06L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	describe site protection measures that minimize environmental impact
b.	explain bulk soil storage procedures that minimize environmental impact

Range of Variables (include, but not limited to)

growing media: native soil, soilless media, manufactured soil, compost, mineral soil (sand, silt, clay)

soil stewardship methods: no-till, natural decomposition, cut and fill, appropriate use of plant health products, increasing organic matter input, lasagna gardening, compaction prevention, covering soil for erosion control

types of soil amendments and fertilizers: organic, inorganic

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

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

B-8.04 Practices water stewardship

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
B-8.04.01P	assess site features and determine **low impact development (LID) practices**	site features are assessed, and **LID practices** are determined
B-8.04.02P	collect and label water samples, and send to lab for **testing**	water samples are collected, labelled and sent to lab for **testing**
B-8.04.03P	interpret **test** results	**test** results are interpreted to determine water quality

Range of Variables (include, but not limited to)

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

testing: pH, contaminants, nutrient levels, microbial levels

Knowledge

Reference Code	Learning Outcomes and Objectives
B-8.04.01L	demonstrate knowledge of water stewardship concepts and principles
a.	describe **elements of water stewardship**
b.	identify water retention materials
c.	describe benefits and application of efficient irrigation systems
d.	describe xeriscape principles
B-8.04.02L	demonstrate knowledge of landscaping practices that support water stewardship
a.	identify water retention practices
b.	identify **LID practices**
c.	describe **erosion control methods**
d.	explain methods for protecting endangered species in waterways
e.	explain methods for preventing spread of invasive species in waterways
f.	explain methods to prevent pesticides, fertilizers and pollutants from reaching waterways
g.	describe **benefits of preserving urban forest tree canopy**
h.	describe riparian restoration
i.	describe benefits and use of reclaimed water systems
B-8.04.03L	demonstrate knowledge of regulatory requirements about water stewardship
a.	identify jurisdictional regulations about water stewardship
B-8.04.04L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection

Range of Variables (include, but not limited to)

elements of water stewardship: protection of endangered species, lot level storm water management, water conservation/recycling, source quality and recovery rates, rainwater harvesting, pollution prevention, infiltration promotion, riparian maintenance and restoration, plant selection

LID practices: rain barrels, infiltration trenches, bioswales, bioretention cells, rain gardens, green roofing, smart irrigation, xeriscaping, permeable surfacing, water harvesting systems, downspout disconnect, stormwater ponds, retention ponds, detention ponds

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

benefits of preserving urban forest tree canopy: provide shade, maintain leaf surface to slow water infiltration into soil, minimize flooding

B-8.05 Practices fire safety and prevention in landscaping

Skills

Reference Code	Performance Criteria	Evidence of Attainment
B-8.05.01P	identify **fire-risk zones** on property	**fire-risk zones** are identified to create defensible space around property
B-8.05.02P	select plants with **fire-resistant characteristics**	plants with **fire-resistant characteristics** are selected
B-8.05.03P	identify level of fire risk of existing landscape	fire risk of existing landscape is identified according to **fire-risk zones** and regional plant characteristics
B-8.05.04P	space shrubs and trees	shrubs and trees are spaced vertically and horizontally to help prevent fires from spreading according to **fire-risk zones**
B-8.05.05P	identify **strategies to raise humidity of micro-climate in landscape**	**strategies to raise humidity of micro-climate in landscape** are identified
B-8.05.06P	select **fire-resistant mulches**	**fire-resistant mulches** are selected
B-8.05.07P	identify **fire prevention practices** for design, installation and maintenance of hardscape and softscape	**fire prevention practices** for design, installation and maintenance of hardscape and softscape are identified

Range of Variables (include, but not limited to)

fire-risk zones: zone 0 - immediate (ember-resistant) is 0 to 5 feet (1.5 m) from buildings and decks; zone 1 - intermediate (lean, clean and green zone) is 5-30 feet (1.5-10 m) from buildings and structures; zone 2 - extended (reduce fuel zone) is 30-100 feet (10-30 m) from buildings

fire-resistant characteristics: moist and supple leaves, little dead wood and tendency not to accumulate dead material, low amount of resin material in sap, non-peeling bark, dense and moist root structure

strategies to raise humidity of micro-climate in landscapes: installing water features, installing and maintaining turfgrass, maintaining a canopy for shade, installing shade structures and windbreaks, preserving soil moisture, installing irrigation

fire-resistant mulches: rocks, pebbles, gravel, shale, stone, lava rock, recycled glass, bricks, concrete, slag

fire prevention practices: selection of fire-resistant products and materials, removal of combustible materials from zones 0 and 1, good maintenance of flammable structures, removal of plant materials that are high fire risk, preparation of pre-configured sprinkler systems and hoses for use of emergency workers

Knowledge

Reference Code	Learning Outcomes and Objectives
B-8.05.01L	demonstrate knowledge of **fire prevention practices**
a.	identify **fire prevention practices** and resources
b.	identify fire-resistant plants and describe their **characteristics** and applications
c.	identify highly flammable plants and describe their **characteristics** and applications
d.	identify **fire-resistant mulches** and describe their characteristics and applications
e.	identify **fire-risk zones**
f.	identify **strategies to raise humidity of micro-climate in landscape**
g.	identify **fire prevention practices** for hardscape and softscape
B-8.05.02L	demonstrate knowledge of training resources and certification available for fire safety and prevention
a.	identify training and certification that is available for fire safety and prevention
B-8.05.03L	demonstrate knowledge of regulatory requirements about fire safety and prevention
a.	identify jurisdictional regulations about fire safety and prevention

Reference Code	Learning Outcomes and Objectives
B-8.05.04L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection

Range of Variables (include, but not limited to)

fire prevention practices: selection of fire-resistant products and materials, removal of combustible materials from zones 0 and 1, good maintenance of flammable structures, removal of plant materials that are high fire risk, preparation of pre-configured sprinkler systems and hoses for use of emergency workers

fire-resistant characteristics: moist and supple leaves, little dead wood and tendency not to accumulate dead material, low amount of resin material in sap, non-peeling bark, dense and moist root structure

characteristics of highly flammable plants: fine, dry or dead material within plant; plant stem, branches and leaves contain volatile waxes, terpenes or oil; aromatic leaves; gummy and resinous sap; loose papery bark; softscape design that is too dense; shallow root profile

fire-resistant mulches: rocks, pebbles, gravel, shale, stone, lava rock, recycled glass, bricks, concrete, slag

fire-risk zones: zone 0 - immediate (ember-resistant) is 0 to 5 feet (1.5 m) from buildings and decks; zone 1 - intermediate (lean, clean and green zone) is 5-30 feet (1.5-10 m) from buildings and structures; zone 2 - extended (reduce fuel zone) is 30-100 feet (10-30 m) from buildings

strategies to raise humidity of micro-climate in landscapes: installing water features, installing and maintaining turfgrass, maintaining a canopy for shade, installing shade structures and windbreaks, preserving soil moisture, installing irrigation

Major Work Activity C - Performs landscape construction

Task C-9 Performs pre-construction activities

Task Descriptor

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

C-9.01 Participates in landscape design activities

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
C-9.01.01P	select and use **tools and equipment**	**tools and equipment** are selected and used according to industry practices and manufacturers' specifications
C-9.01.02P	verify measurements and inventory of existing site conditions	information on existing design base plan is verified according to measurements and inventory and site analysis, and discrepancies are documented and reported
C-9.01.03P	apply **design principles**	**design principles** are applied according to industry practices
C-9.01.04P	create **landscape drawings**	**landscape drawings** are created according to client consultation, jurisdictional regulations and **standards**

Range of Variables (include, but not limited to)

tools and equipment: levels, global positioning systems (GPS), measuring devices, drones

design principles: unity, balance, emphasis, order, rhythm, sequence, scale, visual weight, line, form, texture, colour

landscape drawings: existing conditions, site, concept, drainage, elevation, grading, lighting, irrigation, planting

standards: American National Standards Institute (ANSI), CLS

Knowledge

Reference Code	Learning Outcomes and Objectives
C-9.01.01L	demonstrate knowledge of landscape design, its characteristics and applications
a.	identify landscape design and describe its characteristics and applications
b.	identify and interpret information about landscape design found on **landscape drawings** and **documentation**
c.	describe applications of **design principles** in **landscape drawings**
C-9.01.02L	demonstrate knowledge of procedures to perform landscape design activities
a.	identify **tools and equipment** used to perform landscape design activities, and describe their procedures for use
b.	describe procedures to perform landscape design activities
c.	identify hazards and describe safe work practices related to **site conditions**
d.	identify methods and procedures used to stake out points when performing **site measurements**
C-9.01.03L	demonstrate knowledge of regulatory requirements about landscape design
a.	identify codes, **standards** and jurisdictional regulations about landscape design
C-9.01.04L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	identify practices that contribute to reducing carbon emissions

Range of Variables (include, but not limited to)

landscape drawings: existing conditions, site, concept, drainage, elevation, grading, lighting, irrigation, planting
documentation: specifications, codes, standards, details
design principles: unity, balance, emphasis, order, rhythm, sequence, scale, visual weight, line, form, texture, colour
tools and equipment: levels, GPS, measuring devices, drones
site conditions: utilities, easements, right-of-ways
site measurements: grade levels and stake interpretation, grid system, triangulation
standards: ANSI, CLS

C-9.02 Prepares construction site

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

Skills

Reference Code	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, site access and manufacturers' specifications
C-9.02.02P	identify and communicate discrepancies between plans and site conditions	discrepancies between plans and site conditions are identified and communicated to employer and **stakeholders**
C-9.02.03P	preserve and protect soil, **existing hardscape and softscape elements**	soil, **existing hardscape and softscape elements** are preserved and protected according to drawings, specifications, CLS and jurisdictional regulations
C-9.02.04P	remove hazards, debris and other unwanted materials	hazards, debris and other unwanted materials are removed according to drawings and specifications
C-9.02.05P	create site access	site access is created according to drawings, specifications and site conditions

Reference Code	Performance Criteria	Evidence of Attainment
C-9.02.06P	identify markings of underground and overhead utility hazards	underground and overhead utility hazard markings are identified according to locate information
C-9.02.07P	interpret and extract locate information for **public utilities and private systems**	locate information for **public utilities and private systems** is interpreted and extracted
C-9.02.08P	locate and cordon off areas	areas are located and cordoned off using barriers to minimize access and environmental impact
C-9.02.09P	install **environmental mitigation mechanisms**	**environmental mitigation mechanisms** are installed according to manufacturers' specifications, drawings, specifications, jurisdictional regulations and CLS
C-9.02.10P	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-9.02.11P	excavate and place service conduits	service conduits are excavated and placed to support **activities** according to drawings, specifications, jurisdictional regulations and CLS
C-9.02.12P	verify site preparation	site preparation is verified according to drawings and specifications

Range of Variables (include, but not limited to)

stakeholders: property owners, designers, engineers

existing hardscape and softscape elements: trees, decks, walkways, driveway, existing gardens

public utilities and private systems: fibre-optics, gas lines, septic, electrical, water, sewer, landscape lighting, irrigation systems

environmental mitigation mechanisms: filters, silt fencing, storm sewer guards

activities: installing irrigation systems and extra-low voltage wiring

Knowledge

Reference Code	Learning Outcomes and Objectives
C-9.02.01L	demonstrate knowledge of procedures to prepare construction sites
a.	interpret information about construction site preparation found on drawings and specifications
b.	identify tools and equipment used to prepare construction sites and describe their procedures for use
c.	describe procedures, considerations and requirements when preparing construction sites
d.	identify **methods and procedures** used to stake out points when performing site layout for construction site preparation
C-9.02.02L	demonstrate knowledge of regulatory requirements about construction site preparation
a.	identify codes, standards and regulations about construction site preparation
C-9.02.03L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	identify practices that contribute to reducing carbon emissions

Range of Variables (include, but not limited to)

methods and procedures: grade levels and stake interpretation, grid system, triangulation

C-9.03 Performs grading

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

Skills

Reference Code	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 and manufacturers' specifications

Reference Code	Performance Criteria	Evidence of Attainment
C-9.03.02P	salvage and store native soils	native soils are salvaged and stored for reuse according to drawings, specifications, jurisdictional regulations and CLS
C-9.03.03P	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-9.03.04P	prepare site for positive drainage	site is prepared for positive drainage according to drawings, specifications, jurisdictional regulations and CLS
C-9.03.05P	verify that site is prepared	site is prepared according to drawings, specifications and jurisdictional regulations

Knowledge

Reference Code	Learning Outcomes and Objectives
C-9.03.01L	demonstrate knowledge of grading, its characteristics and applications
a.	identify grading and describe its characteristics and applications
b.	interpret information about grading found on drawings and specifications
c.	identify types of **grading plans**
d.	identify types of **site grading**
C-9.03.02L	demonstrate knowledge of procedures to perform grading
a.	identify tools and equipment used to perform grading and describe their procedures for use
b.	identify hazards and describe safe work practices to perform grading
c.	describe procedures to perform **site grading**
C-9.03.03L	demonstrate knowledge of regulatory requirements about grading
a.	identify codes, standards and regulations about grading
C-9.03.04L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	describe implications of grading on environmental stewardship

Range of Variables (include, but not limited to)

grading plans: existing grades, proposed grades (finished), contour plans
site grading: rough grading, grading for drainage, finish grading

C-9.04 Installs drainage systems

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
C-9.04.01P	identify **drainage system** requirements	**drainage system** requirements are identified according to drawings, specifications and jurisdictional regulations
C-9.04.02P	select and use tools and equipment	tools and equipment are selected and used according to task
C-9.04.03P	calculate elevation and slope	elevation and slope are calculated to verify drainage according to drawings and specifications
C-9.04.04P	excavate subsoil	subsoil is excavated to grade and depth according to specifications and CLS
C-9.04.05P	store or remove excavated materials	excavated materials are stored or removed according to industry practices, CLS and jurisdictional regulations
C-9.04.06P	lay out, assemble and place **drainage components**	**drainage components** are laid out, assembled and placed according to drawings and specifications
C-9.04.07P	backfill **drainage system** to finished grade	**drainage system** is backfilled to finished grade according to specifications
C-9.04.08P	verify installation	installation meets drawings and specifications

Range of Variables (include, but not limited to)

drainage systems: subsurface drainage, surface drainage, retention ponds, detention ponds

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

Knowledge

Reference Code	Learning Outcomes and Objectives
C-9.04.01L	demonstrate knowledge of **drainage systems**, their **components**, characteristics, applications and operation
a.	identify types of **drainage systems** and describe their characteristics and applications
b.	describe operating principles of **drainage systems**
c.	interpret **documentation** about **drainage systems**
C-9.04.02L	demonstrate knowledge of procedures to install **drainage systems**
a.	identify tools and equipment used to install **drainage systems** and describe their procedures for use
b.	identify hazards and describe safe work practices to install **drainage systems**
c.	identify calculations required to determine slope
d.	describe procedures to install **drainage systems**
C-9.04.03L	demonstrate knowledge of regulatory requirements about **drainage systems**
a.	identify codes, standards and regulations about **drainage systems**
C-9.04.04L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	describe implications of **drainage systems** on practice of environmental stewardship
b.	identify practices that contribute to reducing carbon emissions

Range of Variables (include, but not limited to)

drainage systems: subsurface drainage, surface drainage, retention ponds, detention ponds

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

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

Task C-10 Installs hardscape

Task Descriptor

Landscape horticulturists install hardscape structures such as outdoor living amenities, fences, decks, pergolas, gazebos, walkways, patios, driveways, steps, retaining walls, and water features. Enhancements such as irrigation, water, lighting and audio are also key hardscape features. These features all comply with drawings, specifications, regulations and codes to ensure the safety and integrity of the installation. Jurisdictional regulations will determine the extra-low voltage permitted to be installed by landscape horticulturists.

C-10.01 Installs landscape structures

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

Skills

Reference Code	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 and manufacturers' specifications
C-10.01.02P	lay out and mark construction area	construction area is laid out and marked according to drawings, specifications and permits
C-10.01.03P	excavate construction area	construction area is excavated according to drawings and specifications
C-10.01.04P	prepare foundation	foundation is prepared according to drawings, specifications, building code and manufacturers' specifications
C-10.01.05P	construct **landscape structures**	**landscape structures** are constructed according to drawings, specifications, manufacturers' specifications, building codes and jurisdictional regulations
C-10.01.06P	verify installation	installation meets drawings and specifications

Reference Code	Performance Criteria	Evidence of Attainment
C-10.01.07P	clean structures and project area	structures and project area are cleaned according to CLS and manufacturers' specifications
C-10.01.08P	repair construction access	access area is restored to original state
C-10.01.09P	recycle or dispose of excess materials	excess materials are recycled or disposed of according to jurisdictional regulations
C-10.01.10P	apply preservatives, stains and sealants	preservatives, stains and sealants are applied to provide ease of cleaning, longevity and aesthetics according to manufacturers' specifications and jurisdictional regulations

Range of Variables (include, but not limited to)

landscape structures: decks, pergolas, outdoor kitchens, gazebos, fences, sheds, cabanas

Knowledge

Reference Code	Learning Outcomes and Objectives
C-10.01.01L	demonstrate knowledge of **landscape structures**, their components, characteristics and applications
a.	identify products and materials used in **landscape structure** construction, and describe their characteristics and applications
b.	interpret information about **landscape structures** found on drawings and specifications
C-10.01.02L	demonstrate knowledge of procedures to install **landscape structures**
a.	identify tools and equipment used to install **landscape structures**, and describe their procedures for use
b.	identify hazards and describe safe work practices to install **landscape structures**
c.	describe procedures to install **landscape structures**
d.	describe procedures to estimate quantities of materials required to install **landscape structures**

Reference Code	Learning Outcomes and Objectives
e.	identify **methods and procedures to perform site layout**
f.	describe preparation and installation procedures to install foundations
C-10.01.03L	demonstrate knowledge of regulatory requirements to install of **landscape structures**
a.	identify codes, standards and regulations to install **landscape structures**
C-10.01.04L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	identify practices that contribute to reducing carbon emissions
c.	identify practices to recycle and dispose of excess materials

Range of Variables (include, but not limited to)

landscape structures: decks, pergolas, outdoor kitchens, gazebos, fences, sheds, cabanas

methods and procedures to perform site layout: grade levels and stake interpretation, grid systems, triangulation

C-10.02 Installs surface materials

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

Skills

Reference Code	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, manufacturers' specifications and CLS
C-10.02.02P	lay out and mark construction area	construction area is laid out and marked according to drawings and specifications
C-10.02.03P	excavate area and compact sub-grade	area is excavated and sub-grade is compacted according to specifications and CLS

Reference Code	Performance Criteria	Evidence of Attainment
C-10.02.04P	store or remove excavated materials	excavated materials are stored or removed according to industry practices and jurisdictional regulations
C-10.02.05P	place geotextile and geogrid materials	geotextile and geogrid materials are placed for base stability according to manufacturers' specifications, drawings and specifications
C-10.02.06P	install aggregate base and compact in lifts	aggregate base is installed, and lifts are compacted according to CLS, equipment manufacturers' specifications, drawings specifications and jurisdictional regulations
C-10.02.07P	create or maintain grade	grade is created or maintained to ensure positive drainage according to drawings and specifications
C-10.02.08P	secure edge restraints for finished material	edge restraints for finished material are secured according to CLS, drawings and specifications
C-10.02.09P	select **surface materials**	**surface materials** are selected according to intended use, manufacturers' specifications, drawings and specifications
C-10.02.10P	place **bedding materials**	**bedding materials** are placed according to drawings, specifications and CLS
C-10.02.11P	screed **bedding materials**	**bedding materials** are screeded according to CLS
C-10.02.12P	install **surface materials**	**surface materials** are installed according to CLS and manufacturers' specifications
C-10.02.13P	measure, cut and fit **surface materials**	**surface materials** are measured, cut and fit according to drawings, specifications and task requirements
C-10.02.14P	clean surfaces	surfaces are cleaned according to CLS

Reference Code	Performance Criteria	Evidence of Attainment
C-10.02.15P	compact surfaces	surfaces are compacted according to manufacturers' specifications and CLS
C-10.02.16P	apply **joint materials**	**joint materials** are applied according to product specifications
C-10.02.17P	clean **surface materials**	**surface materials** are cleaned according to manufacturers' specifications
C-10.02.18P	seal **surface materials**	**surface materials** are sealed according to manufacturers' specifications
C-10.02.19P	verify installation	installation specifications are met
C-10.02.20P	clean and repair construction access	construction access is cleaned and repaired according to task requirements
C-10.02.21P	recycle or dispose of excess materials	excess materials are recycled or disposed of according to jurisdictional regulations

Range of Variables (include, but not limited to)

surface materials: natural stones, concrete, paving stones (segmental pavement), aggregate, permeable pavement, synthetic materials
bedding materials: sand, aggregates, high performance base (HPB)
joint materials: mortars, sand, polymeric sand

Knowledge

Reference Code	Learning Outcomes and Objectives
C-10.02.01L	demonstrate knowledge of **surface materials**, their characteristics and applications
a.	identify **surface materials** and describe their characteristics and applications
b.	identify **bedding materials** and **base** used with **surface materials**
c.	identify **joint materials** applied to **surface materials**
d.	interpret **documentation** about **surface materials** found on drawings and specifications

Reference Code	Learning Outcomes and Objectives
C-10.02.02L	demonstrate knowledge of procedures to install **surface materials**
a.	identify tools and equipment used to install **surface materials** and describe their procedures for use
b.	identify hazards and describe safe work practices to install **surface materials**
c.	describe procedures to verify quantities of materials required to install **surface materials**
d.	describe procedures to install **surface materials**
e.	describe procedures to apply **joint materials**
C-10.02.03L	demonstrate knowledge of additional training and certification available to install **surface materials**
a.	identify additional training and certification available to install **surface materials**
C-10.02.04L	demonstrate knowledge of regulatory requirements for installations of **surface materials**
a.	identify codes, standards and regulations for installations of **surface materials**
C-10.02.05L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	identify practices that contribute to reducing carbon emissions
c.	identify practices to recycle and dispose of excess materials

Range of Variables (include, but not limited to)

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

bedding materials: sand, aggregates, high performance base (HPB)

base: concrete, aggregate, manufactured

joint materials: mortars, sand, polymeric sand

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

C-10.03 Installs steps and retaining walls

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

Skills

Reference Code	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 and manufacturers' specifications
C-10.03.02P	lay out and mark construction area	construction area is laid out and marked according to drawings and specifications
C-10.03.03P	excavate area and compact sub-grade	area is excavated and sub-grade is compacted according to specifications and CLS
C-10.03.04P	store or remove excavated materials	excavated materials are stored or removed according to industry practices and jurisdictional regulations
C-10.03.05P	place geogrid materials	geogrid materials are placed for base stability according to manufacturers' specifications, drawings and specifications
C-10.03.06P	install aggregate base and compact in lifts	aggregate base is installed, and lifts are compacted according to CLS, equipment manufacturers' specifications, drawings, specifications and jurisdictional regulations
C-10.03.07P	install **foundation**	**foundation** is installed according to drawings and specifications
C-10.03.08P	build walls and steps	walls and steps are built following **procedures** and using **materials** according to drawings, specifications, jurisdictional regulations, manufacturers' specifications and CLS

Reference Code	Performance Criteria	Evidence of Attainment
C-10.03.09P	place drainage systems and backfill	drainage systems are placed and backfilled according to drawings, specifications and manufacturers' specifications
C-10.03.10P	install adhesives or mortars	adhesives or mortars are installed to secure capstones and treads according to manufacturers' specifications
C-10.03.11P	clean surfaces	surfaces are cleaned according to CLS
C-10.03.12P	verify installation	installation specifications are met
C-10.03.13P	seal **steps and retaining walls**	**steps and retaining walls** are sealed according to manufacturers' specifications
C-10.03.14P	clean and repair construction access	construction access is cleaned and repaired according to task requirements
C-10.03.15P	recycle or dispose of excess **materials**	excess **materials** are recycled or disposed of according to jurisdictional regulations

Range of Variables (include, but not limited to)

foundation: concrete, aggregate

procedures: preparing base, stacking and assembling courses, leveling, installing geogrid, staggering joint seams, creating batter

materials: timber, natural stone, manufactured stone, mass (mechanically) stabilized earth (MSE) walls, gabion basket

steps and retaining walls: natural stone and modular precast concrete landscape wall units, natural stone pavers and modular precast concrete landscape pavers and slabs, poured concrete features, landscape wood features

Knowledge

Reference Code	Learning Outcomes and Objectives
C-10.03.01L	demonstrate knowledge of **steps and retaining walls**, their characteristics and applications
a.	identify **materials** used in **steps and retaining wall** construction, and describe their characteristics and applications

Reference Code	Learning Outcomes and Objectives
b.	interpret information about **steps and retaining walls** found on drawings and specifications
C-10.03.02L	demonstrate knowledge of **procedures** to install **steps and retaining walls**
a.	identify tools and equipment used to install **steps and retaining walls**, and describe their procedures for use
b.	identify hazards and describe safe work practices to install **steps and retaining walls**
c.	describe procedures to verify quantities of **materials** required to install **steps and retaining walls**
d.	describe procedures to prepare for installation of **steps and retaining walls**
e.	describe **procedures** to install **steps and retaining walls**
C-10.03.03L	demonstrate knowledge of additional training and certification available to install **steps and retaining walls**
a.	identify additional training and certification available to install **steps and retaining walls**
C-10.03.04L	demonstrate knowledge of regulatory requirements for installation of **steps and retaining walls**
a.	identify codes, standards and regulations for installation of **steps and retaining walls**
C-10.03.05L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	identify practices that contribute to reducing carbon emissions
c.	identify practices to recycle and dispose of excess **materials**

Range of Variables (include, but not limited to)

steps and retaining walls: natural stone and modular precast concrete landscape wall units, natural stone pavers and modular precast concrete landscape pavers and slabs, poured concrete features, landscape wood features

materials: timber, natural stone, manufactured stone, MSE walls, gabion basket

procedures: preparing base, stacking and assembling courses, leveling, installing geogrid, staggering joint seams, creating batter

C-10.04 Installs irrigation systems

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

Skills

Reference Code	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 and manufacturers' specifications
C-10.04.02P	mark component locations	component locations are marked according to drawings and specifications
C-10.04.03P	excavate or trench area, and install pipe	area is excavated or trenched to grade and depth, and pipe is installed according to drawings, specifications and CLS
C-10.04.04P	store or remove excavated materials	excavated materials are stored or removed according to CLS and jurisdictional regulations
C-10.04.05P	lay out and assemble **irrigation system components**	**irrigation system components** are laid out and assembled according to manufacturers' specifications, irrigation plan and jurisdictional regulations
C-10.04.06P	test system integrity	water is flowing as intended
C-10.04.07P	backfill and compact trenches with appropriate materials to finished grade	trenches are backfilled and compacted with appropriate materials to finished grade according to drawings and specifications
C-10.04.08P	set head heights and nozzles of irrigation system	head heights and nozzles of irrigation system are set to ensure coverage according to jurisdictional regulations

Reference Code	Performance Criteria	Evidence of Attainment
C-10.04.09P	install and program control system	control system is installed and programmed according to jurisdictional regulations, and landscape and **environmental requirements**
C-10.04.10P	verify installation and operation	installation specifications and site conditions are met
C-10.04.11P	clean and restore area	area is cleaned and restored to original state
C-10.04.12P	recycle or dispose of excess materials	excess materials are recycled or disposed of according to jurisdictional regulations

Range of Variables (include, but not limited to)

irrigation systems: drip/low water volume, sprinkler, in-ground, above-ground
irrigation system components: screens, heads, pipes, wires, filters, valves, fittings, controller, rain sensor, swing joint assembly
environmental requirements: soil type, evapo-transpiration rates, plant needs

Knowledge

Reference Code	Learning Outcomes and Objectives
C-10.04.01L	demonstrate knowledge of **irrigation systems** and equipment, their **components**, characteristics, applications and operation
a.	identify **irrigation systems** and equipment, and describe their characteristics and applications
b.	describe operating principles of **irrigation systems** and equipment
c.	interpret information about **irrigation systems** and equipment found on drawings and specifications
C-10.04.02L	demonstrate knowledge of procedures to install **irrigation systems** and equipment
a.	identify tools and equipment used to install **irrigation systems** and equipment, and describe their procedures for use
b.	identify hazards and describe safe work practices to install **irrigation systems** and equipment
c.	describe procedures to install **irrigation systems** and equipment

Reference Code	Learning Outcomes and Objectives
d.	identify **factors that determine irrigation rates and methods**
e.	identify water sources for irrigation and describe **considerations and procedures for determining water quality and availability**
C-10.04.03L	demonstrate knowledge of additional training and certification available to install **irrigation systems** and equipment
a.	identify additional training and certification available to install **irrigation systems** and equipment
C-10.04.04L	demonstrate knowledge of regulatory requirements for installing **irrigation systems** and equipment
a.	identify codes, standards and regulations about installing **irrigation systems** and equipment
C-10.04.05L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	identify practices that contribute to reducing carbon emissions
c.	identify practices to recycle and dispose of excess materials

Range of Variables (include, but not limited to)

irrigation systems: drip/low water volume, sprinkler, in-ground, above-ground

irrigation system components: screens, heads, pipes, wires, filters, valves, fittings, controller, rain sensor, swing joint assembly

factors that determine irrigation rates and methods: 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: sample preparation, water testing, water pressure, flow rate, results interpretation

C-10.05 Installs water features

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

Skills

Reference Code	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 and manufacturers' specifications
C-10.05.02P	lay out and mark construction area	construction area is laid out and marked according to drawings and specifications
C-10.05.03P	excavate and store or remove excavated materials	materials are excavated and stored or removed according to site requirements, industry standards and jurisdictional regulations
C-10.05.04P	place sand and geotextile materials	sand and geotextile materials are placed according to design and manufacturers' specifications
C-10.05.05P	install liners and decorative stones	liners and decorative stones are installed according to design and manufacturers' specifications
C-10.05.06P	complete assembly of **water supply components** and filtration systems	**water supply components** and filtration systems are assembled according to design and manufacturers' specifications
C-10.05.07P	apply adhesives, foams and mortar	adhesives, foams and mortar are applied to secure and seal assembly according to manufacturers' specifications
C-10.05.08P	add water, operate water systems and check for leaks	water is added and water systems are operated and checked for leaks
C-10.05.09P	repair leaks	leaks are repaired according to requirements
C-10.05.10P	add **decorative features**	**decorative features** are added according to design

Reference Code	Performance Criteria	Evidence of Attainment
C-10.05.11P	verify and adjust water flow	water flow is verified and adjusted to optimize performance, sound and aesthetics
C-10.05.12P	drain water and clean all components	components are drained of water and cleaned
C-10.05.13P	refill water features and add **ecosystem enhancement products**	water features are refilled, and **ecosystem enhancement products** are added according to manufacturers' specifications
C-10.05.14P	place aquatic plants and fish	aquatic plants and fish are placed according to design
C-10.05.15P	verify installation	installation specifications are met
C-10.05.16P	clean and repair construction access	construction access is cleaned and repaired according to task requirements
C-10.05.17P	recycle or dispose of excess materials	excess materials are recycled or disposed of according to jurisdictional regulations

Range of Variables (include, but not limited to)

water supply components: pumps, drains, valves, filtration systems, electrical conduits, autofill systems

decorative features: rocks, garden art, foot bridges, lighting

ecosystem enhancement products: beneficial bacteria, pH amendments

Knowledge

Reference Code	Learning Outcomes and Objectives
C-10.05.01L	demonstrate knowledge of landscape water features, their components, characteristics, applications and operation
a.	identify types of landscape water features and describe their characteristics and applications
b.	describe operating principles of landscape water features
c.	interpret **documentation** about landscape water features

Reference Code	Learning Outcomes and Objectives
C-10.05.02L	demonstrate knowledge of procedures to install landscape water features
a.	identify tools and equipment used to install landscape water features, and describe their procedures for use
b.	identify hazards and describe safe work practices to install landscape water features
c.	describe procedures to prepare site for installation of landscape water features
d.	describe procedures to install landscape water features
C-10.05.03L	demonstrate knowledge of additional training and certification available to install landscape water features
a.	identify additional training and certification available to install landscape water features
C-10.05.04L	demonstrate knowledge of regulatory requirements for landscape water features
a.	identify codes, standards and regulations for landscape water features
C-10.05.05L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	identify practices to recycle and dispose of excess materials

Range of Variables (include, but not limited to)

documentation: flow rates, pipe and pump sizing charts, maintenance requirements guide

C-10.06 Installs extra-low voltage landscape lighting and other extra-low voltage electrical systems

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

Skills

Reference Code	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 and manufacturers' specifications
C-10.06.02P	perform voltage drop calculation	voltage drop calculation is performed to confirm operation and desired effects according to manufacturers' specifications
C-10.06.03P	create trenches for cable to depth	trenches for cable to depth are created according to specifications
C-10.06.04P	lay out and assemble **extra-low voltage lighting components** and **other extra-low voltage electrical systems**	**extra-low voltage lighting components** and **other extra-low voltage electrical systems** are laid out and assembled according to manufacturers' specifications, lighting plan and industry standards
C-10.06.05P	test operation of lighting system and **other extra-low voltage electrical systems**, and check voltage	lighting system and **other extra-low voltage electrical systems** are tested for operation, and voltage is checked
C-10.06.06P	position and secure **extra-low voltage lighting components** and **other extra-low voltage electrical systems** into final location	**extra-low voltage lighting components** and **other extra-low voltage electrical systems** are positioned and secured into final location according to landscape plan
C-10.06.07P	program lighting controller	lighting controller is programmed according to site and customer requirements

Reference Code	Performance Criteria	Evidence of Attainment
C-10.06.08P	adjust fixtures	fixtures are adjusted for desired effects
C-10.06.09P	clean and repair construction access	construction access is cleaned and repaired according to industry practices

Range of Variables (include, but not limited to)

extra-low voltage lighting components: lamps, fuses, sensors, fixtures, transformers, connectors, solar panels, conduits/sleeves

other extra-low voltage electrical systems: speakers, security systems, pet management wiring, wiring for autonomous mowers

Knowledge

Reference Code	Learning Outcomes and Objectives
C-10.06.01L	demonstrate knowledge of **extra-low voltage lighting components** and **other extra-low voltage electrical systems**, their characteristics, applications and operation
a.	identify types of **extra-low voltage lighting components** and **other extra-low voltage electrical systems**, and describe their characteristics and applications
b.	describe operating principles of **extra-low voltage lighting components** and **other extra-low voltage electrical systems**
c.	interpret documentation about **extra-low voltage lighting components** and **other extra-low voltage electrical systems**
C-10.06.02L	demonstrate knowledge of procedures to install **extra-low voltage lighting components** and **other extra-low voltage electrical systems**
a.	identify tools and equipment used to install **extra-low voltage lighting components** and **other extra-low voltage electrical systems**, and describe their procedures for use
b.	identify hazards and describe safe work practices to install **extra-low voltage lighting components** and **other extra-low voltage electrical systems**
c.	describe procedures to prepare site for installation of **extra-low voltage lighting components** and **other extra-low voltage electrical systems**

Reference Code	Learning Outcomes and Objectives
d.	describe procedures to estimate quantities of materials required to install **extra-low voltage lighting components** and **other extra-low voltage electrical systems**
e.	describe voltage drop calculation, its applications and procedure for use
f.	describe procedures to install **extra-low voltage lighting components** and **other extra-low voltage electrical systems**
C-10.06.03L	demonstrate knowledge of additional training and certification available to install **extra-low voltage lighting components** and **other extra-low voltage electrical systems**
a.	identify additional training and certification available to install **extra-low voltage lighting components** and **other extra-low voltage electrical systems**
C-10.06.04L	demonstrate knowledge of regulatory requirements for **extra-low voltage lighting components** and **other extra-low voltage electrical systems**
a.	identify codes, standards and regulations for **extra-low voltage lighting components** and **other extra-low voltage electrical systems**
C-10.06.05L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	identify practices that contribute to reducing carbon emissions
c.	identify practices to recycle and dispose of excess materials

Range of Variables (include, but not limited to)

extra-low voltage lighting components: lamps, fuses, sensors, fixtures, transformers, connectors, solar panels, conduits/sleeves

other extra-low voltage electrical systems: speakers, security systems, pet management wiring, wiring for autonomous mowers

Task C-11 Installs softscape

Task Descriptor

Landscape horticulturists install softscape features such as growing media, exterior and interior plants as well as seed and sod. All features comply with plans, specifications, regulations and codes to ensure the integrity of the installation. The CLS provides guidance to landscape horticulturists installing softscapes.

C-11.01 Installs growing media

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
C-11.01.01P	select and use tools and equipment	tools and equipment are selected and used according to task and manufacturers' specifications
C-11.01.02P	verify functioning of drainage systems	drainage systems are verified to be effective and functioning according to CLS and AHJ
C-11.01.03P	scarify subsoil	subsoil is scarified with mechanical and manual tools and equipment according to industry practices, CLS and AHJ
C-11.01.04P	select **growing media**	**growing media** are selected according to project requirements, specifications, landscape requirements, jurisdictional regulations, CLS and AHJ
C-11.01.05P	move **growing media**	**growing media** are moved to desired location according to drawings, specifications, CLS and AHJ
C-11.01.06P	add **growing media** in lifts and compact	**growing media** are added in lifts and compacted according to specifications, CLS and AHJ

Reference Code	Performance Criteria	Evidence of Attainment
C-11.01.07P	add and incorporate **amendments, fertilizers and biostimulants**	**amendments, fertilizers and biostimulants** are added and incorporated according to industry practices, results of soil tests, CLS and AHJ
C-11.01.08P	shape and grade **growing media**	**growing media** are shaped and graded to finished grade by mechanical and manual raking according to drawings, specifications, CLS and AHJ
C-11.01.09P	verify **growing media** depth	**growing media** depth meets drawings and specifications according to CLS and AHJ

Range of Variables (include, but not limited to)

growing media: native soil, soilless medium, manufactured soil, compost
amendments, fertilizers and biostimulants: composts, bark fines, beneficial soil microorganisms, mycorrhizae, aggregates

Knowledge

Reference Code	Learning Outcomes and Objectives
C-11.01.01L	demonstrate knowledge of **growing media**, their components, characteristics and applications
a.	identify types of **growing media** and describe their characteristics and applications
b.	interpret information about **growing media** found on drawings and specifications
c.	identify types of **amendments, fertilizers and biostimulants** added to **growing media**, and describe their characteristics and applications
C-11.01.02L	demonstrate knowledge of procedures to install **growing media**
a.	identify tools and equipment used to install **growing media** and describe their procedures for use
b.	identify hazards and describe safe work practices to install **growing media**
c.	describe procedures to estimate quantities of materials required for installation of **growing media**
d.	describe procedures to install **growing media**

Reference Code	Learning Outcomes and Objectives
C-11.01.03L	demonstrate knowledge of regulatory requirements for **growing media**
a.	identify codes, standards and regulations for **growing media**
C-11.01.04L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	identify practices that contribute to reducing carbon emissions

Range of Variables (include, but not limited to)

growing media: native soil, soilless medium, manufactured soil, compost
amendments, fertilizers and biostimulants: composts, bark fines, beneficial soil microorganisms, mycorrhizae, aggregates

C-11.02 Installs exterior landscape plants

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
C-11.02.01P	select and use tools and equipment	tools and equipment are selected and used according to task and manufacturers' specifications
C-11.02.02P	select **exterior plant material**	**exterior plant material** is selected according to project requirements, specifications, landscape and jurisdictional regulations, and CLS
C-11.02.03P	prepare **exterior plant material**	**exterior plant material** is prepared by performing **activities** according to CLS
C-11.02.04P	monitor and maintain plant health	plant health is monitored and maintained throughout installation process according to industry practices and CLS

Reference Code	Performance Criteria	Evidence of Attainment
C-11.02.05P	lay out **exterior plant material**	**exterior plant material** is laid out according to drawings, specifications and CLS
C-11.02.06P	water growing media, plant, stake or guy **exterior plant material**	growing media is watered, **exterior plant material** is planted, staked or guyed according to drawings, specifications and CLS
C-11.02.07P	prune **exterior plant material**	**exterior plant material** is pruned according to industry practices and CLS
C-11.02.08P	verify moisture content of growing media	moisture content of growing media is verified according to CLS
C-11.02.09P	verify **exterior plant material** installation	**exterior plant material** installation meets drawings, specifications and CLS
C-11.02.10P	recycle or dispose of excess materials	excess materials are recycled or disposed of according to jurisdictional regulations

Range of Variables (include, but not limited to)

exterior plant material: perennials, shrubs, trees, annuals

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

Knowledge

Reference Code	Learning Outcomes and Objectives
C-11.02.01L	demonstrate knowledge of **exterior plant material**, their characteristics and applications
a.	identify types of **exterior plant material** and describe their characteristics and applications
b.	interpret information about **exterior plant material** found on drawings and specifications

Reference Code	Learning Outcomes and Objectives
C-11.02.02L	demonstrate knowledge of **amendments, fertilizers and biostimulants**, their characteristics, applications and procedures for use
a.	identify types of **amendments, fertilizers and biostimulants** added to growing media and describe their characteristics and applications
b.	describe procedures and equipment used for application of **amendments, fertilizers and biostimulants**
C-11.02.03L	demonstrate knowledge of procedures to install **exterior plant material**
a.	identify tools and equipment used to install **exterior plant material** and describe their procedures for use
b.	identify hazards and describe safe work practices to install **exterior plant material**
c.	identify **considerations for determining suitability of planting site for exterior plant material**
d.	describe procedures to estimate quantities of **exterior plant material** required
e.	identify **stock types**
f.	describe **procedures to prepare planting site** for tree installation
g.	describe **procedures to install trees**
h.	describe **procedures for post-planting care of trees**
i.	describe **procedures to prepare planting beds** for herbaceous and woody plant material installation
j.	describe **procedures to install herbaceous and woody plant material**
C-11.02.04L	demonstrate knowledge of pruning **exterior plant material**, their characteristics and applications
a.	describe procedures to prune **exterior plant material**
C-11.02.05L	demonstrate knowledge of irrigation equipment and systems, their applications and operation to achieve adequate irrigation
a.	identify **factors that determine irrigation rates and methods**
C-11.02.06L	demonstrate knowledge of regulatory requirements for **exterior plant material**
a.	identify codes, standards and regulations for **exterior plant material**
C-11.02.07L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	identify practices that contribute to reducing carbon emissions

Range of Variables (include, but not limited to)

exterior plant material: perennials, shrubs, trees, annuals

amendments, fertilizers and biostimulants: composts, peat moss, mycorrhizae, aggregates

considerations for determining suitability of planting site for exterior plant material: sun and wind exposure, water availability, structure and quality of growing medium, site use, proximity to buildings and utility services, air quality, mature plant size, pollutants, cultural requirements

stock types: bare root, balled and burlapped (B&B), wire basket, containerized, caliper stock

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

procedures to install trees: placement; loosening of root containment; root flare depth; root placement; backfilling; mulching; machine-planting; stabilizing; fertilizing; protecting tree; watering before; during and after planting

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

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

procedures to install herbaceous and woody plant material: bed layout, plant placement, loosening of root containment, root placement, backfilling, irrigation, fertilizing, mulching, watering before, during and after planting

factors that determine irrigation rates and methods: plant material (growth stage, mature size, water use rate), root zone assessment, soil/water relationship, site conditions, application (time, rate, duration), climate

C-11.03 Transplants plants

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
C-11.03.01P	select and use tools and equipment	tools and equipment are selected and used according to task and manufacturers' specifications

Reference Code	Performance Criteria	Evidence of Attainment
C-11.03.02P	verify plant is viable for transplant	viability of plant for transplant is verified according to **factors** and **considerations**
C-11.03.03P	prepare **plant material** for transplanting	**plant material** is prepared for transplanting according to industry practices and CLS
C-11.03.04P	dig **plant material**	**plant material** is dug according to CLS and industry practices
C-11.03.05P	install **plant material**	**plant material** is installed according to drawings, specifications and CLS
C-11.03.06P	prune **plant material**	**plant material** is pruned according to CLS and industry practices
C-11.03.07P	apply amendments	amendments are applied according to CLS and industry practices
C-11.03.08P	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-11.03.09P	irrigate **plant material**	**plant material** is irrigated according to CLS and plant requirements
C-11.03.10P	recycle or dispose of excess materials	excess materials are recycled or disposed of according to jurisdictional regulations

Range of Variables (include, but not limited to)

factors: species, health, time of year
considerations: environmental conditions, site use, cultural requirements
plant material: perennials, shrubs, trees, annuals

Knowledge

Reference Code	Learning Outcomes and Objectives
C-11.03.01L	demonstrate knowledge of **plant material**, their characteristics and applications
a.	identify types of **plant material** and describe their characteristics and applications

Reference Code	Learning Outcomes and Objectives
b.	interpret information about **plant material** found on drawings and specifications
C-11.03.02L	demonstrate knowledge of procedures to transplant **plant material**
a.	identify tools and equipment used to transplant **plant material** and describe their procedures for use
b.	identify hazards and describe safe work practices to transplant **plant material**
c.	identify **factors** and **considerations** for determining viability of **plant material** for transplanting
d.	describe procedures to transplant **plant material**
e.	describe irrigation rates and methods, and fertilization requirements for transplanted **plant material**
f.	describe procedures to prune transplanted **plant material**
C-11.03.03L	demonstrate knowledge of regulatory requirements for transplantation of **plant material**
a.	identify codes, standards and regulations for transplantation of **plant material**
C-11.03.04L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	describe procedures to dispose of and recycle excess materials
c.	identify practices that contribute to reducing carbon emissions

Range of Variables (include, but not limited to)

plant material: perennials, shrubs, trees, annuals
factors: species, health, time of year
considerations: environmental conditions, site use, cultural requirements

C-11.04 Installs mulch

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

Skills

Reference Code	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 and manufacturers' specifications
C-11.04.02P	verify that area to be mulched is prepared	area to be mulched is prepared according to drawings, specifications and CLS
C-11.04.03P	verify **mulch**	**mulch** meets specifications, CLS and jurisdictional regulations
C-11.04.04P	apply **mulch**	**mulch** is applied according to industry practices, CLS and jurisdictional regulations
C-11.04.05P	verify **mulch** installation	**mulch** installation meets specifications, CLS and jurisdictional regulations

Range of Variables (include, but not limited to)

mulch: shredded bark, aggregates, straws, wood chips, pine needles

Knowledge

Reference Code	Learning Outcomes and Objectives
C-11.04.01L	demonstrate knowledge of **mulch**, their characteristics and applications
a.	identify types of **mulch** and describe their characteristics and applications
b.	interpret information about **mulch** found on drawings and specifications
C-11.04.02L	demonstrate knowledge of procedures to apply **mulch**
a.	identify tools and equipment used to apply **mulch** and describe their procedures for use
b.	identify hazards and describe safe work practices to apply **mulch**
c.	identify hazards of **mulch** in fire prone areas

Reference Code	Learning Outcomes and Objectives
d.	describe procedures to estimate quantities of **mulch** required
e.	describe procedures to apply **mulch**
C-11.04.03L	demonstrate knowledge of regulatory requirements for application of **mulch**
a.	identify codes, standards and regulations for application of **mulch**
C-11.04.04L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	identify practices that contribute to reducing carbon emissions

Range of Variables (include, but not limited to)

mulch: shredded bark, aggregates, straws, wood chips, pine needles

C-11.05 Installs turf from seed

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
C-11.05.01P	select and use tools and equipment	tools and equipment are selected and used according to task and manufacturers' specifications
C-11.05.02P	verify seedbed is prepared and add **amendments, fertilizers and biostimulants**	seedbed is prepared and **amendments, fertilizers and biostimulants** are added according to specifications and CLS
C-11.05.03P	select seed variety and seeding rate	seed variety and seeding rate are selected to meet project requirements and CLS
C-11.05.04P	apply seed to prepared area	seed is applied to prepared area according to specifications, CLS, weather conditions, seed count and cross-directional seeding

Reference Code	Performance Criteria	Evidence of Attainment
C-11.05.05P	use landscape rollers	landscape rollers are used to ensure seed is in direct contact with growing media according to specifications, CLS and industry practices
C-11.05.06P	verify seed distribution	seed distribution is verified to result in uniform turf according to CLS, visual inspection, seed count and cross-directional seeding
C-11.05.07P	apply **organic matter**	**organic matter** is applied according to CLS and specifications to retain moisture and minimize seed movement
C-11.05.08P	irrigate and monitor turf regularly	turf is monitored and irrigation meets turf health requirements according to jurisdictional regulations and CLS

Range of Variables (include, but not limited to)

amendments, fertilizers and biostimulants: composts, coir, lime, sulphur, mycorrhizae
organic matter: hydro mulch, straw, composts

Knowledge

Reference Code	Learning Outcomes and Objectives
C-11.05.01L	demonstrate knowledge of turf establishment from seed, its characteristics and applications
a.	identify types of seeds, **organic matter, amendments, fertilizers and biostimulants** used to establish turf, and describe their characteristics and applications
b.	interpret information about seeds, **organic matter, amendments, fertilizers and biostimulants** found on drawings and specifications
C-11.05.02L	demonstrate knowledge of procedures to install turf from seed
a.	identify tools and equipment used to install turf from seed and describe their procedures for use
b.	identify hazards and describe safe work practices to install turf from seed
c.	identify **considerations when selecting turf seed types**
d.	identify calculations required for determining seed quantities

Reference Code	Learning Outcomes and Objectives
e.	describe procedures to establish turf from seed
f.	identify methods for post-establishment care of seeded turf
C-11.05.03L	demonstrate knowledge of regulatory requirements for installations of turf by seed
a.	identify codes, standards and regulations for installations of turf by seed
C-11.05.04L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	identify practices that contribute to reducing carbon emissions

Range of Variables (include, but not limited to)

organic matter: hydro mulch, straw, composts
amendments, fertilizers and biostimulants: composts, coir, lime, sulphur, mycorrhizae
considerations when selecting turf seed types: environmental conditions, site use, cultural requirements

C-11.06 Installs sod

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
C-11.06.01P	select and use tools and equipment	tools and equipment are selected and used according to task and manufacturers' specifications
C-11.06.02P	verify that area to be sodded is prepared	area to be sodded is prepared according to drawings, specifications and CLS
C-11.06.03P	verify selected sod	selected sod meets specifications and CLS

Reference Code	Performance Criteria	Evidence of Attainment
C-11.06.04P	apply **amendments, fertilizers and biostimulants**	**amendments, fertilizers and biostimulants** are applied according to specifications, CLS and industry practices
C-11.06.05P	lay sod	sod is laid according to drawings, specifications, CLS and industry practices
C-11.06.06P	secure sod	sod is secured to slope according to drawings, specifications, CLS and industry practices
C-11.06.07P	use landscape rollers	landscape rollers are used to ensure roots are in direct contact with growing media according to CLS and industry practices
C-11.06.08P	irrigate and monitor sod regularly	sod is irrigated and monitored according to requirements, CLS and jurisdictional regulations
C-11.06.09P	verify sod installation	sod installation is verified according to drawings, specifications and CLS
C-11.06.10P	recycle or dispose of excess materials	excess materials are recycled or disposed of according to jurisdictional regulations

Range of Variables (include, but not limited to)

amendments, fertilizers and biostimulants: composts, lime, sulphur, coir, mycorrhizae

Knowledge

Reference Code	Learning Outcomes and Objectives
C-11.06.01L	demonstrate knowledge of turf establishment from sod, its characteristics and applications
a.	identify types of sod and **amendments, fertilizers and biostimulants** used to establish turf, and describe their characteristics and applications
b.	interpret information about sod and **amendments, fertilizers and biostimulants** found on drawings and specifications

Reference Code	Learning Outcomes and Objectives
C-11.06.02L	demonstrate knowledge of procedures to install turf from sod
a.	identify tools and equipment used to install turf from sod and describe their procedures for use
b.	identify hazards and describe safe work practices to install turf from sod
c.	identify **considerations when selecting sod types**
d.	identify calculations required for determining sod quantities and coverage
e.	describe procedures to install sod
f.	identify methods used for post-establishment care of sod
C-11.06.03L	demonstrate knowledge of regulatory requirements for sod and **amendments, fertilizers and biostimulants**
a.	identify codes, standards and regulations for sod and **amendments, fertilizers and biostimulants**
C-11.06.04L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	describe procedures to recycle and dispose of excess materials
c.	identify practices that contribute to reducing carbon emissions

Range of Variables (include, but not limited to)

amendments, fertilizers and biostimulants: composts, lime, sulphur, coir, mycorrhizae
considerations when selecting sod types: environmental conditions, site use, cultural requirements

C-11.07 Installs interior landscape plants

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
C-11.07.01P	select and use tools and equipment	tools and equipment are selected and used according to task and manufacturers' specifications

Reference Code	Performance Criteria	Evidence of Attainment
C-11.07.02P	prepare **interior plant material**	**interior plant material** is prepared by performing **activities** according to industry practices and CLS
C-11.07.03P	monitor and maintain plant health	plant health is monitored and maintained throughout installation process according to industry practices and CLS
C-11.07.04P	protect interior furnishings and surfaces	interior furnishings and surfaces are protected according to industry practices and contract documents
C-11.07.05P	lay out **interior plant material**	**interior plant material** is laid out according to drawings, specifications and CLS
C-11.07.06P	plant **interior plant material**	**interior plant material** is planted according to drawings, specifications and CLS
C-11.07.07P	prune **interior plant material**	**interior plant material** is pruned according to plant and site requirements, and CLS
C-11.07.08P	irrigate **interior plant material**	**interior plant material** is irrigated according to plant requirements and CLS
C-11.07.09P	verify moisture content of growing media	moisture content of growing media meets specifications according to CLS
C-11.07.10P	verify **interior plant material** installation	**interior plant material** installation is verified according to drawings, specifications and CLS

Range of Variables (include, but not limited to)

interior plant material: perennials, shrubs, trees, tropicals
activities: foliar washing, scarifying root ball

Knowledge

Reference Code	Learning Outcomes and Objectives
C-11.07.01L	demonstrate knowledge of **interior plant material**, their components, characteristics, applications and operation
a.	identify types of **interior plant material** and describe their characteristics and applications
b.	interpret information about **interior plant material** found on drawings and specifications
C-11.07.02L	demonstrate knowledge of **amendments, fertilizers and biostimulants**, their characteristics, applications and procedures for use
a.	identify types of **amendments, fertilizers and biostimulants** added to growing media and describe their characteristics and applications
b.	describe procedures and equipment used for application of **amendments, fertilizers and biostimulants**
C-11.07.03L	demonstrate knowledge of procedures to install **interior plant material**
a.	identify tools and equipment used to install **interior plant material**, and describe their procedures for use
b.	identify hazards and describe safe work practices to install **interior plant material**
c.	identify **considerations for determining suitability of planting site for interior plant material**
d.	describe procedures to install **interior plant material**
e.	describe **procedures to prepare planting beds** for herbaceous, woody and tropical plant material installation
f.	describe **procedures to install herbaceous, woody and tropical plant material**
C-11.07.04L	demonstrate knowledge of pruning **interior plant material**, its characteristics and applications
a.	describe procedures to prune **interior plant material**
C-11.07.05L	demonstrate knowledge of irrigation equipment and systems, their applications and operation to achieve adequate irrigation
a.	identify **factors that determine irrigation rates and methods**
C-11.07.06L	demonstrate knowledge of regulatory requirements for **interior plant material**
a.	identify codes, standards and regulations for **interior plant material**

Reference Code	Learning Outcomes and Objectives
C-11.07.07L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	identify practices that contribute to reducing carbon emissions

Range of Variables (include, but not limited to)

interior plant material: perennials, shrubs, trees, tropicals

amendments, fertilizers and biostimulants: composts, peat moss, mycorrhizae

considerations for determining suitability of planting site for interior plant material: sun and light exposure, water availability, quality of growing medium, site accessibility, air quality, pollutants

procedures to prepare planting beds: bed cultivation, amending soil, removal of weeds/debris, grading and drainage, managing nutrient balance

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

factors that determine irrigation rates and methods: plant material (growth stage, mature size, water use rate), root zone assessment, soil/water relationship, site conditions, application (time, rate, duration)

Task C-12 Installs green infrastructure systems

Task Descriptor

Landscape horticulturists install green infrastructure such as such as green walls, green roofs, rain gardens, rainwater management, stormwater management, green paving system, permeable pavement, bioswales, and urban forests. These features comply with CLS, drawings, specifications, regulations and codes to ensure the integrity of the systems.

C-12.01 Participates in green infrastructure design strategies

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
C-12.01.01P	determine **green infrastructure** requirements by inspecting **site-specific environmental conditions**	**green infrastructure** requirements are identified
C-12.01.02P	consider **factors affecting selection of green infrastructure**	**factors affecting selection of green infrastructure** are considered
C-12.01.03P	identify **benefits** and applications of **green infrastructure** technologies	**benefits** and applications of **green infrastructure** technologies mimic nature for sustainability according to site requirements
C-12.01.04P	select **green infrastructure** technologies, methods and products	**green infrastructure** technologies, methods and products are selected according to CLS, client's needs, site conditions, product availability and jurisdictional regulations

Range of Variables (include, but not limited to)

green infrastructures: green walls, green roofs, rain gardens, rainwater management, stormwater management, green paving systems, permeable pavement, bioswales, urban forests

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

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

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

Knowledge

Reference Code	Learning Outcomes and Objectives
C-12.01.01L	demonstrate knowledge of **green infrastructure** principles, their characteristics and applications
a.	identify types of **green infrastructure** and describe their characteristics and applications
b.	describe types of blue and grey infrastructures
c.	identify purpose and **benefits of green infrastructures**
d.	identify **benefits of plants**
e.	identify xeriscape principles
f.	identify value of environmental, economic and social impact of urban forests
g.	define natural ecosystems' functions, purpose and structure
h.	define ecosystem service benefits
C-12.01.02L	demonstrate knowledge of **green infrastructure** practices
a.	describe brown field reclamation
b.	describe smart water technology
c.	define site sustainability
d.	explain landscape design, development process and aesthetics
e.	identify **surface and subsurface drainage systems and practices**
f.	describe filtration systems
g.	explain LID

Reference Code	Learning Outcomes and Objectives
C-12.01.03L	demonstrate knowledge of training and certification to participate in **green infrastructure** design strategies
a.	identify training and certification to participate in **green infrastructure** design strategies
C-12.01.04L	demonstrate knowledge of regulatory requirements for **green infrastructures**
a.	identify codes, standards and regulations for **green infrastructures**
C-12.01.05L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	identify practices that contribute to reducing carbon emissions

Range of Variables (include, but not limited to)

green infrastructures: green walls, green roofs, rain gardens, rainwater management, stormwater management, green paving systems, permeable pavement, bioswales, urban forests

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

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

surface and subsurface drainage systems and practices: rooftop gardens and vegetated landscape over structures, catch basins, bioswales, bioretention ponds, retention ponds, detention ponds, cisterns, rooftop retention systems, engineered wetlands, rain gardens, permeable pavement

C-12.02 Installs green roofs

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
C-12.02.01P	select and use **tools and equipment**	**tools and equipment** are selected and used according to task and manufacturers' specifications
C-12.02.02P	prepare work area	work area is prepared according to CLS, contract documents, industry standards, manufacturers' specifications and jurisdictional regulations
C-12.02.03P	install roofing **non-organic components**	roofing **non-organic components** are installed according to manufacturers' specifications, industry standards and contract documents
C-12.02.04P	install growing medium	growing medium is installed according to CLS, contract documents, industry standards and manufacturers' specifications
C-12.02.05P	install plant material	plant material is installed according to CLS, contract documents, industry standards and manufacturers' specifications
C-12.02.06P	verify green roof installation	green roof installation meets specifications according to CLS

Range of Variables (include, but not limited to)

tools and equipment: lifts, booms, cranes, fall protection equipment

non-organic components: membranes, root barriers, drainage, irrigation, geotechnical mesh

Knowledge

Reference Code	Learning Outcomes and Objectives
C-12.02.01L	demonstrate knowledge of green roofs, their **components**, characteristics, applications and operation
a.	identify green roofs and describe their characteristics and applications
b.	describe operating principles of green roofs
c.	interpret information about green roofs found on drawings and specifications
d.	identify growing media used in green roofs and describe their characteristics and applications
e.	identify plant material used in green roofs and describe their characteristics and applications
C-12.02.02L	demonstrate knowledge of procedures to install green roofs
a.	identify **tools and equipment** used to install green roofs and describe their procedures for use
b.	identify hazards and describe safe work practices to install green roofs
c.	describe procedures to install green roofs
C-12.02.03L	demonstrate knowledge of additional training and certification available to install green roofs
a.	identify additional training and certification available to install green roofs
C-12.02.04L	demonstrate knowledge of regulatory requirements for installation of green roofs
a.	identify codes, standards and regulations for installation of green roofs
C-12.02.05L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	identify practices that contribute to reducing carbon emissions

Range of Variables (include, but not limited to)

components (green roof): vegetation, growing media, water retention mats, membrane, drainage, structural support, irrigation systems

tools and equipment: lifts, booms, cranes, fall protection equipment

C-12.03 Installs green walls

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
C-12.03.01P	select and use **tools and equipment**	**tools and equipment** are selected and used according to task and manufacturers' specifications
C-12.03.02P	prepare work area	work area is prepared according to CLS, contract documents, industry standards, manufacturers' specifications and jurisdictional regulations
C-12.03.03P	install wall **non-organic components**	wall **non-organic components** are installed according to manufacturers' specifications, industry standards and contract documents
C-12.03.04P	install growing media	growing media are installed according to CLS, contract documents, industry standards and manufacturers' specifications
C-12.03.05P	install plant material	plant material is installed according to CLS, contract documents, industry standards and manufacturers' specifications
C-12.03.06P	verify green wall installation	green wall installation meets specifications according to CLS

Range of Variables (include, but not limited to)

tools and equipment: lifts, booms, cranes, fall protection equipment

non-organic components: membranes, root barriers, drainage, irrigation, trays, mechanical fasteners

Knowledge

Reference Code	Learning Outcomes and Objectives
C-12.03.01L	demonstrate knowledge of green walls, their **components**, characteristics, applications and operation
a.	identify green walls and describe their characteristics and applications
b.	describe operating principles of green walls
c.	interpret information about green walls found on drawings and specifications
d.	identify growing media used in green walls and describe their characteristics and applications
e.	identify plant material used in green walls and describe their characteristics and applications
C-12.03.02L	demonstrate knowledge of procedures to install green walls
a.	identify **tools and equipment** used to install green walls and describe their procedures for use
b.	identify hazards and describe safe work practices to install green walls
c.	describe procedures to install green walls
C-12.03.03L	demonstrate knowledge of additional training and certification available to install green walls
a.	identify additional training and certification available to install green walls
C-12.03.04L	demonstrate knowledge of regulatory requirements for installation of green walls
a.	identify codes, standards and regulations for installation of green walls
C-12.03.05L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	identify practices that contribute to reducing carbon emissions

Range of Variables (include, but not limited to)

components (green walls): vegetation, growing media, water retention mats, membrane, drainage, structural support, irrigation systems

tools and equipment: lifts, booms, cranes, fall protection equipment

C-12.04 Installs rainwater and stormwater management systems

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
C-12.04.01P	select and use tools and equipment	tools and equipment are selected and used according to task and manufacturers' specifications
C-12.04.02P	prepare work area	work area is prepared according to contract documents, industry standards and manufacturers' specifications
C-12.04.03P	install **rainwater and stormwater harvesting components**	**rainwater and stormwater harvesting components** are installed according to CLS, contract documents, industry standards and manufacturers' specifications
C-12.04.04P	install **stormwater management systems**	**stormwater management systems** are installed according to CLS, contract documents and industry standards
C-12.04.05P	install **rainwater and stormwater retention systems**	**rainwater and stormwater retention systems** are installed according to CLS, contract documents and industry standards
C-12.04.06P	install growing media	growing media are installed according to CLS, manufacturers' specifications, industry standards and contract documents
C-12.04.07P	install plant material	plant material is installed according to CLS, industry standards and contract documents
C-12.04.08P	verify plant material installation	plant material installation meets specifications according to CLS

Range of Variables (include, but not limited to)

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

stormwater management systems: rooftop gardens, catch basins, bioswales, bioretention ponds, retention ponds, detention ponds, cisterns, rooftop retention systems, engineered wetlands, rain gardens, permeable pavement

rainwater and stormwater retention systems: retention ponds, detention ponds, cisterns, rooftop retention systems, green roof, permeable pavement

Knowledge

Reference Code	Learning Outcomes and Objectives
C-12.04.01L	demonstrate knowledge of rainwater and **stormwater management systems**, their components, characteristics, applications and operation
a.	identify rainwater and **stormwater management systems**, and describe their characteristics and applications
b.	identify **rainwater and stormwater harvesting components**, and describe their characteristics, applications and operation
c.	identify **rainwater and stormwater retention systems**, and describe their characteristics, applications and operation
d.	describe operating principles of rainwater and **stormwater management systems**
e.	interpret information about rainwater and **stormwater management systems** found on drawings and specifications
C-12.04.02L	demonstrate knowledge of procedures to install rainwater and **stormwater management systems**
a.	identify tools and equipment used to install rainwater and **stormwater management systems**, and describe their procedures for use
b.	identify hazards and describe safe work practices to install rainwater and **stormwater management systems**
c.	describe procedures to install rainwater and **stormwater management systems**
C-12.04.03L	demonstrate knowledge of additional training and certification available to install rainwater and **stormwater management systems**
a.	identify additional training and certification available to install rainwater and **stormwater management systems**

Reference Code	Learning Outcomes and Objectives
C-12.04.04L	demonstrate knowledge of regulatory requirements for rainwater and **stormwater management systems**
a.	identify codes, standards and regulations for rainwater and **stormwater management systems**
C-12.04.05L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	identify practices that contribute to reducing carbon emissions

Range of Variables (include, but not limited to)

stormwater management systems: rooftop gardens, catch basins, bioswales, bioretention ponds, retention ponds, detention ponds, cisterns, rooftop retention systems, engineered wetlands, rain gardens, permeable pavement

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

rainwater and stormwater retention systems: retention ponds, detention ponds, cisterns, rooftop retention systems, green roof, permeable pavement

C-12.05 Installs erosion control

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
C-12.05.01P	select and use tools and equipment	tools and equipment are selected and used according to task and manufacturers' specifications
C-12.05.02P	move **erosion control materials**	**erosion control materials** are moved into desired location according to drawings, specifications, CLS and industry practices

Reference Code	Performance Criteria	Evidence of Attainment
C-12.05.03P	place **erosion control material**	**erosion control material** is placed according to drawings, specifications, CLS and industry practices
C-12.05.04P	secure placement of **erosion control material**	**erosion control material** is secured to ensure stability according to drawings, specifications, CLS and industry practices
C-12.05.05P	verify **erosion control material** installation	**erosion control material** installation meets specifications according to CLS
C-12.05.06P	recycle or dispose of excess materials	excess materials are recycled or disposed of according to jurisdictional regulations

Range of Variables (include, but not limited to)

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

Knowledge

Reference Code	Learning Outcomes and Objectives
C-12.05.01L	demonstrate knowledge of **erosion control materials**, their characteristics and applications
a.	identify types of **erosion control materials** and describe their characteristics and applications
b.	interpret information about **erosion control materials** found on drawings and specifications
C-12.05.02L	demonstrate knowledge of procedures to install **erosion control materials**
a.	identify tools and equipment used to install **erosion control materials** and describe their procedures for use
b.	identify hazards and describe safe work practices to install **erosion control materials**
c.	describe procedures to estimate quantities of **erosion control materials** required
d.	describe procedures to install **erosion control materials**

Reference Code	Learning Outcomes and Objectives
C-12.05.03L	demonstrate knowledge of additional training and certification available to install **erosion control materials**
a.	identify additional training and certification available to install **erosion control materials**
C-12.05.04L	demonstrate knowledge of regulatory requirements for installation of **erosion control materials**
a.	identify codes, standards and regulations for installation of **erosion control materials**
C-12.05.05L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	describe procedures to recycle and dispose of excess materials
c.	identify practices that contribute to reducing carbon emissions

Range of Variables (include, but not limited to)

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

C-12.06 Installs biodiverse plantings and natural areas

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
C-12.06.01P	select tools and equipment	tools and equipment are selected according to task requirements and manufacturers' specifications
C-12.06.02P	prepare planting area	planting area is prepared according to CLS, drawings, contract documents and industry standards
C-12.06.03P	lay out plant material	plant material is laid out according to CLS, drawings and contract documents

Reference Code	Performance Criteria	Evidence of Attainment
C-12.06.04P	install plant material	plant material is installed according to CLS, drawings and contract documents
C-12.06.05P	verify installation of biodiverse plantings and natural areas	installation of biodiverse plantings and natural areas meets specifications according to CLS

Knowledge

Reference Code	Learning Outcomes and Objectives
C-12.06.01L	demonstrate knowledge of biodiverse plantings and natural areas, their characteristics, **benefits** and applications
a.	identify biodiverse plantings and natural areas, and describe their characteristics, **benefits** and applications
b.	interpret information about biodiverse plantings and natural areas found on drawings and specifications
c.	identify plant material used for biodiverse plantings and natural areas, and describe their characteristics and applications
C-12.06.02L	demonstrate knowledge of procedures to install biodiverse plantings and natural areas
a.	identify tools and equipment used to install biodiverse plantings and natural areas, and describe their procedures for use
b.	identify hazards and describe safe work practices to install biodiverse plantings and natural areas
c.	describe procedures to install biodiverse plantings and natural areas
C-12.06.03L	demonstrate knowledge of regulatory requirements for biodiverse plantings and natural areas
a.	identify codes, standards and regulations for biodiverse plantings and natural areas
C-12.06.04L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	identify practices that contribute to reducing carbon emissions

Range of Variables (include, but not limited to)

benefits (of biodiverse plantings and natural areas): animal habitat, refugia for organisms, biodiversity, psychosocial health, preservation of natural resources

Major Work Activity D - Performs landscape maintenance

Task D-13 Maintains hardscape

Task Descriptor

Landscape horticulturists are responsible for maintaining hardscapes and their features for safety and preservation. Other tradespeople may be required to complete tasks in the maintenance of hardscape such as lighting, drainage and irrigation. Jurisdictional regulations will determine the extra-low voltage permitted to be worked on by landscape horticulturists.

D-13.01 Maintains drainage systems

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
D-13.01.01P	check drains, catch basins and retention/detention ponds	operation of drains, catch basins and retention/detention ponds is checked
D-13.01.02P	inspect, clean and replace screens	screens are inspected, cleaned and replaced to avoid blockage
D-13.01.03P	remove debris from **drainage system**	debris is removed from **drainage system** to ensure optimal flow
D-13.01.04P	perform **grading** to maintain grades	grades are maintained to allow for adequate flow
D-13.01.05P	flush **drainage systems** with water	**drainage systems** are flushed with water to ensure performance of drains, catch basins and retention/detention ponds

Reference Code	Performance Criteria	Evidence of Attainment
D-13.01.06P	secure drain covers	drain covers are secured according to jurisdictional regulations and manufacturers' specifications
D-13.01.07P	winterize **drainage system**	**drainage systems** are winterized by performing **winterization procedures**

Range of Variables (include, but not limited to)

drainage systems: subsurface drainage, surface drainage, retention ponds, detention ponds, bioswales, rain barrels, cisterns

grading: rough grading, grading for drainage, finish grading

winterization procedures: cleaning, flushing, installing heating cables, adding lengths to further direct water

Knowledge

Reference Code	Learning Outcomes and Objectives
D-13.01.01L	demonstrate knowledge of procedures to protect features on site, their characteristics and applications
a.	describe how **drainage system** maintenance protects site features
b.	describe **winterization procedures** for **drainage systems**
c.	interpret documentation about site protection, **grading** and drainage
D-13.01.02L	demonstrate knowledge of procedures used to maintain **grading** and **drainage systems**
a.	identify types of **grading** and **drainage systems**
b.	identify hazards and describe safe work practices for site layout, surveying, **grading** and drainage
c.	describe procedures to maintain site **grading**
D-13.01.03L	demonstrate knowledge of maintenance of erosion and sediment control materials
a.	identify types of erosion and sediment control materials and describe their characteristics and applications
b.	describe procedures used to maintain materials used to control erosion and sedimentation

Reference Code	Learning Outcomes and Objectives
D-13.01.04L	demonstrate knowledge of regulatory requirements about site protection, **grading** and drainage
a.	identify codes, standards and regulations about site protection, **grading** and drainage
D-13.01.05L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection

Range of Variables (include, but not limited to)

drainage systems: subsurface drainage, surface drainage, retention ponds, detention ponds, bioswales, rain barrels, cisterns

winterization procedures: cleaning, flushing, installing heating cables, adding lengths to further direct water

grading: rough grading, grading for drainage, finish grading

D-13.02 Maintains landscape structures

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
D-13.02.01P	select and use tools and equipment	tools and equipment are selected and used according to task and manufacturers' specifications
D-13.02.02P	inspect **landscape structures** for **damage and defects**	**landscape structures** are inspected, and **damage and defects** are identified
D-13.02.03P	identify hazards of **landscape structures**	hazards of **landscape structures** are identified, flagged and reported to supervisor

Reference Code	Performance Criteria	Evidence of Attainment
D-13.02.04P	clean surface areas	surface areas are cleaned according to manufacturers' specifications
D-13.02.05P	maintain integrity of surface areas	integrity of surface areas is maintained using **techniques** according to CLS and manufacturers' specifications

Range of Variables (include, but not limited to)

landscape structures: decks, pergolas, outdoor kitchens, gazebos, fences
damage and defects: compromised hardware, rotting wood, heaving, settling, spalling, mechanical damage, environmental damage, efflorescence
techniques: resealing, re-applying adhesives

Knowledge

Reference Code	Learning Outcomes and Objectives
D-13.02.01L	demonstrate knowledge of products used to maintain **landscape structures**, their characteristics and applications
a.	identify products used to maintain **landscape structures** and describe their characteristics and applications
b.	interpret information for products used to maintain **landscape structures** found on drawings and specifications
D-13.02.02L	demonstrate knowledge of procedures to maintain **landscape structures**
a.	identify tools and equipment used to maintain **landscape structures** and describe their procedures for use
b.	identify hazards and describe safe work practices to maintain **landscape structures**
c.	describe procedures to inspect **landscape structures** for **damage and defects**
d.	describe procedures to maintain **landscape structures**
e.	describe procedures to clean **landscape structures**
f.	describe **techniques** to maintain surface integrity of **landscape structures**
D-13.02.03L	demonstrate knowledge of regulatory requirements about maintenance of **landscape structures**
a.	identify codes, standards and regulations about maintenance of **landscape structures**

Reference Code	Learning Outcomes and Objectives
D-13.02.04L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	identify practices that contribute to reducing carbon emissions

Range of Variables (include, but not limited to)

landscape structures: decks, pergolas, outdoor kitchens, gazebos, fences
damage and defects: compromised hardware, rotting wood, heaving, settling, spalling, mechanical damage, environmental damage, efflorescence
techniques: resealing, re-applying adhesives

D-13.03 Maintains surface materials

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
D-13.03.01P	select and use tools and equipment	tools and equipment are selected and used according to task and manufacturers' specifications
D-13.03.02P	remove debris and undesirable growth	debris and undesirable growth is removed using tools, equipment and products
D-13.03.03P	top up jointing/polymeric sand on interlock surfaces	jointing/polymeric sand on interlock surfaces is topped up according to CLS and manufacturers' specifications
D-13.03.04P	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

Reference Code	Performance Criteria	Evidence of Attainment
D-13.03.05P	visually inspect structural integrity of hard surfaces	structural integrity of hard surfaces is inspected for **damage**
D-13.03.06P	clean **hardscape surfaces**	**hardscape surfaces** are cleaned according to Interlocking Concrete Pavement Institute/Concrete Masonry and Hardscapes Association (ICPI/CMHA), jurisdictional regulations, manufacturers' specifications and CLS to remove or remediate **undesirable conditions**

Range of Variables (include, but not limited to)

damage: cracks, frost heave, efflorescence, spalling, settling, staining

hardscape surfaces: walkways, patios, synthetic surfaces, natural stone products, driveways, parking lots

undesirable conditions: algae, efflorescence, weeds, debris, stains

Knowledge

Reference Code	Learning Outcomes and Objectives
D-13.03.01L	demonstrate knowledge of **hardscape surfaces**, their components, characteristics and applications
a.	identify types of **hardscape surfaces** and describe their characteristics and applications
b.	interpret information about **hardscape surfaces** found on drawings and specifications
D-13.03.02L	demonstrate knowledge of procedures to maintain **hardscape surfaces**
a.	identify tools and equipment used to maintain **hardscape surfaces** and describe their procedures for use
b.	identify hazards and describe safe work practices to maintain **hardscape surfaces**
c.	describe procedures to inspect **hardscape surfaces**
d.	describe procedures to maintain **hardscape surfaces**
e.	describe procedures to clean **hardscape surfaces**

Reference Code	Learning Outcomes and Objectives
D-13.03.03L	demonstrate knowledge of regulatory requirements about maintenance of **hardscape surfaces**
a.	identify codes, standards and regulations about **hardscape surfaces**
D-13.03.04L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection

Range of Variables (include, but not limited to)

hardscape surfaces: walkways, patios, synthetic surfaces, natural stone products, driveways, parking lots

D-13.04 Maintains steps and retaining walls

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
D-13.04.01P	select and use tools and equipment	tools and equipment are selected and used according to task and manufacturers' specifications
D-13.04.02P	inspect **steps and retaining walls**	**steps and retaining walls** are inspected to identify **defects** that require remediation
D-13.04.03P	identify hazards of **steps and retaining walls**	hazards of **steps and retaining walls** are identified, flagged and reported to supervisor
D-13.04.04P	clean **steps and retaining walls** to remove or remediate **undesirable conditions**	**steps and retaining walls** are cleaned according to jurisdictional regulations, manufacturers' specifications and CLS

Reference Code	Performance Criteria	Evidence of Attainment
D-13.04.05P	top up jointing/polymeric sand on interlock surfaces	jointing/polymeric sand on interlock surfaces is topped up according to manufacturers' specifications
D-13.04.06P	apply sealants or stains to prevent deterioration in **steps and retaining walls**	sealants or stains are applied to prevent deterioration in **steps and retaining walls** according to manufacturers' specifications

Range of Variables (include, but not limited to)

steps and retaining walls: natural stone, porcelain and modular precast concrete landscape wall units; natural stone pavers and modular precast concrete landscape pavers and slabs; poured concrete features; landscape wood features

defects: structural defects, loose and misaligned components, blocked drainage system outlets

undesirable conditions: algae, efflorescence, weeds, debris

Knowledge

Reference Code	Learning Outcomes and Objectives
D-13.04.01L	demonstrate knowledge of **steps and retaining walls**, their characteristics and applications
a.	identify types of **steps and retaining walls** and describe their characteristics and applications
b.	identify types of jointing/polymeric sand, sealants and stains used to maintain **steps and retaining walls**, and describe their characteristics and applications
c.	interpret information about **steps and retaining walls** found on drawings and specifications
D-13.04.02L	demonstrate knowledge of procedures to maintain **steps and retaining walls**
a.	identify tools and equipment used to maintain **steps and retaining walls**, and describe their procedures for use
b.	identify hazards and describe safe work practices to maintain **steps and retaining walls**
c.	describe procedures to maintain **steps and retaining walls**
d.	identify types of **defects** and **undesirable conditions** needing remediation

Reference Code	Learning Outcomes and Objectives
D-13.04.03L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection

Range of Variables (include, but not limited to)

steps and retaining walls: natural stone, porcelain and modular precast concrete landscape wall units; natural stone pavers and modular precast concrete landscape pavers and slabs poured concrete features, landscape wood features

defects: structural defects, loose and misaligned components, blocked drainage system outlets

undesirable conditions: algae, efflorescence, weeds, debris

D-13.05 Maintains irrigation systems

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
D-13.05.01P	select and use tools and equipment	tools and equipment are selected and used according to task and manufacturers' specifications
D-13.05.02P	start up **irrigation system** and **components**	start-up of **irrigation system** and **components** is performed by charging and running system through test cycle
D-13.05.03P	determine functioning of **irrigation system**	functioning of **irrigation system** is determined by visual site inspection
D-13.05.04P	identify, troubleshoot and repair problems	problems with **irrigation system** are identified and repaired
D-13.05.05P	visually inspect and adjust **irrigation system components**	**irrigation system components** are adjusted according to manufacturers' specifications, industry standards and site requirements

Reference Code	Performance Criteria	Evidence of Attainment
D-13.05.06P	identify **damage**	**damage** is identified
D-13.05.07P	adjust irrigation controllers	irrigation controllers are adjusted according to environmental and site conditions, and jurisdictional regulations
D-13.05.08P	clean and clear sensors	sensors are cleaned and cleared to ensure optimum operation according to manufacturers' specifications
D-13.05.09P	winterize **irrigation system**	**irrigation system** is winterized according to manufacturers' specifications and industry standards

Range of Variables (include, but not limited to)

irrigation systems: drip/low water volume, sprinkler, in-ground, above-ground
irrigation system components: screens, heads, pipes, wires, filters, valves, fittings, controller, rain sensor
damage: clogging, cracks, cuts, severs, corroded wiring

Knowledge

Reference Code	Learning Outcomes and Objectives
D-13.05.01L	demonstrate knowledge of **irrigation systems**, their **components**, characteristics, applications and operation
a.	identify **irrigation systems** and describe their characteristics and applications
b.	describe operating principles of **irrigation systems** and their **components**
c.	interpret information about **irrigation systems** and their **components** found on drawings and specifications
d.	identify water sources for irrigation and describe **considerations and procedures for determining water quality and availability**
D-13.05.02L	demonstrate knowledge of **procedures to maintain irrigation systems and their components**
a.	identify tools and equipment used to maintain **irrigation systems** and their **components**, and describe their procedures for use
b.	identify hazards and describe safe work practices to maintain **irrigation systems** and their **components**

Reference Code	Learning Outcomes and Objectives
c.	describe procedures to inspect and test **irrigation systems** and their **components**
d.	describe procedures to maintain, repair and replace **irrigation systems** and their **components**
e.	identify **factors that determine irrigation rates and methods**
D-13.05.03L	demonstrate knowledge of regulatory requirements for maintenance of **irrigation systems**
a.	identify codes, standards and regulations for maintenance of **irrigation systems**
D-13.05.04L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection

Range of Variables (include, but not limited to)

irrigation systems: drip/low water volume, sprinkler, in-ground, above-ground

irrigation system components: screens, heads, pipes, wires, filters, valves, fittings, controller, rain sensor

damage: clogging, cracks, cuts, severs, corroded wiring

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

procedures to maintain irrigation systems and their components: spring start-up, seasonal operation, winterizing

factors that determine irrigation rates and methods: plant material (growth stage, mature size, water use rate), root zone assessment, soil/water relationship, site conditions, application (time, rate, duration), evapo-transpiration rates, age and condition of system and components

D-13.06 Maintains water features

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
D-13.06.01P	select and use tools and equipment	tools and equipment are selected and used according to task and manufacturers' specifications
D-13.06.02P	inspect water features	water features are inspected for **defects**
D-13.06.03P	prime systems and test pumps	systems are primed to start up operation for season, and pumps are replaced when required
D-13.06.04P	set and reset timers	timers are set and reset according to manufacturers' specifications
D-13.06.05P	drain and refill features for seasonal maintenance	features are drained and refilled according to site requirements, industry standards and jurisdictional regulations
D-13.06.06P	clean **components**	**components** are cleaned according to manufacturers' specifications
D-13.06.07P	run systems to ensure functioning	systems are run to confirm function according to manufacturers' specifications
D-13.06.08P	inspect water for **conditions**, and mitigate and remediate **conditions**	**conditions** of water are identified by visual inspection, and mitigated and remediated according to industry standards
D-13.06.09P	**test** water	water is **tested** for optimal function of water feature
D-13.06.10P	test ground fault circuit interrupter (GFCI)	GFCI are tested according to Canadian Standards Association (CSA)

Reference Code	Performance Criteria	Evidence of Attainment
D-13.06.11P	clean water features	water features are cleaned with aquatic products according to manufacturers' specifications and contract documents
D-13.06.12P	remove and protect plants and fish during winter or when cleaning features	plants and fish are removed and protected during winter, or when cleaning features, according to conditions and species requirements
D-13.06.13P	winterize water features	water features are winterized according to environmental conditions and type of feature

Range of Variables (include, but not limited to)

defects: cracks, leaks, plugged filters, faulty gaskets and seals
components: filters, screens, nozzles, pumps, skimmers, liners
conditions (of water): clarity, algae, debris, water levels
tests (water): pH levels, nutrient level, bacteria, oxygen

Knowledge

Reference Code	Learning Outcomes and Objectives
D-13.06.01L	demonstrate knowledge of water features, their **components**, characteristics, applications and operation
a.	identify types of water features and their **components**, and describe their characteristics and applications
b.	describe operating principles of water features and their **components**
c.	interpret information about water features found on drawings and specifications
D-13.06.02L	demonstrate knowledge of procedures to maintain water features and their **components**
a.	identify tools and equipment used to maintain water features and describe their procedures for use
b.	identify hazards and describe safe work practices to maintain water features
c.	describe procedures to maintain water features

Reference Code	Learning Outcomes and Objectives
d.	describe procedures to inspect water features
e.	describe procedures to **test** water
D-13.06.03L	demonstrate knowledge of regulatory requirements for water features
a.	identify codes, standards and regulations for water features
D-13.06.04L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection

Range of Variables (include, but not limited to)

components: filters, screens, nozzles, pumps, skimmers, liners
tests (water): pH levels, nitrogen nutrient level, bacteria, oxygen

D-13.07 Maintains extra-low voltage landscape lighting and other extra-low voltage electrical systems

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
D-13.07.01P	select and use tools and equipment	tools and equipment are selected and used according to task and manufacturers' specifications
D-13.07.02P	turn on systems	systems are turned on to detect defects
D-13.07.03P	visually inspect **extra-low voltage lighting components** and **other extra-low voltage electrical systems**, and repair and replace	**extra-low voltage lighting components** and **other extra-low voltage electrical systems** are visually inspected, repaired and replaced according to manufacturers' specifications

Reference Code	Performance Criteria	Evidence of Attainment
D-13.07.04P	repair extra-low voltage cable	extra-low voltage cable is repaired according to manufacturers' specifications and industry standards
D-13.07.05P	check and adjust lighting coverage and positioning	lighting coverage and positioning is checked and adjusted according to original design goals
D-13.07.06P	clean and remove debris from **extra-low voltage lighting components**	**extra-low voltage lighting components** are cleaned and debris removed to ensure optimum operation according to manufacturers' specifications
D-13.07.07P	check light timing and adjust program	light timing is checked, and program is adjusted according to seasonal and functional requirements
D-13.07.08P	adjust voltage levels	voltage levels are adjusted to meet original design goals

Range of Variables (include, but not limited to)

extra-low voltage lighting components: lamps, fuses, sensors, fixtures, transformers, connectors, solar panels, wires

other extra-low voltage electrical systems: speakers, security systems, pet management wiring, wiring for autonomous mowers, aquatic lighting, wiring for irrigation systems

Knowledge

Reference Code	Learning Outcomes and Objectives
D-13.07.01L	demonstrate knowledge of **extra-low voltage lighting components** and **other extra-low voltage electrical systems**, their characteristics, applications and operation
a.	identify types of **extra-low voltage lighting components** and **other extra-low voltage electrical systems**, and describe their characteristics and applications
b.	describe operating principles of **extra-low voltage lighting components** and **other extra-low voltage electrical systems**
c.	interpret information about **extra-low voltage lighting components** and **other extra-low voltage electrical systems** found on drawings and specifications

Reference Code	Learning Outcomes and Objectives
D-13.07.02L	demonstrate knowledge of procedures to maintain **extra-low voltage lighting components** and **other extra-low voltage electrical systems**
a.	identify tools and equipment used to maintain **extra-low voltage lighting components** and **other extra-low voltage electrical systems**, and describe their procedures for use
b.	identify hazards and describe safe work practices to maintain **extra-low voltage lighting components** and **other extra-low voltage electrical systems**
c.	describe procedures to inspect **extra-low voltage lighting components** and **other extra-low voltage electrical systems**
d.	describe procedures to maintain, repair and replace **extra-low voltage lighting components** and **other extra-low voltage electrical systems**
D-13.07.03L	demonstrate knowledge of regulatory requirements for **extra-low voltage lighting components** and **other extra-low voltage electrical systems**
a.	identify codes, standards and regulations for **extra-low voltage lighting components** and **other extra-low voltage electrical systems**
D-13.07.04L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection

Range of Variables (include, but not limited to)

extra-low voltage lighting components: lamps, fuses, sensors, fixtures, transformers, connectors, solar panels, wires

other extra-low voltage electrical systems: speakers, security systems, pet management wiring, wiring for autonomous mowers, aquatic lighting, wiring for irrigation systems

D-13.08 Practices snow and ice management within landscaping

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
D-13.08.01P	select and use **tools and equipment**	**tools and equipment** are selected and used according to industry standards and manufacturers' specifications
D-13.08.02P	determine snow storage locations and removal requirements	snow storage locations and removal requirements are determined according to contract documents and to preserve landscape elements
D-13.08.03P	clear snow	snow is cleared according to contract documents while preserving landscape elements
D-13.08.04P	apply ice management products	ice management products are applied according to contract documents, manufacturers' specifications, industry standards and jurisdictional regulations and to preserve landscape elements
D-13.08.05P	install snow fence and snow markers	snow fence and snow markers are installed according to industry standards
D-13.08.06P	install wind breaks	wind breaks are installed according to industry standards
D-13.08.07P	monitor weather conditions for precipitation and wind	weather conditions are monitored to inform snow and ice management strategy

Range of Variables (include, but not limited to)

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

Knowledge

Reference Code	Learning Outcomes and Objectives
D-13.08.01L	demonstrate knowledge of snow and ice management, their characteristics and applications
a.	identify types of products used for snow and ice management, and describe their characteristics and applications
b.	interpret information about snow and ice management found on drawings and specifications
D-13.08.02L	demonstrate knowledge of procedures and practices to manage snow and ice
a.	identify **tools and equipment** used to manage snow and ice, and describe their procedures for use
b.	identify power sources for snow and ice management equipment
c.	identify hazards and describe safe work practices for snow and ice management and products
d.	describe procedures to manage snow and ice
e.	identify sources used to gather weather information
f.	describe impact of snow and ice management practices and products on plants and landscape features
D-13.08.03L	demonstrate knowledge of regulatory requirements about snow and ice management
a.	identify codes, standards and regulations about snow and ice management
D-13.08.04L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	identify practices that contribute to reducing carbon emissions
c.	describe implications of snow and ice management on environmental stewardship

Range of Variables (include, but not limited to)

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

D-13.09 Repairs hardscape

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
D-13.09.01P	select and use tools and equipment	tools and equipment are selected and used according to task and manufacturers' specifications
D-13.09.02P	perform minor repairs to drainage systems	minor repairs to drainage systems are performed to fix **drainage issues** according to CLS
D-13.09.03P	visually inspect structural integrity of **hardscape surfaces**	structural integrity of **hardscape surfaces** is inspected for **damage** according to CLS
D-13.09.04P	repair **damage** to **aggregate-based surfaces**	**damage** to **aggregate-based surfaces** is repaired according to CLS
D-13.09.05P	repair **damage** to **hardscape surfaces**	**damage** to **hardscape surfaces** is repaired according to CLS
D-13.09.06P	repair and replace faulty and broken **water feature components**	**water feature components** are repaired and replaced according to manufacturers' specifications and CLS
D-13.09.07P	repair and replace faulty and broken **irrigation system components**	faulty and broken **irrigation system components** are repaired and replaced according to manufacturers' specifications and CLS
D-13.09.08P	repair loose caps on steps and retaining walls	loose caps on steps and retaining walls are repaired by applying adhesive according to manufacturers' specifications and CLS

Reference Code	Performance Criteria	Evidence of Attainment
D-13.09.09P	perform lift and re-lay of **hardscape surface** materials	**hardscape surfaces** with improper slope or elevation are fixed or replaced according to ICPI/CMHA, manufacturers' specifications and CLS
D-13.09.10P	perform **minor repairs to hardscape structures**	**minor repairs to hardscape structures** are performed according to jurisdictional regulations and CLS

Range of Variables (include, but not limited to)

drainage issues: damaged pipes, plugged catch basins, pooling, failure of heat lines
hardscape surfaces: structural planters, paving stone, synthetic surfaces, composite material
damage: cracks, frost heave, spalling, settling, efflorescence
aggregate-based surfaces: gravel, concrete, sand, clear stone
water feature components: filters, screens, nozzles, pumps, skimmers, liners
irrigation system components: screens, heads, pipes, wires, filters, valves, fittings
minor repairs to hardscape structures: replacing cracked stones; replacing rotting, splintering and cracked timber; levelling structures; staining or painting wood structures; applying mortar

Knowledge

Reference Code	Learning Outcomes and Objectives
D-13.09.01L	demonstrate knowledge of procedures to repair hardscapes
a.	identify tools and equipment used to repair hardscapes, and describe their procedures for use
b.	identify hazards and describe safe work practices to repair hardscapes
c.	interpret documentation about hardscape repair
d.	describe procedures to repair hardscapes
D-13.09.02L	demonstrate knowledge of regulatory requirements about hardscape repair
a.	identify codes, standards and regulations about hardscape repair
D-13.09.03L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection

Task D-14 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, maintain the integrity of the design and provide a functioning and aesthetically pleasing environment.

D-14.01 Maintains exterior softscape

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
D-14.01.01P	select and use tools and equipment	tools and equipment are selected and used according to task and manufacturers' specifications
D-14.01.02P	perform visual inspection	visual inspection is performed to identify plant health and appearance according to CLS
D-14.01.03P	irrigate plants	plants are irrigated according to plant needs
D-14.01.04P	fertilize plants	plants are fertilized according to test results and plant needs
D-14.01.05P	cultivate growing media	growing media is cultivated for ease of planting according to CLS
D-14.01.06P	perform seasonal planting, harvesting, dividing and removal of plant material and **underground storage organs**	seasonal planting, harvesting, dividing and removal of plant material and **underground storage organs** is performed according to time of year and plant requirements
D-14.01.07P	select and perform **propagation methods**	**propagation methods** are selected and performed according to time of year, plant requirements and CLS

Reference Code	Performance Criteria	Evidence of Attainment
D-14.01.08P	apply or install **seasonal protection**	**seasonal protection** is applied or installed according to CLS and manufacturers' specifications to ensure plant survival through winter
D-14.01.09P	perform hardening-off practices	hardening-off practices are performed according to CLS to ensure plant survival
D-14.01.10P	protect plants from snow, ice, wind and de-icing salt damage	plants are protected from snow, ice, wind and de-icing salt damage, and **seasonal protection** is installed
D-14.01.11P	control weeds	weeds are controlled to prevent interference with desired species
D-14.01.12P	**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-14.01.13P	edge beds	beds are edged for bed definition and weed control according to contract documents
D-14.01.14P	inspect and maintain natural and manufactured edge	natural and manufactured edges are inspected and maintained according to industry practices
D-14.01.15P	perform site cleanup	site cleanup is performed according to industry practices and contract documents
D-14.01.16P	remove staking and guying materials	staking and guying materials are removed to prevent plant damage and ensure safety according to CLS
D-14.01.17P	use IPM practices	IPM practices are used to promote plant health

Range of Variables (include, but not limited to)

underground storage organs: rhizomes, tubers, bulbs, corms, roots

propagation methods: layering, dividing, cutting, seeding

seasonal protection: anti-desiccants, geotextile fabric and burlap wrapping and binding with rope or twine, flax straw, animal protection, snow fences

mulches: composted bark, manufactured wood products, pine needles, cones, coir

Knowledge

Reference Code	Learning Outcomes and Objectives
D-14.01.01L	demonstrate knowledge of exterior softscape, their characteristics, applications and **cultural requirements**
a.	identify types of exterior softscape and describe their characteristics and applications
b.	describe **cultural requirements** of exterior softscape
c.	interpret information about exterior softscape found on drawings and specifications
D-14.01.02L	demonstrate knowledge of procedures to maintain exterior softscape
a.	identify tools and equipment used to maintain exterior softscape, and describe their procedures for use
b.	identify hazards and describe safe work practices to maintain exterior softscape
c.	describe procedures to maintain exterior softscape
d.	describe procedures and **methods** used to propagate plant material
e.	describe procedures to inspect health of exterior softscape
D-14.01.03L	demonstrate knowledge of regulatory requirements to maintain exterior softscape
a.	identify codes, standards and regulations to maintain exterior softscape
D-14.01.04L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	identify practices that contribute to carbon neutral commitments

Range of Variables (include, but not limited to)

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

propagation methods: layering, dividing, cutting, seeding

D-14.02 Maintains interior softscape

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
D-14.02.01P	select and use tools and equipment	tools and equipment are selected and used according to task and manufacturers' specifications
D-14.02.02P	perform visual inspection	visual inspection is performed to identify plant health and appearance according to CLS
D-14.02.03P	test and amend irrigation water	irrigation water is tested for quality, temperature and pH, and amended according to CLS
D-14.02.04P	irrigate and fertilize plants	plants are irrigated and fertilized according to plant needs and CLS using manual or automated methods
D-14.02.05P	prepare, amend and fertilize growing media	growing media is prepared, amended and fertilized for aeration, aesthetics and plant health according to CLS
D-14.02.06P	clean foliage and containers	foliage and containers are cleaned for aesthetics and plant health according to CLS
D-14.02.07P	replace damaged or broken containers	damaged or broken containers are replaced according to CLS
D-14.02.08P	perform seasonal plant replacement	seasonal plant replacement is performed for health and aesthetic reasons according to contract documents, industry practices and CLS
D-14.02.09P	protect furnishings and surfaces	furnishings and surfaces are protected from effects of **damaging materials** according to contract documents and CLS

Reference Code	Performance Criteria	Evidence of Attainment
D-14.02.10P	prune interior plants	interior plants are pruned for aesthetics, plant health and space restrictions according to CLS
D-14.02.11P	root prune interior plants	interior plants are root pruned for containment according to CLS
D-14.02.12P	pot and divide interior plants	interior plants are potted and divided for propagation and plant health according to CLS
D-14.02.13P	use IPM practices	IPM practices are used to promote plant health according to CLS
D-14.02.14P	move and rotate plant	plant is moved and rotated to promote uniform growth according to changing light and CLS

Range of Variables (include, but not limited to)

damaging materials: salts, fertilizers, water, plant secretions

Knowledge

Reference Code	Learning Outcomes and Objectives
D-14.02.01L	demonstrate knowledge of interior softscape, their characteristics, applications and **cultural requirements**
a.	identify types of interior softscape, and describe their characteristics and applications
b.	describe **cultural requirements** of interior softscape
c.	interpret information about interior softscape found on drawings and specifications
D-14.02.02L	demonstrate knowledge of irrigation equipment and systems, their applications and operation
a.	identify **factors** that determine irrigation rates and methods
D-14.02.03L	demonstrate knowledge of procedures to maintain interior softscape
a.	identify tools and equipment used to maintain interior softscape, and describe their procedures for use
b.	identify hazards and describe safe work practices to maintain interior softscape
c.	describe procedures to inspect interior softscape

Reference Code	Learning Outcomes and Objectives
d.	describe procedures to maintain interior softscape
e.	describe procedures to prune interior softscape
f.	identify types of fertilizers used for interior softscape, and describe their characteristics, applications and how to apply them
D-14.02.04L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	identify practices that contribute to reducing carbon emissions

Range of Variables (include, but not limited to)

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

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

D-14.03 Maintains turfgrass

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
D-14.03.01P	select and use **tools and equipment**	**tools and equipment** are selected and used according to task and manufacturers' specifications
D-14.03.02P	monitor turfgrass	turfgrass is monitored to identify **plant health characteristics** according to CLS
D-14.03.03P	irrigate turfgrass	turfgrass is irrigated according to CLS, species, environmental conditions, usage and jurisdictional regulations

Reference Code	Performance Criteria	Evidence of Attainment
D-14.03.04P	mow and trim turfgrass	turfgrass is mowed and trimmed according to usage of site, climate conditions, contract documents and CLS
D-14.03.05P	aerate turfgrass	turfgrass is aerated according to CLS, growing media analysis, turfgrass conditions, time of year, usage of site and climate conditions
D-14.03.06P	adjust pH and fertility	pH and fertility are adjusted according to CLS, soil analysis, contract documents and jurisdictional regulations
D-14.03.07P	use IPM practices and control weeds	IPM practices are used to promote plant health according to CLS, and weeds are controlled to prevent interference with desired species
D-14.03.08P	overseed turfgrass	turfgrass is overseeded for repairs, rejuvenation and introduction of new cultivars according to CLS
D-14.03.09P	top-dress turfgrass	turfgrass is top-dressed for enhancement of substrate profile and thatch control according to CLS and industry practices
D-14.03.10P	dethatch turfgrass	turfgrass is dethatched to promote optimum growth conditions
D-14.03.11P	repair turfgrass	turfgrass is repaired using sod or seed according to CLS

Range of Variables (include, but not limited to)

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

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

Knowledge

Reference Code	Learning Outcomes and Objectives
D-14.03.01L	demonstrate knowledge of turfgrass, its characteristics and applications
a.	identify turfgrass and describe its characteristics and applications
b.	interpret information about turfgrass found on drawings and specifications
D-14.03.02L	demonstrate knowledge of **procedures to maintain turfgrass**
a.	identify **tools and equipment** used to maintain turfgrass, and describe their procedures for use
b.	identify hazards and describe safe work practices to maintain turfgrass and use of **turfgrass maintenance products**
c.	describe **procedures to maintain turfgrass**
d.	identify **considerations for determining turfgrass maintenance techniques**
e.	identify possible **turfgrass problems** and describe their causes and procedures to correct them
f.	identify types of **turfgrass maintenance products** and describe their characteristics and applications
D-14.03.03L	demonstrate knowledge of training and licensing requirements for maintaining turfgrass
a.	identify training and licensing requirements for maintaining turfgrass
D-14.03.04L	demonstrate knowledge of regulatory requirements for **turfgrass maintenance products**
a.	identify codes, standards and regulations for **turfgrass maintenance products**
D-14.03.05L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	identify practices that contribute to reducing carbon emissions

Range of Variables (include, but not limited to)

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

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

turfgrass maintenance products: fertilizers, lime, pest control products, top-dressing materials, plant health products (e.g., plant growth regulators, acidifiers, biostimulants, micronutrient supplements, wetting agents)

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

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

D-14.04 Repairs softscape

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
D-14.04.01P	select and use tools and equipment	tools and equipment are selected and used according to task
D-14.04.02P	perform **damaged plant material management**	**damaged plant material management** is performed according to plant requirements, CLS and industry practices
D-14.04.03P	replace dead, damaged or diseased interior and exterior plants	dead, damaged or diseased interior and exterior plants are replaced according to CLS and contract documents
D-14.04.04P	repair natural and **manufactured edges**	natural and **manufactured edges** are repaired according to CLS
D-14.04.05P	repair and adjust staking and guying materials	staking and guying materials are repaired and adjusted according to CLS to prevent plant damage
D-14.04.06P	repair grading and drainage	grading and drainage are repaired according to CLS

Reference Code	Performance Criteria	Evidence of Attainment
D-14.04.07P	remediate and fertilize non-viable growing media	non-viable growing media is remediated and fertilized according to test results and CLS
D-14.04.08P	repair organic and inorganic mulch	organic and inorganic mulch is repaired by removing debris, cleaning, replenishing and re-leveling according to CLS

Range of Variables (include, but not limited to)

damaged plant material management: cabling, staking, bracing, applying anti-desiccants, pruning, amending soils

manufactured edges: brick, plastic, aluminum, lumber

Knowledge

Reference Code	Learning Outcomes and Objectives
D-14.04.01L	demonstrate knowledge of procedures to repair softscapes
a.	identify tools and equipment used to repair softscapes, and describe their procedures for use
b.	identify hazards and describe safe work practices to repair softscapes
c.	describe procedures to repair softscapes
D-14.04.02L	demonstrate knowledge of regulatory requirements to repair softscapes
a.	identify codes, standards and regulations to repair softscapes
D-14.04.03L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	identify practices that contribute to reducing carbon emissions

Task D-15 Maintains green infrastructure systems

Task Descriptor

Green infrastructure systems are planned and managed technologies that mitigate pollution and provide ecosystems that support healthy living. Landscape horticulturists are responsible for maintaining green infrastructure to prolong the integrity of the systems.

D-15.01 Maintains green roofs

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
D-15.01.01P	select and use tools and equipment	tools and equipment are selected and used according to industry practices and manufacturers' specifications
D-15.01.02P	inspect **non-horticultural elements**	**non-horticultural elements** are inspected to prevent impaired drainage, and damage is reported to supervisor according to CLS
D-15.01.03P	maintain **non-horticultural elements**	**non-horticultural elements** are maintained to prevent excess loading and promote plant health according to CLS
D-15.01.04P	remove debris	debris is removed to avoid interference with plant growth according to CLS
D-15.01.05P	monitor sediment	sediment is monitored and removed as required according to CLS
D-15.01.06P	control weeds	weeds are controlled to prevent interference with desired species according to CLS
D-15.01.07P	use IPM practices	IPM practices are used to protect plant health according to CLS

Reference Code	Performance Criteria	Evidence of Attainment
D-15.01.08P	apply fertilizer	fertilizer is applied as recommended by soil or water testing according to jurisdictional regulations and CLS
D-15.01.09P	irrigate green roofs	green roofs are irrigated according to plant requirements, jurisdictional requirements and CLS
D-15.01.10P	comply with working at heights and other safe work procedures	working at heights and other safe work procedures are followed according to jurisdictional regulations and company policies
D-15.01.11P	monitor green roof for plant coverage	plant coverage is monitored and replaced as required according to CLS
D-15.01.12P	inspect green roofs for leaks	green roofs are inspected for leaks and issues are reported to supervisor according to CLS

Range of Variables (include, but not limited to)

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

Knowledge

Reference Code	Learning Outcomes and Objectives
D-15.01.01L	demonstrate knowledge of green roofs, their **components**, characteristics and applications
a.	identify green roofs and describe their characteristics and applications
b.	interpret information about green roofs found on drawings and specifications
c.	describe differences between extensive and intensive green roofs
d.	describe uses and functionality of different systems relating to green roofs
e.	describe concept of structural loads relating to green roof systems
f.	identify types of plants used on green roofs and describe their characteristics and applications

Reference Code	Learning Outcomes and Objectives
D-15.01.02L	demonstrate knowledge of procedures to maintain green roofs
a.	identify tools and equipment used to maintain green roofs and describe their procedures for use
b.	identify hazards and describe safe work practices to maintain green roofs
c.	describe procedures to maintain green roofs
d.	describe procedures to inspect green roofs
D-15.01.03L	demonstrate knowledge of **training and certification requirements** for green roofs
a.	identify training and certification requirements for green roofs
D-15.01.04L	demonstrate knowledge of regulatory requirements for green roofs
a.	identify codes, standards and regulations for green roofs
b.	describe fall protection procedures and regulations
D-15.01.05L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	identify practices that contribute to reducing carbon emissions

Range of Variables (include, but not limited to)

components (green roofs): vegetation, growing media, water retention mats, membrane, drainage, structural support, irrigation systems

training and certification requirements: working at heights, access equipment certification, manufacturer-specific certification, Green Roof Professional (GRP)

D-15.02 Maintains green walls

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
D-15.02.01P	select and use tools and equipment	tools and equipment are selected and used according to industry practices and manufacturers' specifications
D-15.02.02P	inspect **non-horticultural elements**	**non-horticultural elements** are inspected to prevent impaired drainage, and damage is reported to supervisor according to CLS and manufacturers' specifications
D-15.02.03P	maintain **non-horticultural elements**	**non-horticultural elements** are maintained to prevent excess loading and promote plant health
D-15.02.04P	remove debris	debris is removed to maintain healthy plant growth
D-15.02.05P	monitor sediment	sediment is monitored and removed as required
D-15.02.06P	control weeds	weeds are controlled to prevent interference with desired species
D-15.02.07P	use IPM practices	IPM practices are used to protect plant health according to CLS, manufacturers' specifications and jurisdictional regulations
D-15.02.08P	apply fertilizer	fertilizer is applied as recommended by soil or water testing according to jurisdictional regulations
D-15.02.09P	irrigate green walls	green walls are irrigated according to plant requirements, CLS and jurisdictional requirements
D-15.02.10P	comply with working at heights and other safe work procedures	working at heights and other safe work procedures are followed according to jurisdictional regulations and company policies

Reference Code	Performance Criteria	Evidence of Attainment
D-15.02.11P	monitor green wall for plant coverage	plant coverage is monitored and replaced as required by contract documents
D-15.02.12P	inspect green walls for leaks	green walls are inspected for leaks and issues are reported to supervisor

Range of Variables (include, but not limited to)

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

Knowledge

Reference Code	Learning Outcomes and Objectives
D-15.02.01L	demonstrate knowledge of green walls, their **components**, characteristics and applications
a.	identify green walls and describe their characteristics and applications
b.	interpret information about green walls found on drawings and specifications
c.	describe uses and functionality of different systems relating to green walls
d.	describe concept of structural loads relating to green wall systems
e.	identify types of plants used on green walls and describe their characteristics and applications
D-15.02.02L	demonstrate knowledge of procedures to maintain green walls
a.	identify tools and equipment used to maintain green walls and describe their procedures for use
b.	identify hazards and describe safe work practices to maintain green walls
c.	describe procedures to maintain green walls
d.	describe procedures to inspect green walls
D-15.02.03L	demonstrate knowledge of **training and certification requirements** for green walls
a.	identify **training and certification requirements** for green walls
D-15.02.04L	demonstrate knowledge of regulatory requirements for green walls
a.	identify codes, standards and regulations for green walls
b.	describe fall protection procedures and regulations

Reference Code	Learning Outcomes and Objectives
D-15.02.05L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	identify practices that contribute to reducing carbon emissions

Range of Variables (include, but not limited to)

components (green walls): vegetation, growing media, water retention mats, membrane, drainage, structural support, irrigation systems

training and certification requirements: working at heights, access equipment certification, manufacturer-specific certification

D-15.03 Maintains rainwater and stormwater management systems

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
D-15.03.01P	inspect **components** of rainwater and stormwater management systems	**components** of rainwater and stormwater management systems are inspected for blockage, unwanted leaks and sedimentation
D-15.03.02P	remove debris and sedimentation	debris and sedimentation are removed
D-15.03.03P	control weeds	weeds are controlled to prevent interference with desired species
D-15.03.04P	monitor plants	plants are monitored for health
D-15.03.05P	test water	water is tested for contaminants
D-15.03.06P	monitor growing media for signs of erosion	growing media is monitored for erosion signs
D-15.03.07P	**maintain** plants for system function	plants are **maintained** for system function
D-15.03.08P	apply mulch	mulch is applied according to site requirements

Reference Code	Performance Criteria	Evidence of Attainment
D-15.03.09P	monitor for standing water	standing water is monitored according to jurisdictional regulations
D-15.03.10P	inspect and maintain pumps	pumps are inspected and maintained according to manufacturers' specifications

Range of Variables (include, but not limited to)

components (rainwater and stormwater management systems): mesh, filters, basins, inlet channels, outlet channels, pipes, pumps, cisterns, soil cells, plants, water harvesting crates, growing media

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

Knowledge

Reference Code	Learning Outcomes and Objectives
D-15.03.01L	demonstrate knowledge of rainwater and stormwater management systems, their **components**, characteristics, applications and operation
a.	identify rainwater and stormwater management systems and their **components**, and describe their characteristics and applications
b.	describe concepts, principles and interactions of blue and green infrastructure
c.	describe operating principles of rainwater and stormwater management systems and their **components**
d.	interpret information about rainwater and stormwater management systems found on drawings and specifications
D-15.03.02L	demonstrate knowledge of procedures to maintain rainwater and stormwater management systems and their **components**
a.	identify tools and equipment used to maintain rainwater and stormwater management systems and their **components**, and describe their procedures for use
b.	identify hazards and describe safe work practices to maintain rainwater and stormwater management systems and their **components**
c.	describe procedures to maintain rainwater and stormwater management systems and their **components**
d.	describe procedures to inspect rainwater and stormwater management systems and their **components**

Reference Code	Learning Outcomes and Objectives
e.	describe procedures to test rainwater and stormwater management systems and their **components**
f.	interpret test results relating to water and soil quality
g.	identify signs of erosion
h.	describe soil water relationship with respect to sedimentation
i.	describe plant maintenance requirements in relation to their function within rainwater and stormwater management systems
D-15.03.03L	demonstrate knowledge of regulatory requirements for rainwater and stormwater management systems
a.	identify codes, standards and regulations for rainwater and stormwater management systems
D-15.03.04L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	identify practices that promote responsible water use and conservation

Range of Variables (include, but not limited to)

components (rainwater and stormwater management systems): mesh, filters, basins, inlet channels, outlet channels, pipes, pumps, cisterns, soil cells, plants, water harvesting crates, growing media

D-15.04 Maintains erosion control

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
D-15.04.01P	inspect **erosion control material**	**erosion control material** is inspected to ensure functionality

Reference Code	Performance Criteria	Evidence of Attainment
D-15.04.02P	repair **erosion control material**	**erosion control material** is repaired in accordance with industry standards and manufacturers' specifications
D-15.04.03P	remove unwanted vegetation	unwanted vegetation is removed from **erosion control material**

Range of Variables (include, but not limited to)

erosion control material: roll-type material (tarps, mats, blankets), aggregates, plant material (living and non-living), silt fences, boulders, wattles

Knowledge

Reference Code	Learning Outcomes and Objectives
D-15.04.01L	demonstrate knowledge of **erosion control material**, their characteristics and applications
a.	identify **erosion control material**, and describe their characteristics and applications
b.	interpret information about **erosion control material** found on drawings and specifications
D-15.04.02L	demonstrate knowledge of procedures to maintain erosion control
a.	identify tools and equipment used to maintain **erosion control material**, and describe their procedures for use
b.	identify hazards and describe safe work practices to maintain **erosion control material**
c.	describe procedures to maintain erosion control
d.	describe procedures to inspect **erosion control material**
e.	describe procedures to repair **erosion control material**
D-15.04.03L	demonstrate knowledge of regulatory requirements about erosion control
a.	identify codes, standards and regulations about erosion control
D-15.04.04L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	identify practices that contribute to reducing carbon emissions

Range of Variables (include, but not limited to)

erosion control material: roll-type material (tarps, mats, blankets), aggregates, plant material (living and non-living), silt fences, boulders, wattles

D-15.05 Maintains biodiverse plantings and natural areas

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
D-15.05.01P	inspect area for safe public access	safe public access is ensured by inspecting area according to jurisdictional regulations and contract documents
D-15.05.02P	monitor, control/remove and report invasive and unwanted species	invasive and unwanted species are monitored, controlled/removed and reported according to contract documents and jurisdictional regulations
D-15.05.03P	monitor plant health	plant health is monitored for pests and diseases
D-15.05.04P	maintain pathways	pathways are maintained for safe access according to contract documents
D-15.05.05P	remove debris	debris is removed
D-15.05.06P	plant vegetation	vegetation is planted according to contract documents and CLS
D-15.05.07P	monitor for **site disturbances**	**site disturbances** are monitored and reported to site supervisor
D-15.05.08P	protect vegetation from excessive damage	vegetation is protected from excessive damage by installing **protection measures**

Range of Variables (include, but not limited to)

site disturbances: erosion, vandalism, illegal camping, illegal dumping, wildlife damage
protection measures: tree guards, fencing, deterrents

Knowledge

Reference Code	Learning Outcomes and Objectives
D-15.05.01L	demonstrate knowledge of biodiverse plantings and natural areas, their characteristics and applications
a.	identify types of biodiverse plantings and natural areas, and describe their characteristics and applications
b.	describe **benefits of biodiverse plantings and natural areas**
D-15.05.02L	demonstrate knowledge of procedures to maintain biodiverse plantings and natural areas
a.	identify tools and equipment used to maintain biodiverse plantings and natural areas, and describe their procedures for use
b.	identify hazards and describe safe work practices to maintain biodiverse plantings and natural areas
c.	describe procedures to maintain biodiverse plantings and natural areas
d.	describe procedures to inspect biodiverse plantings and natural areas
D-15.05.03L	demonstrate knowledge of regulatory requirements about biodiverse plantings and natural areas
a.	identify codes, standards and regulations about biodiverse plantings and natural areas
D-15.05.04L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	identify practices that contribute to reducing carbon emissions
c.	describe environmental benefits of biodiverse plantings and natural areas

Range of Variables (include, but not limited to)

benefits of biodiverse plantings and natural areas: 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-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 Installs growing facility components (Not Common Core)

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
E-16.01.01P	select and use tools and equipment	tools and equipment are selected and used according to task and manufacturers' specifications
E-16.01.02P	install **growing facility components**	**growing facility components** are installed according to building codes, jurisdictional regulations and manufacturers' specifications
E-16.01.03P	assemble and install **amenities**	**amenities** are assembled and installed according to drawings and manufacturers' specifications
E-16.01.04P	install or assist in installation of **utilities**	**utilities** are installed according to drawings, specifications and jurisdictional regulations

Range of Variables (include, but not limited to)

growing facility components: ventilation, irrigation, fertigation, water conservation and recapture systems, heat distribution, lighting, generators, glass and plastic coverings, climate control systems, curtain systems, system controllers

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

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

Knowledge

Reference Code	Learning Outcomes and Objectives
E-16.01.01L	demonstrate knowledge of **growing facility components**, their characteristics, applications and operation
a.	identify **growing facility components** and describe their characteristics and applications
b.	describe operating principles of **growing facility components**
c.	interpret information about **growing facility components** found on drawings and specifications
d.	identify types of growing facility **amenities** and **utilities**
E-16.01.02L	demonstrate knowledge of procedures to install **growing facility components**
a.	identify tools and equipment used to install **growing facility components** and describe their procedures for use
b.	identify hazards and describe safe work practices to install **growing facility components**
c.	describe procedures to install **growing facility components**
E-16.01.03L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection

Range of Variables (include, but not limited to)

growing facility components: ventilation, irrigation, fertigation, water conservation and recapture systems, heat distribution, lighting, generators, glass and plastic coverings, climate control systems, curtain systems, system controllers

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

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

E-16.02 Operates growing facility structures and amenities (Not Common Core)

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
E-16.02.01P	inspect, troubleshoot, maintain and repair **growing facility structures**	**growing facility structures** are inspected and maintained by replacing greenhouse covers and repairing **floor surfaces**
E-16.02.02P	inspect, maintain and repair **amenities**	**amenities** are inspected for defects and maintained and repaired according to manufacturers' specifications
E-16.02.03P	use generators	generators are used for emergency back-up systems according to manufacturers' specifications
E-16.02.04P	winterize **growing facility structures**	**growing facility structures** are winterized to prevent snow buildup and ice damage

Range of Variables (include, but not limited to)

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

floor surfaces: concrete, gravel, paving stones, geo-textiles

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

Knowledge

Reference Code	Learning Outcomes and Objectives
E-16.02.01L	demonstrate knowledge of **growing facility structures** and **amenities**, their components, characteristics, applications and operation
a.	identify **growing facility structures** and **amenities**, and describe their characteristics and applications

Reference Code	Learning Outcomes and Objectives
b.	describe operating principles of **growing facility structures** and **amenities**
c.	interpret information about **growing facility structures** and **amenities** found on drawings and specifications
E-16.02.02L	demonstrate knowledge of procedures to operate **growing facility structures** and **amenities**
a.	identify tools and equipment used to operate **growing facility structures** and **amenities**, and describe their procedures for use
b.	identify hazards and describe safe work practices to operate, maintain and repair **growing facility structures** and **amenities**
c.	describe procedures to operate, maintain and repair **growing facility structures** and **amenities**
d.	describe procedures to inspect **growing facility structures** and **amenities**
E-16.02.03L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection

Range of Variables (include, but not limited to)

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

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

E-16.03 Maintains sanitary environments (Not Common Core)

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
E-16.03.01P	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

Reference Code	Performance Criteria	Evidence of Attainment
E-16.03.02P	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-16.03.03P	select cultural, physical or chemical sanitation methods	cultural, physical or chemical sanitation methods are selected to maintain sanitary environment according to industry practices and manufacturers' specifications
E-16.03.04P	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-16.03.05P	perform regular maintenance activities on areas adjacent to **growing facility structures**	regular maintenance activities on areas adjacent to **growing facility structures** are performed to manage sanitation and promote plant health

Range of Variables (include, but not limited to)

sanitation practices: hand washing, plant quarantine, inspection of new plants, use of foot baths, cleaning tools and equipment

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

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

Knowledge

Reference Code	Learning Outcomes and Objectives
E-16.03.01L	demonstrate knowledge of **sanitation practices** used to maintain sanitary environments, their characteristics and applications
a.	identify **sanitation practices** and describe their characteristics and applications

Reference Code	Learning Outcomes and Objectives
E-16.03.02L	demonstrate knowledge of procedures to maintain sanitary environments
a.	identify tools, equipment and products used to maintain sanitary environments and describe their procedures for use
b.	identify hazards and describe safe work practices to maintain sanitary environments
c.	describe procedures to maintain sanitary environments
d.	describe procedures to inspect **growing facility structures** and **amenities**
E-16.03.03L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection

Range of Variables (include, but not limited to)

sanitation practices: hand washing, plant quarantine, inspection of new plants, use of foot baths, cleaning tools and equipment

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

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

E-16.04 Operates climate control systems (Not Common Core)

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
E-16.04.01P	interpret results of **climate monitoring devices**	results of **climate monitoring devices** are interpreted to determine inside and outside climate conditions
E-16.04.02P	conduct regular inspections of growing facility structures and plants, and follow check lists	regular inspections are conducted, and check lists are followed according to industry practices

Reference Code	Performance Criteria	Evidence of Attainment
E-16.04.03P	maintain **climate control systems**	**climate control systems** are maintained according to industry practices and manufacturers' specifications to ensure efficient operation
E-16.04.04P	perform troubleshooting and **basic maintenance** on heating, cooling and ventilation systems	troubleshooting and **basic maintenance** on heating, cooling and ventilation systems are performed to limit system downtime and protect crops
E-16.04.05P	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-16.04.06P	mist, flood and vent growing facility structures	growing facility structures are misted, flooded and vented to regulate humidity levels
E-16.04.07P	use shade material	shade material is used to regulate light and heat levels
E-16.04.08P	select and use artificial lights	artificial lights are selected and used to ensure adequate light levels according to crop requirements
E-16.04.09P	test and maintain emergency alarm system	emergency alarm system is tested and maintained according to manufacturers' specifications

Range of Variables (include, but not limited to)

climate monitoring devices: thermometers, hygrometers (relative humidity meters), photometers (light meters), anemometers (wind meters)

climate control systems: heating, ventilation and cooling systems, automated and computerized control systems

basic maintenance: oil changes, track adjustments, filter maintenance

Knowledge

Reference Code	Learning Outcomes and Objectives
E-16.04.01L	demonstrate knowledge of **climate control systems** and **climate monitoring devices**, their components, characteristics, applications and operation
a.	identify **climate control systems** and **climate monitoring devices**, and describe their characteristics and applications
E-16.04.02L	demonstrate knowledge of procedures to operate **climate control systems**
a.	identify tools and equipment used to operate **climate control systems** and describe their procedures for use
b.	identify hazards and describe safe work practices to operate **climate control systems**
c.	describe procedures to operate **climate control systems**
d.	describe procedures to inspect **climate control systems**
e.	describe procedures to perform **basic maintenance** on **climate control systems**
E-16.04.03L	demonstrate knowledge of regulatory requirements for operation of **climate control systems**
a.	identify codes, standards and regulations for operation of **climate control systems**
E-16.04.04L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection

Range of Variables (include, but not limited to)

climate control systems: heating, ventilation and cooling systems, automated and computerized control systems

climate monitoring devices: thermometers, hygrometers (relative humidity meters), photometers (light meters), anemometers (wind meters)

basic maintenance: oil changes, track adjustments, filter maintenance

E-16.05 Operates irrigation and fertigation systems (Not Common Core)

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
E-16.05.01P	calibrate **monitoring equipment**	**monitoring equipment** is calibrated to establish standard settings and accuracy
E-16.05.02P	interpret test results and meter readings from **monitoring equipment**	test results and meter readings are interpreted from **monitoring equipment** to determine water quality and volume
E-16.05.03P	maintain irrigation and fertigation systems	irrigation and fertigation systems are maintained to ensure efficient operation
E-16.05.04P	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-16.05.05P	perform troubleshooting and **basic repairs** on irrigation and fertigation systems	troubleshooting and **basic repairs** on irrigation and fertigation systems are performed
E-16.05.06P	inspect water retention, capture and recycling systems	water retention, capture and recycling systems are inspected to ensure that systems are functioning according to drawings, specifications, industry standards and jurisdictional regulations
E-16.05.07P	maintain water retention, capture and recycling systems	water retention, capture and recycling systems are maintained to preserve water quality according to manufacturers' specifications and jurisdictional regulations

Reference Code	Performance Criteria	Evidence of Attainment
E-16.05.08P	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 (include, but not limited to)

monitoring equipment: flow, pH and EC meters

basic repairs: repairing and replacing distribution and drip lines, nozzles and injector systems

Knowledge

Reference Code	Learning Outcomes and Objectives
E-16.05.01L	demonstrate knowledge of irrigation and fertigation systems, their components, characteristics, applications and operation
a.	identify irrigation and fertigation systems, and describe their characteristics and applications
b.	identify **monitoring equipment** and describe their characteristics and applications
c.	identify water conservation and recapture systems, and describe their characteristics and applications
d.	describe operating principles of irrigation and fertigation systems
e.	interpret information about irrigation and fertigation systems found on drawings and specifications
E-16.05.02L	demonstrate knowledge of procedures to operate irrigation and fertigation systems
a.	identify tools and equipment used to operate irrigation and fertigation systems, and describe their procedures for use
b.	identify hazards and describe safe work practices to operate irrigation and fertigation systems
c.	describe procedures to operate, inspect and maintain irrigation and fertigation systems
d.	describe procedures to winterize irrigation and fertigation systems

Reference Code	Learning Outcomes and Objectives
E-16.05.03L	demonstrate knowledge of regulatory requirements for irrigation and fertigation systems
a.	identify codes, standards and regulations for irrigation and fertigation systems
E-16.05.04L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection

Range of Variables (include, but not limited to)

monitoring equipment: flow, pH and EC meters

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 Develops greenhouse crop production plan (Not Common Core)

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

Skills

Reference Code	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

Reference Code	Performance Criteria	Evidence of Attainment
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 market demands

Range of Variables (include, but not limited to)

materials for production: soil mixes, containers, trays, fertilizers, plant growth regulators, pest and disease management products

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

Knowledge

Reference Code	Learning Outcomes and Objectives
E-17.01.01L	demonstrate knowledge of greenhouse crop production planning, their characteristics and applications
a.	describe greenhouse crop production planning schedule and activities, and describe their characteristics and applications
E-17.01.02L	demonstrate knowledge of procedures to develop greenhouse crop production plan
a.	identify growing facility capacities
b.	identify market demand
c.	determine desired saleable quantities
d.	determine quantities and **materials for production**
e.	identify **production activities**
E-17.01.03L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection

Range of Variables (include, but not limited to)

materials for production: soil mixes, containers, trays, fertilizers, plant growth regulators, pest and disease management products

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

E-17.02 Propagates greenhouse crops (Not Common Core)

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
E-17.02.01P	select and use **tools and equipment**	**tools and equipment** are used according to task, 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 **propagation methods**	**propagation methods** are performed to grow additional plants according to plant requirements
E-17.02.04P	maintain propagated materials	propagated materials are maintained until viable for transplanting, growing-on and harvesting
E-17.02.05P	label plants and complete propagation documents	plants are labelled to identify species and propagation documents are completed

Range of Variables (include, but not limited to)

tools and equipment: mechanical seeders, dibblers, watering cans, misters

seeding methods: hand seeding, mechanical seeding

propagation methods: seeding, cutting, grafting, budding, layering, dividing/separating, micro-propagation

Knowledge

Reference Code	Learning Outcomes and Objectives
E-17.02.01L	demonstrate knowledge of procedures and methods used to propagate greenhouse crops, their characteristics and applications
a.	identify greenhouse crop **propagation methods**, and describe their characteristics and applications

Reference Code	Learning Outcomes and Objectives
b.	identify **tools and equipment** used to propagate greenhouse crops and describe their procedures for use
c.	identify hazards and describe safe work practices to propagate greenhouse crops
d.	describe procedures to propagate greenhouse crops
e.	identify **seeding methods** and describe their characteristics and applications
f.	identify considerations used when selecting stock/parent plants for propagation purposes
g.	describe procedures used to maintain stock/parent plants
h.	describe procedures used to maintain post-propagated plants
E-17.02.02L	demonstrate knowledge of regulatory requirements to propagate greenhouse crops
a.	identify codes, standards and regulations to propagate greenhouse crops
E-17.02.03L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection

Range of Variables (include, but not limited to)

propagation methods: seeding, cutting, grafting, budding, layering, dividing/separating, micro-propagation

tools and equipment: mechanical seeders, dibblers, watering cans, misters

seeding methods: hand seeding, mechanical seeding

E-17.03 Transplants greenhouse crops (Not Common Core)

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
E-17.03.01P	select and use **tools and equipment**	**tools and equipment** are used according to task, 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 (include, but not limited to)

tools and equipment: mechanical transplanters, potting machines, soil batch mixers, dibblers, misters

Knowledge

Reference Code	Learning Outcomes and Objectives
E-17.03.01L	demonstrate knowledge of greenhouse crop transplantation, its characteristics and applications
a.	identify greenhouse crop transplantation and describe its characteristics and applications
E-17.03.02L	demonstrate knowledge of procedures to transplant greenhouse crops
a.	identify **tools and equipment** used to transplant greenhouse crops and describe their procedures for use
b.	identify hazards and describe safe work practices to transplant greenhouse crops
c.	describe procedures to transplant greenhouse crops
d.	identify criteria for timing transplant process
e.	identify how **environmental factors** affect transplants
E-17.03.03L	demonstrate knowledge of regulatory requirements to transplant greenhouse crops
a.	identify industry standards and regulations to transplant greenhouse crops
E-17.03.04L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection

Range of Variables (include, but not limited to)

tools and equipment: mechanical transplanters, potting machines, soil batch mixers, dibblers, misters

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

E-17.04 Grows greenhouse crops (Not Common Core)

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
E-17.04.01P	use IPM practices	IPM practices are used to promote plant health
E-17.04.02P	monitor and maintain water quality	water quality is monitored and maintained, and pH and nutrients are amended as required
E-17.04.03P	monitor crop growth	crop growth is monitored to identify health and development rate
E-17.04.04P	monitor crop health	crops are monitored for pests and disease
E-17.04.05P	apply **interventions**	**interventions** are applied to manage crop according to plant growth and health requirements
E-17.04.06P	group crops	crops are grouped according to plant requirements
E-17.04.07P	monitor growing media fertility levels	growing media fertility levels are monitored using **monitoring methods** to determine **interventions** according to plant requirements
E-17.04.08P	harden-off crops	crops are hardened-off to prepare for sale

Range of Variables (include, but not limited to)

interventions: temperature, fertility, lighting, water, pinching, spacing, leaching, potting-on, quarantining, use of plant growth regulator products, application of pest and disease control methods

monitoring methods: sampling; testing and analyzing of water, soil and tissue

Knowledge

Reference Code	Learning Outcomes and Objectives
E-17.04.01L	demonstrate knowledge of procedures to grow greenhouse crops
a.	identify hazards and describe safe work practices to grow greenhouse crops
b.	describe procedures to grow greenhouse crops
c.	define water quality requirements
d.	identify and describe cultural requirements for plant growth
e.	describe characteristics of plant growth and health
f.	identify and describe **environmental deficiencies**
g.	identify and describe pests and diseases
h.	identify and describe common **interventions**
i.	determine crop groupings based on plant requirements
j.	describe hardening-off process
E-17.04.02L	demonstrate knowledge of training and certification requirements to apply regulated pesticide products
a.	identify training and certification requirements to apply regulated pesticide products
E-17.04.03L	demonstrate knowledge of regulatory requirements to grow greenhouse crops
a.	identify industry standards and regulations to grow greenhouse crops
E-17.04.04L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection

Range of Variables (include, but not limited to)

environmental deficiencies: excess or insufficient light, fertilizer/nutrients, temperature, water, humidity

interventions: temperature, fertility, lighting, water, pinching, spacing, leaching, potting-on, quarantining, use of plant growth regulator products, application of pest and disease control methods

E-17.05 Harvests greenhouse crops (Not Common Core)

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
E-17.05.01P	use IPM practices	IPM practices are used to promote plant health
E-17.05.02P	select crop	crops are selected according to maturity and quality to fill sales orders
E-17.05.03P	inspect plant material before shipping	plant material is inspected before shipping to ensure it is free of pests and disease
E-17.05.04P	label plants	plants are labelled for marketing, species, cultural practices and retail price
E-17.05.05P	clean and prune harvested plants	harvested plants are cleaned and pruned to prepare for shipping

Knowledge

Reference Code	Learning Outcomes and Objectives
E-17.05.01L	demonstrate knowledge of **procedures to harvest greenhouse crops**
a.	identify hazards and describe safe work practices to harvest greenhouse crops
b.	describe **procedures to harvest greenhouse crops**
c.	describe procedures to inspect plant material
E-17.05.02L	demonstrate knowledge of regulatory requirements to harvest greenhouse crops
a.	identify industry standards to harvest greenhouse crops
E-17.05.03L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection

Range of Variables (include, but not limited to)

procedures to harvest greenhouse crops: storing, grading, labelling, cleaning, pruning

E-17.06 Ships greenhouse crops (Not Common Core)

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

Skills

Reference Code	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 completed according to policies, regulations and industry practices

Range of Variables (include, but not limited to)

packaging materials: boxes, nursery carts, pallets, trays, packing material for moisture and temperature regulation, moist mulch (compost, straw), dry mulch (plastic sheets)

equipment: forklifts, loaders, tractors

documentation: labels, phytosanitary documents, legislative and regulatory documents, movement certificates, import/export documents, packing lists, care and maintenance instructions

Knowledge

Reference Code	Learning Outcomes and Objectives
E-17.06.01L	demonstrate knowledge of procedures to ship greenhouse crops
a.	identify **equipment** used to load greenhouse crops for shipping and describe their procedures for use
b.	identify hazards and describe safe work practices to ship greenhouse crops
c.	describe procedures to ship greenhouse crops
d.	describe procedures for packing and loading harvested crops for transportation
e.	describe climate control requirements during transportation
f.	identify **documentation** required for shipping harvested crops and its function
g.	identify **equipment** used for loading greenhouse crops for shipping and describe their procedures for use
h.	identify **packaging materials** used for packing and protecting greenhouse crops for shipping
i.	identify **covering materials** used for protecting greenhouse crops during shipping
E-17.06.02L	demonstrate knowledge of training and certification requirements to operate **equipment**
a.	identify training and certification requirements to operate **equipment**
E-17.06.03L	demonstrate knowledge of regulatory requirements for shipping greenhouse crops
a.	identify regulations to operate **equipment**
b.	identify OHS regulations for shipping greenhouse crops
E-17.06.04L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	identify practices that contribute to reducing carbon emissions

Range of Variables (include, but not limited to)

equipment: forklifts, loaders, tractors

documentation: labels, phytosanitary documents, legislative and regulatory documents, movement certificates, import/export documents, packing lists, care and maintenance instructions

packaging materials: boxes, nursery carts, pallets, trays, packing material for moisture and temperature regulation, moist mulch (compost, straw), dry mulch (plastic sheets)

covering materials: 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 Develops nursery crop production plan (Not Common Core)

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

Skills

Reference Code	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 industry standards, and to meet market demand

Range of Variables (include, but not limited to)

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

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

Knowledge

Reference Code	Learning Outcomes and Objectives
E-18.01.01L	demonstrate knowledge of nursery crop production planning, their characteristics and applications
a.	describe nursery crop production planning schedule and activities, and describe their characteristics and applications
E-18.01.02L	demonstrate knowledge of procedures to develop nursery crop production plan
a.	identify growing facility capacities
b.	identify market demand
c.	determine desired saleable quantities
d.	determine quantities and **materials for field production**
e.	identify **production activities**
E-18.01.03L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection

Range of Variables (include, but not limited to)

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

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

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

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

Skills

Reference Code	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

Reference Code	Performance Criteria	Evidence of Attainment
E-18.02.02P	take cuttings, divide plants and place in planting medium	cuttings are taken, and plants are divided and placed in planting medium according to plant requirements
E-18.02.03P	graft scion wood and buds to selected rootstocks and stems	scion wood and buds are grafted to selected rootstocks and stems according to plant requirements
E-18.02.04P	maintain propagated material	propagated material is maintained until viable for transplanting, growing-on and harvesting to marketable size
E-18.02.05P	label plants and complete propagation documents	plants are labelled with **propagation information** and propagation documents are completed
E-18.02.06P	prepare fields and beds	fields and beds are prepared for **nursery activities** according to crop and site requirements
E-18.02.07P	plant out **field materials**	**field materials** are planted out according to crop requirements
E-18.02.08P	direct-seed **crops**	**crops** are direct-seeded using mechanical field seeding equipment according to crop requirements
E-18.02.09P	select growing media for container-grown plant material	growing media for container-grown plant material is selected according to crop requirements

Range of Variables (include, but not limited to)

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

Knowledge

Reference Code	Learning Outcomes and Objectives
E-18.02.01L	demonstrate knowledge of procedures and methods used to propagate field and container crops
a.	identify field and container crop **propagation methods** and describe their characteristics and applications
b.	identify tools and equipment used to propagate field and container crops, and describe their procedures for use
c.	identify hazards and describe safe work practices to propagate field and container crops
d.	describe procedures to propagate field and container crops
e.	identify considerations used when selecting stock/parent plants for propagation purposes
f.	describe procedures used to maintain stock/parent plants
g.	describe procedures used to maintain post-propagated plants
E-18.02.02L	demonstrate knowledge of regulatory requirements to propagate field and container crops
a.	identify codes, standards and regulations to propagate field and container crops
E-18.02.03L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection

Range of Variables (include, but not limited to)

propagation methods: seeding, cutting, grafting, budding, layering, dividing/separating

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

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

Skills

Reference Code	Performance Criteria	Evidence of Attainment
E-18.03.01P	select and use **tools and equipment**	**tools and equipment** are selected and used according to task, 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 in **locations**	crops are placed in **locations** 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 (include, but not limited to)

tools and equipment: mechanical transplanters, potting machines, shovels, tree spades, skid steers and their attachments, tractors

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

Knowledge

Reference Code	Learning Outcomes and Objectives
E-18.03.01L	demonstrate knowledge of field and container crop transplantation, its characteristics and applications
a.	identify field and container crop transplantation and describe its characteristics and applications
E-18.03.02L	demonstrate knowledge of procedures to transplant field and container crops
a.	identify **tools and equipment** used to transplant field and container crops and describe their procedures for use
b.	identify hazards and describe safe work practices to transplant field and container crops
c.	describe procedures to transplant field and container crops
d.	identify criteria for timing transplant process
e.	identify how **environmental factors** affect transplants
E-18.03.03L	demonstrate knowledge of regulatory requirements to transplant field and container crops
a.	identify industry standards and regulations to transplant field and container crops
E-18.03.04L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection

Range of Variables (include, but not limited to)

tools and equipment: mechanical transplanters, potting machines, shovels, tree spades, skid steers and their attachments, tractors

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

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

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

Skills

Reference Code	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 improve 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 (include, but not limited to)

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

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

methods: sampling; testing and analyzing water, soil and tissue

Knowledge

Reference Code	Learning Outcomes and Objectives
E-18.04.01L	demonstrate knowledge of procedures to grow field and container crops
a.	identify hazards and describe safe work practices to grow field and container crops
b.	describe procedures to grow field and container crops

Reference Code	Learning Outcomes and Objectives
c.	identify water quality, accessibility and supply requirements
d.	identify and describe cultural requirements for plant growth
e.	describe characteristics of plant growth and health
f.	identify and describe **environmental factors** for field and container crops
g.	identify and describe pests and diseases
h.	identify and describe common **interventions** for maintaining field and container crops
i.	determine crop groupings based on plant requirements
j.	describe hardening-off process
E-18.04.02L	demonstrate knowledge of training and certification requirements for application of regulated pesticide products
a.	identify training and certification requirements for application of regulated pesticide products
E-18.04.03L	demonstrate knowledge of regulatory requirements for growing field and container crops
a.	identify industry standards and regulations for growing field and container crops
E-18.04.04L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection

Range of Variables (include, but not limited to)

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

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

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

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

Skills

Reference Code	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 industry practices, plant requirements and CLS
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 CLS and plant requirements
E-18.05.06P	grade plant material	plant material is graded according to size, conditions and CLS
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 confirm the required number and to verify that they are free of diseases and pests

Reference Code	Performance Criteria	Evidence of Attainment
E-18.05.11P	harvest sod crop	sod crop is harvested using mechanical sod cutters according to CLS
E-18.05.12P	document grade, inventory and type	grade, inventory and type are documented according to company policies

Range of Variables (include, but not limited to)

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

Knowledge

Reference Code	Learning Outcomes and Objectives
E-18.05.01L	demonstrate knowledge of **procedures to harvest field and container crops**
a.	identify hazards and describe safe work practices to harvest field and container crops
b.	describe **procedures to harvest field and container crops**
c.	describe procedures to inspect plant material
E-18.05.02L	demonstrate knowledge of regulatory requirements to harvest field and container crops
a.	identify industry standards and regulations to harvest field and container crops
E-18.05.03L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection

Range of Variables (include, but not limited to)

procedures to harvest field and container crops: grading, sorting, labelling

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

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

Skills

Reference Code	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** for shipping	**documentation** for shipping is completed 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 according to CLS
E-18.06.06P	secure loads	loads are secured using **covering materials** according to CLS, plant requirements, environmental conditions and jurisdictional regulations

Range of Variables (include, but not limited to)

documentation: labels, phytosanitary documents, legislative and regulatory documents, movement certificate, import/export documents, packing list, care and maintenance instructions

packaging materials: boxes, nursery carts, pallets, trays, packing material for moisture and temperature regulation, moist mulch (compost, straw), dry mulch (plastic sheets)

equipment: forklifts, loaders, tractors

covering materials: tarps, security straps, netting, shade materials

Knowledge

Reference Code	Learning Outcomes and Objectives
E-18.06.01L	demonstrate knowledge of procedures to ship field and container crops
a.	identify **equipment** used to load field and container crops for shipping, and describe their procedures for use
b.	identify hazards and describe safe work practices to ship field and container crops
c.	describe procedures to ship field and container crops
d.	describe procedures for packing and loading field and container crops for transportation
e.	describe climate control requirements during transportation
f.	identify **documentation** required for shipping field and container crops and its function
g.	identify **equipment** used for loading field and container crops for shipping and their procedures for use
h.	identify **packaging materials** used for packing and protecting field and container crops for shipping
i.	identify **covering materials** used for protecting field and container crops during shipping
E-18.06.02L	demonstrate knowledge of training and certification requirements to operate **equipment**
a.	identify training and certification requirements to operate **equipment**
E-18.06.03L	demonstrate knowledge of regulatory requirements for shipping field and container crops
a.	identify regulations to operate **equipment**
b.	identify OHS regulations to ship field and container crops
E-18.06.04L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection
b.	identify practices that contribute to reducing carbon emissions

Range of Variables (include, but not limited to)

equipment: forklifts, loaders, tractors

documentation: labels, phytosanitary documents, legislative and regulatory documents, movement certificate, import/export documents, packing list, care and maintenance instructions

packaging materials: boxes, nursery carts, pallets, trays, packing material for moisture and temperature regulation, moist mulch (compost, straw), dry mulch (plastic sheets)

covering materials: tarps, security straps, netting, shade materials

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

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

Skills

Reference Code	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

Reference Code	Performance Criteria	Evidence of Attainment
E-18.07.08P	protect field crops against sunlight damage	field crops are protected against sunlight damage by installing snow fences and reducing reflectivity of 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 B&B and wire-basketed field crops	B&B and wire-basketed field crops are heeled-in to prevent desiccation and frost damage to 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 (include, but not limited to)

protective coverings: white polyethylene, insulated tarps, organic mulches, thermal blankets, snow, anti-desiccants

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

Knowledge

Reference Code	Learning Outcomes and Objectives
E-18.07.01L	demonstrate knowledge of **procedures to winterize field and container crops**
a.	identify hazards and describe safe work practices to winterize field and container crops
b.	describe **procedures to winterize field and container crops**
c.	identify field crops that require winter protection
d.	identify and describe **spring maintenance activities**
E-18.07.02L	demonstrate knowledge of training and certification requirements for application of regulated pesticide products
a.	identify training and certification requirements for application of regulated pesticide products
E-18.07.03L	demonstrate knowledge of sustainability and environmental stewardship practices
a.	identify practices that contribute to environmental protection

Range of Variables (include, but not limited to)

procedures to winterize field and container crops: installing snow fences, heeling in nursery stock, using shelter houses, applying animal repellents, reducing snow reflectivity, using protective coverings

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

Appendix A - Acronyms

AI	artificial intelligence
ANSI	American National Standards Institute
ATV	all-terrain vehicle
B&B	balled and burlapped
CCUS	carbon capture, utilization and storage
CLS	Canadian Landscape Standard
CMHA	Concrete Masonry and Hardscapes Association
CNLA	Canadian Nursery Landscape Association
CNZEAA	Canadian Net-Zero Emissions Accountability Act
CODIT	compartmentalization of decay in trees
CSA	Canadian Standards Association
EAP	employee assistance plan
EC	electrical conductivity
GFCI	ground fault circuit interrupter
GIS	Geographic Information System
GPS	global positioning systems
GRP	Green Roof Professional
HPB	high performance base
HVAC	heating, ventilation and air conditioning
ICPI	Interlocking Concrete Pavement Institute
IPM	integrated pest management
LEED	Leadership in Energy and Environmental Design
LID	low impact development
MSE	mass (mechanically) stabilized earth
NECB	National Energy Code of Canada for Buildings
OEM	operator equipment manual
OHS	Occupational Health and Safety
PMRA	Pest Management Regulatory Agency
PPE	personal protective equipment
ROP	rollover protection devices
SDS	safety data sheets
TDG	Transportation of Dangerous Goods
UV	ultraviolet
WHMIS	Workplace Hazardous Material Information System

ZCB	Zero Carbon Building
ZEV	zero-emission vehicles

Appendix B - Tools and Equipment / Outils et équipement

Personal Protective Equipment (PPE) and Safety Equipment / Équipement de protection individuelle et équipement de sécurité

barriers	barrières
chemical suits	combinaisons protectrices contre les produits chimiques
cold weather clothing/gear	vêtements et équipement pour l’hiver
ear protection	protecteurs auditif
eye protection (various types)	protecteurs oculaires (différents types)
eye wash kits	trousses de rinçage oculaire d’urgence
face shields	écrans faciaux
fall protection equipment	équipement de prévention des chutes
fire extinguishers	extincteurs
first aid kits	trousses de premiers soins
flares	fusées éclairantes
gloves (various types)	gants (différents types)
hard hats	casques de sécurité
hearing protection	dispositifs de protection anti-bruit
high visibility clothing	vêtements à haute visibilité
respiratory protection	appareils respiratoires de protection
safety boots or shoes	bottes ou chaussures de sécurité
safety pants/chaps	pantalons/jambières de protection
safety vests	gilets de sécurité
scabbard/protective sheaths	fourreaux/gaines de recouvrement
signage	panneaux d’avertissement
skin protection	équipement de protection de la peau
spill kits	trousses de lutte contre les déversements
sun hats	chapeaux de soleil
sunblock	écran solaire
traffic cones	cônes de signalisation
ventilation fans	ventilateurs

Hand Tools / Outils manuels

axes	haches
blocks	blocs

box cutters	couteaux à lame rétractable
brick carriers	pinces pour transport de briques
brick splitters	guillotines
brooms	balais
calculators	calculatrices
carts	chariots
chains	chaînes
chisels (various types)	ciseaux (différents types)
core samplers (probe)	sondes (géodoseurs)
crimpers	pinces à sertir
crowbars	barres à clous
cultivators (manual)	cultivateurs manuels
dibblers	plantoirs
dollies	diables
edgers	coupe-bordures
files	limes
flags	dalles
forks (various types)	fourches (différents types)
grease guns	pistolets graisseurs
guillotine/block or brick splitter	guillotines/trancheuses à blocs ou briques
hammers (various types)	marteaux (différents types)
hand planes	rabots manuels
hand tampers	compacteurs manuels
handheld watering equipment	équipement d’arrosage portatif
handsaws (various types)	scies manuels (différents types)
hedge shears	cisailles à haie
hex keys (Allen)	clés hexagonales (Allen)
hoes (various types)	binettes (différents types)
knives (various types)	couteaux (différents types)
ladders (various types)	échelles (différents types)
levels (various types)	niveaux (différents types)
loppers	ébrancheurs
microscopes	microscopes
nursery carts	chariots de pépinière
paving stone carts	chariots à pavé
paving stone extractors	extracteurs de pavé

picks	pioches
pipe cutters	coupe-tuyaux
pliers (various types)	pinces (différents types)
plumb line (bob)	fil à plomb
pole pruners	échenilloirs
pole saws	scies à long manche
post hole augers	tarières
post mauls	masses à pieux/poteaux
post pounders	pilons à poteaux
pruners (various types)	sécateurs (différents types)
pruning saws	scies à élaguer
pry bars	barre-leviers
rakes (various types)	râteaux (différents types)
rollers	rouleaux à gazon
scaffolding	échafaudages
screeding bars	barres d’aplanissement/nivellement
screwdrivers (various types)	tournevis (différents types)
scythe	faux
secateurs	sécateurs
seed/fertilizer spreader	épandeurs à semences/fertilisants
sharpening tools	outils d’affûtage
shears	cisailles
shoring equipment	équipement d’étayage
shovels (various types)	pelles (différents types)
side cutters	pinces à coupe diagonale
sod lifters	lève-gazons
soil screeners	tamiseurs à terre
spades (various types)	bêches (différents types)
sprayers (various types)	pulvérisateurs (différents types)
spreaders (various types)	épandeurs (différents types)
sprinklers	asperseurs
squares (various types)	équerres (différents types)
string line	cordeaux
tape measures	rubans à mesurer
tarps	bâches
tie downs (various types)	colliers de serrage (différents types)

transplant tables	tables à transplanter
tree carts	chariots à arbres
trowels	truelles
water hoses	boyaux d’arrosage
water keys	clés pour ouvrir/fermer les robinets
watering cans	arrosoirs
weed diggers	arracheuses de mauvaises herbes
weed torches	torches pour brûler les mauvaises herbes
wheelbarrows, trolleys	brouettes, chariots
wire cutters	coupe-fils
wire strippers	pinces à dénuder
wrenches (various types)	clés (différents types)

Power Tools and Motorized Equipment / Outils mécaniques et équipement motorisé

air seeders	semoirs pneumatiques
attachments	accessoires
chainsaws (pole)	tronçonneuses (perches élagueuses à moteur)
circular saws	scies circulaires
compressors	compresseurs
concrete saws (dry, wet)	scies à béton (sec, humide)
core aerators	aérateurs de gazon
demolition hammers (electric)	marteaux de démolition (électriques)
demolition hammers (pneumatic)	marteaux de démolition (pneumatiques)
electric drills	perceuses électriques
fertilizer injectors	injecteurs de fertilisants
grinders (various types)	broyeurs (différents types)
hammer drills	perceuses à percussion
heat guns	pistolets à air chaud
hydro-seeders	semoirs hydrauliques
lathes (wood/metal)	tours (bois/métal)
masonry saws (various types)	scies à maçonnerie (différents types)
mechanical diggers	pelles mécaniques
misters	brumisateurs
mitre/chop saws	scies à onglet/à tronçonner
mortar/concrete mixers	malaxeurs à mortier/béton
mowers/mulchers	déchiqueteuses

powder-actuated tools	outils à charge explosive
power augers	tarières mécaniques
power cultivators (rototiller)	motoculteurs (rotoculteurs)
power pole saws	scie électrique à long manche
power seeders/power spreaders	semoirs motorisés/épandeurs motorisés
power soil screeners	tamiseurs à terre mécaniques
power sprayers	pulvérisateurs à moteur
power washers	laveuses à pression
powered wheelbarrows	brouettes motorisées
reciprocating saws	scies alternatives
sabre saws	scies sabre
saws	scies
spider lifts	élévateurs à nacelle
table saws	scies circulaires sur table
torches	lampes de poche
tree spades	transplanteuses d’arbres
trenchers	trancheuses
vacuum lifters	ventouses de levage
vacuums (various types)	aspirateurs (différents types)
walk-behind aerators	aérateurs de gazon poussés
wet saws	scies à eau

Measuring Equipment / Équipement de mesure

anemometers	anémomètres
automated plan scalers	mises à l’échelle automatisées
barometers	baromètres
calibrated cylinders	cylindres graduées
calipers	calibres
catch can readers	pluviomètres
compaction measuring devices	appareils de mesure de la densité
EC meters	mesureurs de CE
engineer levels	niveaux d’ingénieur
flow meters	débitmètres
gas meters	compteurs de gaz
gauges	jauges
GPS	système de positionnement global (GPS)
graduated cylinders (metric/imperial)	pot-verseurs gradués (métrique et impérial)

hygrometers	hygromètres
laser distance measures	mesureur de distance au laser
levels (various types)	niveaux (différents types)
light meters	posemètres
measuring tapes	rubans à mesurer
measuring wheels	roues d’arpentage
moisture metres/sensors	humidimètres/sondes d’humidité
monitoring devices	dispositifs de surveillance
pH meters	pH-mètres
scale rulers	règles triangulaires
scales	balances
soil testers	analyseurs de sol
tension meters	tensiomètres
thermometers	thermomètres
timers & controllers	minuteries et contrôleurs
tire pressure meters	manomètres pour pneus
tree calipers	compas forestier
volt meters/multimeters	voltmètres/multimètres
water meters	compteurs d’eau

Vehicles and Motorized Equipment / Équipement motorisé

air compressors	compresseurs à air
all-terrain vehicles	véhicules tout-terrain
backhoes	pelles rétrocaveuses
baggers	ensacheuses
bale breakers (straw and hay)	brise-balles (foin et paille)
bed edgers	bordures de plate-bande
blenders (power)	mélangeurs (mécaniques)
blower trucks	camions souffleurs
blowers (various types)	souffleurs à feuilles (différents types)
brush cutters	débroussailleuses à lames
chippers	déchiqueteuses à feuilles
circulation/exhaust fans	ventilateurs de recirculation et d’extraction
clearing saws (brush cutters)	débroussailleuses à lames
compactors (various types)	plaques vibrantes (différents types)
conveyor belts	courroies transporteuses
dethatchers (various types)	déchaumeuses (différents types)

dollies	diables
edgers	coupe-bordures
excavators	excavatrices
fertilizer injectors	injecteurs de fertilisants
flat deck trucks	camions à plateforme
flat fillers	chargeurs pour plateaux
forklifts	lève-palettes
front end loaders	chargeuses frontales à godet
generators	génératrices
golf carts	voiturettes de golf
grass trimmers (various types)	débrousailleuses à fils (différents types)
guillotines	guillotines
hedge trimmers (various types)	taille-haies (différents types)
hydro-seeding equipment	hydro-semoirs
lifts (various types)	chariots élévateurs (différents types)
loaders (front end, pay)	chargeuses (frontales/à benne frontale)
mechanical rototillers	motoculteurs à fraise rotative
mortar/concrete mixers	malaxeurs de mortier/béton
mowers (various types)	tondeuses (différents types)
mulchers	déchiqueteurs
paddle brooms	balais mécaniques
pallet jacks	transpalettes manuels
peat shredders	déchiqueteuses de mousse de tourbe
pipe pullers	extracteurs de tuyaux
pneumatic hammers	marteaux pneumatiques
post hole augers	bêches tarières
post pounders	pilons à poteaux
pot fillers	empoteuses
potting machines	machines à empoter
power rakes	déchaumeuses mécanique
powered rollers	rouleaux à gazon motorisés
powered wheelbarrows	brouettes motorisées
pressure washers	laveuses à haute pression
pumps	pompes
rototillers	motoculteurs

shredders (various types)	déchiqueteuses à branches (différents types)
skid steers (various types)	chargeuses frontale compacte (différents types)
slit seeders	semoirs-scarificateurs
sod cutters	déplaqueuses à gazon
soil screeners	tamis à terre
steam cleaners	nettoyeuses à jet de vapeur
sterilizers	stérilisateurs
tractors	tracteurs
tree gantries	supports à arbre
tree spades	transplanteuses d’arbres
trenchers	trancheuses
trucks	camions
turfgrass maintenance machines	équipement d’entretien du gazon
vehicles with blades	véhicules équipés de lame
walk behinds (various types)	équipements poussés (différents types)
walk-behind aerators	aérateurs de gazon (poussé)
walk-behind snowblowers	souffleuses à neige (poussées)

Equipment Attachments / Accessoires pour équipement

aerators	aérateurs de gazon
auger/post hole diggers	tarières à vrille
backhoes	pelles rétrocaveuses
blades	charrues à lames
buckets (various types)	godets (différents types)
cultivators (various types)	cultivateurs (différents types)
de-thatchers	déchaumeuses
fertilizer spreaders	épandeurs de fertilisants
flat decks	plateformes
forks	fourches
graders (various types)	niveleuses (différents types)
grapples	grappins
ladders	échelles
landscape rakes	râteaux de paysagement
leaf vacuums	aspirateurs de feuilles
loaders	chargeuses

mower baggers	tondeuses ensacheuses
overseeders	sursemeurs
plows	charrues pour labour
power sweepers	balais mécanique
reapers	faucheuses
rollers	rouleaux
seeders	semoirs
snow equipment (various types)	souffleuses à neige (différents types)
spray equipment	équipement pour pulvérisation
spreaders	épandeurs
top dressers	terreauteurs de surface
tow behind dethatchers	déchaumeuses à remorquer
tow behind trenchers	trancheuses à remorquer
trailers	remorques
tree dollies	diables pour arbres
tree spades	transplanteuses d’arbres
u-blades	lames en U
vacuums	aspirateurs
water tankers	camions-citernes

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 (www.cnla.ca/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, aesthetics or biological threat is critical to guide future pest control decisions	**seuil d'action**	avant de prendre des mesures de lutte antiparasitaire, la LAI 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, esthétique ou biologique 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 burlapped (B&B)/wire basket	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 or other textiles is tied and sometimes reinforced with a rope or a wire basket.	**culture en paniers brochés et enrobés**	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 ou autres tissus et parfois renforcée d'une corde ou d'un panier en broches métalliques.

bedding materials (hardscape)	last layer of material placed over a compacted base on which interlocking/segmental pavers will be installed.	**matériaux de lit de pose (matériaux inertes)**	dernière 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.
biomimicry	the use of engineered or designed solutions to mimic natural systems	**biomimétisme**	utilisation de pratiques d'ingénierie ou d'aménagement pour reproduire de systèmes naturels.
biophilic	the innate human desire to interact and connect with nature and natural environments	**biophile**	désir humain inné d'interagir et de connecter avec la nature et les environnements naturels.
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	**rigoles /noues/fossés/végétalisés**	éléments de l'aménagement paysager conçus pour enlever le limon et la pollution de l'eau provenant du ruissellement des eaux de surface ; il

	with vegetation, compost and/or riprap.		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 things that influence or affect a plant or an ecosystem.	**facteur biotique**	espèce vivante qui a une incidence sur une plante ou un écosystème ou qui l’influence.
blue infrastructure	landscape elements which are linked to water such as pools, ponds and pond systems, 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.
bulb	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 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 de fertilisants).
Canadian Landscape Standard (CLS)	a document that sets guidelines and makes recommendations for all major aspects of the landscape industry across Canada.	**Norme canadienne du paysage (NCP)**	d'établir des lignes directrices pour les projets d'aménagement paysager à travers le Canada.

canker (tree)	localized diseased or necrotic area on a trunk, branch, or twig of a woody plant, usually caused by fungi or bacteria.	**chancre (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 de la couronne de l'arbre**	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/bloc 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.	**capture de dioxyde de carbone**	capter les émissions de carbone et les stocker loin de l'atmosphère.
catch basin	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 order	written order approved by a project owner directing the contractor to change an element of the contract.	**ordre de modification**	ordre écrit approuvé par un maître d'ouvrage qui indique à l'entrepreneur de changer un élément 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 produite par cette dernière pendant laquelle des atomes ou des molécules sont modifiés.

circle check	a visual, and sometimes physical, inspection of a piece of equipment (e.g., truck, trailer, forklift, etc.). It involves walking all the way around the equipment to ensure there are no safety concerns.	**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	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 that control the indoor climate including light, temperature, air exchange, humidity and CO_2 concentration.	**systèmes de régulation du climat**	systèmes ajustables contrôlent le climat intérieur, y compris la lumière, la température, le renouvellement d'air, l'humidité et la concentration de CO_2.
codes	a collection of regulations adopted by an industry to define safety standards, and provide guidelines for design, construction and maintenance. Common codes used in this industry include the Canadian Building Code, The Canadian Electrical Code, and	**codes**	ensemble de règlements adoptés par une industrie qui définit les normes de sécurité et fournis des directives pour l'aménagement, la construction et l'entretien. Certains des codes communs comprennent le Code national du bâtiment, le Code canadien de

	the National Plumbing Code.		l'électricité et le Code national de plomberie.
companion planting	close planting of different plants that enhance each others' 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 fertilisant 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	a space that has controlled access and may cause atmospheric and ventilation hazards for workers.	**espace clos**	espace 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 pine, spruce and fir.	**conifères**	principalement des arbres ou des arbustes gymnospermes à feuillage généralement persistant en aiguilles ou en écailles, à tronc conique, de l'ordre des conifères. L'ordre comprend le pin, l'épinette et le sapin.

construction details	detailed graphical representations that illustrate the technical characteristics of various structure components.	**détails de construction**	représentations graphiques détaillées illustrant les caractéristiques techniques de différents composants structurels.
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 or more parties to perform work or provide goods, including an agreement or order for the procurement of supplies or services.	**contrat**	accord entre deux ou plusieurs 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 or vegetative propagation methods.	**cultivar**	variété de plantes qui a été produite dans une culture au moyen de la reproduction sélective ou de méthodes de propagation végétales.
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 material from the cut is used for fill on the same site.	**déblai et remblai**	ajouter 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.
cutting (for propagation)	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 pour les plantes à propagation 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 floraisons mortes**	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.
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.
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 subjective component principles as they are applied to the quality of a design. They may include considerations such as texture, colour, repetition, variety, balance, unity, emphasis, sequence (rhythm) and scale.	**principes de conception**	incluent les principaux éléments subjectifs qui s'appliquent à la qualité d'une conception. Peuvent comprendre la texture, la couleur, la répétition, la variété, l'équilibre, l'emphase, la séquence (rythme) et l'échelle
detention	the temporary retention and controlled release of water, with focus on flow rate.	**rétention temporaire**	rétention temporaire et écoulement contrôlé de l'eau, axé sur le débit.

detention pond	pond that is temporary in nature and slows the passage of water on its way to a further destination.	**bassin sec**	bassin temporaire qui ralentit le passage de l’eau avant une autre destination.
dethatch	mechanical removal from a lawn of the layer of dead turfgrass tissue known as “thatch.”	**défeutrer**	suppression mécanique de la couche de gazon mort sur une pelouse, également appelé « feutre ».
dichotomous key	analytical guide to the identification of organisms, based on the use of contrasting characters to subdivide a group under study into branches.	**clé de détermination dichotomique**	guide analytique pour identifier les organismes, 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 or slowed.	**dormance**	période du cycle de vie d’un organisme au cours de laquelle la croissance et le développement sont temporairement et partiellement arrêtés.
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 stewardship	forming a relationship with the natural environment and using and protecting the environment through conservation and sustainable practices.	**gérance environnementale**	relation envers l'environnement naturel dans le but de l'utiliser et de le protéger 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.	**fertigation**	application de fertilisants, d'amendements du sol ou d'autres produits solubles dans l'eau au moyen d'un système d'irrigation.
fertilizer	a fertilizing chemical or natural substance added to soil or land to increase its productivity.	**fertilisants**	substance chimique ou naturelle fertilisante ajoutée à la terre ou au sol afin d'accroître sa productivité.

filtration systems	systems that filter liquids or gases to remove solid particles.	**systèmes de filtration**	systèmes qui filtrent les liquides ou les gaz afin d'éliminer les particules solides.
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.
geotextiles	permeable synthetic fabrics which, when used in association with soil and aggregate, can separate, modify drainage, filter, reinforce, protect, drain, and serve as a weed barrier.	**géotextiles**	tissus synthétiques perméables, qui, lorsqu'utilisés avec le sol et l'agrégat, 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	**nivellement**	travail d'altération d'un terrain, d'une base, d'une élévation ou d'une pente

	specifications for work such as a foundation, base, landscape feature or surface drainage.		existante 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 integrate natural processes within the built environment. They are intended to support healthy living and environmental sustainability.	**infrastructure verte**	technologie planifiée et gérée qui intègre des procédés naturels à l'environnement construit. Leur objectif est de favoriser un environnement sain et la durabilité environnementale.
green roof	roofing system which includes a water proofing and root control system, a drainage system, filter cloth, a growing medium and plants.	**toit vert**	toit qui comprend un système d'étanchéité et anti-racines, un système de drainage, une toile filtrante, un milieu de culture et des plantes.
grey infrastructure	includes traditional built environments, including roads, pipes and sewers, utilities and buildings.	**infrastructure grise**	comprend les infrastructures traditionnelles, y compris les routes, les tuyaux et les égouts, les services publics et les immeubles.

growing media	the material that plants grow in. It 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 (port)**	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 and wind.	**rusticité**	capacité d'une plante à tolérer des conditions de culture défavorables comme le froid, la chaleur, la sécheresse, les inondations et le vent, et à y survivre.
hardscape	components of the design and construction of any landscape project that deals with a range of materials (e.g., 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	**matériaux 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

	pits, etc.		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**	raccourcir une branche au-dessus d’un bourgeon; il s’agit d’un terme dont les sous-catégories incluent « l’écimage » et la taille en têtard (tête de chat).
herbaceous	plants or plant parts that are fleshy as opposed to woody and that die 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 culturales, 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 organisms with the potential to cause serious harm to the economy, the	**espèces envahissantes**	organismes non indigènes qui peuvent causer d’importants dommages à

	environment and health.		l’économie, à l’environnement et à la santé.
irrigation controller	device to operate automatic irrigation systems such as lawn sprinklers and drip irrigation systems and that has 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 landscape and horticultural crops for the purpose of growing and maintaining moisture during periods of inadequate supply of precipitation.	**systèmes d’irrigation**	systèmes automatisés qui apportent et distribuent de l’eau à l’aménagement paysager et aux cultures horticoles aux fins de culture et du maintien de l’humidité du sol pendant les périodes où les pluies sont insuffisantes.
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.
lasagna gardening	a no-dig gardening practice of layering organic materials	**jardinage en lasagnes**	pratique de jardinage sans creuser où on pose en couches des

	(such as leaves, branches, paper) to create a rich and fertile soil network.		matières organiques (comme des feuilles, des branches, du papier) pour former un réseau de terre riche et fertile.
layering	propagation method by which a branch/shoot takes root while still attached to the parent plant.	**marcottage**	méthode de propagation par l'entremise de laquelle une branche ou une pousse s'enracine alors qu'elle est toujours attachée à la plante mère.
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, aggregate structure, and consequently, oxygen levels.	**chaulage**	traitement du sol ou de l'eau avec de la chaux afin de réduire l'acidité (augmentant le pH) et d'améliorer la fertilité, la structure des agrégats, et donc les niveaux 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.	**plants 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	**exigences de répartition des charges**	charge distribuée uniformément sur la totalité de la longueur

	member or the surface of a vehicle, trailer, floor, or roof expressed in weight per length or weight per area.		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.	**cadenasser 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 cadenasser 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 lieu de travail 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.	**propagation végétative in vitro**	propagation 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.
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, retain water,	**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

	promote the soil microbiome and improve aesthetics		autour de la base des plantes utilisé avant tout pour réduire les mauvaises herbes, retenir l'eau, promouvoir le microbiome du sol et améliorer l'esthétique.
no-till	is a soil conservation method 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.	**culture sans labour**	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.
organic material	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.
pathogen	biological agent that causes disease or illness to its host by disrupting 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 made from Sphagnum used to increase acidity, organic matter, aeration and water retention of soil. Most soilless mix features peat as its main ingredient.	**mousse de tourbe**	amendement du sol organique et spongieux fait de sphaigne, utilisé pour accroître l'acidité, la quantité de matière organique, l'aération et la rétention d'eau du sol; 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. Pests include but are not limited to insects, snails, nematodes, fungi, viruses, bacteria, microorganisms, mycoplasma organisms, weeds, plants or parasitic plants.	**parasite**	toute espèce de plante, d'animal ou d'agent pathogène qui affaiblit la productivité ou la santé des plantes. Les parasites comprennent, mais ne se limitent pas aux insectes, aux escargots, les nématodes, les champignons, les virus, les bactéries, les microorganismes, les mycoplasmes, les mauvaises herbes, les plantes ou les plantes parasitaires.
physiology	plant physiology is the study of vital processes and functional activity occurring in plants in relation to their survival, metabolic activities, water relations, mineral	**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

	nutrition, development, movement, irritability, organization, growth and transport.		minéraux, son développement, ses mouvements, son irritabilité, son organisation, sa croissance et ses processus de transport.
phytosanitary certificate	a document, issued by a qualified inspector, that attests to the phytosanitary status of anything exported to and from Canada.	**certificat phytosanitaire**	document, émis par un inspecteur, qui atteste de l'état phytosanitaire de tous les végétaux et produits végétaux importés au Canada et exportés du Canada.
pinching	a form of pruning that encourages branching on the plant.	**pincement**	type de taille qui encourage la formation de branches sur une plante.
plain language	communication that is clear and easy to understand for the target audience.	**langage simple**	communication claire et facile à comprendre pour le public cible.
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	**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.

	adaptations and cultural requirements.		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 zone map outlines the different zones in Canada where various types of trees, shrubs and non-woody plants will most likely survive. It is based on the average climatic conditions of each area and on a wide range of climatic variables. 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 plantes non ligneuses, d'après les conditions climatiques moyennes de chaque région et d'après une vaste gamme de facteurs climatiques. 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.	**cellule**	cylindre d'un substrat 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 negatively 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).	**rempotage**	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	**quarantaine**	confinement ou isolement de plantes ou de produits

	suspected of carrying an infectious agent for observation and research or for further inspection, testing and/or treatment for a period to prevent disease from spreading.		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.
refugia	areas that provides shelter for a population of organisms to survive through a period of unfavourable conditions.	**refuge**	zone où une population d'organismes peut survivre pendant une période de conditions défavorables.
regeneration	processes designed to build soil health or to regenerate soil, including maintaining a high percentage of organic matter in soils, minimum tillage, biodiversity,	**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

	composting, mulching, and crop rotation to support a sustainable growing environment.		sols, le travail réduit du sol, la biodiversité, le compostage, le paillage et la rotation des cultures pour soutenir un environnement de culture durable.
retention	the storage of water, measured as a unit of retention capacity, without reference to flow rate	**rétention**	entreposage de l’eau, mesurée comme unité de capacité de rétention, pas axée sur le débit.
retention pond	pond that holds water for either infiltration into native soil or as a body of water and is the end location of piping or surface runoff systems. Retention water is not transported to other destinations.	**bassin de rétention**	bassin conçu pour contenir de l’eau pour ensuite la laisser s’infiltrer dans la terre ou pour agir comme étendue d’eau. Emplacement final d’une tuyauterie ou d’un réseau de ruissellement de surface. L’eau d’un bassin de rétention n’est pas transportée vers d’autres emplacements.
ribbon test	simple method used to estimate the percentage of sand, silt and clay in a soil sample.	**analyse de rubans de terre**	méthode simple utilisée pour estimer le pourcentage de sable, de limon et d’argile dans un échantillon du sol.
right plant-right place	concept used in the process of plant selection to select plants that are suited to the growing conditions and fulfill the intended function for their specific use in the landscape.	**bonne plante au bon endroit**	concept utilisé lors du choix d’une plante visant à choisir une plante adaptée aux conditions de culture et pour remplir la fonction prévue dans un aménagement spécifique.

riparian zones	zones where land and waterways interface.	**zones riveraines**	zones où la terre et les cours d'eau interagissent
rootstock	the root or part of a root used for plant propagation. In grafting, the rootstock is the part of a grafted plant that supplies the roots.	**porte-greffes**	racine ou partie de la racine utilisée pour la propagation 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 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 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. Also, to rough up the surface of a root ball or other material.	**scarifier**	ameublir et décompacter le sol à une faible profondeur. Également, rendre rugueuse la surface d'une masse racinaire ou d'un autre matériau.
scion wood	short length of stem, taken from one plant, which is then grafted onto the rootstock of another plant.	**scion/greffon**	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 de ruissellement.
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.	**analyse du lieu de travail**	analyse 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 public and private utilities existing on a piece of property including lines for telecommunication, electricity distribution, natural gas, cable television, fiberoptics, traffic lights, street lights, storm drains,	**plan des services souterrains du lieu de travail**	illustre l'emplacement des services publics et privés souterrains existants du site sur une propriété, y compris les câbles pour les télécommunications, la distribution d'électricité, le gaz naturel, la câblodistribution, la

	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.		fibre optique, les feux de circulation, les lampadaires, les collecteurs d'eaux de ruissellement, 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 organic or inorganic material added to a soil/media to improve its physical properties such as water retention, permeability, water infiltration, drainage, aeration and structure.	**amendements du sol**	matériaux organiques ou inorganiques 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.
soil texture	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	the part of the contract that consists of written requirements and provides a detailed and precise statement of particulars for the work of a project, and outlines a detailed description of materials, equipment, systems, processes, techniques, standards and workmanship, and certain administrative requirements and procedural matters applicable to the work. Specifications are typically prepared by the consultant as a complement to the drawings.	**spécifications**	partie d’un contrat comportant les exigences écrites et qui fournit un énoncé précis des détails d’un projet et donne une description détaillée des matériaux, de l’équipement, des procédés, des techniques, des normes et de la qualité de l’exécution, en plus des exigences administratives et des questions de procédures en lien avec le travail. Elles sont généralement dressées par le consultant comme complément aux dessins.
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	**équipement de lutte contre les déversements**	matériaux absorbants épandus sur des déversements ou tissus spongieux placés autour des

	around the spill to contain it. The kit may also include protective equipment, such as goggles and gloves.		déversements afin de les restreindre; l'équipement peut également inclure de l'équipement protecteur, comme des lunettes et des gants.
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 de ruissellement**	pratiques développées afin de réduire, de contrôler et de prévenir l'écoulement des eaux de ruissellement 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 base materials	the layer or layers of specified or selected material of designed thickness and density placed on a sub-grade to support a base course.	**matériaux structurels de fondation**	une ou plusieurs couches de matériaux spécifiques d'une épaisseur et d'une densité choisie qui est placée sur le sol d'assise pour servir d'appui à une couche de base.

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 the 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	**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

	electronically, and start “taking off” quantities of items they will need from those blueprints 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.		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	**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

	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.		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 granular 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 de fertilisants granulaires, 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 using a bound mulch filter or an assembly of twigs or sticks.	**fascine**	méthode de contrôle de l'érosion utilisant un filtre de paillis ficelé ou un assemblage de brindilles.
wetlands	generally, include swamps, marshes, bogs and similar areas that are protected and managed 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.