

RED SEAL

OCCUPATIONAL

STANDARD

LANDSCAPE HORTICULTURIST



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FOREWORD

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

**Background**

The first National Conference on Apprenticeship in Trades and Industries, held in Ottawa in 1952, recommended that the federal government be requested to cooperate with provincial and territorial apprenticeship committees and officials in preparing analyses of a number of skilled occupations. Employment and Social Development Canada (ESDC) sponsors the Red Seal Program, which, under the guidance of the CCDA, develops a national occupational standard for each of the Red Seal trades.

Standards have the following objectives:

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

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

Trades and Apprenticeship Division

Apprenticeship and Regulated Occupations Directorate

Employment and Social Development Canada

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STRUCTURE OF THE OCCUPATIONAL STANDARD

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

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

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

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

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

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

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

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

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

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

**Task Descriptor:** a general description of the task

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

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

**Skills**

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

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

**Knowledge**

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

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

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

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

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

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

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

DESCRIPTION OF THE

LANDSCAPE HORTICULTURIST TRADE

“Landscape Horticulturist” is this trade’s official Red Seal occupational title approved by the CCDA. This standard covers tasks performed by landscape horticulturists whose occupational title has been identified by some provinces and territories of Canada under the following names:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | NL | NS | PE | NB | QC | ON | MB | SK | AB | BC | NT | YT | NU |
| Landscape Horticulturist | ◼ | ◼ | ◼ | ◼ |  |  | ◼ | ◼ | ◼ | ◼ |  |  |  |
| Horticultural Technician |  |  |  |  |  | ◼ |  |  |  |  |  |  |  |
| Landscape Worker |  |  |  |  | ◼ |  |  |  |  |  |  |  |  |

Landscape horticulturists survey and assess landscapes, draw sketches and interpret plans. They construct and maintain gardens, parks, golf courses and other landscape environments. In addition, landscape horticulturists construct and maintain hard landscape elements, such as patios, walkways and walls. They also prepare estimates, provide products and services, and advise clients on issues related to horticulture and landscape projects. Landscape horticulturists also propagate, cultivate and study plants, and treat injured and diseased plants. They are employed by landscape designers, architects and contractors, lawn service and tree care establishments, recreation facilities, golf courses, parks, nurseries, greenhouses, and municipal, provincial and federal governments. They may also be self-employed.

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

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

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

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

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

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

ESSENTIAL SKILLS SUMMARY

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

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

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

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

Tools are available online or for order at: <https://www.canada.ca/en/employment-social-development/programs/essential-skills/tools.html>.

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

READING

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

DOCUMENT USE

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

WRITING

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

ORAL COMMUNICATION

Oral communication is a very important skill for landscape horticulturists. A substantial amount of communication is done in order to exchange information, instruct, convey knowledge and to coordinate work with others. They talk to clients about plant care, landscape design, maintenance and practices. They speak with other professionals including suppliers, landscape architects, architects and engineers to coordinate projects.

NUMERACY

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

THINKING

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

DIGITAL TECHNOLOGY

Landscape horticulturists use computers and other digital devices when researching and documenting horticultural information. They may also use applications for communication, word processing, labeling, spreadsheets, databases and global positioning systems (GPS). They may use design, estimating, accounting and inventory software. They may use management software that incorporates electronic time sheets, real-time job data and inventory control. Digital controls may be used for irrigation and lighting systems.

WORKING WITH OTHERS

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

CONTINUOUS LEARNING

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

TRENDS IN THE  
LANDSCAPE HORTICULTURIST TRADE

The landscape horticulture industry must continuously adapt to changing trends in education, certification, legislation and the labour market as they relate to safety, environmental stewardship and conservation.

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

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

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

As jurisdictional safety and prevention legislation changes, compliance requirements by industry are increasing. Safety awareness and implementation of safe work practices in the industry is evolving to better protect the workforce and the general public. Tools and equipment that produce fewer emissions and reduce noise and vibration are in greater demand.

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

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

A higher degree of attention is paid to plant health starting at the design phase and through construction and maintenance due to jurisdictional environmental regulations. Growers are growing more pest- and disease-resistant varieties of plants. There are changes to pest and disease control measures including legislation that has reduced dependence on chemical use.

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

INDUSTRY EXPECTED PERFORMANCE

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

LANGUAGE REQUIREMENTS

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

PIE CHART

OF RED SEAL EXAMINATION

WEIGHTINGS

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

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

LANDSCAPE HORTICULTURIST

TASK MATRIX

|  |  |
| --- | --- |
| A – Performs common occupational skills | 19% |

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| --- | --- | --- | --- | --- | --- |
| Task A-1 Performs safety-related functions  19% |  | A-1.01 Uses personal protective equipment (PPE) and safety equipment | A-1.02 Maintains safe work environment | |  |
| Task A-2 Uses tools, equipment and vehicles 27% |  | A-2.01 Uses hand tools | A-2.02 Uses power tools | | A-2.03 Uses measuring equipment |
|  |  | A-2.04 Uses vehicles and motorized equipment, trailers and attachments |  |
| Task A-3 Organizes work  27% |  | A-3.01 Performs site assessments | A-3.02 Uses documentation and reference material | | A-3.03 Maintains records |
|  |  | A-3.04 Participates in job planning activities | A-3.05 Orders materials | | A-3.06 Organizes materials and equipment |
|  |  | A-3.07 Transports materials | A-3.08 Transports equipment | |
| Task A-4 Participates in marketing and sales  15% |  | A-4.01 Controls inventory | A-4.02 Sells products and services | | A-4.03 Maintains customer relations |
|  |  | A-4.04 Prepares estimates |  | |  |
| Task A-5 Uses communication and mentoring techniques  12% |  | A-5.01 Uses communication techniques | A-5.02 Uses mentoring techniques | |  |

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| --- | --- |
| B - Applies horticultural principles | 24% |

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

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| --- | --- |
| C – Performs landscape construction | 33% |

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

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| --- | --- |
| D – Performs landscape maintenance | 24% |

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

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

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

MAJOR WORK ACTIVITY A

Performs common occupational skills

TASK A-1 Performs safety-related functions

TASK DESCRIPTOR

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

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

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| --- | --- |
| **Essential Skills** | Reading, Document Use, Thinking |

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

|  |  |  |
| --- | --- | --- |
|  | SKILLS | |
|  | **Performance Criteria** | **Evidence of Attainment** |
| A-1.01.01P | select and use ***PPE*** | ***PPE*** required for task, tools, equipment, machinery and environment is selected according to company policy and used according to manufacturers’ specifications |
| A-1.01.02P | select and use ***safety equipment*** | ***safety equipment*** is selected and used according to manufacturers’ specifications |
| A-1.01.03P | store ***PPE*** and ***safety equipment*** | ***PPE*** and ***safety equipment*** are stored in a dry, protected environment to maintain its integrity and according to manufacturers’ specifications |
| A-1.01.04P | inspect operation and condition of ***PPE*** and ***safety equipment*** | ***PPE*** and ***safety equipment*** are checked regularly and prior to use according to jurisdictional regulations and manufacturers’ specifications |
| A-1.01.05P | inspect ***PPE*** and ***safety equipment*** inventory | ***PPE*** and ***safety equipment*** inventory is complete with a ready supply |
| A-1.01.06P | recognize damaged and expired ***PPE*** and ***safety equipment*** and remove from service | damaged and expired ***PPE*** and ***safety equipment*** is removed from service |
| A-1.01.07P | check and replace ***PPE*** components | ***PPE*** components are replaced according to manufacturers' specifications, workplace requirements and jurisdictional regulations |

RANGE OF VARIABLES

***PPE*** includes: ear, eye, hand, foot and head protection, high-visibility clothing, breathing protection (mask)

***safety equipment*** includes: ventilation fans, spill kits, fire extinguishers, barriers, signage, first-aid kit

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

RANGE OF VARIABLES

***PPE*** includes: ear, eye, hand, foot and head protection, high-visibility clothing, breathing protection (mask)

***safety equipment*** includes: ventilation fans, spill kits, fire extinguishers, barriers, signage, first-aid kit

***jurisdictional workplace safety and health regulations*** include: Workplace Hazardous Material Information System (WHMIS), Transportation Of Dangerous Goods (TDG), Pest Management Regulatory Agency (PMRA), federal, provincial/territorial, municipal, Occupational Health And Safety (OH&S)

|  |  |
| --- | --- |
| A-1.02 | Maintains safe work environment |

|  |  |
| --- | --- |
| **Essential Skills** | Document Use, Thinking, Oral Communication |

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

|  |  |  |
| --- | --- | --- |
|  | SKILLS | |
|  | **Performance Criteria** | **Evidence of Attainment** |
| A-1.02.01P | identify and assess ***hazards*** | ***hazards*** are identified and assessed according to OH&S and company safety policy |
| A-1.02.02P | identify ***overhead hazards*** to prevent damage and personal injuries | preventative actions are taken to minimize damage and personal injuriesdue to ***overhead hazards*** |
| A-1.02.03P | follow ***safety procedures*** | ***safety procedures*** specified by OH&S, jurisdictional regulations and company policies are followed |
| A-1.02.04P | maintain a clear and tidy work area | clear and tidy work area is maintained to reduce the risk of injury to self and others |
| A-1.02.05P | comply with lock-out/tag-out procedures | lock-out/tag-out procedures are used when working with/on equipment according to jurisdictional regulations and manufacturers’ specifications |
| A-1.02.06P | coordinate tasks with other workers | tasks with other workers are coordinated to avoid injury to self and co-workers |
| A-1.02.07P | place ***safety barriers*** in work areas | ***safety barriers*** are used according to jurisdictional regulations and company policies |
| A-1.02.08P | handle hazardous material | hazardous material handling is done in accordance with jurisdictional regulations and ***WHMIS procedures*** |
| A-1.02.09P | participate in safety meetings and discussions | safety meetings and discussions are held to ensure that information is recorded and communicated to all team members |
| A-1.02.10P | recognize and report unsafe conditions | unsafe conditions are reported according to OH&S and company policies |
| A-1.02.11P | recognize ***safety symbols*** and ***warning signals*** | ***safety symbols*** and ***warning signals*** are recognized to ensure a safe work site and environment |
| A-1.02.12P | use universal hand signals | universal hand signals are used when communicating with equipment operators and drivers |
| A-1.02.13P | contain and dispose of spill contaminants | spill contaminants are contained and disposed of according to jurisdictional regulations |
| A-1.02.14P | coordinate with ***emergency response teams*** | ***emergency response teams*** are coordinated with according to work site requirements and company policies |

RANGE OF VARIABLES

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

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

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

***safety barriers*** include: flagging, pylons, barricades, signage

***WHMIS procedures*** include: disposal, labelling, use of PPE

***safety symbols*** include:workplace andjob-site safety signage, truck signage, product labels

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

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

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

RANGE OF VARIABLES

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

TASK A-2 Uses tools, equipment and vehicles

TASK DESCRIPTOR

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

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| A-2.01 | Uses hand tools |

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| **Essential Skills** | Thinking, Document Use, Reading |

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

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

RANGE OF VARIABLES

***hand tools that require lubrication*** include: secateurs, shears, loppers

***hand tools that require sharpening*** include: secateurs, shears, shovels, loppers, edgers

***hand tools whose components require replacement*** include: secateurs, loppers, shovels, rakes, axes

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

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| A-2.02 | Uses power tools |

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| **Essential Skills** | Reading, Document Use, Thinking |

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

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|  | SKILLS | |
|  | **Performance Criteria** | **Evidence of Attainment** |
| A-2.02.01P | select power tools | power tools are selected according to the task |
| A-2.02.02P | lubricate power tools | power tools are lubricated according to manufacturers' specifications |
| A-2.02.03P | ***adjust power tools*** | power tools are adjusted according to manufacturers' specifications |
| A-2.02.04P | check power tools and ***power tool components*** | power tools and ***power tool components*** are checked for damage, excessive wear and safe and effective operation according to manufacturers' specifications, and removed from service if required |
| A-2.02.05P | maintain power tools | power tools are maintained according to recommended maintenance schedule and manufacturers' specifications |
| A-2.02.06P | check fluid levels, fuel mixture ratios and air pressure | fluid levels, fuel mixture ratios and air pressure are checked according to manufacturers' specifications |
| A-2.02.07P | grease motorized equipment | motorized equipment is greased according to manufacturers' specifications |
| A-2.02.08P | sharpen and balance mower blades | mower blades are sharpened and balanced according to manufacturers' specifications |
| A-2.02.09P | ***sharpen power tool*** components | power tool components are sharpened according to manufacturers' specifications |
| A-2.02.10P | check, charge or replace batteries on power tools | power tool batteries are operational and charged |
| A-2.02.11P | refuel equipment | equipment is refueled according to manufacturers' specifications to ensure personal safety and minimize environmental impact |
| A-2.02.12P | clean and disinfect power tools | power tools are cleaned and disinfected to prevent cross‑contamination from site to site |
| A-2.02.13P | store power tools | power tools are stored for organization, safety and security and according to manufacturers’ specifications |

RANGE OF VARIABLES

***power tools that can be adjusted*** include: chainsaws, mowers, power washers

***power tool components*** include: filters, mufflers, blades, power cords, attachments

***power tools that need sharpening*** include: chainsaws, hedge shears

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

RANGE OF VARIABLES

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

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| A-2.03 | Uses measuring equipment |

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| **Essential Skills** | Numeracy, Thinking, Document Use |

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

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

RANGE OF VARIABLES

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

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

RANGE OF VARIABLES

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

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

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| **Essential Skills** | Document Use, Thinking, Reading |

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

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|  | SKILLS | |
|  | **Performance Criteria** | **Evidence of Attainment** |
| A-2.04.01P | select ***vehicles, motorized equipment***, ***attachments and trailers*** | ***vehicles, motorized equipment***, ***attachments and trailers*** are selected according to task |
| A-2.04.02P | operate and transport vehicles and motorized equipment | vehicles are operated and transported according to jurisdictional regulations, manufacturers’ specifications and company policy |
| A-2.04.03P | inspect ***vehicles, motorized equipment***, ***attachments and trailers*** for ***defects***, damage and wear | ***vehicles, motorized equipment***, ***attachments and trailers*** are inspected to ensure efficient functioning, identify damage and wear, and document findings according to jurisdictional regulations and company policies |
| A-2.04.04P | clean ***vehicles, motorized equipment***, ***attachments and trailers*** | ***vehicles, motorized equipment***, ***attachments and trailers*** are cleaned to maintain optimal operation and appearance, detect leaks, and maintain sanitation |
| A-2.04.05P | check condition of ***safety features*** | ***safety features*** are checked for safe operating condition according to manufacturers' specifications and jurisdictional regulations |
| A-2.04.06P | check ***fluid*** levels | ***fluid*** levels are checked to ensure that they meet manufacturers' specifications |
| A-2.04.07P | check and replace ***components*** | ***components*** are replaced according to manufacturers’ specifications |
| A-2.04.08P | check and adjust air pressure in tires | air pressure levels meet manufacturers’ specifications |
| A-2.04.09P | check and tighten loose connections and fittings | loose connections and fittings are tightened according to manufacturers’ specifications |
| A-2.04.10P | grease ***vehicles, motorized equipment***, ***attachments and trailers*** | ***vehicles, motorized equipment***, ***attachments and trailers*** are greased according to manufacturers' specifications |
| A-2.04.11P | adjust and secure ***attachments*** for parking, travel and operation | ***attachments*** are adjusted and secured for parking, travel and operation |
| A-2.04.12P | check hydraulic hose condition | hydraulic hose condition is checked to ensure safe and effective operation of equipment |
| A-2.04.13P | disinfect ***vehicles, motorized equipment***, ***attachments and trailers*** | ***vehicles, motorized equipment***, ***attachments and trailers*** are disinfected to prevent transfer of invasive species and contaminants according to jurisdictional regulations and site specifications |
| A-2.04.14P | replace damaged and worn ***components*** | damaged and worn ***components*** are replaced according to manufacturers’ specifications |
| A-2.04.15P | reduce unnecessary idling of vehicles and equipment | idling is kept to a minimum according to jurisdictional regulations and company policies |
| A-2.04.16P | check operation of safety brake, latch pin and safety chain on trailers | safety brake, latch pin and safety chain on trailers are checked for safe and effective operation, and removed from service if necessary, according to manufacturers’ specifications and jurisdictional regulations |

RANGE OF VARIABLES

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

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

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

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

***fluid*** includes: oil, coolant, hydraulic, fuel types

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

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

RANGE OF VARIABLES

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

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

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

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

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

TASK A-3 Organizes work

TASK DESCRIPTOR

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

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| A-3.01 | Performs site assessments |

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| **Essential Skills** | Thinking, Document Use, Oral Communication |

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

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|  | SKILLS | |
|  | **Performance Criteria** | **Evidence of Attainment** |
| A-3.01.01P | assess access points | access points are assessed to identify site restrictions and challenges for work |
| A-3.01.02P | perform visual inspection of site and neighbouring properties | visual inspection identifies existing damage and extensional (surrounding) landscape |
| A-3.01.03P | arrange for jurisdictional underground utility locate service | utility locations are marked prior to commencing any digging work to identify markings for ***private and public utilities*** |
| A-3.01.04P | perform ***soil tests*** | ***soil tests*** are completed to determine quality of existing soil |
| A-3.01.05P | locate septic system and wells | septic systems and wells are located according to drawings and/or verbal and physical confirmation |
| A-3.01.06P | assess health and vigour of existing plants | existing plants’ health and vigour is assessed for cultural maintenance or removal |
| A-3.01.07P | identify areas to be excavated and protected | areas to be excavated and protected are identified according to drawings and specifications |
| A-3.01.08P | identify and verify existing and proposed grading and drainage patterns | existing and proposed grading and drainage patterns are identified and verified according to drawings and specifications |
| A-3.01.09P | identify security requirements | security requirements are identified according to site conditions |
| A-3.01.10P | protect site elements | site elements are protected |

RANGE OF VARIABLES

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

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

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

RANGE OF VARIABLES

***documentation*** includes: plans, specifications, contracts, surveys

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| A-3.02 | Uses documentation and reference material |

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| **Essential Skills** | Reading, Document Use, Thinking |

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

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

RANGE OF VARIABLES

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

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

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

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

RANGE OF VARIABLES

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

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

***design principles*** include: colour, texture, scale, form

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

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| A-3.03 | Maintains records |

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| **Essential Skills** | Reading, Writing, Document Use |

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

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

RANGE OF VARIABLES

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

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

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

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

RANGE OF VARIABLES

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

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

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| A-3.04 | Participates in job planning activities |

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| **Essential Skills** | Thinking, Document Use, Writing |

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

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|  | SKILLS | |
|  | **Performance Criteria** | **Evidence of Attainment** |
| A-3.04.01P | identify and prioritize tasks | tasks are prioritized to assist in time management and efficient performance |
| A-3.04.02P | identify labour expertise and allocate production hours | labour expertise is identified according to specifications and in consultation with project manager |
| A-3.04.03P | organize labour, materials, ***tools and equipment*** | production hours are allocated and materials, ***tools and equipment*** are organized according to ***project*** ***requirements*** |
| A-3.04.04P | identify and schedule sub-contractors | sub-contractors are identified and scheduled according to scope of work |
| A-3.04.05P | refer to historical information and previous records | historical information and previous records are checked to assist in the daily planning |
| A-3.04.06P | review safety requirements | safe completion of the project is ensured according to safety requirements |
| A-3.04.07P | locate private and public utilities | safe completion of project is ensured according to private and public utility locates |
| A-3.04.08P | verify scope of project and determine sequence of job | scope of project is verified and job sequence is determined to ensure project is completed according to plans and budget |
| A-3.04.09P | verify materials and ***practices*** | materials and ***practices*** are verified according to project specifications and schedule |
| A-3.04.10P | plan ***site-specific staging*** | ***site-specific staging*** is planned to ensure a safe and efficient work site |
| A-3.04.11P | identify and schedule daily and end of project clean-up | daily and end of project clean-up is identified and scheduled |

RANGE OF VARIABLES

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

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

***practices*** include:safe-work, horticultural, construction

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

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

RANGE OF VARIABLES

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

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| A-3.05 | Orders materials |

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| **Essential Skills** | Reading, Thinking, Numeracy |

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

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

RANGE OF VARIABLES

***material information*** includes: order number, tracking number, time and date of delivery or pick up

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

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

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| A-3.06 | Organizes materials and equipment |

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| **Essential Skills** | Thinking, Reading, Document Use |

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

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

RANGE OF VARIABLES

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

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

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

***substandard plants*** include: damaged/diseased and undersized plants

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

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

RANGE OF VARIABLES

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

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| A-3.07 | Transports materials |

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| **Essential Skills** | Document Use, Thinking, Reading |

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

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|  | SKILLS | |
|  | **Performance Criteria** | **Evidence of Attainment** |
| A-3.07.01P | identify types of transportation | types of transportation are identified |
| A-3.07.02P | protect plant material | ***protective items*** and proceduresare usedto ensure plant health according to CLS |
| A-3.07.03P | secure ***materials*** | ***materials*** are secured using appropriate load bearing tie downs according to jurisdictional regulations, and ***loose materials*** are loaded and secured in a manner to prevent spillage and damage |
| A-3.07.04P | load/unload ***materials*** | ***materials*** are loaded and unloaded using ***tools and equipment*** in sequence and direction to allow for optimal transport |
| A-3.07.05P | cover ***materials*** | ***materials*** are covered according to company policies and jurisdictional regulations |
| A-3.07.06P | load and transport ***material*** | ***material*** is loaded and transported according to weight restrictions, manufacturers’ specifications, load distribution requirements, and according to jurisdictional regulations |
| A-3.07.07P | perform and document circle check of loaded vehicle and towed equipment | circle check of loaded vehicle and towed equipment is documented according to jurisdictional regulations and company policies |

RANGE OF VARIABLES

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

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

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

RANGE OF VARIABLES

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

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

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| A-3.08 | Transports equipment |

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| **Essential Skills** | Document Use, Thinking, Reading |

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

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

TASK A-4 Participates in marketing and sales

TASK DESCRIPTOR

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

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

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| A-4.01 | Controls inventory |

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| **Essential Skills** | Numeracy, Digital Technology, Reading |

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

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

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

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| A-4.02 | Sells products and services |

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| **Essential Skills** | Digital Technology, Oral Communication, Working with Others |

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

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

RANGE OF VARIABLES

***procedures*** include: merchandising, invoicing, receiving payments, advertising

***marketing principles*** include: creating internet presence, advertising

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| A-4.03 | Maintains customer relations |

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| **Essential Skills** | Oral Communication, Working with Others, Thinking |

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

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

RANGE OF VARIABLES

***customer record information*** includes: address, phone number, email address, product preferences

***jurisdictional regulations*** include: privacy legislation, trade regulations

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

RANGE OF VARIABLES

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

***jurisdictional regulations*** include: privacy legislation, trade regulations

***customer record information*** includes: address, phone number, email address, product preferences

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| A-4.04 | Prepares estimates |

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| **Essential Skills** | Numeracy, Thinking, Continuous Learning |

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

RANGE OF VARIABLES

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

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

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

***logistical issues*** include: skill requirements, scheduling, equipment availability

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

RANGE OF VARIABLES

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

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

TASK A-5 Uses communication and mentoring techniques

TASK DESCRIPTOR

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

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| A-5.01 | Uses communication techniques |

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| **Essential Skills** | Oral Communication, Working with Others, Continuous Learning |

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

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

RANGE OF VARIABLES

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

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|  | KNOWLEDGE | |
|  | **Learning Outcomes** | **Learning Objectives** |
| A-5.01.01L | demonstrate knowledge of trade terminology | define terminology used in the trade |
| A-5.01.02L | demonstrate knowledge of effective communication practices | describe the importance of using effective verbal and non-verbal communication with people in the workplace |
|  |  | identify ***sources of information*** to effectively communicate |
|  |  | identify communication and ***learning styles*** |
|  |  | describe effective listening and speaking skills |
|  |  | identify ***personal responsibilities and attitudes*** that contribute to on-the-job success |
|  |  | identify the value of diversity in the workplace |
|  |  | identify communication that constitutes ***harassment*** and ***discrimination*** |

RANGE OF VARIABLES

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

***learning styles*** include: seeing, hearing, doing

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

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

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

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| A-5.02 | Uses mentoring techniques |

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| **Essential Skills** | Oral Communication, Working with Others, Continuous Learning |

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

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|  | SKILLS | |
|  | **Performance Criteria** | **Evidence of Attainment** |
| A-5.02.01P | identify and communicate learning objective | apprentice or colleague can explain the objective |
| A-5.02.02P | link lesson to other lessons and the job | the relation of the lessons to each other and to the job or job segment is demonstrated |
| A-5.02.03P | demonstrate performance of a skill to an apprentice or colleague | ***steps required to demonstrate a skill*** are performed |
| A-5.02.04P | set up conditions required for an apprentice to practice a skill | ***practice conditions*** are set up so that the skill can be practiced safely by the apprentice |
| A-5.02.05P | assess apprentice or colleague’s ability to perform tasks with increasing independence | performance improves with practice to a point where skill can be done with little supervision |
| A-5.02.06P | give supportive and corrective feedback | apprentice adopts best practice after having been given supportive or corrective feedback |
| A-5.02.07P | support apprentices in pursuing technical training opportunities | technical training is completed within timeframe prescribed by apprenticeship authority |
| A-5.02.08P | support equity group apprentices | workplace is harassment and discrimination-free |
| A-5.02.09P | implement probationary period to assess suitability to the trade | commitment is demonstrated and more suitable career options are provided if required |

RANGE OF VARIABLES

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

***practice conditions*** means: guided, limited independence, full independence

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|  | KNOWLEDGE | |
|  | **Learning Outcomes** | **Learning Objectives** |
| A-5.02.01L | demonstrate knowledge of strategies for learning skills in the workplace | describe the importance of individual experience |
|  |  | describe the shared responsibilities for workplace learning |
|  |  | determine one’s own learning preferences and explain how these relate to learning new skills |
|  |  | describe the importance of different types of skills in the workplace |
|  |  | describe the importance of ***essential skills*** in the workplace |
|  |  | identify different ***learning styles*** |
|  |  | identify different ***learning needs*** and strategies to meet ***learning needs*** |
|  |  | identify ***strategies to assist in learning a skill*** |
| A-5.02.02L | demonstrate knowledge of strategies for ***teaching skills*** in theworkplace | identify different roles played by a workplace mentor |
|  |  | describe ***teaching skills*** |
|  |  | explain the importance of identifying the lesson objective |
|  |  | identify teachable moments |
|  |  | explain the importance of linking the lessons |
|  |  | identify the components of the skill (the context) |
|  |  | describe considerations in setting up opportunities for skill practice |
|  |  | explain the importance of providing feedback |
|  |  | identify techniques for giving effective feedback |
|  |  | describe a skills assessment |
|  |  | identify methods of assessing progress |
|  |  | explain how to adjust a lesson to different situations |

RANGE OF VARIABLES

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

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

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

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

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

MAJOR WORK ACTIVITY B

Uses horticultural principles

TASK B-6 Applies horticultural practices

TASK DESCRIPTOR

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

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| B-6.01 | Identifies plants and plant requirements |

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| **Essential Skills** | Reading, Document Use, Thinking |

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

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

RANGE OF VARIABLES

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

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

RANGE OF VARIABLES

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

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

***basic plant science*** includes: botany, physiology

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

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

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

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

***plant anatomy*** includes: cell types, tissues, organs

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

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| B-6.02 | Manages plant health and growing conditions |

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| **Essential Skills** | Reading, Thinking, Continuous Learning |

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| **NL** | **NS** | **PE** | **NB** | **QC** | **ON** | **MB** | **SK** | **AB** | **BC** | **NT** | **YT** | **NU** |
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|  | SKILLS | |
|  | **Performance Criteria** | **Evidence of Attainment** |
| B-6.02.01P | determine plants’ exposure to ***environmental conditions*** | plants’ exposure to ***environmental conditions*** is identified |
| B-6.02.02P | determine factors that lead to ***plant stress*** | factors that lead to ***plant stress*** are determined by inspecting plants for ***signs and symptoms of plant diseases, deficiencies and environmental impacts*** |
| B-6.02.03P | identify signs and symptoms of ***plant stress*** | signs and symptoms of ***plant stress*** are identified |
| B-6.02.04P | collect ***growing*** ***media*** samples | representative media samples are collected by using various techniques according to industry practices |
| B-6.02.05P | collect water samples | representative water samples are collected using various techniques according to industry practices |
| B-6.02.06P | test ***growing media*** and irrigation water samples manually or by lab analysis | ***growing media*** and irrigation water sample ***properties*** are identified through sample testing |
| B-6.02.07P | examine foliar samples to identify nutrient deficiencies, diseases and pests | plant health and nutrient deficiencies, diseases and pests are identified based on foliar samples using reference materials, resources and test results |
| B-6.02.08P | interpret test results | plan of action is determined based on test results |
| B-6.02.09P | identify air quality conditions that affect interior and exterior plants | air quality conditions that affect interior and exterior plants are determined |
| B-6.02.10P | adjust plant selection and placement | plant selection and placement are adjusted according to ***growing conditions*** |
| B-6.02.11P | develop plan for implementing ***corrective measures*** | plan for ***corrective measures*** is put in place according to findings and plant requirements |
| B-6.02.12P | amend ***growing conditions*** to meet plant requirements | ***growing conditions*** are amended according to plant requirements |
| B-6.02.13P | measure and apply ***fertilizer and amendments*** | ***fertilizer and amendments*** are used according to plant requirements and test results |
| B-6.02.14P | remove and dispose of pest and disease-ridden plant parts | pest and disease-ridden plant parts are removed and disposed of to prevent spreading of pests and diseases according to jurisdictional regulations and horticultural practices |

RANGE OF VARIABLES

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

***plant stress*** includes: biotic and abiotic factors

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

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

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

***growing conditions*** include: microclimate, topography, natural habitat, pH level, soil type and depth, growing environment, water availability, available space, humidity, shelter, light, plant hardiness zone ***corrective measures*** include: fertilization, liming, adding organics, neutralizing water, correcting drainage

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

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|  | KNOWLEDGE | |
|  | **Learning Outcomes** | **Learning Objectives** |
| B-6.02.01L | demonstrate knowledge of ***growing media*** conditions and ***properties*** | identify ***growing media*** conditions and ***properties*** |
|  |  | apply tests such as pH, air quality and nutrient tests |
|  |  | identify treatment methods |
| B-6.02.02L | demonstrate knowledge of soil types and ***soil amendments*** | identify ***physical soil characteristics*** to consider when determining the suitability for plant growth |
|  |  | describe the implications of soil management on the practice of environmental stewardship |
|  |  | identify types of ***growing media*** and describe their characteristics and applications |
|  |  | identify the ***soil characteristics that impact soil chemical and biological properties*** |
|  |  | explain the procedures used for taking soil samples |
|  |  | identify types of soil tests and describe their characteristics and applications |
|  |  | identify types of ***soil amendments*** and describe their characteristics and applications |
|  |  | identify the considerations when selecting ***soil amendments*** |
|  |  | describe the procedures used to apply and incorporate ***soil amendments*** |
|  |  | describe the procedures for storing, transporting and disposing of soil, soil amendment products and packaging according to jurisdictional regulations |
|  |  | interpret soil test results |
| B-6.02.03L | demonstrate knowledge of plant health | define characteristics of normal plant growth |
|  |  | identify signs and symptoms of ***plant stress*** |
|  |  | describe companion planting procedures |
|  |  | identify IPM principles |
|  |  | identify Canadian and regional landscape standards and jurisdictional regulations |
| B-6.02.04L | demonstrate knowledge of the characteristics of fertilizers | identify types of fertilizers and describe their characteristics and applications |
|  |  | define terminology associated with fertilizers |
|  |  | describe the analysis and formulation of fertilizers |
|  |  | identify hazards and describe safe work practices pertaining to fertilizers and their use |
|  |  | describe the implications of fertilizer management on the practice of environmental stewardship |
| B-6.02.05L | demonstrate knowledge of jurisdictional regulations pertaining to fertilizers | describe jurisdictional regulations pertaining to fertilizers |
| B-6.02.06L | demonstrate knowledge of the procedures and equipment used for the application, handling, transport, storage and disposal of fertilizers | describe the procedures and equipment used and calibration for the application of fertilizers |
|  |  | describe the procedures and equipment used to store, dispose and transport fertilizers |

RANGE OF VARIABLES

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

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

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

***soil amendments*** include: organic, inorganic

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

***plant stress*** includes: biotic and abiotic factors

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| B-6.03 | Prunes plant material |

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| **Essential Skills** | Reading, Document Use, Thinking |

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

RANGE OF VARIABLES

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

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

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

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|  | KNOWLEDGE | |
|  | **Learning Outcomes** | **Learning Objectives** |
| B-6.03.01L | demonstrate knowledge of the procedures used to inspect, use, maintain, store and transport pruning ***tools and equipment*** | describe the procedures used to inspect, use, maintain, store and transport pruning ***tools and equipment*** |
|  |  | describe procedures for cleaning and sanitizing pruning ***tools and equipment*** |
| B-6.03.02L | demonstrate knowledge of the procedures for pruning | define terminology associated with pruning |
|  |  | identify hazards and describe safe work practices pertaining to pruning |
|  |  | describe the ***purpose of pruning*** |
|  |  | describe ***pruning methods*** and techniques |
|  |  | identify ***factors*** that affect pruning times |
|  |  | describe methods to organize debris for efficient handling |
| B-6.03.03L | demonstrate knowledge of the procedures for the disposal of diseased and infested plant parts | describe the procedures for removing plant parts and disposal of diseased and infested plant parts |

RANGE OF VARIABLES

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

***purpose of pruning*** includes: plant appearance, structure, plant growth requirements, unwanted growth, plant health, prevention of winter damage

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

***factors*** include: dormancy, flower period, growth response, wind and frost damage, scorch

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| B-6.04 | Manages pests, diseases and invasive species |

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| **Essential Skills** | Reading, Document Use, Thinking |

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|  | SKILLS | |
|  | **Performance Criteria** | **Evidence of Attainment** |
| B-6.04.01P | determine environmental and site conditions that lead to plant stress | conditions that lead to plant stress are determined by inspecting site |
| B-6.04.02P | inspect plants visually | pest population and ***damage*** is inspected and identified |
| B-6.04.03P | identify pests, diseases, invasive species and beneficial insects | pests, diseases, invasive species and beneficial insects are identified by visually inspecting plants and using resources |
| B-6.04.04P | determine course of action for managing pests and invasive species | course of action is determined and complies with jurisdictional regulations |
| B-6.04.05P | monitor pest populations, spread of disease and damage characteristics | pest populations, spread of disease and damage characteristics are documented |
| B-6.04.06P | monitor biological control populations | biological control populations are documented |
| B-6.04.07P | establish injury and action thresholds | injury and action thresholds are established according to economics, aesthetics and plant health |
| B-6.04.08P | select treatment and control methods | treatment and control methods are selected according to types of pests, diseases and environment that minimizes negative impact on native or existing ecosystem, and jurisdictional regulations |
| B-6.04.09P | identify and calibrate pesticide application equipment | pesticide application equipment is selected and calibrated according to required application and manufacturers' specifications |
| B-6.04.10P | prevent infestation of pests, diseases and invasive species | infestation of pests, diseases and invasive species is prevented by using ***prevention strategies*** |
| B-6.04.11P | apply ***treatment methods*** | ***treatment methods*** are appliedin compliance with jurisdictional regulations |
| B-6.04.12P | document the use of pest control products | use of pest control products is documented according to jurisdictional regulations |
| B-6.04.13P | monitor results of treatment | results of treatment are monitored to evaluate efficacy |
| B-6.04.14P | identify ***quarantine protocols*** | ***quarantine protocols*** are identified, according to jurisdictional regulations and industry practices |
| B-6.04.15P | dispose of pest and disease-ridden plant material and invasive species | pest and disease-ridden plant material and invasive species are disposed of according to jurisdictional regulations |

RANGE OF VARIABLES

***damage*** includes: leaf disfiguration, notching, stippling, discoloration

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

***treatment methods*** include: cultural, mechanical, biological, chemical

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

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|  | KNOWLEDGE | |
|  | **Learning Outcomes** | **Learning Objectives** |
| B-6.04.01L | demonstrate knowledge of types of pests and diseases and the procedures used to manage them | define terminology associated with pest and disease management |
|  |  | identify the ***considerations*** for selecting and applying pest and disease management measures |
|  |  | define the components of an integrated pest management (IPM) program |
|  |  | describe the implications of IPM on the practice of environmental stewardship |
|  |  | identify ***methods*** used for pest and disease management and treatment |
|  |  | identify ***common types of pests*** and describe their characteristics and life cycles |
|  |  | identify ***common types of diseases and disorders*** and describe their characteristics and life cycles |
|  |  | identify ***causes of diseases*** |
|  |  | identify ***pathogens*** |
|  |  | identify ***biotic factors*** |
|  |  | identify ***abiotic factors*** |
|  |  | identify the ***factors for selecting and applying pest and disease management measures*** |
|  |  | describe the ***procedures*** used to implement pest and disease management measures |
| B-6.04.02L | demonstrate knowledge of jurisdictional regulations and ***documentation*** pertaining to pest and disease management | identify jurisdictional regulations pertaining to pest and disease management |
|  |  | describe ***documentation*** pertaining to pest and disease management |
| B-6.04.03L | demonstrate knowledge of pest control products, formulations and application equipment | identify specific tools, equipment and products relating to pest and disease management and describe their applications and procedures for use |
| B-6.04.04L | demonstrate knowledge of the ***procedures*** used to handle, transport, apply, store and dispose of pest and disease management products and tools | identify hazards and describe safe work practices pertaining to pest and disease management |
|  |  | describe the ***procedures*** associated with the handling, transportation, storage and disposal of pest and disease management related products and materials |
|  |  | describe how to select, apply and record pest and disease management measures |

RANGE OF VARIABLES

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

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

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

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

***causes of diseases*** include: pathogens, nematodes, nutrient deficiencies

***pathogens*** include: viruses, bacteria, fungi

***biotic factors*** include: diseases, insects, animals

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

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

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

application techniques

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

TASK B-7 Applies environmental practices

TASK DESCRIPTOR

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

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| B-7.01 | Practices environmental stewardship |

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| **Essential Skills** | Thinking, Working with Others, Continuous Learning |

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| **NL** | **NS** | **PE** | **NB** | **QC** | **ON** | **MB** | **SK** | **AB** | **BC** | **NT** | **YT** | **NU** |
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|  | SKILLS | |
|  | **Performance Criteria** | **Evidence of Attainment** |
| B-7.01.01P | select and use sustainable ***horticultural and landscaping materials*** | ***horticultural and landscaping materials*** that minimize ***negative impact on environment*** and ecosystems are used |
| B-7.01.02P | select and use recycled and recyclable materials | recycled and recyclable materials are used for operations when possible |
| B-7.01.03P | select and maintain ***tools and equipment*** that minimize ***negative impact on environment*** and ***ecosystems*** | ***tools and equipment*** that minimize ***negative impact on environment*** and ***ecosystems*** are used and maintained |
| B-7.01.04P | source local materials and equipment | materials and equipment from local sources are used when possible |
| B-7.01.05P | select permeable surfaces and maximize green space | landscape projects are implemented to reduce impermeable surfaces and maximize green space |
| B-7.01.06P | perform on-site recycling/composting | soil and plant parts are recycled/composted on site using ***eco-methods*** based on environmental stewardship principles |
| B-7.01.07P | organize work flow | work flow is organized in a manner that minimizes ***negative impact on environment*** |
| B-7.01.08P | incorporate on-site ***elements*** into naturalized green spaces | naturalized green spaces include on-site ***elements*** |

RANGE OF VARIABLES

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

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

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

***ecosystems*** include: meadows, ponds, parks, urban landscape

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

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

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

RANGE OF VARIABLES

***ecosystems*** include: meadows, ponds, parks, urban landscape

***environmental waste management best practices*** include: reduce, reuse, recycle

***site protection*** includes: silt fencing, erosion control, amending native soil, let-it-lay, adjusting mowing height

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| B-7.02 | Practices biodiversity enhancement |

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| **Essential Skills** | Thinking, Working with Others, Continuous Learning |

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

RANGE OF VARIABLES

***environment conditions*** include: soil type, light, pH, humidity and moisture availability, wind, exposure, native habitat

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

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

RANGE OF VARIABLES

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

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

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| B-7.03 | Practices soil stewardship |

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| **Essential Skills** | Continuous Learning, Numeracy, Thinking |

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

RANGE OF VARIABLES

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

***conditions*** include:texture, moisture levels, porosity, soil microbiome

***test methods*** include: visual, ribbon tests, probes

***soil testing*** includes: pH, nutrient, deficiency levels, micro-activity levels, organic content

***environmental impact on soils*** includes: compaction, depletion of organic matter, destruction of soil structure, damage to soil microbiome, hardpan, erosion, introduction of invasive species, diseases and pests, damage to root systems

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|  | KNOWLEDGE | |
|  | **Learning Outcomes** | **Learning Objectives** |
| B-7.03.01L | demonstrate knowledge of ***growing media*** | identify types of ***growing media*** and describe their characteristics and applications |
| B-7.03.02L | demonstrate knowledge of soil types and ***soil amendments*** | identify types ofsoil |
|  |  | identify types of ***soil amendments*** and describe their characteristics, and procedures used to apply and/or incorporate them |
|  |  | identify types of soil tests and describe their characteristics and applications |
|  |  | explain the procedures used for taking soil samples |
| B-7.03.03L | demonstrate knowledge of interpreting test results | interpret test results |
|  |  | explain how to develop recommendations based on test results |
| B-7.03.04L | demonstrate knowledge of selecting and applying fertilizers and amendments | describe the procedures used to apply and/or incorporate fertilizers and amendments |
| B-7.03.05L | demonstrate knowledge of minimizing harm to soil structure, health and microbiome | describe the difference between good soil structure and poor soil structure |
|  |  | describe the impact of cultivation on the soil structure, health and microbiome |
|  |  | identify situations in which cultivating is required |
|  |  | describe how minimum tillage and other methods of cultivation minimize harm to soil structure, health and ***soil organisms*** |
| B-7.03.06L | demonstrate knowledge of conserving soil and preserving soil health | explain the economic and ***environmental reasons*** for conserving soil and preserving soil health |
|  |  | describe site protection measures that minimize environmental impact |
|  |  | explain bulk soil storage procedures that minimize environmental impact |
|  |  | describe methods to prevent soil erosion and siltation |
|  |  | explain the reasons for using the cut and fill method |

RANGE OF VARIABLES

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

***soil amendments*** include: organic, inorganic

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

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

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| B-7.04 | Practices water stewardship |

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| **Essential Skills** | Thinking, Continuous Learning, Document Use |

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

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

RANGE OF VARIABLES

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

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

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

RANGE OF VARIABLES

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

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

MAJOR WORK ACTIVITY C

Performs landscape construction

TASK C-8 Performs pre-construction activities

TASK DESCRIPTOR

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

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| C-8.01 | Participates in landscape design activities |

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| **Essential Skills** | Document Use, Thinking, Oral Communication |

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

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

RANGE OF VARIABLES

***tools*** include: levels, GPS, measuring devices

***design principles*** include: texture, colour, form, scale, balance, rhythm, unity

***standards*** include: American National Standards Institute (ANSI), CLS, OH&S

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

RANGE OF VARIABLES

***landscape drawings*** include: drainage, elevation, grading, lighting, irrigation, planting

***documentation*** includes: specifications, codes, standards

***site measurements*** include: grade levels and stake interpretation, grid system, triangulation

***design principles*** include: texture, colour, form, scale, balance, rhythm, unity

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| C-8.02 | Prepares construction site |

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| **Essential Skills** | Document Use, Thinking, Oral Communication |

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

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|  | SKILLS | |
|  | **Performance Criteria** | **Evidence of Attainment** |
| C-8.02.01P | select and use ***hand and measuring tools*** | ***hand and measuring tools*** are selected and used according to task requirements and manufacturers' specifications |
| C-8.02.02P | select and use ***motorized equipment*** | ***motorized equipment*** is selected and used according to task requirements, site access and manufacturers' specifications |
| C-8.02.03P | identify and communicate discrepancies between plans and site conditions | plan and site conditions are identified and discrepancies are communicated to employer and ***stakeholders*** |
| C-8.02.04P | preserve and protect ***existing hardscape and softscape elements*** and soil | ***existing hardscape and softscape elements*** and soilare preserved and protected according to drawings, specifications, CLS and jurisdictional regulations |
| C-8.02.05P | remove hazards, debris and other unwanted materials | hazards, debris and other unwanted materials are removed according to drawings and specifications |
| C-8.02.06P | create site access | site access is created according to drawings, specifications and site conditions |
| C-8.02.07P | identify markings of underground and overhead utility hazards | underground and overhead utility hazard markings are identified according to locate information |
| C-8.02.08P | interpret and extract locate information for ***privately-owned and public utilities*** | locate information for ***privately-owned and public utilities*** is interpreted and extracted |
| C-8.02.09P | locate and cordon off areas | areas are located and cordoned off using barriers to minimize access and environmental impact |
| C-8.02.10P | install ***environmental mitigation mechanisms*** | ***environmental mitigation mechanisms*** are installed according to manufacturers' specifications, drawings, specifications, jurisdictional regulations and CLS |
| C-8.02.11P | lay out site by marking and staking location of hardscape and softscape elements to be installed | location of hardscape and softscape elements to be installed is marked and staked out according to drawings and specifications |
| C-8.02.12P | excavate and place service conduits | service conduits are excavated and placed to support ***activities*** according to drawings and specifications, jurisdictional regulations and CLS |
| C-8.02.13P | verify site preparation | site preparation meets drawings and specifications |

RANGE OF VARIABLES

***hand and measuring tools*** include: shovels, builders’ levels, transits

***motorized equipment*** includes: loaders, skid-steers, excavators

***stakeholders*** include: property owners, designers, engineers

***existing hardscape and softscape elements*** include: trees, decks

***privately-owned and public utilities*** include: fibre-optics, gas lines, septic, hydro, water, sewer

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

***activities*** include: installing irrigation systems and low voltage wiring

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

RANGE OF VARIABLES

***information*** includes: general conditions, supplementary conditions, contract personnel

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

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| C-8.03 | Performs grading |

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| **Essential Skills** | Document Use, Thinking, Numeracy |

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| **NL** | **NS** | **PE** | **NB** | **QC** | **ON** | **MB** | **SK** | **AB** | **BC** | **NT** | **YT** | **NU** |
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|  | SKILLS | |
|  | **Performance Criteria** | **Evidence of Attainment** |
| C-8.03.01P | select and use ***tools and equipment*** | ***tools and equipment*** are selected and used according to task requirements and manufacturers' specifications |
| C-8.03.02P | strip and stockpile topsoil | topsoil is stripped and stockpiled according to drawings, specifications, jurisdictional regulations and CLS |
| C-8.03.03P | cut and fill material to establish rough grade | material is cut and filled to establish rough grade according to drawings, specifications and industry standards |
| C-8.03.04P | prepare site for positive drainage | site is prepared for positive drainage according to drawings, specifications, jurisdictional regulations and CLS |
| C-8.03.05P | verify that site is prepared | site preparation meets drawings and specifications |

RANGE OF VARIABLES

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

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

RANGE OF VARIABLES

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

***grading plans*** include:existing grades, proposed grades (finished), contour plans

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

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| C-8.04 | Installs drainage systems |

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| **Essential Skills** | Document Use, Thinking, Numeracy |

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

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

RANGE OF VARIABLES

***drainage systems*** include: sub-surface drain, surface drainage

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

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

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

RANGE OF VARIABLES

***drainage systems*** include: sub-surface drain, surface drainage

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

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

TASK C-9 Installs hardscape

TASK DESCRIPTOR

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

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| C-9.01 | Installs landscape structures |

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| **Essential Skills** | Numeracy, Document Use, Working with Others |

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

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|  | SKILLS | |
|  | **Performance Criteria** | **Evidence of Attainment** |
| C-9.01.01P | select and use ***hand and power tools*** | ***hand and power tools*** are selected and used according to task requirements and manufacturers' specifications |
| C-9.01.02P | select and use ***equipment*** | ***equipment*** is selected and used according to task requirements and manufacturers' specifications |
| C-9.01.03P | lay out and mark construction area | construction area is laid out and marked according to drawings, specifications and permits |
| C-9.01.04P | excavate construction area | construction area is excavated according to drawings and specifications |
| C-9.01.05P | prepare foundation | foundation is prepared according to drawings and specifications, building code and manufacturers' specifications |
| C-9.01.06P | construct ***landscape*** ***structures*** | ***landscape*** ***structures*** are constructed according to drawings, specifications, manufacturers' specifications, building codes and jurisdictional regulations |
| C-9.01.07P | verify installation | installation meets drawings and specifications |
| C-9.01.08P | clean structures | structures are cleaned according to industry standards |
| C-9.01.09P | repair construction access | access area is restored to original state |
| C-9.01.10P | dispose of, or recycle, excess materials | excess materials are disposed of, or recycled, according to jurisdictional regulations |
| C-9.01.11P | apply preservatives, stains and sealants | preservatives, stains and sealants are applied to provide ease of cleaning, longevity and aesthetics according to product specifications and jurisdictional regulations |

RANGE OF VARIABLES

***hand and power tools*** include: hammers, mitre saws, power drills

***equipment*** includes: excavators, loaders, skid-steers, attachments

***landscape structures*** include: decks, pergolas, outdoor kitchens, gazebos, fences

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

RANGE OF VARIABLES

***landscape structures*** include: decks, pergolas, outdoor kitchens, gazebos, fences

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

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| C-9.02 | Installs surface materials |

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| **Essential Skills** | Document Use, Working with Others, Numeracy |

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

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|  | SKILLS | |
|  | **Performance Criteria** | **Evidence of Attainment** |
| C-9.02.01P | select and use ***tools and*** ***equipment*** | ***tools and*** ***equipment*** are selected and used according to task requirements, manufacturers' specifications and CLS |
| C-9.02.02P | lay out and mark construction area | construction area is laid out and marked according to drawings and specifications |
| C-9.02.03P | excavate area and compact sub-grade | area is excavated and sub-grade is compacted according to specifications and CLS |
| C-9.02.04P | store or remove excavated materials | excavated materials are stored or removed according to industry practices and jurisdictional regulations |
| C-9.02.05P | place geotextiles | geotextiles are placed for base stability according to drawings and specifications |
| C-9.02.06P | add aggregate base and compact in lifts | aggregate base is added and lifts are compacted according to drawings and specifications and jurisdictional regulations |
| C-9.02.07P | create or maintain adequate grade | adequate grade is created or maintained to ensure positive drainage according to drawings and specifications |
| C-9.02.08P | secure edge restraints for finished material | edge restraints for finished material are secured according to industry standards, drawings and specifications |
| C-9.02.09P | select ***surface materials*** | ***surface*** ***materials*** are selected according to intended use, drawings and specifications |
| C-9.02.10P | place ***bedding materials*** | ***bedding materials*** are placed according to drawings and specifications and industry standards |
| C-9.02.11P | screed ***bedding materials*** | ***bedding materials*** are screeded according to industry standards |
| C-9.02.12P | install ***surface*** ***materials*** | ***surface*** ***materials*** are installed according to industry standards and manufacturers' specifications |
| C-9.02.13P | measure, cut and fit ***surface*** ***materials*** | ***surface*** ***materials*** are measured, cut and fit according to drawings, specifications and task requirements |
| C-9.02.14P | clean surfaces | surfaces are cleaned according to industry standards |
| C-9.02.15P | apply ***joint materials*** | ***joint materials*** are applied according to product specifications |
| C-9.02.16P | compact surfaces | surfaces are compacted according to manufacturers' specifications and industry standards |
| C-9.02.17P | clean and seal ***surface*** ***materials*** | ***surface*** ***materials*** are cleaned and sealed according to manufacturers’ specifications |
| C-9.02.18P | verify installation | installation meets specifications |
| C-9.02.19P | clean and repair construction access | construction access is cleaned and repaired according to task requirements |
| C-9.02.20P | dispose of, or recycle, excess materials | excess materials are disposed of, or recycled, according to jurisdictional regulations |

RANGE OF VARIABLES

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

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

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

***joint materials*** include: mortars, sand, polymeric sand

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

RANGE OF VARIABLES

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

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

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

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

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| C-9.03 | Installs steps and retaining walls |

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| **Essential Skills** | Document Use, Working with Others, Numeracy |

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

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|  | SKILLS | |
|  | **Performance Criteria** | **Evidence of Attainment** |
| C-9.03.01P | select and use ***tools and*** ***equipment*** | ***tools*** ***and*** ***equipment*** are selected and used according to task requirements and manufacturers' specifications |
| C-9.03.02P | lay out and mark construction area | construction area is laid out and marked according to drawings and specifications |
| C-9.03.03P | excavate area and compact sub-grade | area is excavated and sub-grade is compacted according to specifications and CLS |
| C-9.03.04P | store or remove excavated materials | excavated materials are stored or removed according to industry practices and jurisdictional regulations |
| C-9.03.05P | place geotextile materials | geotextiles are placed for base stability according to drawings and specifications |
| C-9.03.06P | install aggregate base and compact in lifts | aggregate base is installed and lifts are compacted according to industry standards and manufacturers' specifications |
| C-9.03.07P | install concrete foundation for mortared natural stone wall | concrete foundation for mortared natural stone wall is installed according to drawings and specifications |
| C-9.03.08P | place ***bedding materials*** | ***bedding materials*** are placed according to drawings, specifications and industry standards |
| C-9.03.09P | screed ***bedding materials*** | ***bedding materials*** are screeded according to industry standards |
| C-9.03.10P | build walls and steps | walls and steps are built following ***procedures*** and using ***materials*** according to drawings, specifications, jurisdictional regulations, manufacturers' specifications and industry standards |
| C-9.03.11P | place drainage systems and backfill | drainage systems are placed and backfilled according to drawings, specifications and manufacturers' specifications |
| C-9.03.12P | install adhesives or mortars | adhesives or mortars are installed to secure capstones and treads according to manufacturers' specifications |
| C-9.03.13P | clean surfaces | surfaces are cleaned according to industry standards |
| C-9.03.14P | seal steps and retaining walls | steps and retaining walls are sealed according to product specifications |
| C-9.03.15P | verify installation | installation meets specifications |
| C-9.03.16P | clean and repair construction access | construction access is cleaned and repaired according to task requirements |
| C-9.03.17P | dispose of, or recycle, excess materials | excess materials are disposed of, or recycled, according to jurisdictional regulations |

RANGE OF VARIABLES

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

***bedding materials*** include: sand, limestone screening, concrete footing

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

***materials*** include: timber, natural stone, manufactured stones

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|  | KNOWLEDGE | |
|  | **Learning Outcomes** | **Learning Objectives** |
| C-9.03.01L | demonstrate knowledge of the procedures used to install wall units and steps | define terminology associated with hardscape installation |
|  |  | identify hazards and describe safe work practices pertaining to hardscape installation |
|  |  | interpret codes, regulations and manufacturers’ specifications pertaining to hardscape installation |
|  |  | identify types of ***materials*** used in wall and step construction and describe their characteristics and applications |
|  |  | describe the procedures used to prepare for installation of walls and steps |
|  |  | describe the procedures used to install walls and steps |
|  |  | describe the procedures used to estimate quantities of materials required to install wall units and steps |

RANGE OF VARIABLES

***materials*** include: timber, natural stone, manufactured stones

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| C-9.04 | Installs irrigation systems |

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| **Essential Skills** | Document Use, Numeracy, Digital Technology |

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

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|  | SKILLS | |
|  | **Performance Criteria** | **Evidence of Attainment** |
| C-9.04.01P | select and use ***tools and*** ***equipment*** | ***tools and*** ***equipment*** are selected and used according to task requirements and manufacturers' specifications |
| C-9.04.02P | mark proposed irrigation plan | proposed irrigation plan is marked according to drawings and specifications |
| C-9.04.03P | excavate or trench area and install pipe | area is excavated or trenched to grade and depth, and pipe is installed according to drawings and specifications, and CLS |
| C-9.04.04P | store or remove excavated materials | excavated materials are stored or removed according to industry standards and jurisdictional regulations |
| C-9.04.05P | lay out and assemble irrigation components | irrigation components are laid out and assembled according to manufacturers’ specifications, irrigation plan and jurisdictional regulations |
| C-9.04.06P | backfill trenches with materials to finished grade | trenches are backfilled with materials to finished grade according to drawings and specifications |
| C-9.04.07P | set head heights and nozzles of irrigation system | head heights and nozzles of irrigation system are set to ensure coverage |
| C-9.04.08P | install and program control system | control system is installed and programmed according to landscape and ***environmental requirements*** |
| C-9.04.09P | verify installation and operation | installation meets specifications and site conditions |
| C-9.04.10P | clean and restore area | area is restored and cleaned to original state |
| C-9.04.11P | dispose of, or recycle, excess materials | excess materials are disposed of, or recycled, according to jurisdictional regulations |

RANGE OF VARIABLES

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

***environmental requirements*** include: soil type, evapo-transpiration rates, plant needs

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

RANGE OF VARIABLES

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

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

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

***irrigation systems*** include: drip/low water volume, sprinkler

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

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| C-9.05 | Installs water features |

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| **Essential Skills** | Working with Others, Thinking, Numeracy |

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

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|  | SKILLS | |
|  | **Performance Criteria** | **Evidence of Attainment** |
| C-9.05.01P | select and use ***tools and*** ***equipment*** | ***tools and*** ***equipment*** are selected and used according to task requirements and manufacturers' specifications |
| C-9.05.02P | lay out and mark construction area | construction area is laid out and marked according to drawings and specifications |
| C-9.05.03P | excavate and store or remove excavated materials | materials are excavated and stored or removed according to site requirements, industry standards and jurisdictional regulations |
| C-9.05.04P | place sand and geotextile materials | sand and geotextile materials are placed according to design and manufacturers' specifications |
| C-9.05.05P | install liners and aggregates | liners and aggregates are installed according to design |
| C-9.05.06P | complete assembly of ***water supply components*** and filtration systems | ***water supply components*** and filtration systems are assembled according to manufacturers' specifications |
| C-9.05.07P | apply adhesives, foams and mortar | adhesives, foams and mortar are applied to secure and seal assembly according to manufacturers' specifications |
| C-9.05.08P | add water, operate water systems and check for leaks | water is added, water systems are operated and checked for leaks |
| C-9.05.09P | repair leaks | leaks are repaired according to requirements |
| C-9.05.10P | add ***aggregates and decorative features*** | ***aggregates and decorative features*** are added according to design |
| C-9.05.11P | verify and adjust water flow | water flow is verified and adjusted to optimize performance, sound and aesthetics |
| C-9.05.12P | drain water and clean all components | components are drained of water and cleaned according to industry standards |
| C-9.05.13P | refill water features and add ***ecosystem enhancement products*** | water features are refilled and ***ecosystem enhancement products*** are added according to manufacturers' specifications |
| C-9.05.14P | place aquatic plants and fish | aquatic plants and fish are placed according to design |
| C-9.05.15P | verify installation | installation meets specifications |
| C-9.05.16P | clean and repair construction access | construction access is cleaned and repaired according to task requirements |
| C-9.05.17P | dispose of, or recycle, excess materials | excess materials are disposed of, or recycled, according to jurisdictional regulations |

RANGE OF VARIABLES

***tools and*** ***equipment*** include: shovels, picks, chisels, wheelbarrows, excavators, loaders, skid-steers

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

***aggregates and decorative features*** include: rocks, garden art, foot bridges

***ecosystem enhancement products*** include: beneficial bacteria, pH amendments

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

RANGE OF VARIABLES

***documentation*** includes:flow rates, pipe and pump sizing charts

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| C-9.06 | Installs low voltage landscape lighting |

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| **Essential Skills** | Document Use, Working with Others, Numeracy |

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

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

RANGE OF VARIABLES

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

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

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

RANGE OF VARIABLES

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

TASK C-10 Installs softscape

TASK DESCRIPTOR

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

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| C-10.01 | Installs growing media |

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| **Essential Skills** | Working with Others, Thinking, Document Use |

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

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

RANGE OF VARIABLES

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

***amendments*** include: fertilizers, composts, peat moss, mycorrhizae

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

RANGE OF VARIABLES

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

***amendments*** include: fertilizers, composts, peat moss, mycorrhizae

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| C-10.02 | Installs exterior landscape plants |

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| **Essential Skills** | Working with Others, Thinking, Document Use |

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

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|  | SKILLS | |
|  | **Performance Criteria** | **Evidence of Attainment** |
| C-10.02.01P | select and use ***tools and equipment*** | ***tools and equipment*** are selected and used according to task requirements and manufacturers' specifications |
| C-10.02.02P | prepare ***plant material*** | ***plant material*** is prepared by performing ***activities*** |
| C-10.02.03P | monitor and maintain plant health | plant health is monitored and maintained throughout installation process according to industry practices |
| C-10.02.04P | lay out ***plant material*** | ***plant material*** is laid out according to drawings and specifications |
| C-10.02.05P | plant, stake and guy ***plant material*** | ***plant material*** is planted, staked and guyed according to drawings and specifications, and CLS |
| C-10.02.06P | prune ***plant material*** | ***plant material*** is pruned according to industry practices |
| C-10.02.07P | verify moisture content of growing media | moisture content of growing media is verified |
| C-10.02.08P | verify ***plant material*** installation | ***plant material*** installation meets specifications |
| C-10.02.09P | dispose of, or recycle, excess materials | excess materials are disposed of, or recycled, according to jurisdictional regulations |
| C-10.02.10P | select ***plant material*** | ***plant material*** is selected according to project requirements, specifications, landscape requirements, and jurisdictional regulations |

RANGE OF VARIABLES

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

***plant material*** includes: perennials, shrubs, trees

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

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|  | KNOWLEDGE | |
|  | **Learning Outcomes** | **Learning Objectives** |
| C-10.02.01L | demonstrate knowledge of the procedures used to install exterior landscape ***plant material*** | identify the ***considerations*** for determining suitability of planting site for ***plant material*** |
|  |  | describe the installation procedures for a variety of root preparations and ***stock types*** |
|  |  | describe the ***procedures used to*** ***prepare planting site*** for tree installation |
|  |  | describe the ***procedures used to install trees*** |
|  |  | describe the ***procedures used for post-planting care of trees*** |
|  |  | describe the ***procedures used to prepare planting beds*** for herbaceous and woody plant material installation |
|  |  | describe the ***procedures used to install herbaceous and woody plant material*** |
|  |  | describe the procedures used to estimate quantities of ***plant material*** required |
| C-10.02.02L | demonstrate knowledge of pruning exterior ***plant material***, the application and procedures for use | describe the application and procedures used to prune exterior ***plant material*** |
| C-10.02.03L | demonstrate knowledge of fertilizers, their application, and procedures for use | identify types of fertilizers and describe their characteristics and applications |
|  |  | describe the procedures and equipment used for the application of fertilizers |
| C-10.02.04L | demonstrate knowledge of irrigation equipment and systems, their applications and operation to achieve adequate irrigation | identify the ***factors*** that determine irrigation rates and methods |

RANGE OF VARIABLES

***plant material*** includes: perennials, shrubs, trees

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

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

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

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

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

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

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

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

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| C-10.03 | Transplants plants |

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| **Essential Skills** | Working with Others, Thinking, Oral Communication |

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

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|  | SKILLS | |
|  | **Performance Criteria** | **Evidence of Attainment** |
| C-10.03.01P | select and use ***tools and equipment*** | ***tools and equipment*** are selected and used according to task requirements and manufacturers' specifications |
| C-10.03.02P | verify plant is viable for transplant | viability of plant for transplant is verified according to ***factors*** |
| C-10.03.03P | dig ***plant material*** | ***plant material*** is dug according to CLS and industry practices |
| C-10.03.04P | install ***plant material*** | ***plant material*** is installed according to drawings, specifications and CLS |
| C-10.03.05P | prune ***plant material*** | ***plant material*** is pruned according to industry practices |
| C-10.03.06P | apply fertilizer | fertilizer is applied according to industry practices |
| C-10.03.07P | verify moisture content of growing media | moisture content of growing media is verified to ensure establishment and plant health according to jurisdictional regulations and CLS |
| C-10.03.08P | irrigate ***plant material*** | ***plant material*** is irrigated according to plant requirements |
| C-10.03.09P | dispose of, or recycle, excess materials | excess materials are disposed of, or recycled, according to jurisdictional regulations |
| C-10.03.10P | prepare ***plant material*** for transplanting | ***plant material*** is prepared for transplanting according to industry practices and CLS |

RANGE OF VARIABLES

***tools and equipment*** include: shovels, tree dollies, tree spades, axes

***factors*** include: species, health, time of year

***plant material*** includes: perennials, shrubs, trees

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

RANGE OF VARIABLES

***tools and equipment*** include: shovels, tree dollies, tree spades, axes

***factors*** include: species, health, time of year

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| C-10.04 | Installs mulch |

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| **Essential Skills** | Numeracy, Working with Others, Document Use |

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

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

RANGE OF VARIABLES

***tools and equipment*** include: wheelbarrows, bow rakes, pitch forks, loaders, skid-steers, blower trucks

***mulch materials*** include: shredded bark, aggregates, composts

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

RANGE OF VARIABLES

***mulch materials*** include: shredded bark, aggregates, composts

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| C-10.05 | Installs turf from seed |

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| **Essential Skills** | Numeracy, Working with Others, Document Use |

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

RANGE OF VARIABLES

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

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

***organic matter*** includes: hydro mulch, straw, compost

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

RANGE OF VARIABLES

***considerations*** include: environmental conditions, site use, cultural requirements

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| C-10.06 | Installs sod |

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| **Essential Skills** | Working with Others, Oral Communication, Numeracy |

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

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|  | SKILLS | |
|  | **Performance Criteria** | **Evidence of Attainment** |
| C-10.06.01P | select and use ***tools and equipment*** | ***tools and equipment*** are selected and used according to task requirements and manufacturers' specifications |
| C-10.06.02P | verify that area to be sodded is prepared | area to be sodded is prepared according to drawings and specifications |
| C-10.06.03P | verify selected sod | selected sod meets specifications and CLS |
| C-10.06.04P | apply ***amendments*** | ***amendments*** are applied according to specifications and industry practices |
| C-10.06.05P | lay sod | sod is laid according to drawings and specifications and industry practices |
| C-10.06.06P | secure sod | sod is secured to slope according to drawings, specifications and industry practices |
| C-10.06.07P | use landscape rollers | landscape rollers are used to ensure roots are in direct contact with growing media according to industry practices |
| C-10.06.08P | irrigate and monitor sod regularly | sod is irrigated and monitored according to requirements and jurisdictional regulations |
| C-10.06.09P | verify sod installation | sod installation meets drawings and specifications |
| C-10.06.10P | dispose of, or recycle, excess materials | excess materials are disposed of, or recycled, according to jurisdictional regulations |

RANGE OF VARIABLES

***tools and equipment*** include: landscape rakes, sod knives, tractors and attachments, landscape rollers

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

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

RANGE OF VARIABLES

***considerations*** include: environmental conditions, site use, cultural requirements

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| C-10.07 | Installs interior landscape plants |

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| **Essential Skills** | Document Use, Working with Others, Oral Communication |

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

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

RANGE OF VARIABLES

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

***activities*** include: foliar washing, scarifying root ball, managing nutrient balance

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|  | KNOWLEDGE | |
|  | **Learning Outcomes** | **Learning Objectives** |
| C-10.07.01L | demonstrate knowledge of the procedures used to install interior landscape plants | identify ***tools and equipment*** relating to plant material installation |
|  |  | identify the ***considerations*** for determining suitability of planting site for plant material |
|  |  | describe the installation procedures for a variety of root preparations and ***stock types*** |
|  |  | describe the ***procedures used to prepare planting beds*** for herbaceous and woody plant material installation |
|  |  | describe the ***procedures used to install herbaceous and woody plant material*** |
| C-10.07.02L | demonstrate knowledge of pruning interior landscape plants | describe the application and procedures used to prune interior landscape plants |
| C-10.07.03L | demonstrate knowledge of fertilizers, their application and procedures for use | identify types of fertilizers and describe their characteristics and applications |
|  |  | describe the procedures and equipment used for the application of fertilizers |
| C-10.07.04L | demonstrate knowledge of irrigation equipment and systems, their applications and operation | identify the ***factors*** that determine irrigation rates and methods |

RANGE OF VARIABLES

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

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

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

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

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

TASK C-11 Installs green infrastructure systems

TASK DESCRIPTOR

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

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| C-11.01 | Selects green infrastructure |

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| **Essential Skills** | Continuous Learning, Working with Others, Thinking |

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

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

RANGE OF VARIABLES

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

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

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|  | KNOWLEDGE | |
|  | **Learning Outcomes** | **Learning Objectives** |
| C-11.01.01L | demonstrate knowledge of green infrastructure principles | describe types of ***green infrastructure*** |
|  |  | describe types of blue and grey infrastructures |
|  |  | identify purpose and ***benefits of green infrastructures*** |
|  |  | identify ***benefits of plants*** |
|  |  | identify xeriscape principles |
|  |  | identify value of environmental, economic and social impact of urban forests |
|  |  | define natural ecosystems’ functions, purpose and structure |
|  |  | define ecosystem service benefits |
| C-11.01.02L | demonstrate knowledge of green infrastructure practices | identify jurisdictional regulations related to green infrastructure |
|  |  | describe green field and brown field reclamation |
|  |  | describe smart water technology |
|  |  | define site sustainability |
|  |  | explain landscape design, development process and aesthetics |
|  |  | identify ***surface and subsurface drainage systems and practices*** |
|  |  | describe filtration systems |
|  |  | explain low impact development |

RANGE OF VARIABLES

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

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

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

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

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| C-11.02 | Installs green roofs and walls |

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| **Essential Skills** | Document Use, Thinking, Working with Others |

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

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

RANGE OF VARIABLES

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

***non-organic components*** include: membranes, root barriers, drainage, irrigation, pumps

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|  | KNOWLEDGE | |
|  | **Learning Outcomes** | **Learning Objectives** |
| C-11.02.01L | demonstrate knowledge of process and procedures of the installation of green roofs and walls | describe the process and procedures when installing green roofs and walls |
|  |  | identify the ***non-organic components*** of green roofs and walls |
|  |  | describe the characteristics of growing media used in green roofs and walls |
|  |  | describe the characteristics of plant material used in green roofs and walls |
| C-11.02.02L | demonstrate knowledge of types and functions of plants used on green roofs and walls | identify plants used on green roofs and walls and describe their functions |
| C-11.02.03L | demonstrate knowledge of growing media and walls used on green roofs | describe characteristics of growing media used on green roofs and walls |
| C-11.02.04L | demonstrate knowledge of ***components*** of green roofs and walls | describe the ***components*** of green roofs and walls |
| C-11.02.05L | demonstrate knowledge of site safety | describe fall protection procedures with regulations |

RANGE OF VARIABLES

***non-organic components*** include: membranes, root barriers, drainage, irrigation, pumps

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

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| C-11.03 | Installs rainwater and stormwater management systems |

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| **Essential Skills** | Thinking, Document Use, Continuous Learning |

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

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|  | SKILLS | |
|  | **Performance Criteria** | **Evidence of Attainment** |
| C-11.03.01P | select tools and equipment | tools and equipment are selected and used according to task requirements and manufacturers' specifications |
| C-11.03.02P | prepare work area | work area is prepared in accordance with contract documents, industry standards and manufacturers’ specifications |
| C-11.03.03P | install ***rainwater and stormwater harvesting*** ***components*** | ***rainwater and stormwater harvesting components*** are installed according to manufacturers’ specifications, industry standards and contract documents |
| C-11.03.04P | install ***stormwater management systems*** | ***stormwater management systems*** are installed according to contract documents and industry standards |
| C-11.03.05P | install ***rainwater and stormwater retention systems*** | ***rainwater and stormwater retention systems*** are installed according to contract documents and industry standards |
| C-11.03.06P | install growing media | growing media is installed according to manufacturers’ specifications, industry standards and contract documents |
| C-11.03.07P | install plant material | plant material is installed according to industry standards and contract documents |

RANGE OF VARIABLES

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

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

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

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

RANGE OF VARIABLES

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

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

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| C-11.04 | Installs erosion control material |

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| Essential Skills | Document Use, Working with Others, Oral Communication |

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

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

RANGE OF VARIABLES

***tools and equipment*** include: shovels, post pounders, knives, augers, trenchers, loaders

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

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

RANGE OF VARIABLES

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

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| C-11.05 | Installs biodiverse plantings and natural areas |

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| **Essential Skills** | Document Use, Working with Others, Thinking |

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

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

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

RANGE OF VARIABLES

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

MAJOR WORK ACTIVITY D

Performs landscape maintenance

TASK D-12 Maintains hardscape

TASK DESCRIPTOR

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

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| D-12.01 | Maintains drainage systems |

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| **Essential Skills** | Numeracy, Document Use, Thinking |

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

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

RANGE OF VARIABLES

***winterization*** ***procedures*** include: cleaning, flushing and installing heating cables

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

RANGE OF VARIABLES

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

***drainage systems*** include: sub-surface drainage, surface drainage

***winterization*** ***procedures*** include: cleaning, flushing and installing heating cables

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| D-12.02 | Maintains landscape structures |

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| **Essential Skills** | Thinking, Document Use, Working with Others |

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| **NL** | **NS** | **PE** | **NB** | **QC** | **ON** | **MB** | **SK** | **AB** | **BC** | **NT** | **YT** | **NU** |
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|  | SKILLS | |
|  | **Performance Criteria** | **Evidence of Attainment** |
| D-12.02.01P | inspect structures for ***damage and*** ***defects*** | ***damage and*** ***defects*** in the structures are identified |
| D-12.02.02P | identify hazards of structures | hazards of structures are identified, flagged and reported to supervisor |
| D-12.02.03P | clean surface areas | surface areas are cleaned according to CLS and manufacturers’ specifications |

RANGE OF VARIABLES

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

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

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| D-12.03 | Maintains surface materials |

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| **Essential Skills** | Working with Others, Oral Communication, Thinking |

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

RANGE OF VARIABLES

***damage*** includes: cracks, frost heave, efflorescence, spalling, settling

***undesirable conditions*** include: algae, efflorescence, weeds, debris

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|  | KNOWLEDGE | |
|  | **Learning Outcomes** | **Learning Objectives** |
| D-12.03.01L | demonstrate knowledge of the procedures used to maintain natural stone pavers and modular precast concrete landscape pavers and slabs | identify types of natural stone pavers, and modular precast concrete landscape pavers and slabs used in hardscape maintenance and describe their characteristics and applications |
|  |  | describe the procedures used to maintain natural stone pavers and modular precast concrete landscape pavers and slabs |
| D-12.03.02L | demonstrate knowledge of the procedures used to maintain poured concrete features | identify concrete products and materials used in hardscape maintenance and describe their characteristics and applications |
|  |  | describe the procedures used to maintain poured concrete features |
| D-12.03.03L | demonstrate knowledge of the procedures used to maintain landscape wood features | identify products and materials used in wood feature maintenance and describe their applications and procedures for use |
|  |  | describe the procedures used to maintain landscape wood features |
| D-12.03.04L | demonstrate knowledge of the procedures and products used to maintain artificial turf | describe the procedures and products used to maintain artificial turf |

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| D-12.04 | Maintains steps and retaining walls |

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| **Essential Skills** | Document Use, Thinking, Oral Communication |

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

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

RANGE OF VARIABLES

***undesirable conditions*** include: algae, efflorescence, weeds, debris

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

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| D-12.05 | Maintains irrigation systems |

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| **Essential Skills** | Document Use, Thinking, Digital Technology |

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| **NL** | **NS** | **PE** | **NB** | **QC** | **ON** | **MB** | **SK** | **AB** | **BC** | **NT** | **YT** | **NU** |
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|  | SKILLS | |
|  | **Performance Criteria** | **Evidence of Attainment** |
| D-12.05.01P | start up system | system start-up is performed by charging and running system through a test cycle |
| D-12.05.02P | determine functioning of system | functioning of system is determined by visual site inspection |
| D-12.05.03P | identify, troubleshoot and repair problems | problems with irrigation system are identified and repaired |
| D-12.05.04P | visually inspect and adjust ***system components*** | ***system components*** are adjusted according to manufacturers’ specifications, industry standards and site requirements |
| D-12.05.05P | check functioning of zone valves | functioning of zone valves is checked according to manufacturers' specifications and industry standards |
| D-12.05.06P | adjust irrigation controllers | irrigation controllers are adjusted according to environmental and site conditions, and jurisdictional regulations |
| D-12.05.07P | clean and clear sensors | sensors are cleaned and cleared to ensure optimum operation according to manufacturers’ specifications |
| D-12.05.08P | winterize system | system is winterized according to manufacturers’ specifications and industry standards |
| D-12.05.09P | identify ***damage*** | ***damage*** is identified |
| D-12.05.10P | repair and replace faulty and broken ***system components*** | faulty and broken ***system components*** are repaired and replaced according to manufacturers’ specifications |

RANGE OF VARIABLES

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

***damage*** includes: clogging, cracks, corroded wiring

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

RANGE OF VARIABLES

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

***irrigation systems*** include:drip/low water volume, sprinkler

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

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

***procedures*** include: spring start-up, seasonal operation, fall shut-down

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| D-12.06 | Maintains water features |

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| **Essential Skills** | Thinking, Document Use, Continuous Learning |

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

RANGE OF VARIABLES

***defects*** include: cracks, leaks, plugged filters, faulty gaskets and seals

***components*** include: filters, screens, nozzles, pumps, skimmers

***conditions*** include: clarity, algae, debris, water levels

***tested*** includes: pH levels, nitrogen, bacteria, oxygen

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

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| D-12.07 | Maintains landscape lighting |

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| **Essential Skills** | Document Use, Thinking, Continuous Learning |

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| **NL** | **NS** | **PE** | **NB** | **QC** | **ON** | **MB** | **SK** | **AB** | **BC** | **NT** | **YT** | **NU** |
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|  | SKILLS | |
|  | **Performance Criteria** | **Evidence of Attainment** |
| D-12.07.01P | turn on systems | systems are turned on to detect defects |
| D-12.07.02P | visually check ***lighting components***, and repair and replace | ***lighting components*** are visually checked, repaired and replaced according to manufacturers’ specifications |
| D-12.07.03P | repair low voltage cable | low voltage cable is repaired according to manufacturers’ specifications and industry standards |
| D-12.07.04P | check and adjust lighting coverage and positioning | lighting coverage and positioning is checked and adjusted according to original design goals |
| D-12.07.05P | clean and clear ***lighting components*** | ***lighting components*** are cleaned and cleared to ensure optimum operation according to manufacturers’ specifications |
| D-12.07.06P | check light timing and adjust program | light timing is checked and program is adjusted according to seasonal and functional requirements |
| D-12.07.07P | adjust voltage levels | voltage levels are adjusted to meet original design goals |

RANGE OF VARIABLES

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

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

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| D-12.08 | Practices snow and ice control |

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| **Essential Skills** | Thinking, Working with Others, Document Use |

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

RANGE OF VARIABLES

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

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|  | KNOWLEDGE | |
|  | **Learning Outcomes** | **Learning Objectives** |
| D-12.08.01L | demonstrate knowledge of snow and ice control and the procedures used | identify ***tools and equipment*** used for snow and ice control |
|  |  | describe procedures used to control snow and ice |
|  |  | identify jurisdictional regulations pertaining to snow and ice control procedures and products |
|  |  | identify products used for snow and ice control |
|  |  | identify sources used to gather weather information |
|  |  | identify hazards associated with snow and ice control practices and products |
|  |  | describe the impact of snow and ice control practices and products on plants and landscape features |
|  |  | describe implications of snow and ice control on environmental stewardship |

RANGE OF VARIABLES

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

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| D-12.09 | Repairs hardscape |

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| **Essential Skills** | Document Use, Thinking, Reading |

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

RANGE OF VARIABLES

***issues*** include: damaged pipes, plugged catch basins, pooling

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

***damage*** includes: cracks, frost heave, spalling, settling

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

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

RANGE OF VARIABLES

***documentation*** includes: plans, contract specifications

TASK D-13 Maintains softscape

TASK DESCRIPTOR

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

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| D-13.01 | Maintains exterior softscape |

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| **Essential Skills** | Thinking, Working with Others, Continuous Learning |

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| **NL** | **NS** | **PE** | **NB** | **QC** | **ON** | **MB** | **SK** | **AB** | **BC** | **NT** | **YT** | **NU** |
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|  | SKILLS | |
|  | **Performance Criteria** | **Evidence of Attainment** |
| D-13.01.01P | perform visual inspection | visual inspection identifies plant health |
| D-13.01.02P | irrigate plants | plants are irrigated according to plant needs |
| D-13.01.03P | fertilize plants | plants are fertilized according to test results |
| D-13.01.04P | cultivate growing media | growing media is cultivated for aesthetics and ease of planting |
| D-13.01.05P | perform seasonal planting and removal of plants | seasonal planting and removal of annuals, biennials, perennials and bulbs is performed |
| D-13.01.06P | apply or install ***seasonal protection*** | ***seasonal protection*** is applied or installed according to CLS, manufacturers’ specifications and industry standards to ensure plant survival through winter |
| D-13.01.07P | perform hardening-off practices | hardening-off practices are performed according to CLS to ensure plant survival |
| D-13.01.08P | protect plants from snow and ice damage | plants are protected from snow and ice damage and ***seasonal protection*** is installed |
| D-13.01.09P | remove weeds | weeds are removed for plant health and aesthetics according to CLS and contract documents |
| D-13.01.10P | ***mulch*** beds and containers | beds and containers are mulched for moisture retention, weed suppression, growing media amendment, aesthetics and temperature moderation according to CLS and contract documents |
| D-13.01.11P | edge beds | beds are edged for bed definition and weed control according to contract documents |
| D-13.01.12P | inspect and maintain natural and manufactured edge | natural and manufactured edges are inspected and maintained according to industry practices |
| D-13.01.13P | perform ***site cleanup*** | ***site cleanup*** is performed according to industry practices and contract documents |
| D-13.01.14P | remove staking and guying materials | staking and guying materials are removed to prevent plant damage and ensure safety according to CLS |

RANGE OF VARIABLES

***seasonal protection*** includes: anti-desiccants, burlap wrapping and binding with twine, flax straw

***mulch*** includes:composted bark, manufactured wood products, pine needles, cones, coir

***site cleanup*** includes: picking up litter, removing excess clippings, cleaning pathways

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

RANGE OF VARIABLES

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

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| D-13.02 | Maintains interior softscape |

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| **Essential Skills** | Thinking, Continuous Learning, Document Use |

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| **NL** | **NS** | **PE** | **NB** | **QC** | **ON** | **MB** | **SK** | **AB** | **BC** | **NT** | **YT** | **NU** |
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|  | SKILLS | |
|  | **Performance Criteria** | **Evidence of Attainment** |
| D-13.02.01P | perform visual inspection | visual inspection identifies plant health and appearance |
| D-13.02.02P | test and amend irrigation water | irrigation water is tested for quality, temperature and pH and amended according to industry standards |
| D-13.02.03P | irrigate and fertilize plants | plants are irrigated and fertilized according to plant needs using manual or automated methods |
| D-13.02.04P | cultivate and amend growing media | growing media is cultivated and amended for aeration, aesthetics and plant health |
| D-13.02.05P | clean foliage and containers | foliage and containers are cleaned for aesthetics and plant health |
| D-13.02.06P | replace damaged or broken containers | damaged or broken containers are replaced |
| D-13.02.07P | perform seasonal plant replacement | seasonal plant replacement is performed for health and aesthetic reasons according to contract documents and industry practices |
| D-13.02.08P | protect furnishings and surfaces | furnishings and surfaces are protected from the effects of ***damaging materials*** according to contract documents and industry standards |
| D-13.02.09P | prune interior plants | interior plants are pruned for aesthetics, plant health and space restrictions |
| D-13.02.10P | root prune interior plants | interior plants are root pruned for containment |
| D-13.02.11P | pot-on, pot-up and divide interior plants | interior plants are potted-on, potted-up and divided for propagation and plant health |
| D-13.02.12P | use IPM practices | IPM practices are used to promote plant health |
| D-13.02.13P | move and rotate plant | plant is moved and rotated to promote uniform growth according to changing light |

RANGE OF VARIABLES

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

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

RANGE OF VARIABLES

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

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

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| D-13.03 | Maintains turfgrass |

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| **Essential Skills** | Thinking, Working with Others, Numeracy |

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

RANGE OF VARIABLES

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

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

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

RANGE OF VARIABLES

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

***methods of turfgrass establishment*** include: seeding, sodding

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

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

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

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

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| D-13.04 | Propagates plant material |

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| **Essential Skills** | Thinking, Continuous Learning, Working with Others |

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

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

RANGE OF VARIABLES

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

***propagation methods*** include: layering, dividing, cutting, seeding

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

RANGE OF VARIABLES

***considerations*** include: vigor, health, propagation methods, timing

***propagation methods*** include: layering, dividing, cutting, seeding

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| D-13.05 | Repairs softscape |

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| **Essential Skills** | Thinking, Working with Others, Continuous Learning |

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

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

RANGE OF VARIABLES

***management*** includes: cabling, staking, bracing, applying anti-desiccants, pruning, amending soils

***manufactured edges*** include: brick, plastic, aluminum, lumber

***inorganic mulch*** includes: aggregate, rubber

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

TASK D-14 Maintains green infrastructure systems

TASK DESCRIPTOR

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

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| D-14.01 | Maintains green roofs and walls |

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| **Essential Skills** | Working with Others, Thinking, Document Use |

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

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|  | SKILLS | |
|  | **Performance Criteria** | **Evidence of Attainment** |
| D-14.01.01P | select and use tools and equipment | tools and equipment are selected and used according to industry practices and manufacturers' specifications |
| D-14.01.02P | inspect ***non-horticultural elements*** | ***non-horticultural elements*** are inspected to prevent impaired drainage and damage is reported to supervisor |
| D-14.01.03P | maintain ***non-horticultural elements*** | ***non-horticultural elements*** are maintained to prevent excess loading |
| D-14.01.04P | remove debris | debris is removed to avoid interference with plant growth |
| D-14.01.05P | monitor sediment | sediment is monitored and removed as required |
| D-14.01.06P | control weeds | weeds are controlled for aesthetics and to avoid damage to the green roof or wall system according to manufacturers' specifications and contract documents |
| D-14.01.07P | use IPM practices | IPM practices are used to protect plant health according to IPM, manufacturers’ specifications and jurisdictional regulations |
| D-14.01.08P | apply fertilizer | fertilizer is applied as recommended by soil or water testing according to jurisdictional regulations |
| D-14.01.09P | irrigate green roof and walls | green roof and walls are irrigated according to plant requirements and jurisdictional requirements |
| D-14.01.10P | comply with safe working procedures | safe working procedures are followed according to jurisdictional regulations and company policies |
| D-14.01.11P | monitor green roof for plant coverage | plant coverage is monitored and replaced as required |
| D-14.01.12P | inspect wall for leaks | wall is inspected for leaks and issues are reported to supervisor |

RANGE OF VARIABLES

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

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

RANGE OF VARIABLES

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

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| D-14.02 | Maintains rainwater and stormwater management systems |

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| **Essential Skills** | Working with Others, Thinking, Continuous Learning |

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

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

RANGE OF VARIABLES

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

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

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|  | KNOWLEDGE | |
|  | **Learning Outcomes** | **Learning Objectives** |
| D-14.02.01L | demonstrate knowledge of operation of rainwater and stormwater management systems | describe rainwater and stormwater management systems and their ***components*** |
|  |  | describe benefits of rainwater and stormwater management systems |
|  |  | interpret test results relating to water and soil quality |
|  |  | interpret codes and jurisdictional regulations relating to rainwater and stormwater management systems |
|  |  | identify signs of erosion |
|  |  | describe soil water relationship with respect to sedimentation |
| D-14.02.02L | demonstrate knowledge of plant maintenance for rainwater and stormwater management systems | describe plant maintenance requirements in relation to their function within rainwater and stormwater management systems |
| D-14.02.03L | demonstrate knowledge of procedures used to maintain rainwater and stormwater management systems | describe procedures used to maintain rainwater and stormwater management systems and maintenance of their components |

RANGE OF VARIABLES

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

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| D-14.03 | Maintains erosion control |

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| **Essential Skills** | Thinking, Working with Others, Reading |

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

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

RANGE OF VARIABLES

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

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

RANGE OF VARIABLES

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

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| D-14.04 | Maintains biodiverse plantings and natural areas |

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| **Essential Skills** | Working with Others, Oral Communication, Thinking |

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

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

RANGE OF VARIABLES

***site disturbances*** include: erosion, vandalism, illegal camping

***protection measures*** include: tree guards, fencing, deterrents

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

RANGE OF VARIABLES

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

MAJOR WORK ACTIVITY E

Works in production of plant material (NOT COMMON CORE)

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

TASK DESCRIPTOR

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

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| E-15.01 | Builds growing facilities (Not Common Core) |

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| **Essential Skills** | Document Use, Working with Others, Thinking |

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

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|  | SKILLS | |
|  | **Performance Criteria** | **Evidence of Attainment** |
| E-15.01.01P | excavate base and prepare grade | base is excavated and grade prepared according to drawings, specifications and jurisdictional regulations |
| E-15.01.02P | install footings | footings are installed according to drawings and specifications |
| E-15.01.03P | install in-ground drainage, ***services*** and granular base material | in-ground drainage, ***services*** and granular base material are installed according to drawings, specifications and jurisdictional regulations |
| E-15.01.04P | construct ***floor surfaces*** | ***floor surfaces*** are constructed for accessibility throughout the facility, drainage and sanitation according to industry practices and jurisdictional regulations |
| E-15.01.05P | construct frame and install greenhouse covers | frame is constructed and greenhouse covers are installed according to drawings, specifications and jurisdictional regulations |
| E-15.01.06P | assemble premade structures and components | premade structures and components are assembled according to manufacturers’ specifications and jurisdictional regulations |

RANGE OF VARIABLES

***services*** include: in-ground heat, electrical

***floor surfaces*** include: concrete, gravel, paving stone, geo-textile

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

RANGE OF VARIABLES

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

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

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| **Essential Skills** | Document Use, Working with Others, Thinking |

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

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

RANGE OF VARIABLES

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

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

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

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

RANGE OF VARIABLES

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

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

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

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

TASK DESCRIPTOR

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

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

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| **Essential Skills** | Thinking, Continuous Learning, Digital Technology |

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

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

RANGE OF VARIABLES

***floor surfaces*** include: concrete, gravel, paving stone, geo-textile

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

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

RANGE OF VARIABLES

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

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

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| E-16.02 | Maintains sanitary environment (Not Common Core) |

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| **Essential Skills** | Thinking, Continuous Learning, Document Use |

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

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|  | SKILLS | |
|  | **Performance Criteria** | **Evidence of Attainment** |
| E-16.02.01P | conduct regular inspections and follow check lists | regular inspections are conducted and check listsarefollowedaccording toindustry practices and jurisdictional regulations to ensure ***sanitation practices*** are followed |
| E-16.02.02P | select cultural, physical or chemical sanitation methods | cultural, physical or chemical sanitation methods are selected to maintain a sanitary environment according to industry practices and manufacturers' specifications |
| E-16.02.03P | sanitize tools, containers, ***growing facility structures*** and ***amenities*** | tools, containers, ***growing facility structures*** and ***amenities*** are sanitized to minimize pests and diseases according to industry practices and manufacturers' specifications |
| E-16.02.04P | select and use sanitized tools and equipment | sanitized tools and equipment are selected and used according to industry practices and manufacturers' specifications to control pests and diseases |
| E-16.02.05P | perform regular maintenance activities on areas adjacent to ***growing facility structures*** | regular maintenance activities on adjacent areas are performed to manage sanitation and promote plant health |

RANGE OF VARIABLES

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

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

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

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

RANGE OF VARIABLES

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

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

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| **Essential Skills** | Numeracy, Digital Technology, Thinking |

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

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|  | SKILLS | |
|  | **Performance Criteria** | **Evidence of Attainment** |
| E-16.03.01P | interpret results of ***environmental climate monitoring devices*** | results of ***environmental climate monitoring devices*** are interpreted to determine inside and outside climate conditions |
| E-16.03.02P | conduct regular inspections of growing facilities and plants, and follow check lists | regular inspections are conducted and check lists are followed according to industry practices |
| E-16.03.03P | maintain heating, cooling, and ventilation systems | heating, cooling, and ventilation systems are maintained to ensure efficient operation according to industry practices and manufacturers’ specifications |
| E-16.03.04P | perform troubleshooting and ***basic repairs*** on heating, cooling and ventilation systems | troubleshooting and ***basic repairs*** on heating, cooling and ventilation systems are performed to limit system downtime and to protect crops |
| E-16.03.05P | winterize heating and cooling systems when shutting greenhouse for winter | heating and cooling systems are winterized when shutting greenhouse for winter to protect from frozen lines, and ice and water damage of equipment according to manufacturers’ specifications |
| E-16.03.06P | mist, flood and vent growing facility structures | growing facility structures are misted, flooded and vented to regulate humidity levels |
| E-16.03.07P | use shade material | shade material is used to regulate light and heat levels |
| E-16.03.08P | select and use artificial lights | artificial lights are selected and used to ensure adequate light levels according to crop requirements |
| E-16.03.09P | test and maintain emergency alarm system | emergency alarm system is tested and maintained according to manufacturers' specifications |

RANGE OF VARIABLES

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

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

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

RANGE OF VARIABLES

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

***climate control systems*** are heating, ventilation and cooling systems

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

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| **Essential Skills** | Document Use, Numeracy, Thinking |

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

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

RANGE OF VARIABLES

***monitoring equipment*** includes: flow, pH and EC meters

***basic repairs*** include: repairing and replacing distribution and drip lines, nozzles and injector systems

***methods*** include: filter replacement, ultraviolet (UV) bulb replacement, chemical treatment

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

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

TASK DESCRIPTOR

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

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

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| **Essential Skills** | Numeracy, Document Use, Continuous Learning |

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

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|  | SKILLS | |
|  | **Performance Criteria** | **Evidence of Attainment** |
| E-17.01.01P | determine capacity and characteristics of growing facilities | capacity and characteristics of growing facilities are calculated |
| E-17.01.02P | select species and varieties | species and varieties are selected according to availability and market demand |
| E-17.01.03P | calculate crop production quantities | crop production quantities are calculated based on facility capacity and market demand |
| E-17.01.04P | determine ***materials for production*** | ***materials for production*** are determined based on plant requirements, market demand and industry practices |
| E-17.01.05P | schedule ***production activities*** | ***production activities*** are scheduled according to plant requirements and to meet saleable quantities |

RANGE OF VARIABLES

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

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

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

RANGE OF VARIABLES

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

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| E-17.02 | Propagates greenhouse crops (Not Common Core) |

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| **Essential Skills** | Thinking, Continuous Learning, Document Use |

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

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|  | SKILLS | |
|  | **Performance Criteria** | **Evidence of Attainment** |
| E-17.02.01P | select and use ***tools and equipment*** | ***tools and equipment*** are used according to industry practices and manufacturers' specifications |
| E-17.02.02P | sow seeds in flats and containers | seeds are sown in flats and containers using ***seeding*** ***methods*** according to plant requirements |
| E-17.02.03P | perform ***vegetative propagation*** | ***vegetative propagation*** is performed to grow additional plants according to plant requirements |
| E-17.02.04P | maintain propagated materials | propagated materials are maintained until viable for transplanting, harvesting and growing-on |
| E-17.02.05P | label plants and complete propagation documents | plants are labelled to identify species and propagation documents are completed |

RANGE OF VARIABLES

***tools and equipment*** include: mechanical seeders, dibblers, watering cans, misters

***seeding*** ***methods*** include: hand seeding, mechanical seeding

***vegetative propagation*** includes: cutting, grafting and budding, layering, division, separation, micro-propagation

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

RANGE OF VARIABLES

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

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| E-17.03 | Transplants greenhouse crops (Not Common Core) |

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| **Essential Skills** | Document Use, Thinking, Continuous Learning |

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

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

RANGE OF VARIABLES

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

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

RANGE OF VARIABLES

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

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| E-17.04 | Grows greenhouse crops (Not Common Core) |

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| **Essential Skills** | Thinking, Continuous Learning, Document Use |

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

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

RANGE OF VARIABLES

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

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

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|  | KNOWLEDGE | |
|  | **Learning Outcomes** | **Learning Objectives** |
| E-17.04.01L | demonstrate knowledge of the procedures associated with growing greenhouse crops | define water quality requirements |
|  |  | identify and describe cultural requirements for plant growth |
|  |  | describe characteristics of plant growth and health |
|  |  | identify and describe ***environmental deficiencies*** |
|  |  | identify and describe pests and diseases |
|  |  | identify and describe common ***interventions*** |
|  |  | determine crop groupings based on plant requirements |
|  |  | describe hardening-off process |

RANGE OF VARIABLES

***environmental deficiencies*** include: excess or insufficient light, fertilizer/nutrients, temperature, water

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

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| E-17.05 | Harvests greenhouse crops (Not Common Core) |

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| **Essential Skills** | Continuous Learning, Thinking, Document Use |

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

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

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

RANGE OF VARIABLES

***procedures*** include: storage, grading, labelling, shipping

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| E-17.06 | Ships greenhouse crops (Not Common Core) |

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| **Essential Skills** | Numeracy, Document Use, Thinking |

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

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

RANGE OF VARIABLES

***packaging materials*** include: boxes, nursery carts, pallets, trays, packing material (moist or dry mulch)

***equipment*** includes: forklifts, loaders, tractors

***documentation*** includes: labels, phytosanitary documents, legislative and regulatory documents, movement certificates, import/export documents, packing lists, care and maintenance instructions

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

RANGE OF VARIABLES

***documentation*** includes: labels, phytosanitary documents, legislative and regulatory documents, movement certificates, import/export documents, packing lists, care and maintenance instructions

***equipment*** includes: forklifts, loaders, tractors

***packaging materials*** include: boxes, nursery carts, pallets, trays, packing material (moist or dry mulch)

***covering materials*** include: tarps, security straps, netting, shade materials

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

TASK DESCRIPTOR

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

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

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| **Essential Skills** | Numeracy, Document Use, Continuous Learning |

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

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|  | SKILLS | |
|  | **Performance Criteria** | **Evidence of Attainment** |
| E-18.01.01P | determine capacity and characteristics of growing facilities | capacity and characteristics of growing facilities are calculated |
| E-18.01.02P | select species and varieties | species and varieties are selected according to availability and market demand |
| E-18.01.03P | calculate crop production quantities | crop production quantities are calculated based on facility capacity and market demand |
| E-18.01.04P | determine ***materials for field production*** | ***materials for field production*** are determined based on plant requirements, market demand and industry practices |
| E-18.01.05P | schedule ***production activities*** | ***production activities*** are scheduled according to plant requirements and to meet saleable quantities |

RANGE OF VARIABLES

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

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

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

RANGE OF VARIABLES

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

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

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| **Essential Skills** | Thinking, Document Use, Continuous Learning |

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

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|  | SKILLS | |
|  | **Performance Criteria** | **Evidence of Attainment** |
| E-18.02.01P | harvest and divide ***underground*** ***storage organs*** | ***underground*** ***storage organs*** are harvested and divided to produce additional plants according to plant requirements |
| E-18.02.02P | take cuttings and graft scion wood and buds to selected rootstocks and stems | cuttings are taken, scion wood and buds are grafted to selected rootstocks and stems according to plant requirements |
| E-18.02.03P | maintain propagated material | propagated material is maintained until viable for transplanting, harvesting and growing-on to marketable size |
| E-18.02.04P | label plants and complete propagation documents | plants are labelled with ***propagation information*** and propagation documents are completed |
| E-18.02.05P | prepare fields and beds | fields and beds are prepared for ***nursery activities*** according to crop and site requirements |
| E-18.02.06P | plant out ***field materials*** | ***field materials*** are planted out according to crop requirements |
| E-18.02.07P | direct-seed ***crops*** | ***crops*** are direct-seeded using mechanical field seeding equipment according to crop requirements |
| E-18.02.08P | select growing media for container-grown plant material | growing media for container-grown plant material is selected according to crop requirements |

RANGE OF VARIABLES

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

***propagation information*** includes: row marking, species, date

***nursery activities*** include: lining-out, pot-in-pot, seeding, irrigation

***field materials*** include: liners, whips, roots, bulbs, plugs

***crops*** include: nursery sod, herbaceous plants, woody plants

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

RANGE OF VARIABLES

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

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

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| **Essential Skills** | Thinking, Document Use, Working with Others |

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

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

RANGE OF VARIABLES

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

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

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

RANGE OF VARIABLES

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

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

|  |  |
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| **Essential Skills** | Continuous Learning, Thinking, Working with Others |

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

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

RANGE OF VARIABLES

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

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

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

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

RANGE OF VARIABLES

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

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

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

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| --- | --- |
| **Essential Skills** | Thinking, Working with Others, Continuous Learning |

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

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| --- | --- | --- |
|  | SKILLS | |
|  | **Performance Criteria** | **Evidence of Attainment** |
| E-18.05.01P | identify harvest-ready field crops | harvest-ready field crops are identified |
| E-18.05.02P | harvest seeds, roots, corms, bulbs, and cuttings | seeds, roots, corms, bulbs, and cuttings are harvested according to plant requirements |
| E-18.05.03P | dig harvest-ready field crops | harvest-ready field crops are dug according to CLS, industry practices and plant requirements |
| E-18.05.04P | wash and divide ***bare root plant material*** | ***bare root plant material*** is washed and divided for storage prior to shipping |
| E-18.05.05P | protect bare roots | bare roots are protected from ***damage*** according to plant requirements |
| E-18.05.06P | grade plant material | plant material is graded according to size, conditions and industry standards |
| E-18.05.07P | select and use ***root containment products*** for field-grown trees and shrubs | ***root containment products*** for field-grown trees and shrubs are selected and used according to suitability for resale and CLS |
| E-18.05.08P | clean, prune and ***label*** harvested plants | harvested plants are cleaned, pruned and ***labelled*** for shipment |
| E-18.05.09P | select container crops | container crops are selected for filling orders |
| E-18.05.10P | inspect and count plants before shipping | plants are counted and inspected before shipping to ensure they are the required number and are free of diseases and pests |
| E-18.05.11P | harvest sod crop | sod crop is harvested using mechanical sod cutters according to CLS |
| E-18.05.12P | document grading, inventory and type | grading, inventory and type are documented according to company policies |

RANGE OF VARIABLES

***bare root plant material*** include: perennials, vines, shrubs, trees

***damage*** includes: desiccation, breakage, pests and disease, temperature extremes

***root containment products*** include: wire-baskets, burlap, grow bag

***labelling*** includes: species, grade

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

RANGE OF VARIABLES

***procedures*** include: grading, sorting, labelling

***root containment products*** include: wire-baskets, burlap, grow bag

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

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

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| **Essential Skills** | Numeracy, Document Use, Thinking |

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

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

RANGE OF VARIABLES

***documentation*** includes: labels, phytosanitary documents, legislative and regulatory documents, movement certificate, import/export documents, packing list, care and maintenance instructions

***packaging materials*** include: boxes, nursery carts, pallets, trays, packing materials (moist or dry mulch)

***equipment*** includes: forklifts, loaders, tractors

***covering materials*** include: tarps, security straps, netting, shade materials

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

RANGE OF VARIABLES

***documentation*** includes: labels, phytosanitary documents, legislative and regulatory documents, movement certificate, import/export documents, packing list, care and maintenance instructions

***equipment*** includes: forklifts, loaders, tractors

***packaging materials*** include: boxes, nursery carts, pallets, trays, packing materials (moist or dry mulch)

***covering materials*** include: tarps, security straps, netting, shade materials

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

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| **Essential Skills** | Thinking, Working with Others, Continuous Learning |

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

|  |  |  |
| --- | --- | --- |
|  | SKILLS | |
|  | **Performance Criteria** | **Evidence of Attainment** |
| E-18.07.01P | collect and group container crops | container crops are collected and grouped in winterizing location |
| E-18.07.02P | arrange container crops | container crops are arranged to maximize insulation value |
| E-18.07.03P | apply container crop pest protection methods | container crop pest protection methods are applied according to pesticide labels and jurisdictional regulations |
| E-18.07.04P | store container crops | container crops are stored beneath ***protective coverings*** |
| E-18.07.05P | monitor container crop over winter | container crop is monitored for pest damage, condition of insulation, temperature fluctuations and moisture requirements |
| E-18.07.06P | identify field crops that require winter protection | field crops that require winter protection are identified according to production planning |
| E-18.07.07P | apply field crop pest protection barriers | field crop pest protection barriers are applied according to crop species and local pests |
| E-18.07.08P | protect field crops against sunlight damage | field crops are protected against sunlight damage by installing snow fences and reducing the reflectivity of the snow |
| E-18.07.09P | monitor field crop over winter | field crop is monitored for pest damage and sunlight damage |
| E-18.07.10P | heel in balled-and-burlapped and wire-basketed field crops | balled-and-burlapped and wire-basketed field crops are heeled-in to prevent desiccation and frost damage to the root zone |
| E-18.07.11P | perform ***spring maintenance activities*** | ***spring maintenance activities*** are performed according to plant requirements and site conditions |

RANGE OF VARIABLES

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

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

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

RANGE OF VARIABLES

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

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

APPENDIX A

ACRONYMS

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

APPENDIX B

TOOLS AND EQUIPMENT / OUTILS ET ÉQUIPEMENT

Hand Tools / Outils à main

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

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

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

Power Tools and Motorized Equipment / Outils mécaniques et équipement motorisé

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

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

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

Measuring Equipment / Équipement de mesure

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

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

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

Motorized Equipment / Équipement motorisé

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

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

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

Equipment Attachments/ Accessoires pour équipement

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

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

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

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

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

APPENDIX C

GLOSSARY / GLOSSAIRE

Note – a Canadian plant list approved and kept up-to-date by the Canadian Nursery and Landscape Association can be obtained by visiting their website or contacting the association.

|  |  |  |  |
| --- | --- | --- | --- |
| **abiotic factors** | non-living condition or thing, such as climate or habitat, that influences or affects an ecosystem and the organisms in it | **facteur abiotique** | condition ou élément non vivant, comme le climat ou l’habitat, qui influence un écosystème et les organismes qui y vivent, ou qui nuit à ces derniers |
| **action threshold** | before taking any pest control action, IPM first sets an action threshold, a point at which pest populations or environmental conditions indicate that pest control action must be taken. Sighting a single pest does not always mean control is needed. The level at which pests will either become an economic threat is critical to guide future pest control decisions | **seuil d’action** | avant de prendre des mesures de lutte antiparasitaire, la lutte antiparasitaire intégrée établit un seuil d’action, un point où les populations de parasites ou les conditions environnementales indiquent qu’une mesure de lutte contre les parasites doit être prise; l’observation d’un seul parasite ne signifie pas toujours qu’il est nécessaire de mettre en œuvre les mesures de lutte; il est essentiel de connaître le niveau à partir duquel les parasites deviennent une menace économique pour guider les futures décisions en matière de lutte antiparasitaire. |
| **aeration** | in soil, the process by which air from the atmosphere is brought into the soil. Usually to reverse loss of macropores resulting from compaction | **aération** | processus par lequel l’air de l’atmosphère est amené à circuler dans le sol; on y a normalement recours pour compenser la perte de macropores à la suite d’un compactage. |
| **aggregates** | broad category of coarse particulate material used in landscape construction, including sand, gravel, crushed stone, slag, recycled concrete etc. | **agrégat** | vaste catégorie de matériaux particulaires grossiers utilisés dans la construction d’aménagements paysagers, comprenant du sable, du gravier, de la pierre concassée, des scories, du béton recyclé, etc. |
| **annual** | plant that completes its life cycle, from germination to the production of seed, within one year, and then dies. | **plante annuelle** | plante qui complète son cycle de vie, de la germination à la production de graines, en un an, et qui fane ensuite. |
| **anti-desiccants** | compounds applied to plants to reduce dehydration. | **agents antitranspirants** | composés appliqués sur les plantes afin de diminuer la déshydratation. |
| **balled-and-burlap (B&B)** | relating to a tree, shrub or other plant prepared for transplanting by allowing the roots to remain covered by a ball of soil around which burlap is tied and sometimes reinforced with a rope or a wire basket. | **mettre en tontines** | préparation pour la transplantation d’arbres, d’arbustes ou d’autres végétaux pour laquelle les racines demeurent couvertes par une motte de terre entourée d’une toile de jute, parfois renforcée d’une corde ou d’un panier en treillis. |
| **bedding materials** | layer of material placed over a compacted base on which interlocking/segmental pavers will be installed. | **matériaux de lit de pose** | couche de matériau placée sur une base compacte sur laquelle est installé du pavé uni ou sectionnel. |
| **biennial** | flowering plant that takes two years to complete its biological lifecycle. | **plante bisannuelle** | plante florale qui prend deux années pour compléter son cycle biologique. |
| **biodiversity** | the variability among living organisms on the earth, including the variability within and between species and within and between ecosystems. Short for biological diversity. | **biodiversité** | variabilité chez les organismes vivants sur la Terre, y compris la variabilité au sein des espèces et entre ces dernières ainsi qu’au sein des écosystèmes et entre ces derniers; terme dérivé de « diversité biologique ». |
| **biome** | a large naturally occurring community of flora and fauna occupying a habitat. | **biome** | grande communauté naturelle de faune et de flore occupant un habitat. |
| **bioswales** | landscape elements designed to remove silt and pollution from surface runoff water. They consist of a swaled drainage course with gently sloped sides and filled with vegetation, compost and/or riprap. | **rigoles écologiques** | éléments de l’aménagement paysager conçus pour enlever le limon et la pollution de l’eau provenant du ruissellement des eaux de surface ; il s’agit d’une couche drainante creuse dont les côtés sont légèrement inclinés et qui est remplie de végétation, de compost ou d’enrochement. |
| **biotic factors** | living thing that influences or affects an ecosystem. | **facteur biotique** | espèce vivante qui a une incidence sur un écosystème ou qui l’influence. |
| **blue infrastructure** | landscape elements which are linked to water such as pools, ponds and pond systems, wadis, artificial buffer basins or water courses. | **infrastructure bleue** | éléments de l’aménagement paysager reliés à l’eau, comme les piscines, les étangs et les systèmes d’étangs, les oueds, les bassins tampons ou les cours d’eau. |
| **botany** | scientific study of plants, including their physiology, structure, genetics, ecology, distribution, classification, and economic importance. | **botanique** | étude scientifique des végétaux, comprenant leur physiologie, leur structure, leur écologie, leur distribution, leur classification et leur importance économique. |
| **brown field reclamation** | redevelopment of abandoned, vacant, derelict or underutilized commercial and industrial properties where past actions have resulted in actual or perceived contamination. | **remise en état des zones désaffectées** | réaménagement des propriétés commerciales et industrielles abandonnées, inoccupées ou sous-utilisées où les actions qui y étaient exercées ont laissé une contamination réelle ou probable. |
| **bud** | small lateral or terminal protuberance on the stem of a plant that may develop into a flower, leaf, or shoot. | **bourgeon** | petite protubérance latérale ou terminale sur la tige d’une plante qui pourrait devenir une fleur, une feuille ou une pousse. |
| **bulbs** | underground storage structure that is the resting stage of certain seed plants, particularly perennial monocotyledons, that grows into a new plant when growing conditions are favourable. | **bulbe** | structure de réserve souterraine qui représente le stade de réserve de certaines plantes porte-graines, plus particulièrement les monocotylédones vivaces, qui poussent pour devenir une nouvelle plante lorsque les conditions de culture sont favorables. |
| **calibrate** | the process of measuring products and adjusting components in order to deliver the desired volume. (Used for sprayers and fertilizer spreaders). | **étalonner** | processus de mesure des produits et de réglage des composantes afin d’obtenir le volume désiré (utilisé pour les pulvérisateurs et les épandeurs d’engrais). |
| **Canadian Landscape Standard (CLS)** | The purpose of the CLS is to document acceptable Canadian landscape construction practices as agreed upon by the Canadian Society of Landscape Architects, the Canadian Nursery Landscape Association, government authorities and other industry associations. The CLS sets guideline and makes recommendations for all major aspects of the landscape industry. It is intended that the CLS will set guidelines for landscape construction projects across Canada. It is intended for use by anyone who specifies landscape work, including landscape architects, landscape designers, municipal parks, planning departments, procurement departments, and allied organizations. It is intended for landscape contractors to support them in the bid process. Furthermore, it supports industry related educational and training programs. Although the standard is not a specification, it will help streamline the specification writing process by referencing one nationally recognized industry standard. | **Norme canadienne du paysage** | Le but de cette norme est de documenter les pratiques acceptables des travaux d'aménagement paysager du Canada, telles que convenues par L'Association des Architectes paysagistes du Canada (l'AACP), l'Association canadienne des pépiniéristes et des paysagistes (l'ACPP), les autorités gouvernementales ainsi que d'autres associations de l'industrie. Cette norme établit des lignes directrices et propose des recommandations relativement à tous les principaux aspects de l'industrie de l'aménagement paysager. L'intention de la Norme canadienne du paysage est d'établir des lignes directrices pour les projets d'aménagement paysager à travers le Canada. Elle est destinée à être utilisée par toute personne qui établit les exigences des travaux d'aménagement paysager, dont les architectes paysagistes, les concepteurs-paysagistes, les parcs municipaux, les services de planification, les services d'approvisionnement et des organisations connexes. Elle est destinée aux entrepreneurs paysagistes pour les assister dans le processus de soumission. De plus, elle appuie des programmes d'éducation et de formation reliés à l'industrie. Bien que la norme ne constitue pas une spécification, elle vous aidera à rationaliser le processus de rédaction des spécifications en faisant référence à une norme de l'industrie reconnue au niveau national. |
| **canker** | localized diseased or necrotic area on a trunk, branch, or twig of a woody plant, usually caused by fungi or bacteria. | **chancre des arbres** | zone malade ou nécrotique localisée sur un tronc, une branche ou une brindille d’une plante ligneuse, généralement causée par un champignon ou une bactérie. |
| **canopy raising** | removal of lower branches from the tree crown to provide understorey clearance. | **élévation du couvert forestier** | suppression des branches plus base du collet de l’arbre afin de dégager le sous-étage. |
| **capstone** | one of a set of slabs on the top of a wall or structure. | **pierre de couronnement** | élément d’un ensemble de dalles sur le dessus d’un mur ou d’une structure. |
| **carbon capturing** | trapping carbon emissions and storing them away from the atmosphere to prevent global warming. | **capture de dioxide de carbone** | capter les émissions de carbone et les stocker loin de l’atmosphère afin de prévenir le réchauffement climatique. |
| **catch basins** | receptacle or reservoir that receives surface water runoff or drainage. | **puits de captation** | réceptacle ou le réservoir qui recueille l’écoulement de surface ou le drainage de l’eau de surface. |
| **change orders** | written order approved by a project owner directing the contractor to change contract amount, requirements, or time. | **ordre de modification** | ordre écrit approuvé par un maître d’ouvrage qui indique à l’entrepreneur de changer le montant, les exigences ou les calendriers du contrat. |
| **chemical** | any [basic](http://dictionary.cambridge.org/dictionary/british/basic_1) [substance](http://dictionary.cambridge.org/dictionary/british/substance) that is used in or [produced](http://dictionary.cambridge.org/dictionary/british/produce) by a [reaction](http://dictionary.cambridge.org/dictionary/british/reaction) [involving](http://dictionary.cambridge.org/dictionary/british/involve) [changes](http://dictionary.cambridge.org/dictionary/british/change) to [atoms](http://dictionary.cambridge.org/dictionary/british/atom) or [molecules](http://dictionary.cambridge.org/dictionary/british/molecule). | **produit chimique** | substance basique utilisée dans une réaction ou produites par cette dernière pendant laquelle des atomes ou des molécules sont modifiés. |
| **circle check** | a circle check is a visual, and sometimes physical, inspection of a piece of equipment (e.g., truck, trailer, forklift, etc.). It involves walking all the way around the equipment to ensure there are no safety concerns. | **inspection sommaire** | inspection visuelle, parfois physique, d’une pièce d’équipement (p. ex., camion, remorque, chariot élévateur à fourche, etc.), ce qui implique de marcher autour de l’équipement pour veiller à ce qu’il n’y ait pas de problèmes de sécurité. |
| **climate control** | is the process of producing particular environmental conditions to regulate the growing environment such as temperature, ventilation and humidity. | **régulation du climat** | processus de production de conditions environnementales précises afin de réguler l’environnement de culture, comme la température, la ventilation et l’humidité. |
| **climate control systems** | adjustable systems installed to grow crops with optimum efficiency. They control the indoor climate including; light, temperature, air exchange, humidity and CO2 concentration. (greenhouse, cold storage facilities etc.). | **systèmes de régulation du climat** | systèmes ajustables installés pour cultiver les végétaux avec une efficacité optimale; ils contrôlent le climat intérieur, y compris la lumière, la température, le renouvellement d’air, l’humidité et la concentration de CO2 (serres, entrepôts frigorifiques, etc.). |
| **codes** | construction technologies and techniques must meet safety standards and comply with municipal, provincial and federal codes such as: electrical, building, plumbing and fire codes etc. | **codes** | normes de sécurité auxquelles les technologies et les techniques de construction doivent répondre; celles-ci doivent être conformes aux codes municipaux, provinciaux et fédéraux comme les codes de l’électricité, du bâtiment, de plomberie, de prévention contre les incendies, etc. |
| **companion planting** | close planting of different plants that enhance each other's growth or protect each other from pests. | **compagnonnage des plantes** | plantation rapprochée de différentes plantes qui améliorent leur croissance réciproque ou qui se protègent les unes les autres des parasites. |
| **compost** | decayed organic material used as a soil conditioner, amendment or plant fertilizer. | **compost** | matière organique décomposée utilisée comme un revitalisant du sol, un amendement du sol ou un engrais pour les plantes. |
| **concrete** | mixture of gravel, sand, cement, and water that can be spread or formed and forms a stone-like mass upon hardening. | **béton** | mélange de gravier, de sable, de ciment et d’eau qui peut être étendu ou formé, et qui devient une masse similaire à une pierre lorsqu’il a durci. |
| **confined space** | is a space that is not both designed and constructed for continuous human occupancy, has limited access and may cause atmospheric and ventilation hazards for workers. | **espace clos** | espace qui n’est pas conçu ni construit aux fins d’occupation humaine, qui a un accès limité et qui pourrait représenter des dangers atmosphériques et de ventilation pour les travailleurs. |
| **coniferous** | mostly needle-leaved or scale-leaved, chiefly evergreen, cone-bearing gymnospermous plants of the order Coniferales, such as pines, spruces, and firs. | **conifères** | principalement des arbres ou des arbustes gymnospermes à feuillage généralement persistant en aiguilles ou en écailles, à tronc conique, de l’ordre des coniférales. L’ordre comprend le pin, l’épinette et le sapin. |
| **contaminant** | biological, chemical, physical, or radiological substance (normally absent in the [environment](http://www.businessdictionary.com/definition/environment.html)) which, in sufficient [concentration](http://www.businessdictionary.com/definition/concentration.html), can adversely affect living organisms through air, water, [soil](http://www.businessdictionary.com/definition/soil.html), and/or [food](http://www.businessdictionary.com/definition/food.html). | **contaminants** | substance biologique, chimique, physique ou radiologique (normalement absente de l’environnement) qui, en concentration suffisante, peut nuire aux organismes vivants par l’entremise de l’air, de l’eau, du sol ou des aliments. |
| **contract** | an agreement between two parties to perform work or provide goods, including an agreement or order for the procurement of supplies or services. | **contrat** | accord entre deux parties pour effectuer un travail ou fournir des biens, y compris un accord ou un ordre pour l’approvisionnement de fournitures ou de services. |
| **corm** | rounded underground storage organ present in plants such as crocuses, gladioli, and cyclamens, consisting of a swollen fleshy stem base covered with thin external scale leaves; corms differ from bulbs in having much more stem tissue and fewer scale leaves. | **corme** | organe de stockage rond et souterrain présent dans les plantes comme les crocus, les glaïeuls et les cyclamens, qui est un renflement charnu à la base de la tige couverte de minces feuilles externes en forme d’écailles; les cormes diffèrent des bulbes par le fait qu’ils ont plus de tissus caulinaires et moins de feuilles en forme d’écailles. |
| **cropping schedule** | schedule to grow plants to marketable size at the right time of year. | **calendrier de récolte** | calendrier pour cultiver les plantes afin qu’elles atteignent une taille commercialisable au bon moment de l’année. |
| **cultivar** | a plant variety that has been produced in cultivation by selective breeding. | **cultivar** | variété de plantes qui a été produite dans une culture au moyen de la reproduction sélective. |
| **cultivation** | the planting, tending, improving, or harvesting of crops or plants; or the preparation of ground to promote plant growth. | **culture** | plantation, les soins, l’amélioration ou la récolte des cultures ou des plantes; ou la préparation du sol pour promouvoir la croissance des plantes. |
| **cut-and-fill** | adding or removing to achieve grade whereby the amount of material from cuts roughly matches the amount of fill needed. | **déblai et remblai** | mettre ou enlever des matériaux pour obtenir le niveau voulu lorsque la quantité de matériau déblayée est relativement la même que la quantité de matériau remblayée. |
| **cuttings** | plant cutting, also known as striking or cloning, is a technique for vegetatively (asexually) propagating plants in which a piece of the stem or root of the source plant is placed in a suitable medium to grow. | **boutures** | technique, aussi connue sous le nom de reprise ou de clonage, pour les plantes à multiplication végétative (asexuelles) pendant laquelle une partie de la tige ou de la racine de la plante mère est placée dans un milieu convenable pour pousser. |
| **deadhead** | remove spent flower heads from a plant to encourage further blooming. | **enlever les éléments morts** | enlever les têtes florales mortes d’une plante afin d’encourager la floraison. |
| **deciduous** | trees, shrubs, and herbaceous perennials that shed their leaves for part of the year due to dormancy. | **à feuilles caduques** | se dit des arbres, arbustes et vivaces herbacées qui perdent leurs feuilles pendant une partie de l’année appelée phase de dormance. |
| **defoliation** | to strip (a tree, bush, etc.) of leaves. | **défoliation** | enlever les feuilles (d’un arbre, d’un arbuste, etc.). |
| **desiccation** | drying out of a living organism, such as when plants are exposed to sunlight or drought. | **dessiccation** | dessèchement d’un organisme vivant, comme lorsque les plantes sont exposées aux rayons du soleil ou à une sécheresse. |
| **design principles** | include the component principles of repetition, variety, balance, emphasis, sequence (rhythm) and scale as they are applied to the quality of a design. | **principes de conception** | incluent les principaux éléments en matière de répétition, de variété, d’équilibre, d’emphase, de séquence (rythme) et d’échelle qui s’appliquent à la qualité d’une conception. |
| **dethatch** | mechanical removal from a lawn of the layer of dead turfgrass tissue known as "thatch." | **déchaumer** | suppression mécanique de la couche de gazon mort sur une pelouse, également appelé « chaume ». |
| **dichotomous key** | analytical guide to the identification of plants, based on the use of contrasting characters to subdivide a group under study into branches. | **clé de détermination** | guide analytique pour identifier les plantes, selon l’utilisation de caractéristiques contrastées pour subdiviser un groupe à l’étude en sections. |
| **disease** | abnormal growth or dysfunction of a plant, caused by an interruption in the normal life cycles of a plant. Disease can be caused by biotic or abiotic factors. | **maladie** | croissance anormale ou dysfonctionnement d’une plante, causé par une interruption des cycles de vie normaux d’une plante; les maladies peuvent être causées par des facteurs biotiques ou abiotiques. |
| **dormancy** | period in an organism's life cycle when growth and development are temporarily stopped, in part, due to low temperatures that slow chemical activity. | **dormance** | période du cycle de vie d’un organisme au cours de laquelle la croissance et le développement sont temporairement et partiellement arrêtés en raison de basses températures qui ralentissent l’activité chimique. |
| **ecosystem** | biological community of interacting organisms and their physical environment. | **écosystème** | communauté biologique d’organismes qui interagissent et leur environnement physique. |
| **efflorescence** | white powdery substance on the surfaces of unsealed concrete caused by migrating vapour bringing soluble salts to the surface. | **efflorescence** | substance poudreuse blanche sur les surfaces de béton non scellé causée par la vapeur migratrice qui entraîne les sels solubles à la surface. |
| **electrical conductivity (EC)** | common measure of soil salinity and is indicative of the ability of an aqueous solution to carry an electric current. Indirect measurement that correlates very well with several soil physical and chemical properties. | **conductivité électrique (CE)** | mesure commune de la salinité du sol, qui indique la capacité d’une solution aqueuse à transmettre un courant électrique; il s’agit d’une mesure indirecte qui correspond très bien à plusieurs propriétés physiques et chimiques du sol. |
| **environmental stewards** | individuals who responsibly use and protect the natural environment through conservation and sustainable practices. | **responsables en matière de gérance environnementale** | personnes qui utilisent de façon responsable l’environnement naturel et qui le protègent au moyen de pratiques de conservation et de pratiques durables. |
| **fertigation** | application of [fertilizers](http://en.wikipedia.org/wiki/Fertilizers), [soil amendments](http://en.wikipedia.org/wiki/Soil_amendments), or other [water](http://en.wikipedia.org/wiki/Water) soluble products through an [irrigation](http://en.wikipedia.org/wiki/Irrigation) system. | **fertirrigation** | application d’engrais, d’amendements du sol ou d’autres produits solubles dans l’eau au moyen d’un système d’irrigation. |
| **fertilizer** | a chemical or natural substance added to soil or land to increase its productivity. | **engrais** | substance chimique ou naturelle ajoutée à la terre ou au sol afin d’accroître sa productivité.. |
| **filtration systems** | process of filtering liquids or gases, such as air, through a filter in order to remove solid particles. | **systèmes de filtration** | processus de filtration des liquides ou des gaz, comme l’air, au moyen d’un filtre afin d’éliminer les particules solides. |
| **foot baths** | a tub or mat containing disinfectants to provide sanitation protection of the footwear of all workers/visitors entering growing area to prevent the introduction of soil-borne pests and diseases from contaminating crops. | **pédiluves** | bassins ou tapis contenant des désinfectants qui fournissent une protection en matière d’assainissement pour les chaussures pour tous les travailleurs et les visiteurs entrant dans les régions de culture afin d’éviter d’introduire des parasites et des maladies terricoles qui pourraient contaminer les cultures. |
| **gall** | abnormal outgrowths of plant tissues caused by many living organisms living on plants including insects, mites, fungi, parasites, and bacteria. | **galle** | excroissances anormales des tissus d’une plante causées par plusieurs organismes vivants sur les plantes, y compris les insectes, les acariens, les champignons, les parasites et les bactéries. |
| **geotextile** | permeable synthetic fabrics which, when used in association with soil, have the ability to separate, modify drainage, filter, reinforce, protect, or drain and serves as a weed barrier. | **géotextiles** | tissus synthétiques perméables, qui, lorsqu’utilisés avec le sol, ont la capacité de séparer, de modifier le drainage, de filtrer, de renforcer, de protéger ou drainer, et de servir d’obstacles aux mauvaises herbes. |
| **germination** | the process by which a plant grows from a seed. Examples include the sprouting of seedlings from a seed of an angiosperm or gymnosperm and the growth of hyphae from fungal spores. | **germination** | processus par lequel une plante croît à partir d’une semence, Par exemple, la germination de semis à partir de la semence d’une angiosperme ou d’une gymnosperme et la croissance d’un hyphe à partir de spores fongiques. |
| **grades** | specified elevations of existing terrain or base. | **pentes** | élévations précises du niveau ou du terrain existant. |
| **grading** | the work of altering existing terrain, base or an elevation or slope to meet specifications for work such as a foundation, base, landscape feature or surface drainage. | **nivellement** | travail d’altération d’un terrain, d’une base, d’une élévation ou d’une pente existants afin de respecter les spécifications des travaux comme une fondation, une base, un élément d’aménagement paysager ou un drainage de surface. |
| **green infrastructure** | planned and managed technologies that mitigate pollution and provide ecosystems that support healthy living. Green infrastructure takes many forms including but is not limited to the following: urban forests, natural areas, greenways, streams and riparian zones, meadows and agricultural lands; green roofs and green walls; parks, gardens and landscaped areas, community gardens, and other green open spaces; rain gardens, bio-swales, engineered wetlands, rainwater and stormwater management systems and permeable hard surfaces. | **infrastructure écologique (verte)** | technologies planifiées et gérées qui réduisent la pollution et fournissent des écosystèmes qui soutiennent un environnement sain. L’infrastructure écologique prend bien des formes, dont les suivantes : les forêts urbaines, les aires naturelles, les voies vertes, les ruisseaux et les zones riveraines, les prairies et les terres agricoles, les toits et les murs écologiques, les parcs, les jardins et les espaces aménagés, les jardins communautaires et d’autres espaces verts, les jardins pluviaux, les rigoles de drainage biologiques, les marais artificiels, les systèmes de gestion des eaux pluviales et des eaux d’orages et les surfaces dures perméables. |
| **green roof** | a green roof system is an improvement of an existing roof which includes a water proofing and root repellant system, a drainage system, filter cloth, a lightweight growing medium and plants that can provide building owners and municipalities with a return on investment. | **toit écologique (vert)** | amélioration d’un toit existant qui comprend un système d’étanchéité et anti-racines, un système de drainage, une toile filtrante, un milieu de culture léger et des plantes qui peuvent offrir aux propriétaires des immeubles et aux municipalités un rendement du capital investi. |
| **grey infrastructure** | includes traditional roads, stormwater management including pipes and sewers, utilities and buildings. | **infrastructure grise** | comprend les routes traditionnelles, la gestion des eaux pluviales, y compris les tuyaux et les égouts, les services publics et les immeubles. |
| **growing media** | the material that plants grow in and has three main functions: to supply roots with nutrients, air, and water, to support maximum root growth, and to physically support the plant. | **milieu de culture** | matériau dans lequel la plante est cultivée, qui a trois principales fonctions : fournir des éléments nutritifs, de l’air et de l’eau aux racines; soutenir la croissance maximale des racines et soutenir physiquement la plante. |
| **growth habits** | general appearance, form (shape) and manner of growth of a plant. | **habitudes de croissance** | apparence générale, forme et façon de croître d’une plante. |
| **guy** | cable designed to add stability to a tree or free-standing structure. | **hauban** | câble conçu pour ajouter de la stabilité à un arbre ou une structure autoportante. |
| **hardiness** | describes a plant’s ability to tolerate and survive adverse growing conditions such as [cold](http://en.wikipedia.org/wiki/Cold), [heat](http://en.wikipedia.org/wiki/Heat), [drought](http://en.wikipedia.org/wiki/Drought), [flooding](http://en.wikipedia.org/wiki/Flood), or [wind](http://en.wikipedia.org/wiki/Wind). | **rusticité** | capacité d’une plante à tolérer des conditions de culture défavorables comme le froid, la chaleur, la sécheresse, les inondations ou le vent, et à y survivre. |
| **hardscape** | components of the design and construction of any landscape project that deals with a range of materials that include brick, stone, wood, metals or other natural or fabricated materials used in construction of the built landscape including [streets](http://en.wikipedia.org/wiki/Street), walkways, structures, walls, street amenities, pools and fountains, and fireplaces and fire pits etc. | **éléments inertes** | composants de la conception et de la construction de tout projet d’aménagement paysager par rapport à la variété de matériaux utilisés, comme la brique, la pierre, le bois, les métaux ou tout autre matériau naturel ou fabriqué, dans la construction de l’aménagement créé; on y inclut les rues, les allées, les structures, les murs, les infrastructures des rues, les piscines et les fontaines, les foyers intérieurs et extérieurs, etc. |
| **heading** | cutting back the terminal portion of a branch to a bud. A term whose subcategories include "topping" and "pollarding." | **rabattage** | couper le bout d’une branche pour obtenir une bouture; il s’agit d’un terme dont les sous-catégories incluent « l’écimage » et « l’émondage ». |
| **herbaceous** | plants or plant parts that are fleshy as opposed to woody and that dies back to the ground at the end of each growing season. | **herbacées** | plantes ou parties d’une plante qui sont charnues plutôt que ligneuses et qui, à la fin de chaque saison de culture, meurent en tombant au sol. |
| **integrated pest management (IPM)** | an approach to planning and managing pests that uses a combination of cultural, biological, mechanical and chemical methods to reduce pest populations to acceptable levels and with the least disruption to the environment starting with the least toxic control first. | **lutte antiparasitaire intégrée (LAI)** | approche à la planification et à la gestion des parasites qui utilise une combinaison de méthodes culturelles, biologiques, mécaniques et chimiques pour réduire les populations de parasites à des niveaux acceptables et avec le moins de perturbations possible pour l’environnement, à commercer par la mesure de contrôle la moins toxique. |
| **invasive species** | nonindigenous plants that have the potential to invade agricultural and natural areas causing serious damage to Canada's economy and environment and sometimes harm to human health. | **espèces envahissantes** | plantes non indigènes qui ont la capacité d’envahir les zones agricoles et naturelles, qui peuvent causer d’importants dommages à l’économie et à l’environnement du Canada et qui, parfois, peuvent représenter un danger pour la santé humaine. |
| **irrigation controllers** | device to operate automatic irrigation systems such as lawn sprinklers and drip irrigation systems and that have a means of setting the frequency of irrigation, the start time, and the duration of watering. | **régulateurs d’irrigation** | dispositif utilisé pour faire fonctionner les systèmes d’irrigation automatiques, comme les arroseurs de pelouse et les systèmes d’irrigation par goutte à goutte, et avec lequel peut être fixé la fréquence de l’irrigation, l’heure de début et la durée de l’arrosage. |
| **irrigation systems** | automated systems that deliver and distribute water to the landscape and horticultural crops (greenhouse and nursery), for the purpose of growing and maintaining moisture during periods of inadequate rainfall. Components of these systems typically include sprinklers, nozzles, controllers, bubblers, drip emitters, valves, backflow prevention, pipe etc. | **systèmes d’irrigation** | systèmes automatisés qui apportent et distribuent de l’eau à l’aménagement paysager et aux cultures horticoles (serre et pépinière), aux fins de culture et du maintien de l’humidité du sol pendant les périodes où les pluies sont insuffisantes; les composants de ces systèmes comprennent généralement des arroseurs, des buses, des contrôleurs, des barboteurs, des goutteurs, des vannes, des dispositifs antirefoulement, des tuyaux, etc. |
| **joint materials** | compounds used to fill the space between adjacent paving units and wall stone. May be bound or unbound. Including: sand, polymeric sand, cement mortars, resin mortars, etc. | **produits de jointoiement** | composants utilisés pour combler l’espace entre des pavés adjacents et les pierres des murs. Ils peuvent également être liés ou non liés; ces matériaux incluent le sable, le sable polymérique, le mortier de ciment Portland, le mortier de résine, etc. |
| **layering** | propagation method by which a branch/shoot takes root while still attached to the parent plant. | **marcottage** | méthode de multiplication par l’entremise de laquelle une branche ou une pousse s’enracine alors qu’elle est toujours attachée à la plante mère. |
| **let-it-lay** | leave in place, let lie, take no action, not removing natural debris in forested and natural areas. | **jachère** | laissé au repos, non cultivé, aucun retrait de débris dans les aires forestières et naturelles. |
| **lifts** | layers of soil or aggregate fill. | **couches** | étendues de terre ou de remblai d’agrégat. |
| **liming** | treatment of soil or water with lime to reduce acidity (increasing pH) and improve fertility or oxygen levels. | **chaulage** | traitement du sol ou de l’eau avec de la chaux afin de réduire l’acidité (augmentam6 le pH) et d’améliorer les niveaux de fertilité ou d’oxygène. |
| **liners** | young, immature plants intended for ‘growing-on’ to mature sizes in nurseries, either by lining-out in the field or in containers. Typically 1 or 2 years old and often sold bare-root or in small containers. | **plans à repiquer** | jeunes plantes immatures conçues pour être cultivées jusqu’à une taille mature dans les pépinières, soit en les repiquant en ligne dans le sol ou en les plantant dans des contenants; elles sont généralement cultivées pendant un an ou deux et sont souvent vendues à racines nues ou dans un petit contenant. |
| **load distribution requirements** | a [load](http://www.dictionaryofconstruction.com/definition/load.html) distributed evenly over the entire [length](http://www.dictionaryofconstruction.com/definition/length.html) of a [structural](http://www.dictionaryofconstruction.com/definition/structural.html) member or the surface of a vehicle, trailer, floor, or roof expressed in weight per length or weight per [area](http://www.dictionaryofconstruction.com/definition/area.html). | **exigences de distribution des charges** | charge distribuée uniformément sur la totalité de la longueur d’une pièce de charpente ou de la surface d’un véhicule, d’une remorque, d’un plancher ou d’un toit et qui s’exprime en poids par longueur ou en poids par surface. |
| **lock-out/tag-out** | is a safety procedure used in workplaces to protect workers by tagging dangerous tools, equipment and machines and ensuring that the energy source is locked out to prevent accidental use or start up prior to the completion of maintenance or servicing work. | **verrouiller et étiqueter** | procédure de sécurité utilisée pour protéger les travailleurs en étiquetant les outils, les machines et les équipements dangereux et en veillant à ce que les sources d’énergie soient verrouillées afin de prévenir leur utilisation accidentelle ou leur démarrage avant la fin des travaux d’entretien ou de réparation. |
| **low impact development (LID)** | planning and engineering design approach to managing stormwater runoff. Its basic principle is modelled after nature. LID’s goal is to mimic a site’s pre-development hydrology by using design technologies that infiltrate, filter, store, evaporate and detain runoff close to its source. | **développement à faible impact (DFI)** | concept de planification et d’ingénierie pour la gestion des eaux de ruissellement. Le principe fondamental s’inspire de la nature. Le but du DFI est de reproduire l’hydrologie préalable à l’aménagement du chantier à l’aide de méthodes de conception qui permettent aux eaux de ruissellement de s’infiltrer, d’être emmagasinées, de s’évaporer et d’être retenues près de la source. |
| **microclimate** | local climate conditions of a specific area that include temperature, light, wind and moisture and influenced by walls, fences, slope, elevation, exposure and orientation. | **microclimat** | conditions climatiques d’une zone précise, incluant la température, la lumière, le vent et l’humidité, qui sont influencées par les murs, les clôtures, les pentes, les élévations, l’exposition et l’orientation. |
| **micro-propagation** | propagation of plants from very small plant parts, tissues or cells grown in a test tube or container where the environment and nutrition are rigidly controlled. | **multiplication végétative in vitro** | multiplication des plantes à partir de minuscules parties, cellules ou tissus de plantes qui sont cultivés dans un tube à essai ou un contenant où l’environnement et la nutrition sont rigoureusement contrôlés. |
| **minimum tillage** | is a soil conservation system with the goal of minimum soil manipulation. It is a tillage method that does not turn the soil over. It is contrary to intensive tillage, which damages the soil structure. | **labourage minimal** | méthode de conservation du sol qui consiste à le manipuler le moins possible, où le sol n’est pas retourné; et qui est contraire au labourage intensif qui endommage la structure du sol. |
| **morphology** | the study of organism structures, including reproductive structures, and also addresses the pattern of development and relationships of these structures as they mature. | **morphologie** | étude des structures des organismes, notamment des structures reproductives, qui porte également sur le type de développement et les relations de ces structures pendant la maturation. |
| **mulch** | layer of bark, peat moss, compost, shredded leaves, hay or straw, lawn clippings, gravel, paper, plastic or other material spread over the soil around the base of plants primarily to reduce weeds, promote the soil microbiome and improve aesthetics | **paillis** | couche d’écorces, de mousse de tourbe, de compost, de feuilles déchiquetées, de foin, de paille, d’accumulations d’herbe coupée, de gravier, de papier, de plastique ou d’un autre matériau étendu sur le sol autour de la base des plantes utilisé avant tout pour réduire les mauvaises herbes, promouvoir le microbiome du sol et améliorer l'esthétique. |
| **organics** | an organic substance such as a fertilizer of plant or animal origin; a pesticide whose active component is an organic compound or a mixture of organic compounds; or a plant produced by organic farming. | **matière organique** | substance organique, comme un engrais d’origine végétale ou animale, pesticide dont le composant actif est un composé organique ou un mélange de composés organiques, ou plante produite à partir d’une culture biologique. |
| **overseed** | to spread grass seed on turf or an established lawn to fill in thin or bare spots. | **sursemer** | action d’épandre des graines de graminées sur le gazon ou une pelouse existante afin de combler les espaces dégarnis ou dénudés. |
| **pathogens** | biological agent that causes disease or illness to its host by disrupting the normal physiology. Can be a fungus, virus, bacteria or parasite. | **pathogène** | agent biologique qui cause une maladie à son hôte en perturbant sa physiologie normale; l’agent peut être un champignon, un virus, une bactérie ou un parasite. |
| **peat moss** | spongy organic soil amendment used to increase acidity, organic matter, aeration and water retention of soil. Sphagnum peat moss is generally considered to be highest in quality. Most soilless mix features peat as its main ingredient. | **mousse de tourbe** | amendement du sol organique et spongieux utilisé pour accroître l’acidité, la quantité de matière organique, l’aération et la rétention d’eau du sol; la mousse de tourbe de sphaigne est considérée comme étant de plus grande qualité par rapport aux autres; la plupart des mélanges sans terre ont de la mousse comme principal ingrédient. |
| **perennial** | a non-woody plant which grows and lives for more than two years. | **plante vivace** | plante non ligneusequi croît et vit pendant plus de deux ans. |
| **pest** | any species of plant, animal, or pathogenic agent which reduces the productivity or health of plants, either directly by eating them or indirectly by spreading diseases among them. | **parasite** | toute espèce de plante, d’animal ou d’agent pathogène qui affaiblit la productivité ou la santé des plantes, soit de manière directe en les consommant, soit de manière indirecte en leur transmettant des maladies. |
| **physiology** | plant physiology is the study of vital processes and functional activity occurring in plants in relation to its survival, metabolic activities, water relations, mineral nutrition, development, movement, irritability, organization, growth and transport processes. | **physiologie** | étude des processus vitaux et de l’activité fonctionnelle d’une plante relativement à sa survie, ses activités métaboliques, ses relations hydriques, son métabolisme des minéraux, son développement, ses mouvements, son irritabilité, son organisation, sa croissance et ses processus de transport. |
| **phytosanitary certificates** | a document, issued by an inspector, that attests to the phytosanitary status of anything exported to and from Canada and that contains the information required by the Model Phytosanitary Certificate of the International Plant Protection Convention is signed by an inspector / official and sealed with an official Phytosanitary Certificate seal. | **certificat phytosanitaire** | document, émis par un inspecteur, qui atteste de l’état sanitaire de tous les végétaux et produits végétaux importés au Canada et exportés du Canada; le document contient des renseignements requis par le modèle de certificat phytosanitaire de la Convention internationale pour la protection des végétaux, il est signé par un inspecteur ou un représentant officiel et il porte un sceau officiel de certificat phytosanitaire. |
| **pinching** | a form of pruning that encourages branching on the plant. | **pincement** | type de taille qui encourage la formation de branches sur une plante. |
| **plant classification** | assignment and identification of organisms to groups and taxonomies within a system of categories distinguished by structure, origin, ecological adaptation, use, cultural or climatic requirements, growth habit and life span etc.  Plants are grouped by various common characteristics to help us communicate similar ecological adaptations and cultural requirements. | **classification des plantes** | attribution et identification des organismes selon des groupes et des taxonomies dans un système de catégories caractérisées par, notamment, la structure, l’origine, l’adaptation écologique, l’utilisation, les besoins culturaux ou climatiques, les habitudes de croissance et la longévité.  Les plantes sont regroupées selon différentes caractéristiques communes afin de nous aider à communiquer les adaptations écologiques et les besoins culturaux similaires. |
| **plant hardiness zone map** | the plant hardiness zones map outlines the different zones in Canada where various types of trees, shrubs and flowers will most likely survive. It is based on the average climatic conditions of each area and based on a wide range of climatic variables, including minimum winter temperatures, length of the frost-free period, summer rainfall, maximum temperatures, snow cover, January rainfall and maximum wind speed. In Canada, the map is divided into nine major zones: the harshest is 0 and the mildest is 8. Subzones (e.g., 4a or 4b, 5a or 5b) are also noted in the map legend. | **carte des zones de rusticité** | carte donnant une vue d’ensemble des zones du Canada les plus propices à la survie de différents types d’arbres, d’arbustes et de fleurs, d’après les conditions climatiques moyennes de chaque région et d’après une vaste gamme de facteurs climatiques, dont les températures hivernales minimales, la durée de la période sans gel, les précipitations estivales, les températures maximales, l’enneigement, les pluies de janvier et les vitesses maximales des vents. Au Canada, la carte est divisée en neuf zones principales : de la plus rigoureuse, c’est-à-dire 0, à la moins rigoureuse, c’est-à-dire 8; la légende de la carte indique également des divisions à l’intérieur de chaque zone (p. ex., 4a ou 4b, 5a ou 5b). |
| **plugs** | cylinder of medium in which a plant is grown. The term is generally used for seedlings and rooted cuttings. | **motte** | cylindre d’un milieu dans lequel une plante est cultivée. Le terme est généralement utilisé pour les semis et les boutures racinées. |
| **positive drainage** | grade that ensures that surface water drains away from all structures on a property so as not to damage structures and buildings on a site nor negative impact on human health. | **drainage dirigé** | pente qui veille à ce que l’eau de surface soit drainée loin de toutes les structures d’une propriété, de façon à ne pas endommager les structures et les bâtiments et à ne pas avoir d’effets négatifs sur la santé humaine. |
| **potting-on** | transplanting a plant from a smaller container up to a bigger container in the growing-on process (also called bumping-up). | **empotage** | transplantation d’une plante d’un petit contenant vers un contenant plus gros pendant le processus de culture. |
| **pruning** | the selective cutting and removing of parts of a tree or shrub. It covers a number of horticultural techniques that control growth, shape, remove dead or diseased [wood](http://en.wikipedia.org/wiki/Wood), and stimulate the formation of [flowers](http://en.wikipedia.org/wiki/Flowers) and [fruit buds](http://en.wikipedia.org/wiki/Bud). Pruning often means cutting [branches](http://en.wikipedia.org/wiki/Branch) back, sometimes removing smaller limbs entirely to preserve or improve plant health and structure. | **taille** | coupe sélective et suppression de parties d’un arbre ou d’un arbuste; ce terme englobe un certain nombre de techniques horticoles visant à gérer la croissance et la forme, supprimer le bois mort ou malade, et stimuler la formation de fleurs et de bourgeons à fruit. La taille signifie souvent de couper les branches, parfois supprimer complètement les plus petites branches maîtresses afin de maintenir ou d’améliorer la santé de la plante et sa structure. |
| **quarantine** | confinement or isolation of plants or plant products suspected of carrying an infectious agent for observation and research or for farther inspection, testing and/or treatment for a period of time, in an effort to prevent disease from spreading. | **quarantaine** | confinement ou isolement de plantes ou de produits végétaux soupçonnés d’être porteurs d’un agent infectieux, aux fins d’observation et de recherche ou aux fins d’inspection, d’examen ou de traitement plus approfondis pendant une période déterminée, en vue d’empêcher la maladie de se propager. |
| **rainwater management** | collection and storage of rainwater (often from rooftops in storage units) for reuse on-site, rather than allowing it to run off. Uses include water for garden, irrigation, domestic use with proper treatment, etc. | **gestion des eaux pluviales** | collecte et stockage des eaux pluviales (souvent à partir des toits, dans des unités de stockage) aux fins de réutilisation sur place, plutôt que de permettre à l’eau de s’écouler; les utilisations incluent l’eau pour arroser le jardin, l’irrigation, l’utilisation domestique à la suite des traitements appropriés, etc. |
| **regeneration** | processes designed to build soil health or to regenerate soil, including maintaining a high percentage of organic matter in soils, minimum tillage, biodiversity, composting, mulching, and crop rotation to support a sustainable growing environment. | **remise en état** | processus conçu pour renforcer la santé du sol ou pour le remettre en état, y compris l’entretien d’un pourcentage élevé de matière organique dans les sols, le travail réduit du sol, la biodiversité, le compostage, le paillage et la rotation des cultures pour soutenir un environnement de culture durable. |
| **refugia** | area where a population of organisms can survive through a period of unfavourable conditions. | **refuge** | zone où une population d’organismes peut survivre pendant une période de conditions défavorables. |
| **retention ponds** | basins that are designed to temporarily hold a set amount of water and to catch runoff from higher elevation areas while slowly draining to another location. They are more or less around for flood control when large amounts of rain could cause flash flooding. | **bassins de rétention** | bassins conçus pour contenir temporairement une quantité fixe d’eau et pour recueillir l’écoulement des zones plus élevées tout en drainant lentement l’eau vers un autre emplacement. Ils sont en partie construits pour lutter contre les inondations lorsque de grandes quantités d’eaux pluviales peuvent causer des crues éclairs. |
| **ribbon tests** | simple method used to estimate the percentage of sand, silt and clay in a soil sample. | **analyses de rubans de terre** | méthode simple utilisée pour estimer le pourcentage de sable, de limon et d’argile dans un échantillon du sol. |
| **rootstock** | the root or part of a root used for plant propagation. In grafting the rootstock is that part of a grafted plant that supplies the roots. | **porte-greffes** | racine ou partie de la racine utilisée pour la multiplication des plantes; en ce qui a trait au greffage, le porte-greffe est la partie d’une plante greffée qui fournit les racines. |
| **rotating crops** | a system in which crops are grown on different sections of a plot on a three- or four-year cycle to build soil fertility, boost yields and economic returns, and minimize the negative impact of soil-borne pests and diseases. | **rotation des cultures** | système dans lequel les cultures sont cultivées dans différentes sections d’une parcelle de terrain selon un cycle de trois ou quatre ans afin de favoriser la fertilité du sol, stimuler la production et le rendement économique et minimiser les effets négatifs des parasites et des maladies terricoles. |
| **scarify** | to break up and loosen (soil) to a shallow depth. Roughing up the surface of a root ball that has circling roots. | **scarifier** | ameublir et décompacter le sol à une faible profondeur; rendre rugueuse la surface d’une masse racinaire dont les racines sont enroulées. |
| **scion wood** | short length of stem, taken from one plant, which is then grafted onto the rootstock of another plant. | **scion** | courte partie de tige, prélevée d’une plante, qui est ensuite greffée sur le porte-greffe d’une autre plante. |
| **silt fencing** | temporary [sediment control](http://en.wikipedia.org/wiki/Sediment_control) device used on [construction](http://en.wikipedia.org/wiki/Construction) sites to protect [water quality](http://en.wikipedia.org/wiki/Water_quality) in nearby streams, rivers, lakes and seas from sediment (loose [soil](http://en.wikipedia.org/wiki/Soil)) in [stormwater](http://en.wikipedia.org/wiki/Stormwater) [runoff](http://en.wikipedia.org/wiki/Surface_runoff). | **clôture anti-érosion** | dispositif de blocage temporaire des sédiments utilisé dans les chantiers de construction pour protéger la qualité de l’eau des cours d’eau, des rivières, des lacs et des mers proches des sédiments (terre meuble) lors du ruissellement des eaux d’orages. |
| **site assessment** | site assessment includes identifying the existing inventory of elements and features including roads, neighbouring properties, soil type, drainage, microclimate, compaction, slopes, waterways, existing plants, wildlife, utilities and hazards, access and security requirements etc. | **évaluation du chantier** | évaluation qui implique de dresser la liste des éléments existants et des caractéristiques, notamment les routes, les propriétés avoisinantes, le type de sol, le drainage, le microclimat, le compactage, les pentes, les voies navigables, les plantes existantes, les animaux sauvages, les services publics et les dangers, ainsi que les exigences en matière d’accès et de sécurité, etc. |
| **site locates** | depicts the location of underground site utilities existing on a piece of property including lines for [telecommunication](http://en.wikipedia.org/wiki/Telecommunication), [electricity distribution](http://en.wikipedia.org/wiki/Electricity), [natural gas](http://en.wikipedia.org/wiki/Natural_gas), [cable television](http://en.wikipedia.org/wiki/Cable_television), [fiber optics](http://en.wikipedia.org/wiki/Optical_fibers), [traffic lights](http://en.wikipedia.org/wiki/Traffic_lights), [street lights](http://en.wikipedia.org/wiki/Street_light), [storm drains](http://en.wikipedia.org/wiki/Storm_drain), [water mains](http://en.wikipedia.org/wiki/Water_supply_network), and [wastewater](http://en.wikipedia.org/wiki/Wastewater) pipes. In some locations, major [oil and gas pipelines](http://en.wikipedia.org/wiki/Pipeline_transport), national defense communication lines, [mass transit](http://en.wikipedia.org/wiki/Public_transport), rail and road tunnels also compete for space underground. | **plan des services souterrains du chantier** | illustre l’emplacement des services publics souterrains existants du site sur une propriété, chantier les câbles pour les télécommunications, la distribution d’électricité, le gaz naturel, la câblodistribution, la fibre optique, les feux de circulation, les lampadaires, les collecteurs d’eaux d’orages, les conduites maîtresses et les conduites des eaux usées. Dans certains emplacements, les principales conduites de pétrole et de gaz, les câbles de télécommunication de la défense nationale, le transport en commun, ainsi que les tunnels ferroviaires et routiers peuvent également compétitionner pour de l’espace souterrain. |
| **smart water technology** | irrigation best management practices and components that address landscape needs without overwatering. | **technologie de gestion intelligente de l’eau** | pratiques exemplaires en gestion de l’irrigation, et les composants qui répondent aux besoins des aménagements paysagers sans les arroser excessivement. |
| **sod** | carpet-like sheets of turf that are laid over prepared soil to establish new lawns. Many types of grasses are available. | **gazon en plaques** | plaques de pelouse semblables à du tapis qui sont déposées sur de la terre préparée afin de faire de nouvelles pelouses; de nombreux types de graminées sont disponibles. |
| **softscape** | parts of a landscape that comprise and support living material such as flowers, plants, grass, trees, soil, mulch, etc. | **éléments naturels de l’aménagement paysager** | parties d’un aménagement paysager qui comprennent et soutiennent des végétaux vivants, par exemple, les fleurs, les plantes, le gazon, les arbres, la terre, le paillis, etc. |
| **soil amendments** | any material added to a soil/media to improve its physical properties to enhance production, such as water retention, permeability, water infiltration, drainage, aeration and structure. | **amendements du sol** | matériaux ajoutés à un sol ou à un milieu afin d’améliorer ses propriétés physiques, comme la rétention d’eau, la perméabilité, l’infiltration de l’eau, le drainage, l’aération et la structure, et d’ainsi accroître la production. |
| **soil texture** | soil texture is a qualitative classification tool used in both the field and laboratory to determine classes for soils based on their physical texture. | **texture du sol** | outil de classification qualitatif utilisé sur le terrain et en laboratoire pour déterminer les classes des sols à partir de leur texture physique. |
| **spalling** | loss of a fragment/chip or splinter, usually in the shape of a flake, or pitted appearance detached from the edge or surface of a paver or concrete due to a blow or sudden force, or the action of weather, or pressure. Typically caused by poor installation and / or weather factors. | **effritement** | perte d’un fragment, d’un éclat ou d’une écornure, généralement sous la forme d’une écaille ou d’apparence piquée, qui se détache du bord ou de la surface d’un pavé ou du béton en raison d’un coup ou d’une force soudaine, de l’action des conditions météorologiques ou de la pression; l’effritement est généralement causé par une mauvaise installation ou par des facteurs météorologiques. |
| **specifications** | precise statement of legal particulars or documents that define the detailed qualitative requirements for products, materials, and workmanship upon which the contract for construction is based. | **spécifications** | énoncé précis des renseignements ou documents légaux qui définissent les exigences qualitatives détaillées pour les produits, les matériaux et la qualité de l’exécution, et sur lesquelles le contrat pour la construction est fondé. |
| **spill containment** | where spills of chemicals, oils, sewage etc. are contained within a barrier or [drainage](http://en.wikipedia.org/wiki/Drainage) system rather than being absorbed. | **confinement des déversements** | lorsque les déversements de produits chimiques, de pétrole, d’eaux usées, etc. sont confinés par des barrières ou un système de drainage plutôt que d’être absorbés. |
| **spill kits** | consist of absorbents that are sprinkled on top of the spill or sponge-like fabrics that are placed around the spill in order to contain it. The kit may also include protective equipment, such as goggles and gloves. | **équipement de lutte contre les déversements** | matériaux absorbants épandus sur des déversements ou tissus spongieux placés autour des déversements afin de les restreindre; l’équipement peut également inclure de l’équipement protecteur, comme des lunettes et des gants. |
| **standards** | a document developed to establish recognized and accepted minimum levels of quality that may be recognized by the owner, user, consultant for material, product, plant, design, system or installation procedure and;  to standardize, or simplify such variables as dimensions, varieties or other characteristics of specific products or plants in order to minimize variation in manufacture, production and/or use. | **normes** | document élaboré afin d’établir des niveaux de qualité minimums reconnus et acceptés pouvant être reconnu par le propriétaire, l’utilisateur et le consultant pour les matériaux, les produits, les plantes, la conception, les systèmes ou les procédures d’installation;  et afin de normaliser ou de simplifier des variables comme les dimensions, les variétés ou d’autres caractéristiques de produits ou de plantes précises afin de minimiser la variation dans la fabrication, la production ou l’utilisation. |
| **stems** | the main body or stalk of a plant or shrub, typically rising above ground but occasionally subterranean. Slender stalk supporting or connecting another plant part, such as a leaf or flower. | **tige** | corps ou axe principal d’une plante ou d’un arbuste, s’élevant généralement du sol, occasionnellement souterrain; il s’agit d’un organe élancé soutenant ou reliant une autre partie de la plante, comme les feuilles ou les fleurs. |
| **stormwater management** | stormwater management practices are developed to reduce, control, and prevent stormwater runoff through a variety of strategies. These strategies vary in nature and effectiveness and strive to improve water quality and either reduce or control flooding and erosion. | **gestion des eaux d’orages** | pratiques développées afin de réduire, de contrôler et de prévenir l’écoulement des eaux d’orages au moyen de plusieurs stratégies différentes; ces stratégies varient tant en nature qu’en efficacité et visent à améliorer la qualité de l’eau et à réduire ou limiter les inondations et l’érosion. |
| **structural integrity** | ability of an item to hold together under a load, including its own weight, resisting breakage or bending. It ensures that the construction will perform its designed function, during reasonable use, for as long as the designed life of the structure. | **intégrité structurelle** | capacité d’un élément de se maintenir sous une charge, y compris son propre poids, et de résister aux ruptures ou aux pliages; l’intégrité structurelle assure que la construction effectuera sa fonction prévue, pendant une utilisation raisonnable, tout au long de la vie utile de la structure. |
| **subsoil** | the stratum of earth or earthy material immediately under surface of top[soil](http://dictionary.reference.com/browse/soil). It contains little or no humus. | **sous-sol** | strate de la terre ou matière terreuse située immédiatement sous la surface de la couche arable; il contient peu ou pas d’humus. |
| **subsurface drainage systems** | the process of directing excess water away from the root zones of plants by natural or artificial means, such as by using a system of pipes and drains placed below ground surface level. | **système de drainage souterrain** | processus par lequel l’excès d’eau est dirigé loin des rhizosphères des plantes à l’aide de moyens naturels ou artificiels, comme au moyen d’un système de tuyaux et de drains placés sous le niveau du sol. |
| **take-off or quantity take‑off** | process in which detailed lists are compiled, based on drawings and specifications, of all the material and equipment necessary to construct a project. Estimators use construction blueprints, either manually or electronically, and start "taking off" quantities of items they will need from those blueprints in order to prepare part of the estimate. Examples of possible take offs include the number of plants, linear measurement of pavers, volumes of aggregate, etc. needed to complete the work. | **avant-métré** | processus au cours duquel des listes détaillées sont compilées, à partir des dessins et des spécifications, sur l’ensemble des matériaux et de l’équipement requis pour réaliser un projet. Les préposés aux devis utilisent les plans de construction, manuellement ou électroniquement, et commencent à réaliser l’avant-métré des quantités d’articles dont ils auront besoin à partir de ces plans afin de préparer une partie de leur estimation; des exemples d’avant-métrés incluent le nombre de plantes, les mesures linéaires des pavés, les volumes d’agrégat, etc. requis pour compléter le travail. |
| **thinning** | selective removal of plants/trees to improve to allow sufficient room for the remaining plants to grow  form of pruning that removes an entire shoot, limb, or branch at its point of origin to revitalize a plant by removing over-mature, weak, problematic, and excessive growths. When performed correctly, thinning encourages the formation of new growth that will more readily bear fruit and flowers. This is a common technique in pruning roses and "opening-up" the branching of neglected trees, or for renewing shrubs with multiple branches. A thinned plant becomes more open and is more likely to retain its natural form. More light penetrates a plant that has been thinned, and interior branches and foliage will be retained nearer the center of a tree. | **éclaircissage** | suppression sélective de plantes ou d’arbres afin de donner suffisamment d’espace aux plantes restantes pour croître  type de taille qui enlève une pousse ou une branche entière à son point d’origine afin de revitaliser une plante en enlevant les éléments surmatures, faibles, problématiques et dont la croissance a été excessive; lorsque l’éclaircissage est fait correctement, il encourage la formation de nouvelles pousses qui porteront plus facilement les fruits et les fleurs; il s’agit d’une technique courante pour tailler les rosiers et pour « ouvrir » les branches d’un arbre négligé, ou pour renouveler les arbustes à branches multiples; une plante éclaircie est plus ouverte et peut plus facilement garder sa forme naturelle; l’éclaircissage laisse davantage pénétrer la lumière dans la plante, et les branches et le feuillage intérieurs resteront plus près du centre de l’arbre. |
| **top-dress** | application of soluble fertilizers, fresh soil, or compost to the soil surface around a plant or to lawns to replenish nutrients and to improve plant health. | **épandage en surface** | application d’engrais solubles, d’une nouvelle terre ou de compost sur la surface du sol autour d’une plante ou sur des pelouses afin de restaurer les éléments nutritifs et d’améliorer la santé de la plante. |
| **topping** | cutting back of the vertical stem (leader) and upper primary limbs (scaffold branches) on mature trees to achieve a uniform height. Topping is also referred to as heading, stubbing, or dehorning. | **écimage** | couper la tige verticale (tige principale) et les branches primaires supérieures (branches charpentières) des arbres matures afin d’obtenir une hauteur uniforme; l’écimage est également nommé le rabattage, raboutage ou ravalement. |
| **turf** | the upper stratum of soil bound by grass and plant roots into a thick mat.  Any of various grasses (as Kentucky bluegrass or perennial ryegrass) grown to form turf. | **gazon** | strate supérieure du sol liée par des graminées et les racines des plantes en un tapis épais  Toutes variétés de graminées (comme le pâturin des prés ou l’ivraie vivace) cultivées pour obtenir une pelouse. |
| **vines** | plant whose stem requires support and which climbs by tendrils or twining or creeps along the ground. | **vigne** | plante dont la tige a besoin de soutien et qui grimpe en vrilles, en grimpant ou en rampant sur le sol. |
| **wattles** | a method of erosion control. | **fascine** | méthode de contrôle de l’érosion. |
| **wetland** | wetlands generally include swamps, marshes, bogs and similar areas that are protected and managed in order to preserve a particular type of habitat and its flora and fauna which are often rare or endangered. | **réserves des zones humides** | les zones humides incluent généralement les marécages, les marais, les tourbières et d’autres endroits similaires qui sont protégés et gérés afin de préserver un type d’habitat précis, ainsi que sa flore et sa faune, lesquels sont souvent rares et en voie de disparition. |
| **whip** | a slender, un-branched [shoot](http://en.wikipedia.org/wiki/Shoot) or [plant](http://en.wikipedia.org/wiki/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. |