

## 1 ASSEMBLY - GENERAL

- 1.1 The work of this section includes the provision of all design, labour, materials, equipment and services required to fabricate and install exterior landscaping as required for a complete project. The work includes, but is not necessarily limited to, the items referenced herein:
- 1.1.1 Tree and Shrub Transplanting and Preservation
  - 1.1.2 Soil Preparation and Finish Grading
  - 1.1.3 Lawns and Grasses
  - 1.1.4 Trees, Plants, and Ground Covers
  - 1.1.5 Landscaping Accessories
- 1.2 Reference Standards:
- 1.2.1 Metric Guide Specification for Nursery Stock (latest edition) of the Canadian Nursery Trades Association.
  - 1.2.2 The Canadian System of Soil Classification.
  - 1.2.3 Canada Fertilizers Act and Fertilizers Regulations.
  - 1.2.4 Canada Seeds Act and Seeds Regulations.
- 1.3 Qualifications: Suppliers and Installers shall have a minimum of 5 years experience in the supply and installation of systems and materials specified.
- 1.4 Quality Control: Use local source for soil and planting material where possible.
- 1.5 The Owner reserves right to review and accept plant, grass, and soil materials at source.
- 1.6 Sodded areas will not be accepted until grass has been cut twice by the *[Design Builder]* and the area free of weeds and bare spots.
- 1.7 Test topsoil for N, P, K, Mg, soluble salt content, organic matter and pH value by qualified testing laboratory. In addition soil sampling, testing and analysis shall be carried out in accordance with Provincial regulations and standards. Submit soil analysis and recommendations for soil amendments to confirm supply of topsoil as specified.
- 1.8 Warranty:
- 1.8.1 Sod: Provide a 1 year warranty against deterioration, bare spots, or damage from faulty materials or workmanship for a total warranty period of 2 years.

- 1.8.2 Planting: Provide a 1 year warranty against defects in plant material unless noted otherwise. Provide a 1 year extended warranty against defects in plant material over 75 mm caliper for a total warranty period of 2 years. The Owner reserves the right to extend [*Design Builder's*] warranty responsibilities for an additional year if, at end of initial warranty period, leaf development and growth is not sufficient to ensure future survival.
- 1.8.3 During warranty period, remove from site any plant material that has died or failed to grow satisfactorily as determined by the Owner and provide' replacement.
- 1.8.4 Extend warranty on replacement plant material for a period equal to the original warranty period.

## **2 ASSEMBLY DESIGN CRITERIA**

- 2.1 The [*Design Builder*] shall engage a qualified Landscape Architect, licensed to practice in the Province of Ontario, to design landscape and provide review during its construction.
- 2.2 Finish all areas from the perimeter of the building to the site boundaries, shown in the Site Plan of the Statement of Requirements, with the following landscape types as appropriate:
  - 2.2.1 Sodded areas.
  - 2.2.2 Planting beds, adjacent to major building entrances areas.
  - 2.2.3 Maintenance strips to the perimeter of the building.
- 2.3 Preservation of Existing Features:
  - 2.3.1 Design and site structures and landscaped areas with consideration for the preservation of man-made and natural site features such as existing trees, rock out-croppings etc. Where appropriate, incorporate these features into the landscape to enhance the overall design of the project.
  - 2.3.2 Protect man-made and natural features on or adjacent to the site that are susceptible to damage from (or environmentally sensitive to) construction, where the possibility of damage to these features exists.
  - 2.3.3 Design systems to preserve existing planting and root systems.
- 2.4 Planting and lawns:

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- 2.4.1 Incorporate grass (sod) into design where appropriate. Seed selection and mixture types, mulch, fertilizer and application rates shall be suitable to local environmental conditions such as moisture, light, soil conditions and man-made stresses such as salt spray and snow embankment from ploughs.
  - 2.4.2 Plant material specified in the design shall include trees, shrubs, and ground cover and be suitable to local environmental conditions such as moisture, light, soil conditions and man-made stresses such as salt spray and snow embankment from ploughs.
  - 2.4.3 Design with plant materials that require minimal maintenance and are drought-resistant.
  - 2.4.4 The spacing of trees and shrubs in sodded areas shall allow for future growth and spread and shall allow for the use of gang-mowers.
  - 2.4.5 Provide precast concrete tree grates *[(to match Building 'J' site)]* for trees planted in paved areas.
  - 2.4.6 Provide mulch on all planting beds.
- 2.5 Grading:
- 2.5.1 Adhere to soil stabilization, slope protection, and erosion control requirements in Section G1030 - Site Earthwork.
  - 2.5.2 Where a change in grade is required around existing trees that are to be preserved, provide the necessary details indicating how grade will be retained so as to not affect the trees' existing root system.
  - 2.5.3 Design grading to provide adequate surface drainage.
  - 2.5.4 Where adequate surface drainage is not possible by grading alone, a supplementary drainage system will be required to suit the particular circumstances.

### 3 MATERIALS

- 3.1 Tree and Shrub Transplanting and Preservation:
  - 3.1.1 Fill:
    - 3.1.1.1 Type A: clean, natural river sand and gravel material, free from silt, clay, loam, friable or soluble materials and organic matter.
    - 3.1.1.2 Type B: excavated soil, free from roots, rocks larger than 75 mm, building debris, and toxic ingredients. Excavated material shall be approved by Owner before use as fill.

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- 3.1.2 Draintile: plastic perforated tubing complete with snap couplings to [CGSB 41-TP-31M].
  - 3.1.3 Welded wire fabric to [CSA G30.5].
  - 3.2 Topsoil and Amendments:
    - 3.2.1 Screened topsoil, minimum 100mm deep, for all landscaped areas: mixture of mineral particulates, microorganisms and organic matter, which provides suitable medium for supporting intended plant growth.
    - 3.2.2 Contains no toxic elements or growth inhibiting materials.
    - 3.2.3 Topsoil containing crabgrass or other noxious weeds is not acceptable.
    - 3.2.4 Provide amendments such as, but not limited to, peat moss, sand, limestone, and fertilizer required by the soil analysis to promote and support healthy plant growth.
  - 3.3 Lawns and Grasses:
    - 3.3.1 Certified No.1 nursery sod, drought-tolerant species, well rooted, free of burned spots. Sod grown in accordance with classification of Nursery Sod Growers Association. Of sufficient density that no surface soil is visible when mowed to height of 38 mm.
    - 3.3.2 Fertilizer: To Canada "Fertilizers Act" and "Fertilizers Regulations".
  - 3.4 Trees, Plants, and Ground Covers:
    - 3.4.1 Type of root preparation, sizing, grading and quality to comply with "Metric Guide specifications for Nursery Stock" of Canadian Nursery Trades Association.
    - 3.4.2 Use trees and shrubs of No. 1 grade.
    - 3.4.3 Source of plant material to be grown in same hardiness Zone in accordance with Agriculture Canada Plant Hardiness Zone Map as location of project.
    - 3.4.4 Plant material to be free of disease, insects, defects or injuries and structurally sound with strong fibrous root system. "Bare root" is not acceptable.
    - 3.4.5 Specimen deciduous trees shall have a minimum caliper of 75 mm. Specimen coniferous trees shall have a minimum height of 1800 mm.
    - 3.4.6 Deciduous trees adjacent to walkways and sidewalks shall be specified with a minimum branching, height of 2200 mm.
  - 3.5 Accessories:

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- 3.5.1 Provide tree wrapping material, mulch, anti-desiccant, wound dressing, filter cloth and zinc coated stakes, guys, tree-guards, eye bolts and turnbuckles, tree rings, and anchors where required and in quality and quantity dictated by good landscape practice.
  - 3.5.2 Provide wooden pegs for sod when installed on sloped surfaces 1:3 or steeper.
  - 3.5.3 Shredded coniferous wood mulch. Use local source where possible.

## 4 INSTALLATION

### 4.1 Preparation of Existing Grade:

- 4.1.1 Verify that grades are correct. Grade soil, eliminating uneven areas and low spots, ensuring positive drainage as per drainage design.
- 4.1.2 Cross cultivate entire area, which is to receive topsoil to depth of 100 mm. Cross-cultivate those areas where equipment has compacted soil.
- 4.1.3 Remove debris, roots, branches, stones in excess of 50 mm diameter and other deleterious materials.

### 4.2 Placing and Spreading of Topsoil and Soil Amendments:

- 4.2.1 Cross cultivate entire area to receive topsoil to depth of 100 mm.
- 4.2.2 Spread topsoil in uniform layers not exceeding 150 mm, over unfrozen sub-grade free of standing water.
- 4.2.3 Spread topsoil to following minimum depths after settlement and 80% compaction:
  - 4.2.3.1 135 mm for sodded areas.
  - 4.2.3.2 150 mm for seeded areas
  - 4.2.3.3 500 mm for planting beds.
- 4.2.4 Apply and thoroughly mix soil amendments and fertilizer into full depth of topsoil and top 50 mm of existing soil for all landscaped areas.

### 4.3 Finish Grading:

- 4.3.1 Fine grade surface to eliminate rough spots and low areas and ensure positive drainage. Prepare loose friable bed by means of cultivation and subsequent raking.
- 4.3.2 Consolidate topsoil to required bulk density. Leave surfaces smooth, uniform and firm against deep foot printing.

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- 4.4 Lawns:
- 4.4.1 Schedule installation to coincide with preparation of soil surface.
  - 4.4.2 Schedule installation after frost has left ground and before June 15 or between August 15 and September 30.
  - 4.4.3 Provide signage and protect planted area from trespass until growth has been established.
  - 4.4.4 Place sod immediately after delivery and no later than 36 hr after lifting.
  - 4.4.5 Lay in rows, longitudinally, along contour of slopes, joints staggered; no overlaps or open joints. Lay smooth with abutting paving.
  - 4.4.6 For slopes of 3:1 and steeper install and secure geotextile fabric. Lay sod starting at bottom and of slope. Peg every row at 600 mm o/c each way. Drive pegs flush with sod surface.
  - 4.4.7 Water sodded areas immediately to saturate upper 100 mm of soil. Allow to dry moderately to prevent damage and using light roller, roll out minor depressions and irregularities and sod is bonded with soil. Use of heavy roller to correct irregularities in grade is not permitted.
  - 4.4.8 Sod placed in fall will not be reviewed for acceptance until the following spring one month after start of growing season.
- 4.5 Trees, shrubs, and ground cover:
- 4.5.1 Do tree, shrub and ground cover work in accordance with the Metric Guide Specification for Nursery Stock [1984] Edition of the Canadian Nursery Trades Association.
  - 4.5.2 Trees and shrubs growing in containers may be planted throughout growing season.
  - 4.5.3 Protect plant material from damage, frost, excessive heat, wind, and sun during transportation. Store and protect plant material, which will not be installed with 1 hour after arrival at site in storage location approved by Owner.
  - 4.5.4 Preparation:
    - 4.5.4.1 Apply anti-desiccant to conifers and deciduous trees in leaf in accordance with manufacturer's instructions.
    - 4.5.4.2 Stake out plant locations and plant vertically. Orient plant material to give best appearance in relation to structure, roads, and walks.
  - 4.5.5 Excavation:

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- 4.5.5.1 Provide permanent drainage in method acceptable to Owner if planting pit is wet due to ground water. Protect excavations against freezing. Form pits with saucer-shaped bottoms and scarify 150 mm. Remove standing water from pits before planting.
  - 4.5.6 Planting:
    - 4.5.6.1 Backfill soil in 150 mm lifts when planting trees and shrubs. Use of frozen or saturated soil is not acceptable. Tamp each lift to eliminate air pockets. When two thirds of depth of planting pit has been backfilled, fill remaining space with water. After water has penetrated into soil, backfill to finish grade.
    - 4.5.6.2 Fill with soil to finish grade after soil settlement has occurred. Build 100mm lip to form water saucer around plant.
    - 4.5.6.3 Apply necessary fertilizer in type, mix and quantity required by soil analysis and required to promote healthy growth.
  - 4.5.7 Support:
    - 4.5.7.1 Use single stake for deciduous trees less than 3 m and conifers less than 2 m. Place on prevailing wind side. Provide guying complete with collar tube.
    - 4.5.7.2 Use 3 guy wires and anchors for deciduous trees greater than 3 m and conifers greater than 2. Guy wires, collars, turnbuckles, and stakes shall be tight and sufficient in strength to adequately support tree.
    - 4.5.7.3 Wrap deciduous trees with a caliper of 50 mm or greater, spirally from ground to a height of second set of branches with burlap. Treat trunk with paste of long residual insecticide before applying wrapping.
    - 4.5.7.4 For trees where guy wires cannot be used, place rectangular wood frame of cedar 38 x 89 mm over root ball with frame as close to edge as possible without damaging root system or breaking root ball. Fasten two 3.658 mm wires to one member, lead them over wooden frame and fasten to opposite second member. Break wires in middle of root ball and install turnbuckles.
    - 4.5.7.5 Spread mulch to planting beds to a depth of 50 mm.
    - 4.5.7.6 Install tree crates at all trees planted within paved surfaces per manufacturer's instructions.
  - 4.5.8 Maintenance: Perform the following maintenance procedures from time of planting to the expiration of the warranty period.
    - 4.5.8.1 General:

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- 4.5.8.1.1 Water planting and lawns sufficiently and regularly to maintain optimum growth and health of planting without causing erosion.
  - 4.5.8.1.2 Apply fertilizer in accordance with approved application program.
  - 4.5.8.1.3 Remove weeds monthly using control methods acceptable to Owner.
  - 4.5.8.1.4 Provide adequate protection against winter damage.
  - 4.5.8.1.5 Do not use any pesticides or herbicides without prior approval of Owner.
  - 4.5.8.2 Lawns:
    - 4.5.8.2.1 Mow lawns regularly to 38 mm when grass reaches 60 mm.
    - 4.5.8.2.2 Maintain lawn free of weeds, pests, and bare spots.
  - 4.5.8.3 Trees, shrubs, and ground cover:
    - 4.5.8.3.1 Keep soil around trees, shrubs and planing beds moderately cultivated and soil within the confines of such areas free from weeds.
    - 4.5.8.3.2 Monitor plants for pests and diseases. Obtain approval for treatment protocol from Owner prior to application.
    - 4.5.8.3.3 Remove and replace plant material as soon as failure is apparent.
    - 4.5.8.3.4 Keep tree guards, grates, guy wires and wrappings in proper repair.
    - 4.5.8.3.5 Prune plants and trim hedges as necessary and to best horticultural standards and practices.
    - 4.5.8.3.6 Replace or re-spread damaged, missing or disturbed mulch. Maintain proper mulch depth of 50 mm in shrub beds and around trees.

***End of Section***