

PART 1 – GENERAL

1.1 RELATED SECTIONS

- .1 Section 013543 - Environmental Procedures
- .2 Section 311100 - Clearing and Grubbing
- .3 Section 310099 – Earthworks for Minor Works

1.2 BASIS OF PAYMENT

- .1 No measurement for payment will be made under this section. Payment at the contract lump sum price shall be full compensation for all labour, materials and equipment to do the work.

1.3 QUALITY STANDARDS
FOR THE PRUNING WORK

- .1 Pruning work must comply with the methods and information described in the following reference guide published by the *International Society of Arboriculture* (ISA) available via www.isa-arbor.com:
 - .1 Best Management Practices – Tree Pruning (Revised 2008), Edward F. Gilman and Sharon Lilly, 2008, ISBN 1-881956-31-8.

1.4 DEFINITION

- .1 Tree :
The term 'tree' refers equally to the aerial parts (trunk, crown, branches, leaves) that to the underground portion, namely the roots and soil (topsoil, sand, stone, rock) around the roots as well as the physical (texture, porosity, density and topography) and chemical (composition, acidity, etc.) properties that characterize the soil.

PART 2 – PRODUCTS

2.1 PROTECTION FENCING
FOR TREES

- .1 Fencing should be built either in wood or wire mesh (modular fence).
- .2 Wood fencing :
 - .1 Wood plywood panels: Approximate dimensions: 1,2 m × 2,4 m × 19 mm (4' × 8' × 3/4").
 - .2 Wood planks : Wood pieces with following approximate dimensions 5 cm × 10 cm × 2,4 m (2" × 4" × 8').
- .3 Wire mesh fence :
 - .1 Fences should be of "Wire mesh site fence" type and of following approximate dimensions: 1800 mm high and 2400 mm long. Fencing must be equipped with metal feet to prevent them from falling over and must be well anchored in the soil so that they cannot be moved during the entire period of work.

2.2 PERLITE

- .1 Perlite must be destined for horticultural use must be composed of coarse particles of 2 to 5 mm in diameter.

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- 2.3 VERMICULITE
 - .1 Vermiculite should be medium-sized, composed mainly of particles of 2 to 5 mm in diameter. Vermiculite should contain no contaminants, or weed seeds.

 - 2.4 STEEL BELT
 - .1 The dimensions of the steel belts used to firmly hold wood pieces into place against the tree trunk for the duration of the entire contract period are: $\frac{3}{4}$ x .2 in. with a rupture strength of 2150 pounds and must be held in place with a $\frac{3}{4}$ in. closed cover.
 - .2 Removal of wood pieces must be done by Contractor, after completion of work, and once approval has been granted by Departmental Representative.

PART 3 – EXECUTION

- 3.1 PROFESSIONAL QUALITY OF THE CONTRACTOR
 - .1 The Contractor selected to perform tree removal and pruning work must have on-site within his team at least one ISA certified arborist (International Society of Arboriculture) whose certification will be fully valid at the time when the arboriculture work is required and for the contract period.

- 3.2 TEAM FOR PRUNING AND TREE REMOVAL WORK
 - .1 For pruning and tree removal work, Contractor must provide following equipment and machinery:
 - .1 A truck equipped with a closed box for the shredding of the branches with a minimal capacity of 10 cubic metres.
 - .2 A trailer mounted industrial chipper unit. The chipper must be able to shred branches at least 20 cm in diameter.
 - .3 The Contractor must provide trucks and all necessary tooling, material, labor and monitoring necessary to complete the work described in the drawings.
 - .2 The workforce provided by Contractor must consist of 3 employees, including 1 for driving the truck:
 - .1 A tree trimmer and team leader with a minimum of 5 years experience, or a number of years judged satisfactory by the Departmental Representative, and who is skilled with “cable” work.
 - .2 A tree trimmer with a minimum of 2 years experience, or a number of years judged satisfactory by the Departmental Representative, and who is skilled with “cable” work.
 - .3 A worker to work on the ground.
 - .3 Furthermore, in order to validate his team’s work experience, the Contractor shall meet with the following requirements at the beginning of his work:
 - .1 Provide job references for his employees and their academic or professional training.
 - .2 No personnel changes will be allowed, unless some major consideration which must be accepted in advance by the Departmental Representative.
 - .3 The Departmental Representative reserves the right to exclude any worker he deems as incompetent or seems in a state that

- prevents him from carrying on with work, or who engages in improper conduct in case of force majeure.
- .4 Prior to beginning work, the Departmental Representative can request a thorough assessment of employees.

PART 4 – WORK DESCRIPTION

4.1 TREE PROTECTION

- .1 The Contractor must install appropriate means necessary to avoid any damage (physical or chemical) to trees, in any way whatsoever. Contractor must protect and preserve trees. This also includes exhaust emitted by equipment and vehicles.
- .2 Therefore, it is the responsibility of the Contractor and Subcontractors to be fully aware of existing conditions and exact locations of crown trunk and the roots of trees.
- .2 It is forbidden for the Contractor and the Subcontractors to mark with paint or fix objects in any way whatsoever to trees.

4.2 IDENTIFICATION OF TREES TO PROTECT

- .1 Unless otherwise stated by the Departmental Representative, or if otherwise mentioned in drawings, all trees, shrubs, forested areas, and sodded surfaces present on Parliament Hill are to be preserved and protected. This also includes soil surrounding trees.

4.3 PERIMETER OF PROTECTION FOR SOIL AND ROOTS

- .1 Under no circumstances, unless otherwise noted in this current book of specifications or in drawings, will the contractor be allowed to pass within the zones of protection (as indicated on the plans) and conservation around the trees (by means of depositing materials or from passage of machinery and workers), without prior authorization of the Departmental Representative.
- .2 The Contractor cannot remove or bury waste or any other materials before, during or after construction work, around trees or the midst of woodland, for neither a temporary nor a permanent period of time. Similarly, no discharge of toxic compounds or products should seep towards or around trees to preserve.
- .3 The Contractor must implement the necessary means to avoid physical or chemical damage to trees.
- .4 Where construction work requires to be executed near trees, the Contractor must comply with the relevant specifications of this current book of specifications.

4.4 PROTECTION FENCING
AND PROTECTION
PERIMETER FOR TREES

- .1 A fence must be installed around (6) trees that they are to be preserved and protected. Beyond fences, or in the area between fence and tree (shown in drawings), no machinery, workers, storage of materials, or circulation of machinery will be tolerated, even temporarily.
- .2 Fences should be erected according to distances and locations specified in drawings.
- .3 Fences must be of wood or metal wire meshing. The use of orange plastic safety fence is strictly prohibited.
- .4 For wood fences, comply with following instructions:
 - .1 These temporary fences must be 1200 mm high and composed of plywood nailed to a structure made of wooden planks as shown in drawings. Fencing must be held in place using stakes and wooden bracing retained in the soil.
- .5 For wire mesh fencing, comply with following instructions:
 - .1 Fences must be kept standing in place and fully functional at all times.
 - .2 They must be have feet to insure solid footing. The feet must be kept in place with anchors sunken into the ground, in order to avoid any unauthorized displacement.
- .6 During installation of the fence, the Contractor must avoid touching or injuring trees.
- .7 Under no circumstances may the fence be attached to trees.
- .8 No dismantling of fences will be tolerated prior to the completion of work.
- .9 All tree trunks of trees within contract limits must be protected by means of wood pieces placed vertically, measuring 1.8m high starting at ground level, fixed in place with a steel belt.
 - .1 For trees with DBH (Diameter at Breast Height) less than 15 cm, use wood pieces with following dimension: 2" x 3". The space allowed between each wood piece should never exceed (3) centimetres.
 - .2 For trees with DBH (Diameter at Breast Height) greater than 15 cm, use wood pieces with following dimension: 2" x 4". The space allowed between each wood piece should never exceed (3) centimetres.
 - .3 Contractor must place between tree trunk and wood pieces a padded layer and must get material approved by Departmental Representative prior to installation.

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- 4.5 PRUNING OF BRANCHES .1 Pruning work must be carried out in compliance with the requirements listed in art. 1.1 of this current book of specifications.
- .2 Selected arboriculture Contractor assigned to this task must approved by Departmental Representative prior to beginning work.
- .3 If the Departmental Representative is not satisfied with the quality of the work done by a tree trimmer, the latter will be automatically replaced.
- .4 The use of products on cuts, wounds or injuries on trees is prohibited.
- .5 In spite of what is registered for reference standards, the use of climbing spurs on the boots is strictly prohibited for work other than for tree removal work or during air rescue.
- .6 Waste products from pruning work must be loaded into trucks immediately and transported off site by the Contractor.
- .7 In case of unplanned breakage of branches during the work, any damaged branches should be cut in accordance with instructions from Departmental Representative.
- 4.6 TREE REMOVAL .1 For tree removal work, the Contractor must take into account the direct environment of tree to be removed as a means to avoid damage to surrounding trees, property (sport fields, flowerbeds, etc.), goods (cars, etc), buildings and other infrastructure, and make sure not to cause injury to passers-by.
- 4.7 GRUBBING .1 The remaining stump of all felled trees should be shredded using a mechanical stump grinder.
- .2 Grubbing shall be performed 500 mm deep, below the general level surrounding stump.
- .1 In situations where felled tree caused lifting of ground, raised part must also be mulched with stump grinder to a depth of 15 cm below the ground level (where lifting stops).
- .2 Roots present along the surface of the ground should either be cut or entirely shredded with stump grinder.
- 4.8 REMOVAL OF PRUNING
FELLING, AND GRUBBING
RESIDUES .1 All residues of pruning, felling and stump - wood chips, logs, Earth, etc. – resulting from arboricultural work must be removed from site of the work to an appropriate location, approved by Departmental Representative at the expense of the Contractor.
- .2 Departmental Representatives must be fully aware of sites where residues will be placed.
- .3 When wood from ash trees are encountered, the Contractor shall dispose of residues in compliance with *Ministerial Order for the*

Emerald Ash Borer issued by the *Canadian Food Inspection Agency*, affecting the whole the Ottawa region, as well as applicable provincial and municipal regulations. All additional costs resulting from the application of these procedures must be covered entirely by the Contractor.

- 4.9 SOIL AERATION
- .1 Soil must be aerated in turf within construction area, as shown in drawings. Alternatively, no soil aeration must be carried out within 1.5 m away from tree trunks to be protected. Furthermore, no drilling must be done directly over an apparent root (i.e., visible from ground surface) greater or equal to 25 mm in diameter.
 - .2 Soil aeration must be done in natural soil by drilling holes 50 to 60 mm wide. The holes should be drilled using an auger, or an excavator (of type Air Spade™ or Air Knife™). The spacing between the holes must be approx. 350 mm. If necessary, during the drilling of holes, the Contractor must first water the ground thoroughly in order to facilitate the penetration of the auger into the ground.
 - .3 The holes should eventually be entirely filled with a mixture of 50% - 50% of perlite and vermiculite.
- 4.10 PRE-CUTTING OF ROOTS
 PRIOR TO EXCAVATION
- .1 For all excavations made at a distance of 6000 mm or closer from the tree trunk, a pre-cutting of the roots must be carried out along the boundary of the area to be excavated. Pre-cutting must be made within the first 400 mm of soil depth.
 - .2 Pre-cutting of roots must be made either by means of a mechanical stump grinder or by scraping in thin layers.
 - .3 If a mechanical stump grinder is used, its blade should be large enough to make the pre-cut to the required depth in a single operation. Cutting must be carried out along the edge of the area to be excavated, but without exceeding beyond as to preserve soil in place.
 - .4 If the scraping method is to be used, the following requirements must be met:
 - .1 All along the boundary of the area to be excavated, the contractor must avoid when digging, to raise the soil roots outside the area to be excavated, within the first 400 mm of depth of soil.
 - .2 The excavation will be made by scraping in thin layers of 30 mm at a time in order to reach a depth of 400 mm.
 - .3 As roots greater or equal to 20 mm are carefully uncovered, they must be cut with well sharpened tools (pruning shears, chain saw).
 - .4 Roots must be cut perpendicularly as to eliminate the portion of the root that is exposed to the open air.
 - .5 Excavation work, specifically that concerning the cutting of roots, should be done under the direct supervision of the Departmental Representative.

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- 4.11 WATERING OF TREES WITHIN TREE PROTECTION AREA .1 Regular watering of protected trees must be done by the contractor.
- .1 The contractor will water trees abundantly at 7 day intervals during the growing season (between May 1 and September 30), when a lack of heavy rainfall occurs 7 days prior to watering.
 - .2 Watering period should take 30 to 45 minutes to complete.
 - .3 Watering must be made not only at the foot of trees, but also all along tree protection area.
- .2 Irrigation should be applied in fine droplets using a garden-type sprinkler device so to avoid soil from eroding.
- 4.12 MAINTENANCE AND REPAIR OF TREE PROTECTION MEASURES .1 All protection measures and devices for trees described in this section of the current book of specifications must be kept in good condition by the Contractor during the duration of contract period.
- .2 The Departmental Representative is the only person competent enough to determine the need or not for the application and required period of application for tree protection measures.
 - .3 The Contractor shall immediately repair any broken tree protection measures.
 - .4 The Departmental Representative will verify the upkeep of tree protection measures and whether instructions described in this current book of specifications have been met. If necessary, the Departmental Representative may issue directives that General Contractor and his Subcontractors must comply to.
- 4.13 REMOVAL OF TREE PROTECTION MEASURES .1 Tree protection work should be entirely removed once all construction and landscaping work have been entirely completed.
- .2 Tree protection measures must be removed so as to not to cause damage to the adjacent trees and woodlands.
 - .4 Tree protection measures must be removed under the supervision of the Departmental Representative.
 - .5 The contractor is responsible for the disposal of tree protection measures, in accordance with the regulations, standards and laws in force. Contractor must cover all costs associated with disposal of tree protection measures.
- 4.14 SPILL OF HAZARDOUS SUBSTANCES .1 It is prohibited at all times to spill in or on the soil any substances that may be harmful to the health of trees and other plants.
- 4.15 HERBICIDE USE .1 The use of all substances for weed removal is prohibited at all times.

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- 4.16 SALT USE FOR DUST CONTROL OR DE-ICING. .1 Under no circumstances may the contractor use salt or any other material to control dust during the duration of the work.
- 4.17 DEFICIENCIES .1 The contractor will be required to rebuild at his own expense all work non-compliant with requirements stated in this current book of specifications and in drawings.
- .2 The Departmental Representative will regularly verify that all work comply with the specifications present in drawings and in current book of specifications.
- 4.18 DAMAGE TO TREES .1 Whenever there is damage to a tree intended to be preserved and protected, the Departmental Representative will require that Contractor implements corrective measures necessary to remedy the situation. If corrective measures cannot be implemented by Contractor, Departmental Representative will charge to Contractor the value of the damages.
- 4.19 NON-AUTHORISED SPILL WITHIN PROTECTED ZONES .1 Whenever soil, concrete, pumped water, deleterious substances or chemicals (liquid, gaseous or solid) are spilled near trees to protected and preserved, the Departmental Representative will ask for corrective measures to be implemented immediately in order to remedy the situation, at the expense of the contractor.
- 4.20 IRCULATION OF MOVEMENT WITHIN PROTECTED AREA .1 Whenever machinery or materials are stored or moved even temporarily outside areas Departmental for that purpose on the drawings, the Departmental representative will ask for corrective measures to be implemented immediately in order to remedy the situation, at the expense of the contractor.

***** END OF SECTION *****