CORPORATION OF THE CITY OF BURLINGTON

SPECIFICATIONS

INDEX FOR

MATURE TREE PRUNING & FERTILIZING STANDARDS (SPEC. NO. SS3)

INDEX		**PAGE**
MATURE TREE PRUNING		
1	Examination	SS3-1
2	Inspection	SS3-1
3	Safety	SS3-1
4	Public Relations	SS3-2
5	Tools and Equipment	SS3-2
6	Workmen	SS3-3
7	General Mature Tree Pruning Standards	SS3-3
8	Traffic Control	SS3-4
9	Coniferous Pruning Standards	SS3-5
10	Repair of Girdling Roots	SS3-5
11	Cleanliness of Site	SS3-5
MATURE TREE FERTILIZATION		
12	Materials	SS3-6
13	Soil Tests	SS3-6
14	Methods of Application	SS3-6
15	Granular Fertilizer Application	SS3-6
16	Cleanup	SS3-7
17	Guarantee	SS3-8

SPECIFICATIONS

FOR

MATURE TREE PRUNING STANDARDS (SPEC. NO. SS3)

1. EXAMINATION

Report to the City Forester, in writing, any conditions encountered before or during work that will adversely affect the performance of the work.

2. INSPECTION

a) The City Forester may enter upon the actual site of the work at any time to inspect any or all equipment, tools, vehicles and materials associated with the work specified.

b) The Contractor shall advise the City Forester when final inspection is required.

c) Under circumstances beyond the control of the Contractor, the City Forester, at his sole discretion, may inspect a site where partial acceptance has been requested.

3. SAFETY

a) All workmen working near utility lines shall be briefed by the Contractor on the current of the conduit in the vicinity of the work and the Senior On-Site Supervisor in charge of any work group will be fully aware of safety procedures which should be followed in case of accident involving utility lines.

b) All tree trimmers are to be members of the Electrical Utility Safety Association (E.U.S.A.)

c) Safety ropes, tools, severed limbs, equipment and aerial lifts shall be handled in such a way as to ensure they do not come into contact with any utility lines.

d) All safety ropes in use on the site shall be inspected from end to end each day to ensure that there is no weakening, fraying or stressing that constitutes a danger to the climber or his co-workers. Similarly, all other safety equipment shall be checked regularly to ensure that it is in safe working condition and that any defect is rectified.

e) All safety equipment shall be approved by the Canadian Standards Association for the purpose for which it is being used.

f) All aerial lifts shall be insulated so as to ensure the safety of an employee in the bucket or at any controls, should the lift come into contact with any energized utility line on the site.

g) All work shall be carried out in accordance with the applicable sections of The Industrial Safety Act of Ontario and The Construction Safety Act of Ontario and all relevant regulations made under such legislation.

h) A safe distance from live electrical conduit must be maintained by all persons. This safe distance shall also apply for any conducting tools or material handled by any workmen.

In performing work near live electrical apparatus, particular care must be exercised in watching body and tool or material movements to avoid accidentally coming into the danger zone.

The general rule which must be observed by all workmen in the approach to live electrical lines is outlined as follows:

Distance from the Live

Voltage Range	Utility Line
- 15,000 volts	3 feet
- 50,000 volts	4 feet
- 150,000 volts	5 feet
- 250,000 volts	7 feet

Under no circumstances shall unqualified persons be allowed to work closer to live electrical lines and apparatus than the distances outlined in the above table for the respective voltage ranges.

i) In the case of a limb falling and becoming lodged on one or more conductors, men shall be warned to keep clear in case a conductor should burn off and fall. Approved methods for removal of the limb, depending on the line voltage, are as follows:

   i) Telephone Lines - Under normal conditions, the branch may be removed from telephone conductors by means of wooden handled or fibreglass pole pruners.

   ii) Lines carrying 44,000 Volts Phase to Phase and Under - The branch may be removed with properly maintained non-dielectric fibreglass pole pruners. Rubber gloves shall be worn and the work shall be supervised directly by the man in charge. Care shall be taken not to stand directly below the conductors.

   iii) Lines carrying over 44,000 Volts Phase to Phase - Should branches become lodged over electrical utility lines carrying over 44,000 volts, the foreman shall make application to the responsible Hydro authority to remove the limb. Under no circumstances will unqualified personnel be allowed to come within 4 feet of such lines.

4. PUBLIC RELATIONS

When carrying out utility line clearance, street tree maintenance and park tree repair, the Contractor and his workers shall maintain good relations with those with whom they come into contact.

5. TOOLS AND EQUIPMENT

a) Each climber shall employ safety belt and strap, or safety belt and saddle in the tree at all times. When working in an aerial lift, he will remain inside the bucket with his safety laniard securely and property fastened at all times.

b) Aerial lifts shall be kept clean of all tree paint, grease and dirt that could reduce its
c) Under no circumstances shall axes or hatchets be used off the ground.

d) "Tree climbers" or "spurs" may be used only in trees that are being felled. Under such circumstances, only long gaff climbers (3 to 3 1/2 inch inside length measurement) shall be used.

e) All ropes employed in lowering major limbs shall be sized according to the following charts:

Type of Rope	Size	Total Weight Allowable
Standard Lay Nylon	1/2 inch	1,120 lbs.

Standard Lay Polypropylene	1/2 inch	710 lbs.
Standard Lay Polypropylene	5/8 inch	1,240 lbs.
Standard Lay Polypropylene	3/4 inch	1,520 lbs.
Standard Lay Polypropylene	1 inch	2,570 lbs.
Standard Lay Manilla	1/2 inch	450 lbs.
Standard Lay Manilla	5/8 inch	748 lbs.
Standard Lay Manilla	3/4 inch	920 lbs.
Standard Lay Manilla	1 inch	1,530 lbs.

f) All pruning equipment shall be designed specifically for tree work and shall be clean, sharp and in proper, safe working order. Pruning equipment will be capable of producing clean, flush cuts without tearing or unduly fraying the bark.

g) Rubber sole (or equivalent) shoes shall be employed in climbing to ensure that there is no damage to trees and that the risk of slipping is minimized.

h) All equipment utilized shall be of suitable strength, reliability, and design for the job specified.

i) Only wooden or fibreglass ladders shall be employed in street tree maintenance or near utility lines.

6. WORKMEN

a) Each workman involved in utility line clearance shall be able to identify and distinguish low voltage, distribution and service electrical conductors and communications lines. He will understand the hazards and safety standards critical to work in the immediate environs of each.

b) All workmen involved in tree pruning under this contract shall be experienced and knowledgeable in standard pruning practices.

c) All workmen involved in pruning shall be aware of the standards and specifications contained herein.

7. GENERAL MATURE TREE PRUNING STANDARDS

a) The stubbing of major branches or the trunk normally called "pollarding" shall not be permitted.

b) The pruning of any tree or shrub shall be carried out in such a manner as to retain its natural integrity and as much as possible its natural form. In pruning for clearance from lights, utility lines and structures, the stripping of one side of the tree will be avoided.

c) Remove all dead and decaying branches and twigs.

d) Remove all seriously abraded and weakened branches and twigs that could constitute a hazard, could fall in high winds or heavy precipitation, or could abrade against other major branches causing further damage. The smaller of two abrading branches shall be removed unless such actions will disrupt the natural form of the tree.

e) All broken branches shall be pruned back to the nearest suitable trunk, crotch or lateral. To facilitate optimum healing, all pruning cuts shall be made flush with the lateral, main branch or trunk, or on twigs and small branches no more than one-half (1/2) inch above any buds.

f) Where limbs are to be shortened, workmen shall avoid cutting back to small suckers.

g) Pruning shall be carried out in such a way as to leave the foliage evenly distributed throughout the tree crown. Deciduous trees growing over park, commercial or residential lawn areas will cast an intermittent shade. Ensure sufficient sun penetration to maintain turf growth unless otherwise specified in the contract documents.

h) Where ropes are to be snubbed around healthy trunks or limbs in lowering and felling operations, care will be taken to ensure that no peeling, lifting, fraying or other bark damage occurs. Padding of trunks with burlap pads, or burlap pads under boards will be carried out where necessary.

i) Where trees are known to be diseased, pruning tools shall be disinfected with alcohol or an approved substitute between trees where there is a known danger of transmitting the disease on tools.

j) Where reasonable pruning shall not disrupt the natural form of any tree, all limbs that come into contact with and will damage utility lines, structures, lighting posts, fences, etc. will be removed.

k) Except as is otherwise specified in the Contract documents, clearance over roadways shall be no less than 14 feet (4.25 m). Over public walkways, clearance will exceed 8 feet (2.4m). Over residential properties, no branches overhanging walkways, drives, or patios will be lower than 6 feet 6 inches (2 m) unless otherwise specified in the Contract documents or by the City Forester.

l) Where a major cut has been made, where minor rot problems occur, or where bark is frayed, damaged, ripped or lifted, tracing will be carried out. All loose or damaged bark will be removed to the sap wood and all decaying wood, if any, will be removed

m) No tree shall have more leaf bearing branches removed than is permissible for that species, thus undermining its health. Generally, the removal of any more than 1/3 of the foliage producing structure at any one time shall be avoided, except for fast growingtrees where a maximum of 1/2 of the foliage producing structure could be removed, if necessary.

n) No "hangers" shall be left in any pruned tree at the close of the day's work, or at the end of any shift.

o) Any limbs over utility lines, structures, fences and flower beds, etc. that cannot be handled and lowered safely by hand will be carefully roped and lowered.

8. TRAFFIC CONTROL

a) When working over sidewalks or areas frequented by the public, the area under the tree plus at lest a 10 foot safety strip will be roped off. Where major limbs are being removed, the entire fall area plus at least a 20 foot safety strip will be roped off. Appropriate warning signs, with letters no less than 2 inches in height will be posted. A groundsman shall be responsible for ensuring that passers-by remain outside the roped off area.

b) Where roped-off work areas unduly restrict vehicular traffic, or cause unreasonable inconvenience to pedestrians on heavily travelled public or private walkways, warning signs will be posted and a flagman on continuous duty while work is in progress shall conduct traffic by any point of potential danger.

c) Work shall be scheduled in such a way as to minimize the restriction of vehicular and pedestrian routes between 0700 hours and 0900 hours; and 1600 hours and 1800 hours on weekdays.

d) Regardless of the foregoing, the Contractor is responsible for the safety of passers-by, public and private property and his own workmen and may take whatever reasonable steps he deems necessary for safety.

e) All warning signs and traffic control devices shall be erected and maintained in accordance where applicable with Provincial Statutes, Municipal By-laws and City of Burlington Construction Sign Manual.

f) When working over public sidewalks, walkways, streets or roads, no safety or lowering rope will fall to within 15 feet of surfaces travelled by vehicles and within 10 feet of pedestrian walkways.

9. CONIFEROUS PRUNING STANDARDS

a) Coniferous pruning shall conform to all standards listed in this specification, except 2-H(g), (n) and (o).

b) Should the leader of an excurrent coniferous tree be damaged, a lateral branch of the whorl immediately below the leader will be bent up and braced vertically to replace the lost leader.

c) On all coniferous trees, pruning shall be kept to a minimum.

10. REPAIR OF GIRDLING ROOTS

a) Unless otherwise specified in the Contract documents, correction of girdling roots shall only apply to those visible to the naked eye.

b) Without damaging the larger root, the smaller root shall be severed using a sharp pruning tool. Both ends of the severed root will be cut cleanly and any physical damage to the remaining root will be repaired. Any dead, peeling rotten or abraded bark will be removed and any wound traced back to healthy bark. Minor surface decay will be removed with a chisel (subject to Section 2-H(k)). All such wounds shall be coated with tree paint approved by the City Forester.

c) If this process could impair the health of the tree, the girdling condition shall be reported to the City Forester and further work will await his decision.

11. CLEANLINESS OF SITE

a) Once removed, all wood chips, brush, limbs, trunks and logs, unless otherwise specified in the Contract documents, shall be considered the property of the Contractor who will dispose of them in a manner consistent with applicable Provincial Statutes and Municipal By-laws.

b) In some cases, if the adjoining resident so requests, the City Forester may approve logs from 3 inches to 8 inches in diameter and suitable for burning, cut into lengths not to exceed 18 inches, being left stacked along a road right-of-way, if the Contractor agrees and no further cost is incurred.

c) Where a chipper is to be used, all wood chips shall be removed from the site and disposed of by the Contractor. Spreading chips shall not be permitted except as allowed for in the Contract documents or in writing by the City Forester.

d) In natural, meadow, or rural areas, all branches, limbs and twigs over 1/4 inch in diameter shall be removed from the site. In all industrial, residential, commercial, park and similarly maintained areas, all grass, gravel and garden areas will be left "fan rake clean". All driveways, walkways, roads, curbs, patios, and other asphalt, concrete, stone and similar surfaces shall be "broom clean" when the site is vacated at the end of each shift and at the end of each day.

e) It is expected that cleanup operations shall progress with the job and that a minimum of one groundsman shall be engaged in brush removal for each three climbers or pruners.

f) It is understood that all damage caused by workmen engaged in the work under these specifications will be repaired by the Contractor at his sole expense. Damaged turf areas will be levelled and seeded or sodded, all horticultural planting damaged beyond repair will be replaced and any damage to structures, utilities, signs, light fixtures, landscape furniture, etc. will be repaired or replaced. Repair work will be carried out by skilled workmen acceptable to the City Forester. All repairs and replacements shall be approved by the City Forester prior to final payment.

MATURE TREE FERTILIZATION

12. MATERIALS

a) The Contractor shall be responsible for the supply of all necessary fertilizers and equipment. Fertilizers will be delivered and stored on the site, if necessary, in standard bags or containers clearly indicating contents, weight, analysis, and the name of the manufacturer.

b) Where fertilizers are supplied in bulk, a written statement shall be submitted to the City Forester indicating the same information as if supplied in standard containers.

13. SOIL TESTS

Soil tests will be made where there are at least 20 trees to be fertilized on any one site, or as otherwise specified in the Contract documents. In such cases, sufficient soils samples will be taken to ensure that valid test is made. Copies of all tests shall be forwarded to the City Forester.

14. METHODS OF APPLICATION

Fertilization shall be carried out by the following method:
Application of granular fertilizer in holes punches 12 inches to 18 inches deep with power or hand drive auger, jack hammer, or bar.

15. GRANULAR FERTILIZER APPLICATION

a) Fertilizer shall be complete commercial fertilizer containing between 8% and 12% by weight nitrogen (N), 4% to 6% by weight phosphate (P_2O_5) and 4% to 6% by weight potassium (k_20). The above shall be subject to adjustment upon receipt of the soil analysis report.

b) Granular fertilizer shall be a slow release type unless otherwise specified in the Contract documents.

c) On broad branching deciduous trees, holes shall be drilled or punched in the soil in concentric rings roughly 50cm apart beginning immediately below the outer edge of the crown dripline. Holes shall be drilled 12 to 18 inches deep (30-45cm) and spaced 12 to 18 inches (30-45cm) apart in the rings.

Around trees in excess of 6 inches (15cm) in diameter, holes shall not be drilled in the soil closer than 3 feet (1 metre) from the base of the trunk. Where augers, jack hammers, or hand punch bar strikes a root, it shall be lifted immediately and a new hole punched off the line of that root.

d) Slow release granular fertilizer as specified above shall be applied at a rate of 3 to 5lbs per 1 inch DBH for trees over 6 inches in diameter. Smaller trees shall be fertilized at the rate of 1 1/2 to 3lbs per inch. Roughly 7oz of fertilizer shall be added to each hole until all fertilizer calculated for that tree according to the above formula has been applied. On trees such as those with narrow crowns, there may be the need to punch additional holes outside the area covered by the foliage canopy (dripline).

e) Where part of the feeding area is covered by hard surfaces (roads, sidewalks, driveways, patios, or other structures), less fertilizer shall be applied. Follow the specifications for punching and spacing holes throughout the feeding area not covered by hard surface. The amount of fertilizer added to each hole

shall remain the same, but the total of fertilizer applied will be reduced by the percentage of feeding area covered by hard surface.

f) Fertilization shall commence with the ring of holes nearest the trunk and radiate outward to the edge of the crown until the amount of fertilizer calculated for that tree is used.

g) Fertilizer shall be added to holes no closer to the surface than 3 inches.

h) Throughout the fertilization operation, care shall be taken not to spill fertilizer on turf, flower beds, or other vegetation. Should spillage of granular fertilizer occur, it will be recovered and the area flushed with water.

i) Filling holes: After the specified amount of fertilizer has been added to each hole, they shall be filled or closed using one of the following methods, unless otherwise specified in the Contract documents or in written instructions from the City Forester:

   i) On heavy clay soils containing less than 10% by volume sand and organic matter, holes shall be filled to the surface with sand, peat, or friable loamy top soil unless otherwise approved by the City Forester. Fertilization on heavy soils will not be carried out if water logged, or if 12 inch deep holes punctured in the soil fill with water.

   ii) On very light sandy soils, or soils subject to excessive drying, holes will be filled to the surface with peat or loamy top soil.

   iii) On soils suitable for the existing trees and other vegetation, the holes may be kicked closed with the heel.

   iv) Where holes have been drilled with a hand or power driver bore or auger, the soil may be raked back into the hole following fertilization.

j) Any excess of soil brought to the surface by auger, or materials including fertilizer, sand, peat, or soil used in filling holes, shall be removed from the site.

k) All turf areas and ornamental gravel surfaces shall be left "fan rake clean".

l) All fertilizer applications on maintained turf areas shall be followed by a thorough watering by hose or sprinkler allowing moisture penetration at least 12 inches into the ground.

16. **CLEANUP**

a) Any fertilizer spilled on turf or garden areas shall be recovered and the area flushed with water.

b) All paved areas shall be left "broom clean".

17. GUARANTEE

Death to any tree within a year following acceptance of the job proven to be directly caused by over-fertilization or faulty materials is the responsibility of the Contractor. The Contractor is responsible for compensating the City of Burlington for any such damage caused by himself, his workmen, or his sub-contractors. Under such circumstances, the Contractor shall remunerate the City to a value set by the City Forester or a mutually acceptable arbitrator using the Ontario Shade Tree Council evaluation formula as published in "Evaluating Trees in our Environment in the Province of Ontario".