APPENDIX 'F'

PROVENCHER BOULEVARD LANDSCAPING

1. PROTECTION OF EXISTING TREES ON PROVENCHER BOULEVARD

1.1. Construction Work will occur in close proximity to existing trees that are to remain. The Contractor shall take the following precautionary steps to prevent damage from construction activities to existing trees within the limits of the construction area:

1.1.1. The Contractor shall not stockpile materials and soil or park vehicles and equipment on boulevards within two (2) metres of trees.

1.1.2. Trees within the limits of construction and within five (5) metres beyond the limits of construction are to be:

(a) Strapped with twenty-five (25) by one hundred (100) by two thousand four hundred (2,400) mm wood planks as approved by the Contract Administrator.

(b) Be surrounded by a snow fence barrier placed around the perimeter of the tree along the edge of the tree canopy drip line as approved by the Contract Administrator.

1.1.3. Excavation shall be performed in a manner that minimizes damage to the existing root systems. Where possible, excavation shall be carried out such that the edge of the excavation shall be a minimum of 1.5 times the diameter (measured in inches), with the outcome read in feet, from the closest edge of the trunk. Where roots must be cut to facilitate excavation, they shall be pruned neatly at the face of excavation.

1.1.4. Operation of equipment within the dripline of the trees shall be kept to the minimum required to perform the Work required. Equipment shall not be parked, repaired, refuelled; construction materials shall not be stored, and earth materials shall not be stockpiled within the driplines of trees. The dripline of a tree shall be considered to be the ground surface directly beneath the tips of its outermost branches. The Contractor shall ensure that the operations do not cause flooding or sediment deposition on areas where trees are located.

1.1.5. Work on-Site shall be carried out in such a manner so as to minimize damage to existing tree branches. Where damage to branches does occur, they shall be neatly pruned by a certified arborist.

1.2. American elm trees are not to be pruned between April 1 and August 1 and Siberian elm trees between April 1 and July 1 of any year under provisions of The Dutch Elm Disease Act.

1.3. All damage to existing trees caused by the Contractor's activities shall be repaired to the requirements and satisfaction of the Contract Administrator and the City Forester or their designate.

1.4. Root Protection, Cutting and Care

1.4.1. Avoid cutting roots. If root cutting appears to be necessary, obtain approval from the Contract Administrator before proceeding. If required and approved, root pruning must be performed under the direction of the Forestry Branch.

1.4.2. Cut roots cleanly with sharp, sterilized hand tools to promote quick wound closure and regeneration.

1.4.3. Minimize damage by avoiding excavation during hot, dry weather.

1.4.4. Keep protected plants well watered before and after digging.

1.4.5. Cover exposed roots with approved temporary root cover material such as soil, mulch, or damp burlap immediately after exposure. Temporary root covers shall be kept damp as long as they are in place.

1.5. Materials

1.5.1. Strapping: 0.25 by 0.10 by 2.4 metres wood planks.

1.5.2. Snow Fence Barrier: plastic UV stabilized, high density polyethylene web snow fence, international orange colour, 1.2 metre height, including rolled steel T-bar fence posts, or approved equal.

1.6. Measurement and Payment

1.6.1. The protection of existing trees shall be measured on a unit each basis for "Protection of Existing Trees" and be paid for at the Contract Unit Price per unit in accordance with this Specification, accepted and measured by the Contract Administrator.

2. STRUCTURAL SOIL CELLS

2.1. Description

2.1.1. Provide all labour, materials, methods, equipment and accessories for the supply and installation of:

(a) Structural soil cell system and all related work.

(b) Drainage pipe, including drainage material.

2.2. Submittals

2.2.1. Product Data: For each type of product, submit manufacture's product literature with technical data sufficient to demonstrate that the product meets these Specifications.

2.2.2. Shop Drawings: Submit manufacturer supplied Shop Drawings for structural soil cell system.

2.2.3. Submit product samples of root barrier, geogrid, cable tie, anchor spikes, non-woven geotextile and sump pit rock.

2.3. Delivery, Storage and Handling

2.3.1. Deliver materials in manufacturer's original, unopened, undamaged palletized units with identification numbers intact.

2.3.2. Bulk Materials:

(a) Do not deliver or place backfill, soils and soil amendments in frozen, wet, or muddy conditions.

(b) Do not dump or store bulk materials near structures, utilities, sidewalks, pavements, and other facilities, or on existing turf areas or plants.

(c) Provide protection including tarps, plastic and or matting between bulk materials and finished surfaces sufficient to protect the finish material.

2.3.3. Provide erosion-control measures to prevent erosion or displacement of bulk materials and discharge of soil-bearing water runoff or airborne dust to adjacent properties, water conveyance systems, and walkways. Provide additional sediment control to retain excavated material, backfill, soil amendments and planting mix within the project limits as needed.

2.3.4. Protect structural cells from damage during delivery, storage and handling.

2.3.5. Store under tarp to protect from sunlight when time from delivery to installation exceeds one (1) week. Storage should occur on smooth surfaces, free from dirt, mud and debris.

2.3.6. Handling is to be performed with equipment appropriate to the size (height) of cells and Site conditions, and may include, hand, handcart, forklifts, extension lifts, small cranes, etc., with care given to minimize damage to structural cell components.

2.3.7. Contractor shall be responsible for the supply, safe storage and handling of all materials.

2.4. Materials

2.4.1. Structural Cell System

(a) 3X silva cell system, one (1) base, six 3X posts and one (1) deck.

(b) DeepRoot barrier, UB-12-2.

(c) DeepRoot Water & Air Vent: water and air system 01, cast iron body, stainless steel grate.

(d) Geogrid per structural cell manufacturers requirements.

(e) Cable tie for attaching geogrid to silva cell per manufacturers requirements.

(f) Geotextile per structural cell system manufacturers requirements.

(g) Galvanized anchoring spikes two hundred fifty (250) mm long by ten (10) mm Dia.

(h) Manufactured by DeepRoot Green Infrastructure, LLC ph. 1.800.458.7668.

2.4.2. Sump Pit Rock: hard, unbroken round washed granite field stone or approved equal. Min. eighty-five percent (85%), by weight, shall be between one hundred fifty (150) mm minimum and two hundred fifty (250) mm maximum in diameter.

2.5. Drainage Pipe & Drainage Material

2.5.1. Drainage Pipe: one hundred fifty (150) mm dia. perforated PVC pipe.

2.5.2. Drainage Material: Granular drainage material in accordance with specification CW3120 – Installation of Sub Drains.

2.5.3. Non-woven geotextile fabric to CW3130.

2.5.4. Base Course and Backfill Material: to CW3110 granular A base granite material only – do not use limestone.

2.5.5. Compacted planting medium mound and planting medium to planting medium and finished grading Specification.

2.6. Construction Method

2.6.1. Silva cell modules must be transported and stored on manufacturers pallets with pallet wrap intact until ready for installation. Pallets should be positioned on firm level base, so as not to impede traffic or workflow.

2.6.2. Prior to the start of Work layout and stake the limits of excavation and horizontal and vertical control points sufficient to install the structural cells and required drainage features in the correct locations.

2.6.3. The Contractor must ensure that all buried utilities and services are located and if necessary, protected and exposed prior to any excavation in accordance with Specification CW 1120.

2.6.4. Excavate and confirm to the dimensions and depth shown on the Drawings, including provision for drainage and base course layer, allowing two hundred (200) mm (eight (8) inches) additional clearance in length and width. Side walls of excavated pit to be clean, straight, and within fifteen (15) degrees of vertical. Soft dig/day lighting process to be used in area of existing underground utilities. Ensure subgrade slopes to sub drain trench toward perforated drainage pipe system (min two percent (2.0%) slope).

2.6.5. Clear excavation of all construction debris, trash, rubble and any foreign material. Excavate and remove oil spills and other soil contamination sufficiently to remove the harmful material. Fill over excavations with approved fill and compact to the required subgrade compaction.

2.6.6. All excavated material shall be disposed of off-site in accordance with Specification CW 1130.

2.6.7. Compact sub-grade in accordance with Specification CW 3110.

2.6.8. Install non-woven geotextile fabric for aggregate subbase, sump pit and tree planting bed sides in accordance with CW 3130.

2.6.9. Install sump pit rocks, drainage pipe, drainage material and aggregate sub-base below structural cell system to the depths indicated in the Drawings and compact to a minimum of ninety-five percent (95%) of maximum dry density at optimum moisture content, in accordance with ASTM D 698 Standard Proctor Method.

2.6.10. Assemble and install structural cell system in accordance with manufacturer's Specifications.

2.6.11. Install silva cells, anchoring spikes, geogrid, cable ties, planting medium, root barrier and backfill. These three (3) materials must be installed and compacted together in alternating operations in two hundred (200)mm lifts to top of silva cells to achieve correct compaction relationships within the structural cell system. Compact per manufacturers recommendations.

2.6.12. Place geotextile over top of silva cell system, four hundred fifty (450) mm overlap past excavation.

2.6.13. Install root barrier directly adjacent to concrete edge restraint.

2.7. Protection

2.7.1. Maintain a minimum of one hundred (100) mm of aggregate sub-base over the geotextile material during construction. Use only low-pressure tire or low impact track vehicles with a maximum surface pressure under vehicle of four (4) pounds per square inch, on top of structural cells prior to the installation of final paving.

2.7.2. When vehicle must cross structural cells that does not have final paving surfaces installed, use plates or mats to distribute vehicle loads to levels that would be expected at deck surface once final paving has been installed. Use low-pressure tire or low impact track vehicles.

2.7.3. Ensure that all construction traffic is kept away from limits of structural cells until final surface materials are in place. No vehicles shall drive directly on the structural cell deck.

2.8. Measurement and Payment

2.8.1. The construction of structural cell system and related Work shall be measured on a lump sum basis as accepted by the Contract Administrator for "Structural Soil Cell System" inclusive of excavation, sub grade compaction, sum pit rock, granular a base granite material, silva cell system, root barrier, water and air vent, geogrid, cable ties, geotextile, anchor spikes, and non-woven geotextile. Price shall be payment in full for supplying materials and for performing the Work in accordance with this Specification and accepted and measured by the Contract Administrator.

2.8.2. The supply and installation of perforated PVC pipe will be measured on a lineal metre basis and paid for at the Contract Unit Price for "Drainage Pipe". The item to be paid shall be the total length in accordance with this Specification, accepted and measured by the Contract Administrator. Granular drainage material shall be considered incidental to the Work and no separate payment will be made.

3. PLANTING MEDIUM AND FINISHED GRADING

3.1. Description

3.1.1. Provide all labour, materials, methods, equipment and accessories for the supply and installation of clay rich planting medium.

3.2. References

3.2.1. Agriculture and Agri-Food Canada:

(a) The Canadian System of Soil Classification, Third Edition, 1998.

3.2.2. Canadian Council of Ministers of the Environment (CCME) Guidelines.

3.2.3. The City of Winnipeg Standard Construction Specifications:

(a) CW 1130 – Site Requirements; and

(b) CW 3540 – Topsoil and Finish Grading for Establishment of Turf Areas.

3.3. Submittals

3.3.1. Submit 0.5 kilogram (kg) sample of planting medium to National Testing Laboratory, or approved alternate, and indicate present use and intended use. Prepare and ship sample in accordance with Provincial regulations and testing laboratory requirements. Submit samples for:

(a) Clay-Rich Planting Medium for Structural Soil Cells and tree planting bed.

3.3.2. Submit two (2) copies of soil analysis and recommendations for corrections to Contract Administrator.

3.3.3. Submit two (2) litre sample of compost to Contract Administrator with manufacturers literature and material certification that the product meets the CCME guidelines.

3.4. Quality Assurance

3.4.1. Inform Contract Administrator of proposed source of materials to be supplied and provide a sample for review by Contract Administrator prior to installation.

3.4.2. Testing of planting medium to be carried out and paid for by Contractor. Prepare and ship planting medium samples to approved laboratory in accordance with Provincial regulations and laboratory requirements, indicating intended use on each sample.

3.4.3. Test planting medium for nutrients N, P, K, micronutrients, soluble salt content, pH value and OM (organic matter).

3.4.4. Acceptance of planting medium is subject to an inspection of material and confirmation of test results. Do not commence soft landscaping Work until Contract Administrator has accepted planting medium.

3.5. Delivery, Storage and Handling

3.5.1. Store materials in a dry area, protected from freezing, sedimentation and contamination.

3.5.2. Deliver and store fertilizer in waterproof bags labeled with weight, analysis and name of manufacturer.

3.6. Materials

3.6.1. Black Topsoil: In accordance with CW 3540 for topsoil except organic matter to be in the range of five (5) to ten percent (10%).

3.6.2. Peatmoss: deliver from partially decomposed fibrous or cellular stems and leaves of species of sphagnum mosses. Elastic and homogeneous, brown in colour. Free of wood and deleterious material that could prohibit growth. Shredded particle minimum size: five (5) mm.

3.6.3. Compost:

(a) Mixture of soil, decomposing organic matter used as fertilizer, mulch or soil conditioner.

(b) Dark brown in colour, no objectionable odour.

(c) Processed organic matter containing forty percent (40%) or more organic matter as determined by Walkley-Black or Lost On Ignition (LOI) test.

(d) Must be sufficiently decomposed (i.e., stable) so that any further decomposition does not adversely affect plant growth (C:N ratio below 25:1) and contain no toxic or growth inhibiting contaminates.

(e) Composed bio-solids to: CCME Guidelines for Compost Quality, Category A.

3.6.4. Sand: hard fine silica sand, well washed and free of impurities, chemical or organic matter. Coarse texture, and to the following gradation:

Particle Size (mm)	% Passing through Screen
2.0	100%
1.0	95 to 100%
0.5	80 to 100%
0.25	0 to 30%
0.15	0 to 8%
0.075	0 to 1%

3.6.5. Fertilizer: Synthetic start-up slow release fertilizer with a N-P-K analysis of 12-36-15 ratio at a rate of four (4) kg per one hundred (100) square metres (m^2) which is eight (8) pounds per one hundred (100) square feet (sq ft).

3.6.6. Clay-Rich Planting Medium for Structural Soil Cells and Tree Planting Beds: planting medium for structural soil cells and tree wells shall be a blend of black topsoil, compost, and course sand mixed to the following proportion:

Material	% by volume
Black Topsoil	70%
Compost	15%
Coarse Sand	15%

3.7. Construction Method

3.7.1. Excavation

(a) Excavate tree planting beds by hand or using approved soft digging technology unless otherwise directed by Contract Administrator. Dispose of all rock, clay soils and other deleterious materials off site.

(b) Protect bottom of excavations against freezing.

(c) Remove water that has entered the excavation prior to planting. Notify Contract Administrator if water source is groundwater.

(d) Verify and obtain approval by Contract Administrator of tree planting beds prior to compacted soil mound and planting medium placement.

3.7.2. Planting Medium Placement

(a) Place planting medium in uniform layers over approved, unfrozen sub-grade, to the depth indicated on the Drawings.

(b) Eliminate rough spots and low areas, Prepare a loose, friable bed, boot firm and level.

3.7.3. Soil Amendments

(a) Apply lime, sulphur, or other soil amendment at a rate determined and recommended from planting medium sample test.

(b) Mix soil amendment well into full depth topsoil prior to application of fertilizer.

3.7.4. Finished Grading and Rolling

(a) Per CW 3540.

(b) Fine grade entire soil area to elevations as indicated on the Drawings. Eliminate rough spots and low areas. Leave surfaces smooth, uniform and firm against foot printing with a fine loose texture.

3.8. Surplus Material

3.8.1. Dispose of unused planting medium off site in accordance with CW 1130.

3.9. Cleaning

3.9.1. Perform cleaning to remove accumulated environmental dirt from all paved surfaces of building faces. Remove surplus materials, rubbish, tools and equipment barriers.

3.10. Measurement and Payment

3.10.1. Supply and placement of planting medium mix for soil cells and tree planting beds shall be measured on a volume basis and paid for at the Contract Unit Price per cubic metre as "Clay-Rich Planting Medium". The volume to be paid for shall be the total cubic metre volume installed in accordance with this Specification, accepted and measured by the Contract Administrator.

4. TREE PLANTING

4.1. Description

4.1.1. Provide all labour, materials, methods, equipment and accessories for the supply and installation of trees and black granite mulch.

4.2. References

4.2.1. Agriculture and and Agri-Food Canada (AAFC):

(a) Plant Hardiness Zones in Canada-2000.

4.2.2. Canadian Nursery Landscape Association (CNLA):

(a) Plant Canadian Standards for Nursery Stock-2001.

4.2.3. Department of Justice Canada (JUS):

(a) Plant Canadian Environmental Protection Act (CEPA), 1999, c. 33.; and

(b) Transport of Dangerous Goods Act (TDGA), 1992, c.34.

4.2.4. Health Canada/Workplace Hazardous Materials Information System (WHMIS):

(a) Materials Safety Data Sheets (MSDS).

4.3. Submittals

4.3.1. Submit product data for:

(a) Fertilizer.

4.4. Source Quality Control

4.4.1. Obtain approval from Contract Administrator of plant material at source.

4.4.2. Notify Contract Administrator of source of material at least seven (7) days in advance of shipment. No Work under this section is to proceed without approval.

4.4.3. Acceptance of plant material at source does not prevent rejection on Site prior to or after planting operations.

4.4.4. Plant material imported from other nations will not be accepted.

4.4.5. Bare root plant material will not be accepted.

4.5. Storage and Protection

4.5.1. Coordinate the shipping of plants and excavation of tree vaults to ensure minimum time laps between digging and planting.

4.5.2. Protect plant material from frost, excessive heat, wind and sun during delivery.

4.5.3. Protect plant material from damage during transportation:

(a) When delivery distance is less than thirty (30) kilometres (km) and vehicle travels at speeds
under eighty (80) kilometres per hour (km/h), tie tarpaulins around plants or over vehicle box.

(b) When delivery distance exceeds thirty (30) km or vehicle travels at speeds over eighty (80) km/h, use enclosed vehicle where practical.

(c) Protect foliage and rootballs using anti-desiccants and tarpaulins, where use of enclosed vehicle is impractical due to size and weight of plant material.

4.5.4. Protect stored plant material from frost, wind and sun as follows:

(a) For balled and burlapped and wire basket rootballs, place to protect branches from damage. Maintain moisture level in root zones.

4.5.5. Remove broken and damaged roots with sharp pruning shears. Make clean cut and cover cuts over twenty (20) mm (3/4 inch) diameter with wound dressing.

4.5.6. Keep roots moist and protect from sun and wind. Heel-in trees that cannot be planted immediately in shaded areas and water well.

4.6. Scheduling

4.6.1. Order plant material as soon as possible after award of contract to ensure plant availability. Request substitutes as required.

4.6.2. Provide Contract Administrator a written schedule fourteen (14) days in advance of shipment of plant material. Schedule to include: quantity and type of plant material, shipping dates, arrival dates on Site, and planting dates.

4.7. Warranty of Nursery Stock

4.7.1. For all plant material a two (2) year warranty period is required.

4.7.2. During the warranty period, upon written notification from the Contract Administrator, the Contractor warrants to replace and replant any nursery stock found dead and/or in poor condition as soon as possible thereafter, without cost to The City. "Poor Condition" shall be interpreted as meaning nursery stock on which branches are dead or dying, or have not shown satisfactory growth in leaves. Exempted is nursery stock damaged by accidental causes or vandalism, which stock shall be replaced at the cost of The City.

4.7.3. At the end of the two (2) year warranty period an inspection will be conducted by Contract Administrator.

4.7.4. Contact Administrator reserves the right to extend Contractor's warranty responsibilities for an additional one (1) year if, at end of initial warranty period, leaf development and growth is not sufficient to ensure future survival.

4.8. Replacements

4.8.1. During warranty period, remove and replace any plant material that has died or failed to grow satisfactorily, at no cost to the City, as directed by the Contract Administrator.

4.8.2. A two (2) year warranty period shall be required on all replacement plant material.

4.8.3. All replacement plant material shall be the same size and species as specified, and shall be supplied and planted in accordance with the original Drawings and Specifications.

4.8.4. Should the replaced plant material not survive, the Contractor will be responsible for a third replacement and a two (2) year warranty period shall be required.

4.9. Plant Material

4.9.1. Type of root preparation, sizing, grading and quality shall comply to the Canadian Standards for Nursery Stock.

4.9.2. Source of plant material: grown in Zone 3 only in accordance with Plant Hardiness Zones in Canada. Plant material must be planted in zone indicated as appropriate for its species.

4.9.3. Plant material free of disease, insects, defects or injuries and structurally sound with strong fibrous root system.

4.9.4. Substitutions to plant material as indicated on planting plan are not permitted unless written approval has been obtained as to type, variety and size. Plant substitutions must be of similar species and of equal size as those originally specified.

4.9.5. Refer to Plant Specification List on the Drawings and the Drawings for species, quantities, size and quality of plant materials.

4.10. Water

4.10.1. Water free of impurities that would hinder plant growth. The Contractor shall provide water, so that all costs to provide water for the watering operation and all associated costs shall be borne by the Contractor. These costs may include hydrant permit and meter rental fees.

4.10.2. Further to clause 3.7 of CW 1120, the Contractor shall pay for all costs associated with obtaining water in accordance with the Waterworks By-law. Sewer charges will not be assessed for water obtained from a hydrant.

4.11. Planting Medium: backfill with planting medium as specified in Planting Medium Specification.

4.12. Fertilizer: synthetic start-up slow release fertilizer with a N-P-K analysis of 12-36-15 ratio at a rate of four (4) kg per one hundred (100) m^2 which is eight (8) pounds per one hundred (100) sq ft.

4.13. Mulch: clean granite mulch, black in colour.

4.14. Pre-Planting Preparation

4.14.1. Obtain approval from Contract Administrator of finish grading, and planting medium installation prior to commencing Work in this section.

4.14.2. Ensure plant material is acceptable to the Contract Administrator.

4.14.3. Remove damaged roots and branches from plant material with sharp clean equipment treating wounds as necessary to maintain plant health.

4.14.4. Apply anti-desiccant to deciduous trees in leaf in accordance with manufacturer's instructions.

4.15. Plant Material Layout

4.15.1. Prepare planting areas. Refer to Planting Medium Specification.

4.15.2. For individual trees:

(a) Excavate tree pits to depths and widths indicated on the Drawings.

(b) Remove rocks, roots, debris and toxic material from the tree pit.

4.15.3. Remove water that has entered the excavated tree pit prior to planting. Notify Contract Administrator if water source is groundwater.

4.16. Planting

4.16.1. For jute burlap rootballs, cut away top one third of wrapping and wire basket without damaging rootball. Do not pull burlap or rope from under rootball.

4.16.2. For container stock or rootballs in non-degradable wrapping, remove entire container or wrapping without damaging rootball. Loosen rootball to encourage bonding with planting medium and subgrade.

4.16.3. Plant vertically in locations as indicated. Orient plant material to give best appearance in relation to structure, roads and walks.

4.16.4. Set plants and trees at elevations indicated on the drawings with no more than fifty (50) mm of soil above the root flair. Review with City Forestry representative and Contract Administrator when trees are on Site, prior to installation.

4.16.5. For Trees:

(a) Prepare compacted soil mound below tree root ball. Ensure top of mound is set to suit the depth of rootball.

(b) Backfill soil in one hundred fifty (150) mm (six (6) inches) lifts. 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.

4.16.6. Water plant material thoroughly. Report extreme ponding in planters indicative of malfunctioning drains to the Contract Administrator immediately.

4.16.7. After soil settlement has occurred, fill with soil to finish grade.

4.16.8. Dispose of burlap, wire and container material off site.

4.17. Pruning

4.17.1. Undertake corrective pruning after planting to eliminate torn and broken branches. Do not damage lead branches or remove smaller twigs along main branches. Do not prune to compensate for root loss.

4.18. Maintenance

4.19. Maintain plant material from date of planting to the end of the two (2) year warranty period. Refer to Landscape Maintenance Specification.

4.20. Measurement and Payment

4.20.1. Supply and installation of trees shall be measured on a unit basis, and be paid for at the Contract Unit Price per unit for installed trees, as accepted and measured in the field by the Contract Administrator, for the following Items of Work, which price shall be payment in full for performing all operations herein described and all other items incidental to the Work included in this Specification.

4.20.2. Items of Work:

(a) Trees:

(i) Silver Maple;

(ii) Hackberry;

(iii) Boulevard Linden;

(iv) Discovery Elm; and

(v) Night Rider Elm.

4.20.3. Black granite mulch will be measured on an area basis and paid for at the Contract Unit Price per square metre for “Black Granite Mulch”. The area to be paid shall be the total square metre area in accordance with this Specification, accepted and measured by the Contract Administrator.

5. TREE AND STUMP REMOVAL

DESCRIPTION

5.1. This Specification shall amend the City of Winnipeg Standard Construction Specification CW 3010 “Clearing and Grubbing” and shall cover the removal of trees as specified on the Contract Drawings. The City of Winnipeg, Forestry Branch must be contacted prior to removing any trees.

MATERIALS

5.2. General

(a) The grinding of stumps specified by the Contract Administrator shall be done with the use of a mechanical stump grinder.

CONSTRUCTION METHODS

5.3. Remove only trees marked and confirmed for removal in the field by the Contract Administrator.

5.4. Remove trees in accordance with CW 3010.

5.5. The Contractor shall arrange for any Elmwood to be disposed of by the City of Winnipeg.

5.6. Stump Removal:

(a) stumps will be ground a minimum depth of three hundred (300) mm from top of finished median and the Material removed from the specified areas as marked and confirmed by the Contract Administrator;

(b) the Contractor shall take all precautions to prevent damage to traffic, structures, pole lines, adjacent properties and to trees and shrubs designated to be saved; and

(c) remove and dispose of Material as per CW 3010 Clause 9.

MEASUREMENT AND PAYMENT

5.7. Removal of trees and stumps will be measured on a unit basis and paid for at the Contract Unit Price per unit item of “Tree Removal”. The number to be paid for will be the total number of trees removed and stumps ground in accordance with this Specification and accepted by the Contract Administrator.

6. SITE FURNISHINGS

6.1. Description

6.1.1. Provide all labour, materials, methods, equipment and accessories for the supply and install of tree grates with frame, trench grate with frame and Site furniture from stockpile.

6.2. Submittals

6.2.1. Submit product data for trench grate with frame. Indicate sizes, assembly, and installation details.

6.3. Storage and Handling

6.3.1. Document via photos Site furnishings that is to be stockpiled. Any damage that occurs during transportation and storage will be the responsibility of the Contractor and if deemed irreparable by the Contract Administrator, the Contractor shall replace with new furnishings at no cost to City.

6.3.2. Carefully remove from Site existing Site furniture that is to be stockpiled for installation and store off-site in a clean dry place.

6.4. Schedule

6.4.1. Confirm delivery times and schedule with supplier and inform Contact Administrator.

6.4.2. Submit Shop Drawings and order furniture in a timely manner to ensure there are no delays to the construction schedule.

6.5. Materials

6.5.1. Tree Grate

(a) Forty-eight (48) by forty-eight (48) inches Metropolitan tree grate model R-8706-1A available from Reliance Foundry 1-877-789-3245, or approved equal.

6.5.2. Trench Grate C/W Frame and Tamper Proof Bolts

(a) Trench Grate: two hundred three (203) by four hundred fifty-seven (457) trench grate ‘tidal wave’ grey iron, standard raw finish.

(b) Trench Grate Frame: +/- eight (8) inches wide frame, mild steel, standard raw finish, light vehicular load classification, embedded into concrete sidewalk.

(c) Grate to Frame Fastening: fasten grates to frame with tamperproof screws type and size as recommended by manufacturer.

(d) Available from Parkworks by MAKR 1-431-334-9627, or approved equal.

6.5.3. Site Furniture from Stockpile

(a) Salvaged furniture from on Site includes benches, bike racks, waste receptacles and planters.

(b) Hardware: Threaded rods, bolts, nuts, washers, lag screws, lag bolts to be hot dipped galvanized, sized to suit.

6.6. Construction Methods

6.6.1. All work is to be located and installed in accordance with the Drawings and manufacturers Specifications.

6.6.2. Tree grate and trench grate frames to be cast into concrete. Concrete per CW 3325 and SD228A.

6.6.3. Ensure structural soil cells are in place and functioning prior to installation of trench grates.

6.6.4. Benches, bike racks and waste receptacles shall be surface mounted to concrete with lag bolts, sized to suit.

6.6.5. Planters shall be free standing.

6.6.6. Furnishings to be installed plumb and true to correct elevations and location, as directed by the Contract Administrator. The Contractor shall confirm proposed locations of all Site furnishings with Contract Administrator prior to installation.

6.6.7. All furnishings to be carefully handled so that no parts will be bent, broken, or otherwise damaged. Contractor is responsible for replacing any damaged furnishings, prior to installation, at no cost to the City.

6.7. Measurement and Payment

6.7.1. The supply and installation of tree grates c/w frame shall be measured on a unit each basis and paid for at the Contract Unit Price for “Tree Grate c/w Frame”. Price shall be payment in full for supplying materials and for performing the Work in accordance with this Specification, accepted and measured by the Contract Administrator.

6.7.2. The supply and installation of trench grates c/w frame and tamper proof bolts will be measured on a lineal metre basis and paid for at the Contract Unit Price for “Trench Grate c/w Frame and Tamper Proof Bolts”. The item to be paid shall be the total length in accordance with this Specification, accepted and measured by the Contract Administrator.

6.7.3. The supply and installation of Site furniture from stockpile shall be paid for on a unit each basis and paid for at the Contract Unit Price per unit for the Items of Work listed below. Price shall be payment in full for supplying materials and for performing the Work in accordance with this Specification, accepted and measured by the Contract Administrator. Prices shall include all mounting hardware.

6.7.4. Items of Work:

(a) bench from stockpile;

(b) bike rack from stockpile;

(c) waste receptacle from stockpile; and

(d) planter from stockpile.

7. LANDSCAPE MAINTENANCE

7.1. Description

7.1.1. Provide all labour, materials, methods, equipment and accessories for the maintenance of trees following acceptance of the plant material to start warranty.

7.1.2. In general, the Work shall include:

(a) fertilizing;

(b) watering;

(c) weed control;

(d) pest and disease control; and

(e) winter preparation.

7.1.3. Maintenance shall be performed on a bi-weekly basis at a minimum.

7.2. Maintenance and Warranty Period

7.2.1. Thirty (30) days after the planting installation has been completed, the Contract Administrator shall perform an inspection of the plant material to determine if the plant material is acceptable to start warranty.

7.2.2. The maintenance and warranty period shall begin following acceptance of plant material by Contract Administrator and shall be for a period of two (2) years.

7.3. Submittals

7.3.1. Submit maintenance log to Contract Administrator indicating date, times, employee, start time, stop time and maintenance activities.

7.3.2. Payment will not be processed without receipt of maintenance logs.

7.4. Materials and Equipment

7.4.1. Materials shall conform to the requirements of related Specification sections.

7.4.2. Provide all equipment to properly execute Work. Maintain such equipment in a workable, safe condition while in use during this project.

7.4.3. Contract Administrator shall review equipment to be used to execute Work prior to execution.

7.5. Method

7.5.1. General

(a) Provide watering service within twenty-four (24) hours, weeding services within forty-eight (48) hours of the request by the Contract Administrator. Monitor the Site and advise the Contract Administrator of conditions that might void the Contractor's warranty responsibilities.

(b) Provide maintenance schedule to Contract Administrator prior for the two (2) year maintenance period.

(c) Contractor shall notify Contract Administrator of the exact time Contractor proposes to commence each application.

(d) Schedule operations in accordance with growth, health, weather conditions, and use of Site.

(e) Perform each operation continuously and completely within a reasonable time period.

(f) Store equipment and materials off site.

(g) Collect and dispose of debris or excess material on the day the maintenance is undertaken.

7.5.2. Maintenance of Trees

(a) Fertilizing: Apply fertilizer only at frequency, ratio and rates as recommended by manufacturer. Water immediately after fertilizing. Apply fertilizer no later than May 30 of each maintenance year.

(b) Watering: Apply water as required to supplement rainfall and to maintain optimum growing conditions. In general, water once a week to achieve rates as indicated. Allow soil to adequately dry between watering to prevent over saturation without creating water stress. Subject to the above-noted requirements, the Contractor must water at least once a week between May 1 and October 15 inclusive. A complete record is to be kept of each series of waterings for all planted trees noting location and date of watering. This record is to be given to the Contract Administrator when requested. Apply forty (40) litres of water per twenty-five (25) mm calliper per application using a deep root feeder or low pressure open flow nozzle and hose. The water stream must not gouge the soil.

(c) Weed Control: Inspect and undertake weed control weekly during the first year of maintenance and monthly during the second year. By hand, remove all weeds with their roots from tree pits and tree beds and dispose of off site. When weeding operation is complete, replace and rake displaced soil to its original condition.

(d) Pests and Diseases: Obtain written approval of Contract Administrator prior to using any pesticide. Control pests and disease through pruning or application of pesticides. Use species specific pesticides where possible. Use only pesticides of low mammalian toxicity. Strictly follow manufacturer's written instructions.

(e) Pruning: The Contractor shall provide a person with a Manitoba Arborists Certificate for each work crew or Work Site. Prune as required to remove dead, broken or damaged limbs. Prune back to healthy growth while maintaining balanced crown shape. Employ clean sharp tools. Make cuts smooth and flush with outer edge of branch collar near the main stem or branch. Cuts must be smooth and sloping to prevent accumulation of water on cut. Do not leave little stumps ("horns") on trunks or main branches. Prune according to accepted horticultural practices as outline in "The Pruning Manual", Publication No. 1505-1977 by Agriculture Canada.

(f) Winter Preparation: Ensure adequate moisture in tree root zones prior to freeze-up.

7.6. Measurement and Payment

7.6.1. Landscape maintenance shall be paid for on a lump sum basis for the items of Work listed below and shall be payment in full for supplying all material and performing all operations herein described and all other items incidental to the Work included in this Specification and accepted by the Contract Administrator.

Items of Work:

(a) Year One (1) Landscape Maintenance

(b) Year Two (2) Landscape Maintenance