

PART E
SPECIFICATIONS

PART E - SPECIFICATIONS

GENERAL

E1. APPLICABLE SPECIFICATIONS, STANDARD DETAILS AND DRAWINGS

- E1.1 *The City of Winnipeg Standard Construction Specifications* in its entirety, whether or not specifically listed on Form B: Prices, shall apply to the Work.
- E1.1.1 *The City of Winnipeg Standard Construction Specifications* is available in Adobe Acrobat (.pdf) format on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division Internet site at <http://www.winnipeg.ca/matmgt/>
- E1.1.2 Further to GC:2.4(d), Specifications included in the Bid Opportunity shall govern over *The City of Winnipeg Standard Construction Specifications*.
- E1.2 The following Drawings are applicable to the Work:

Drawing Title	Drawing No.	File Name	Size
Fermor Ave. - Lagimodiere to Archibald	Cover Page	99-2004 _Drawing_00-R0.pdf	A1
Fermor Ave. – Sta 1+00 to Sta 2+50	SE-04-07	99-2004 _Drawing_01-R0.pdf	A1
Fermor Ave. – Sta 2+50 to Sta 4+00	SE-04-08	99-2004 _Drawing_02-R0.pdf	A1
Fermor Ave. – Sta 4+00 to Sta 5+50	SE-04-09	99-2004 _Drawing_03-R0.pdf	A1
Fermor Ave. – Sta 5+50 to Sta 7+00	SE-04-10	99-2004 _Drawing_04-R0.pdf	A1
Fermor Ave. – Sta 7+00 to Sta 8+50	SE-04-11	99-2004 _Drawing_05-R0.pdf	A1
Fermor Ave. – Sta 8+50 to Sta 10+00	SE-04-12	99-2004 _Drawing_06-R0.pdf	A1
Fermor Ave. – Sta 10+00 to Sta 11+50	SE-04-13	99-2004 _Drawing_07-R0.pdf	A1
Fermor Ave. – Sta 11+50 to Sta 13+00	SE-04-14	99-2004 _Drawing_08-R0.pdf	A1
Fermor Ave. – Sta 13+00 to Sta 14+50	SE-04-15	99-2004 _Drawing_09-R0.pdf	A1
Fermor Ave. – Sta 14+50 to Sta 16+00	SE-04-16	99-2004 _Drawing_10-R0.pdf	A1
Fermor Ave. – Sta 16+00 to Sta 17+50	SE-04-17	99-2004 _Drawing_11-R0.pdf	A1
Fermor Ave. – Sta 17+50 to Sta 19+00	SE-04-18	99-2004 _Drawing_12-R0.pdf	A1
Fermor Ave. – Sta 19+00 to Sta 20+50	SE-04-19	99-2004 _Drawing_13-R0.pdf	A1
Fermor Ave. – Sta 20+50 to Sta 22+00	SE-04-20	99-2004 _Drawing_14-R0.pdf	A1
Fermor Ave. – Sta 22+00 to Sta 23+50	SE-04-21	99-2004 _Drawing_15-R0.pdf	A1
Fermor Ave. – Sta 23+50 to Sta 25+00	SE-04-22	99-2004 _Drawing_16-R0.pdf	A1

Drawing Title	Drawing No.	File Name	Size
Fermor Ave. – Sta 25+00 to Sta 26+50	SE-04-23	99-2004 _Drawing_17-R0.pdf	A1
Fermor Ave. – Sta 26+50 to Sta 28+00	SE-04-24	99-2004 _Drawing_18-R0.pdf	A1
Fermor Ave. – Sta 28+00 to Sta 29+50	SE-04-25	99-2004 _Drawing_19-R0.pdf	A1
Fermor Ave. – Sta 29+50 to Sta 31+00	SE-04-26	99-2004 _Drawing_20-R0.pdf	A1
Fermor Ave. – Sta 31+00 to Sta 32+10	SE-04-27	99-2004 _Drawing_21-R0.pdf	A1
Fermor Ave. – Details	SE-04-28	99-2004 _Drawing_22-R0.pdf	A1
Plaza 11+28 and Miscellaneous Details	SE-04-29	99-2004 _Drawing_23-R0.pdf	A1
Plaza 8+10 and 28+40	SE-04-30	99-2004 _Drawing_24-R0.pdf	A1
Inkster Blvd. (Westbound) from Sinclair St. to Airlies St.	01	99-2004 _Drawing_25-R0.pdf	Letter
Inkster Blvd. at Airlies St. Radius Modification	02	99-2004 _Drawing_26-R0.pdf	Letter

E2. OFFICE FACILITIES

- E2.1 The Contractor shall supply office facilities meeting the following requirements:
- (a) The field office shall be for the exclusive use of the Contract Administrator.
 - (b) The building shall be conveniently located near the site of the Work.
 - (c) The building shall have a minimum floor area of 20 square metres, a height of 2.4m with two windows for cross ventilation and a door entrance with a suitable lock.
 - (d) The building shall be suitable for all weather use. It shall be equipped with an electric heater and air conditioner so that the room temperature can be maintained between either 16-18°C or 24-25°C.
 - (e) The building shall be adequately lighted with fluorescent fixtures and have a minimum of three wall outlets.
 - (f) The building shall be furnished with one desk, one drafting table, one table 3m x 1.2m and a minimum of 8 chairs.
 - (g) A portable toilet shall be located near the field office building. The toilet shall have a locking door and be for the exclusive use of the Contract Administrator and other personnel from the City.
 - (h) The field office building and the portable toilet shall be cleaned on a weekly basis immediately prior to each site meeting. The Contract Administrator may request additional cleaning when he deems it necessary.
- E2.2 The Contractor shall be responsible for all installation and removal costs, all operating costs, and the general maintenance of the office facilities.
- E2.3 The office facilities will be provided from the date of the commencement of the Work to the date of Total Performance.
- E2.4 On a one time basis, where directed by the Contract Administrator, the Contractor shall relocate the office facilities from a location to Phase I to III Work (Fermor Avenue) to a location convenient to the Phase IV Work (Inkster Boulevard).

E3. PROTECTION OF EXISTING TREES

- E3.1 The Contractor shall take the following precautionary steps to prevent damage from construction activities to existing boulevard trees within the limits of the construction area:
- a) The Contractor shall not stockpile materials and soil or park vehicles and equipment on boulevards within 2 metres of trees.
 - b) Trees identified to be at risk by the Contract Administrator are to be strapped with 25 x 100 x 2400mm wood planks, or suitably protected as approved by the Contract Administrator.
 - c) 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.
 - d) Operation of equipment within the drip line 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 drip lines of trees. The drip line 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.
 - e) 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.
- E3.2 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 his designate.
- E3.3 No separate measurement or payment will be made for the protection of trees.
- E3.4 Elm trees cannot be trimmed between April 1 and July 31, inclusive.

E4. TRAFFIC CONTROL

- E4.1 Further to clauses 3.6 and 3.7 of CW 1130-R1:
- (a) Where directed, the Contractor shall construct and maintain temporary asphalt ramps to alleviate vertical pavement obstructions such as manholes and planing drop-offs to the satisfaction of the Contract Administrator. No measurement for payment will be made for this Work.
 - (b) In accordance with the Manual of Temporary Traffic Control, the Contractor ("Agency" in the manual) shall make arrangements with the Traffic Services Section of the City of Winnipeg to place all temporary regulatory signs. The Contractor shall bear all costs associated with the placement of temporary traffic control devices by the Traffic Services Section of the City of Winnipeg in connection with the Works undertaken by the Contractor.

E5. TRAFFIC MANAGEMENT

- E5.1 Further to clause 3.7 of CW 1130-R1, the Contractor shall be responsible for maintaining on Fermor Avenue and Inkster Boulevard:
- a) A minimum of one lane of traffic Westbound must be maintained at all times;
 - b) Where there are existing left turn lanes, an additional lane to accommodate the left turn storage lane shall be maintained at all times.
- E5.2 North/South intersection access must be maintained during construction to allow for one lane of traffic in each direction to go straight through and another lane in each direction to turn left. When no Work is being performed in the intersection and providing it is safe for vehicles, north and south lane closures in the intersection will not be permitted.
- E5.3 Intersecting street and private approach access shall be maintained at all times.
- E5.4 Should the Contractor be unable to maintain pedestrian or vehicular access to a residence or business, he shall review the planned disruption with the business or residence and the Contract Administrator, and take reasonable measures to minimize the impact. The Contractor shall provide a minimum of 24 hours notification to the affected residence or business and the Contract Administrator, prior to disruption of access.
- E5.5 Pedestrian and ambulance/emergency vehicle access must be maintained at all times.

E6. PEDESTRIAN SAFETY

- E6.1 During Phase II and until Pedestrian/Cycle Path is open, at Existing North-South Gravel Pedestrian Crossing, South of the extension of Speers Road, a temporary snow fence shall be installed Parallel to Fermor Avenue at the North and South Property Line of Fermor Avenue, approximately 20 metres in length at North Property Line of Fermor Avenue at Existing Gravel Path and approximately 15 metres in length at South Property Line of Fermor Avenue at Existing Gravel Path. The Contractor shall be responsible for maintaining the snow fence in a proper working condition. No measurement for payment shall be made for this Work.

E7. WATER USED BY CONTRACTOR

- E7.1 Further to clause 3.7 of CW 1120-R1, 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.

E8. SURFACE RESTORATIONS

- E8.1 Further to clause 3.3 of CW 1130-R1, when Total Performance is not achieved in the year the Contract is commenced, the Contractor shall temporarily repair any Work commenced and not completed to the satisfaction of the Contract Administrator. The Contractor shall maintain the temporary repairs in a safe condition as determined by the Contract Administrator until permanent repairs are completed. The Contractor shall bear all costs associated with temporary repairs and their maintenance.

E9. RENEWAL OF EXISTING CURBS

E9.1 This Specification shall amend CW 3240-R4.

CONSTRUCTION METHODS

E9.2 Further to clause 3.1 of CW 3240-R4 "Concrete Curb Removal" add the following:

Remove existing barrier curb with reinforcing steel – 20M vertical deformed bar and 10M or > longitudinal deformed bar by planing methods at the locations as shown on the Drawings or as directed by the Contract Administrator.

Plane to within 5 millimetres of the top of the existing concrete pavement or as directed by the Contract Administrator.

Utilize planing equipment in accordance with CW 3450.

Dispose of planing material in accordance with Section 3.4 of CW 1130.

MEASUREMENT AND PAYMENT

E9.3 Further to clause 4.1 of CW 3240-R4 "Concrete Curb Removal" include the following:

Items of Work:

- Concrete Curb Removal
- viii) Planing of Barrier Curb with Reinforcing Steel

E10. INTERLOCKING PAVING

E10.1 Interlocking paving shall be installed in accordance with CW 3330-R3 Specification for Installation of Interlocking Paving Stones.

E10.2 Type, size, colours and paving pattern are shown in the Details on Drawings SE-04-29 and SE-04-30.

E10.3 Edging for paving shall be "Snap Edge".

E10.4 Install granular sub-base for interlocking paving a minimum 150mm past all edges of the paving stones, to permit the snap edge to be installed on a compacted granular base.

E10.5 Interlocking paving will be paid for on a per square metre basis and shall include all costs associated with saw-cutting and removal of excess asphalt paving, rough grading, sub-base preparation, sand, supply and installation of paving stones, and Snap Edge restraints.

E11. PRECAST CONCRETE RETAINING WALLS

E11.1 This specification covers the supply and installation of precast concrete retaining walls as located at the two plazas at Station 11+28 & 28+40 and as shown on drawing SE-04-29 and SE-04-30.

E11.2 Materials

- (a) Precast concrete retaining wall shall be constructed with Barkman Concrete Pisa 2 Roman Stones, Desert Buff in colour.
- (b) Granular base course shall be 19 mm diameter crushed limestone.
- (c) Filter fabric shall be an approved Nonwoven geotextile.
- (d) Adhesive shall be Snap Edge "Bond'Loc" or approved equal.

E11.3 The Contractor shall install the concrete retaining walls to the shapes shown on Detail 2, - SE-04-29 and 4-SE-04-30, and construction details shown in detail 6 – SE-04-29.

E11.4 Construct wall on compacted granular base. Compact granular base to 95% Proctor Density. Ensure wall is constructed so one full layer of retaining wall stone is below grade.

E11.5 Install geotextile drainage filter cloth where topsoil shrub beds will backfill wall.

E11.6 Glue all layers of the wall together with a double bead, minimum 6mm dia. bead, of adhesive. Glue top cap to wall with double bead, minimum 12mm dia. bead, of adhesive, including adhesive beads on butting sides of all caps.

E11.7 Fastening of all retaining wall blocks and caps is to be warranted for a full five (5) years, against separation. Repair and replace any blocks, which become loose or missing during warranty period.

E11.8 The cost for the supply and installation of the Precast Concrete Roman Stone Retaining Walls shall be a the lump sum cost all Precast Concrete Retaining Walls for each related plaza.

E12. BOULDER PAVING

E12.1 This specification covers the supply and installation of boulder paving as located at the two plazas and as shown on drawings SE-04-29 and SE-04-30.

E12.2 Materials

- (a) Boulders shall be an equal mixture of 200 -400 mm diameter, round granite boulders, free of any split surfaces.
- (b) Gravel backfill shall be 6 mm diameter crushed limestone
- (c) Edging shall be Barkman Concrete Desert Buff coloured, I-Con pavers.

E12.3 The Contractor shall install the boulder paving to the shapes shown on Detail 3-SE-04-29 and 6-SE-04-30, and construction details shown in detail 6 – SE-04-29.

E12.4 Install a full row of I-Con pavers along outside edge of boulders where boulder paving adjoins sodded areas. Top of I-Con pavers is to be installed flush with top of surrounding sod.

E12.5 After installing the boulders install a 100mm depth of 6mm diameter crushed limestone amongst boulders. Broom top of gravel level and wash down surface of all boulders to remove dust from boulders and consolidate gravel paving.

E12.6 The cost for the supply and installation of Boulder Paving will be paid for on a per square meter basis and shall include all costs for excavation, supply and installation of boulders, gravel and I-Con paver edging.

E13. INSTALLATION OF SITE FURNISHINGS

- E13.1 This specification will cover the installation only of site furnishings
- E13.2 The following site furnishings are to be picked up at City of Winnipeg Central Repair/Manufacturing at 215 Tecumseh Street. The Contractor shall contact MR. MURRAY BURTON, 986-5504 to arrange pick-up.
- (a) Nine (9) Tache Benches, 2440mm length with backs – SCD 120
- E13.3 Site furnishings shall be installed in accordance with the applicable SCD drawings.
- E13.4 Install new benches in concrete filled holes (two holes per bench), minimum 400mm diameter by 600mm depth. Top of concrete shall be 100mm below top of new interlocking paving. Slope top of concrete to drain away from post.
- E13.5 Five bench locations are shown on the drawings. Four additional bench locations will be field installed along the walkway system and be located within existing grassed areas. Locations to be determined by Contract Administrator.
- E13.6 Payment for installation of all site furnishings will be made on a per unit basis and is to be include all costs for picking up the furniture, installation of the furniture, and concrete bases.

E14. PLANT MATERIAL

- E14.1 Description: This specification shall cover the supply and installation of nursery grown trees, shrubs and shrub bed installation.
- E14.2 Materials
- E14.2.1 General
- (a) Trees shall be the size and variety noted on the Plant List at the end of this section. Plant material which does not have the specified root ball diameter will be rejected.
 - (b) All nursery stock supplied shall be Canadian prairie nursery grown, of the species and sizes indicated on the drawings. Quality shall be in accordance with the latest "Guide Specification for Nursery Stock of the Canadian Nursery Trades Association".
 - (c) Any nursery stock dug from native stands, wood lots, orchards or neglected nurseries and which have not received proper cultural maintenance as advocated by the Canadian Nursery Trades Association, shall be designated as "collected plants". The use of "collected plants" will not be permitted unless approved by the Contract Administrator.
 - (d) The Contract Administrator reserves the right to inspect the plant material at their original source, and to instruct the supplier on root and branch pruning requirements.
 - (e) Nomenclature of specified nursery stock shall conform to the International Code of Nomenclature for Cultivated Plants and shall be in accordance with the approved scientific names given in the latest edition of standardized Plant Names. The names of varieties therein are generally in conformity with the names accepted in the nursery trades.
 - (f) Plants larger than specified may be used if approved by the Contract Administrator. The use of such plants shall not increase the Contract price.
 - (g) All nursery stock shall be measured when the branches are in their normal position. Height and spread dimensions specified refer to the main body of the plant and not from branch tip.

- (h) Where trees are measured by calliper (cal.), reference is made to the diameter of the trunk measured 300 mm above ground prior to digging.
- (i) All nursery stock shall be well branched, true to type, structurally sound, possess a well developed, undamaged root system and shall be free of disease, insect infestations, rodent damage, sunscald, frost cracks and other abrasion or scare to the bark. All parts of the nursery stock shall be moist and show live, green cambium when cut.
- (j) All trees shall have one only, sturdy, reasonably straight and vertical trunk and a well balanced crown with fully developed leader. All evergreens shall be symmetrically grown and branched from ground level up, and must be balled and burlapped unless noted otherwise on the plant list. At least one plant of each variety supplied shall bear a tag showing both the botanical and common name of the plant.

E14.2.2 Protection of Stock

- (a) All nursery stock shall be well protected from damage and drying out from the time of digging until the time of planting on site. All roots shall be cleanly cut; split roots are not acceptable.
- (b) Nursery stock shall be transplanted with care to prevent damage. Branches shall be carefully tied in such a manner so as not to break or damage trunks. Points of contact with equipment shall be padded. All nursery stock, which cannot be planted immediately upon arrival at the site, shall be well protected to prevent drying out and shall be kept moist until commencement of planting.

E14.2.3 Topsoil Backfill Mix

- (a) Backfill mix shall be screened garden soil mixture of five parts black loam topsoil, one part milled peat moss and one part sharp sand.

E14.2.4 Stakes

- (a) T-rail iron stakes 40 x 40 x 5 x 1540 mm long, primed with 1 brush coat of black zinc rich plant paint to CGSB 1-GP-181B. Paint section of stake above ground with 1 coat of green enamel paint.

E14.2.5 Tree Rings

- (a) Fabricated from 3 mm galvanized wire encased in two ply reinforced 12 mm dia. rubber garden hose of equivalent.

E14.2.6 Anti-Desiccant

- (a) Wax-like emulsion to provide film over plant surfaces reducing evaporation, but permeable enough to permit transpiration.

E14.2.7 Wound Dressing

- (a) Horticulturally accepted non-toxic, non-hardening emulsion.

E14.2.8 Wood Chip Mulch

- (a) Shall be standard tree limbs and leaves chippings, containing a maximum of 5% conifer branches.

E14.2.9 I-Con Paver Edging

- (a) Edging shall be Barkman Concrete Desert Buff coloured, I-Con pavers

E14.3 Construction Methods

E14.3.1 General

- (a) Planting pits shall be excavated in a square shape with vertical sides to a depth and width amounting to twice the diameter of the root system. The minimum depth shall be 610 mm (24") and the minimum length/width shall be 1530 mm (5'). The excavated tree pits shall be refilled with backfill mix (E14.2.3). Hand dig pits where required to protect underground utilities. Plan access and digging to minimize driving equipment over locations where Trees/Shrubs are to be located.
- (b) Shrub beds shall be excavated with vertical sides to the width shown on the drawings, and to a depth of 400mm. The excavated shrub bed shall be refilled with backfill mix (E14.2.3) to a 300mm depth, and covered with a 100mm depth of wood chip mulch. Where shrub beds adjoin sodded areas, a row of I-Con pavers shall be installed flush with the top of the sod to separate the wood chip from the sod.

E14.3.2 Installation

- (a) Upon excavation of the tree pits, and protection of any underground utility lines, the holes shall be backfilled with a topsoil mixture to a depth to permit adequate installation and stabilization of the plant material.
- (b) Each balled specimen shall be handled with great care, to ensure that the root balls will not be broken. Burlap shall be folded back only at the top and sides. Broken roots of deciduous stock shall be pruned back prior to planting.
- (c) After inserting the tree and filling the planting hole with topsoil, water shall be poured in until the pit is thoroughly soaked. Filling of the hole shall then be completed and the fill-in soil shall be packed firmly around the roots, leaving a concave surface for convenient watering 75 mm below rounding and grade elevation. After filling, the planting shall be watered at frequent intervals.
- (d) Planting shall be done during periods suitable to weather conditions and locally accepted practice. All nursery stock shall be set plumb in the centre of pits and at levels as shown on the planting details after settlement has taken place.
- (e) Nursery stock shall be faced to give the best appearance or relationship to adjacent structures and to the approval of the Contract Administrator.
- (f) Wood chip mulch shall be installed over the tree rootball as shown on the drawings.

E14.3.3 Pruning

- (a) All deciduous trees shall be pruned immediately after planting. The amount of pruning shall be limited to the minimum necessary to remove dead or injured branches and to compensate for the loss of roots as a result of transplanting operations. Pruning shall be done in such a manner as to preserve the natural character of the plants. Leaders shall not be removed. Only clean, sharp tools shall be used. All cuts shall be clean and flush, leaving no stubs. Cuts, bruises or scars on the bark shall be traced back to living tissue and removed. The affected areas shall be shaped so as not to retain water and all cuts of more than 25 mm in diameter shall be painted with approved tree paint.
- (b) Pruning of existing Siberian Elm trees at plaza location 11 + 28, to accommodate planting of new Colorado Spruce trees, is considered incidental to the planting of new trees. No separate payment will be made for pruning of existing trees.
- (c) Elm trees cannot be pruned between April 1 and July 31, inclusive. Siberian Elm trees cannot be pruned between April 1 and June 30, inclusive.

E14.3.4 Staking

- (a) All trees shall be staked using metal T-BAR stakes. The number of stakes required per tree is shown in the Plant List. The tree trunk shall be completely encircled and protected with two rubber tree rings and secured to each tree stake. Top of each tree stake shall be at the same elevation above finished grade, approximately 1200 – 1500 mm height.

E14.4 Maintenance and Guarantee of Nursery Stock

- (a) 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 Work is acceptable to start warranty. Plant material shall be accepted to start warranty when installation in accordance with the Drawings and Specifications, is complete and there is no sign of wilting, chlorosis, pest infestation, transplant shock or any conditions deleterious to longevity and appearance.
- (b) The Contractor shall provide all watering, weeding, tightening and repairing tree stakes and rings, removal of dead material and all tree stakes and rings, removal of dead material and all other maintenance operations required for two years after the date the landscaped areas are accepted to start warranty. See B15 for additional information.
- (c) The Contractor shall agree and guarantee to replace and replant any nursery stock found dead and/or in poor condition two years from the Date of Acceptance to start the Warranty, at his cost. "Poor condition" shall be interpreted as meaning nursery stock on which branches are dying, or have not shown satisfactory growth of leaves.
- (d) Nursery stock damaged by accidental causes or vandalism, shall be replaced.
- (e) All required replacements shall be by plants of at least the same size and species as specified, and shall be supplied and planted in accordance with the original drawings and Specifications, and the replaced material shall carry an additional two-year guarantee and maintenance period.

E14.5 Method of Measurement

- (a) Plant Material will be measured on a unit basis. The number to be paid for shall be the total number of each type and size of tree supplied, installed and accepted to start the warranty in accordance with the Specification and accepted by the Contract Administrator. The number includes trees replaced due to damage/removal by vandalism and non-contract related accidents.
- (b) Shrub beds will be measured on a per square metre basis.

E14.6 Basis of Payment

- (a) The supply and installation of Plant Material will be paid for at the Contract unit price for each tree, measured as specified herein, which price shall be payment in full including all costs for the tree, tree pit and topsoil backfill, tree stakes, tree rings, pruning, and all other items incidental to the Work included in this Specification.
- (b) The supply and installation of Shrub beds will be paid for a the Contract unit price per square metre, and shall include all costs for excavation, topsoil installation, wood chip mulch, and I-Con Paver edging.

PLANT LIST		
QUANTITY	COMMON NAME/ BOTANICAL NAME	SIZE / REMARKS
6	AMERICAN BASSWOOD / Tilia americana	Min. 75mm cal., 3660mm height. All single stem trees. Well branched head above 1220mm ht. Min. 1000mm dia. rootball. Two stakes
18	COLORADO SPRUCE / Picea pungens	9 @ 3000mm ht., and 9 @ 3660mm ht. 50% blue, 50% green. Install colours in random pattern of equal proportions. Min. rootball size: 1120mm dia. Double stake.
43	LITTLELEAF LILAC / Syringa Palibiana	Min. 10 stems, each stem to be min. 500 mm ht. Container.
30	GOLDFINGER POTENTILLA / Potentilla fruticosa "Goldfinger"	Min. 6 stems, each stem to be min. 400 mm ht. Container.

E15. TREE/SHRUB MAINTENANCE SCHEDULE

E15.1 Description: This specification shall cover the landscape maintenance requirements for all trees and associated tree pits, shrubs and associated shrub beds.

E15.2 Related Work: Plant material and tree pits are specified elsewhere in this Specification and form an integral part to all Work described herein.

E15.3 Maintenance Period: Undertake maintenance from the date of acceptance to start the warranty for a period of two years.

E15.4 Description of Work

- (a) Maintain trees shown on the drawings, to the satisfaction of the Contract Administrator
- (b) Work includes:
 - Fertilizing
 - Watering
 - Weed Control of tree pits, wood chip mulch areas
 - Pest and disease control
 - Pruning
 - Mulching
 - Tree support and tie adjustment
 - Winter protection

E15.5 Protection

- (a) Prevent damage to fencing, other trees, landscaping, bench marks, building, pavement, surface and underground utility facilities.

E15.6 Materials

- (a) Materials are to conform to the requirements of related specifications.

E15.7 Maintenance Requirements

(a) Condition of Equipment

Prior to the commencement of tree and shrub planting, the Contractor will be required to arrange to have the equipment to be supplied under this Contract inspected by the Contract Administrator to verify that the equipment is in good operating condition and meets the requirements of the Specifications.

(b) Replacement Equipment

The supply of replacement equipment of equal or larger size, if regular units are under repair, will be the responsibility of the Contractor.

(c) General Workmanship

(d) Program timing of operations to growth, weather conditions and use of site. Do each operation continuously and complete within reasonable time period. Store equipment and materials off-site. Collect and dispose of debris or excess material on daily basis.

E15.8 Fertilizing

(a) Apply fertilizer no later than May 30th of each maintenance year.

E15.9 Watering

(a) Apply water as required to supplement rainfall and to maintain optimum growing conditions. In general, water once a week to achieve rates as indicated below. Allow soil to dry adequately between watering to prevent over-saturation without creating water stress.

(b) Subject to the requirements above, the Contractor must water at least once a week inclusive between May 1st and October 30th. A complete record is to be kept of each series of waterings for all planted and transplanted trees, noting: 1) location, and 2) date of watering. This record is to be given to the Contract Administrator when requested.

(c) Apply 40 litres of water per 25mm calliper per application using deep root feeder or low pressure open flow nozzle and hose. The water stream must not gouge out a hole in the soil and mulch.

(d) Apply 4 litres of water per shrub per application.

E15.10 Weed Control

(a) Maintain surface of tree pit, shrub bed and mulched areas, free of weeds. Do not allow weeds to establish for a period longer than one (1) week.

(b) Do not use dicamba and picloram solutions near trees.

E15.11 Pests and Diseases

(a) Obtain written approval of Contract Administrator prior to using any pesticide.

(b) 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.

E15.12 Pruning

(a) The Contractor shall provide a person with a valid Manitoba tree Pruner's License for each Work crew or Work site.

(b) Prune trees as required to remove dead, broken or damaged limbs. Prune back to healthy growth while maintaining balanced crown shape.

- (c) Employ clean sharp tools. Make cuts coincident with the 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.
- (d) Prune trees according to accepted horticultural practices as outlined in the Pruning Manual, Publication No. 1505 by Agriculture Canada.

E15.13 Wood Chip Mulching

- (a) Add mulch as required to maintain 100 mm thickness.

E15.14 Tree Supports and Tie Adjustments

- (a) Maintain tree supports and ties in proper repair.
- (b) Remove supports and ties at end of two year maintenance period or earlier if directed by Contract Administrator.
- (c) Straighten any tree, which is leaning.

E15.15 Winter Protection

- (a) Ensure adequate moisture in tree zones prior to freeze-up.
- (b) Apply anti-desiccant to evergreen trees susceptible to winter desiccation as directed by Contract Administrator.

E15.16 Maintenance Schedule

- (a) The Contractor shall provide a complete written maintenance schedule to the Contract Administrator prior to the commencement of the two year maintenance period, and must provide weekly reports of all maintenance to the City of Winnipeg, Forestry Branch, within one week of the maintenance being provided.

E15.17 Maintenance Period

- (a) The two year maintenance period shall be based on a six month growing season per year. The two year maintenance program will consist of a total of 12 months of maintenance. In general the maintenance shall commence on May 1st and terminate on October 30th of each year. In the event of any early spring, whereby the weather conditions are conducive to plant growth, the Contractor shall start the maintenance period at such time as they deem necessary. However, the City of Winnipeg, Forestry Branch, must be notified prior to commencing the maintenance period. Where the maintenance contract is started prior to May 1st, the actual number of days that the plant material is maintained prior to May 1st will be deducted from the October 30th completion period.

E15.18 Warranty Inspection

- (a) The Contract Administrator will call one or more annual plant material inspection to identify plant material that requires replacement, extended warranty or final acceptance. For final acceptance of trees after two years, trees should show sufficient leaf development and growth to ensure their future survival.

E15.19 Cost of Two Year Maintenance Period

- (a) The cost for the Two Year Plant Maintenance Period is to be paid in two annual installments each 50% of the lump sum paid on the anniversary of the date of tree acceptance for warranty.