

**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 The version in effect three (3) Business Days before the Submission Deadline shall apply.
- E1.1.3 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:

<u>Drawing No.</u>	<u>Drawing</u>
L1	Existing Conditions, Removals and Salvage
L2	Master Plan
L3	Layout and Grading Plans
L4	Planting Plan and Details
L5	Details 2

#### E2. WINNIPEG WATERWAY AUTHORITY PERMIT

- E2.1 The Contract Administrator is in the process of obtaining the Winnipeg Waterway Authority Permit for the project. Once the permit is obtained the Contract Administrator shall provide the Contractor with a copy of the permit for the project and the Contractor shall be governed by the Permit's requirements (relative to locations for stockpiling materials, etc.).

#### E3. SITE PREPARATION

##### GENERAL

- E3.1 Description
- E3.1.1 This Specification shall cover all aspects of the site preparation work, including equipment mobilization and demobilization, erection and maintenance of safety fence, removal of vegetation, trees, and site furnishings, access development, and Site restoration.

##### EXECUTION

- E3.2 Mobilization and Demobilization
- E3.2.1 The mobilization and demobilization of all equipment necessary to complete the Work is covered under this specification.
- E3.3 Site Access
- E3.3.1 The location of access points for the construction equipment and materials, and the methodology to facilitate construction shall be subject to the approval of the Contract

Administrator. All material excavated for access ramps shall be hauled away from the Site at no additional cost. Care shall be taken to prevent damage to existing Site facilities, services and roads. In the event of damage to existing Site facilities or services caused by the Contractor's access and construction activities, the Contractor shall be held liable, and shall be required to provide appropriate restoration, to the satisfaction of the Contract Administrator. The Contractor shall be required to submit his proposed access methodology for review and approval prior to initiation of the Work to ensure that temporary slope stability conditions are not jeopardized at the Site or on adjacent lands.

#### E3.4 Removals and Salvage

E3.4.1 All vegetation, trees, site furnishings, and debris shall be removed from the Site prior to excavation and/or fill placement. The Contractor shall load and haul all trees, stumps, roots, logs, brush, rubbish, and any other surface litter that may be on the slope away from the Site, and dispose of these materials at dumps located by the Contractor and approved by the Contract Administrator. All material shall be disposed off site immediately upon collection, and stockpiling at the Site will not be permitted. The Contract Administrator shall identify the limits of the tree and vegetation removal. No trees or vegetation outside these limits shall be disturbed or damaged.

#### E3.5 Site Restoration

E3.5.1 The Site shall be restored to a condition at least equivalent to its original condition prior to construction, as approved by the Contract Administrator. This may include, but not necessarily limited to, landscaping, grading repairs, and equipment removal.

### METHOD OF MEASUREMENT

E3.6 The Site Preparation will be measured on a lump sum basis, and shall include all Items of Work completed in accordance with this Specification and accepted by the Contract Administrator.

### BASIS FOR PAYMENT

E3.7 Site preparation will be paid for at the Contract Unit Price for each "Items of Work", listed below, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this Specification.

Items of Work:

- i) Site Preparation

## **E4. PROTECTION OF EXISTING TREES**

### GENERAL

#### E4.1 Description

E4.1.1 This specification covers the protection of existing trees. The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all other things necessary for and incidental to the satisfactory performance and completion of all Work hereinafter specified.

## CONSTRUCTION METHODS

### E4.2 Preservation

E4.2.1 Existing trees shall be protected and preserved as is.

### E4.3 Trunk Protection

E4.3.1 All trees will have a 1.0m (minimum) radius protective zone calculated from the circumference at the base of the trunk which will remain free of digging, trenching, grade changes, stock piling of materials and soil compaction throughout the duration of the contract. Protective fencing around these areas is required. All trees within and immediately adjacent to, proposed construction areas will require 1x6x8' wood planks strapped to the tree trunk to completely protect the tree trunk from impact damage. (smaller trees will be similarly protected using proportionally sized wood planks).

### E4.4 Overhead Branch and Limb Protection

E4.4.1 Tree limbs and branches overhanging the construction area shall not be damaged. The responsibility to ensure that the above ground portions of trees are not damaged is that of the agent involved in the actual Work.

### E4.5 Excavation

E4.5.1 During all excavation a representative from the City of Winnipeg Forestry Branch shall be present at all times unless otherwise agreed upon by the Contract Administrator, Forestry Branch and Contractor prior to commencement of construction.

### E4.6 Notification

E4.6.1 The Contract Administrator is to be notified 48 hours in advance of any large equipment to be working in the vicinity of the existing trees. The Contractor shall provide adequate personnel on foot to supervise equipment operators in the vicinity of the trees to ensure that there is no damage whatsoever to the existing trees.

E4.6.2 Special care is required during excavation to ensure existing tree root structure is not damaged. Should root pruning be required the Contractor must notify the Contract Administrator at least three (3) Working Days to ensure proper root pruning techniques are employed by a licensed arbourist.

## METHOD OF MEASUREMENT

E4.7 No measurement will be made for protection of existing trees.

## BASIS FOR PAYMENT

E4.8 No separate payment will be made for protection of existing trees.

## **E5. EARTHWORK AND GRADING**

### GENERAL

#### E5.1 Description

E5.1.1 This specification shall cover all Work associated with general Site preparation and grading. The Contractor shall furnish all superintendence, overhead, labour, materials, equipment, tools, supplies and all things necessary for and incidental to the satisfactory

performance and completion of all Work hereinafter specified. This specification shall supplement CW3170-R3.

## CONSTRUCTION METHODS

### E5.2 General

E5.2.1 The Contractor shall grade to the levels and contours allowing for surface treatment as shown on the drawings. Existing topsoil shall be stockpiled on-Site as directed by the Contract Administrator. Prior to placing any fill over existing ground the Contractor shall scarify to surface to a depth of 150mm. Moisture content of filling and existing surface material shall be the same in order to facilitate proper bonding.

E5.2.2 All fill shall be clean fill.

### E5.3 Compaction

E5.3.1 Compact fill and undisturbed areas to Standard Proctor Density to ASTM D698-78 as follows:

- (a) Landscaped Areas - 85%
- (b) Paved Areas - 95%

### E5.4 Approvals

E5.4.1 The Contractor shall stake grades and receive approval from the Contract Administrator prior to any construction.

E5.4.2 The Contract Administrator shall approve grading work prior to installation of topsoil and/or surfacing materials.

## METHOD OF MEASUREMENT

E5.5 Earthwork and Grading will be measured on a square meter basis. The amount to be paid for shall be the total number of square metres constructed in accordance with this Specification and as accepted by the Contract Administrator.

## BASIS OF PAYMENT

E5.6 Payment for Earthwork and Grading shall be paid for at the contract unit price for the "Items of Work" listed below, which price shall include all costs of labour and material supply, including fill, and all other items incidental to the Work included in this specification.

Items of Work:

- i) Earthwork and Grading

## E6. PAVEMENT

### E6.1 General

#### E6.1.1 Description

- (a) This Specification shall cover the supply and installation of unit pavers, concrete paving with inlay pavers, concrete paving edge and relaying of salvaged unit pavers for areas as indicated on the Drawing. The work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies, and all other things necessary for and incidental

to the satisfactory performance and completion of all work as specified and in accordance with applicable City of Winnipeg specifications

## E6.2 Materials

### E6.2.1 General

- (a) All materials shall conform to CW 3335 and this Specification. Where the two do not agree, this Specification shall take precedence.

### E6.2.2 Salvaged Unit Pavers

- (a) Salvaged unit pavers shall be salvaged interlocking stone as shown on the drawings.

### E6.2.3 Unit Pavers

- (a) Unit Pavers for both unit paving and concrete with inlay areas shall be Endicott Manganese Iron Spot, full module pavers as supplied by Alsips Brick and Tile, Winnipeg

### E6.2.4 Ground Concrete.

- (a) Ground concrete shall be supplied as per CW 3325-R2.

### E6.2.5 Paving Edge

- (a) Paving edge shall be poured in place concrete curb, as shown on the drawings.

### E6.2.6 Sand Bedding

- (a) Sand bedding shall be in accordance with Specification CW3335.

### E6.2.7 Lean Concrete Base

- (a) Lean concrete base shall conform to Specification CW 3335.

### E6.2.8 Equipment

- (a) All equipment shall conform to Specification CW 3335.

## E6.3 Construction Method

### E6.3.1 General

- (a) Construction methods shall conform to Specification CW 3335 and CW3325-R2. All joints shall be tight.
- (b) Concrete pavement shall have its surface ground in order to reveal the aggregate.

### E6.3.2 Salvaged Unit Pavers

- (a) Salvaged unit pavers shall be installed as per CW 3330-R3, and as shown on the drawings.

## E6.4 Method of Measurement

- (a) The supplying and placing of Pavement will be measured on a square metre basis. The area to be paid for shall be the total number of square metres of Pavement installed in accordance with this Specification and as accepted by the Contract Administrator. The supply and of installation of paving edge shall be considered incidental to the works. No separate measurement and payment will be made.

## Basis of Payment

- (b) The supplying and placing of Pavement shall be paid for at the Contract Unit Price per square metre for the "Items of Work", measured as specified herein, which price shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the work included in this Specification.

### Items of Work:

- i) Unit Paving
- ii) Ground Concrete Paving with Inlay
- iii) Relaying of Salvaged Unit Paving

## E7. PLANTING BED PREPARATION

### E7.1 General / Description

This specification shall cover planting bed preparation. The work to be done by the Contractor under this specification shall include the furnishing of all superintendence, overhead, labor, materials, equipment, tools, supplies and all other things necessary for and incidental to the satisfactory performance and completion of all work as specified.

### E7.2 Materials

#### E7.2.1 Planting Soil

- (a) Planting Soil shall consist of black top soil, a fertile friable natural loam containing by volume not less than 4% and no more than 25% of organic matter for clay loams, and not less than 2% and no more than 25% for sandy loams, with an acidity value ranging from pH 6.0 to 8.0 and capable of sustaining vigorous plant growth. Top soil is to be free of any mixture of subsoil, clay lumps and free of stones and other extraneous matter. It is not to contain couch or crab grass rhizomes.

#### E7.2.2 Bark Mulch

- (a) Bark Mulch shall vary in size from 25mm to 50 mm in diameter from bark of coniferous trees.

#### E7.2.3 Water

- (a) Water shall be potable and free of minerals which may be detrimental to plant growth.

#### E7.2.4 Fertilizer

- (a) Fertilizer shall be complete synthetic slow release fertilizer with maximum 35% water soluble nitrogen.

### E7.3 Construction Methods

#### E7.3.1 Planting Bed Preparation

- (a) Contractor shall co-ordinate site excavation works with landscaping to ensure minimal additional excavation for shrub beds is required by the Landscaper. All remaining

areas to be excavated shall be to the shape shown on the drawings. Beds shall be excavated for a finished depth (including bark mulch) of 475mm.

- (b) Fill excavation with soil mixture to a 400mm depth. After filling excavation top of bed shall be level with surrounding grade. Soil should be lightly compacted and soil depths indicated are depths after light compaction.
- (c) All areas and locations provided for planting shall be staked according to layout shown on the drawings. Excavation shall not be proceeded with until the layout has been inspected and approved by the Contract Administrator. Do not excavate until all underground utilities have been located and protected.

#### E7.3.2 Installation of Mulch

- (a) Spread bark mulch to consistent depth over entire planting bed area taking care not to damage the plants.

#### E7.4 Method of Measurement

- (a) Shrub Bed Preparation shall be measured on a square metre basis executed in accordance with this Specification and accepted by the Contract Administrator. The units to be paid for shall be the total number of square metres installed as measured by the Contract Administrator.

#### E7.5 Basis of Payment

- (a) Shrub Bed Preparation shall be paid for at the contract unit price for the "Items of Work" listed below, which price shall include all costs of labour and material supply, and all other items incidental to the work included in this specification.

Items of work:

- (i) Shrub Bed Preparation

### E8. **PLANTING – TREES AND SHRUBS**

#### E8.1 General/Description

- (a) This specification shall cover the supply and installation of trees and shrubs.
- (b) The work to be done by the Contractor under this specification shall include the furnishing of all superintendence, overhead, labour, miscellaneous materials, equipment, tools, supplies and all other things necessary for and incidental to the satisfactory performance and completion of all work as hereinafter specified. All planting and replacements must be completed by June 15th of any given year.

#### E8.1.1 Source Quality Control

- (a) All plant material shall be randomly inspected at the source upon request of the Contract Administrator.



- (b) Trees are to be grown in nurseries under proper cultural practices as recommended by the Canadian Nursery Trade Association.
- (c) Only those trees will be accepted which have been grown for at least the four (4) previous years in local Manitoba nurseries located in an Agricultural Canada Plant Hardiness Zone designation of 2(a or b) or 3(a or b), and within a 250 kilometres radius of Winnipeg. Trees that have grown in plant hardiness zones 1 and 4 or greater will be rejected.

#### E8.1.2 Warranty and Maintenance

- (a) The Contractor shall maintain and guarantee the Work against any and all defects or deficiencies resulting from insect infestation, disease and mechanical damage due to improper handling, installation or maintenance, for a period of two (2) years from the date of the Certificate of Total Performance. Nursery stock damaged by vandalism or reasons beyond the control of the Contractor shall be replaced by the City.
- (b) End-of-Warranty inspection will be conducted by the Contract Administrator with representation by the City.
- (c) The Contract Administrator reserves the right to request material replacement or extend the Contractor's responsibilities for an additional one (1) year if, at the end of the Warranty Period, leaf development and growth are not sufficient to ensure future survival of the tree or shrub.

#### E8.1.3 Replacements

- (a) During the Maintenance Period, the Contractor shall remove from Site any plant material that has died or failed to grow satisfactorily as determined by the Contract Administrator and replace as per Specifications within a maximum thirty-day period from notification.
- (b) Defective plants shall be replaced within three (3) days of notification to the Contractor.
- (c) The Contractor shall extend the Warranty on replacement tree for a period equal to the original Warranty Period.
- (d) The Contractor shall continue such replacement, Maintenance and Warranty until tree is acceptable.

### E8.2 Materials

#### E8.2.1 Miscellaneous Materials

- (a) **Planting Soil** – as specified in CW 3540.
- (b) **Water** – Water is to be potable and free of minerals which may be detrimental to plant growth.
- (c) **Fertilizer** – Fertilizer is to be a slow release formulation of low nitrogen and high phosphorus e.g. 10-50-12. Apply quantities at rates stated by product manufacturer.
- (d) **Rootball burlap** shall be 150g, Hessian burlap, biodegradable.
- (e) **Anti-dessicant** shall be wax-like emulsion to provide film over plant surfaces reducing evaporation but permeable enough to permit transpiration.

- (f) **Wound dressing** shall be horticultural accepted non-toxic, non-hardening emulsion.

#### E8.2.2 Plant Material

- (a) All nursery stock supplied shall be Canadian Prairie nursery grown, and of species and sizes indicated in the plant list on the drawings. Its quality shall be in accordance with the "Guide Specification for Nursery Stock of the Canadian Nursery Trades Association".
- (b) 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 specified below. 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 not named therein are generally in conformity with the names accepted in the nursery trade.
- (c) All trees are to be supplied in accordance with the Work of this Contract and shall be inspected by the Contract Administrator at the nursery site. At the time of inspection, the Contractor shall permanently tag a suitable branch of each tree with a distinct code clearly indicating that THE CITY OF WINNIPEG will be the intended recipient of that tree. The tag and code must be approved at least two (2) weeks in advance of their use by the Contract Administrator.
- (d) The tag must be kept on the tree at the time of planting, and removed only when authorized in writing by the Contract Administrator. The Contract Administrator will reject each and every tree that has not been delivered with its tag intact at the planting site.
- (e) Each tag will identify the species of the tree and its caliper at the time in which the tag is placed permanently on the tree. All trees tagging operation shall be conducted after Award of Contract to the Bidder. The use of trees requiring treatments as ordered by Agriculture Canada is prohibited.
- (f) Plants larger than specified may be used if approved by the Owner or his representative. 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 to root base or from branch tip to branch tip. Where trees are measured by caliper (cal), reference is made to the diameter of the trunk measured 300mm above ground as the tree stands in the nursery.
- (h) All nursery stock shall be well branched, densely foliated when in leaf, true to type, structurally sound, possess a well developed, undamaged root system and shall be free of disease, insect infestations, rodent damage, sun scald, frost cracks, and other abrasions or scars to the bark. All parts of the nursery stock shall be moist and show live, green cambium when cut. All trees shall have one (1) sturdy, reasonably straight and vertical trunk and a well-balanced crown with fully developed leader. At least one (1) plant of each variety supplied shall bear a tag showing both the botanical and common name of the plant.
- (i) Trees are to have been root pruned regularly, but not later than one growing season prior to arrival on Site. The Contractor may be required to furnish documentation to THE CITY OF WINNIPEG on his root-pruning program. Trees in excess of 75 mm caliper are to have been half root pruned during each of two successive growing seasons, the latter at least, one growing season prior to arrival on Site.

E8.2.3 Tree Quantity and Size

- (a) Trees are to be planted at the quantities and calipers listed on the Plant List. Any variation from the specified quantity is to be clearly identified on the Schedule of Prices. Any variations to species, size or caliper of specified trees will require a request for approval from the Contract Administrator.
- (b) Any changes in planting locations shall be determined on-site by the Contract Administrator.

QUANTITY	COMMON NAME / BOTANICAL NAME	SIZE AND REMARKS
DECIDUOUS TREE		
5	Amur Cherry / <i>Prunus maackii</i>	65mm caliper, min. 3200mm ht., min. 1200mm wide rootball, straight trunk, balanced head.
4	Discovery Elm / <i>Ulmus davidiana japonica 'Discovery'</i>	75mm caliper, min. 3500mm ht., min. 1200mm wide rootball, straight trunk, balanced head.
SHRUBS AND PERENNIALS		
33	Frobel Spirea / <i>Spirea bumalda 'Frobeli'</i>	500mm ht., minimum 5 basal stems, potted
26	Dwarf Winged Euonymus / <i>Euonymus alatus 'Compactus'</i>	600mm ht., minimum 7 basal stems, potted
55	Canadian Border Patrol Daylily / <i>Hermercallis</i>	2 year potted
67	Salieri Daylily / <i>Hermercallis</i>	2 year potted
62	Karl Forster Feather Grass / <i>Calamagrotis x acutiflora</i>	2 year potted
20	Elijah Blue Fescue / <i>Festuca</i>	2 year potted

- (c) Trees are to conform to the measurements specified in the PLANT LISTS, except that trees larger than specified may be used if approved by the Contract Administrator.
- (d) Trees are to be measured when the branches are in their normal position. Height dimensions specified are to refer to the main body of the tree and not from branch tip to root base. Where trees have been measured by caliper or diameter, reference is to be made to the diameter of the trunk measured 300 mm above the ground as the tree stands in the nursery prior to lifting. Caliper of tree shall be appropriately designed on a permanently fixed tag on one of the branches.

#### E8.2.4 Shipment and Pre-Planting Care

- (a) Shipment of trees and the excavation of holes shall be coordinated to ensure minimum time lapse between digging and planting.
- (b) Branches of trees shall be tied securely, and trees shall be protected against abrasion, exposure and extreme temperature change during transit. Avoid binding of trees with rope or wire which would damage bark, break branches or destroy natural shape of tree. Give full support to root ball of trees during lifting.
- (c) Tree foliage shall be covered with a tarpaulin, and bare roots shall be protected by means of dampened straw, peat moss, saw dust or other acceptable material to prevent loss of moisture during transit and storage.
- (d) Broken and damaged roots shall be removed with sharp pruning shears. Make clean cuts, and cover cuts over 10 mm diameter with a tree wound dressing.
- (e) Roots shall be kept moist and protected from sun and wind. Heel-in trees, which cannot be planted immediately in shaded areas, and water well.

#### E8.3 Construction Methods

##### E8.3.1 Workmanship

- (a) Location of trees shall be staked out or painted on Site by the Contractor. Locations shall be approved by the Contract Administrator prior to installation.
- (b) Anti-desiccant shall be applied in accordance with material manufacturer's instructions with prior approval of the Contract Administrator.
- (c) Coordinate operations. Keep Site clean and planting holes drained. Immediately remove soil or debris spilled onto street pavement, grass or sidewalk.

##### E8.3.2 Planting Time

- (a) Deciduous trees shall be planted during dormant period before buds have broken. Trees noted for spring planting only, must be planted in dormant period.
- (b) When permission has been obtained from the Contract Administrator to plant deciduous trees after buds have broken, plants shall be sprayed with anti-desiccant to slow down transpiration prior to transplanting.
- (c) Plant only under conditions that are conducive to health and physical conditions of trees.
- (d) Provide planting schedule to Contract Administrator. Extending planting operations over long period using limited crew will not be accepted.

- (e) The Contractor must obtain all above and belowground clearances from all the utilities as well as the appropriate District Operations Branch in a timely manner so as not to jeopardize the schedule of the complete tree-planting Contract.

#### E8.3.3 Excavation of Tree Pits

- (a) Excavation of planting pits shall be located as indicated by stakes or paint marks.
- (b) The Contractor must not commence excavation of any tree pits until the full extent of all buried utilities and services are located and protected.
- (c) The Contractor shall hand excavate all tree pits located over underground utility lines. Tree wells not located over underground utilities may be machine excavated. Tree wells shall be excavated with vertical sides to the full width of the surface area, as shown on the drawings. All excavated material shall be disposed of off site.

#### E8.3.4 Planting of Nursery Stock

- (a) Each balled specimen shall be handled with great care so that the root balls shall not be broken. Burlap shall be folded back only at the top and sides.
- (b) Broken root balls or balls consisting of loose soil shall not be accepted and shall be replaced. Broken roots of deciduous stock shall be pruned back prior to planting.
- (c) Where the root ball of plant material is enclosed in wire baskets, the wire baskets shall be removed from the root ball once the tree has been located properly in the pit. Removal shall be by a min. of 4 vertical cuts equally spaced around the baskets without damaging the rootball. Cutting of the 2 lowest horizontal strands of the wire basket before placing the tree in the pit is acceptable provided that the bottom of the root ball will remain intact.

#### E8.3.5 Planting Procedure

- (a) With balled and burlapped root balls and root balls in wire baskets, burlap shall be loosened and cut away from the top 1/3 without disturbing root ball. Burlap or rope shall not be pulled from under root ball. Non-biodegradable wrapping shall be removed.
- (b) After inserting the tree and tamping the root system with topsoil in layer of 150 mm, 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. After filling, the planting shall be watered at frequent intervals. No tree pit shall be left open at the end of the Contractor's Work Day.
- (c) Each tree is to have an earth saucer at its base having a diameter as large as the excavation with a 10 cm lip formed at the perimeter of the saucer to retain water.
- (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 structure and to the approval of the Owner of his representative. Trees shall be placed equal to depth they were originally growing in nursery.

E8.3.6 Fertilizing

- (a) When planting is completed, surface of planting saucer shall be fertilized, meeting the requirements of Specification. Fertilizer shall be mixed thoroughly with top layer of planting soil and watered in well.

E8.3.7 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 (1") in diameter shall be painted within approved tree paint.

E8.3.8 Watering

- (a) Trees shall be watered during the planting procedure as described previously, and once a week thereafter, or more frequently if required.
- (b) A complete record shall be kept of each series of waterings for all planted trees, noting: 1) location, and 2) date of watering. This record shall be sent bi-weekly to the Contract Administrator – Fax: (204) 927-3443.
- (c) Forty (40) litres of water per 25 mm calliper per application shall be applied using deep root feeder or low/pressure nozzle and hose. The water stream shall not gouge out a hole in the soil and mulch.

E8.3.9 Staking

- (a) All trees shall be staked and tied in accordance with the Drawings.

E8.4 Method of Measurement

- (a) Trees and Shrubs shall be measured on a per unit basis. The amount to be paid for shall be the total number of trees and shrubs supplied and installed in accordance with this specification, the drawings and as accepted by the Contract Administrator.

E8.5 Basis of Payment

- (a) Payment for Trees and Shrubs shall be paid for at the contract unit price for the "Items of Work" listed below, which price shall include all costs of labour and material supply, and all other items incidental to the work included in this specification.

Items of Work:

- (i) Discovery Elm
- (ii) Amur Cherry
- (iii) Froebel Spirea
- (iv) Dwarf Winged Euonymus

- (v) Karl Forester Feather Grass
- (vi) Blue Fescue Grass
- (vii) Canadian Border Patrol Daylily
- (viii) Salieri Daylily

## **E9. SODDING**

### **E9.1 General / Description**

- (a) This Specification shall supplement City of Winnipeg Specification CW 3510-R6 Sodding.
- (b) The work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all things necessary for and incidental to the satisfactory performance and completion of all work as hereinafter specified and in accordance with CW 3510-R6

#### **E9.1.1 Maintenance**

- (a) The Contractor shall be responsible for the maintenance of sod from the time of installation and for ninety (90) Calendar days from the date of Total Performance.

#### **E9.1.2 Warranty**

- (a) The Contractor shall guarantee the sod against any and all defects or deficiencies resulting from insect infestation, disease and mechanical damage due to improper handling, installation or initial maintenance, for a period of one (1) year from the date of the Certificate of Total Performance. Sod damaged by vandalism or reasons beyond the control of the Contractor shall be replaced by the City
- (b) End-of-Warranty inspection will be conducted by the Contract Administrator.

### **E9.2 Materials**

- (a) Materials shall be supplied as per CW 3510-R6

### **E9.3 Construction Methods**

- (a) Construction methods shall be in accordance with CW 3510-R6

### **E9.4 Method of Measurement**

- (a) Sodding shall be measured on a square metre basis. The amount to be paid for shall be the total number of square metres installed as measured by the Contract Administrator.

### **E9.5 Basis of Payment**

- (a) Sodding shall be paid for at the contract unit price for the "Items of Work" listed below, which price shall include all costs of labour and material supply, and all other items incidental to the work included in this specification.

Items of Work:

- i) Sodding

## **E10. SITE FURNITURE**

### **E10.1 Description**

- (a) This specification shall cover the supply and installation of benches. The work to be done by the contractor under this specification shall include the furnishings of all superintendence, overhead, labour, materials, equipment, tools, supplies and all things necessary for and incidental to the satisfactory performance and completion of all work hereinafter specified.

### **E10.2 Shop Drawings**

- (a) The contractor shall submit shop drawings for all components of the bench specified herein to the Consultant a minimum of 2 weeks prior to fabrication. The shop drawings shall include all details of connection hardware, fasteners, structural supports, materials and material sizing.

### **E10.3 Materials**

#### **E10.3.1 Benches**

- (a) As shown on drawings.

### **E10.4 Construction Methods**

#### **E10.4.1 Benches**

- (a) The seat of each bench shall be installed as per the drawings and horizontal along the length of the bench with the height from the middle of the bench (along it's length and at the front of the seat) to be 450mm above the finished grade as taken from the centre of the bench. Benches shall not slope with adjacent grade.

### **E10.5 Method of Measurement**

#### **E10.5.1 Benches**

- (a) The supply and installation of benches will be measured on a unit basis. The number of to be paid for shall be the total number supplied and installed in accordance with this Specification and Contract Drawings and accepted by the Contract Administrator.

### **E10.6 Basis of Payment**

#### **E10.6.1 Benches**

- (a) The supply and installation of benches will be paid for at the Contract Unit Price for the "Items of Work" listed below, measured as specified herein, 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.



Items of Work:

i) Benches

**E11. GEAR PAINTING**

E11.1 Description

- (a) This specification shall cover the wire brushing, cleaning and painting of the metal gear sculpture. The work to be done by the contractor under this specification shall include the furnishings of all superintendence, overhead, labour, materials, equipment, tools, supplies and all things necessary for and incidental to the satisfactory performance and completion of all work hereinafter specified.

E11.2 Materials

E11.2.1 Paint

- (a) Paint shall be POR 15 Rust Encasing Paint or approved equal.

E11.3 Construction Methods

E11.3.1 Cleaning and Preparation

- (a) All metal surfaces shall be wire brushed in order to removal all rust and loose and flaking paint. Surfaces shall be sanded smooth to eliminate any edges, ridges and cleaned to remove any dirt, grease and grime. The contractor shall ensure that the paint manufacturer's specifications for preparation are followed.
- (b) The contractor shall apply three coats POR 15 rust encasing paint as per manufacturer's specifications.

E11.4 Method of Measurement

- (a) Gear Painting will be measured on a lump sum basis and shall include all Items of Work completed in accordance with this Specification and accepted by the Contract Administrator.

E11.5 Basis for Payment

- (a) Site preparation will be paid for at the Contract Unit Price for each "Items of Work", listed below, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this Specification.

Items of Work:

- i) Gear Painting

## **E12. LANDSCAPE MAINTENANCE**

### **E12.1 General**

**E12.1.1** This specification shall cover the maintenance of trees and sod from the time of installation. Trees and Shrubs shall be maintained for a period of two years from the date of Total Performance. Sod shall be maintained for a period of 90 Calendar days from the date of total performance. The Contractor shall furnish all labour, materials, equipment and services necessary to perform the work according to the drawings and specifications. In general, work shall include:

- (a) Spring cleaning
- (b) Fertilizing
- (c) Watering
- (d) Mowing
- (e) Weed Control
- (f) Pest and disease control
- (g) Tree pruning
- (h) Winter preparation

### **E12.1.2 Protection**

- (a) Prevent damage to fencing, other trees, landscaping, benches, buildings, pavement, surface and underground utility facilities.

### **E12.1.3 Maintenance Schedule**

- (a) The Contractor shall provide a complete written Maintenance schedule to the Contract Administrator prior to the issuing of the Certificate of Substantial Performance.
- (b) All maintenance of trees and shrubs to be supervised by a Manitoba Certified Arborist.

### **E12.1.4 Documentation and Reporting**

- (a) All maintenance personnel they shall record in a logbook the operations carried out and any conditions that require attention or monitoring. The arborist shall submit a summary of the information as a Monthly Report to the Contract Administrator. Conditions requiring attention should be brought to the Contract Administrator's attention immediately.
- (b) The contractor should review the site regularly and adjust maintenance operations to suit observed conditions. A Site Maintenance Inspection Form (supplied by the Contract Administrator) should be used to record each site visit. Copies of these forms shall be sent to the Contract Administrator biweekly.
- (c) Report in writing any major maintenance procedures intended, minimum one week in advance.
- (d) If any damage, dangerous or potentially dangerous situations are observed the Contractor shall notify the Contract Administrator immediately.

### **E12.1.5 Failure to Document and Report**

- (a) If the Contractor fails to submit a monthly report it shall be assumed the work was not performed for that time period. Payment for Landscape Maintenance shall be reduced by 1/6<sup>th</sup> for every month a report is not submitted.

E12.1.6 Qualifications

- (a) All landscape maintenance personnel shall be skilled in the tasks assigned to them.

E12.1.7 Certificate of Acceptance

- (a) The Certificate of Acceptance will be issued upon completion of the two (2) year Maintenance Period, provided that trees and sod are well established and rooted, properly pruned and showing vigorous growth satisfactory to the Contract Administrator.
- (b) Unacceptable trees / sod shall be removed and replaced according to the required specifications. Maintenance of replacement items shall be extended for a period equal to the original Maintenance Period as specified herein. The Contract Administrator shall make further inspection after the additional Maintenance Period.
- (c) Replacement and maintenance requirements shall continue until the material is accepted.

E12.2 Materials

E12.2.1 General

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

E12.2.2 Fertilizer

- (a) Sod - Fertilizer shall be complete synthetic slow release fertilizer with maximum 35% water soluble nitrogen. Composition of the fertilizer shall be formulated particularly for sod in conjunction with soil tests from a recognized testing facility. Fertilizer shall be approved by the City's Area Superintendent prior to application.
- (b) Trees - Fertilizer shall be complete synthetic slow release fertilizer with maximum 35% water soluble nitrogen. Composition of the fertilizer shall be formulated particularly for woody plant material in conjunction with soil tests from a recognized testing facility. City's Area Superintendent prior to application.

E12.2.3 Bark Mulch

- (a) Bark mulch shall be locally available tree mulch, free of soil, stones, debris and any other deleterious material.

E12.3 Construction Methods

E12.3.1 General

- (a) Program timing of operations to growth, weather conditions and use of Site.
- (b) Each operation shall be done continuously and complete within reasonable time period.
- (c) Store equipment and materials off site.
- (d) Collect and dispose of debris or excess material on daily basis.

E12.3.2 Spring Cleaning

- (a) Any dead vegetation, leaves and debris shall be removed. Heavy raking shall be done with a flexible grass rake on areas with "snow mold". Roll lightly areas where grass plants have lifted due to frost action.

E12.3.3 Fertilizing - General

- (a) Soil testing shall be carried out by a recognized testing facility prior to fertilizer application to ensure a properly formulated program.

- (b) Fertilizer shall be spread evenly at frequency, ratio and rates as recommended by Manufacturer. Use approved mechanical spreading equipment. Check calibration to ensure specified rate is spread evenly. Water immediately after fertilizing. Rectify uneven spreading as soon as it becomes apparent.

#### E12.3.4 Watering - General

- (a) Water shall be applied 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.
- (b) Water shall be applied in a soft spray to avoid packing of soil.
- (c) Use of the installed irrigation system is prohibited unless approved by the Contract Administrator.
- (d) Do not impede use of sidewalk and other paved areas.

#### E12.3.5 Watering of Trees

- (a) Water every third day for first and second month after planting. Thereafter, water once per week between May 1 and October 15.
- (b) A complete record is to be kept of each series of watering for all planted 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.

#### E12.3.6 Weed Control of Trees

- (a) Surface of tree saucers shall be maintained free of weeds. Do not allow weeds to establish for a period longer than one (1 week).
- (b) Obtain written approval of Contract Administrator prior to using any herbicides.
- (c) Do not use dicamba and picloram solutions near trees.

#### E12.3.7 Pests and Disease Control

- (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.

#### E12.3.8 Cultivating Planting Beds and Tree Pits

- (a) Cultivate whenever required to keep top layer of soil, loose, friable and free from weeds. Any operation must be continuous without interruption.
- (b) Cultivate surface of planting bed, and soil areas around trees.
- (c) Remove weeds including their roots.
- (d) Take care not to damage roots of shrubs or flowers. Use small hand tools for areas of closely planted shrubs and/or perennials.
- (e) Collect and dispose of paper and refuse. Remove dead plants, leaves, branches, dead flowers and seed pods.
- (f) Clean, by hand, areas that are covered with mulch. Loosen top layer of mulch without mixing it with soil underneath.
- (g) Add mulch as required to maintain specified thickness.

E12.3.9 Tree Adjustment

- (a) Straighten any trees that are leaning.

E12.3.10 Tree Pruning

- (a) The Contractor shall provide a person with a valid Manitoba Arborist'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 co-incident 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.

E12.3.11 Bark Mulch

- (a) Bark Mulch shall be installed at the locations and depths shown on the drawings. Mulch shall be installed at a uniform thickness and contained within the areas shown. Mulch spilled on pathways and sodded areas shall be removed.

E12.3.12 Maintenance of Sod

- (a) The Contractor shall mow the turf area at regular intervals to a height of between 50-60 mm. Do not cut more than thirty percent (30%) of the grass height at any one mowing. Remove clippings that will smother grassed areas.
- (b) The Contractor shall water sodded areas in sufficient quantities and at frequency required to maintain soil under sod continuously moist to a minimum depth of 100 mm. All costs to provide water for sodded areas shall be borne by the Contractor. These costs may include hydrant permit and meter rental fees.
- (c) The Contractor shall clean and remove all dead vegetation, leaves, debris and snowmold from turf areas to encourage healthy and uniform grass growth.
- (d) The Contractor shall apply herbicide when broadleaf weeds start developing in competition with grass. Apply herbicide in accordance with the manufacturer's instructions and the Manitoba Agriculture Guide to Crop Protection and Herbicide Recommendations for Landscape Applicators, latest editions and the following criteria:
  - (i) Use 2,4-D Amine or MCPA Amine herbicide for susceptible broadleaf weeds.
  - (ii) Use a mixture containing 2,4-D Amine or MCPA Amine, Mecoprop and Dicamba for 2,4-D resistant plants
  - (iii) Do not apply to newly seeded areas until after the second or third mowing.
  - (iv) Do not water within 24 hours after application.
  - (v) Apply when winds are less than 20 km/h and air temperature is above 10 degrees Celsius.
- (e) Avoid use of pure Dicamba solutions near trees and shrubs.
- (f) Given the need for insect control, the Contractor shall have in his possession a Pesticide Applicator's License and a Pesticide Use Permit for pesticide applications related to this specification. Use standard commercial products in accordance with the manufacturer's instructions and the Manitoba Agriculture Guide to Crop Protection (latest edition) for the particular insect/insects involved.

- (g) Copies of the Pesticide Applicator's License and the Pesticide Use Permit must be submitted to the Engineer prior to commencement of pesticide application.
- (h) All persons handling insecticides shall be fully aware of toxicological rules and regulations governing their use.
- (i) The Contractor shall inform the Contract Administrator immediately of any dangerous occurrence.

#### E12.3.13 Winter Preparation

- (a) Rake and assemble leaves after they have been shed by trees. Remove from site.
- (b) Protect trees from rodent damage using fine wire mesh or approved plastic protector beyond snow line or by applying rodent repellent sprays.
- (c) Ensure adequate moisture in root zones of trees material prior to freeze-up.
- (d) Apply anti-desiccant to evergreen trees susceptible to winter desiccation.

#### E12.4 Measurement and Payment

- (a) No measurement will be made for this work. Landscape Maintenance shall be paid at the Contract Lump Sum Price for All Work which price shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the work included in this specification.