

**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>
K1T(1-2)	Kildonan – 1 <sup>st</sup> Tee Expansion
W10T	Windsor - 10 <sup>th</sup> Tee Expansion
W12T	Windsor - 12 <sup>th</sup> Tee Expansion
W15T	Windsor - 15 <sup>th</sup> Tee Expansion
W16T	Windsor - 16 <sup>th</sup> Tee Expansion

#### E2. PROTECTION OF EXISTING TREES

##### E2.1 GENERAL

- E2.1.1 Description
- (a) This specification covers the protection of all 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.

##### E2.2 EXECUTION

- E2.2.1 Preservation
- (a) Existing trees shall be protected and preserved as is.
- E2.2.2 Trunk Protection
- (a) 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).
- E2.2.3 Overhead Branch and Limb Protection

- (a) 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.

#### E2.2.4 Excavation

- (a) 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.

#### E2.2.5 Notification

- (a) The Contract Administrator is to be notified 48 hours in advance of any large equipment to be working in the vicinity of existing trees. The Contractor shall provide adequate personnel on foot to supervise equipment operators in the vicinity of the trees to ensure that no damage occurs.
- (b) Special care is required during excavation to ensure existing tree root structure is not damaged. Should root pruning be required the Contractor must ensure proper root pruning techniques are employed by a licensed arbourist.

#### E2.3 METHOD OF MEASUREMENT

- (a) No measurement will be made for protection of existing trees.

#### E2.4 BASIS FOR PAYMENT

- (a) No separate payment will be made for protection of existing trees.

### **E3. SITE PREPARATION**

#### E3.1 GENERAL

##### E3.1.1 Description

- (a) This Specification shall cover all aspects of the Site Preparation, Removals and Relocation Work as described by Drawings, including, but not limited to the following:
  - (i) equipment mobilization and demobilization
  - (ii) erection and maintenance of safety fence
  - (iii) removal and disposal of asphalt paving
  - (iv) construction access

#### E3.2 EXECUTION

##### E3.2.1 Mobilization and Demobilization

- (a) The mobilization and demobilization of all equipment necessary to complete the Work is covered under this specification.

##### E3.2.2 Site Access

- (a) 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.
- (b) Care shall be taken to prevent damage to existing trees, 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.

### E3.2.3 Removals and Salvage

- (a) The Contractor shall load and haul all removed materials away from the Site, and dispose of these materials at dumps located by the Contractor and approved by the Contract Administrator. All removed material shall be disposed off site immediately upon collection.

### E3.3 METHOD OF MEASUREMENT

- (a) 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.

### E3.4 BASIS FOR PAYMENT

- (a) Site preparation will be paid for at the Contract Lump Sum 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. EARTHWORK AND GRADING

### E4.1 GENERAL

#### E4.1.1 Description

- (a) This specification shall cover all Work associated with general Earthwork and Grading as described by Drawings. 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.

### E4.2 EXECUTION

#### E4.2.1 General

- (a) The Contractor shall grade to the levels and contours allowing for surface treatment as shown on 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.
- (b) All fill shall be clean fill.

#### E4.2.2 Compaction

- (a) Compact fill and undisturbed areas to Standard Proctor Density to ASTM D698-78 as follows:
  - (i) Landscaped Areas - 85%
  - (ii) Paved Areas - 95%

#### E4.2.3 Approvals

- (a) The Contractor shall stake grades and receive approval from the Contract Administrator prior to any construction.
- (b) The Contract Administrator shall approve grading prior to installation of topsoil and/or surfacing materials.

#### E4.3 METHODS OF MEASUREMENT

- E4.3.1 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.

#### E4.4 BASIS OF PAYMENT

- E4.4.1 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

### E5. TEE COMPLEXES

#### E5.1 GENERAL

##### E5.1.1 Description

- (a) This specification shall cover all Work associated with the construction of new and renovation of existing tee complexes as shown on the Drawings. 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.

#### E5.2 MATERIALS

##### E5.2.1 Fill

- (a) All fill shall be clean fill and in accordance with CW3170-R3

##### E5.2.2 Tee Surfaces

- (a) Tee sod shall be '4-Variety Dwarf Bluegrass sod as supplied by Lach Sod Farms.

##### E5.2.3 Tee Mix

- (a) Tee mix shall be as described on the drawings.

##### E5.2.4 General Areas

- (a) Sod for general areas, i.e. not teeing surfaces, shall be supplied as per CW3510-R5.

##### E5.2.5 Topsoil

- (a) Topsoil shall be supplied as per CW3540.

#### E5.3 EXECUTION

##### E5.3.1 General

- (a) Rough grading shall be constructed in accordance with CW3170-R3 Earthwork and Grading and as shown on the drawings.
- (b) Fine grading and tee mix installation shall be installed as per CW3540.
- (c) Tee Sod and sod for general areas shall be installed as per CW3510-R5.

#### E5.4 METHODS OF MEASUREMENT

E5.4.1 Tee Complexes 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.

#### E5.5 BASIS OF PAYMENT

E5.5.1 Payment for Tee Complexes 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 excavation and material supply, including fill, topsoil and tee mix, and sod and all other items incidental to the Work included in this specification.

Items of Work:

- (i) New Tee Construction
- (ii) Tee Renovation

### E6. ASPHALT PATHWAYS

#### E6.1 Description

- (a) This Specification shall cover the supply and installation of new asphaltic concrete paving, base course and geotextile fabric 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 CW 3110-R5 'Sub-grade, Sub-base, and Base Course Construction' and CW 3410-R5 'Asphaltic Concrete Pavement Works'.

#### MATERIALS

#### E6.2 General

- (a) All materials shall conform to CW 3110-R5 and CW 3410-R5 and this Specification. Where the two do not agree, this Specification shall take precedence. All materials supplied under this specification shall be of a type approved by the Contract Administrator, and shall be subject to inspection and testing by the Contract Administrator.

#### E6.3 Asphaltic Concrete Pavement

- (a) Asphaltic Concrete Pavement Installation shall conform to CW 3410-R5 'Asphaltic Concrete Pavement Works' and as specified for Type I paved surface.

#### E6.4 Granular Base Course

- (a) Granular base course for asphalt pathway and sidewalk shall conform to CW 3110-R5 'Sub-grade, Sub-base, and Base Course Construction' for crushed limestone base course material.

#### E6.5 Geotextile Fabric

- (a) Geotextile shall be in accordance with CW 3710-R3 'Products Approved for Use in Surface Works'.

#### CONSTRUCTION METHOD

#### E6.6 General

E6.6.1 Construction method shall conform to Specification CW 3110-R5 'Sub-grade, Sub-base, and Base Course Construction' and CW 3410-R5 'Asphaltic Concrete Pavement Works'. Installation shall be for asphalt park pathway and for asphalt sidewalks.

E6.7 Sub-Grade

E6.7.1 Prepare compacted sub-grade to the lines and grades as shown on the drawings. Contract Administrator is to review sub-grade preparation prior to placement of granular base.

E6.8 Geotextile Fabric

E6.8.1 Geotextile fabric shall be installed on top of a compacted subgrade along the length and width of the asphalt path and sidewalk prior to installation of granular base.

E6.8.2 Fabric shall extend to full width of granular base course. Pin in place every 750mm O.C.

E6.8.3 Where joining fabric pieces is required overlap seam 300mm minimum.

E6.9 Granular Base

E6.9.1 Place granular base material to the lines and grades as shown on the drawings. Extend base minimum 300mm beyond width of asphalt overlay. Compact material to a minimum of 95 percent Standard Proctor Density.

E6.10 Asphaltic Concrete Paving

E6.10.1 Construction method shall conform to Specification CW 'Asphaltic Concrete Pavement Works'. The surface upon which new asphaltic concrete paving mix is to be placed shall be approved by the Contract Administrator prior to paving operations.

**METHOD OF MEASUREMENT**

E6.11 The supplying and placing of Asphalt Pathway will be measured on an area basis. The area to be paid for shall be the total number of square metres of asphalt pathway installed in accordance with this Specification, accepted by the Contract Administrator, as measured in the field.

**BASIS OF PAYMENT**

E6.12 The supplying and installation of Asphalt Pathway 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) Asphalt Pathway

**E7. GRANULAR SURFACING**

E7.1 General / Description

- (a) This Specification shall cover crushed limestone surfacing for new granular cart paths.
- (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.

## E7.2 Material

### E7.2.1 Limestone Dust Topping

- (a) Limestone dust topping shall be supplied in accordance with the requirements of Specification CW 3150-R3, and shall meet the following gradation:

Sieve	Percent Passing
9.5 mm	100
4.75 mm	50 – 100
1.18 mm	20 – 55
0.30 mm	10 – 30
0.075 mm	0 – 12

### E7.2.2 Granular Base

- (a) Granular Base shall be supplied in accordance with the requirements of Specification CW 3110-R5 for 50 mm down crushed limestone.

## E7.3 Construction Methods

### E7.3.1 Subgrade Preparation

- (a) The subgrade preparation shall conform to the levels required for the installation of granular base, and in accordance with CW 3110-R5. Minor grading will be required to accommodate the pathway. All grades for path subgrade are to be approved by contract administrator prior to the installation of the base course.

### E7.3.2 Granular Base

- (a) Granular base shall be installed in accordance with Specification CW 3110-R5 and to the minimum thickness indicated on the Drawings. Each layer shall be compacted to 100% Standard Procter Density. The granular base shall be shaped and rolled alternately to obtain a smooth, even and uniformly compacted base. Base shall be graded to reflect finished grade elevations. Water shall be applied as necessary to obtain compaction. If the granular base is excessively moist, it shall be aerated by scarifying with suitable equipment until the moisture content is corrected. Approved mechanical tampers shall be used to compact the granular base in areas not accessible to rolling equipment. The top of the granular base shall be within 10 mm of the required finished base course grade.

### E7.3.3 Limestone Topping

- (a) Limestone dust shall be installed to compacted thickness as shown on the drawings. The limestone dust topping shall be compacted to 100% of the Standard Procter Density. Keep topping material moist throughout compaction procedures.



#### E7.3.4 Quality Control

- (a) All workmanship and all materials furnished and supplied under this Specification are subject to close and systematic inspection and testing by the Contract Administrator including all operations from the selection and production of materials through to final acceptance of the work. The Contractor shall be wholly responsible for the control of all operations incidental thereto notwithstanding any inspection or approval that may have been previously given. The Contract Administrator reserves the right to reject any materials or works which are not in accordance with the requirements of the Specification.

#### E7.4 Method of Measurement

- (a) Granular Surfacing 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.

#### E7.5 Basis of Payment

- (a) Granular Surfacing 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) Granular Cart Path

### **E8. PLANTING BED PREPARATION**

#### E8.1 GENERAL

##### E8.1.1 Work Included

- (a) This specification shall cover planting bed preparation as described by Drawings. 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.

#### E8.2 PRODUCTS

##### E8.2.1 Materials

###### (a) Planting Soil

- (i) 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. Topsoil 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.

###### (b) Tree Mulch

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

- (c) Water
  - (i) Water shall be potable and free of minerals which may be detrimental to plant growth.
- (d) Fertilizer
  - (i) Fertilizer shall be complete synthetic slow release fertilizer with maximum 35% water-soluble nitrogen.

### E8.3 EXECUTION

#### E8.3.1 General

- (a) Contractor shall visit the site and verify all data and dimensions and report any errors, omissions or discrepancies to the Contract Administrator prior to any installation.

#### E8.3.2 Planting Bed Preparation

- (a) Contractor shall co-ordinate site excavation works with landscaping to ensure minimal additional excavation for shrub beds, required by Landscaper. All remaining areas to be excavated shall be to the shape shown on the drawings. Beds shall be excavated to the finished depth (including bark mulch) shown on Drawings.
- (b) Excavation shall be filled with soil mixture. After filling, excavation of top of bed shall be level with surrounding grade. Soil should be lightly compacted and indicated soil depths shall be 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 proceed until the layout has been inspected and approved by the Contract Administrator. Excavation shall not be undertaken until all underground utilities have been located and protected.
- (d) The contractor shall provide a planting bed with a crisp spade edge (where appropriate) around the existing shrubs and tree, topsoil and bark mulch as indicated on Drawings.

#### E8.3.3 Installation of Mulch

- (a) Bark mulch shall be spread to a consistent depth over entire planting bed area, taking care not to damage the plants.

### E8.4 METHOD OF MEASUREMENT

- (a) Planting Bed Preparation 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.

### E8.5 BASIS OF PAYMENT

- (a) Payment for Planting 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, including fill, and all other items incidental to the work included in this specification.

#### Items of Work:

- (i) Planting Bed Preparation

## E9. PLANTING – TREES, SHRUBS AND PERENNIALS

### E9.1 GENERAL

- (a) This specification shall cover the supply and installation of trees, shrubs and perennials. 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 August 15th of any given year.

E9.1.1 Source Quality Control

- (a) All new 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.

E9.1.2 Warranty and Maintenance

- (a) The Contractor shall guarantee planting of new plant material 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 one (1) 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.
- (d) The Contractor shall be responsible for the maintenance of salvaged plant material for the duration of the contract.

E9.1.3 Replacements

- (a) During the Warranty Period, the Contractor shall remove from Site any new 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) New plants found to be defective 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 and Warranty until tree is acceptable.

E9.2 PRODUCTS

E9.2.1 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.
- (g) **Weed barrier** shall be Nilex product DeWitt Pro5 weed barrier or approved equal. The fabric shall be supplied to the site in widths no less than 1.8 metres and free of defects.

#### E9.2.2 Plant Material - New

- (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.

**E9.2.3 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
<b>PART A - CLIFTON COMMUNITY CENTRE</b>		
<b>SHRUBS</b>		
	Meyer Lilac / <i>Syringa meyeri</i>	600mm height, 7 major basal stems, dense bushy plants, container.
	Froebel Spirea / <i>Spirea x bumalda 'Frobeli'</i>	450mm height, 5 major basal stems, dense bushy plant, container.
	Calgary Carpet Juniper / <i>Juniperus sabina 'Calgary Carpet'</i>	600mm spread all directions, full and bushy plants, container
<b>PERENNIALS</b>		
	Daylily 'Stella d'Oro' / <i>Hemerocallis 'Stella d'Oro'</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.

**E9.2.4 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.

### E9.3 EXECUTION

#### E9.3.1 General

- (a) Contractor shall visit the site and verify all data and dimensions and report any errors, omissions or discrepancies to the Contract Administrator prior to any installation.

#### E9.3.2 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.

#### E9.3.3 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.

#### E9.3.4 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.

#### E9.3.5 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.

#### E9.3.6 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 and salvaged material 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.

#### E9.3.7 Weed Barrier Installation

- (a) The weed barrier shall be installed in tree pit, under Play Stone Playsurface as described by Drawings and in accordance with the manufacturer's recommended procedure. The weed barrier shall be laid smooth and free of tension, stress, folds, wrinkles or creases.
- (b) Joints in the weed barrier shall be overlapped not less than 0.5 metres.
- (c) Securing pins with washers shall be inserted through the fabric at intervals not greater than 1.5 metres along a line 100 mm from both the lowest and highest exterior edge of the weed barrier.
- (d) Additional pins shall be installed as necessary, regardless of location, to prevent any slippage of the fabric.
- (e) The supply and installation of the securing pins shall be incidental to the cost of the weed barrier.

#### E9.3.8 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.

#### E9.3.9 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.

#### E9.3.10 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.

#### E9.3.11 Staking

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

### E9.4 METHODS OF MEASUREMENT

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

### E9.5 BASIS OF PAYMENT

- (a) Payment for Trees, Shrubs and Perennials shall be paid for at the contract unit price for the "Items of Work" listed below. New material 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) Meyer Lilac
- (ii) Frobel Spirea
- (iii) Daylily 'Stella d'Oro'
- (iv) Calgary Carpet Juniper

## E10. TIMBER WORK

### E10.1 GENERAL

#### E10.1.1 Description

- (a) This specification shall cover all the supply and installation of heavy timber stairs for the Kildonan 1<sup>st</sup> tee. 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.



## E10.2 MATERIALS AND EXECUTION

### E10.2.1 General

- (a) All materials shall be supplied and installed as per the drawings. Installations shall be set true, plumb and anchored as shown.

## E10.3 METHOD OF MEASUREMENT

- (a) Timber work 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.

## E10.4 BASIS FOR PAYMENT

- (a) Timber work will be paid for at the Contract Lump Sum 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) Timber Steps