

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:

<u>Drawing No.</u>	<u>Drawing</u>
L-1	Site Plans
L-2	Existing Site Photos

E2. LAYOUT OF WORK

- E2.1 The Contractor shall set control lines and bench marks by means of stakes, buoys or marks and the Contractor shall make the completed works conform to the lines and marks thus indicated. The Contractor shall furnish all other lines and levels required. The Contractor shall be responsible for the careful preservation of all stakes and marks. Care must be taken that the Contract Administrator be notified immediately of the disturbance of any such stakes or marks; the cost of correcting any errors arising out of neglect of the Contractor or his agent or his employees, to so notify the Contract Administrator shall be borne entirely by the Contractor, as well as the cost of replacing any disturbed stakes or marks.
- E2.2 All layout Work shall be inspected and approved by the Contract Administrator prior to construction.
- E2.3 Before commencing Work the Contractor shall satisfy himself as to the meaning and correctness of all stakes and marks and no claims shall be entertained by the City of Winnipeg on account of any alleged inaccuracies. If any error is suspected in the plans, specifications or the directions of the Contract Administrator, Work shall be discontinued until the errors are rectified, but no claims shall be made on account of any delay occasioned thereby.
- E2.4 All proposed tree planting locations shall be staked with minimum 610mm height vertical markers, and be approved by the Contract Administrator prior to excavating the tree pit.
- E2.5 The Contractor shall locate and protect all underground utilities prior to commencing construction.

E3. EXISTING SURVEY INFORMATION

- E3.1 The Site plan is based on drawing data supplied by the City of Winnipeg and additional field data added to the drawings by Ken Rech Landscape Architects.
- E3.2 Survey grade elevations have not been provided due to the snow cover, and fact the walkway/culvert will be field located, and the grades vary throughout the proposed locations.

The culvert sizing and amount of soil/gravel cover, allow for the anticipated grade change in all areas.

E4. SITE ACCESS

E4.1 Access to the Work areas shall be off of Park Place West.

E5. DEMOLITION AND SALVAGE

E5.1 In general terms the only demolition that will be required is the excavation of individual tree pits, excavation for the granular walkways, and removal of a small portion of existing gravel paving.

E5.2 The cost for all demolition, and salvage and reinstallation Work is to be included in the unit price form, of the most applicable Work area, or description. No separate payment will be made for this Work.

E6. SITE RESTORATION

E6.1 Total Performance of the Work shall not be attained until the Contractor has cleaned up the Site and has removed all plant, tools, equipment, waste, debris and surplus foundation earth to the satisfaction of the Contract Administrator. Unless otherwise specified, the Contractor shall restore all areas of the Site beyond the established limit of Work, which have been disturbed by the Contractor's operations to as good as or better than the original condition to the satisfaction of the Contract Administrator. The Contractor shall pay all costs associated with this Work.

E7. CRUSHED LIMESTONE PAVING

E7.1 This Specification shall amend and supplement City Specification CW 3110-R6. The Work to be done by the Contractor under this Specification shall cover all phases of supply and placement of crushed limestone surfacing materials necessary to install gravel paved walkways as shown on drawing L-1.

E7.2 New walkway paving shall consist of a 125 mm subbase depth of 39 mm diameter crushed limestone down, a 50 mm base depth of 19 mm diameter crushed limestone down, with a 25 mm capping depth of 6 mm diameter limestone dust.

E7.3 Install material to the depth and design elevations indicated on the Construction Drawings. Install only on clean unfrozen surface, properly shaped and compacted. Place the material using methods which do not lead to segregation or degradation of aggregate.

E7.4 The finished surface is to be within plus or minus 10 mm of established grade and cross section, but not uniformly high or low. Any surface irregularities shall be corrected by loosening and adding or removing material until surface is within specified tolerance.

E7.5 Where the crushed limestone walk crosses over the new culverts, the walkway will have to be gently sloped and raised over a 15 metre distance on both sides of the culvert, which will result in a greater amount of fill or base being provided closest to the culvert. The side walkway embankment slopes which will be sodded, shall not exceed 4:1 slope.

E7.6 The cost for the supply and installation of Crushed Limestone paving will be paid for on a per square metre basis, and shall include all costs for the walkway excavation, granular paving, associated sodding repairs, and the thirty day sod maintenance period.

E8. CORRUGATED STEEL PIPE CULVERTS

- E8.1 Corrugated steel pipe culverts shall be installed in accordance with CW 3610-R3 Specification for Installation of Culverts.
- E8.2 Culverts shall be corrugated steel pipe, diameter and length shown on drawing detail 1 L1.
- E8.3 Install culvert in location where the existing grade is the lowest, and in the direction of drainage. Invert of culvert to be 100 mm below existing grade elevations.
- E8.4 Backfill with sand at the underside of the culvert, and compacted clay for the remainder of backfill. Use compacted clay fill to build up walkway approaches to and over culvert.
- E8.5 Cost for culverts will be paid for on a per unit basis, as shown in the unit price forms.

E9. WOOD BOLLARDS AND CHAIN

- E9.1 This specification covers the relocation of one existing wood bollard, and the supply and installation of chain across the vehicle access to Site, located by the existing concrete paved entrance at the east end of the Site.
- E9.2 Materials
- (a) Chain shall be 6mm diameter galvanized.
 - (b) Granular backfill shall be 6 mm diameter crushed limestone
- E9.3 The Contractor shall sawcut the existing concrete paving where the posts will be installed, maximum 400 mm square opening, and patch all concrete upon the post installation with a 100 mm depth of concrete to the City of Winnipeg Standards..
- E9.4 Install post in 300 mm diameter holes backfilled with compacted limestone. Posts may be installed by sharpening the bottom end to a conical point, and pushing the posts into grade.
- E9.5 Install chain across vehicle opening. Chain to be in two pieces, with one piece being 600 mm length and the other chain being long enough, that when the chains are joined together they sag 300 mm down in the centre. Secure chain to posts by installing in existing holes, $\frac{3}{4}$ the way through the post, and driving a 150 – 200 mm long spike, through the post, and through the chain link, back into the wood post. Choose as long as possible nail, but not so long in protrudes out the other side of the wood post. Consult Contract Administrator if necessary, for Site instructions.
- E9.6 Wood bollards and chain will be paid for on a lump sum basis, as shown in the unit price forms.

E10. TOPSOIL AND FINISH GRADING

- E10.1 This specification shall amend CW 3540-R2 Specification for Topsoil and Finish Grading for Establishment of Turf Areas.
- E10.2 The cost for supply and installation of topsoil is to be included in the unit price cost for Crushed Limestone Paving. No separate payment will be made for topsoil and finish grading.

E11. SODDING

- E11.1 This specification shall amend CW 3510-R6.
- E11.2 Where the crushed limestone walk crosses over the two culverts, the walkway will have to be gently sloped and raised over a 15 metre distance on both sides of the culvert, which will result

in a greater area of sodding on the side embankments of the walkway slope. The Contractor shall allow a total of 300 square metres of new sodding at the culvert areas, for these repairs. The Contractor is responsible for determining all other quantities of sod required, as a result of the new granular walk installation.

E11.3 The cost for supply and installation of sod, and the thirty day maintenance period, is to be included in the unit cost for Crushed Limestone Paving. No separate payment will be made for sodding.

E12. PLANT MATERIAL

E12.1 Description: This specification shall cover the supply and installation of nursery grown trees.

E12.2 Materials

E12.2.1 General

- (a) Trees shall be the size and variety noted on the Plant List on drawing L-1. 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 not names 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 as the tree stands in the nursery.
- (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.

E12.2.2 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.

E12.2.3 Topsoil Backfill Mix

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

E12.2.4 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.

E12.2.5 Tree Rings

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

E12.2.6 Anti-Desiccant

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

E12.2.7 Wound Dressing

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

E12.2.8 Wood Chip Mulch

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

E12.3 Construction Methods

E12.3.1 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 diameter shall be 1530 mm (5'). The excavated tree pits shall be refilled with backfill mix (E13.2.3). Hand dig pits where required to protect underground utilities.

E12.3.2 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.

E12.3.3 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.

E12.3.4 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.

E12.4 Maintenance and Guarantee of Nursery Stock

- (a) The Contractor shall provide all watering, weeding, tightening and repairing tree stakes and rings, removal of dead material and all repairing tree stakes and rings, removal of dead material and all other maintenance operations required for two years after the date of the Certificate of Total Performance. See E14 for additional information.
- (b) 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 the Certificate of Total Performance, 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.
- (c) Exempted is nursery stock damaged by accidental causes or vandalism, which stock shall be replaced at the cost of the Owner.
- (d) 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.

E12.5 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 and installed in accordance with the Specification and accepted by the Contract Administration.

E12.6 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, two year maintenance, and all other items incidental to the Work included in this Specification.

- (b) Twenty five (25) % of the value of all plant material, as itemized on the unit price forms, shall be held back to pay for the two year maintenance period. See E14.18 and D17.1 for payment during two year maintenance period.
- (c) Seventy five (75) % of the value of all plant material, as itemized on the unit price forms, will be paid for when the plant material complies with the supply and installation sections of the specification requirements.

E13. TREE MAINTENANCE SCHEDULE

E13.1 Description: This specification shall cover the landscape maintenance requirements for all trees and associated tree pits.

E13.2 Related Work: Plant material and tree pits are specified elsewhere in this Specification and form an integral part to all Work described herein.

E13.3 Maintenance Period: Undertake maintenance from the date of installation for a period of two years past the date of Total Performance.

E13.4 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

E13.5 Protection

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

E13.6 Materials

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

E13.7 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

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.

E13.8 Fertilizing

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

E13.9 Watering

(a) The Contractor shall acquire and pay for all water from off site sources.

(b) 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.

(c) 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.

(d) Apply 40 litres of water per 25mm caliper, 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.

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

(f) The Contractor shall maintain all sodded areas for 30 days from the Contract completion.

E13.10 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.

E13.11 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.

E13.12 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.

E13.13 Mulching

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

E13.14 Tree Supports and Tie Adjustments

- (a) Maintain tree supports and ties in proper repair.
- (b) Remove supports and ties as directed by Contract Administrator.
- (c) Straighten any tree which is leaning.

E13.15 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.

E13.16 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 Department, within one week of the maintenance being provided.

E13.17 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.

E13.18 Cost of Two Year Maintenance Period

- (a) The cost for the Two Year Plant Maintenance Period will be twenty-five (25) % of the total cost of all the trees and shrubs, as shown in Form B: Prices, items six (6) to eleven (11) inclusive. The remaining seventy five (75) % value will be paid on a per unit basis, for each plant properly installed, and which plant complies with the specification requirements.
- (b) Where the plant material has been replaced and is covered under the extended warranty period, a proportional amount of holdback will be further maintained, until the plant has survived for a full two years and is accepted.

E13.19 Payment of Two Year Maintenance Period

- (a) The basis of payment cost, will be based on a pro rated basis, based on each full month of maintenance, and the respective proportion of the total twelve (12) months. Progress payments will be made once a year at the end of each growing season.

E14. INTERLOCKING PAVING

- E14.1** Interlocking paving shall be installed in accordance with CW 3330-R3 Specification for Installation of Interlocking Paving Stones.

- E14.2 Type, size, colours and paving pattern are shown in the Detail 5 – L1. All paving stones shall be as manufactured by Barkman Concrete.
- E14.3 Edging for paving shall be “Snap Edge”.
- E14.4 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.
- E14.5 Contractor shall remove existing granular paved walkway. Salvage gravel which is clean and suitable for reuse. Dispose of unsuitable material off site.
- E14.6 Contractor to repair all sod damage as a result of interlocking paving installation. Cost for sodding repairs is to be included in interlocking paving lump sum cost.
- E14.7 Cost for interlocking paving will be paid on a lump sum basis and as identified in the unit price forms. The lump sum cost shall include all costs for excavation, granular base and paving stone installation, edging, sodding repairs, and thirty day sod maintenance.

E15. INSTALLATION OF SITE FURNISHINGS

- E15.1 This specification will cover the installation only of Site furnishings, including the supply and installation of granular paved areas under the Site furnishings.
- E15.2 The following Site furnishings are to be picked up at the City of Winnipeg storage yard. The Contractor shall contact MR. TERRY SANDERSON, 986-5505 to arrange pick-up.
 - (a) Two (2) Tache Benches – SCD 120
 - (b) Two (2) Picnic Tables c/w Duckbill Anchors – SCD 103
- E15.3 Site furnishings shall be installed in accordance with the applicable SCD drawings.
- E15.4 Install new benches in concrete filled holes, 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. Supply and install 100 mm depth of 19 mm diameter crushed limestone down paving under each bench to a 1metre by 3 metre shape. Cost for granular paving to be included in cost of each bench.
- E15.5 Picnic tables are to be installed on a 3 metre by 3 metre granular base, as per bench specification. Anchor picnic table to grade with duck bill anchors.
- E15.6 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 granular base.