

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	Portage Avenue Poles and Paving
L2	Existing Conditions - Intersections
L3	Proposed Ornamental Poles - Intersections
L4	Transit Loop Park – Existing Conditions/Removals
L5	Transit Loop Park – Layout
L6	Transit Loop Park – Planting/Paving
L7	Transit Loop Park – Grading Plan
L8	Transit Loop Park – Details
ValourRd-32	32 Foot Dodecagonal Banner Pole
ValourRd-15	15 Foot Octagonal Banner Pole
Broadway	Broadway Decorative Casting
MPA-C	Screw Base Anchor

E2. ACCESS TO SITE AND DAMAGE TO EXISTING STRUCTURES AND PROPERTY

- E2.1 Access to the Sites as required by the Contractor shall be provided and maintained by the Contractor at his own expense and approved by the Contract Administrator.
- E2.2 All necessary precautions shall be exercised by the Contractor so as not to remove, disturb, or damage any existing trees, shrubs, sod, pavements, streets, roads, boulevards, poles, hydrants, water pipes, gas pipes, electrical wires, cables, conduits, sewers or other existing facilities and equipment at the Site of the Work. For all damage incurred thereto in the performance of the Work, the Contractor shall upon instructions from and to the satisfaction of the City thereof, either replace and repair such damage, whichever may be deemed necessary in the opinion of, and acceptable to, the City thereof and the cost of which shall be borne entirely by the Contractor. The Contractor shall also indemnify and save harmless the City and David Wagner Associates Inc. from all claims made directly or indirectly against them in respect to any such damage.
- E2.3 The Contractor's operations shall be limited to the minimum area necessary for undertaking the Work and he shall be responsible for all damage resulting from his work on private property. The Contractor shall take such measures as are necessary to ensure safe and convenient pedestrian ingress and egress is maintained to private properties while he is working near them. Any damage caused by the negligence of the Contractor or his Sub-Contractors to the adjacent works or properties, shall be promptly repaired by him at his own expense, to the satisfaction of the Contract Administrator.

E2.4 Care shall be taken to protect existing trees and their root systems from damage, compaction, and contamination resulting from construction to the satisfaction of the Contract Administrator. No heavy equipment shall be driven or parked on the area within the drip line of any trees.

E3. PROTECTION OF SURVEY INFRASTRUCTURE

E3.1 Refer to CW 1130-R1, Site Requirements, Clause 3.14. Contractors must ensure their Sub-contractors are aware of this clearance procedure and potential restoration costs.

E4. SCHEDULING OF WORK

E4.1 Work on the Valour/Sargent Transit Loop Park must be completed in a timely fashion in order that disruption to the Transit operations on the Site are minimized. Scheduling of work shall be to the satisfaction of the Contract Administrator and Winnipeg Transit.

E4.2 The Contract Administrator is to be given sufficient notification of the commencement of Work so that Winnipeg Transit may remove the existing bus shelter.

E5. REMOVALS

E5.1 General Description

(a) This specification shall cover the removal of concrete approaches, concrete paving and the existing asphalt transit loop as specified on the Drawings.

E5.2 Location and Itemization of Work

(a) Valour Road at Portage Avenue

(i) Removal of concrete sidewalks and bus stop areas as shown on Drawing L1.

(b) Valour/Sargent Transit Loop Park

(i) Removal of concrete approaches, sidewalks and curbs as shown on Drawing L4.

(ii) Removal of asphalt paving from the existing transit loop.

E5.3 Execution

(a) As per CW 3110-R7.

E5.4 Basis of Payment

(a) Payment for Work specified under this section shall be paid for at the Unit Price, measured on a square metre basis, for the Items of Work listed below, which price shall include all costs of excavation, removal, and disposal.

(b) Items of Work:

(i) Removal of Concrete

(ii) Removal of Asphalt Transit Loop

E6. CONCRETE WORK

E6.1 General Description

(a) Further to CW 3110-R7, CW 3310-R8 and CW 3325-R2, this specification shall cover the supply and installation of concrete curbs, sidewalks, approaches, concrete paving and patterned / stamped concrete paving as shown on the Drawings.

E6.2 Location and Itemization of Work

(a) Valour Road at Portage Avenue

- (i) Patterned/stamped concrete sidewalks.
- (b) Valour/Sargent Transit Loop Park
 - (i) Concrete approaches c/w curbs for the new transit loop.
 - (ii) Concrete paving for the new transit loop.
 - (iii) Concrete sidewalks c/w curbs on boulevard areas.
 - (iv) Patterned/stamped concrete paving in park.
 - (v) Edge curbs around planting beds.
 - (vi) Bases for Tyndall stone blocks.

E6.3 Materials and Methods for Standard Concrete Work

- (a) All work to be to CW 3110-R7, CW 3310-R8 and CW 3325-R2 and as shown on the Drawings.
- (b) Approaches are to be commercial approaches as shown on SD-232 with 150mm depth of concrete paving on 75mm depth of compacted granular base. Curb ramps are to SD-229B.
- (c) Sidewalks are to be to standard City requirements with 100mm depth of concrete paving on 50mm depth of compacted granular base.
- (d) Concrete paving for the new transit loop is to be 150mm depth of concrete paving on 75mm depth of compacted granular base. New paving is to tie into and match the existing backlane paving.
- (e) Concrete reinforcement is to be to SD-216 and 217.
- (f) The Contractor is to determine the new Site grades prior to construction, to the satisfaction of the Contract Administrator, to ensure positive Site drainage.
- (g) Sawcut control joints to be approved by Contract Administrator prior to implementation.
- (h) Concrete bases for the Tyndall blocks shall be constructed as shown on the Drawing L8 and coordinated with that Work.

E6.4 Materials and Methods for Patterned/Stamped Concrete Work

- (a) All cement shall be Type 10, Normal Portland Cement.
- (b) The concrete mix shall have the required strength and workability
 - (i) Minimum Specified Compressive Strength @ 28 days = 32 MPA.
 - (ii) Minimum Cementitious Content = 340 kg/m³
 - (iii) Minimum Water / Cementitious Ratio = 0.45
 - (iv) Slump = 70 +/- 20mm
 - (v) Aggregate Size = 20mm Nominal
 - (vi) Air Content = 5.0% to 8.0%
- (c) Granular base CW 3110-R7.
- (d) Install 125mm thick concrete paving on 75mm depth of compacted granular base.
- (e) Reinforce concrete with 10m r-bars at 600mm O.C. both ways, minimum 50mm coverage.
- (f) Sawcut control joints to be approved by Contract Administrator prior to implementation.
- (g) Patterned / Stamped Concrete Paving
 - (i) Concrete colour shall be "Cobblestone" colour with a charcoal release. Colour to be finalized at a later date. Colour shall be integral throughout paving.
 - (ii) Pattern shall be StampMaster "London Cobblestone #2" TB-2 or approved alternative.

- (iii) Contractor is to supply a colour and pattern concrete sample, one square metre in size, to the satisfaction of the Contract Administrator, prior to installation.
- (iv) Sealer shall be Type 1, non-yellowing, solvent based c/w 25% solids. Provide two (2) coats of sealer. The first coat after installation and power washing. The second coat at 28 days after curing of the concrete. Power wash prior to applying the second coat.
- (v) Installation shall be by a qualified applicator with a minimum of 5 years experience. Three references must be supplied within three (3) Working Days upon request of the Contract Administrator.

E6.5 Materials and Methods for Edge Curb

- (a) All work to be to CW 3110-R7 and CW 3310-R8 and as shown on the Drawings.

E6.6 Basis of Payment

- (a) Payment for Work specified under this section shall be paid for at the Unit Price for the Items of Work listed below, which price shall include all costs of supply and installation of granular base, concrete, reinforcing, sealers and control joints. All approaches, sidewalks, and paving shall be measured by the square metre and associated curbs shall be considered incidental to the Work. Edge curbs shall be measured by the lineal metre. Concrete bases for the Tyndall blocks shall be considered incidental to that Work. Site restoration Work shall be considered incidental to the Work.
- (b) Items of Work
 - (i) Concrete Approaches c/w Curbs
 - (ii) Concrete Paving
 - (iii) Concrete Sidewalks c/w Curbs
 - (iv) Patterned/Stamped Concrete Paving
 - (v) Edge Curbs

E7. RETAINING WALLS

E7.1 General Description

- (a) This specification shall cover the supply and installation of retaining walls as shown on the Drawings. Construction of the berms behind the walls shall be considered incidental to this Work.

E7.2 Samples

- (a) The Contractor shall submit samples of the Tyndall blocks for approval of the Contract Administrator prior to ordering of materials.

E7.3 Materials

- (a) Tyndall stone split face blocks, 90mm high x 300mm deep x random lengths.
- (b) Granular
 - (i) Base: 19mm \emptyset down crushed limestone.
- (c) Adhesive
 - (i) Snap Edge, Bond-Loc All Weather Landscape Products Adhesive or approved equal.

E7.4 Method

- (a) Blocks shall be subject to inspection by the Contract Administrator.
- (b) Retaining walls and base shall be installed as per Drawings.

- (c) Subgrade preparation shall conform to levels and compaction required to allow for installation of granular base.
- (d) Base shall be compacted to 95% standard Proctor Density.
- (e) Blocks shall be installed true to grade such that the top of the finished wall is level across its entire length. The wall is to step down in equal increments at the wall ends
- (f) Blocks shall be installed with tight joints. The shape of the block shall be adjusted to fit the curved layout.
- (g) The base course blocks shall be levelled and compacted with a mechanical plate vibrator using a 19mm thick plywood or neoprene pad under the plate. Blocks are to be true to grade and free of movement.
- (h) Vertical joints shall be staggered with overlap of blocks to be no less than 225mm.
- (i) The wall shall be backfilled with compacted clean fill in 150mm lifts.
- (j) The top course shall be fixed down with adhesive after the wall has been constructed to the satisfaction of the Contract Administrator.
- (k) The berms behind the walls shall be constructed from clean compacted fill to the grades shown on the Drawings.

E7.5 Basis of Payment

- (a) Payment for Work specified under this section shall be paid for at the Unit Price, measured on a lineal metre basis, for the Items of Work listed below, which price shall include all costs of material supply including the granular, sub-grade preparation, and proper material installation. Site restoration and berm construction shall be considered incidental to the Work.
- (b) Items of Work
 - (i) Retaining Wall

E8. TYNDALL BLOCKS

E8.1 General Description

- (a) This specification shall cover the supply and installation of Tyndall stone blocks for use of commemorative signs and bases for silhouettes.

E8.2 Materials

- (a) Commemorative Sign Blocks
 - (i) Tyndall stone blocks, natural rough direct from quarry bed, sized as shown on the Drawings, c/w one smooth face cut on a 45° angle.
- (b) Silhouette Base Blocks
 - (i) Tyndall stone blocks, natural rough direct from quarry bed, 450mm high x 750mm deep x 910mm lengths.
 - (ii) Dowels: 18mm Ø steel dowels.

E8.3 Method

- (a) Blocks shall be subject to inspection by the Contract Administrator prior to installation.
- (b) Blocks are to be installed as shown on the Drawings.
- (c) Silhouette base blocks are to be installed in conjunction with the installation of the silhouettes. There are three (3) blocks for each silhouette. Blocks are to be secured in place with dowels and epoxy.

E8.4 Basis of Payment

- (a) Payment for Work specified under this section shall be paid for at the Unit Price, measured on a per unit basis, for the Items of Work listed below, which price shall include all costs of material supply and proper material installation.
- (b) Items of Work
 - (i) Commemorative Sign Blocks
 - (ii) Silhouette Base Blocks

E9. TOPSOIL AND FINISH GRADING

E9.1 General Description

- (a) Further to CW 3540-R2, this specification shall cover the supply and installation of topsoil for sodding, planting and shrub beds.

E9.2 Materials

- (a) Manufactured Topsoil Mix
 - (i) Sodding and Planting Beds: Three-way Mix, 1/3-1/3-1/3 (sand/peatmoss/topsoil).
- (b) Sand: washed, medium to coarse textured.
- (c) Peatmoss:
 - (i) Derived from partially decomposed Sphagnum Moss.
 - (ii) Elastic and homogeneous, brown in colour.
 - (iii) Free of wood and deleterious material which could prohibit growth.
 - (iv) Shredded particle minimum size: 5mm.
- (d) Topsoil: As per CW 3540-R2.
- (e) Fertilizer: Industry accepted standard medium containing nitrogen, phosphorous, potassium and any other micro-nutrients suitable to the specific application and as determined by chemical analysis of the manufactured topsoil mix.

E9.3 Source Quality Control

- (a) The Contractor is responsible for amendments to supply topsoil as specified.
- (b) Testing of the manufactured topsoil mix will be carried out by a testing laboratory designated by the Contract Administrator. Testing shall be for pH, P and K, and for organic matter. Sampling, testing and analysis shall be in accordance with provincial standards.

E9.4 Methods

- (a) The manufactured topsoil mix shall be installed as per CW3540-R2.
- (b) Place manufactured topsoil mix to the following depths after settlement:
 - (i) Sodded areas: 100mm except for as noted below.
 - (ii) Shrub Beds: 300mm.

E9.5 Basis of Payment

- (a) Payment for Work specified under this section shall be included with the price for sod and plant material except for:
 - (i) Payment for shrub beds shall be paid for at the contract Unit Price measured by square metre for the Items of Work listed below, which price shall include all costs of excavation and removal of materials, material supply and proper material installation.
- (b) Items of Work

(i) Shrub Beds

E10. SODDING

E10.1 General Description

- (a) Further to CW 3510-R7, this specification shall cover the supply and installation of sod.

E10.2 Materials and Method

- (a) Type 1 – Sodding
- (i) As per CW 3510-R7.
 - (ii) Manufactured Topsoil Mix shall be as per E9.

E10.3 Maintenance Period

- (a) The Contractor shall maintain the sod for 60 Calendar Days after the completion of the installation or until such a time as the turf is established in accordance with CW 3510-R7.

E10.4 Basis of Payment

- (a) Payment for Work specified under this section shall be paid for at the Unit Price, measured on a square metre basis, for the Items of Work listed below, which price shall include all costs of material supply, sub-grade preparation, proper material installation, maintenance and all other items incidental to the Work. Payment for Sodding shall be in accordance with the following:
- (i) Seventy-five (75%) following supply and placement.
 - (ii) Twenty-five (25%) following termination of the maintenance period.
- (b) Items of Work
- (i) Sodding

E11. PLANT MATERIAL

E11.1 General Description

- (a) This specification shall cover the supply and installation of trees and shrubs and all materials incidental to their installation.

E11.2 Materials

- (a) Plant Material
- (i) Quality and source is to comply with Canadian Standards for Nursery Stock, Seventh Edition of Canadian Nursery Landscape Association (C.N.L.A.) referring to size and development of plant material and root ball. Measure trees when branches are in their natural position. Height and spread dimensions refer to main body of trees and not from branch top to branch top. Use trees of No. 1 grade. Trees are to have only one, sturdy, reasonably straight and vertical trunk, and a well balanced crown with fully developed leader.
 - (ii) Trees are to be free of disease, insect infestation, rodent damage, sun scald, frost cracks, abrasions, unhealed scars, scars exceeding 5cm in diameter, major forks or crooks in the trunk, broken branches, or angled leaders. Trees having the above defects will not be accepted by the Contract Administrator.
 - (iii) Nursery stock is to be grown in nurseries under proper cultural practices as recommended by the C.N.L.A. Only nursery stock grown for at least the last four (4) years in nurseries located in an Agriculture Canada Plant Hardiness Zone of 2 (a or

b) or 3 (a or b) will be accepted. Nursery stock that has grown in plant hardiness zones 1 and 4 or greater will be rejected.

(iv) Plant Specification List – on Drawings

- (b) Planting soil is to Specification E9.
- (c) Water is to be potable and free of minerals which may be detrimental to plant growth.
- (d) 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.
- (e) Staking shall be as shown on Drawings.
- (f) Mulch shall be clean bark or wood chip mulch with chips not less than 15mm or larger than 75mm in size and not more than 20mm thick. Mulch shall be free of leaves, branches and other extraneous matter..

E11.3 Method

- (a) Trees and shrubs are to be planted according to Drawings.
- (b) The Contractor shall obtain all above and below ground clearances from all utilities. Clearances shall be obtained in a timely manner so as not to jeopardize the schedule of the complete planting operation.
- (c) Coordinate shipping of nursery stock and excavation of holes to ensure minimum time laps between digging and planting. Tie branches of nursery stock securely, and protect plants against abrasion, exposure and extreme temperature change during transit. Avoid binding of plants with rope or wire which would damage bark, break branches or destroy natural shape of plant. Give full support to root ball of nursery stock during lifting. Cover plant foliage with tarpaulin, and protect bare roots by means of dampened straw, peat moss, saw dust or other acceptable material to prevent loss of moisture during transit and storage. Remove broken and damaged roots with sharp pruning shears. Make clean cuts, and cover cuts over 10mm diameter with a tree wound dressing.
- (d) Location of nursery stock will be staked out or painted on Site by the Contractor and approved the Contract Administrator prior to planting.
- (e) The Contractor shall coordinate operations, keeping the site clean and the planting holes drained. The Contractor shall immediately remove soil or debris spilled onto street pavement, grass or sidewalk.
- (f) Installation shall be done during periods of suitable weather conditions and in accordance with locally accepted practice. Trees are to be planted within forty-eight (48) hours of excavation from the nursery. No tree pit is to be left open at the end of the Contractor's Work Day. The planting program is to be planned to ensure that trees delivered to the Site at designated planting locations are installed and thoroughly watered the same day as delivery.
- (g) Loosen bottom of planting hole to depth of 100-150mm. Cover bottom of each excavation with minimum of 150 mm topsoil mixture, incorporate with sub-grade material.
- (h) Plant trees vertically. Orient trees and shrubs to give best appearance in relation to structure, roads and sidewalks. Place nursery stock to depth equal to depth they were originally growing in nursery. With balled and burlapped root balls and root balls in wire baskets, loosen burlap and cut away the top 1/3 without disturbing root ball. Do not pull burlap or rope from under root ball. Non-biodegradable wrapping must be removed. Tamp planting soil around root system in layers of 150mm eliminating air voids. Frozen or saturated planting soil is unacceptable. When 2/3 of planting soil has been placed, fill hole with water. After water has completely penetrated into soil, complete backfilling.
- (i) Each tree is to have an earth saucer at its base having a diameter as large as the excavation with a 10cm lip formed at the perimeter of the saucer to retain water. When

planting is completed, give surface of planting saucer dressing of fertilizer and mix fertilizer thoroughly with top layer of planting soil and water in well.

- (j) Trees are to be staked as per Details.
- (k) Shrub beds shall be in accordance with E9. Shrubs shall be planted as per details.
- (l) Each tree is to have wood chip mulch spread over the earth saucer to 75mm depth. Shrub beds shall have wood chip mulch to a depth of 75mm.

E11.4 Maintenance Period

- (a) Refer to E12.

E11.5 Basis of Payment

- (a) Payment for Work specified under this section shall be paid for at the Unit Price, measured on a per unit basis, for the Items of Work listed below, which price shall include all costs of material supply, and proper material installation. The supply and installation of mulch shall be considered incidental to the Work.
- (b) Items of Work
 - (i) Fallgold Ash
 - (ii) Scots Pine
 - (iii) Cotoneaster
 - (iv) Goldmound Spirea
 - (v) Fairy Queen Spirea

E12. PLANT MATERIAL MAINTENANCE

E12.1 Maintenance Period

- (a) The Contractor shall undertake maintenance of all plant material from the date of installation up to a period of 60 Calendar Days from the date of Certificate of Substantial Performance.
- (b) In general the maintenance shall not commence prior to May 1st and/or terminate after October 30th of each year. In the event of an early spring, whereby 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.
- (c) In the event that plant material requires replacement under the warranty period, the 60 day maintenance period for the replaced material shall commence on the date of replacement.

E12.2 Description of Work

- (a) Irrigate weekly or as required during the growing season following installation by saturating the soil in the root zone area to a depth of 400mm. Water when rainfall is less than 25mm per week for more than three weeks. Irrigate prior freeze-up.
- (b) Apply 2:1:2 soluble fertilizer to root zone of plants in the early spring not later than May 30th. Irrigate to saturate the soil in the root zone area to a depth of 500mm. Apply additional fertilizers as per standard horticultural practice. Apply at manufacturer's specified rates. Retain and submit material purchase records for all pertinent substances.
- (c) Cultivate soil in earth saucer lightly at beginning of growing season and apply mulch to maintain installed depth of mulch. Weed as necessary during the entire growing season.
- (d) Undertake disease and insect control programs as required to control known and serious pests. Obtain approval from Contract Administrator prior to using any pesticide. The use of

chemical pesticides is not permitted on City of Winnipeg properties. Retain and submit material purchase records for all pertinent substances.

- (e) Prune trees during dormant season if possible. Remove dead, diseased, crossing, weak, crowded and unsightly or unshapely branches. Do not head back or shear to control shape.
- (f) Repair all damage to plant material immediately following the discovery of damage and check and re-secure stakes every 2-3 months. Remove all stakes at the end of the maintenance period.
- (g) Record all activities on a daily basis. Submit reports to the Contract Administrator on a monthly basis.

E12.3 Basis of Payment

- (a) The payment of the maintenance shall be incidental to the Plant Material.

E13. SITE FURNITURE

E13.1 General Description

- (a) This specification shall cover the supply and installation of site furniture as specified on the Drawings.

E13.2 Materials and Method

- (a) Benches shall be DuMor, Inc. Site Furnishings, Bench 137-80. They shall be 2.4m (8') in length. They shall have the embedment support option S-1. Colour shall be Bronze. Benches are to be installed according to Drawings and manufacturer's specifications.
- (b) Benches are to be installed before the installation of concrete paving. Tops of concrete footings are to be 200mm below finished grade of all paving. Provide a 12mm thick fibreboard sleeve around the top 200mm of the post frame where it meets the concrete paving. Benches are to be protected during the installation of the concrete paving. Any damaged surfaces shall be touched-up to the approval of the Contract Administrator.

E13.3 Basis of Payment

- (a) Payment for Work specified under this section shall be paid for at the Unit Price, measured on a per unit basis, for the Items of Work listed below, which price shall include all costs of material supply and proper material installation.
- (b) Items of Work:
 - (i) Benches

E14. SILHOUETTES

E14.1 General Description

- (a) This specification shall cover the supply and installation of silhouettes as specified on the Drawings.

E14.2 Materials

- (a) Silhouettes
 - (i) Plate: Single sheet 240 Mpa grade mild steel plate, thickness to be 19mm (3/4").
 - (ii) Base plates: 19mm (3/4") Steel Plates, size 610mm x 300mm, three (3) per silhouette. Bolting holes shall be four (4) per plate and set in 38mm from the corners.
- (b) Finish: DuPont Automotive paint, Chrome Illusion Paint.

- (c) Fasteners as per drawings.
- (d) Base
 - (i) Tyndall stone as per E8.

E14.3 Method

- (a) Silhouettes
 - (i) There are three different silhouettes as shown on the Drawings. The Contractor shall be provided with the required artwork in a TIFF or PDF electronic format.
 - (ii) Silhouettes are to be laser cut from the plate. Edges are to be ground smooth and bevelled.
 - (iii) Silhouettes are to be welded to base plates with 6mm fillet weld entire length both sides.
 - (iv) Work is to be shop primed.
- (b) Finishing
 - (i) Finishing shall be by a qualified automotive paint applicator with a minimum of 5 years experience. Three references must be supplied within three (3) Working Days upon request of the Contract Administrator.
 - (ii) Three stage automotive paint process on top of shop priming.
 - (iii) "Black" base coat prep and prime.
 - (iv) Chrome Illusion paint, colour to be approved by Contract Administrator.
 - (v) Three coats clear finish.
 - (vi) Baked finish.
- (c) Installation
 - (i) After finishing and curing of the finish, the silhouettes shall be wrapped with protective cardboard film or other blanketing material to protect the finished product.
 - (ii) Silhouettes are to be handled with nylon slings or other protective carrying devices as required for safe transportation and installation.
 - (iii) Installation shall be as shown on Drawings. Any damaged surfaces shall be touched-up to the satisfaction of the Contract Administrator.

E14.4 Warranty

- (a) Warranties for paints and finishes shall be to Manufacturer's warranties.

E14.5 Basis of Payment

- (a) Payment for Work specified under this section shall be paid for at the Unit Price, measured on a lump sum basis, for the Items of Work listed below, which price shall include all costs of material supply, finishing and proper material installation.
- (b) Items of Work:
 - (i) Silhouettes

E15. BOLLARDS

E15.1 General Description

- (a) This specification shall cover the supply and installation of wood and concrete bollards as specified on the Drawings.

E15.2 Materials and Method

- (a) Wood Bollards

- (i) Round wood posts, 190-250mm diameter, solid core, air dried, SPF, smooth but not turned, no bark. Top edge to have 50mm chamfer. Bottoms are to be sharpened for installation. ACQ treated after shaping. Treat all cuts with preservative.
 - (ii) Bollards are to be installed by direct burial method at 1.8m O.C. Bollards are to be installed in straight line with each other and as shown on the Drawings. Top of bollards are to be level or as directed by the Contract Administrator.
- (b) Concrete Bollards
- (i) Barkman pre-cast concrete bollards, 355mm round, finish to be natural sandblasted.
 - (ii) Bollards are to be installed as per manufacturer's specifications at 2.1m O.C. Bollards are to be installed in straight line with each other and as shown on the Drawings.
- (c) All bollards are to be set true vertically.

E15.3 Basis of Payment

- (a) Payment for Work specified under this section shall be paid for at the Unit Price, measured on a per unit basis, for the Items of Work listed below, which price shall include all costs of material supply and proper material installation.
- (b) Items of Work:
 - (i) Wood Bollards
 - (ii) Concrete Bollard

E16. ORNAMENTAL POLES

E16.1 General Description

- (a) This specification shall cover the supply and installation of ornamental poles as specified on the Drawings.
- (b) All poles are to receive streetscaping signage to be supplied and installed by others upon completion of this Work.

E16.2 Materials

- (a) Poles
 - (i) Poles shall be dodecagonal and/or octagonal in shape and evenly tapered. Pole and finial details shall be as on Drawings ValourRd-32 for the 9.75m pole and ValourRd-15 for the 5.2m, 4.6m and 4.0m poles.
 - (ii) Poles shall be fabricated from minimum A-570- grade 50 hot rolled steel.
 - (iii) The pole seam shall be smooth and have a minimum penetration of 60%.
 - (iv) Base plate shall be fabricated from steel plate minimum G-40-21-44w.
 - (v) The pole shall be designed to support the load as specified for conditions laid out in the National building Code.
 - (vi) The complete structure shall be finished in hot dipped galvanize as per ASTM 163.
 - (vii) Fabrication shall be carried out by a shop certified by the Canadian Welding Bureau.
- (b) Quantities of each pole height are as noted in the Form B: Prices.
- (c) Base Covers: Refer to Drawing Broadway – Broadway Decorative Casting.
- (d) Finish: Hot apply Protech PS311 NI Semi-gloss Black 7 to 10 mils dry film thickness.
- (e) Galvanized Screw Type Bases
 - (i) Refer to Drawing MPA-C.
 - (ii) Diameter and depth to suite specific poles.

- (iii) Anchor plates and base plates shall meet current City of Winnipeg standards and details.
- (iv) Anchor bolts to be full thread galvanized hex bolts (Grade 5)
- (v) All bolt holes to be drilled and tapped.

E16.3 Method

- (a) Installation of Bases
 - (i) The Contractor is responsible for obtaining all clearances for all underground utilities prior to location of poles.
 - (ii) Pole locations shall be marked out on site and approved by the Contract Administrator prior to construction.
 - (iii) All support bases to be set at such a grade as to allow the pole base cover to sit flush, 360° with finished sidewalk or adjacent surface grade.
 - (iv) Adjacent surfaces shall be restored to pre-construction condition or better. All site restoration Work shall be considered incidental to the Work.
- (b) Installation of Poles
 - (i) After finishing and curing of the finish, the poles shall be wrapped with protective cardboard film or other blanketing material to protect the finished product.
 - (ii) Poles are to be handled with nylon slings or other protective carrying devices as required for safe transportation and installation.
 - (iii) Installation shall be as shown on Drawings. Any damaged surfaces shall be touched-up to the satisfaction of the Contract Administrator.

E16.4 Warranty

- (a) Warranties for paints and finishes shall be to Manufacturer's warranties.

E16.5 Basis of Payment

- (a) Payment for Work specified under this section shall be paid for at the Unit Price, measured on a per unit basis, for the Items of Work listed below, which price shall include all costs of material supply, finishing and proper material installation. Site restoration work shall be considered incidental to this Work.
- (b) Items of Work:
 - (i) Ornamental Pole – 9.75m
 - (ii) Ornamental Pole – 5.2m
 - (iii) Ornamental Pole – 4.6m
 - (iv) Ornamental Pole – 4.0m