Part 1 General

1.1 DESCRIPTION

.1 This specification shall supplement CW 3310.

1.2 RELATED SECTIONS

.1 Section 05 50 00 – Exterior Metal Fabrication

1.3 SUBMITTALS

.1 Shop Drawings:

.1 Provide shop drawings of proposed cast-in-place concrete pile.

Part 2 Products

2.1 MATERIALS

.1 Type 1 concrete:

.1 Class of Exposure: C-2
.2 Minimum Specified compressive strength @ 28 days = 32 MPa
.3 Minimum Cementitious Content = 340 kg/m^3
.4 Maximum Water/Cementitious Ratio =n 0.45
.5 Slump = 50 +/- 20mm (for slip form paving), 70mm +/- 20mm (for hand placement)
.6 Aggregate Size = 20mm nominal
.7 Air Content = 5% to 8%

Part 3 Execution

3.1 WORKMANSHIP

.1 Install in accordance with CW 3310.

3.2 CLEAN-UP

.1 Upon completion of installation, remove construction and accumulated environmental dirt, surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

Part 1 General

1.1 DESCRIPTION

.1 This specification shall cover all labour, methods, equipment and accessories for the supply and install of:

.1 Commemorative sign structures

.2 Commemorative sign interior framing

.2 Additional steel fabrication specifications are noted on Drawing S-1.

1.2 RELATED SECTIONS

.1 Section 03 30 00 – Cast-in-Place Concrete Short Form

.2 Section 10 75 00 – Interpretive Panels

.3 Section 26 00 00 – Solar Lighting

1.3 REFERENCES

.1 American Society for Testing and Materials International, (ASTM)

.1 ASTM A53/A53M-02, Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.

.2 ASTM A307-02, Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.

.2 Canadian Standards Association (CSA International)

.1 CAN/CSA-G40.20/G40.21-98, General Requirements for Rolled or Welded Structural Quality Steel.

.2 CAN/CSA-G164-M93(R1998), Hot Dip Galvanized or Irregularly Shaped Articles, or latest.

.3 CAN/CSA-S16.1-01, Limit States Design of Steel Structures.

.4 CSA W48-01, Filler Metals and Allied Materials for Metal Arc Welding (Developed in co-operation with the Canadian Welding Bureau).

.5 CSA W59-1989, R2001,Welded Steel Construction, Metal Arc Welding, Imperial Version.

1.4 SUBMITTALS

.1 Submittals in accordance with Section 01 00 10 - General Requirements.

.2 Use construction drawings as reference only in preparing submittals. Field verify as-built conditions and dimensions. Report any discrepancies to Contract Administrator if as-built conditions are significantly different from drawings.

.3 Submit shop drawings for commemorative sign structures.

.4 Drawings to clearly indicate size, assembly, welds, hardware, materials, core thicknesses, finishes, connections, joints, method of anchorage, number and size of anchors, supports, reinforcement, installation details and accessories for all aspects of work.

.5 Shop drawings shall identify and quantify all hardware and miscellaneous items to be used.

.6 Shop drawings to Indicate related, adjacent materials, and connections.

.7 Provide templates, patterns, fixing diagrams as required for installation.

.8 Have shop drawings approved prior to providing samples for review and approval.

.9 Submit product data and full size mock-ups (450mm x 450mm section) to Contract Administrator for review and acceptance:

.1 Commemorative sign custom cut out graphic, one (1) per each sign

1.5 QUALITY ASSURANCE

.1 Trained and qualified industrial metal fabricator with more than 5 years of experience.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Deliver materials to site, suitably packaged, clearly marked indicating manufacturer name and any other identifying symbols or information. Do not deliver materials long before they are required on site. Cause no delays to scheduling.

.2 Temporarily store materials in storage areas as directed by Contract Administrator.

.3 Cover with pressure sensitive heavy protection paper or apply strippable plastic coating, before shipping to job site.

.4 Leave protective covering in place until final cleaning of site. Provide instructions for removal of protective covering.

.5 Store materials in a dry location off the ground, and prevent damage.

.6 Materials that have been damaged or deemed unfit for use during delivery or storage shall be immediately replaced at no cost to the City.

1.7 SITE CONDITIONS

.1 Make a careful examination of the site conditions and investigate all matters relating to the nature of the work to be undertaken, the means of access and egress, the rights and interests which may be interfered with during the construction of the work.

.2 Measure as-built condition of concrete sidewalks and asphalt pathways prior to producing shop drawings.

.3 Report any discrepancies or omissions to the Contract Administrator, who will issue written clarification. Oral interpretations or instructions are not acceptable.

1.8 WASTE MANAGEMENT AND DISPOSAL

.1 Separate metal, plastic, wood and corrugated cardboard packing and place in area designated for disposal and recycling.

Part 2 Products

2.1 MATERIALS

.1 Steel sections and plates: to CAN/CSA-G40.20/G40.21, Grade 300W.

.2 Welding materials: to CSA W59.

.3 Welding electrodes: to CSA W48 Series.

.4 Bolts and anchor bolts: to ASTM A307.

.5 CorTen steel plate.

2.2 ARTWORK

.1 Artwork to be provided in digital (.eps) format by the Contract Administrator. A full colour hard copy of the artwork will be provided on award of Contract.

.2 This artwork shall not be reproduced in any other form or in excess of the amount contracted for, except by written approval of the Contract Administrator.

Part 3 Execution

3.1 WORKMANSHIP

.1 Fabrication, printing and application of sheeting shall be performed by trained and qualified workers with a minimum of 5 years expereicne, under controlled conditions. Acceptable supplier: SignEx Manufacturing Inc. or Electra Sign Ltd.

.2 CorTen steel plate cut outs for top half of signs may be CNC cut with plasma, water, laser or approved alternate. Digital template to be provided by the Contract Administrator in .dwg or .eps format. Remove all burs and ease sharp edges.

3.2 FABRICATION

.1 Obtain approval of all associated shop drawings prior to commencing fabrication.

.2 Fabricate work square, true, straight and accurate to required sizes, with joints closely fitted and properly secured.

.3 Where possible, fit and shop-assemble work, ready for erection.

.4 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.

.5 All welds shall be min. 6mm all around fillet welds.

.6 All welds, except hidden welds, shall be ground smooth and flush with adjacent surface prior to hot dip galvanizing.

.7 Measure bolthole locations on interpretive panels and lower CorTen steel plates to ensure boltholes on steel plates match.

.8 All corners and edges to be ground smooth to a 6mm radius prior to hot dip galvanizing. De-grease and de-bur all sharp edges in the shop left behind after fabrication is complete.

3.3 INSTALLATION

.1 Confirm with Contract Administrator final location of commemorative signs.

.2 Excavate for commemorative sign structures as indicated on the Drawings. Set commemorative sign structures plumb and centred in the excavation. Compact with

approved granular fill in max. 150 mm lifts, ensuring commemorative sign structure remains plumb and square throughout the operation.

.3 Install interpretive panels on commemorative sign structures. Refer to the Drawings for locations on commemorative sign structures and Section 10 75 00 Interpretive Panels.

.4 Exposed fasteners devices to be compatible with material through which they pass.

.5 Touch up rivets, bolts and burnt or scratched surfaces after erection.

3.4 ACCEPTANCE

.1 Contact Contract Administrator for review and approval of final installation prior to applying any items and finishes that will cover up the original work.

.2 Work will be accepted only if it is erected true to the design intent in conformation with shop drawings and site instructions.

3.5 CLEAN-UP

.1 Upon completion of installation, remove construction and accumulated environmental dirt, surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

Part 1 General

1.1 DESCRIPTION

.1 This specification shall cover all labour, methods, equipment and accessories for the supply and install of:

.1 Interpretive panels

1.2 RELATED SECTIONS

.1 Section 05 50 00 – Exterior Metal Fabrication

1.3 DELIVERY, STORAGE AND HANDLING

.1 Storage and Protection:

.1 Cover finished panels with pressure sensitive heavy protection paper or non-reactive protective before shipping to job site.

1.4 SUBMITTALS

.1 Colour Proofs:

.1 The Contractor shall provide one (1) half-size colour proof of each interpretive panel to ensure compliance with the Specifications and Drawings and shall obtain written approval from the Contract Administrator prior to printing full order.

.2 Submit proof with reasonable promptness so as to cause no delay in the Work.

.3 Submit manufacturer's installation instructions.

.2 Samples:

.1 Following approval of the proofs, the Contractor Shall provide one (1) full size sign for approval prior to printing the complete order. Sample sign will be returned to the Contractor for use if it is acceptable.

Part 2 Products

2.1 MATERIALS

.1 Substrate: durable exterior rated material, minimum 19mm thickness, finished one side with moisture resistant backer sheet on unfinished face. Corners rounded 3mm radius and edges finished with matching white coating.

.2 Approved material:

.1 Tactile – Exterior Grade Brilliant Touch as supplied by Eye Catch Signs Ltd. on 3mm (1/8") aluminum (or approved alternate).

.2 Non Tactile – Exterior Grade Brilliant Touch as supplied by Eye Catch Signs Ltd. on 3mm (1/8") aluminum (or approved alternate).

.3 Inks: high durability solvent based inks, UV stable, suitable for exterior applications.

2.2 ARTWORK

.1 Artwork to be provided in digital (.eps) format by the Contract Administrator. A full colour hard copy of the artwork will be provided on award of Contract.

.2 This artwork shall not be reproduced in any other form or in excess of the amount contracted for, except by written approval of the Contract Administrator.

Part 3 Execution

3.1 WORKMANSHIP

.1 Obtain approval of all associated shop drawings prior to commencing fabrication.

.2 Printing shall be performed by trained and qualified printers with a minimum of five years experience, under controlled conditions.

3.2 PRINTER RESOLUTION

.1 Minimum resolution shall be 300 dpi.

3.3 INSTALLATION

.1 Confirm with Contract Administrator final location of interpretive panels.

.2 Supply signs to location identified by Contract Administrator.

3.4 ACCEPTANCE

.1 Contact Contract Administrator for review and approval of final installation prior to applying any items and finishes that will cover up the original work.

.2 Work will be accepted only if it is erected true to the design intent in conformation with shop drawings and site instructions.

3.5 CLEAN-UP

.1 Upon completion of installation, remove construction and accumulated environmental dirt, surplus materials, rubbish, tools and equipment barriers.

3.6 WARRANTY

.1 Warranty on interpretive panels shall be 10 years, UV rated as stated in the manufacturer's warranty policy.

END OF SECTION

Part 1 General

1.1 DESCRIPTION

.1 This specification shall cover all labour, methods, equipment and accessories for the supply and install of:

.1 Solar lighting inside commemorative sign structures

1.2 RELATED SECTIONS

.1 Section 05 50 00 – Exterior Metal Fabrication

1.3 SUBMITTALS

.1 Shop Drawings:

.1 Provide shop drawings of proposed solar lighting installation.

.2 Samples:

.1 Submit for review one solar light fixture for approval to Contract Administrator.

.2 Deliver samples prepaid to Contract Administrator's business address.

.3 Notify Contract Administrator in writing, at time of submission of deviations in samples from requirements of Contract Documents.

.4 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified and may be returned to the Contractor for use if it is acceptable.

.5 Submit sample with reasonable promptness so as to cause no delay in the Work.

Part 2 Products

2.1 MATERIALS

.1 Solar lighting equipment to be new and CSA certified.

.2 Solar lighting model: SL007 as supplied by Solar Lighting Inc. or approved alternate. Contact Ross Christie at 204-736-2441. Website: www.solarlightinginc.com

Part 3 Execution

3.1 WORKMANSHIP

.1 Obtain approval of all associated shop drawings prior to commencing fabrication.

.2 Do complete installation in accordance with local standards.

3.2 CLEAN-UP

.1 Upon completion of installation, remove construction and accumulated environmental dirt, surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

Part 1 General

1.1 DESCRIPTION

.1 Provide all labour, materials, methods, equipment and accessories for the demolition and removal of sod, asphalt and concrete pathways.

1.2 DEFINITIONS

.1 Demolition consists of cutting of asphalt and concrete to be removed as well as surface debris.
.2 Removal consists of excavation and disposal of sod, asphalt and concrete to subgrades as indicated on the Drawings.

1.3 STORAGE AND PROTECTION

.1 Prevent damage to benchmarks, existing asphalt, pavement, curbs, utilities and site appurtenances which are to remain. Repair damaged items to approval of Contract Administrator, at no cost to the City.

1.4 WASTE MANAGEMENT AND DISPOSAL

.1 Separate metal, plastic, wood and corrugated cardboard packing and place in area designated for disposal and recycling.

Part 2 Execution

2.1 PREPARATION

.1 Inspect site and verify with Contract Administrator, items designated to remain prior to demolition and removals.
.2 Locate and protect utility lines: preserve in operating condition active utilities traversing site.

  .1 Notify Contract Administrator immediately of damage to or when unknown existing utility lines are encountered.
  .2 When utility lines which are to be removed are encountered within area of operations, notify Contract Administrator in ample time to minimize interruption of service.

.3 Notify utility authorities and have all utilities clearly located on site before starting demolition and removals.
.4 Coordinate work with utility installers.
.5 Keep roads and walks free of dirt and debris.

2.2 DEMOLITION AND REMOVAL

.1 Demolish and remove all areas indicated on the Drawings.
.2 Fill depressions made by demolition and removal with suitable material and to make new surface conform with existing adjacent surface of ground.
.3 Contact Contract Administrator immediately if silt, unforeseen groundwater conditions or any other subsurface anomalies requiring remediation are encountered.
.4 Remove demolished and excavated materials off site to a suitable waste facility.
.5 Burning is not allowed on the construction site.

3.7 CLEAN-UP

.1 Upon completion of demolition and removals, remove accumulated environmental dirt, surplus materials, rubbish, tools and equipment barriers from site.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Supply and installation of planting medium in annual planting beds.
.2 All planting medium to be imported to the site. There is no stockpiled "topsoil" available on site.

1.2 PAYMENT FOR TESTING

.1 Testing of planting medium will be paid by Contractor.

1.3 SUBMITTALS

.1 Quality control submittals:
  .1 Planting medium testing: submit certified test reports showing compliance with specified performance characteristics and physical properties as described in Part 2 – Products.
  .2 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.4 QUALITY ASSURANCE

.1 Obtain approval of proposed imported planting medium source.
.2 Testing of planting medium to be carried out and paid for by Contractor. Prepare and ship planting medium samples to approved laboratory in accordance with provincial regulations and laboratory requirements, indicating intended use on each sample.
.3 Test planting medium for nutrients N, P, K, and micronutrients, soluble salt content, pH value, organic matter (OM), clay and sand content.
.4 Submit copy of soil analysis and recommendations for corrections to Contract Administrator.
.5 Acceptance of planting medium is subject to inspection of soil and confirmation of test results. Do not commence work until Contract Administrator has accepted planting medium.

1.5 WASTE MANAGEMENT AND DISPOSAL

.1 Do not dispose of unused soil amendments into sewer systems, into lakes, streams, onto ground or in locations where it will pose health or environmental hazard.

1.6 DELIVERY STORAGE AND HANDLING

.1 Deliver and store fertilizer in waterproof bags labeled with weight, analysis and name of manufacturer.
.2 Store materials in a dry area, protected from freezing, sedimentation and contamination.

Part 2 Products

2.1 TOPSOIL

.1 Screened clay-textured or loam-textured dark topsoil, fertile, friable material capable of sustaining vigorous plant growth.
.2 Topsoil shall be free of subsoil contamination, roots, stones or clay lumps over 40 mm in

diameter and other extraneous matter. Salinity rating less than 2.5 dS/m and a pH range of 6.5-8.0. Topsoil shall not contain quack grass rhizomes, Canada thistle roots or other noxious weeds.

.3 Topsoil shall not be blown dirt deposited in ditches along wind erosion sites.

.4 Topsoil shall not be taken from fields abandoned to corn production where such soil may contain soil-incorporated herbicides with lasting residual effects such as Eradicane and Atrazine.

2.2 PEATMOSS

.1 Derived from partially decomposed fibrous or cellular stems and leaves of species of sphagnum mosses.

.2 Elastic and homogeneous, brown in colour.

.3 Free of wood and deleterious material that could prohibit growth.

.4 Shredded particle minimum size: 5 mm.

2.3 COMPOST

.1 Mixture of soil and decomposing organic matter used as fertilizer, mulch, or soil conditioner.

.2 Compost shall be dark brown in colour and no objectionable odour.

.3 Compost is processed organic matter containing 40% or more organic matter as determined by Walkley-Black or Loss On Ignition (LOI) test.

.4 Product must be sufficiently decomposed (i.e. stable) so that any further decomposition does not adversely affect plant growth (C:N ratio below 25:1) and contain no toxic or growth inhibiting contaminates.

.5 Composted bio-solids to: Canadian Council of Ministers of the Environment (CCME) Guidelines for Compost Quality, Category A.

.6 Provide a two-litre sample with manufacturers literature and material certification that the product meets the CCME guidelines.

2.4 FERTILIZER

.1 To Canada *Fertilizers Act* and *Fertilizers Regulations*.

.2 Complete synthetic organic starter fertilizer with guaranteed minimum analysis ratio 12:36:10 or approval equal.

2.5 SAND

.1 Coarse Sand: Clean, hard fine silica sand, well washed and free of impurities, chemical or organic matter. Coarse texture, and to the following gradation:

Particle Size (mm)	% Passing through Screen
2.0	100%
1.0	95 to 100%
0.5	80 to 100%
0.25	0 to 30%
0.15	0 to 8%
0.075	0 to 1%

2.6 PLANTING MEDIUM

.1 All planting media shall be thoroughly blended.
.2 Keep all materials moist during blending stage to facilitate uniform mixing and to minimize peat, soil and sand separation.
.3 Final mix shall have a pH of between 6.5 and 8 unless otherwise noted.
.4 Provide a two-litre sample of planting medium with the required soil test results.
.5 Planting medium for planting beds, sodded and seeded areas to contain (by volume):

.1 45% Topsoil
.2 25% Peat
.3 15% Compost
.4 15% Coarse Sand

2.6 FERTILITY

.1 Fertility : major soil nutrients present in following amounts:
.1 Nitrogen N: 20 to 40 micrograms of available N per gram of topsoil.
.2 Phosphorus P: 40 to 50 micrograms of phosphate per gram of topsoil.
.3 Potassium K: 75 to 110 micrograms of potassium per gram of topsoil.
.4 Calcium magnesium, sulphur and micro-nutrients present in balanced ratios to support germination and/or establishment of intended vegetation.

Part 3 Execution

3.1 EXCAVATION

.1 Annual planting beds: excavate to minimum depth of 250 mm (10") and as shown on the Drawings.

3.2 PREPARATION OF EXISTING GRADE

.1 Verify that the grades are correct.
.1 If discrepancies occur, notify Contract Administrator and do not commence work until instructed by Contract Administrator.
.2 Fine grade subgrade, eliminating uneven areas and low spots, sloped to drain as indicated on the drawings. Remove debris, roots, branches, stones in excess of 50mm diameter and building materials. Remove subsoil that has been contaminated with oil or gasoline.
.3 Remove stones, roots, grass, weeds, construction materials, debris and foreign non-organic objects from planting medium.

3.3 PLACING AND SPREADING OF PLANTING MEDIUM

.1 Place planting medium after Contract Administrator has accepted subgrade.
.2 Spread planting medium in uniform layers not exceeding 150 mm.
.3 Spread planting medium to minimum depths as shown on Drawings after settlement.
.4 Manually spread planting medium around trees and obstacles.

3.4 APPLICATION OF FERTILIZER

.1 Prior to planting, spread fertilizer over entire area at rate determined by soil test.
.2 Mix fertilizer thoroughly into upper 50mm of planting medium.

3.5 FINISH GRADING

.1 Grade to eliminate rough spots and low areas and ensure positive drainage.
- .1 Prepare loose, friable bed by means of cultivation and subsequent raking.
- .2 Leave surfaces smooth, uniform and firm against deep footprinting.

END OF SECTION