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**Partie 1      General**

**1.1            RELATED REQUIREMENTS**

- .1      The list of Work in this division is indicative but non-limiting. It does not exclude Work described in other specification divisions shown on the drawings or required for full execution of the Work as intended on the drawings.
- .2      Section 02 41 13 Selective Site Demolition.
- .3      Poured-in-place concrete, see division 03.

**1.2            SUMMARY**

- .1      This section covers:
  - .1      The Work in this section consists of the construction of the steel fence on Wall A including the access doors and guard rail on Wall D.

**1.3            REFERENCES**

- .1      ASTM International
  - .1      ASTM A53/A53M-[07], Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
  - .2      ASTM A269-[08], Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
  - .3      ASTM A307-[07b], Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
- .2      CSA International
  - .1      CSA G40.20/G40.21-[F04 (C2009)], General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
  - .2      CAN/CSA G164-[FM92 (C2003)], Hot Dip Galvanizing of Irregularly Shaped Articles.
  - .3      CSA S16-[09], Design of Steel Structures.
  - .4      CSA W48-[F06], Filler Metals and Allied Materials for Metal Arc Welding (Developed in co-operation with the Canadian Welding Bureau).
  - .5      CSA W59-[FM03 (C2008)], Welded Steel Construction (Metal Arc Welding) [Metric].
- .3      Environmental Choice Program
  - .1      DCC-047-[98 (R2005)], Architectural Surface Coatings.
  - .2      DCC-048-[98 (R2006)], Surface Coatings - Recycled Water-borne.
- .4      Green Seal Environmental Standards (GS)
  - .1      GS-11-[2008, 2nd Edition], Paints and Coatings.

- .5 The Master Painters Institute (MPI)
  - .1 Architectural Painting Specification Manual - édition courante.

#### **1.4 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets for sections, plates, pipe, tubing and bolts and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings:
  - .1 Submit drawings stamped and signed by professional engineer registered or licensed in the province of Quebec, Canada and OIQ member.
  - .2 Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.
  - .3 Shop drawings must clearly indicate the following:
    - .1 Locations and elevations.
    - .2 Different types of fasteners, locations and accessories.
    - .3 Different materials, thicknesses, finishes, assemblies, connectors, joints, supports, locks, hinges, lock latch, drop rods, reinforcements, anchors and welds.
    - .4 Fabrication and installation details.
  - .4 Samples:
  - .5 Galvanized steel plates (2), polyester powder coating in selected colour.

#### **1.5 QUALITY ASSURANCE**

- .1 Test Reports: submit certified test reports showing compliance with specified performance characteristics and physical properties.
- .2 Certifications: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .3 Qualifications:
  - .1 Only contractor specialized in the manufacture of metalwork will be approved for Work in this section. When requested by Departmental Representative, provide list of comparable work and certification of qualifications of personnel.

#### **1.6 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

- .3 Storage and Handling Requirements:
  - .1 Store materials off ground in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Replace defective or damaged materials with new.

## **1.7 ACCEPTABLE PRODUCTS AND MATERIALS**

- .1 Where a particular brand name is stipulated, see Instructions to Bidders for procedure for requesting approval of substitute materials and products

## **Partie 2 Product**

### **2.1 MATERIAL**

- .1 Steel parts, fence sections, gates salvaged from demolition of existing fences. Salvaged sections may be cut in height and length, and accessories may be salvaged as needed.
- .2 To complete Work or use according to details and requirements: steel profiles, bars and plates: 300W, according to CSA G40.20/G40.21.
- .3 Welding materials: to CSA W59.
- .4 Welding electrodes: to CSA W48 Series.
- .5 Bolts and anchor bolts: to ASTM A307.
- .6 Powder polyester paint.

### **2.2 METALWORK – GENERAL**

- .1 Erect metalwork straight, plumb, aligned and to required dimensions. Make joints tight.
- .2 Use flat, round, oval, self-tapping self-locking screws for screwed assemblies, unless otherwise indicated.
- .3 Shop adjust and assemble Work for delivery to site ready to install, wherever possible.
- .4 Make visible welds continuous; grind or file seams smooth and uniform.
- .5 Sandblast salvaged steel to remove paint and residual galvanizing material. Cut and shape to new dimensions and construction details.
- .6 Profiles must be clean, precise, free of nicks, hollows, bumps or other imperfections.
- .7 Shop assemble all metalwork indicated on drawings for on-site installation.

### **2.3 FINISHES**

- .1 Galvanizing: all steel, hot dipped galvanizing with zinc coating 600 g/m<sup>2</sup> to CAN/CSA-G164.

## 2.4 SHOP PAINTING

- .1 Apply one shop coat of primer to metal items, with exception of galvanized or concrete encased items.
- .2 Paint on dry surfaces, free from rust, scale, grease. Do not paint when temperature is lower than 7 degrees C.
- .3 Paint:
  1. Uniform, matte black finish, to 92GP-12P.
  2. Make galvanized steel surfaces clean, smooth, uniform and free of drips.
  3. Preheat elements to be painted to 200oC for twenty to thirty minutes.
  4. Spray on polyester resin powder; apply powder electrostatically onto surface. Bake polyester resin powder to stabilize for glossy, hard, UV resistant finish. Minimum thickness 86 microns.
  5. Cure 10 days after painting and prior to delivery to work site.

## 2.5 PROTECTION

- .1 The Contractor must protect steel components from damage during handling and storage, delivery and installation. Store to allow air to circulate, water to drain and prevent metal to metal contact.
- .2 Replace damaged components.
- .3 Galvanize, paint or replace damaged components.

## 2.6 PERFORMANCE RESULTS FOR PAINT SYSTEM

Criteria	Normes	Results
Résistance to moisture	ASTM D-2247	1,500 hours
Resistance salt spray	ASTM B-117 ASTM D-1654	1,500 hours Result for 6 minimum

## Partie 3 Execution

### 3.1 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for metal fabrications installation in accordance with manufacturer's written instructions.
  - .1 Visually inspect substrate in presence of Departmental Representative.
  - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.

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### **3.2 ERECTION**

- .1 Do welding work in accordance with CSA W59 unless specified otherwise.
- .2 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.
- .3 Provide suitable means of anchorage acceptable to Departmental Representative such as dowels, anchor clips, bar anchors, expansion bolts and shields, and toggles.
- .4 Exposed fastening devices to match finish and be compatible with material through which they pass.
- .5 Supply components for work by other trades in accordance with shop drawings and schedule.
- .6 Assembler les éléments sur place à l'aide de boulons selon la norme CSA S16.
- .7 Deliver items over for casting into concrete and building into masonry together with setting templates to appropriate location.
- .8 Touch-up rivets, field welds, bolts and burnt or scratched surfaces with primer after completion.

### **3.1 TOUCH-UPS**

- .1 Use shop prepared same product and colour paint to touch up components damaged or scratched during installation.
- .2 Provide client sufficient quantity of paint for touch-ups during warranty period.

### **3.3 CLEANING**

- .1 Progress Cleaning:
  - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.

### **3.4 PROTECTION**

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by metal fabrications installation.

**END OF SECTION**