

## **PART 1        GENERAL**

### **1.1            RELATED REQUIREMENTS**

- .1        Section 02 41 13 Selective Site Demolition.
- .2        Section 06 14 01 - Wood Treatment

### **1.2            SUMMARY**

- .1        This section covers:
  - .1        The Work in this section consists of the construction of the guard rails.

### **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].
  - .6        CSA S6 00, Canadian code for roadway bridge calculations.
- .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 and size of anchors, supports, reinforcement, details, and accessories.
  - .3 Design must enable guard rails to withstand vertical and horizontal loads under Canadian Building Code.
  - .4 Shop drawings must clearly indicate the following:
    - .1 Locations and elevations, measured accurately on site based on the existing repaired walls.
    - .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.
    - .5 Parts specified in plans and drawings for guard rails and handrails are for indication purposes only. Shop drawings must specify sizes and placement of assembly and fastening details (screws, bolts, nuts, washers and anchors).

#### **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.

#### **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 SCHEDULE**

- .1 Measure walls and stairs on site as built to adapt shop drawings. Prepare shop drawings and have validated, build guard rails and hand rails for installation in Spring 2017..
- .2 Provide temporary guard rails to protect users from open trenches. Use construction site fencing securely anchored to ground. Have Departmental Representative approve model prior to installation.

## **PART 2 PRODUCT**

### **2.1 MATERIALS**

- .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 Welding materials: to CSA W59.
- .3 Welding electrodes: to CSA W48 Series.
- .4 Bolts and anchor bolts: to ASTM A307.
- .5 Base de béton, 35 MPa for the new chain type of fence section

### **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 Paint where indicated on plan, alkyd, high performance, VOC content: 411-439 grams/litre steel protection, combination primary coat and finish coat , brush, roller or gun applied.

### **2.4 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, replace damaged components.

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**PART 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.

**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      Assembly on site using bolts to CSA S16.
- .7      Touch-up rivets, field welds, bolts and burnt or scratched surfaces after completion.
- .8      Paint, 1 layer, indicated galvanized metal components.

**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**