

**Part 1      General**

**1.1          REFERENCES**

- .1      ASTM International
  - .1      ASTM A53/A53M-12, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
  - .2      ASTM A307-14, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
- .2      Canadian Standards Association (CSA)
  - .1      CSA G40.20-04/G40.21-13, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
  - .2      CAN/CSA G164-M92(R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
  - .3      CSA S16-09, Design of Steel Structures.
  - .4      CSA W48-14, Filler Metals and Allied Materials for Metal Arc Welding (Developed in co-operation with the Canadian Welding Bureau).
  - .5      CSA W59-13, Welded Steel Construction (Metal Arc Welding).
- .3      Health Canada / Workplace Hazardous Materials Information System (WHMIS)
  - .1      Material Safety Data Sheets (MSDS).

**1.2          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 steel products; include product characteristics, performance criteria, physical size, finish and limitations.
  - .2      Submit two copies of WHMIS MSDS in accordance with Section 01 35 29.06 - Health and Safety Requirements.
- .3      Shop Drawings:
  - .1      Submit drawings stamped and signed by professional engineer registered or licensed in Province of Alberta.
  - .2      Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.
  - .3      Stair landing extension: Include foundation requirements for steel stair landing extension.

### **1.3 DELIVERY, STORAGE, AND HANDLING**

- .1 Deliver, store, and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 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.

## **Part 2 Products**

### **2.1 MATERIALS**

- .1 Steel sections and plates: To CSA G40.20/G40.21, Grade 300W.
- .2 Steel pipe: To ASTM A53/A53M standard weight, black finish.
- .3 Welding materials: To CSA W59.
- .4 Welding electrodes: To CSA W48 Series.
- .5 Bolts and anchor bolts: To ASTM A307.
- .6 Grout: Non-shrink, non-metallic, flowable, 15 MPa at 24 hours.

### **2.2 FABRICATION**

- .1 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.
- .2 Use self-tapping shake-proof screws on items requiring assembly by screws.
- .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.

### **2.3 FINISHES**

- .1 Galvanizing: 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.
- .2 Use primer unadulterated, as prepared by manufacturer. Paint on dry surfaces, free from rust, scale, and grease. Do not paint when temperature is lower than 7°C.
- .3 Clean surfaces to be field welded; do not paint.

**2.5 PIPE RAILINGS**

- .1 Steel pipe: 42 mm outside diameter for handrails.
- .2 Fabricate handrails to support concentrated load of 90 kg applied at top of handrail.
- .3 Galvanize and shop prime-paint railings after fabrication.

**Part 3 Execution**

**3.1 EXAMINATION**

- .1 Verify conditions of substrates are acceptable for metal fabrications installation.
  - .1 Visually inspect substrate.
  - .2 Inform DCC Representative of unacceptable conditions.
  - .3 Proceed with installation only after unacceptable conditions have been remedied.

**3.2 ERECTION**

- .1 Perform 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 DCC 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 Make field connections with bolts to CSA S16, or weld field connection.
- .7 Deliver items for casting into concrete and building into masonry together with setting templates to appropriate location and construction personnel.
- .8 Touch-up rivets, field welds, bolts, and burnt or scratched surfaces with primer after completion of installation.
- .9 Touch-up galvanized surfaces with zinc rich primer where burned by field welding.

**3.3 PIPE RAILINGS**

- .1 Install pipe railings as indicated.

**3.4 CLEANING**

- .1 Progress Cleaning: Clean in accordance with Section 01 74 00 - Cleaning.
- .2 Leave Work area clean at end of each day.

- .3 Final Cleaning: Upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
- .4 Waste Management: Remove waste materials in accordance with Section 01 74 19 - Construction/Demolition Waste Management and Disposal.

**3.5 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**