

**Part 1            General**

**1.1                RELATED REQUIREMENTS**

- .1        Section 01 33 00 – Submittal Procedures.
- .2        Section 01 73 00 – Execution.
- .3        Section 01 74 11 – Cleaning.
- .4        Section 07 92 00 – Joint Sealant
- .5        Section 08 44 13 – Glazed Aluminum Curtain Walls
- .6        Section 09 54 23 – Linear Metal Ceiling
- .7        Section 09 91 99 – Painting for Minor Works

**1.2                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-[04(R2009)], 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-[06], Filler Metals and Allied Materials for Metal Arc Welding (Developed in co-operation with the Canadian Welding Bureau).
  - .5        CSA W59-[M03(R2008)], Welded Steel Construction (Metal Arc Welding) [Metric].

**1.3                ACTION AND INFORMATIONAL SUBMITTALS**

- .1        Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2        Shop Drawings:
  - .1        Submit drawings stamped and signed by professional engineer registered or licensed in Province of Manitoba, Canada.
  - .2        Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.

- .3 Samples:
  - .1 Submit 12" long sample of stainless steel handrail with connection assembly to masonry.
- .4 Mock-ups
  - .1 Provide mock-up corner section of metal screen for review and approval by Contract Administrator. Mock up to be 3' x 3'.

#### **1.4 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.

#### **1.5 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 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 350W.
- .2 Steel pipe: to ASTM A53/A53M standard weight.
- .3 Welding materials: Type required for material being welded
- .4 Welding electrodes: to CSA W48 Series.
- .5 Bolts and anchor bolts: to ASTM A307.
- .6 Galvanizing: to CSA G164-M92, hot dipped galvanizing, minimum zinc coating 600g/m<sup>2</sup> (2 oz/sq. ft)
- .7 Stainless steel tubing: Type 304 or 316 commercial grade seamless welded with AISI No. 4 finish.
- .8 Grout: non-shrink, non-metallic, flowable, 15 MPa at 24 hours.

## **2.2 FABRICATION**

- .1 Fit and shop assemble items in largest practical sections, for delivery to site.
- .2 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.
- .3 Use self-tapping shake-proof flat headed screws on items requiring assembly by screws or as indicated.
- .4 Where possible, fit and shop assemble work, ready for erection.
- .5 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
- .6 Site confirm field dimensions prior to fabrication.
- .7 Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where noted otherwise.

## **2.3 FINISHES**

- .1 Galvanizing: hot dipped galvanizing with zinc coating 600 g/m<sup>2</sup> to CAN/CSA-G164.
- .2 Chromium plating: chrome on steel with plating sequence of 0.009 mm thickness of copper [0.010] mm thickness of nickel and 0.0025 mm thickness of chromium.
- .3 Prime paint items with one coat as required.
- .4 Powder Coating: to CAN/CGSB 85.10-99

## **2.4 ISOLATION COATING**

- .1 Isolate aluminum from following components, by means of bituminous paint:
  - .1 Dissimilar metals except stainless steel, zinc, or white bronze of small area.
  - .2 Concrete, mortar and masonry.
  - .3 Wood.

## **2.5 SHOP PAINTING**

- .1 Apply one shop coat of primer to metal items, with exception of galvanized or concrete encased items.
- .2 Use primer unadulterated, as prepared by manufacturer. Paint on dry surfaces, free from rust, scale, grease. Do not paint when temperature is lower than 7 degrees C.
- .3 Clean surfaces to be field welded; do not paint.

**2.6 PIPE RAILINGS**

- .1 Stainless Steel pipe: 38 mm nominal outside diameter, formed to shapes and sizes as indicated.

**2.7 METAL SCREEN FRAMES**

- .1 Fabricate frames from galvanized steel, sizes of channel and opening as indicated.
- .2 Weld bars to Steel supports as indicated.
- .3 Finish: galvanized prime coat painted and paint finish.

**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.
  - .2 Inform Contract Administrator of unacceptable conditions immediately upon discovery.
  - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Contract Administrator.

**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 Contract Administrator 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 over 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 after completion of erection with primer.

**3.3 STAINLESS STEEL PIPE HANDRAIL**

- .1 Provide concealed fastening to concrete surfaces and stainless steel wall brackets as required.
- .2 Install pipe railings to stairs as indicated on drawings.
- .3 Mount railing to existing masonry as indicated on drawings.
- .4 Finish to be brushed finish.

**3.4 METAL SCREEN**

- .1 Install screen as indicated on drawings
- .2 Grind all welds to a smooth finish

**3.5 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

**3.6 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**