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**Partie 1      General**

**1.1            RELATED REQUIREMENTS**

- .1      Section 03 30 00 – Poured-in-place Concrete.
- .2      Section 05 12 23 – Structural Steel for Buildings.
- .3      Section 05 51 29 – Metal Ladders and Stairs.
- .4      Section 06 20 00 – Finish Carpentry.
- .5      Section 06 40 00 – Architectural Woodwork.
- .6      Section 07 72 69 – Roof Anchors and Safety Restraints.
- .7      Section 09 21 16 – Gypsum Board Assemblies.
- .8      Section 09 30 13 – Ceramic Tiling.
- .9      Section 09 68 13 – Tile Carpeting.
- .10     Section 09 91 13 – Exterior Painting.
- .11     Section 09 91 23 – Interior Painting.

**1.2            DESCRIPTION**

- .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. The list applies to interior metal fabrications, exterior metal fabrications and exterior metal work related to the building and pedestrian bridge.
- .2      Manufacture and installation of steel elements that complete structural steelwork, required for masonry siding, awning or other, in addition to structural engineer's documents.
- .3      Loose galvanized steel lintels for masonry work.
- .4      Manufacture and installation of all railings, handrails , mesh partitions or screens, supports for interior and exterior metal and stone louvers, not included in Section 05 1 29 – Metal Ladders and Stairs.
- .5      Manufacture and installation of interior and exterior steel walkways.
- .6      Manufacture and installation of steel framing incorporated into existing and new masonry work.
- .7      Gutters, downspouts, gargoyles, steel section and formed plates included with parapets and not included under Section 07 61 00 – Sheet Metal Roofing.
- .8      All metal coverings that adorn the inside of the multifunctional room, including technical walkways, ventilation duct cladding, wall coverings and metal accessories other structural steel.

- .9 Manufacture and installation of shop painted steel and exterior and interior stainless steel plinths, plugs and covers, wall hooks for the scenography, cable trays for scenography, as indicated in the drawings.
- .10 Manufacture and installation of wall guards and corners, other than those under Section 10 26 00.01 – Wall Guards and Corners.
- .11 Manufacture and installation of metal elements required for furniture as indicated on drawings.
- .12 Manufacture and installation of metal panels and screens in multifunctional room to coordinate with prefabricated aluminum panels under Section 08 44 13 – Glazed Aluminum Curtain Walls.
- .13 Factory application of anti-corrosion primer to interior steel metalwork (except galvanized steel); shop application of paint.
- .14 Hot dip galvanization of metalwork and exterior steel, including hardware and accessories.
- .15 Corners, plates, supports, bolts, welding materials, anchors and other accessories for installation of work under this section or for incorporation of work under this section to other work.
- .16 Stainless steel supports and brackets for installation of copper sun screens, to coordinate with Section 08 44 13 – Glazed Aluminum Curtain Walls.

### 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 A167 99 (2009), Standard Specification for Stainless and Heat Resisting Chromium Nickel Steel Plate, Sheet, and Strip.
  - .3 ASTM A276-10, Standard Specification for Stainless Steel Bars and Shapes.
  - .4 ASTM A269-08, Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
  - .5 ASTM A307-10, 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 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB 1.40 97, Anti-corrosive Structural Steel Alkyd Primer.
  - .2 CAN/CGSB 1.181 99, Ready-mixed Organic Zinc Rich Coating.
- .4 Green Seal Environmental Standards (GS)
  - .1 GS-11-2008, 2nd Edition, Paints and Coatings.
- .5 Health Canada / Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).
- .6 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, bolts and 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.
    - .1 For finishes, coatings, primers, and paints applied on site: indicate VOC concentration in g/L.
- .3 Shop Drawings:
  - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Quebec, Canada.
  - .2 Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.

#### **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 Section 01 61 00 - Common Product Requirements and 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, indoors, in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Replace defective or damaged materials with new.
- .4 Packaging Waste Management: remove for reuse and return by manufacturer of pallets, crates, padding, packaging materials as specified in Construction Waste Management Plan in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

## **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 Products**

### **2.1 MATERIALS**

- .1 Steel pipe: to ASTM A53/A53M standard galvanized finish.
- .2 Steel sections and plates: to CSA G40.20/G40.21, Grade 300W.
  - .1 Hot-dipped steel plates, thickness as indicated.
  - .2 Steel pipe for bollards: 100 mm exterior diameter, minimum 6 mm thick, 2.7 m (1.2 m buried, 1.5 m aboveground) with welded convex cap.
- .3 Steel sections and tubes (HSS) to CAN/CSA-G40.21, most recent version, 300W or 350W gauge, as required or indicated on drawings.
- .4 Stainless steel sheet and plates: to ASTM A167, type 316, commercial grade, satin finish.
- .5 Stainless steel rods and bars: type 304 or 316, to ASTM A276.
- .6 Stainless steel tubing: to ASTM A269, Type 302, commercial grade, seamless welded with AISI No. 4 finish.
- .7 Expanded metal: enamelled matte black steel, 3 mm thick, hexagonal openings of short sections 63.5 mm and long sections 152.4 mm, 26% opening.
- .8 Perforated metal: enamelled steel plate with square openings 8 x 8 mm, 11 mm c/c, 51% opening, 1 mm thick. Perforated plates as indicated on plans to allow non-perforated folded ends.
- .9 Prefabricated steel elements: refer to drawings.
- .10 Aluminum plates and sections: as indicated on drawings.
- .11 Welding materials: to CSA W59.
- .12 Welding electrodes: to CSA W48 Series.
- .13 Bolts and anchor bolts: to ASTM A307.

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## **2.2 METAL FABRICATIONS – GENERAL**

- .1 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.
- .2 Use self-tapping shake-proof flat screws on items requiring assembly by screws or as indicated.
- .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 Bevel and polish hot dipped steel plate edges prior to varnishing.

## **2.3 FINISHES**

- .1 Galvanizing: hot dipped galvanizing with zinc coating 600 g/m<sup>2</sup> to CAN/CSA-G164.
- .2 Galvanized finish for exterior component and primer for interior components.
- .3 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.
- .4 Shop coat primer: MPI- INT and EXT, 5.1A and 5.1B in accordance with location.
- .5 Stainless steel: satin finish unless otherwise indicated.

## **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.

## **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.
- .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

### **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 Make field connections with bolts to CSA S16 or welding as indicated.
- .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 with primer after completion of:
  - .1 Primer: maximum VOC limit 250 g/L, to GS-11.
- .9 Touch-up galvanized surfaces with zinc rich primer where burned by field welding.
  - .1 Primer: maximum VOC limit 250 g/L to GS-11.

### **3.3 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 Waste Management: separate waste materials for reuse/recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
  - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

### **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**