## Part 1 General

### 1.1 REFERENCES

.1 ASTM International

- .1 ASTM A53/A53M, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
- .2 ASTM A307, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
- .3 ASTM F2329, Standard Specification for Hot-Dip Zinc Coating on Threaded Fasteners, Nuts and Washers
- .4 ASTM A276, Standard Specification for Stainless Steel Bars and Shapes
- .5 ASTM B308, Standard Specification for Aluminum Structural Shape Angle

.2 CSA International

- .1 CSA G40.20/G40.21, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
- .2 CAN/CSA G164, Hot Dip Galvanizing of Irregularly Shaped Articles.
- .3 CSA S16.1, Design of Steel Structures.
- .4 CSA W48, Filler Metals and Allied Materials for Metal Arc Welding (Developed in co-operation with the Canadian Welding Bureau).
- .5 CSA W59, Welded Steel Construction (Metal Arc Welding).
- .6 CSA S157, Strength Design in Aluminum

.3 The Master Painters Institute (MPI)

- .1 Architectural Painting Specification Manual.

### 1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit the qualifications of the Contractor, qualifications of operators, shop drawings, mill certificates and welding procedures to the Contractor Administrator for acceptance

.2 Product Data: Submit shop drawings sealed by an engineer registered in the province of Manitoba clearly indicating materials, core thickness, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details and accessories for the Contract Administrator's approval at least two (2) weeks prior to fabrication. Indicate field measurements on Shop Drawings.

### 1.3 QUALIFICATION

.1 Fabricator to be fully approved by the Canadian Welding Bureau, in conformance with CSA Standard W.47.1. Welding to be done by currently licensed welders only.

.2 Fabricator to be fully certified in conformance with CSA Standard W47.2. All welding to be done in a licensed welding shop. Obtain Contract Administrator's approval to do field welding.

**1.4 QUALITY ASSURANCE**

.1 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 off ground 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 GENERAL**

.1 All materials shall be of a type acceptable to the Contract Administrator, and shall be subject to inspection and testing by the Contractor Administrator.

.2 Material intended for use in the various assemblies shall be new, straight and clean, with well defined profiles.

**2.2 MATERIALS**

.1 Steel sections and plates: to CSA G40.20/G40.21, Grade 350W.

.2 Bolts and anchor bolts: to ASTM A307.

.3 Stud Anchors: to ASTM A108, Grade 1020.

.4 Aluminum: to CSA S157 and the Aluminum Association ‘Specifications for Aluminum Structures’. Aluminum for plates shall be Type 6061-T651. Aluminium plate shall have an approved raised oval or multi-grip pattern.

.5 Isolating Sleeves

.1 “Nylite” – headed sleeve as manufactured by SPAE-Nauru of Kitchener, Ontario, or approved equal in accordance with B6.

.6 Aluminum welding shall be in accordance with the requirements of CSA W59.2-M1991.

.7 Anchor bolts and fasteners: ASTM A276, Type 316 stainless steel, of ample section to safely withstand the forces created by operation of the equipment or the load to which they will be subjected.

.8 Quantity and size of the fasteners shall be as recommended by the manufacturer or as shown on the Drawings.

.9 Provide exposed fastenings of same material, and finish as the metal to which applied unless indicated otherwise.

.10 Supply all items complete with all anchors and fastenings.

**2.3 FABRICATION**

.1 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.

.2 Confirm measurements for all fabrications before fabricating.

.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.

.6 Remove and grind smooth burrs, filings, sharp protrusions, and projections from metal fabrications to prevent possible injury. Correct any dangerous or potentially harmful installations as directed by Contract Administrator.

.7 All aluminum surfaces in contact with concrete shall be isolated using alkali-resistant bituminous paint meeting the requirements of CGSB 31-GP-3M.

.8 Pieces shall be of the sizes indicated on the Drawings and shall not be built up from scrap pieces.

.9 Angle frames shall be of the same material as cover plates, and cover plates shall be hinged and be supplied with lifting handles, as required.

**2.4 FINISHES**

.1 Galvanizing: hot dipped galvanizing with zinc coating 600 g/m$^2$ to CAN/CSA-G164.

.2 Paint for shop primed ferrous metal surfaces: MPI EXT 5.1D Alkyd G5 (semi gloss) finish, premium grade. Colour Schedule will be provided by the Contract Administrator.

.3 Zinc primer: zinc rich, ready mix.

**2.5 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.

**2.6 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 materials and air temperatures are lower than 7 degrees C.

.3 Clean surfaces to be field welded; do not paint.

.4 Touch up surfaces after installation.

.5 Surface preparation and coatings shall be as per Section 099123 – Painting.

**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 the Contract Administrator in writing 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 the Contract Administrator.

**3.2 CLEANING**

.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.

**3.3 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**