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| Version | Date | Description of Revisions |
| 1 | August 30, 2006 | Approved final document. |
| 2 | November 13, 2009 | Modified ‘Related Section’ |
| 3 | June 5, 2012 | Added References and Replacement Parts Sections |
| 4 | July 3, 2012 | Reformatted to Remove White Space |
| 5 | April 22, 2015 | General formatting |
| 6 | April 11, 2016 | Phase 1 review (AV) |
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NOTE:

This is a CONTROLLED Document. Any documents appearing in paper form are not controlled and should be checked against the on-line file version prior to use.

**Notice:** This Document hardcopy must be used for reference purpose only.

**The on-line copy is the current version of the document.**

# GEneral

## Related Sections

### [Under "Related Sections", identify other Sections that are related to, and/or dependent on, the work results or information specified elsewhere. The list should be limited to Sections with specific information that the reader might expect to find in this Section, but is specified elsewhere. For example, if hardware for aluminum entrances is specified in the aluminum entrance Section, a cross-reference would be appropriate in the finish hardware Section. The purpose of this cross-referencing is for information only, to aid in finding those other requirements—not to define the scope of the Section.

### Cross-referencing here may also be used to coordinate assemblies or systems whose components may span multiple Sections and which must meet certain performance requirements as an assembly or system.

### Contractor is responsible for coordination of the Work.

### This Section is to be completed/updated during the design development by the Consultant. If it is not applicable to the section for the specific project it may be deleted.]

### [List Sections specifying installation of products supplied but not installed under this Section and indicate specific items.]

### Section [\_\_\_\_\_\_ – \_\_\_\_\_\_\_\_\_\_\_\_]: Execution requirements for ...[item]... specified under this Section.

### [List Sections specifying products installed but not supplied under this Section and indicate specific items.]

### Section [\_\_\_\_\_\_ – \_\_\_\_\_\_\_\_\_\_\_\_]: Product requirements for ...[item]... for installation under this Section.

### [List Sections specifying related requirements.]

### Section [\_\_\_\_\_\_ – \_\_\_\_\_\_\_\_\_\_\_\_]: [Optional short phrase indicating relationship].

## References

### Comply with the latest edition of the following statutes codes and standards and all amendments thereto.

#### American Society for Testing and Materials (ASTM)

##### ASTM A123/A123M-15 Standard Specification for Zinc (Hot Dip Galvanized) Coatings on Iron and Steel products

##### ASTM A269/A269M-14e1, Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.

##### ASTM A307-14, Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60,000 PSI Tensile Strength.

##### ASTM A53/A53M-12, Standard Specification for Pipe, Steel, Black and Hot Dipped, Zinc Coated, Welded and Seamless.

##### ASTM A653/A653M-15; Standard Specification for Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

##### ASTM A1008/A1008M-15; Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable.

##### ASTM A1011/A1011M-14; Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with improved Formability, and Ultra-High Strength.

#### Canadian General Standards Board (CGSB)

##### CAN/CGSB 1.108, Bituminous Solvent Type Paint.

#### Canadian Standards Association (CSA)

##### CAN/CSA G40.20/G40.21-13 General requirements for rolled or welded structural quality steel / Structural quality steel

##### CAN/CSA S16.14, Design of Steel Structures.

##### CAN/CSA S157-05, Strength Design in Aluminum.

##### CAN/CSA W48-14, Filler Metals and Allied Materials for Metal Arc Welding.

##### CAN/CSA W59.2-M1991 (R2013), Welded Aluminum Construction.

##### CAN/CSA W59-13, Welded Steel Construction (Metal Arc Welding).

## Submittals

### Submit shop drawings of each metal fabrication item, indicating in large scale materials, core thicknesses, fabrication details, joints, anchors, locations, finishes and accessories.

### Submit two samples of each finish.

## Protection

### Cover exposed stainless steel surfaces with pressure sensitive heavy protection paper or apply strippable plastic coating, before shipping to job site.

### Leave protective covering in place until final cleaning of building. Provide instructions for removal of protective covering.

# PRODUCTS

## Materials

### Steel sections and plates: in accordance with CAN/CSA G40.20/G40.21-13 Grade 300W, 350W.

### Steel pipe: in accordance with ASTM A53/A53M-12 [standard weight,] [extra strong], [double extra strong,] [black] [galvanized finish].

### Galvanized Steel Sheet: in accordance with ASTM A653/A653M-15, Z275 zinc coating class.

### Hot rolled steel sheet: in accordance with ASTM AA1011/A1011M-14.

### Cold rolled steel sheet: ASTM A1008/A1008M-15.

### Welding electrodes: in accordance with CSA W48-14.

### Bolts and anchor bolts: in accordance with ASTM A307-14.

### Aluminum sheet: (embossed,) (checkered pattern,) 6 mm minimum thickness, finish (anodized), (colour)(clear ).

### Stainless steel tubing: in accordance with ASTM A269/A269M-14e1, Type 304 ,Seamless welded with AISI No. 4, finish.

### Grout: non shrink, non-metallic, flowable, 24hours, MPa 15, pull out strength 7.9 MPa.

## Fabrication

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

### Use self tapping shake proof screws on items requiring assembly by screws or as indicated.

### Where possible, fit and shop assemble work, ready for erection. Shop fabricate in largest practicable size.

### Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.

## Finishes

### Galvanizing: hot dipped galvanizing with zinc coating 610 g/m5 in accordance with ASTM A123.

### 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.

### Shop coat primer: in accordance with *[Consultant to amend with replacement standard for withdrawn CGSB B1.40],*

### Zinc primer: zinc rich, ready mix in accordance *with [Consultant to amend with replacement standard for withdrawn CGSB B1.181]*.

### Bituminous paint: in accordance with *[Consultant to amend with replacement standard for withdrawn CGSB B1.108].*

### Finish for Aluminum components: Architectural Class I Anodic Coating, AA-C22A41 clear.

## Isolation Coating

### Isolate aluminum from following components, by means of bituminous paint:

#### Dissimilar metals except stainless steel, zinc, or white bronze of small area.

#### Concrete, mortar and masonry.

#### Wood.

## Shop Painting

### Apply one shop coat of primer to metal items, with exception of galvanized or concrete encased items.

### 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 Celsius.

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

## Angle Lintels

### Steel angles: galvanized, sizes indicated for openings. Provide 200 mm minimum bearing at ends.

### Weld or bolt back to back angles to profiles as indicated.

## Bent Plate

### Steel bent plate: thickness and configuration as indicated.

### Galvanized finish for exterior, prime paint for interior.

## Corner Guards

### Steel angle: 75mm x 75mm x 6 mm thick x 1200 mm high, with 4 anchors each guard.

### Galvanized finish for exterior, prime paint for interior.

## Grab Rails

### Aluminum Grab Rail: Minimum 22mm diameter with anchorage welded to top and bottom of each rail. Grind welds smooth

### Clear anodize finish.

## Thresholds

### Aluminum Checker Plate Threshold: One piece threshold, 6 mm thick 6061-T6 aluminum checker plate, formed to profile indicated.

### Mill finish.

## Access Ladders

### Stringers: 65 x 12 mm thick, steel plate

### Steel Rungs: 20 mm square bar welded to stringers at 300 mm oc.

### Brackets: sizes and shapes as indicated, weld to stringers at 3,000 mm c.c., complete with fixing anchors.

### Galvanize finish for exterior, prime paint for interior.

### Galvanize exterior ladders after fabrication.

## Bollards

### Steel Bollard: Schedule 40 steel pipe.

### Hot dip galvanize finish.

# EXECUTION

## Erection

### Perform welding work in accordance with CSA W59 unless specified otherwise in the Contract Documents.

### Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.

### Provide suitable means of anchorage acceptable to Consultant such as dowels, anchor clips, bar anchors, expansion bolts and shields, chemically anchored bolts and toggles.

### Exposed fastening devices to match finish and be compatible with material through which they pass.

### Provide components for building by other sections in accordance with shop drawings and schedule.

### Make field connections with bolts to CAN/CSA S16, or weld.

### Hand items over for casting into concrete or building into masonry to appropriate forces and/or Subcontractors together with setting templates.

### Touch up rivets, field welds, bolts and burnt or scratched surfaces after completion of erection with primer.

### Touch up galvanized surfaces with zinc rich primer where burned by field welding.

## Bollards

### Set bollard into concrete encasement.

### Fill post with 25 MPa concrete rounded at the top.

## Corner Guards

### Install corner guards in locations as indicated.

## Access Ladders

### Install access ladders in locations as indicated.

### Erect ladders 150mm clear of wall on bracket supports.

**END OF SECTION**