

PART 1      GENERAL1.1          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 A269/A269M-14e1, Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
  - .3      ASTM A307-14, Standard Specification for Carbon Steel Bolts, Studs, and Threaded 60,000 PSI Tensile Strength.
  - .4      ASTM A325-14, Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
- .2      CSA International
  - .1      CSA G40.20-13/G40.21-13, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel, Includes Update No. 1 (2014).
  - .2      CSA S16-14, Design of Steel Structures.
  - .3      CSA W48-14, Filler Metals and Allied Materials for Metal Arc Welding (Developed in co-operation with the Canadian Welding Bureau).
  - .4      CSA W59-13, Welded Steel Construction (Metal Arc Welding), Includes Update No. 1 (2014).
- .3      Green Seal Environmental Standards (GS)
  - .1      GS-11-2013, Paints and Coatings, Edition 3.1.
- .4      Health Canada / Workplace Hazardous Materials Information System (WHMIS)
  - .1      Material Safety Data Sheets (MSDS).
- .5      The Master Painters Institute (MPI)
  - .1      Architectural Painting Specification Manual - current edition.

1.2          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 Ontario, Canada.
  - .2      Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.

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### 1.3            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.

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### 1.4            DELIVERY, STORAGE AND HANDLING

- .1      Deliver, store and handle materials in accordance with Section 01 00 10 - General 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.
- .4      Develop Waste Reduction Workplan related to Work of this Section and in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .5      Packaging Waste Management: remove for reuse and return by manufacturer of pallets, crates, padding, and packaging materials as specified in Waste Reduction Workplan in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

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## PART 2        PRODUCTS

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### 2.1            MATERIALS

- .1      Steel sections: to CSA G40.20/G40.21, Grade 350W.
- .2      Steel plates: to CSA G40.20/G40.21, Grade 300W.
- .3      Steel pipe: to ASTM A53/A53M extra strong, black finish.
- .4      Welding materials: to CSA W59.
- .5      Welding electrodes: to CSA W48 Series.
- .6      Bolts and anchor bolts: to ASTM A307/A325.

- .7 Grout: non-shrink, non-metallic, flowable, 50 MPa.

## 2.2 FABRICATION

- .1 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.
- .2 Where possible, fit and shop assemble work, ready for erection.
- .3 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.

## 2.3 SHOP PAINTING

- .1 Primer: VOC limit 250 g/L maximum to GS-11.
- .2 Apply one shop coat of primer to metal items, with exception of galvanized or concrete encased items.
- .3 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.
- .4 Clean surfaces to be field welded; do not paint.

## 2.4 ANGLE LINTELS

- .1 Steel angles: prime painted, sizes indicated for openings. Provide 150 mm minimum bearing at ends.
- .2 Weld or bolt back-to-back angles to profiles as indicated.
- .3 Finish: shop painted.  
.1 Primer: VOC limit 250 g/L maximum to GS-11 when applied onsite.

## 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 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 Deliver items over for casting into concrete and building into masonry together with setting templates to appropriate location and construction personnel.
- .7 Touch-up field welds, bolts and burnt or scratched surfaces with primer after completion of:
  - .1 Primer: maximum VOC limit 250 g/L to GS-11.

### 3.3 TRENCH COVERS

- .1 Install trench covers in locations as indicated.

### 3.4 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 and 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.

3.5      PROTECTION

- .1      Protect installed products and components from damage during construction.
- .2      Repair damage to adjacent materials caused by metal fabrications installation.

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END OF SECTION