

PART 1 - GENERAL

1.1 REFERENCES

- .1 ASTM International
  - .1 ASTM A 53/A 53M-07, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
  - .2 ASTM A 269-08, Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
  - .3 ASTM A 307-07b, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
- .2 Canada Green Building Council (CaGBC)
  - .1 LEED Canada-NC-2009, LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Package For New Construction and Major Renovations.
- .3 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.
- .4 Environmental Choice Program
  - .1 CCD-047-98 (R2005), Architectural Surface Coatings.
  - .2 CCD-048-98 (R2006), Surface Coatings - Recycled Water-borne.
- .5 Green Seal Environmental Standards (GS)
  - .1 GS-11-2008, 2nd Edition, Paints and Coatings.
- .6 Health Canada / Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).



- 1.4 DELIVERY,  
STORAGE AND  
HANDLING  
(Cont'd)
- .3 Develop Construction Waste Management Plan related to Work of this Section and in accordance with Section 01 35 21 - LEED Requirements.
  - .4 Packaging Waste Management: remove for reuse and return of pallets, crates, padding, and packaging materials as specified in Construction Waste Management Plan in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal and Section 01 35 21 - LEED Requirements.

PART 2 - PRODUCTS

- 2.1 MATERIALS
- .1 Steel sections and plates: to CSA G40.20/G40.21, Grade 300W.
  - .2 Steel pipe: to ASTM A 53/A 53M standard weight black or galvanized finish, as indicated.
  - .3 Welding materials: to CSA W59.
  - .4 Welding electrodes: to CSA W48 Series.
  - .5 Bolts and anchor bolts: to ASTM A 307.
  - .6 Stainless steel tubing: to ASTM A 269, Type 316 seamless welded with AISI No. 4 finish.
  - .7 Grout: non-shrink, non-metallic, flowable, 15 MPa at 24 hours.
- 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 FINISHES
- .1 Galvanizing: hot dipped galvanizing with zinc coating 600 g/m<sup>2</sup> to CAN/CSA-G164.
  - .2 Stainless steel to ASTM A27.6.S316.
  - .3 High build epoxy coating: to CAN/CGSB-1.153.
- 2.4 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, stainless steel 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.
- 2.5 PIPE RAILINGS
- .1 Steel pipe, exterior: hot dipped galvanized steel construction, formed to shapes and sizes as indicated.
  - .2 Steel pipe interior: standard black pipe construction formed to shapes and sizes as indicated.
  - .3 Galvanized exterior railings after fabrication.
  - .4 Shop coat prime interior railings after fabrication.
- 2.6 BENT PLATE DOOR FRAMES
- .1 Fabricate frames from steel plate, sizes and shapes as indicated.
  - .2 Weld frames together to form continuous frame for jambs and head of openings, sizes as indicated.
  - .3 Finish: galvanized.
-

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 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.

- 3.2 ERECTION .8 Touch-up rivets, field welds, bolts and burnt  
(Cont'd) 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 PIPE RAILINGS .1 Install pipe railings as indicated.
- 3.4 BENT PLATE .1 Install steel bent plate frames to openings  
FRAMES as indicated.
- 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 Waste Management: separate waste materials  
for reuse and recycling in accordance with  
Section 01 74 21 - Construction/Demolition  
Waste Management and Disposal and Section 01  
35 21 - LEED Requirements.  
.1 Remove recycling containers and bins  
from site and dispose of materials at  
appropriate facility.
- 3.6 PROTECTION .1 Protect installed products and components  
from damage during construction.
- .2 Repair damage to adjacent materials caused by  
metal fabrications installation.