

## **1 General**

### **1.1 REFERENCES**

- .1 ASTM A325M, Standard Specification for Structural Bolts, Heat Treated 120/105 ksi Tensile Strength.
- .2 CSA International
  - .1 CSA G40.20/G40.21-04(R2009), General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
  - .2 CSA S16-09, Design of Steel Structures.
  - .3 CSA W48-06, Filler Metals and Allied Materials for Metal Arc Welding (Developed in co-operation with the Canadian Welding Bureau).
  - .4 CSA W59-M03(R2008), Welded Steel Construction (Metal Arc Welding).

### **1.2 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Shop Drawings:
  - .1 Submit drawings stamped and signed by professional Engineer registered or licensed in Province of Saskatchewan, Canada.
  - .2 Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.

### **1.3 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver and store materials on jobsite in such a manner that no damage will be done to the materials or the structure.
- .2 Store all materials of this division in dry weatherproof facilities stacked 150 mm up off the floor or ground on boards. Damaged or bent parts shall be repaired or replaced.
- .3 Leave protective covering in place until final cleaning of building. Provide instructions for removal of protective covering.

## **2 Products**

### **2.1 MATERIALS**

- .1 Materials to conform to the following:
  - .1 Miscellaneous metal, angles, channels, plates: to CAN/CSA-G40.20/G40.21, Grade 300W.
  - .2 W and WT: to CAN/CSA-G40.20/G40.21, Grade 350W.
  - .3 Hollow structural sections: CAN/CSA-G40.20/G40.21, 350W Class C.

- .4 Aluminum to CSA S157 latest edition alloy GM41.
- .5 Galvanizing: hot dipped galvanizing with minimum zinc coating of 600 g/m<sup>2</sup> to CSA G164.
- .6 Galvanized primer: zinc rich, ready mix conforming to CGSB 1-GP-181B.
- .7 High tensile bolts: to ASTM A325M.
- .8 Bolts and nuts: to ASTM A307:
  - .1 Unless noted, all bolts, nuts and washers to be galvanized.
  - .2 Connection bolts for aluminum to conform to ASTM A2024-T4, or use stainless steel bolts.
- .9 Anchor bolts: CSA-G40.21 Grade 300W.
- .10 Welding material: to CSA W59.
- .11 Grout: non-shrink non-metallic, flowable, 24 h, 15 MPa, pull-out strength 7.9 Mpa.

## **2.2 ANCHOR BOLTS, INSERTS, BOLTS AND FASTENERS**

- .1 Anchor bolts not supplied by the structural steel fabricator or equipment suppliers to be ASTM A307 sized for full dead and live load.
- .2 Anchor bolts to be mild steel, unless otherwise shown on the drawings, having hexagonal nuts and washers of suitable sizes.
- .3 Concrete anchor bolts to be as indicated on the drawings. Approved manufacturers are Hilti Canada Ltd., Ramset Fastening Systems, Superior Concrete Accessories, Ucan Fastening Products, USE Diamond, Concrete Chemicals Keystone and Williams Canada Ltd.
- .4 Bolts, inserts and fasteners permanently embedded in concrete but located outdoors, to be Type 316 stainless steel.
- .5 Bolts, inserts and fasteners not permanently embedded in concrete but located indoors where leakage and drainage are not likely to occur (eg.in work spaces outside of mechanical areas) may be galvanized steel.

## **2.3 STAINLESS STEEL**

- .1 Stainless steel type 316 or 304 to be used for miscellaneous stainless steel items called for on the drawings.

## **2.4 FABRICATION**

- .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 headed 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 Galvanize all mild steel components on completion of fabrication.

## **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 temperature is lower than 7°C.

## **2.7 CLEAN SURFACES TO BE FIELD WELDED; DO NOT PAINT 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.

## **2.8 FINISHES**

- .1 Galvanizing: hot dipped galvanizing with zinc coating 600 g/m<sup>2</sup> to CAN/CSA G164.
- .2 Shop coat primer: to CAN/CGSB-1.40.
- .3 Zinc primer: zinc rich, ready mix to CAN/CGSB-1.181.
- .4 Bituminous paint: to CAN/CGSB-1.108.

## **3 Execution**

### **3.1 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 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.
- .8 Touch up rivets, field welds, bolts and burnt or scratched surfaces with primer after completion of:
- .9 Touch up galvanized surfaces with zinc rich primer where burned by field welding.

### **3.2 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**