

**1 General**

**1.1 RELATED SECTIONS**

- .1 E33 – Zinc Metallizing of Structural Steel Members and Coating

**1.2 REFERENCES**

- .1 CAN/CGSB-85.10, Protective Coatings for Metals.
- .2 CAN/CGSB-85.100-M81, Painting.
- .2 CISC/CPMA 1-73a, Quick-Drying, One-Coat Paint for Use on Structural Steel.
- .3 CAN/CSA G40.20/G40.21, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
- .4 CAN/CSA-G164, Hot Dip Galvanizing of Irregularly Shaped Articles.
- .5 CAN/CSA-S16, Limit States Design of Steel Structures.
- .6 CAN/CSA-S136, Cold Formed Steel Structural Members.
- .7 CSA-S136.1, Commentary on CSA Standard S136.
- .8 CSA W47.1, Certification of Companies for Fusion Welding of Steel Structures.
- .9 CSA W48, Filler Metals and Allied Materials for Metal Arc Welding.
- .10 CSA W55.3, Resistance Welding Qualification Code for Fabricators of Structural Members Used in Buildings.
- .11 CSA W59, Welded Steel Construction (Metal Arc Welding) Metric.
- .12 ASTM A36/A36M-89, Specification for Structural Steel.
- .13 ASTM A307-89, Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile.
- .14 ASTM A325M-89, Specification for High-Strength Bolts for Structural Steel Joints.
- .15 CAN/CSA-G40.21-M87, Structural Quality Steels.

**1.3 DESIGN REQUIREMENTS**

- .1 Design details and connections in accordance with requirements of CAN/CSA-S16.1 and CAN/CSA-S136 with CSA S136.1 to resist loads indicated.
- .2 If connection for shear only (standard connection) is required:  
.1 Select framed beam shear connections from an industry-accepted publication such as "Handbook of the Canadian Institute of Steel Construction".  
.2 If shears are not indicated, select or design connections to support reaction from maximum uniformly distributed load that can be safely supported by beam in bending, provided no point loads act on beam
- .3 Submit sketches and design calculations stamped and signed by qualified professional engineer licensed in Province of Manitoba, Canada for non-standard connections.

**1.4 SOURCE QUALITY CONTROL**

- .1 If requested, at least 4 weeks prior to fabrication of structural steel, submit 2 certified copies of mill test reports showing chemical and physical properties and other details of steel to be incorporated into

work. Such mill test reports shall be certified by qualified metallurgists confirming that tests conform to requirements of CAN/CSA G40.20 and CAN/CSA G40.21.

- .2 Fabricator of structural steel shall, in addition, provide an affidavit stating that materials and products used in fabrication conform to applicable material and products standards called for by design drawings and specifications.

## **1.5 SITE CONDITIONS**

- .1 Prior to field erection, examine work of other Trades on which work of this Section affects and report errors or omissions that may affect this work. Commencement of work indicates acceptance of conditions.

## **1.6 SHOP DRAWINGS**

- .1 Submit shop drawings including fabrication and erection documents and materials list in accordance with E3 – Shop Drawings.
- .2 Erection drawings: indicate details and information necessary for assembly and erection purposes including:
  - .1 Description of methods.
  - .2 Sequence of erection.
  - .3 Type of equipment used in erection.
  - .4 Temporary bracings.
- .3 Reproduction of contract drawings for use as erection drawings is not permitted unless approved in writing by Contract Administrator.
- .4 Each drawing submission shall bear signature and stamp of qualified professional engineer registered or licensed in the province of Manitoba for all fabricator designed assemblies, components and connections.

## **1.7 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate and recycle waste materials.
- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .3 Divert unused metal materials from landfill to metal recycling facility approved by Contract Administrator.
- .4 Do not dispose of unused paint materials into sewer systems, into lakes, streams, onto ground or in other location where it will pose health or environmental hazard.

## **2 Products**

### **2.1 MATERIALS**

- .1 Structural steel: to CAN/CSA-G40.21 Grade 350W except channels, angles and plates which may be Grade 300W. Hollow structural sections to be to G40.21 – 350W Class C.
- .2 Anchor bolts: to ASTM A307
- .3 Bolts, nuts and washers: to ASTM A325M.
- .4 Welding materials: to CSA W59 and certified by Canadian Welding Bureau.
- .5 Shop paint primer: to CISC/CPMA 1 – 73a

- .6 Hot dip galvanizing: galvanize steel, where indicated, to CSA G164, minimum zinc coating of 600 g/m<sup>2</sup>.

## **2.2 FABRICATION**

- .1 Fabricate structural steel, as indicated, in accordance with CAN/CSA-S16.1 in accordance with reviewed shop drawings
- .2 Continuously seal members by continuous welds where indicated. Grind smooth
- .3 Provide holes in top and bottom flanges if required for attachment of wood nailers.

## **2.3 ZINC METALLIZING AND COATING**

- .1 Refer to Specification E33 – Zinc Metallizing of Structural Members and Coating.

## **3 Execution**

### **3.1 GENERAL**

- .1 Structural steel work: in accordance with CAN/CSA-S16.
- .2 Welding: in accordance with CSA W59.
- .3 Companies to be certified under Division 1 or 2.1 of CSA W47.1 for fusion welding of steel structures and/or CSA W55.3 for resistance welding of structural components.

### **3.2 CONNECTION TO EXISTING WORK**

- .1 Verify dimensions and condition of existing work, report discrepancies and potential problem areas to Contract Administrator for direction before commencing fabrication.

### **3.3 MARKING**

- .1 Mark materials in accordance with CAN/CSA G40.20/G40.21. Do not use die stamping. If steel is to be left in unpainted condition, place marking at locations not visible from exterior after erection.
- .2 Match marking: shop mark bearing assemblies and splices for fit and match.

### **3.4 ERECTION**

- .1 Erect structural steel, as indicated and in accordance with CAN/CSA-S16.1 and in accordance with reviewed erection drawings
- .2 Obtain written approval of Contract Administrator prior to field cutting or altering of structural members that are not shown on shop drawings.
- .3 Clean with mechanical brush and touch up shop primer to bolts, rivets, welds and burned or scratched surfaces at completion of erection.
- .4 Continuously seal members by continuous welds where indicated. Grind smooth.

### **3.5 REPAIR AND FIELD TOUCH-UP**

- .1 Refer to Specification E33 – Zinc Metallizing of Structural Members and Coating.

**END OF SECTION**