

**Part I General****I.1 REFERENCES**

- .1 ASTM International
  - .1 ASTM A36/A36M-08, Standard Specification for Carbon Structural Steel.
  - .2 ASTM A307-07b, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
  - .3 ASTM A325-07a, Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
  - .4 ASTM A325M-08, Standard Specification for Structural Bolts, Steel, Heat Treated 830 MPa Minimum Tensile Strength Metric.
- .2 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-85.10-99, Protective Coatings for Metals.
- .3 Canadian Institute of Steel Construction (CISC)/Canadian Paint Manufacturers Association (CPMA).
  - .1 Handbook of the Canadian Institute of Steel Construction.
  - .2 CISC/CPMA Standard 2-75, Quick-Drying Primer for use on Structural Steel.
- .4 Canadian Standards Association (CSA)
  - .1 CSA G40.20/G40.21-04, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
  - .2 CAN/CSA S16-01(R2007), Limit States Design of Steel Structures.
  - .3 CSA W47.1-03, Certification of Companies for Fusion Welding of Steel.
  - .4 CSA W48-06, Filler Metals and Allied Materials for Metal Arc Welding.
  - .5 CSA W59-03, Welded Steel Construction (Metal Arc Welding).
- .5 Master Painters Institute
  - .1 MPI-INT 5.1-08, Structural Steel and Metal Fabrications.
  - .2 MPI-EXT 5.1-08, Structural Steel and Metal Fabrications.
- .6 The Society for Protective Coatings (SSPC) and National Association of Corrosion Engineers (NACE) International
  - .1 NACE No. 3/SSPC SP-6-06, Commercial Blast Cleaning.

**I.2 SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Shop Drawings:
  - .1 Provide drawings stamped and signed by professional engineer registered or licensed in Manitoba, Canada, covering the design of all connections.
- .3 Erection drawings:

- .1 Submit erection drawings indicating 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.
- .4 Fabrication drawings:
  - .1 Submit fabrication drawings showing designed assemblies, components and connections are stamped and signed by qualified professional engineer licensed in Manitoba, Canada.
- .5 Source Quality Control Submittals:
  - .1 Submit copies of mill test reports prior to fabrication of structural steel, upon request.
    - .1 Mill test reports to show chemical and physical properties and other details of steel to be incorporated in project.
    - .2 Provide mill test reports certified by metallurgists qualified to practice in Manitoba, Canada.

### **I.3 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Deliver materials in manufacturer's original, undamaged containers with identification labels intact.

## **Part 2 Products**

### **2.1 DESIGN REQUIREMENTS**

- .1 Design details and connections in accordance with requirements of CAN/CSA-S16 to resist forces, moments, shears and allow for movements indicated.
- .2 Shear connections:
  - .1 Select framed beam shear connections from an industry accepted publication such as "Handbook of the Canadian Institute of Steel Construction" when connection for shear only (standard connection) is required.
  - .2 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, when shears are not indicated.
- .3 All bolted connections to use a minimum of A325 high strength bolts. Minimum connection shall consist of 2 bolts.
- .4 The structural steel supplier shall provide and be responsible for all holes in steel sections required by other trades. The steel section shall be strengthened where required to guarantee the original strength of the member. Any cutting or modifications on the job site shall be done only as directed by the Departmental Representative.

**2.2 MATERIALS**

- .1 Structural steel: To CSA-G40.20/G40.21 Grade as indicated.
- .2 Anchor bolts: To CSA-G40.20/G40.21, Grade 300W.
- .3 Bolts, nuts and washers: To ASTM A325.
- .4 Welding materials: To CSA W59 and certified by Canadian Welding Bureau.
- .5 Shop paint primer: To CISC/CPMA2-75 solvent reducible alkyd, grey.

**2.3 FABRICATION**

- .1 Fabricate structural steel in accordance with CAN/CSA-S16 and in accordance with reviewed shop drawings.
- .2 Fabricator is to notify the Departmental Representative of any proposed member substitutions and changed connection details prior to fabrication and erection.
- .3 Continuously seal members by continuous welds where indicated. Grind smooth.

**2.4 SHOP PAINTING**

- .1 Clean, prepare surfaces and shop prime structural steel in accordance with CAN/CSA-S16.
- .2 Clean members, remove loose mill scale, rust, oil, dirt and foreign matter. Prepare surface according to NACE No.3/SSPC-SP-7.
- .3 Apply one coat of primer in shop to steel surfaces except:
  - .1 Surfaces and edges to be field welded.
- .4 Apply paint under cover, on dry surfaces when surface and air temperatures are above 5°C.
- .5 Maintain dry condition and 5°C minimum temperature until paint is thoroughly dry.
- .6 Strip paint from bolts, nuts, sharp edges and corners before prime coat is dry.

**Part 3 Execution****3.1 APPLICATION**

- .1 Manufacturer's Instructions: Comply with manufacturer's written recommendations, including product technical bulletins, handling, storage and installation instructions, and datasheets.

**3.2 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.

**3.3 CONNECTION TO EXISTING WORK**

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

**3.4 MARKING**

- .1 Mark materials in accordance with CSA G40.20/G40.21. Do not use die stamping. When 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.

**3.5 ERECTION**

- .1 Erect structural steel, as indicated and in accordance with CAN/CSA-S16 and in accordance with reviewed erection drawings.
- .2 Field cutting or altering structural members: to approval of Departmental Representative.
- .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.

**3.6 FIELD QUALITY CONTROL**

- .1 Inspection and testing of materials and workmanship will be carried out by testing laboratory designated by Departmental Representative at their discretion.
- .2 Provide safe access and working areas for testing on site, as required by testing agency and as authorized by Departmental Representative.
- .3 Submit test reports to Departmental Representative within 1 week of completion of inspection.

**3.7 FIELD PAINTING**

- .1 Paint in accordance with Section 09 91 00 - Painting.
  - .1 Touch up damaged surfaces and surfaces without shop coat with primer to NACE No.3/SSPC-SP-7 except as specified otherwise. Apply in accordance: MPI Architectural Painting Specification Manual.

**3.8 CLEANING**

- .1 Clean in accordance with Section 01 74 11 - Cleaning.
- .2 Waste Management: Remove waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

**END OF SECTION**