

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 04 04 99 – Masonry for Minor Works.
- .2 Section 05 31 00 – Steel Decking.
- .3 Section 05 50 00 – Metal Fabrications.
- .4 Section 05 51 29 – Metal Stairs and Ladders.
- .5 Section 07 92 00 – Joint Sealants.

1.2 REFERENCES

- .1 ASTM International
 - .1 ASTM A36/A36M-14, Standard Specification for Carbon Structural Steel.
 - .2 ASTM A123/A123M-13, Standard Specification for Zinc Hot Dip Galvanized Coatings on Iron and Steel Products.
 - .3 ASTM A325M-14, Standard Specification for Structural Bolts, Steel, Heat Treated, 830MPa Minimum Tensile Strength (Metric).
 - .4 ASTM A500/A500M-13, Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
- .2 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.
- .3 CSA International
 - .1 CSA G40.20/G40.21-13, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .2 CSA S16-14, Limit States Design of Steel Structures.
 - .3 CSA S136-12, North American Specifications for the Design of Cold Formed Steel Structural Members.
 - .4 CSA W47.1-09(R2014), Certification of Companies for Fusion Welding of Steel.
 - .5 CSA W48-14, Filler Metals and Allied Materials for Metal Arc Welding.
 - .6 CSA W55.3-08(R2013) Certification of Companies for Resistance Welding of Steel and Aluminum.
 - .7 CSA W59-13, Welded Steel Construction (Metal Arc Welding).
- .4 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.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 00 10 – General Instructions.

- .2 Shop Drawings:
 - .1 Provide drawings stamped and signed by professional engineer registered or licensed in Province of Ontario, Canada.
 - .2 Indicate component profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories.
 - .3 Indicate welded connections using standard welding symbols include net weld lengths.
- .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 the Province of Ontario, Canada.
- .5 Source Quality Control Submittals:
 - .1 Upon request submit copies of mill test reports prior to fabrication of structural steel.
 - .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 Province of Ontario, Canada.
 - .2 Fabricator Reports:
 - .1 Provide structural steel fabricator's affidavit stating that materials and products used in fabrication conform to applicable material and product standards specified and indicated.

1.4 QUALIFICATIONS

- .1 Welder's qualifications: welder's certification to CSA W55.3.
 - .1 Employ qualified and licensed welders possessing certificates for each procedure to be performed.
 - .2 Each welder to possess identification symbol issued by authority having jurisdiction.
- .2 Welding company certification: certified for fusion welding of steel structures to CSA W47.1.

1.5 DELIVERY, STORAGE AND HANDLING

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

- .3 Replace defective and damaged materials with new.

Part 2 Products

2.1 DESIGN REQUIREMENTS

- .1 Design details and connections in accordance with requirements of CSA S16 and to resist forces, moments, and 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 Submit sketches and design calculations stamped and signed by qualified professional engineer licensed in Province of Ontario, Canada for non standard connections.

2.2 MATERIALS

- .1 Structural steel: to CSA G40.20/G40.21 Grade 350W.
- .2 Steel channels, angles and plates: to CSA G40.20/G40.21, Grade 300W.
- .3 Steel tubing: ASTM A500/A500M, Grade C.
- .4 Anchor bolts: to CSA G40.20/G40.21, Grade 300W.
- .5 Bolts, nuts and washers: to ASTM A325M.
- .6 Welding materials: to CSA W48 Series and CSA W59 and certified by Canadian Welding Bureau.
- .7 Shop paint primer: to CISC/CPMA2-75 solvent reducible alkyd, red oxide.
- .8 Hot dip galvanizing: galvanize steel, where indicated, to ASTM A123/A123M, minimum zinc coating of 600 g/m².

2.3 FABRICATION

- .1 Fabricate structural steel in accordance with CSA S16 and in accordance with reviewed shop drawings.
- .2 Continuously seal members by continuous welds. Grind smooth.
- .3 Grind exposed joints flush and smooth with adjacent finish surface.
 - .1 Make exposed joints butt tight, flush, and hairline.
 - .2 Ease exposed edges to small uniform radius.
- .4 Exposed Mechanical Fastenings: screws or bolts; consistent with design of component.
- .5 Furnish and install components required for anchorage of fabrications.
- .6 Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.
- .7 Provide holes in top flanges where indicated.

2.4 FINISHES

- .1 Galvanizing: hot dipped galvanizing with zinc coating 600 g/m² to ASTM A123/A123M.

Part 3 Execution**3.1 EXAMINATION**

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for structural steel installation in accordance with manufacturer's written instructions.
 - .1 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .2 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

3.2 PREPARATION

- .1 Clean steel surfaces as directed by Departmental Representative when staining or defacing occurs.
- .2 Verify location of substructure units, elevations of base plates and location of anchor bolts before erection of structural steel; report discrepancies to Departmental Representative.
- .3 Place anchor bolts at elevations and locations indicated.
 - .1 Protect holes against entry of water and foreign material.

3.3 APPLICATION

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

3.4 GENERAL

- .1 Structural steel work: in accordance with 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.

3.5 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.
- .2 Inform Department 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.

3.6 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 for fit and match.

3.7 ERECTION

- .1 Erect structural steel, as indicated and in accordance with 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.

3.8 FIELD PAINTING

- .1 Touch up damaged surfaces.

END OF SECTION