

Part 1 General

1.1 REFERENCES

- .1 ASTM-A307, Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile.
- .2 ASTM-A325M, Specification for High-Strength Bolts for Structural Steel Joints.
- .3 CGSB-85-GP-14M, Painting Steel Surfaces Exposed to Normally Dry Weather.
- .4 CGSB.1.40, Primer Structural Steel, Oil Alkyd Type.
- .5 CSA-G40.20, General Requirements for Rolled or Welded Structural Quality Steel.
- .6 CSA-G40.21, Structural Quality Steels.
- .7 ASTM A132M: Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- .8 ASTM A153M: Standard Specification for Zinc Coating (Hot-Dip) on Iron and Hardware.
- .9 CSA-S16.1, Limit States Design of Steel Structures.
- .10 CSA-S136, Cold Formed Steel Structural Members.
- .11 CSA-W47.1, Certification of Companies for Fusion Welding of Steel Structures.
- .12 CSA-W59, Welded Steel Construction (Metal Arc Welding).

1.2 SOURCE OF QUALITY CONTROL

- .1 Prior to fabrication of structural steel, submit three (3) 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 CSA-G40.20 and CSA-G40.21.

1.3 QUALITY ASSURANCE

- .1 Qualifications of Welders:
 - .1 Welding of load supporting components shall be performed by companies certified by Canadian Welding Bureau in accordance with CSA W47.1.
 - .2 Welders shall be qualified by Canadian Welding Bureau for classification of Work being performed.
- .2 Workmanship Standards:
 - .1 Resistance Welding: to CSA W55.3, Resistance Welding Qualification Code for Fabricators of Structural Members Used in Buildings.
 - .2 Fusion welding: to CSA W59, Welded Steel Construction (Metal Arc Welding).

1.4 DESIGN OF DETAILS AND CONNECTIONS

- .1 Design details and connections in accordance with requirements of CSA-S16.1 to resist forces, moments and shears indicated.
- .2 If connection for shear only (standard double angle 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 For non-standard connections, submit sketches and design calculations stamped and signed by qualified Professional Engineer registered in the Province of Alberta.
- .4 Anchor bolts for securing equipment to concrete or steel supports to be designed and supplied by the equipment manufacturer.

1.5 SHOP DRAWINGS

- .1 Submit Shop Drawings in accordance with Section 01 33 00 - Submittals.
- .2 Indicate welds by welding symbols in accordance with CSA-W59.
- .3 On erection Drawings, indicate all details and information necessary for assembly and erection purposes such as, description of methods, sequence of erection, type of equipment used in erection and temporary bracings.
- .4 Reproduction of Contract Drawings for use as erection Drawings is not permitted unless approved in writing by Department Representative.
- .5 Each Drawing submission shall bear the signature and stamp of qualified Professional Engineer registered in the Province of Alberta for all fabricator-designed assemblies, components and connections.
- .6 Indicate materials, core-thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.

1.6 PRODUCT DELIVERY AND STORAGE

- .1 Schedule delivery of components to site to coincide with installation of this work.
- .2 Store components to prevent damage and distortion.
- .3 Protect finishes from scratches and soiling.

Part 2 Products

2.1 MATERIALS

- .1 Steel plate, angle and channel sections: to CSA-G40.21, Grade 300W.
- .2 Round reinforcing bars: 400W (weldable grade 400)
- .3 Welding materials: to CSA-W59.
- .4 Anchor bolts and nuts: to ASTM-A307, hot-dip galvanized where noted.
- .5 Bolts: to ASTM-A325.
- .6 Expansion anchors: hot dipped galvanized or stainless steel 304 as applicable.
- .7 Adhesive anchors: hot dipped galvanized or stainless steel 304 as applicable. Adhesive epoxy or epoxy acrylate.

2.2 FABRICATION

- .1 Fabricate Work square, true, straight and accurate to required size, with joints closely fitted and properly secured.
- .2 Fabricate structural steel, as indicated, in accordance with CSA-S16.1 and in accordance with reviewed Shop Drawings.
- .3 Weld to CSA-W59.
- .4 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush. Seal exterior steel fabrications to provide corrosion protection in accordance with CSA S16.1.
- .5 Where possible, fit and shop assemble Work, ready for erection.
- .6 Use self-tapping shake-proof flat-headed screws on items requiring assembly by screws or as indicated. Use screws for interior metal Work. Use welded connections for exterior metal Work unless otherwise approved by Department Representative.
- .7 Work of this Section, supplied for installation under other Sections, shall be prepared as required ready for installation.

2.3 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-6.
- .3 Apply paint under cover, on dry surfaces when surface and air temperatures are above 5°C.
- .4 Maintain dry condition and 5°C minimum temperature until paint is thoroughly dry.
- .5 Strip paint from bolts, nuts, sharp edges and corners before prime coat is dry.

2.4 STEEL FINISH

- .1 Interior steel: MPI #153 light industrial coating, colour to match with the existing steel.
- .2 Exterior steel: hot-dip galvanized

2.5 GENERAL

- .1 Do structural metal work in accordance with CSA S16.1.
- .2 Do welding in accordance with CSA-W59.
- .3 Companies to be certified under CSA-W47.1 for fusion welding of steel structures.

2.6 ERECTION

- .1 Verify dimensions and condition of existing Work before commencing fabrication and report any discrepancy and potential problem areas to Departmental Representative and await instructions.
- .2 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections. Stair treads shall be level.

- .3 Provide suitable means of anchorage acceptable to Departmental Representative such as dowels, anchor clips, bar anchors, adhesive anchors and shields, and toggles.
- .4 Make field connections with high tensile bolts to CSA-S16.1.
- .5 Hand items over for casting into concrete or building into masonry to appropriate trades together with setting templates.
- .6 Touch-up rivets, field welds, bolts and burnt or scratched surfaces after completion of erection with primer.
- .7 Paint complete item with zinc rich primer if necessary to obtain uniform finish after touch-up.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Canadian Standards Association (CSA)
 - .1 CSA G40.20/G40.21-04, General Requirements for Rolled or Welded Structural Quality Steel.
 - .2 CAN/CSA-G164-M92 (R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
- .2 Steel Structures Painting Council (SSPC), Systems and Specifications Manual, Volume 2.

1.2 SUBMITTALS

- .1 Submit shop drawings to requirements of Section 01 33 00 – Submittal Procedures.
- .2 Submit shop drawing bearing stamp of a qualified professional engineer registered in Province of Alberta.
- .3 Indicate on shop drawings, profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories.

Part 2 Products

2.1 MATERIALS

- .1 Steel Sections: CAN/CSA-G40.21, Grade W.
- .2 Primer: SSPC 15 Type 1, red, for shop application and field touch-up.
- .3 Touch-up Primer for Galvanized Surfaces: Zinc rich type.

2.2 FABRICATION

- .1 Fabricate components to CSA S136.
- .2 Fit and shop assemble in largest practical sections, for delivery to site.
- .3 Grind exposed welds flush and smooth with adjacent finish surface.
- .4 Make exposed joints butt tight, flush, and hairline.
- .5 Supply components required for anchorage of metal fabrications.

2.3 FINISHES

- .1 Do not prime surfaces in direct contact bond with concrete or where field welding is required.
- .2 Prime paint items with one coat.
- .3 Galvanized items to minimum Z275 (G90) zinc coating to CSA G164.
- .4 Field Painting: to Section 09 91 00.

Part 3 Execution

3.1 PREPARATION

- .1 Make provisions for erection loads with temporary bracing.

3.2 INSTALLATION

- .1 Install items plumb and level, accurately fitted, free from distortion or defects.
- .2 After installation, touch-up field welds scratched or damaged surfaces with primer.

3.3 SCHEDULE

- .1 Refer to Drawing details for items not specifically scheduled.
- .2 Lintels: Galvanized finish (exterior); field painted to Section 09 91 00. Fabricate to suit masonry coursing, unit size and span.

END OF SECTION