

Part 1 General**1.1 RELATED SECTIONS**

- .1 Cast in Place Concrete Section 03 30 00

1.2 REFERENCES

- .1 Canadian Institute of Steel Construction (CISC)/Canadian Paint Manufacturers' Association (CPMA).
 - .1 CISC/CPMA1-(73b), Quick Drying, One-Coat Paint for Use on Structural Steel.
 - .2 CISC/CPMA2-(75), Quick-Drying, Primer for use on Structural Steel
- .2 Canadian Standards Association (CSA)
 - .1 CAN/CSA-G40.20-13 General Requirements for Rolled or Welded Structural Quality Steel
 - .2 CAN/CSA-G40.21-13 Structural Quality Steels.
 - .3 CAN/CSA-G164-M92, Hot Dip Galvanizing of Irregularly Shaped Articles.
 - .4 CAN/CSA-S16-09 CAN/CSA-S16S1-05 Limit States Design of Steel Structures.
 - .5 CAN/CSA-S136-07 / CAN/CSA-S136S1-04 Cold Formed Steel Structural Members.
 - .6 CSA W57.1-(92), Certification of Companies for Fusion Welding of Steel Structures.
 - .7 CSA W48 Series, Electrodes.
 - .8 CSA W55.3-(1965), Resistance Welding Qualification Code for Fabricators of Structural Members Used in Buildings.
 - .9 CSA W59-(M1989), Welded Steel Construction Metal Arc Welding.

1.3 SHOP DRAWINGS

- .1 Submit shop drawings including Fabrication and Erection documents and materials list in Accordance with Section 01 33 00- Submittal Procedures.
- .2 Ensure Fabricator designed assemblies, components and connections, and drawings are stamped and signed by qualified professional Engineer licensed in the province of Ontario.

1.4 DESIGN DETAILS AND CONNECTIONS

- .1 Design details and connections in accordance with requirements of CAN/CSA-S16.09 CAN/CSA-S16S1-05 and CAN/CSA-S136-01 / CAN/CSA-S136S1-04.1 to resist forces, moments, shears and allow for movements 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 See design drawings for specified loading on steel brackets.

1.5 QUALITY ASSURANCE

- .1 If requested submit copies of mill test reports, showing chemical and physical properties and other details of steel to be incorporated into work prior to fabrication of structural steel. Mill test reports shall be certified by metallurgists qualified to practice in province of Ontario.
- .2 Ensure Fabricator of structural steel, in addition, provides an affidavit stating that materials and products used in fabrication conform to applicable material and products standards called for by design drawings and specifications.

Part 2 Products

2.1 MATERIALS

- .1 Structural steel: to CAN/CSA-G40.21-04 Grade as indicated on structural drawings.
- .2 Anchor bolts: to CAN/CSA-G40.21-04, Grade 300W.
- .3 Bolts, nuts and washers: to ASTM A 325, ASTM A 325M, ASTM A490, ASTM A 490M
- .4 Welding materials: to CSA W59 and certified by Canadian Welding Bureau.
- .5 Shop paint primer: to CISC/CPMA2.
- .6 Hot dip galvanizing: galvanize steel, where indicated, to CAN/CSA-G164-M92, minimum zinc coating of (600) g/m².
- .7 Drilled in epoxy anchors to be cartridge injection adhesive anchors: Threaded steel rod, inserts or reinforcing dowels, complete with nuts, washers, polymer or hybrid mortar adhesive injection system, and manufacturer's installation instructions. Type and size as indicated on Drawings.

2.2 FABRICATION

- .1 Fabricate structural steel in accordance with CAN/CSA-S16-01 and in accordance with reviewed shop drawings.
- .2 Continuously seal members by continuous weld (grind smooth)

2.3 SHOP PAINTING

- .1 Clean, prepare surfaces and shop prime structural steel in accordance with CAN/CSA-S16-01 (except where members to be encased in concrete).
- .2 Apply paint under cover, on dry surfaces when surface and air temperature are above 10° C.

- .3 Maintain dry condition and 10°C minimum temperature until paint is thoroughly dry.
- .4 Strip paint from bolts, nuts, sharp edges and corners before prime coat is dry.

Part 3 Execution

3.1 GENERAL

- .1 Structural steel work: in accordance with CAN/CSA-S16-09
- .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.
- .4 Drill holes with rotary impact hammer drills using carbide-tipped bit or hollow drill bit system. Drill bits shall be of diameters as specified by the anchor manufacturer. Unless otherwise shown on the Drawings, all holes shall be drilled perpendicular to the concrete surface.
- .5 Cartridge Injection Adhesive Anchors: Clean all holes per manufacturer instructions to remove loose material and drilling dust prior to installation of adhesive. Inject adhesive into holes proceeding from the bottom of the hole and progressing toward the surface in such a manner as to avoid introduction of air pockets in the adhesive. Follow manufacturer recommendations to ensure proper mixing of adhesive components. Sufficient adhesive shall be injected in the hole to ensure that the annular gap is filled to the surface. Remove excess adhesive from the surface. Shim anchors with suitable device to center the anchor in the hole. Do not disturb or load anchors before manufacturer specified cure time has elapsed.

3.2 MARKING

- .1 Mark materials in accordance with CAN/CSA-G40.20-04 and CAN/CSA-G40.21-04. 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.

3.3 ERECTION

- .1 Erect structural steel, as indicated and in accordance with CAN/CSA-S16-09 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.

3.4 FIELD QUALITY CONTROL

- .1 Inspection and testing of materials and workmanship will be carried out by test Laboratory designated by Departmental Representative.

- .2 Provide safe access and working areas for testing on site, as required by testing agency and as authorized by Departmental Representative.
- .3 Departmental Representative will pay costs of tests.
- .4 Minimum anchor embedments shall be as shown on the drawings.

3.5 HOT DIP GALVANIZING

- .1 All exterior steel including exterior canopy to be hot dip galvanized.

3.6 FIELD PAINTING

- .1 Touch up all damaged surfaces and surfaces without shop coat with primer to CAN/CGSB-1.40 except as specified otherwise. Apply in accordance with CGSB 85-GP-14M.
- .2 Apply industrial corrosion protection paint to all existing steel surfaces. Prepare in accordance with manufacturers direction & obtain approval from Department Representative prior to covering steel.

END OF SECTION