

**DIVISION 05 METALS**

**Section 05 00 00 Metals - General**

1 Refer to Part 1, Section 2, Division 05.

**Section 05 10 00 Structural Metal Framing**

1 Design

1.1 All structural steel work is to be designed and inspected by a Professional Engineer licensed to practice in Nova Scotia.

2 References

- 2.1 ASTM A36/A36, Specification for Structural Steel.
- 2.2 CAN/CGSB-85.100, Painting, Section 09 90 00.
- 2.3 CAN/CSA-G40.20, General Requirements for Rolled or Welded Structural Quality Steel.
- 2.4 CAN/CSA-G40.21, Structural Quality Steels.
- 2.5 CAN/CSA-G164, Hot Dip Galvanizing of Irregularly Shaped Articles.
- 2.6 CAN/CSA-S16.1, Limit States Design of Steel Structures.
- 2.7 CAN/CSA-S136, Cold Formed Steel Structural Members.
- 2.8 CSA W47.1, Certification of Companies for Fusion Welding of Steel structures.
- 2.9 CSA W48, Electrodes.
- 2.10 CSA W55.3, Resistance Welding Qualification Code for Fabricators of Structural Members Used in Buildings.
- 2.11 CSA W59, Welded Steel Construction Metal Arc Welding.
- 2.12 CISC/CPMA 1-73b, Quick-Drying, One-Coat Paint for Use on Structural Steel.

3 Design of Details and Connections

3.1 Design details and connections in accordance with requirements of CAN/CSA-S16.1 to resist forces, moments, shears and allow for movements indicated.

4 See DC350, Part 1, Section 2, Division 05, item 05 10 00

5 Welding

- 5.1 Do welding in accordance with CSA W59.
- 5.2 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.
- 5.3 Provided certification that all welders joints are qualified by Canadian Welding Bureau.

**Section 05 21 00 Steel Joist Framing**

1 References

- 1.1 CAN/CSA-G40.20, General Requirements for Rolled or Welded Structural Quality Steel.
- 1.2 CAN/CSA-G40.21, Structural Quality Steels.
- 1.3 CAN/CSA-S16.1, Limit States Design of Steel Structures.
- 1.4 CSA W47.1, Certification of Companies for Fusion Welding of Steel Structures.
- 1.5 CSA W55.3, Resistance Welding Qualification Code for Fabricators of Structural Members Used in Buildings.
- 1.6 CSA W59, Welded Steel Construction Metal Arc Welding.
- 1.7 CISC/CPMA 2-75, Quick-Drying, Primer for Use on Structural Steel.

- 2 See DC350, Part 1, Section 2, Division 05, item 05 21 00, for Design of Steel Joists and Bridging, Materials, and Shop Painting.

3 Fabrication

- 3.1 Fabricate steel joists and accessories as indicated in accordance with CAN/CSA-S16.1, CAN/CSA-S136 and in accordance with reviewed shop drawings.
- 3.2 Weld in accordance with CSA W59 and with CSA W59S1.
- 3.3 Provide top, bottom chord extensions where indicated.
- 3.4 Provide diagonal and horizontal bridgings and anchorages as required.
- 3.5 Make allowance through the top chord of the joists for drilling holes to support lighting, etc. in the gymnasium.

4 Erection

- 4.1 Erect steel joists and bridging as indicated in accordance with CAN/CSA-S16.1.
- 4.2 Complete installation of all bridging and anchorages before placing construction loads on joists.
- 4.3 Obtain written approval from Engineer prior to field cutting or altering joists or bridging.
- 4.4 Clean and touch up shop primer to bolts, welds, burned or scratched surfaces at completion of erection.

**Section 05 30 00 Steel Deck**

- 1 Steel deck may be exposed only in gymnasiums, and raised drama areas and shall be acoustic deck. Use of exposed steel deck in classroom applications to be submitted to the province for Department of Education approval.

2 References

- 2.1 CAN/CSA-S16.1, Limit States Design of Steel Structures.
- 2.2 CAN/CSA-S136, Cold Formed Steel Structural Members.

- 2.3 CSA W59, Welded Steel Construction, (Metal Arc Welding).
  - 2.4 CSA W59S1, Supplement No. 1 to W59, Welded Steel Construction Metal Arc Welding.
  - 2.5 CAN/CGSB-1.181, Ready-Mixed Organic Zinc-Rich Coating.
  - 2.6 CSSBI 10M-86(Rev. 88), Steel Roof Deck.
  - 2.7 CSSBI 101M, Zinc Coated Structural Quality Steel Sheet for Steel Deck.
  - 2.8 CSA W47.1, Certification of Companies for Fusion Welding of Steel Structures.
  - 2.9 CSA W55.3, Resistance Welding Qualification Code for Fabricators of Structural Members Used in Buildings.
- 3 Types of Decking
- 3.1 Acoustic steel roof deck
    - 3.1.1 Perforated on vertical face of flutes, interlocking side laps.
    - 3.1.2 Provide acoustic deck over the gymnasium, cafeteria, music room, stage and stage storage.
- 4 Materials
- 4.1 Zinc-iron Alloy ZF coated steel sheet
    - 4.1.1 to ASTM A446/A446M or CSSBI 101M structural quality Grade A with ZF75 coating, for interior surfaces not exposed to weather, where no finish painting is to occur .76 mm base steel thickness.
    - 4.1.2 Where deck is to be painted, supplywiped or satin coated decking.
  - 4.2 Acoustic insulation
    - 4.2.1 fibrous glass 17.5 kg/m<sup>3</sup> density profiled to suit deck flutes.
  - 4.3 Closures as recommended by manufacturer.
  - 4.4 Cover plates, cell closures and flashings: steel sheet with minimum base steel thickness of 0.76 mm. Metallic coating same as deck material.
  - 4.5 Touch Up Primer: zinc rich, ready mix to CAN/CGSB-1.181.
- 5 All exposed fasteners extending below deck in gymnasiums and drama areas shall be cut flush with the underside of deck.
- 6 For Design Criteria, Erection, Closures, Openings and Areas of Concentrated Loads, and Connections see DC 35, Part 1, Section 2, Division 05, item 05 30 00.

## **Section 05 50 00      Metal Fabrications**

- 1 References
- 1.1 ASTM A53 Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
  - 1.2 ASTM A269 Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.

- 1.3 ASTM A307 Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile.
  - 1.4 CGSB 1-GP-40 Primer, Structural Steel, Oil Alkyd Type.
  - 1.5 CGSB 1-GP-181 Coating, Zinc-Rich, Organic, Ready Mixed.
  - 1.6 CAN/CSA-G40.21 Structural Quality Steels.
  - 1.7 CSA G164 Hot Dip Galvanizing of Irregularly Shaped Articles.
  - 1.8 CAN/CSA-S16.1 Limit States Design of Steel Structures.
  - 1.9 CSA W47.1 Certification of Companies for Fusion Welding of Steel Structures.
  - 1.10 CSA W55.3 Resistance Welding Qualification Code for Fabricators of Structural Members Used in Buildings.
  - 1.11 CSA W59 Welded Steel Construction Metal Arc Welding.
- 2 See DC350, Part 1, Section 2, Division 05, item 05 50 00, and Room Data Sheets for specific Room requirements.
- 3 Metal Shelving
    - 3.1 Storage Room/Photocopy Cabinets, General Storage Room Shelves, Gymnasium Storage Room Shelves
      - 3.1.1 Supply of metal storage shelving shall be provided the province. Consultant shall provide shelving design in modular format, to be provided to the school board to determine final room location for units.

### **Section 05 51 00 Metal Stairs and Ladders**

- 1 References:
  - 1.1 Aluminum Association Designation System for Aluminum Finishes-1980.
  - 1.2 ASTM A36M Specification for Structural Steel.
  - 1.3 ASTM A53 Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
  - 1.4 ASTM A307, Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile.
  - 1.5 ASTM A325, Specification for High-Strength Bolts for Structural Steel Joints.
  - 1.6 ANSI/NAAMM MBG 531-88 Metal Bar Grating Manual.
  - 1.7 CAN/CGSB-1.40 Primer, Structural Steel, Oil Alkyd Type.
  - 1.8 CAN/CSA-G40.21 General Requirements for Rolled or Welded Structural Quality Steel.
  - 1.9 CSA W59 Welded Steel Construction (Metal Arc Welding).
- 2 Design Criteria
  - 2.1 Design metal stair, balustrade and landing construction and connections to NBC vertical and horizontal live load requirements.
  - 2.2 Detail and fabricate stairs to NAAMM Metal Stairs Manual fourth edition 1982.
  - 2.3 All handrails to be of stainless steel construction.
- 3 See DC350, Part 1, Section 2, Division 05, item 05 51 00.

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