

**Part 1 General****1.1 RELATED REQUIREMENTS**

- .1 Section 03 10 00 - Concrete Forming and Accessories.
- .2 Section 03 30 00 - Cast-In-Place Concrete.

**1.2 REFERENCES**

- .1 ASTM International
  - .1 ASTM A82/A82M-07, Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
  - .2 ASTM A185/A185M-07, Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.
- .2 CSA International
  - .1 CSA-A23.1-09/A23.2-09, Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.
  - .2 CAN/CSA-A23.3-04(R2010), Design of Concrete Structures.
  - .3 CSA-G30.18-09, Carbon Steel Bars for Concrete Reinforcement.
  - .4 CSA-G40.20/G40.21-04(R2009), General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
  - .5 CSA W186-M1990(R2012), Welding of Reinforcing Bars in Reinforced Concrete Construction.
- .3 Reinforcing Steel Institute of Canada (RSIC)
  - .1 RSIC-2010, Reinforcing Steel Manual of Standard Practice.

**1.3 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 00 10 – General Instructions.
- .2 Prepare reinforcement drawings in accordance with RSIC Manual of Standard Practice.
- .3 Shop Drawings:
  - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Ontario of Canada.
    - .1 Indicate placing of reinforcement and:
      - .1 Bar bending details.
      - .2 Lists.
      - .3 Quantities of reinforcement.
      - .4 Sizes, spacings, locations of reinforcement and mechanical splices if approved by Departmental Representative with identifying code marks to permit correct placement without reference to structural drawings.
      - .5 Indicate sizes, spacings and locations of chairs, spacers and hangers.

- .2 Detail lap lengths and bar development lengths to CAN/CSA-A23.3, unless otherwise indicated.
  - .1 Provide type C tension lap splices unless otherwise indicated.

#### **1.4 QUALITY ASSURANCE**

- .1 Upon request submit Mill Test Report to Departmental Representative with certified copy of mill test report of reinforcing steel.
- .2 Upon request submit in writing to Departmental Representative proposed source of reinforcement material to be supplied.

#### **1.5 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
  - .1 Store materials off ground in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Replace defective or damaged materials with new.

### **Part 2 Products**

#### **2.1 MATERIALS**

- .1 Substitute different size bars only if permitted in writing by Departmental Representative.
- .2 Reinforcing steel: billet steel, grade 400, deformed bars to CSA-G30.18, unless indicated otherwise.
- .3 Reinforcing steel: weldable low alloy steel deformed bars to CSA-G30.18.
- .4 Cold-drawn annealed steel wire ties: to ASTM A82/A82M.
- .5 Welded steel wire fabric: to ASTM A185/A185M.
  - .1 Provide in flat sheets only.
- .6 Chairs, bolsters, bar supports, spacers: to CSA-A23.1/A23.2.
- .7 Mechanical splices: subject to approval of Departmental Representative.
- .8 Plain round bars: to CSA-G40.20/G40.21.

#### **2.2 FABRICATION**

- .1 Fabricate reinforcing steel in accordance with CSA-A23.1/A23.2.
- .2 Obtain Departmental Representative's written approval for locations of reinforcement splices other than those shown on placing drawings.
- .3 Upon approval of Departmental Representative, weld reinforcement in accordance with CSA W186.

- .4 Ship bundles of bar reinforcement, clearly identified in accordance with bar bending details and lists.

### **2.3 SOURCE QUALITY CONTROL**

- .1 Upon request provide Departmental Representative with certified copy of mill test report of reinforcing steel, showing physical and chemical analysis.
- .2 Upon request inform Departmental Representative of proposed source of material to be supplied.

## **Part 3 Execution**

### **3.1 FIELD BENDING**

- .1 Do not field bend or field weld reinforcement except where indicated or authorized by Departmental Representative.
- .2 When field bending is authorized, bend without heat, applying slow and steady pressure.
- .3 Replace bars, which develop cracks or splits.

### **3.2 PLACING REINFORCEMENT**

- .1 Place reinforcing steel as indicated on placing drawings and in accordance with CSA-A23.1/A23.2.
- .2 Use plain round bars as slip dowels in concrete.
  - .1 Paint portion of dowel intended to move within hardened concrete with one coat of asphalt paint.
  - .2 When paint is dry, apply thick even film of mineral lubricating grease.
- .3 Prior to placing concrete, obtain Departmental Representative's approval of reinforcing material and placement.
- .4 Ensure cover to reinforcement is maintained during concrete pour.

### **3.3 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 00 10 – General Instructions.
  - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.

**END OF SECTION**