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**Part 1 GENERAL**

**1.1 RELATED SECTIONS**

- .1 03 10 00 – Concrete Forming and Accessories
- .2 03 30 00 – Cast-in-Place Concrete

**1.2 REFERENCE STANDARDS**

- .1 American Concrete Institute (ACI)
  - .1 SP-66-04, ACI Detailing Manual 2004.
- .2 American Society for Testing and Materials (ASTM)
  - .1 ASTM A 1064/A 1064M-16b, Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.
- .3 CSA Group, latest edition
  - .1 CSA-A23.1 /A23.2-14, Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.
  - .2 CAN/CSA-A23.3-14, Design of Concrete Structures.
  - .3 CSA-G30.18-09(R2014), Carbon Steel Bars for Concrete Reinforcement.
  - .4 CSA-G40.20/G40.21-13(R2014), General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
  - .5 CSA W186-M1990(R2016), Welding of Reinforcing Bars in Reinforced Concrete Construction.
- .4 Reinforcing Steel Institute of Canada (RSIC)
  - .1 RSIC-2004, Reinforcing Steel Manual of Standard Practice.

**1.3 ACTION AND INFORMAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Prepare reinforcement drawings in accordance with RSIC Manual of Standard Practice, and ANSI/ACI 315 and ACI 315R, Manual of Departmental Representativeing and Placing Drawings for Reinforced Concrete Structures.
- .3 Shop Drawings:
  - .1 Submit drawings stamped and signed by engineer registered or licensed in Newfoundland and Labrador, Canada.
    - .1 Prepare reinforcement drawings in accordance with RSIC Manual of Standard Practice and SP-66.
    - .2 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 B tension lap splices unless otherwise indicated.
- .3 Indicate position and size of openings in slabs and walls. Coordinate with trades requiring openings.
- .4 Quality Assurance Submittals:
  - .1 Submit in accordance with Section 01 45 00 - Quality Control and as described in PART 2 – SOURCE QUALITY CONTROL.
  - .2 Mill Test Report: upon request, submit to Departmental Representative certified copy of mill test report of reinforcing steel, minimum 4 weeks prior to beginning reinforcing work.
  - .3 Upon request, submit in writing to Departmental Representative proposed source of reinforcement material to be supplied.

#### **1.4 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 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 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 Cold-drawn annealed steel wire ties: to ASTM 1064/A 1064M
- .4 Chairs, bolsters, bar supports, spacers: to CSA-A23.1/A23.2.
- .5 Tie wire: 1.5 mm diameter annealed wire.
- .6 Mechanical splices: subject to approval of Departmental Representative.
- .7 Plain round bars: to CSA-G40.20/G40.21.

#### **2.2 FABRICATION**

- .1 Fabricate reinforcing steel in accordance with CSA A23.1/A23.2, SP-66, and Reinforcing Steel Manual of Standard Practice by the RSIC.

- .2 Obtain Departmental Representative's written approval for locations of reinforcement splices other than those shown on placing drawings.
- .3 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, minimum 4 weeks prior to beginning reinforcing work.
- .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 Cutting or puncturing vapour retarder is not permitted; repair damage and reseal vapour retarder before placing concrete.
- .2 Place reinforcing steel as indicated on reviewed placing drawings and in accordance with CSA-A23.1/A23.2.
- .3 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.
- .4 Prior to placing concrete, obtain Departmental Representative's approval of reinforcing material and placement.
- .5 Ensure cover to reinforcement is maintained at all times during concrete pour.

### **3.3 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

**END OF SECTION**