

PART 1 - GENERAL

1.1 RELATED  
SECTIONS

- .1 Section 03 10 00 - Concrete Forming and Accessories.
- .2 Section 03 30 00 - Cast-in-Place Concrete.
- .3 Section 35 59 29 - Mooring Devices.

1.2 REFERENCES

- .1 American Concrete Institute (ACI)
  - .1 SP-66-04, ACI Detailing Manual 2004.
    - .1 ACI 315-99, Details and Detailing of Concrete Reinforcement.
    - .2 ACI 315R-04, Manual of Engineering and Placing Drawings for Reinforced Concrete Structures.
- .2 ASTM International
  - .1 ASTM A1064/A1064M-13, Standard for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.
  - .2 ASTM A143/A143M-07, Standard Practice for Safeguarding Against Embrittlement of Hot-Dip Galvanized Structural Steel Products and Procedure for Detecting Embrittlement.
  - .3 ASTM A775/A775M-07b(2014), Standard Specification for Epoxy-Coated Reinforcing Steel Bars.
  - .4 ASTM-A123/A123M-13, Standard Specification for Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products.
- .3 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 CSA-A23.3-04 (R2010), Design of Concrete Structures.
  - .3 CSA G30.18-09, Carbon Steel Bars for Concrete Reinforcement.
  - .4 CSA G40.20-13/G40.21-13, General Requirement for Rolled or Welded Structural Quality Steels/Structural Quality Steel.
  - .5 CSA W186-M1990 (R2012), 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  
INFORMATIONAL  
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 ACI 315.
- .3 Shop Drawings:
  - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Newfoundland and Labrador.
    - .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 CSA-A23.3.

1.4 QUALITY  
ASSURANCE

---

- .1 Submit in accordance with Section 01 45 00 - Quality Control and as described in PART 2 - SOURCE QUALITY CONTROL.
  - .1 Mill Test Report: Upon request, provide Departmental Representative with certified copy of mill test report of reinforcing steel, minimum 4 weeks prior to beginning reinforcing work.
  - .2 Upon request submit in writing to Departmental Representative proposed source of reinforcement material to be supplied.

- |   |  |
|---|--|
| <u>1.5 DELIVERY,<br/>STORAGE AND<br/>HANDLING</u> | <ul style="list-style-type: none"><li>.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.</li><li>.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.</li><li>.3 Storage and Handling Requirements:<ul style="list-style-type: none"><li>.1 Store materials off ground, indoors, in dry location, and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.</li><li>.2 Replace defective or damaged materials with new.</li></ul></li></ul> |
| <u>1.6 WASTE<br/>MANAGEMENT AND<br/>DISPOSAL</u>  | <ul style="list-style-type: none"><li>.1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal and the Waste Reduction Workplan.</li></ul>  |

## PART 2 - PRODUCTS

- |                      |   |
|----------------------|---|
| <u>2.1 MATERIALS</u> | <ul style="list-style-type: none"><li>.1 Substitute different size bars only if permitted in writing by Departmental Representative.</li><li>.2 Reinforcing steel: billet steel, grade 400, deformed bars to CAN/CSA-G30.18, unless indicated otherwise.</li><li>.3 Reinforcing steel: weldable low alloy steel deformed bars to CAN/CSA-G30.18.</li><li>.4 Cold-drawn annealed steel wire ties: to CSA G30.3.</li><li>.5 Welded steel wire fabric: to CSA G30.5. Provide in flat sheets only.</li><li>.6 Chairs, bolsters, bar supports, spacers: to CAN/CSA-A23.1.</li><li>.7 Mechanical splices: subject to approval of Departmental Representative.</li></ul> |
|----------------------|---|
-

2.2 FABRICATION

- .1 Fabricate reinforcing steel in accordance with CAN/CSA-A23.1, ANSI/ACI 315, and Reinforcing Steel Manual of Standard Practice by the Reinforcing Steel Institute of Canada. ACI 315R, Manual of Engineering and Placing Drawings for Reinforced Concrete Structures unless indicated otherwise.
- .2 Obtain Departmental Representative's 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 Provide Departmental Representative with certified copy of mill test report of reinforcing steel, showing physical and chemical analysis, minimum 2 weeks prior to commencing 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 Place reinforcing steel as indicated on reviewed placing drawings and in accordance with CAN/CSA-A23.1.
- .2 Use approved type chairs to locate the reinforcing steel at the proper grade.

- .3 Tie reinforcement where spacing in each direction is:
  - .1 Less than 300 mm: tie at alternate intersections.
  - .2 300 mm or more: tie at each intersection.
- .4 Prior to placing concrete, obtain Departmental Representative's approval of reinforcing material and placement.
- .5 Ensure cover to reinforcement is maintained during concrete pour.

3.3 CLEANING

- .1 Clean reinforcing before placing concrete to CAN/CSA-A23.1.