

## **PART 1 - GENERAL**

### **1.1 RELATED SECTIONS**

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

### **1.2 REFERENCES**

- .1 Canadian Standards Association (CSA)
  - .1 CSA-A23.1-09/A23.2-09, Concrete Materials and Methods of Concrete Construction.
- .2 CSA-A23.3-04(R2010), Design of Concrete Structures for Buildings.
- .3 RSIC-2004, Reinforcing Steel Manual of Standard Practice.
- .4 ASTM A1064/A1064M-13, Standards Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.

### **1.3 SHOP DRAWINGS**

- .1 Submit reinforcing steel shop drawings for review by the Departmental Representative.
  - .2 Indicate on shop drawings, bar bending details, lists, quantities of reinforcement, sizes, spacings, splice lengths locations of reinforcement and mechanical splices if approved by Departmental Representative, with identifying code marks to permit correct placement without reference to structural drawings. Indicate sizes, spacings and locations of chairs, spacers and hangers.
  - .3 Prepare reinforcement drawings in accordance with Reinforcing Steel Manual of Standard Practice - by Reinforcing Steel Institute of Canada. General Contractor to sign drawings indicating co-ordination with other trades.
  - .4 Detail splice lengths to CSA-A23.3 as follows:
    - .1 All splices to be tension lap splices, Class "B".
    - .2 No more than 50% of the reinforcing to be spliced at any given location.
  - .5 All corners and intersections to have corner bars, same size and spacing as main bars. Provide tension lap with main bars.
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## **1.4 MEASUREMENT FOR PAYMENT**

- .1 No separate measurement for payment shall be made for items under this section. Costs to be included in Unit Price for the associated Cast-In-Place Concrete.

## **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 CAN/CSA-G30.18, unless indicated otherwise.
- .3 Cold-drawn annealed steel wire ties; Minimum 1.5 mm diameter.
- .4 Chairs, bolsters, bar supports, spacers to CSA-A23.1/A23.2, adequate for strength and support of reinforcing during construction conditions, all of which to be non-staining.
- .5 Mechanical splices: subject to approval of. Departmental Representative.
- .6 Plain round bars: to CAN/CSA-G40.21-92.
- .7 Deformed steel wire for concrete reinforcement to ASTM A1064/A1064M.
- .8 Welded, steel wire fabric to ASTM A1064/A1064M
  - .1 Provide in flat sheets only.
- .9 Welded deformed steel wire fabric to ASTM A1064/A1064M.
  - .1 Provide in flat sheets only.

### **2.2 FABRICATION**

- .1 Fabricate reinforcing steel in accordance with CSA-A23.1/A23.2, ANSI/ACI 315, and Reinforcing Steel Manual of Standard Practice by the Reinforcing Steel Institute of Canada. Shop fabricate and bend all reinforcing steel.
  - .2 Match dowels from footings to vertical reinforcing in wall or pedestal above.
  - .3 Fabricate to the following tolerances:
    - .1 Sheared length  $\pm 25$  mm.
    - .2 Stirrups, items and spirals  $\pm 10$  mm.
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- .3 Other bends  $\pm 25$  mm.
- .4 Obtain Departmental Representative's approval for locations of reinforcement splices other than those shown on placing drawings.
- .5 Upon approval of Departmental Representative, weld reinforcement in accordance with CSA W186.
- .6 Have welding performed by workers qualified under CSA W47.1.
- .7 Welding of reinforcing steel must receive prior approval of the Departmental Representative.
- .8 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 commencing reinforcing work.
- .2 Upon request inform Departmental Representative of proposed source of material to be supplied.

### **2.4 CLEANING**

- .1 Clean reinforcing to CSA-A23.1/A23.2. All reinforcing bars are to be free of scale rust and contamination at time of placing in forms.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- .1 Examine work related to this section and report discrepancies to Departmental Representative.
- .2 Commencement of work shall imply acceptance of conditions.

### **3.2 FIELD BENDING**

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

### **3.3 PLACING REINFORCEMENT**

- .1 Place reinforcing steel as indicated on reviewed placing drawings and in accordance with CSA-A23.1/A23.2.
- .2 Provide all chairs, braces, lateral support, headers, ties, etc. to secure reinforcing in place during construction.
- .3 Use plain round bars as slip dowels in concrete. Paint portion of dowel intended to move within hardened concrete with one coat of asphalt paint. When paint is dry, apply a 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 during concrete pour.
- .6 Under no circumstances will concrete trucks be permitted to travel over the reinforcing during concrete placing operations.
- .7 After reinforcing is placed and prior to closing of forms, notify the Departmental Representative for inspection of the Work.
- .8 Reinforcement shall be adequately supported by metal chairs, spacers or hangers and secured against displacement within the tolerance permitted and in accordance with the latest ACI Standard 315.
- .9 Review with the Departmental Representative, placement of reinforcement prior to concreting.

### **3.4 STORAGE**

- .1 Store reinforcing steel to prevent deterioration, contamination or disfigurement.