

PART 1 - GENERAL

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| <u>1.1 Related Requirements</u> | .1 | Section 01 74 21- Construction/Demolition Waste Management and Disposal |
| | .2 | Section 03 10 00 - Concrete Forming and Formwork Accessories. |
| | .3 | Section 03 30 00 - Cast-in-Place Concrete. |
| <u>1.2 References</u> | .1 | Canadian Standards Association (CSA)
.1 CSA-A23.1-09/A23.2-09, Concrete Materials and Methods of Concrete Construction.
.2 CSA-G30.3 - Cold Drawn Steel Wire for Concrete Reinforcement.
.3 CAN/CSA-G164-M92(R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
.4 CSA-A23.3-04 (R2010), Design of Concrete Structures for Buildings.
.5 CAN/CSA-G30.18-09, Billet-Steel Bars for Concrete Reinforcement. |
| | .2 | Reinforcing Steel Institute of Canada (RSIC)
.1 RSIC-2004, Reinforcing Steel Manual of Standard Practice. |
| | .3 | ASTM A108-13, Standard Specification for Steel Bar, Carbon and Alloy, Cold finished. |
| | .4 | ANSI/ACI 315, Manual of Engineering and Placing Drawings for Reinforced Concrete Structures. |
| <u>1.3 Shop Drawings</u> | .1 | Submit reinforcing steel shop drawings for review by the Departmental Representative that are sealed and signed by a registered Engineer in the Province of Newfoundland and Labrador. |
| | .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 references to structural drawings. Indicate sizes, spacings and locations of chairs, spacers |
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and hangers.

- .3 Prepare reinforcement drawings in accordance with Reinforcing Steel Manual of Standard practice - by Reinforcing Steel Institute of Canada and to ANSI/ACI 315.
- .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.
 - .3 Do not splice near locations of maximum stress (for example, do not splice bottom deck longitudinal reinforcement at midspan).

1.4 Waste Management and Disposal

- .1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

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 to CAN/CSA G30.3.
- .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. Do not use metal chairs. Colour to be grey where all or portions of the chair may remain exposed.
- .5 Mechanical splices: subject to approval of Departmental Representative.

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
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- fabricate and bend all reinforcing steel.
- .2 Fabricate to the following tolerances:
 - .1 Sheared length + 25 mm.
 - .2 Stirrups, items and spirals to + 10 mm.
 - .3 Other bends + 25 mm.
 - .3 Obtain Departmental Representative's approval for locations of reinforcement splices other than those shown on placing drawings.
 - .4 Welding of reinforcing steel must receive prior approval of the Departmental Representative.
 - .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 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 2 weeks prior to beginning reinforcing work. Mill certificates shall be in accordance with CAN/CSA G30.18.
- .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.
- .2 When field bending is authorized, bend without heat, applying slow and steady pressure.
- .3 Replace bars, which 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 Prior to placing concrete, obtain Departmental Representative's approval of reinforcing material and placement.
- .4 Ensure cover to reinforcement is maintained during concrete pour.
- .5 Under no circumstances will concrete trucks or highway traffic be permitted to travel over the reinforcing during concrete placing operations.
- .6 After reinforcing is placed and prior to closing of forms, notify the Departmental Representative for inspection of the Work.
- .7 Reinforcement shall be adequately supported by chairs, spacers or hangers and secured against displacement within the tolerance permitted and in accordance with the latest ACI Standard 315.

3.4 Storage

- .1 Store reinforcing steel to prevent deterioration, contamination or disfigurement.
- .2 Store reinforcing steel off the ground.