

Part 1 General

1.1 REFERENCES

- .1 The City of Winnipeg (CW)
 - .1 CW 2160.
 - .2 CW 3230.
 - .3 CW 3410.
 - .4 CW 2030
- .2 Canadian Standards Association (CSA)
 - .1 CAN/CSA-A23.1, Concrete Materials and Methods of Concrete Construction.
 - .2 CAN/CSA-A23.2, Methods of Test for Concrete.
 - .3 CAN/CSA-A3000-A5, Portland Cement.
 - .4 CAN/CSA-G30.18, Billet-Steel Bars for Concrete Reinforcement.

Part 2 Products

2.1 MATERIALS

- .1 Portland cement: to CAN/CSA-A3000-A5, Type HS or HSb.
- .2 Reinforcing bars: to CAN/CSA-G30.18, Grade 400.
- .3 Joint sealer/filler: to CAN/CGSB-19.24, Type 1, Class B.
- .4 Sealer: proprietary poly-siloxane resin blend.
- .5 Other concrete materials: to CAN/CSA-A23.1.
- .6 Void Form: Frost Cushion as manufactured by Beaver Plastics.

2.2 MIXES

- .1 Proportion concrete in accordance with CAN/CSA-A23.1 and CW 2160.
- .2 Concrete: concrete design shall be in accordance with performance specification and shall have the following properties:
 - Cement:
 - .1 Type HS or HSb.
 - .2 Minimum Compressive Strength @ 28 days: 35 MPa
 - .3 Slump: 80 +/- 20 mm
 - .4 Air Content: 5 +/- 1%
 - .5 Maximum Water/Cement Ratio = 0.45
- .3 Class of exposure: S-2 to CAN/CSA-A23.1.

- .4 Nominal maximum size of coarse aggregate: 20mm and to CAN/CSA-A23.1.
- .5 Air content: concrete to contain purposely entrained air in accordance with CAN/CSA-A23.1.
- .6 Admixtures: to CAN/CSA-A23.1.
- .7 Grout: Sika Grout 212SR or approved equal in accordance with B6.
- .8 Bonding Agent: ACRYL-STIX or approved equal in accordance with B6.

Part 3 Execution

3.1 CONSTRUCTION

- .1 Do cast-in-place concrete work in accordance with CAN/CSA-A23.1.

3.2 FORMING

- .1 Construct formwork and falsework in accordance with CAN/CSA-A23.1 and CSA S269.1.

3.3 INSERTS

- .1 Cast in sleeves, ties, slots, anchors, reinforcement, frames, conduit, bolts, waterstops, joint fillers and other inserts required to be built-in. Sleeves and openings greater than 100 mm x 100 mm not indicated, must be approved by the Contract Administrator.

3.4 FINISHES

- .1 Formed surfaces exposed to view: sack rubbed finish in accordance with CAN/CSA-A23.1.
- .2 Interior floor slabs: initial finishing operations followed by final finishing comprising mechanical floating and steel trowelling as specified in CAN/CSA-A23.1 to produce hard, smooth, dense trowelled surface free from blemishes.

3.5 CURING

- .1 Cure and protect concrete in accordance with CAN/CSA-A23.1.
 - .1 Do not use curing compounds where bond is required by subsequent topping or coating.

3.6 SEALING

- .1 Following curing, apply poly-siloxane resin blend sealer at 4 m²/L.

3.7 SITE TOLERANCES

- .1 Concrete floor slab finishing tolerance in accordance with CAN/CSA-A23.1.

3.8 QUALITY CONTROL

- .1 Field Inspection: A minimum of twenty-four (24) hours notice shall be given to the Contract Administrator prior to the pouring of any concrete to allow for observation of reinforcing steel.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 City of Winnipeg (CW)
 - .1 CW 2160
- .2 American Concrete Institute (ACI)
 - .1 SP-66, ACI Detailing Manual 2004.
 - .1 ACI 315, Details and Detailing of Concrete Reinforcement.
 - .2 ACI 315R, Manual of Engineering and Placing Drawings for Reinforced Concrete Structures.
- .3 CSA International
 - .1 CSA-A23.1/A23.2, Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.
 - .2 CSA-A23.3, Design of Concrete Structures.
 - .3 CSA-G30.18, Carbon Steel Bars for Concrete Reinforcement.
 - .4 CSA-G40.20/G40.21, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .5 CAN/CSA-G164, Hot Dip Galvanizing of Irregularly Shaped Articles.
 - .6 CSA W186, Welding of Reinforcing Bars in Reinforced Concrete Construction.
- .4 Reinforcing Steel Institute of Canada (RSIC)
 - .1 RSIC, Reinforcing Steel Manual of Standard Practice.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 The Contractor shall submit shop drawings for the Contract Administrator's approval two (2) weeks prior to the fabrication of any reinforcing steel.
- .2 The Contractor shall provide, without charge, the samples of reinforcing steel required for quality control tests and provide such assistance and use of tools and construction equipment as is required.

1.3 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 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 Reinforcing steel: billet steel, grade 400, deformed bars to CSA-G30.18.
- .2 Reinforcing steel: weldable low alloy steel deformed bars to CSA-G30.18.
- .3 Cold-drawn annealed steel wire ties: to ASTM A82/A82M.
- .4 Chairs, bolsters, bar supports, spacers: to CSA-A23.1/A23.2.
 - .1 Bar accessories shall be of type approved by the Contract Administrator. They shall be made from a non-corroding material, and they shall not stain, blemish, or spall the concrete surface for the life of the concrete. Bar chairs are to be PVC; galvanized bar chairs are not acceptable.
 - .2 Bar accessories shall include bar chairs, spacers, clips, wire ties, wire (18 gauge minimum), or other similar devices that may be approved by the Contract Administrator. Bar accessories are not shown on the Contract Drawings. The supply and installation of bar accessories shall be considered incidental to the supply and placing of reinforcing steel.
- .5 Plain round bars: to CSA-G40.20/G40.21.
- .6 Replace defective or damaged materials with new.

2.2 FABRICATION

- .1 Fabricate reinforcing steel in accordance with CSA-A23.1/A23.2, ACI 315, CW 2160, and Reinforcing Steel Manual of Standard Practice by the Reinforcing Steel Institute of Canada.
- .2 Ship bundles of bar reinforcement, clearly identified in accordance with bar bending details and lists.

2.3 SOURCE QUALITY CONTROL

- .1 Upon request, provide the Contract Administrator 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 the Contract Administrator 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 authorized by the Contract Administrator.
- .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 the Contract Administrator's approval of reinforcing material and placement.
- .4 Ensure cover to reinforcement is maintained during concrete pour.
- .5 A minimum of twenty-four (24) hours notice shall be given to the Contract Administrator prior to the pouring of any concrete to allow for observation of reinforcing steel.

3.3 CLEANING

- .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