

## **PART 1 - GENERAL**

### **1.1 RELATED SECTIONS**

- .1 Section 03 30 00 - Cast-in-Place Concrete.

### **1.2 REFERENCES**

- .1 American Society for Testing and Materials (ASTM)
  - .1 ASTM A 53/A53M-12, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
  - .2 ASTM A 90/A90M-11, Standard Test Method for Weight (Mass) of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings.
  - .3 ASTM A 121-07, Standard Specification for Metallic-Coated Carbon Steel Barbed Wire.
  - .4 A653/A653M-11, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  - .5 ASTM A 585-97, Specification for Aluminum-Coated Steel Barbed Wire.
  - .6 ASTM C 618-12, Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete.
- .2 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-138.1-96, Fabric for Chain Link Fence.
  - .2 CAN/CGSB-138.2-96, Steel Framework for Chain Link Fence.
  - .3 CAN/CGSB-138.3-96, Installation of Chain Link Fence.
  - .4 CAN/CGSB-1.181-99, Ready-Mixed Organic Zinc-Rich Coating.
- .3 Canadian Standards Association (CSA)
  - .1 CSA-A23.1/A23.2-09, Concrete Materials and Methods of Concrete Construction/Methods of Test for Concrete, Includes update No.1 (2011).
  - .2 CAN/CSA-G164-M92(R1998), Hot Dip Galvanizing of Irregularly Shaped Articles.
  - .3 CAN/CSA-A3000-08, Cementitious Materials Compendium. Includes:
    - .1 CAN/CSA-A23.5-98, Supplementary Cementing Materials

### **1.3 SHOP DRAWINGS**

- .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- .1 Concrete mixes and materials: in accordance with Section 03 30 00 - Cast-in-Place Concrete
- .2 Chain-link fence fabric: to CAN/CGSB-138.1.
  - .1 Type: as indicated.
  - .2 Height of fabric: as indicated.
- .3 Posts, braces and rails: to CAN/CGSB-138.2, galvanized steel pipe. Dimensions as indicated.
- .4 Bottom tension wire: to CAN/CGSB-138.1, Table 2, single strand, galvanized steel wire.
- .5 Tie wire fasteners: to CAN/CGSB-138.1, Table 2 (steel wire).
- .6 Tension bar: to ASTM A 653/A653M, minimum galvanized steel.
- .7 Fittings and hardware: to CAN/CGSB-138.2, cast aluminum alloy, galvanized steel or malleable or ductile cast iron. Tension bar bands: 3 x 20 mm minimum galvanized steel or 5 x 20 mm minimum aluminum. Post caps to provide waterproof fit, to fasten securely over posts and to carry top rail. Overhang tops to provide waterproof fit, to hold top rails and an outward inward projection to hold barbed wire overhang. Provide projection with clips or recesses to hold 3 strands of barbed wire spaced 100 mm apart. Projection of approximately 300 mm long to project from fence at 45° above horizontal. Turnbuckles to be drop forged.
- .8 Organic zinc rich coating: to CAN/CGSB-1.181.

### **2.2 FINISHES**

- .1 Galvanizing:
  - .1 For chain link fabric: to CAN/CGSB-138.1 Grade 2.
  - .2 For pipe: 600 g/m<sup>2</sup> minimum to ASTM A 90.
  - .3 For other fittings: to CAN/CSA-G164.

## **PART 3 - EXECUTION**

### **3.1 GRADING**

- .1 Remove debris and correct ground undulations along fence line to obtain smooth uniform gradient between posts. Provide clearance between bottom of fence and ground surface of 40 mm to 75 mm.

### **3.2 ERECTION OF FENCE**

- .1 Erect fence along lines as indicated and to CAN/CGSB-138.3.
  - .2 Excavate post holes to dimensions indicated. Post holes in asphalt or concrete shall be core cut.
  - .3 Space line posts 3 m max. apart in a symmetrical pattern, measured parallel to ground surface.
  - .4 Install corner posts at all corners of fence and at buildings. Brace rails shall be double braced for fence height of 3m or higher.
  - .5 Place concrete in post holes then embed posts into concrete to depths indicated on drawings. Brace to hold posts in plumb position and true to alignment and elevation until concrete has set.
  - .6 Do not install fence fabric until concrete has cured minimum of 5 days.
  - .7 Install brace between corner and nearest line post, placed in centre of panel at inclination as indicated. Install braces on both sides of corner in similar manner.
  - .8 Install overhang tops and caps.
  - .9 Install top rail between posts and fasten securely to posts and secure waterproof caps and overhang tops.
  - .10 Install bottom tension wire, stretch tightly and fasten securely to corner with turnbuckles and tension bar bands.
  - .11 Lay out fence fabric. Stretch tightly to tension recommended by manufacturer and fasten to end, corner and straining posts with tension bar secured to post with tension bar bands spaced at 300 mm intervals. Knuckled selvedge at bottom. Twisted selvedge at top.
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- .12 Secure fabric to top rails, line posts and bottom tension wire with tie wires at 450 mm intervals. Give tie wires minimum two twists.

### **3.3 TOUCH UP**

- .1 Clean damaged surfaces with wire brush removing loose and cracked coatings. Apply two coats of organic zinc-rich paint to damaged areas. Pre-treat damaged surfaces according to manufacturers' instructions for zinc-rich paint.

### **3.4 CLEANING**

- .1 Clean and trim areas disturbed by operations and dispose of surplus.