

## **Part 1        General**

### **1.1            SECTION INCLUDES**

- .1 Chain link fence, fabric and posts.
- .2 Concrete base for posts.

### **1.2            REFERENCE STANDARDS**

- .1 American Society for Testing and Materials (ASTM).
  - .1 ASTM A53/A53M, Standard Specification for Pipe, Steel, Black and Hot-dipped, Zinc-Coated Welded and Seamless.
  - .2 ASTM A90/A90M, Standard Test Method for Weight Mass of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings.
  - .3 ASTM A116, Standard Specification for Metallic-Coated, Steel-Woven Wire Fence Fabric.
  - .4 ASTM A121, Standard Specification for Zinc-Coated (Galvanized) Steel Barbed Wire.
  - .5 ASTM A123/A123M, Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel.
  - .6 ASTM A641/A641M, Standard Specification for Zinc-coated (Galvanized) Carbon Steel Wire.
  - .7 A653/A653M, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvanized) by the Hot-Dip Process.
- .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-138.4-96, Gates for Chain Link Fence.
- .3 Canadian Standards Association (CSA).
  - .1 CSA-A23.1/A23.2, Concrete Materials and Methods of Concrete Construction/Methods of Test for Concrete.
  - .2 CAN/CSA-G164, Hot Dip Galvanizing of Irregularly Shaped Articles.
  - .3 CAN/CSA-A3000, Cementitious Materials Compendium.

## **Part 2        Products**

### **2.1            MATERIALS**

- .1 Concrete mixes and materials: in accordance with Section 03 30 00- Cast-in-Place Concrete.
  - .1 Nominal coarse aggregate size: 20 mm.
  - .2 Compressive strength: 20 MPa minimum at 28 days.
- .2 Chain-link fence fabric: to CAN/CGSB-138.1.
  - .1 Type 1, Class A, medium style.

- .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 mm diameter.
- .5 Tie wire fasteners: to CAN/CGSB-138.1, Table 2 (steel wire), single strand, galvanized steel wire confirming to requirements of fence fabric, 5 mm diameter.
- .6 Tension bar: to A653/A653M, 5 x 20 mm minimum galvanized steel.
- .7 Tension bar bands: 3 x 20 mm minimum galvanized steel or 5 x 20 mm minimum aluminum.
- .8 Gates: to CAN/CGSB-138.4.
- .9 Gate frames: to ASTM A53/A53M, galvanized steel pipe, standard weight 45 mm outside diameter pipe for outside frame, 35mm outside diameter pipe for interior bracing.
  - .1 Fabricate gates as indicated with electrically welded joints, and hot-dip galvanized after welding.
  - .2 Fasten fence fabric to gate with twisted selvage at top.
  - .3 Furnish gates with galvanized malleable iron hinges, latch and latch catch with provision for padlock which can be attached and operated from either side of installed gate.
  - .4 Furnish double gates with chain hook to hold gates open and centre rest with drop bolt for closed position.
- .10 Fittings and hardware: to CAN/CGSB-138.2, cast aluminum alloy, galvanized steel or malleable or ductile cast iron.
  - .1 Tension bar bands: 3 x 20 mm minimum galvanized steel or 5 x 20 mm minimum aluminum.
  - .2 Post caps to provide waterproof fit, to fasten securely over posts and to carry top rail.
  - .3 Overhang tops to provide waterproof fit, to hold top rails and an outward inward projection to hold barbed wire overhang.
  - .4 Provide projection with clips or recesses to hold 3 strands of barbed wire spaced 100 mm apart.
  - .5 Projection of approximately 300 mm long to project from fence at 45° above horizontal.
  - .6 Turnbuckles to be drop forged.
- .11 Organic zinc rich coating: to CAN/CGSB-1.181.

## 2.2 FINISHES

- .1 Galvanizing:
  - .1 For chain link fabric: to CAN/CGSB-138.1, Grade2.
  - .2 For pipe: 550 g/m<sup>2</sup> minimum to ASTM A90.
  - .3 For barbed wire: to ASTM A121, Class 2.
  - .4 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.
  - .1 Provide clearance between bottom of fence and ground surface of 30 mm to 50 mm.

**3.2 ERECTION OF FENCE**

- .1 Erect fence along lines as indicated and as directed by Owner's Representative and in accordance with CAN/CGSB-138.3.
- .2 Excavate post holes 1200 mm depth x 300 mm diameter by methods approved by Owner's Representative.
- .3 Space line posts 3 m apart, measured parallel to ground surface.
- .4 Space straining posts at equal intervals not exceeding 150 m if distance between end or corner posts on straight continuous lengths of fence over reasonably smooth grade is greater than 150 m.
- .5 Install additional straining posts at sharp changes in grade and where directed by Owner's Representative.
- .6 Install corner post where change in alignment exceeds 10°.
- .7 Install end posts at end of fence and at buildings. Install gate posts on both sides of gate openings.
- .8 Place concrete in post holes then embed posts into concrete to minimum 900 mm depth.
  - .1 Extend concrete 50 mm above ground level and slope to drain away from posts.
  - .2 Brace to hold posts in plumb position and true to alignment and elevation until concrete has set.
- .9 Do not install fence fabric until concrete has cured minimum of 5 days.
- .10 Install brace between end and gate posts and nearest line post, placed in centre of panel and parallel to ground surface.
  - .1 Install braces on both sides of corner and straining posts in similar manner.
- .11 Install overhang tops and caps.
- .12 Install top rail between posts and fasten securely to posts and secure waterproof caps and overhang tops.
- .13 Install bottom tension wire, stretch tightly and fasten securely to end, corner, gate and straining posts with turnbuckles and tension bar bands.
- .14 Lay out fence fabric. Stretch tightly to tension recommended by manufacturer and fasten to end, corner, gate and straining posts with tension bar secured to post with tension bar bands spaced at 300 mm intervals.
  - .1 Knuckled selvedge at bottom.
  - .2 Twisted selvedge at top.
- .15 Secure fabric to top rails, line posts and bottom tension wire with tie wires at 450 mm intervals.

- .1 Give tie wires minimum two twists.
- .16 Install barbed wire strands and clip securely to lugs of each projection.

### **3.3 INSTALLATION OF GATES**

- .1 Install gates in locations as indicated.
- .2 Level ground between gate posts and set gate bottom approximately 40 mm above ground surface.
- .3 Install gate stops where indicated.

### **3.4 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 in accordance with Section 09 91 13 – Exterior Painting. Pre-treat damaged surfaces according to manufacturers' instructions for zinc-rich paint.

### **3.5 CLEANING**

- .1 Clean and trim areas disturbed by operations. Dispose of surplus material as directed by Owner's Representative.

**END OF SECTION**