# GEneral

## Related Sections

### Section 03300 - Cast in Place Concrete

### Section 01300 – Submittals

## References

### ASTM A53/A53M-12, Standard Specification for Pipe, Steel, Black and Hot Dipped, Zinc Coated Welded and Seamless.

### ASTM A90/A90M-13, Standard Test Method for Weight [Mass] of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings

### ASTM A121-13, Standard Specification for Metallic- Coated Carbon Steel Barbed Wire.

### ASTM A653/A653M-15e1, Standard Specification for Steel Sheet, Zinc Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot Dip Process.

### CAN/CSA A23.1-09/A23.2-14, Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete

### CAN/CGSB 138.1-96, Fabric for Chain Link Fence.

### CAN/CGSB 138.2-96, Steel Framework for Chain Link Fence.

### CAN/CGSB 138.3-96, Installation of Chain Link Fence.

### CAN/CGSB 138.4-96, Gates for Chain Link Fence.

### CAN/CSA-A3000-13, Cementitious Materials Compendium. Includes: CAN/CSA-A23.5, Supplementary Cementing Materials.

### Ontario Underground Infrastructure Notification System Act, 2012

## Measurement and Payment

### [The Work outlined in this Section will be measured and paid for at the lump sum price as indicated in the Bid Form Item A2.xx.

# PRODUCTS

## Materials

### Concrete mixes and materials: in accordance with Section 03300 - Cast in Place Concrete.

#### Nominal coarse aggregate size: 20 mm.

#### Compressive strength: minimum of 30 MPa, at 28 Days.

### Chain link fence fabric: in accordance with CAN/CGSB 138.1-96.

#### Type 1, Class A, heavy style.

#### Height of fabric: as indicated in the Contract Documents.

#### Acceptable material: Black vinyl coated steel fencing.

### Posts, braces and rails: in accordance with CAN/CGSB 138.2-96, black vinyl coated, galvanized steel pipe. Dimensions as indicated in the Contract Documents.

### Bottom tension wire: in accordance with CAN/CGSB 138.1-96, Table 2, single strand, black vinyl coated steel wire, 5 mm in diameter.

### Tie wire fasteners: in accordance with CAN/CGSB 138.1-96, Table 2 steel wire, single strand black vinyl coated.

### Tension bar: in accordance with ASTM A653/A653M-15e1, 5 mm x 20 mm (minimum) black vinyl, coated galvanized steel.

### Gates: in accordance with CAN/CGSB 138.4-96, black vinyl coated.

### Gate frames: in accordance with ASTM A53/A53M-12, black vinyl coated, galvanized steel pipe, standard weight 45 mm outside diameter pipe for outside frame, 35 mm outside diameter pipe for interior bracing.

#### Fabricate gates as indicated in the Contract Documents with electrically welded joints, and hot dip galvanized after welding.

#### Fasten the fence fabric to the gate with twisted selvage at the top.

#### 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 the installed gate.

#### Furnish double gates with a chain hook to hold the gates open and a centre rest with a drop bolt for the closed position.

### Fittings and hardware: in accordance with CAN/CGSB 138.2-96, black vinyl coated, cast aluminum alloy, galvanized steel or malleable or ductile cast iron.

### Tension bar bands: 3 mm x 20 mm (minimum) galvanized steel or 5 mm x 20 mm (minimum) aluminum. Post caps to provide a waterproof fit, to fasten securely over the posts and to carry the top rail. Overhang tops to provide a waterproof fit, to hold top rails and an outward projection to hold a barbed wire overhang. Provide projection with clips or recesses to hold 3 strands of barbed wire spaced 100 mm apart. A projection of approximately 300 mm long shall project from the fence at 45 degrees above horizontal. Turnbuckles are to be drop forged.

### Organic zinc rich coating: in accordance with ASTM standards.

### Barbed wire: 2 mm diameter galvanized steel wire in accordance with ASTM A121-13, 4 point barbs 125 mm spacing.

### Barbed wire: in accordance with CAN/CGSB 138.2-96, 2.5 mm in diameter.

### Grounding rod: 16 mm diameter copperwell rod, 3 m long.

## Finishes

### Galvanizing:

#### For chain link fabric: in accordance with CAN/CGSB 138.1-96 Grade 2.

#### For pipe: 550 g/m5 minimum in accordance with ASTM A90/A90M-13.

#### For barbed wire: in accordance with ASTM A121-13, Class 2. CAN/CGSB 138.2-96.

### Vinyl coating:

#### 0.045 mm dry film thickness minimum.

# EXECUTION

## Grading

### Remove debris and correct ground undulations along the fence line to obtain a smooth uniform gradient between posts. Provide clearance between the bottom of the fence and the ground surface of 30 mm to 50 mm.

## Erection of Fence

### The Contractor shall be deemed an “excavator” under the Ontario Underground Infrastructure Notification System Act, 2012, and shall comply with all applicable requirements of the Act.  The Contractor shall obtain locates of underground infrastructure from Ontario One Call prior to commencing an excavation or dig.

### Erect fence 0.3 m back from the property lines and as indicated on the Contract Drawings and in accordance with CAN/CGSB 138.3-96.

### Excavate post holes to the dimensions indicated in the Contract Drawings and by methods approved by the Consultant.

### Space line posts 3 m apart, measured parallel to the ground surface.

### Space straining posts at equal intervals not exceeding 150 m if the distance between end or corner posts on straight continuous lengths of fence over a reasonably smooth grade is greater than 150 m.

### Install additional straining posts at sharp changes in grade and where directed by the Consultant.

### Install corner post where the change in alignment exceeds 10 degrees.

### Install end posts at the end of the fence and at buildings. Install gate posts on both sides of gate openings.

### Place concrete in the post holes then embed the posts into concrete to the depths indicated on the Contract Drawings. Extend concrete 50 mm above ground level and slope to drain away from the posts. Brace to hold the posts in plumb position and true to alignment and elevation until the concrete has set.

### Do not install fence fabric until concrete has cured a minimum of 5 Working Days.

### Install braces between end and gate posts and the nearest line post, placed in the centre of the panel and parallel to the ground surface. Install braces on both sides of corner and straining posts in a similar manner.

### Install overhang tops and caps.

### Install top rail between posts and fasten securely to posts and secure waterproof caps and overhang tops.

### Install bottom tension wire, stretch tightly and fasten securely to end, corner, gate and straining posts with turnbuckles and tension bar bands.

### Lay out fence fabric. Stretch tightly to the tension recommended by the manufacturer and fasten to the end, corner, gate and straining posts with tension bar secured to the post with tension bar bands spaced at 300 mm intervals, with knuckled selvedge at the bottom and twisted selvedge at the top.

### Secure fabric to the top rails, line posts and bottom tension wire with tie wires at 450 mm intervals. Give tie wires a minimum of two twists.

### Install barbed wire strands and clip securely to the lugs of each projection.

### Install grounding rods as indicated by the Consultant.

## Installation of Gates

### Install gates in the locations as indicated by the Consultant.

### Level the ground between gate posts and set the gate bottom approximately 40 mm above the ground surface.

### Determine the position of the centre gate rest for double gate. Cast the gate rest in concrete as directed by the Consultant. Dome the concrete above ground level to shed water.

### Install gate stops as indicated by the Consultant.

## Touch-up

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

## Cleaning

### Clean and trim any areas disturbed by operations. Dispose of surplus material and replace damaged turf with sod as directed by the Consultant.

**END OF SECTION**