

Part 1 General

1.1 DESCRIPTION

- .1 This section specifies installation requirements for chain link fencing for use around the sewage lagoon .

1.2 DELIVERY, STORAGE AND HANDLING

- .1 Delivery of the materials is the responsibility of the Contractor
- .2 Storage of the materials will be the responsibility of the Contractor until such materials are transferred to the contractor. Materials are to be carefully stored off the ground to provide proper protection against oxidation caused by ground moisture. Height of stored materials shall not exceed 2m.

1.3 REFERENCES

- .1 ASTM A53-12, Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
- .2 ASTM A90-81 (2013), Test Method for Weight of Coating on Zinc-Coated (Galvanized) Iron or Steel Articles.
- .3 ASTM A121-13, Specification for Metallic-Coated Carbon Steel Barbed Wire.
- .4 ASTM A653/A653MM-13, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (glvannealed)by the Hot Dip Process.
- .5 CAN/CSA-A23-1-09/A23.2-09(R2014), Concrete Materials and Methods of Concrete Construction.
- .6 CAN/CSA-G164-M92(R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
- .7 CAN/CGSB-138-1-96, Fence Chain Link, Fabric.
- .8 CAN/CGSB-138.2-96, Fence, Chain Link, Framework, Zinc-Coated, Steel,
- .9 CAN/CGSB-138-3-96, Fence, Chain Link - Installation.
- .10 CAN/CGSB-138-4-96, Fence, Chain Link, Gates.
- .11 CAN/CGSB-1.181-99, Ready-Mixed Organic Zinc-Rich Coating.

Part 2 Products

2.1 FABRIC SUPPLIED

- .1 Fabric shall be chain link, hot-dipped galvanized after weaving hand having a nominal height of 3.0m as called for on the drawings.
- .2 Chain link: 50 mm x 50 mm mesh with steel wire, gauge No. 9 (3.5 mm Dia.) galvanized with an average of 460 g of zinc per m² of surface area.

- .3 Top selvedge to have a twisted and barbed finish and bottom selvedge to have a knuckled finish. Top and bottom selvedge of gates only to be knuckled finish.
- .4 Tensile strength of each individual picket to stand a tensile test of 550 MPa.

2.2 FABRIC TIE WIRES

- .1 Fence Fabric shall be secured to Tension wire, all rails and line posts with No. 9 gauge, minimum, galvanized steel wire ties at spacing of 305 mm on centre. Tie down wire shall be hooked to the fabric and pulled across the secure side of the rail or line posts and attached to the fabric on the opposite side of the post. Both ends are twisted to a minimum of two turns pulling the fabric in close contact with the rail or line post. To prevent untwisting of the ties by hand, remove any excess wire ends.
- .2 Twist shall be on non-secure side of the fence. Secure fabric to the end corner and gate posts for the full length of the fabric by using stretcher bars and bar bands. The bar band shall be place 356 mm maximum on centre. Using stretcher bars and bar bands to fastening the chain link fence to the terminal posts for the full height of the fabric.

2.3 POST AND RAILS

- .1 Posts, braces and rails: to CAN/CGSB-138-2, standard continuous weld, hot dip galvanized, Schedule 40 steel pipe.
 - .1 Line Posts
 - .1 Length: 4267 mm
 - .2 Minimum outside diameter: 50 mm
 - .3 Minimum weight: 11.26 kg/m
 - .4 Space posts equal distance to the fence line to 2400 mm on centre. Provide corner or terminal posts for any change in direction of 15 degrees or more and for any abrupt change in grade, with bracing in both directions.
 - .2 Terminal posts:
 - .1 Length: 4267 mm
 - .2 Minimum outside diameter: 89 mm
 - .3 Minimum weight: 11.26 kg/m
 - .4 Terminal posts shall be used at beginning and end of each continuous length of fence and abrupt changes in vertical or change in horizontal alignment of 15 degrees or more.
 - .5 Terminal posts shall be installed at intervals not exceeding 152 m. Where fence runs are greater than 152 m, space terminal posts evenly between corner and/or end posts.
 - .3 Top rail and braces:
 - .1 Top rail shall be 43 mm O.D. galvanized pipe, plain ends, random lengths, standard butt-weld Schedule 40 pipe. No tubing, conduit or open seam material shall be permitted.
 - .2 Couplings shall be the outside sleeve type, at least 180 mm in length for the top rail. The top rail is to pass through line post top and form a continuous brace for each stretch of fence. The top rail is to be secured

to each terminal post with receptacle fittings. Couplings shall not be installed at more than 300 mm from a post. If required to meet this condition, the top rail shall be cut to suit.

- .3 Minimum weight: 3.37 kg/m
- .4 Bracing shall be 43 mm O.D. galvanized, same specifications as top rail. Horizontal brace, spaced midway between top rail bottom or fence, shall be provided and shall extend from terminal post to first adjacent line post. End and gate posts are to have one brace. Corner and straining posts to have two braces.
- .5 Fittings are to hot-dipped galvanized, pressure steel, or aluminum moldings of sufficient strength to ensure the integrity of the fence.
- .4 Tension bar: to ASTM, A525M, 5 x 20 mm galvanized steel. Provide one tension bar for each gate post and terminal post and two for each corner and pull post.
- .5 Tension bar bands: 3 x 20 minimum galvanized steel. Space bar bands not more than 14" (356 mm) on centre and within 4" from top and bottom of fabric.
- .6 Tension wire: No. 6 gauge, single strand, 610 g/m² electro-galvanized steel. Post caps to provide waterproof fit to fasten securely over posts and to carry top rail.

2.4 POST INSTALLATION

- .1 Fence posts are to be installed to a depth of 2.0m, or to a depth agreed upon by the engineer.
 - .1 Installation in berm will include drilling a 150mm diameter hole, to the depth indicated, and centred on the berm. The post is to be piled into the hole and grouted used to fill voids and create a solid base.
 - .2 Installation into rock and native soils will involve drilling the necessary diameter hole to install the post, then using grout to fixate in place.

2.5 SINGLE OUTRIGER BARBED WIRE AND SUPPORTS

- .1 Extension Arm: Post shall be equipped with one 14 inch long extension arm with slits at even spacing for three strands of barbed wire. Extension arms shall have a tight press-fit or should be tack welded or secured to post with self tapping 8 mm dia. screw.
- .2 Extension arms shall be solid one piece construction non-breakaway type.
- .3 Extension arms shall be inclined and rise approximately 300 mm vertically.
- .4 Barbed Wire: Barbed wire shall conform to ASTM A 121, Class 3 and shall be hot-dip galvanized steel consisting of two strands of 12.5 gauge twisted line wire with 14 gauge four point barbs located 75 mm on centre.

2.6 FINISHES

- .1 Galvanizing
 - .1 For chain link fabric: 490 g/m minimum to CAN/CGSB-138.1 Grade 1
 - .2 For pipe: 550 g/m minimum to ASTM A90.
 - .3 For other fittings: 550 g/m to CAN/CSA-G164.

2.7 TOUCH UP

- .1 Clean damaged surfaces with wire brush, removing loose and cracked coatings. Pre-treat damaged surfaces according to manufacturer's instructions for zinc-rich paint. Apply two coats of organic zinc-rich paint to damaged areas.
- .2 Touch-up welded area with zinc-rich paint conforming to ASTM A780.

END OF SECTION