

CW 3550 – Chain Link and Drift Control Fence

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CW 3550 – Chain Link and Drift Control Fence

1. GENERAL CONDITIONS

The General Conditions and General Requirements shall apply to and be a part of this Specification.

3. DESCRIPTION

This Specification shall cover the supply and installation of chain link fencing and drift control fence.

The work to be completed by the Contractor under this Specification shall include the supply of all materials, and the furnishing of all superintendence, overhead, labour, equipment, tools and all other things necessary for and incidental to the satisfactory completion of all of the work as hereinafter specified.

5. MATERIALS

5.1 Drift Control Fence

5.1.1 Approved Products

Use only those materials listed as Approved Products for Surface Works. The Approved Products are available in Adobe Acrobat (.pdf) format at the City of Winnipeg, Corporate Finance, Material Management Internet site at: <http://www.winnipeg.ca/matmgt/info.stm>

5.1.2 Material Property Requirements

- a) Colour – Safety Orange
- b) Width – 1220 ± 50mm (4 feet ± 2inches)
- c) Roll Length – 15.25m (50 feet) approximately
- d) Roll Weight - 17.0 kg (40 lbs)
- e) Material – High Density Polyethylene
- f) Mesh Size – 65mm x 95mm (2.5"x3.75")
- g) Horizontal Ultimate Tensile Strength – 45 kg (100 lbs) minimum per average strand
Or 725kg (1600lbs) minimum per 1220mm (4 foot wide)
- h) Vertical Ultimate Tensile Strength – 45kg (100 lbs) minimum per average strand
or 180 kg (400 lbs) minimum per lineal foot.

5.1.3 T-bar Steel Posts for Drift Control Fence

Steel posts for drift control fence shall be:

- a) No. 2 – T-bar steel posts
- b) Seven feet (7') in total length
- c) Weight - seven to nine pounds (7 – 9 lbs) minimum.
- d) One side shall have a serrated edge

5.2 Chain Link Fence**5.2.1 General**

All chain link fence materials shall conform to this Specification and the Canadian General Standards Board (CGSB) Specifications CAN/CGSB-138.1, CAN/CGSB-138.2 and CAN/CGSB-138.4. Where any contradictions occur, Specification CW 3550-R2 shall take precedence over CGSB Specifications.

5.2.2 Terminal Posts

Terminal posts, comprising of end, gate, corner and straining posts shall be standard seamless, continuous weld, schedule 40 hot dip galvanized steel pipe weighing 11.28 kg per lineal metre. Posts shall be supplied with weatherproof caps. Tubing, conduit or open seam material will not be accepted.

End, gate, corner and straining posts shall be of the lengths and dimensions shown in following table:

TABLE 1
CW3550-R2.1

Fence Height mm	Pipe Diameter (outside) mm	Pipe Length mm	Diameter & Depth of Conc. Pile * mm
1220	88.9	2440	300 x 1800
1830	88.9	3200	300 x 1800
2440	88.9	3810	300 x 1800
3050	88.9	4420	300 x 1800
3660	114.3	5030	400 x 1800
4880	114.3	6550	400 x 1800

* Only where concrete is specified for post installation

5.2.3 Line Posts

Line posts shall be standard seamless, continuous weld, schedule 40 hot dip galvanized steel pipe weighing 5.43 kg per lineal metre. Line posts for fence fabric that is to be 3660 mm and higher shall weigh 8.63 kg per lineal metre. Tubing, conduit or open seam pipe will not be accepted.

Line posts shall be supplied with weatherproof eye top caps to accommodate continuous horizontal top rail and shall be of the lengths and dimensions shown in the following table:

TABLE 2
CW3550-R2.2

Fence Height mm	Pipe Diameter (outside) mm	Pipe Length mm	Diameter & Depth of Conc. Pile *
1220	60.3	2440	250 x 1800
1830	60.3	3200	250 x 1800
2440	60.3	3810	250 x 1800
3050	60.3	4420	250 x 1800
3660	73.0	5030	250 x 1800
4880	73.0	6550	250 x 1800

* Only where concrete is specified for post installation

5.2.4 Top and Bottom Rails

Top rails, or bottom rails where specified, shall be standard, continuous weld, schedule 40 hot dip galvanized steel pipe weighing 3.38 kg per lineal metre. Top rails shall be 6700 mm in length and have an outside diameter of not less than 43 mm.

5.2.5 Top and Bottom Rail Sleeve Couplings

Top and bottom rail sleeve couplings shall be schedule 40, hot dip galvanized steel pipe, 171 mm long and 45 mm inside diameter to accommodate a 43 mm outside diameter top rail and manufactured specifically as a top/bottom rail sleeve coupling for chain link fence.

5.2.6 Fabric

Fabric shall be No. 9 gauge steel wire woven into a uniform 50 mm (2") diamond pattern mesh or as specified. Size of mesh shall be determined by measuring the minimum clear distance between the wires forming the parallel sides of the mesh. Permissible variation in size of mesh shall be 3 mm (1/8"). Diameter of wire shall be no less than 3.68 mm (0.145"). The top and bottom selvage shall be knuckled.

Fabric shall be zinc coated before weaving by the hot dip process to an average mass per unit area of not less than 490 g/m².

Mesh fabric shall not be excessively rough, or have blisters, sal ammoniac spots, bruises or flaking.

Chain link fabric shall have a minimum tensile strength of 415 MPa.

5.2.7 Bottom Tension Wire

Bottom tension wire shall be No. 6 gauge single strand galvanized steel wire.

5.2.8 Turnbuckles

Where turnbuckles are specified, they shall be drop forged steel and be hot dip galvanized. The average overall length shall be approximately 300 mm, with ends in the closed position. Bolt diameter shall be 10 mm and shall be capable of taking up a minimum of 150 mm slack.

5.2.9 Braces

Braces, shall be schedule 40 hot dip galvanized steel pipe, not less than 43 mm outside diameter and weigh 3.38 kg per lineal metre.

5.2.10 Fittings and Accessories

Tension bars shall be 5 x 19 mm galvanized flat steel and not less than 50 mm shorter than the height of the fabric with which they are to be used.

Tension bands shall be 3 x 19 mm galvanized flat steel c/w 8 x 32 mm galvanized carriage bolts and nuts.

Brace bands shall be 3 x 19 mm galvanized flat steel c/w 8 x 32 mm galvanized carriage bolts and nuts to fasten top rail receptacles to terminal posts.

Cut ends of tension bars shall be ground smooth to remove all sharp edges and burrs.

Fabric clips shall be No. 9 gauge aluminum alloy wire.

Weatherproof post tops/caps, receptacles, and fittings shall be of adequate strength and may be of aluminum alloy, malleable steel or pressed steel. All ferrous metals shall be hot dip galvanized.

5.2.11 Concrete

Where concrete piles are specified for post installation, the concrete shall conform to CW 2160 and be sulphate resistant type 50, minimum compressive strength of 25 MPa at 28 days, air content of 4% - 7%, maximum slump of 80 mm and a maximum size of course aggregate of 40 mm.

9. CONSTRUCTION METHODS**9.1 Drift Control Fence**

Install Drift Control Fence in accordance with the manufacturer's instructions or as directed by the Contract Administrator.

9.2 Chain Link Fence**9.2.1 General**

The Contractor shall install chain link fence in accordance with Clauses 9.2 to 9.9 herein and the Canadian General Standards Board Specification CAN/CGSB-138.3. Where any contradictions occur, Specification CW 3550-R2 shall take precedence over CGSB Specifications.

Survey bars and control monuments must be protected during construction in accordance with Clause 4 of CW 1100, Standard Provisions.

9.2.2 Post Installation

Terminal and line posts, except where otherwise specified, shall be installed to a depth equal to the difference between the proposed fence height and the specified pipe length shown in Clauses 5.2 and 5.3 herein. Use hydraulic equipment to push or pound posts into the existing ground.

Where concrete piles are specified for post installation, they shall be of the lengths and dimensions shown in Clauses 5.2 and 5.3 herein. Posts shall be set in the centre of the concrete pile. Tops of concrete piles shall be crowned or domed to shed water and be installed 100mm below the finished grade. Concrete piles shall be constructed in accordance with CW 2160.

Posts shall be plumbed and set to give correct alignment. Bending of posts to give correct alignment is not acceptable.

Weatherproof post tops/caps shall be securely attached to eliminate removal by hand. Eye top caps shall allow for the insertion of a top rail in a horizontal position.

Maximum spacing between centerline of posts shall not exceed 3050 mm.

Straining posts shall be installed at all sharp changes in grade and where directed by the Contract Administrator.

9.2.3 Fabric Installation

Fabric shall be stretched taut to the correct tension as specified by the manufacturer and to the Contract Administrator's satisfaction. Where posts have been installed in concrete piles, fence fabric shall not be installed until piles have cured for a period of not less than five (5) days. Fabric shall be installed on the outside of the fence unless requirement for installation on the inside of the fence is specified.

Clearance between bottom of fabric mesh and ground surface shall be no less than 40 mm or more than 50 mm unless otherwise indicated on the drawing or approved by the Contract Administrator.

Fabric clips shall be used to fasten the fabric to the top rail at 450 mm spacing and to line posts at 380 mm maximum spacing. Wires ties on the top rail and bottom rail or tension wire shall have a minimum of two twists around mesh.

Tension bars, bands and bolts shall be used to fasten the fabric to terminal posts. Maximum spacing for tension bands and bolts shall be 380 mm. Top of tension bars shall not protrude above the bottom of the top rail.

The bottom tension wire shall be stretched taut along the bottom of the fabric and securely attached to all terminal and line posts and attached to the bottom edge of the fabric at 450 mm maximum spacing using hog rings.

9.2.4 Turnbuckles

Where turnbuckles are specified for installation, they shall be used to stretch the bottom tension wire taut and be able to take up a minimum of 150 mm slack.

9.2.5 Braces

Braces, where specified only, shall be placed either horizontally or diagonally from the terminal post to the first adjacent line post. Braces shall be secured to posts in accordance with construction drawing details and/or to the satisfaction of the Contract Administrator.

Corner and straining posts shall have braces on both sides.

9.2.6 Mid Rails

Mid rails for 4880 mm high fences shall be installed at a height of 2440 mm above the finished grade in accordance with construction drawing details and/or to the satisfaction of the Contract Administrator.

9.2.7 Gates

Gate frames shall be made from schedule 40 hot dip galvanized steel pipe; not less than 43 mm outside diameter, electrically welded at all joints with ample bracing to provide a rigid frame free from sag or twist.

Gate height shall match the height of the fence unless otherwise specified.

No. 9 gauge chain link fabric as specified in Clause 5.6 herein shall be attached to gate panels in accordance with Clause 9.3 herein. Top and bottom fabric selvage shall be knuckled.

Gates shall be supplied and installed complete with hot dip galvanized malleable iron hinges, latches, chain holdbacks, and a gate latch suitable for padlock, which is accessible from either side. Gates 3000 mm or more in width shall have three hinges per section.

Hinges shall permit the gate to swing back 180° degrees in line with the fence and shall be installed so as not to permit easy removal of the gate.

If requested by the Contract Administrator, the Contractor shall supply shop drawings of all gates to be supplied prior to manufacture for the Contract Administrator's approval.

9.2.8 Zinc Coating Repairs

All abraded and damaged galvanized surfaces shall be cleaned and painted. Damaged surface areas shall be thoroughly grinded or wire brushed and all loose and cracked zinc coating removed, after which the cleaned area shall be painted with two coats of a zinc pigmented paint approved by the Contract Administrator for these purpose.

9.2.9 Site Clean-Up

All areas of the Work Site shall be kept clean at all times by the Contractor.

Upon completion of the project, the Contractor shall immediately remove all excess material and debris from the Work Site to the satisfaction of the Contract Administrator.

12. METHOD OF MEASUREMENT**12.1 Drift Control Fence**

Supply and installation of Drift Control Fence shall not be measured for payment and shall be incidental to the Contract.

12.2 Chain Link Fence

Chain link fence will be measured on a linear measure basis. The quantity to be paid for will be the actual number of linear metres constructed in accordance with this Specification and accepted by the Contract Administrator, as computed from measurements made by the Contract Administrator.

12.3 Chain Link Fence Gates

Gates will be measured on a linear measure basis. The quantity to be paid for will be the actual number of linear metres constructed in accordance with this Specification and accepted by the Contract Administrator, as computed from measurements made by the Contract Administrator.

13. METHOD OF PAYMENT**13.1 Chain Link Fence**

Chain Link fence will be paid for at the Contract Unit Price per metre for "Chain Link Fence"* measured as specified herein, which price shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the work included in this Specification.

* Specify the following:

* Height of the Chain Link Fence

* If Concrete is required for Line Posts or for Terminal Posts

13.2 Chain Link Fence Gates

Gates will be paid for at the Contract Unit Price per metre for "Gates", measured as specified herein, which price shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the work included in this Specification.