



MATERIAL SPECIFICATION FOR CHAIN-LINK FENCE COMPONENTS

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1541.01 SCOPE

This specification covers the requirements for chain-link fence components and hardware.

1541.01.01 Specification Significance and Use

This specification has been developed for use in municipal-oriented Contracts. The administration, testing, and payment policies, procedures, and practices reflected in this specification correspond to those used by many municipalities in Ontario.

Use of this specification or any other specification shall be according to the Contract Documents.

1541.01.02 Appendices Significance and Use

Appendices are not for use in provincial contracts as they are developed for municipal use, and then, only when invoked by the Owner.

Appendices are developed for the Owner's use only.

Inclusion of an appendix as part of the Contract Documents is solely at the discretion of the Owner. Appendices are not a mandatory part of this specification and only become part of the Contract Documents as the Owner invokes them.

Invoking a particular appendix does not obligate an Owner to use all available appendices. Only invoked appendices form part of the Contract Documents.

The decision to use any appendix is determined by an Owner after considering their contract requirements and their administrative, payment, and testing procedures, policies, and practices. Depending on these considerations, an Owner may not wish to invoke some or any of the available appendices.

1541.02 REFERENCES

When the Contract Documents indicate that municipal-oriented specifications are to be used and there is a municipal-oriented specification of the same number as those listed below, references within this specification to an OPSS shall be deemed to mean OPSS.MUNI, unless use of a provincial-oriented specification is specified in the Contract Documents. When there is not a corresponding municipal-oriented specification, the references below shall be considered to be the OPSS listed, unless use of a provincial-oriented specification is specified in the Contract Documents.

This specification refers to the following standards, specifications, or publications:

Ontario Provincial Standard Specifications, Construction

OPSS 772 Chain-Link Fence

Canadian General Standards Board (CGSB)

138.1-96 Fabric for Chain Link Fence
138.2-96 Steel Framework for Chain Link Fence
138.4-96 Gates for Chain Link Fence

ASTM International

A 27/A 27M-17 Steel Casting, Carbon, for General Application
A 153/A 153M-16 Zinc Coating (Hot-Dip) on Iron and Steel Hardware
A 824-01 (2017) Metallic-Coated Steel Marcellled Tension Wire for Use With Chain Link Fence
F 626-14 Fence Fittings

1541.03 DEFINITIONS

For the purpose of this specification, the definitions in OPSS 772 apply.

1541.05 MATERIALS

1541.05.01 Fence Fabric

The fence fabric shall be 1,200 or 1,800 mm wide according to the Contract Documents, with a uniform 50 mm diamond pattern chain-link mesh closed at one edge by knuckling and at the other edge by twisting.

The steel wire for chain-link fence fabric shall be according to CAN/CGSB 138.1. The fence fabric shall be one of the types listed in Table 1.

The vinyl coating for wire fabric shall be black in colour.

1541.05.02 Posts and Rails

All posts, post sleeves, and rails shall be galvanized steel pipe and shall be according to CAN/CGSB 138.2.

When vinyl-coated fence fabric is used, all posts, post sleeves, and rails shall be vinyl-coated to match the class and colour of the vinyl-coated fence fabric and shall be according to CAN/CGSB 138.1.

1541.05.03 Diagonal Wire Braces, Top and Bottom Wires for use with Galvanized Steel Fence Fabric

Top wire, bottom wire, and diagonal wire braces shall be 4.50 mm diameter marcelled tension wire Type II according to ASTM A 824 with a minimum Class 5 galvanized coating.

1541.05.04 Diagonal Wire Braces, Top and Bottom Wires for use with Vinyl-Coated Fence Fabric

Top wire, bottom wire, and diagonal wire braces shall be 4.50 mm diameter marcelled tension wire Type II according to ASTM A 824 with a minimum Class 3 galvanized coating. The wire shall be vinyl-coated to match the class and colour of the vinyl-coated fence fabric and shall be according to CAN/CGSB 138.1

1541.05.05 Gates

Gates shall be constructed from galvanized steel pipe frames and braces according to CAN/CGSB 138.4. All joints shall be electrically welded and coated with a zinc rich paint after welding.

When vinyl-coated fence fabric is used, gate frames and braces shall be vinyl-coated to match the class and colour of the vinyl-coated fence fabric and shall be according to CAN/CGSB 138.1.

1541.05.06 Fittings

Tension bars, tension bands, brace bands, top rail sleeves, and rail ends shall be according to ASTM F 626.

Barbed wire arms shall be fabricated from galvanized pressed steel or cast iron according to CAN/CGSB 138.2 or ASTM F 626.

Terminal and line post caps shall be according to ASTM F 626.

When vinyl-coated fence fabric is used, the fittings shall be vinyl-coated to match the class and colour of the vinyl-coated fence fabric and shall be according to CAN/CGSB 138.1

1541.05.07 Hardware

All required hardware including, but not limited to carriage bolts and nuts, shall be hot dip galvanized according to ASTM A 153.

1541.05.08 Fasteners

Wire ties for attaching fence fabric to line posts, bottom wires, top rails, and top wires shall be according to ASTM F 626.

1541.05.08.01 Fasteners for Galvanized Steel Fence Fabric

Wire ties for attaching fence fabric to line posts and top rails shall be manually fastened round wire ties, 3.76 mm diameter steel wire, with a minimum 488 g/m² galvanized coating or power fastened round wire ties, 3.76 mm diameter steel wire, with a minimum of 488 g/m² galvanized coating.

Wire ties for attaching fence fabric to bottom or top wires shall be round wire hog rings, 2.69 mm diameter steel wire, with a minimum 488 g/m² galvanized coating.

1541.05.08.02 Fasteners for Vinyl Coated Fence Fabric

Wire ties for attaching fence fabric to line posts and top rails shall be manually fastened round wire ties, 3.76 mm diameter zinc or aluminum coated steel core wire, with a vinyl coating or power fastened round wire ties, 3.76 mm diameter zinc or aluminum coated steel core wire, with a vinyl coating.

Wire ties for attaching fence fabric to bottom or top wires shall be round wire hog rings, 2.69 mm diameter zinc or aluminum coated steel core wire, with a vinyl coating.

Fasteners shall be vinyl-coated to match the class and colour of the vinyl-coated fence fabric and shall be according to CAN/CGSB 138.1.

1541.05.09 Turnbuckles

Turnbuckles shall be drop forged steel according to ASTM A 27 and shall be galvanized according to ASTM A 153.

The average overall length shall be approximately 300 mm with ends in the closed position. Bolt diameter shall be approximately 10 mm and capable of taking up a minimum of 150 mm slack.

1541.05.10 Barbed Wires

Barbed wires shall be according to CAN/CGSB 138.2.

1541.07 PRODUCTION

1541.07.01 Gates

All gates shall be supplied with galvanized malleable iron or pressed steel hinges, latch, and latch catch and shall be capable of opening approximately 180 degrees. Gate latches shall be suitable for use with padlocks that can be attached and operated from either side of the gate.

Gates shall be supplied completely assembled, including the fabric. The gate fabric and wire ties used on the gate shall match the adjacent fence fabric and be subjected to the same quality requirements.

1541.09 OWNER PURCHASE OF MATERIAL

1541.09.01 Measurement and Payment

Measurement of fence fabric shall be by length in metres.

Measurement of barbed wire shall be by length in metres.

For measurement purposes, a count shall be made of the number of posts and rails delivered and accepted.

Diagonal wire brace and top and bottom wires shall be measured in the units specified in the purchasing order.

For measurement purposes, a count shall be made of the gates delivered and accepted, regardless of the size and type of gate. Double gates shall be counted as one gate.

For measurement purposes, a count shall be made of the fittings and hardware of each type specified in the purchasing order delivered and accepted.

For measurement purposes, a count shall be made of the number of turnbuckles delivered and accepted.

Payment at the price specified in the purchasing order shall be for the supply of fence fabric, posts and rails, diagonal wire braces, top and bottom wires, gates, fittings and accessories, turnbuckles, and barbed wires delivered to the destination on the date and time specified.

The cost of all testing, except that performed in the Owner's laboratory, shall be included in the price.

**TABLE 1
Fence Fabric**

| Type | Nominal Diameter of Zinc-Coated Wire mm | Minimum Weight of Galvanized Coating g/m² | Nominal Diameter of Vinyl-Coated Wire mm | Minimum Wire Breaking Strength N | Standard |
|--|--|---|---|---|-----------------|
| Class B - Zinc-Coated Galvanized Before Weaving (WGW) Steel Fabric | 3.5 | 488 | n/a | 5000 | CAN/CGSB 138.1 |
| Class D - Vinyl-Coated Steel Fabric | 3.5 | 90 | 4.26 | 5000 | CAN/CGSB 138.1 |

**Appendix 1541-A, April 2019
FOR USE WHILE DESIGNING MUNICIPAL CONTRACTS**

Note: This is a non-mandatory Commentary Appendix intended to provide information to a designer, during the design stage of a contract, on the use of the OPS specification in a municipal contract. This appendix does not form part of the standard specification. Actions and considerations discussed in this appendix are for information purposes only and do not supersede an Owner's design decisions and methodology.

Designer Action/Considerations

The designer should ensure that the General Conditions of Contract and the 100 Series General Specifications are included in the Contract Documents.

Related Ontario Provincial Standard Drawings

| | |
|--------------|--|
| OPSD 972.101 | Fence, Chain-Link, Component - Barbed Wire |
| OPSD 972.102 | Fence, Chain-Link, Component - Gate |
| OPSD 972.130 | Fence, Chain-Link, Installation - Roadway |
| OPSD 972.131 | Fence, Chain-Link, Installation - Concrete Barrier |
| OPSD 972.132 | Fence, Chain-Link, Details and Table |