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5.14 SUPPLY OF FENCE MATERIAL5.14.1 GENERAL5.14.1.1 **Description**

The Work consists of supplying all required materials for the construction of fence including but not limited to:

- (a) Split Cedar Posts
- (b) Pressure Treated Wood Posts and Braces
- (c) Two Strand Barbed Wire
- (d) Single Strand Barbed Wire
- (e) Woven Wire (Paige Wire)
- (f) Brace Wire
- (g) Staples
- (h) Metal Stays

5.14.1.2 **Abbreviations and Definitions**

Wherever in these Specifications the following abbreviations are used, the intent and meaning shall be as follows:

A.S.T.M.: The American Society for Testing Materials

C.S.A.: The Canadian Standards Association

5.14.2 MATERIALS5.14.2.1 **General for Posts**

Posts shall be of sound quality, free from all decay, shakes, splits, multiple crooks or any other defects which would render them structurally unsuitable for the purpose intended. All posts shall comply with the minimum-maximum top diameter as specified. The top of the post shall mean the small end of the post. The ends of the posts shall be cut square and the length of individual posts shall not vary by more than plus or minus 25 mm from the length required for the applicable installation.

5.14.2.2 **Split Cedar Posts**

Untreated split cedar posts shall be cut from sound timber and shall have an allowable taper from end to end not exceeding 114 mm in perimeter.

5.14.2.3 **Pressure Treated Wood Posts and Braces**

Pressure treated wood posts and braces shall be fir or pine timber, as specified. Knots that are sound, well spaced, smoothly trimmed and which do not impair the strength of the posts or braces will be permitted providing they do not exceed 38 mm in diameter on any face. Posts shall be naturally round and shall have all bark peeled or otherwise removed. Allowable taper from end to end of posts shall not exceed 38 mm in diameter.

Braces shall be sawn square or rectangular to the standard nominal dimensions as specified.

Posts and braces shall be treated by pressure methods with 50/50 creosote-petroleum solution or a chromated copper arsenate solution. The preservative agent shall conform to the requirements of the current edition of C.S.A. Standard 080. The minimum retention of preservative in the wood, as determined by assay, shall be as specified in the following table:

	Round Posts	Sawn Braces
Sample Zone for Assay (mm from surface)	0-19	0-16
Minimum Net Retention (kg/m ³) Creosote - Petroleum	96	96
Chromated Copper Arsenate (CCA)	6.4	6.4

Requirements for the preservative treatment of round posts and sawn braces shall conform to the current requirements of C.S.A. Standard 080 with specific attention to 080.1, 080.2 and 080.5.

5.14.2.4 Metal Stays and Keeper Wire

5.14.2.4.1 Metal Stays

Metal stays shall be fabricated from high tensile steel sheet conforming to the requirements of the current "Standard Specification for Weight (mass) of Coating on Iron and Steel Articles with Zinc or Zinc Alloy Coatings," A.S.T.M. Designation A90, with additions as described in this specification.

Metal stays shall conform to the following minimum requirements:

Length	860 mm
Yield Strength	22 727 kg
High Tensile Steel Breaking Strength	29 545 kg
Barbed Wire Slot Sized	4.75 mm x 15.90 mm

Reflective sheeting for metal stays shall meet or exceed the requirements as specified in ASTM-D4956, Performance Requirements Type III, High Intensity Retro-reflective Sheeting.

5.14.2.4.2 Keeper Wire

High Tensile Galvanized Keeper Wire shall conform to the requirements of the current "Standard Specification for Steel Wire, Cold-Drawn for Mechanical Springs," A.S.T.M. Designation A227, with additions as described in this specification.

Keeper wire shall conform to the following minimum requirements:

Length	860 mm
Yield Strength	35 909 kg
High Tensile Wire Breaking Strength	41 818 kg

5.14.2.5 Two Strand Barbed Wire

Two strand barbed wire shall conform to the requirements of the current "Standard Specifications for Zinc-Coated (Galvanized) Steel Barbed Wire", A.S.T.M. Designation A121, (Class 1 or better) and shall consist

of two strands of 2.5 mm thickness wire, twisted with four-point, 2.0 mm thickness round barbs spaced not more than 152 mm apart.

Each spool delivered to the job site shall be legibly marked showing the mass, linear measure, thickness and name or mark and address of the Manufacturer.

5.14.2.6 Single Strand Barbed Wire

Single strand barbed wire shall conform to the requirements of the current edition A.S.T.M. Designation A121, "Standard Specifications for Zinc-Coated (Galvanized) Steel Barbed Wire". The requirements regarding uniform twisting of strands will be waived.

Single strand barbed wire shall conform to the following minimum requirements:

Measure of wire per spool	402 m
Minimum mass per spool	24 kg
Wire thickness	2.64 mm
Minimum tensile breaking strength of wire	500 kg
Barb spacing	125 mm
Number of points per barb	4

The barbs shall be firmly and securely fixed in position.

5.14.2.7 Woven Wire (Paige Wire)

Woven wire shall conform to the requirements of the current "Standard Specification for Zinc-Coated (Galvanized) Iron or Steel Farm-Field and Railroad Right-of-Way Wire Fencing", A.S.T.M. Designation A116, (Class 1 or better), except that Section 5 of the A.S.T.M. Specification shall be deleted and replaced with the requirements pertaining to size and style of the woven wire mesh as hereinafter provided.

Each roll delivered to the job site shall be legibly marked showing the length, name or mark and address of the Manufacturer.

All wire of a specified class for use on a particular project shall be of identical design unless otherwise specified by the Consultant.

The woven wire mesh design shall conform with one of the following Classes as specified:

5.14.2.7.1 Class "C" Woven Wire

812 mm overall height with not lighter than 3.35 mm thickness top and bottom wires, and not lighter than 2.34 mm thickness filler wires. Vertical stay wires shall be spaced at intervals not greater than 152 mm. There shall be a minimum of eight (8) horizontal line wires forming vertical spaces graduated from 76 mm at the bottom of the mesh to 152 mm at the top. Joints or knots between vertical stay wires and horizontal line wires shall be of a rigid, hinge-locking design which will prevent slippage of the wires. The minimum weight of Class "C" woven wire shall be 0.60 kg per metre.

5.14.2.7.2 Class "D" Woven Wire

978 mm overall height with not lighter than 3.35 mm thickness top and bottom wires, and not lighter than 2.64 mm thickness filler wires. Vertical stay wires shall be spaced at intervals not greater than 152 mm. There shall be a minimum of nine (9) horizontal line wires forming vertical spaces graduated from 76 mm at the bottom of the mesh and 178 mm at the top. Joints or knots between vertical stay wires and horizontal line wires shall be of a rigid, hinge-locking design which will prevent slippage of the wires. The minimum weight of Class "D" woven wire shall be 0.66 kg per metre.

5.14.2.7.3 Class "E" Woven Wire

1064 mm overall height with not lighter than 3.35 mm thickness wire throughout. Vertical stay wires shall be spaced at 420 mm intervals. Horizontal wires shall be spaced at 152 mm intervals, top to bottom. Joints or knots between vertical stay wires and horizontal line wires shall be of a rigid, tight-lock design which will prevent slippage of the wires. The minimum weight of Class "E" woven wire shall be 0.84 kg per metre.

5.14.2.7.4 Class "F" Woven Wire

2134 mm overall height with not lighter than 3.66 mm thickness wire throughout. Vertical stay wires shall be spaced at 152 mm intervals. Horizontal wires shall be spaced at 152 mm intervals, top to bottom. Joints or knots between vertical stay wires and horizontal line wires shall be of a rigid, tight-lock design which will prevent slippage of the wires. The minimum weight of Class "F" woven wire shall be 2.84 kg per metre.

5.14.2.8 **Brace Wire**

Brace wire shall be 3.66 mm thickness soft galvanized wire and the weight of 30.5 m of wire shall not be less than 2.5 kg.

5.14.2.9 **Staples**

Wire staples shall be standard 40 mm long staples, manufactured from 3.66 mm thick galvanized wire. There shall be approximately 140 staples per kilogram.

5.14.3 INSPECTION, SAMPLING AND TESTING

At the time of shipment, the Contractor shall provide certification indicating the specification number according to which the material being supplied was produced and tested.

All materials shall be subject to inspection, sampling and quality assurance testing by the Consultant and the Contractor shall provide safe, convenient access, acceptable to the Consultant, for inspection and sampling of the materials, and shall co-operate in the inspection and sampling process when requested to do so. The Contractor shall be responsible for any costs resulting from such inspections, including the cost of replacing any fence materials damaged by such inspection, sampling or testing.

Any material found unacceptable by the Consultant shall be immediately removed and replaced with acceptable material by the Contractor, at the Contractor's expense.

5.14.4 MEASUREMENT AND PAYMENT

No separate payment will be made for the supply of fencing materials. The costs of supplying and delivering fence materials to the job site will be included in the unit price bid for the applicable fence installation.