



**MATERIAL SPECIFICATION FOR
CABLE GUIDE RAIL**

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1503.01 SCOPE

This specification covers the requirements for cable guide rail and associated components including anchor blocks, fabricated bases, and hardware.

1503.01.01 Specification Significance and Use

This specification is written as a municipal-oriented specification. Municipal-oriented specifications are developed to reflect the administration, testing, and payment policies, procedures, and practices of many municipalities in Ontario.

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

1503.01.02 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.

1503.02 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 Specification, Material

OPSS 1350 Concrete - Materials and Production

CSA Standards

G12-14 (R2019)	Zinc-Coated Steel Wire Strand
G40.20-13/G40.21-13 (R2018)	General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steels
G164-18	Hot Dip Galvanizing of Irregularly Shaped Articles
W59-18	Welded Steel Construction

ASTM International

A47/A47M-99(2018)e1	Ferritic Malleable Iron Castings
B30-20	Copper Alloys in Ingot and Other Remelt Forms

SAE International

J403-2014-06-30 Chemical Compositions of SAE Carbon Steels

1503.05 MATERIALS

1503.05.01 Cable

Guide rail cable and cable used for the pressed ferrule and cable fittings shall be according to CSA G12, grade 800 steel wire strand and hot zinc-coated or class A electro-zinc-coated. Cable shall be 12 mm diameter, 7-wire strand weighing approximately 760 kg/1000 m with a minimum breaking strength of 74 kN and a maximum breaking strength of 100 kN.

1503.05.02 Fittings

Ferrous castings for the end fitting and splicer shall be according to ASTM A47M, grade 32510 for malleable iron.

The tension bolt for the end fitting shall be SAE 1035 hot rolled fine grained steel and the ferrule shall be SAE 1020 rolled steel according to SAE J403. As an option, the tension bolt may contain a square or hex nut welded as specified in the Contract Documents. All welds shall be according to CSA W59. The ferrous castings, tension bolt, and ferrule shall be hot dip galvanized according to CSA G164. The ferrule shall be galvanized after it has been pressed onto the cable.

Wedges shall be bronze according to ASTM B30 for alloy suitable for sand casting.

1503.05.03 Anchor Blocks

1503.05.03.01 Fabricated Steel Sections

The fabricated steel section and angle iron braces in the precast anchor block shall be according to CSA G40.20/G40.21. After fabrication, the section shall be hot dip galvanized according to CSA G164.

1503.05.03.02 Precast Concrete Anchor Blocks

Precast concrete anchor blocks shall be as specified in the Contract Documents. The concrete shall be according to OPSS 1350 with a nominal minimum 28-Day compressive strength of 30 MPa.

1503.05.04 Cable Clamps and Nails

Nails shall be 65 mm long standard spiralled, flat heads with diamond points. Clamps shall be 2.5 mm minimum thickness mild steel. After fabrication, clamps and nails shall be hot dip galvanized according to CSA G164.

1503.05.05 Fabricated Steel Bases

Fabricated steel bases shall be according to CSA G40.20/G40.21. After fabrication, the steel bases shall be hot dip galvanized according to CSA G164.

All welding shall be according to CSA W59. All welds shall be continuous.

1503.07 PRODUCTION

1503.07.01 Pressed Ferrule and Cable Fitting

The ferrule shall be pressed onto the end of the cable fitting. The ferrule shall not slip from the cable when tested under a tensile static load to the limit of cable breakage.

1503.07.02 Marking

Coils and reels of guide rail cable shall be identified by an attached durable tag with the following information indelibly recorded:

- a) CSA standard designation.
- b) Grade of steel.
- c) Nominal diameter of strand.
- d) Manufacturer's name and location.
- e) Length of strand in metres.
- f) Weight of strand in kilograms per coil.

1503.09 OWNER PURCHASE OF MATERIAL

1503.09.01 Packaging

Guide rail cable shall be supplied either in coils or on expendable reels. All reels shall be of sufficient strength to withstand transportation and normal handling. Coils shall be securely and suitably fastened.

The tension bolt and ferrous castings for the end fitting shall be pre-assembled. Splices and end fittings including wedges shall be supplied in cartons containing one type of assembly. Each carton shall be clearly marked as to the number and type of assembly it contains.

Pressed ferrules and cable fittings shall be supplied in bundles of 6 fittings banded with steel straps.

Cable clamps and nails shall be supplied in separate containers having a maximum gross weight of 20 kg. Containers shall be clearly marked with their contents and weight.

1503.09.02 Measurement and Payment

Guide rail cable and cable clamps and nails shall be measured in the units specified in the purchasing order delivered and accepted.

For measurement purposes, a count shall be made of the number of end fittings, splicers, and pressed ferrule and cable fittings of each type specified in the purchasing order delivered and accepted.

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

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

Payment at the price specified in the purchasing order shall be for the supply of guide rail cable, cable clamps and nails, end fittings, splicers, pressed ferrule and cable fittings, fabricated steel sections, and fabricated steel bases delivered to the destination or destinations at the dates and times specified.

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

**Appendix 1503-A, November 2021
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 913.101	Guide Rail System, Cable, Component - Cable Fittings
OPSD 913.102	Guide Rail System, Cable, Component - Concrete Anchor Blocks
OPSD 913.103	Guide Rail System, Cable, Component - Wooden Post Base Plate