MATERIAL SPECIFICATION FOR STEEL POLES, BASE MOUNTED

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2423.01 SCOPE

This specification covers the requirements for base mounted galvanized steel poles maximum 15.1 m in length.

2423.01.01 Specification Significance and Use

This specification is written as a provincial-oriented specification. Provincial-oriented specifications are developed to reflect the administration, testing, and payment policies, procedures, and practices of the Ontario Ministry of Transportation.

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

2423.01.02 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.

2423.02 REFERENCES

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

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

CSA Standards

G40.20-13/G40.21-13	General Requirements for Rolled or Welded Structural Quality Steel / Structural Quality Steel
W59-13	Welded Steel Construction (Metal Arc Welding)

ASTM International

A123 / A123M-15	Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

2423.04 DESIGN AND SUBMISSION REQUIREMENTS

2423.04.01 Submission Requirements

2423.04.01.01 Working Drawings

Working Drawings shall be prepared for the fabrication of steel poles.

Three (3) sets of Working Drawings shall be submitted to the Contract Administrator at least 14 Days prior to commencement of fabrication of the steel poles, for information purposes only. Prior to making a submission, the seals and signatures of a design Engineer and a design-checking Engineer shall be affixed on the Working Drawings verifying that the drawings are consistent with the Contract Documents.

Where multi-discipline engineering work is depicted on the same Working Drawing and the design or design-checking Engineer or both are unable to seal and sign the Working Drawing for all aspects of the

work, the drawing shall be sealed and signed by as many additional design and design-checking Engineers as necessary.

As a minimum, the Working Drawings shall include the following information:

a) Detailed dimensions.

b) Plans, elevations, sections, and details to show pole structural details.

c) Equipment layout.

d) Anchor bolt locations.

e) Exact pole weight.

f) Detailed bill of materials.

g) Details of equipment nameplates.

2423.05 MATERIALS

2423.05.01 General

All steel used in the production of poles shall be according to CSA G40.21, grade 300W, for pole shafts, and grade 300WT, for base plates and gussets.

All steel shall be galvanized according to ASTM A 123.

2423.07 PRODUCTION

2423.07.01 General

The length of the poles shall be as specified in the Contract Documents.

Shafts shall be round or octagonal in cross-section as specified in the Contract Documents and taper uniformly inwards from the base for the length of the pole.

Shafts shall have one or two longitudinal automatically electrically welded joints from top to bottom.

All welding shall be according to CSA W59.

All welds, except for fillet welds, shall be ground smooth.

The maximum permitted number of circumferential welded joints shall be as shown in Table 1.

The pole sections shall be joined by an electrical weld.

After fabrication, the poles shall be galvanized.

Sweep shall not exceed 3.2 mm per 4.57 m, and the overall sweep shall not be greater than:

(Pole length (m) / 4.57 m) x 3.2 mm

The pole shall be supplied with a one-piece fabricated rolled steel base plate. The pole may be supplied as specified in the Contract Documents with a one-piece fabricated rolled steel plate without gussets.

The base shall telescope the butt end of the shaft and be secured with one continuous weld on the inside of the base at the end of the shaft and another continuous weld on the outside at the top of the base. All welding at the base shall be made in such a manner that the welded connection develops the same strength of the adjacent shaft section to resist any bending action.

After fabrication, the underside of the base plate shall be true, distortion free, and perpendicular to the centreline of the pole shaft.

A removable galvanized steel or aluminum top cap shall be supplied with the shaft. The cap shall blend with the general pole design to present an overall neat appearance. The cap shall be secured rigidly to the shaft by a hexagonal head stainless steel set screw.

Wiring apertures at the bracket mounting level and at the handhole shall be accurately positioned on the pole. Wiring apertures, complete with neoprene grommets, shall provide a smooth cable entrance.

Handholes shall be complete with covers and shall be reinforced with a steel handhole frame of such strength and cross section that the strength of the shaft is not reduced.

2423.07.02 Mounting Plate for Grounding

The mounting plate for the grounding post shall be welded to the shaft in such a manner as to present a smooth surface on the exterior of the shaft.

A mounting plate with a bronze split-bolt type ground connector suitable for No. 6 AWG wire shall be welded to the inside of each pole. The bronze ground connector shall be attached to the mounting plate prior to shipment.

2423.07.03 Marking

Each pole shall have the following identification markings located approximately 100 mm above the top of the handhole:

a) Manufacturer's name or trade mark.

b) Length.

c) Gauge of steel.

d) Bolt circle diameter.

e) Designation OPSS 2423.

f) Date of manufacture (i.e., yyyy-mm-dd).

These markings shall be on a corrosion-resistant metal plate securely attached to the surface of the pole.

2423.07.04 Packaging and Shipping

Each pole shall be shipped complete with hardware suitably packaged to ensure that all parts are delivered as an entity.

The grounding connector shall be assembled inside the pole prior to shipment.

The Owner shall be notified of the shipping date 3 Business Days prior to delivery.

2423.08 QUALITY ASSURANCE

2423.08.01 Inspection

All work is subject to an inspection by the Owner's representative prior to shipment.

The Owner shall be notified a minimum of 1 Business Day in advance of the date that the fabrication of the poles is to commence.

The Owner's representative shall have free access to the place of fabrication for the purpose of inspecting and examining plant records; certificates; materials used; fabrication process, including welding and galvanizing; and to make any tests as may be considered necessary, while the poles are being fabricated.

TABLE 1
Circumferential Welded Joints

Pole Length m	Maximum Number of Welds
6.0	1
7.5	1
9.0	1
10.5	2
12.0	2
13.6	2
15.1	3