MATERIAL SPECIFICATION FOR ANCHORAGE ASSEMBLY - HIGH MAST LIGHTING POLE

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2474.01 SCOPE

This specification covers the requirements of anchorage assemblies for the 25, 30, 35, 40, and 45 m base mounted sectional steel high mast lighting poles.

2474.01.01 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.

2474.01.02 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.

2474.02 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
G164-M92 (R2003)	Hot Dip Galvanizing of Irregularly Shaped Articles
W59-13	Welded Steel Construction (Metal Arc Welding)
W178.2-14	Certification of Welding Inspectors

ASTM International

A 153/A 153M-16	Zinc Coating (Hot-Dip) on Iron and Steel Hardware
A 449-14	Hex Cap Screws, Bolts and Studs, Steel, Heat Treated, 120/105/90 ksi Minimum Tensile Strength, General Use
A 563-15	Carbon and Alloy Steel Nuts

Canadian General Standards Board

48.9712-2014	Non-Destructive Testing - Qualification and Certification of NDT Personnel

2474.04 DESIGN AND SUBMISSION REQUIREMENTS

2474.04.01 Submission Requirements

2474.04.01.01 Working Drawings

Six sets of Working Drawings shall be submitted to the Contract Administrator a minimum 14 Days prior to the commencement of fabrication. An Engineer shall affix his or her seal and signature on the Working Drawings verifying that the drawings are consistent with the Contract Documents and sound engineering practices.

When multi-discipline engineering work is depicted on the same Working Drawing and a single Engineer is unable to seal and sign the Working Drawing for all aspects of the work, the drawing shall be signed and sealed by as many additional Engineers, as necessary.

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

a) Dimensioned drawings, including plans, elevations, sections of the anchor rods, nuts, top and bottom plates, and their exact weights.

b) Mill test certificates reports of all steel being used.

2474.05 MATERIALS

2474.05.01 Steel

Anchor rods shall be made of new billet steel round bar, quenched and tempered medium carbon steel, with a minimum yield strength of 517 MPa and a minimum tensile strength of 725 MPa, and shall satisfy Charpy V Notch test requirements of 20 joules at minus 30 °C.

The length, number, and size of the anchor rods shall be as specified in the Contract Documents.

Other general requirements shall be according to ASTM A 449 for anchor rods and ASTM A 563 for anchor rod nuts.

Anchor assembly top and bottom plates shall be made of PL10 x 100 mm according to CSA G40.20/G40.21, Grade 300W.

2474.05.02 Anchorage Setting Templates

The anchorage setting template shall be made of 20 mm thick plywood or hard wood or metal. Metal templates shall be a minimum of 12 gauge steel.

2474.07 PRODUCTION

2474.07.01 General

All fabrication shall be according to dimensions specified in the Working Drawings and as specified in the Contract Documents.

Anchorage assembly shall be supplied complete, as specified in the Contract Documents. Each assembly shall be supplied complete with anchor rods, hexagonal nuts, hardened steel washers, and steel top and bottom plates.

Each anchorage assembly shall be supplied with one anchorage setting template for positioning of the anchor rods to suit the required bolt circle diameter of the pole.

2474.07.02 Tolerance

Dimensions, threads, and hexagonal nuts tolerances shall be according to ASTM A 563, Grade DH. Exposed nuts are to be tapped oversized according to ASTM A 563 to allow for the thickness of the zinc coating on the rod threads.

2474.07.03 Welding

Hexagonal nuts shall be welded to the top and bottom plates according to CSA W59.

2474.07.04 Coating

The anchorage assembly shall be completely galvanized according to CAN/CSA G164M or ASTM A 153.

The exposed hexagonal nuts and washers shall be galvanized according to CAN/CSA G164M or ASTM A 153.

2474.07.05 Quality Control

Certification from the manufacturer shall be submitted to the Contract Administrator certifying that the anchorage assembly is according to the strength and material requirements as specified in the Contract Documents.

An inspector retained by the manufacturer shall inspect and test the anchorage assemblies. The inspector shall be certified for testing bridges according to CSA W178.2. The certification shall be either Level 2 or Level 3 for the methods used as specified in CAN/CGSB 48.9712.

The inspector shall inspect the place of manufacture of the anchorage assemblies while work on the units is being performed and shall inspect and examine the plant records and certificates, the materials used, and the fabrication process and shall conduct any tests as it may be considered necessary.

Two copies of the completed inspection report shall be submitted to the Contract Administrator. Inspection reports shall be completed and certified by the inspector.

When the anchorage assemblies have been delivered to the Working Area and prior to installation, the inspector shall inspect the anchorage assemblies to ensure that they meet all the Contract requirements.

2474.07.06 Testing

Visual inspection of the anchorage assemblies shall be performed by welding inspectors certified by the Canadian Welding Bureau under CSA W178.2 at a Level 3 category or working under a Level 2 inspector.

2474.07.07 Packaging and Shipment

Each anchorage assembly shall be shipped complete with hardware suitably packaged to ensure that all parts are delivered as an entity. A complete parts list shall be included in the shipment.

The supplier shall be responsible for loading, delivery, and off-loading of the anchorage assemblies to the designated areas. Anchorage assemblies shall be subject to inspection during and on completion of off-loading. If any damage is encountered during the off-loading inspection, the supplier shall be responsible for the necessary corrective measures subject to the approval of the Owner.

2474.08 QUALITY ASSURANCE

2474.08.01 Welding

All welding shall be subject to a visual inspection. Procedures and techniques for visual testing shall be according to CSA W59, Clause 7 and 8.

If faulty welding or material is encountered during the inspection procedures, the manufacturer shall submit corrective measures to the Contract Administrator for approval.

2474.08.02 Inspection

The Contract Administrator shall be notified a minimum of 3 Business Days prior to the start of fabrication, testing, and delivery.

The Contract Administrator shall have free access to the place of manufacture of the anchorage assemblies for the purpose of inspecting and examining plant records and certificates; materials used; process of manufacturing, including welding and galvanizing; and to make any tests as may be considered necessary, while the anchorage assembly is being fabricated.

All anchorage assemblies may be subject to an inspection by the Contract Administrator prior to shipment.

2474.09 OWNER PURCHASE OF MATERIAL

2474.09.01 Measurement and Payment

For measurement purposes, a count shall be made of the number of anchorage assemblies supplied and accepted.

Payment at the price specified in the purchasing order shall be for the supply of the anchorage assemblies delivered to the destination on the date and time specified.

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

Appendix 2474-A, November 2016
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

No information provided here.

Related Ontario Provincial Standard Drawings

No information provided here.