

DRAFT B442 - CORROSION PROTECTION OF NEW AND EXISTING WATERMAINS - OPSS 442

(As specified in OPSS 442, April 2026)

442.1 GENERAL

Corrosion protection for watermains involves cathodic protection using sacrificial anodes (magnesium/zinc) or tape coating system. These methods prevent external soil corrosion on metallic pipes and internal degradation.

442.2 REFERENCES

- CDED 441 Watermains
- CDED 490 Site Preparation for Pipelines, Utilities, and Associated Structures
- CDED 492 Site Restoration Following Installation of Pipelines, Utilities, and Associated Structures
- OPSS PROV 442 Corrosion Protection of New and Existing Watermains

442.3 TENDER ITEMS

Item Code	Title	Col Type	U.O.M.	PQP
0442-XXX	Individual Anode	Variation	Each	Y
0442-XXX	Anode Bank	Variation	Each	Y
0442-XXX	Test Station	Variation	Each	Y

442.4 SPECIFICATIONS

The requirements for providing corrosion protection to watermains and their metallic components, valves and fittings using galvanic anodes, or a microcrystalline wax and petrolatum tape coating system are contained in OPSS 442. This includes the requirements for corrosion monitoring for concrete pressure pipe and corrosion protection related tender items.

Site preparation details of the operation shall comply with OPSS 490.

Site restoration are specified in OPSS 492.

442.5 SPECIAL PROVISIONS - None

442.6 STANDARD DRAWINGS

Applicable standard drawings are contained in the 1100 series of the Ontario Provincial Standard Drawings Manual; however, other OPSD or MTOD series may also apply.

442.7 DESIGN

The designer should specify the following in the Contract Documents:

- a) The type of test station to be installed, i.e., flush-mounted or post-mounted.
- b) Length of post-mounted test stations.
- c) Type of C Taps.
- d) Method of corrosion protection.
- e) Method of corrosion protection for metallic components.
- f) Locations of concrete pressure pipe corrosion monitoring stations.
- g) Splice connection method.

Type and spacing of anodes are dependent on the soil conditions. Soil conditions should be verified before specifying the anode type and spacing. Assumptions used for anode spacings provided for new metallic watermains are as follows:

- a) Soil resistivity of 2,000 ohm-cm.
- b) Bitumen coatings on pipe or other components are of no value (i.e., essentially bare).
- c) 150 mm main with copper services should require about 2 mA of cathodic protection current per lineal foot and so in 2,000 ohm-cm soil 50 mA from a 24 lb zinc anode should cover 8.0 m of pipe.
- d) 6.0 m spacing would allow for one anode per joint so discontinuities should not be a problem.
- e) A 24-pound zinc anode has a capacity of about 1,000 ma years so the anodes should have a life of about 20 years.

Anodes and anode banks shall be of the type, location and spacing as specified in Tables 2 through 5 in OPSS.PROV 442.

Anode banks shall be specified to be installed on the side of the street opposite to the watermain. and to ensure the centre of the anode is at the same depth as the service to which they are being attached or a minimum of 2.0 m below the finished grade, whichever is greater.

442.8 COMPUTATION**442.8.1 Sources of Information**

The main sources of information for the above tender items are the Structures Office in TIMD and Electrical Office in Design and Engineering Branch.

441.8.2 Item Payment Basis

The following items are Plan Quantity Payment items:

- "type" Individual Anode - Item
- "type" Anode Bank - Item
- "type" Test Station - Item

The reference to “type” is to indicate that the complete item title for tender should include the type of anode (i.e., zinc or magnesium) required. The reference to type of test station is to indicate that the complete item title for tender should include the type of test station (i.e., flush-mounted or post-mounted) required.

Payment for supply and installation of a tape coating system shall be included with tender item “Watermain” according to OPSS 441.

442.8.3 Method of Calculation

442.8.3.1 Individual Anodes

The measurement unit is each anode type installed and the number of anodes supplied for testing.

442.8.3.2 Anode Banks

The measurement unit is each anode bank type installed.

442.8.3.3 Test Stations

The measurement unit is each test station type installed.

442.8.3.3 Tape coating system

Measurement of tape coating system shall be by length in metres along the horizontal centreline of the watermain pipe from the point of connection to a point vertically above the end of the watermain. Tape coating system should be applied with an overlap of 50-55% to ensure continuous protection and account for the surface area of fittings, joints and bends.

442.9 DOCUMENTATION

442.9.1 Contract Drawings

442.9.2 Quantity Sheets

‘Individual Anode’ is a variation tender item. Each anode is entered in one line in the Quantities - Miscellaneous 1 sheet. Each column is to be labelled with a proper anode type. The unit quantity is entered in the appropriate column.

‘Anode Bank’ is a variation tender item. Each anode bank is entered in one line in the Quantities - Miscellaneous 1 sheet. Each column is to be labelled with a proper anode bank type. The unit quantity is entered in the appropriate column.

‘Test Station’ is a variation tender item. Each test station is entered in one line in the Quantities - Miscellaneous 1 sheet. Each column is to be labelled with a proper test station type. The unit quantity is entered in the appropriate column.