



Report to: General Committee

Meeting Date: May 24, 2022

SUBJECT: 042-T-15 Cathodic Protection of Iron Watermains – Contract Extension (2022 – 2025)
PREPARED BY: Prathapan Kumar, Senior Manager, Environmental Services, Ext. 2989
Flora Chan, Senior Buyer, Ext. 3189

RECOMMENDATION:

- 1) THAT the report entitled “042-T-15 Cathodic Protection of Iron Watermains – Contract Extension (2022 – 2025)” be received; and
- 2) THAT the contract for Cathodic Protection of Iron Watermains be extended for four (4) additional years with 1460973 Ontario Limited O/A C.P. Systems (C.P. Systems) in the following amounts:
 - 2022 - \$575,788.61 + \$46,063.09 (contingency) = \$621,851.70
 - 2023 - \$921,399.15 + \$73,711.92 (contingency) = \$995,111.08
 - 2024 - \$715,545.79 + \$57,243.66 (contingency) = \$772,789.46
 - 2025 - \$442,493.18 + \$35,399.45 (contingency) = \$477,892.64

2023 -2025 award is subject to Council approval of the annual capital budget submission. The contingency amount is established to cover any additional construction costs and that authorization to approve expenditures of this contingency amount up to the specified limit be in accordance with the Expenditure Control Policy; and

- 3) THAT the tendering process for the Cathodic Protection of Iron Watermains be waived in accordance with Purchasing By-Law 2017-8, Part II, Section 11.1 (c); which states that “when the extension of an existing Contract would prove more cost-effective or beneficial”; and
- 4) THAT the 2022 award in the amount of \$621,851.70 be funded from the capital project 053-6150-22201-005 “Cathodic Protection of Iron Watermains” with a budget amount of \$479,500.00; and
- 5) THAT the shortfall of \$142,351.70 (\$621,851.70 - \$479,500.00) in project #22201 “Cathodic Protection of Iron Watermains” be funded from waterworks Reserve;
- 6) AND THAT Staff be authorized and directed to do all things necessary to give effect to this resolution.

EXECUTIVE SUMMARY:

Not Applicable

PURPOSE:

The purpose of this report is to seek Council's authorization to extend the contract for cathodic protection of iron watermain (042-T-15) with the current contractor, C.P. Systems, for an additional four (4) years from 2022 to 2025 at the same labour and installation pricing.

BACKGROUND:

External corrosion of iron watermain is the leading cause of municipal watermain breaks. Cathodic protection of iron watermain program is an annual preventative maintenance program to control the rate of corrosion in cast iron and ductile iron watermain, which reduces costly watermain breaks and extends pipe service life.

As part of the program, sacrificial metal anodes are installed using an auger drilling device or a vacuum excavation machine, and are wired to the iron pipe to inhibit the electrochemical corrosion process in the pipe. This protects the pipe itself from corrosion. Anodes are estimated to last for 18 - 20 years, depending on surrounding soil conditions.

Since 1992, Markham has been implementing the cathodic protection preventive maintenance program. The watermain breaks has been significantly reduced from 153 in 1991 to an average of 19 in the last 5 years.

Proposed Program (refer to Attachment A):

2022 – 12.4 km

2023 – 20.1 km

2024 – 12.7 km

2025 – 12.1 km

Cast iron and ductile iron watermain at the end of their lifecycle are further assessed, planned and replaced as required.

OPTIONS/ DISCUSSION:

The existing contract for cathodic protection was awarded to C.P. Systems in 2015 and expired in December 2021. While preparing the bid issuance to the market, Staff identified benefits in further extending the existing contract with C.P. Systems for four (4) additional years, from June 1, 2022 to May 31, 2025 at the same terms, conditions, and fixed labour and installation pricing, based on the following rationale:

Niche Market

As reflected in City's previous tender results in 2009, 2014 and 2015 as well as recent market tender results, there are only two companies who perform this type of work.

In 2015, the recommended supplier under this report was 47% lower in price than the 2nd bidder.

Price competitiveness was further confirmed via a detailed price comparison with current market rates and bid results from other municipalities who tendered this work in 2020 and 2021. In comparing Markham's rates to the other municipalities, we can confirm the rates under this contract are favourable to the City.

Proven Track Record

C.P. Systems have been working with the City on the cathodic protection program since 1992 and staff are satisfied with their performance.

Price Increase of Magnesium***Price comparison (2015 – 2021)***

The itemized prices of this contract had remained unchanged in the last 7 years since the original contract award in 2015.

Price comparison (2022 – 2025)

Historically, magnesium anodes were used as the sacrificial anode for cathodic protection. Since 2021, the price per 14.25 kg (32 lbs) magnesium anode increased significantly where the average rate per anode increased by 59% and represents a potential budget shortfall of \$354,653.25. The City is undertaking approximately 1,400 anodes in 2022.

In order to mitigate the significant financial impact, staff reviewed the market offerings, consulted with other municipalities and recommends to replace magnesium anodes with zinc anodes for this contract extension. Zinc is an approved material for cathodic protection at a lower unit price and higher weight where a 16.35 kg (36 lbs) zinc anode is equivalent to a 14.25 kg (32 lbs) magnesium anode in characteristics and performance.

Through negotiations, C.P. Systems have agreed to keep the labour and installation portion of the contract prices unchanged at 2015 prices and transfer the difference in material costs only.

By switching from magnesium to zinc anodes, the price increase was reduced to 18% (vs. 59%) and budget shortfall is \$142,351.70 (vs. \$354,653.25).

In comparison to the previous contract (2015-2021), the price under this contract represents an 18% increase; however, the previous contract pricing remained unchanged over a 7 year period (2015-2021). Therefore, in comparison to the 18% increase, the CPI for All Items Ontario from the 2015-2021 was 16.9% and as such, the price under the new contract represents a 1.1% increase.

Therefore, for economic reasons, and to mitigate the potential risk of doubling the cost to the City by issuing a new tender, Staff recommend extending the existing contract as per the City's Purchasing By-Law 2017-8, Part II, Section 11.1 (c); which states that "when the extension of an existing Contract would prove more cost-effective or beneficial"

FINANCIAL CONSIDERATIONS:**Contract Services for 2022:**

The following table summarizes the financial considerations for 2022 - 2025:

Budget Allocation (A)	\$ 479,500.00	053-6150-22201-005 "Cathodic Protection of Iron Watermains"
Less: Construction Cost (B)	\$ 575,788.61	} Awarded to 1460973 Ontario Limited O/A C.P. Systems (042-T-15)
Less: Construction Contingency (8%) (C)	\$ 46,063.09	
Total Cost (D) = (B) + (C)	\$ 621,851.70	
Budget Remaining (E) = (A) – (D)	(\$142,351.70)	*

*The shortfall of \$142,351.70 in project #22201 "Cathodic Protection of Iron Watermains" shall be funded from Waterworks Reserve.

Future Contract Services for 2023, 2024 and 2025:

The Purchase Order will not be issued until 2023, 2024 and 2025, subject to Council approval of the respective year's capital budgets. Under this award, Staff are able to lock in pricing for these years.

2023 Budget		Subject to Council approval of the 2023 Capital budget
Contract Award (F)	\$ 921,399.15	
Contingency (8%) (G)	\$ 73,711.92	
Total Cost for 2023 (H) = (F) + (G)	\$ 995,111.08	
2024 Budget		Subject to Council approval of the 2024 Capital budget
Contract Award (I)	\$ 715,545.79	
Contingency (8%) (J)	\$ 57,243.66	
Total Cost for 2024 (K) = (I) + (J)	\$ 772,789.46	
2025 Budget		Subject to Council approval of the 2025 Capital budget
Contract Award (L)	\$442,493.18	
Contingency (8%) (M)	\$ 35,399.45	
Total Cost for 2025 (N) = (L) + (M)	\$ 477,892.64	

OPERATING BUDGET AND LIFE CYCLE RESERVE IMPACT

The 2022 Waterworks life cycle reserve study will be updated based on this award. There is no incremental operating budget impact. Staff will continue to monitor and evaluate market prices and performance of the both zinc and magnesium anodes.

ALIGNMENT WITH STRATEGIC PRIORITIES:

The proposed cathodic protection program is aligned with City's goal to provide better quality services to the public and is consistent with the Building Markham's Future Together strategic priority on the "Growth Management" and "Environment" as it considers sustainability on the built environment.

LEGAL CONSIDERATIONS:

The City is subject to the following trade agreements, which apply to public sector procurements above a certain dollar threshold: the Canada-European Union Comprehensive Economic and Trade Agreement (CETA), the Canadian Free Trade Agreement (CFTA), and the Ontario-Quebec Trade and Cooperation Agreement (OQTCA).

The recommended contract extension complies with the trade agreements.

BUSINESS UNITS CONSULTED AND AFFECTED:

Finance and Legal departments have been consulted and their comments have been incorporated.

RECOMMENDED BY:

Eddy Wu
Director of Environmental Services

Morgan Jones
Commissioner, Community Services

ATTACHMENTS:

Attachment "A": Location Map - Cathodic Protection of Iron Watermains (2022 – 2025)