



Town of Niagara-on-the-Lake

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REPORT #: OPS-24-021 **COMMITTEE DATE:** 2024-05-14
DUE IN COUNCIL: 2024-05-28
REPORT TO: COTW-General
SUBJECT: 2023 Municipal Bridge Appraisal and Structure Asset Management Cost Forecast

1. RECOMMENDATION

It is respectfully recommended that:

- 1.1 Report OPS-24-021 "2023 Municipal Bridge Appraisal and Structure Asset Management Cost Forecast" be received; and,
- 1.2 Council refer the study and its recommendations, for consideration in future capital and operating budgets implementation and funding (for 2025 and beyond).

2. EXECUTIVE SUMMARY

- The Municipal Bridge Appraisal Rehabilitation and Replacement Needs study is carried out to identify the condition of each structure asset by its time of need and recommended maintenance, rehabilitation, and reconstruction treatment.
- The Structure Asset Management Cost Forecast provides the recommended rehabilitation and replacement costs for each structure asset over the expected asset lifespan.
- The Municipal Bridge Appraisal Program and Cost Forecast supports the Asset Management Plan.

3. PURPOSE

The purpose of this report is to advise Council of the completed 2023 Municipal Bridge Appraisal Rehabilitation and Replacement Needs study and Structure Asset Management Cost Forecast that was conducted by Ellis Engineering Inc. The study identifies the condition rating of each structure asset (Bridge, Culvert and Pedestrian Bridge) by its time of need and recommended maintenance, rehabilitation and reconstruction treatment and the estimated cost for any future replacement and/or rehabilitation need. The 2023 review included all of the Town of Niagara-on-the-Lake's structures of a 3m span or greater.

4. BACKGROUND

Bridge structures are the responsibility of the municipality or the corresponding road authority for which the structure falls within. Structures located within the provincial highway system are the responsibility of the Ministry of Transportation (MTO).

Responsibility for the safety and the maintenance of bridges is set out in the Public Transportation and Highway Improvement Act (Act). As per O.Reg. 104/97 (Standards for Bridges) the Act requires that all provincial and municipal bridges be inspected every two years under the direction of a Professional Engineer using the Ministry's Ontario Structure Inspection Manual (Inspection Manual). The Inspection Manual requires these biennial inspections to be a "close-up" visual assessment of each element of a bridge as well as its material defects, performance deficiencies and maintenance and rehabilitation needs.

5. DISCUSSION / ANALYSIS

The Municipal Bridge Appraisal report summarizes the results of an inspection and review of all bridge culvert structures of a span 3.0 meters and greater on the Town's municipal road system. Data collection and structure ratings were completed in accordance with the Municipal Bridge Appraisal Manuals and the Ontario Structure Inspection Manual. Each structure has been given a priority ranking and a bridge condition index (BCI). The priority ranking summary spreadsheets of the Rehabilitation/Replacement Needs have been prioritized in the following categories: NOW, 1-5 Years, 6-10 Years and Adequate. The structures are also classified with a General Overall Condition rating and corresponding BCI value. A total of fifty-seven (57) bridge and culvert structures were appraised in 2023.

Key Items contained within the inspection report and cost forecast are summarized below:

- Percentage of structures classified by general overall condition: Very Good (9%), Good (56%), Fair (26%) and Poor (9%).
- Four (4) Bridge and (1) Culvert priority structures were noted to require replacement NOW. Two of those structures are field entrances to private properties across municipal drains.
- Twenty-two (22) of the Town's structures require a review to determine if upgrades, repairs, or new installation of Roadside Safety Barriers is needed with a total estimated cost of \$1,124,500.
- Summary of Priority Rating and Cost – NOW (\$3,173,500), 1-5 Years (\$2,770,000) and 6-10 Years (\$1,035,000)
- Structures constructed prior to 2000 have a design service life of typically 50 years.
- Structures constructed after 2000 have a design service life of 75 years.
- The net present value of the current inventory of 57 structures totals \$30,862,000.
- An average net present value of \$411,000 is required to be allocated annually over the next 75 years to maintain the current inventory.

6. STRATEGIC PLAN

The content of this report supports the following Strategic Plan initiatives:

Pillar

3. Enrich Community Assets, Environment, & Infrastructure

Priority

3.3 Infrastructure

Action

3.3 a) Infrastructure Investment (Physical & Green)

7. OPTIONS

- 7.1 **Option 1:** Council receive the report and refers the studies and their recommendations for consideration in future capital and operating budget implementation and funding (for 2025 and beyond). **(Recommended)**
- 7.2 **Option 2:** Council does not receive the report. *(Not Recommended)*

8. FINANCIAL IMPLICATIONS

The approved 2024 Roads Capital Budget includes an amount of \$950,000 to undertake the following:

- \$100,000 – Guide Rail Inventory and Improvement Update. (C02058)
- \$100,000 – Scour Protection Improvement Program. (C02063)
- \$750,000 – Dorchester Street Culvert Replacement @ Gage Street. (C02157)*

“*” – The replacement of the Dorchester Street Culvert was not included as part of the Municipal Bridge Appraisal as the structure was less than 3.0m in span; but it was recommended for replacement in a review of municipal structures along the One Mile Creek System.

Given the average age of the Town’s structures, expenditures should be maintained as recommended over the next decade as the older structures will reach a terminal condition.

It should be noted that several structures, although located wholly within the municipal road allowance are also on municipal drains. Some of these structures in fact serve private driveway entrances. These structures will be subject to financial contributions from affected landowners for any repair, rehabilitation, or replacement in accordance with the appropriate engineer’s report.

9. ENVIRONMENTAL IMPLICATIONS

Undertaking required maintenance activities and improvements at the appropriate time in an asset’s lifecycle can defer the need for a full replacement. Full replacement of the asset requires intensive reconstruction methods that may have greater impact upon the environment.

10. COMMUNICATIONS

Upon Council approval, the report and its recommendations will be referenced by staff for inclusion in the development of the 2025 Roads Capital and Roads Operating Budget. This will also inform updates to the proposed 10-year Roads Capital Budget for Council’s consideration as part of future budget deliberations.

11. CONCLUSION

It is imperative that the municipality implement a long-term funded program of structure rehabilitation and replacement strategy based on the Municipal Bridge Appraisal study and Structure Asset Management Cost Forecast report. This will reduce annual funding gaps in

spending and adequately fund these assets into the future in order to maintain and extend the structures to their intended lifespans.

12. PREVIOUS REPORTS

- OPS-19-023 – 2019 Structures Inspection Program (Rehabilitation/Replacement Needs) and Structure Asset Management Cost Forecast

13. APPENDICES

- **Appendix I** – 2023 Municipal Bridge Appraisal Rehabilitation and Replacement Needs
- **Appendix II** – 2023 Structure Asset Management Cost Forecast

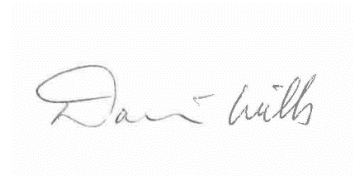
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