
TO: GENERAL COMMITTEE

SUBJECT: PROJECT FUNDING REQUEST – BAYFIELD STREET PAVEMENT REHABILITATION – COULTER STREET TO CUNDLES ROAD

WARD: WARDS 3 AND 4

PREPARED BY AND KEY CONTACT: A. KILEY, P. Eng.
SENIOR PROJECT MANAGER EXT. 4759

SUBMITTED BY: R. SUTTON, P. Eng.
DIRECTOR OF ENGINEERING

GENERAL MANAGER APPROVAL: R. FORWARD, M.B.A., M.Sc., P. Eng.
GENERAL MANAGER OF INFRASTRUCTURE AND GROWTH MANAGEMENT

CHIEF ADMINISTRATIVE OFFICER APPROVAL: M. PROWSE, CHIEF ADMINISTRATIVE OFFICER

RECOMMENDED MOTION

1. That the approved budget for project 14-16-2510-2016 (Bayfield Street Pavement Rehabilitation – Cundles Road to Coulter Street) be increased by \$960,000 for a total approved project budget of \$1,860,000 with the increase funded from the Federal Gas Tax Reserve Fund.
2. That the Tax Capital Reserve component of the funding plan for the construction phase of project 14-16-2510-2016 (Bayfield Street Pavement Rehabilitation – Cundles Road to Coulter Street) be reduced by the amount of the grant funding received (\$778,464).
3. That the approved budget for project 14-16-2510-1966 (2018 Road Resurfacing Program) be reduced by \$960,000 for a total approved project budget of \$2,190,000 with a corresponding decrease to the approved draw from the Federal Gas Tax Reserve Fund.

PURPOSE & BACKGROUND

4. The purpose of this Staff Report is to secure sufficient funds to complete planned improvements to Bayfield Street between Coulter Street and Cundles Road.
5. Bayfield Street from Highway 400 to the City limit is designated as a Connecting Link. Connecting Links are municipal roads that connect two provincial highways through a community or to an international or interprovincial border crossing. These are critical roadways that serve provincial and municipal interests, as they carry long-distance provincial highway traffic moving through communities, as well as local traffic within the community. The Ministry of Transportation's Connecting Links Program provides dedicated provincial funding for road and bridge projects on designated connecting link highways. In November 2017 Barrie submitted an application for a Connecting Links grant for the Bayfield Street Pavement Rehabilitation project. Bayfield Street from Highway 400 to the City limit is the only designated Connecting Link in the City of Barrie.

6. Bayfield Street from Coulter Street to Cundles Road has been resurfaced and rehabilitated since it was initially widened and reconstructed in the late 1980s. A pilot project was completed to install the ultra-thin white topping concrete (UWTC) to the northbound lanes approaching both Ferris Lane and Cundles Road in 2004. Most recently, concrete white topping was added to the southbound lanes in 2007 as part of a watermain construction project. The pilot was undertaken to add structural support to the roadway as distresses in the form of significant rutting had started to occur due to grades, the high traffic volume and the high percentage of commercial truck traffic. The pilot was intended to address the areas where rutting had occurred so a more expensive overall road reconstruction could occur at the appropriate time.
7. Bayfield Street is a unique section of roadway as it is the only location within Barrie where there is UWTC. To understand the causes of the roadway deterioration, a geotechnical investigation was completed in 2016 as part of the Road Resurfacing Program on localized areas where the UWTC had started to deteriorate and was in poor condition. While this investigation provided some information about the extent, severity and potential causes of the deterioration, additional information about other segments of the road were required in order to identify the best rehabilitation design strategy for this important section of road.
8. In 2017, the Engineering department initiated an additional geotechnical investigation and detailed design to rehabilitate this section of roadway and provide an effective design life of 7-10 years. This rehabilitation strategy will improve the level of service provided by the pavement, until the next anticipated reconstruction project is completed in conjunction with the Bayfield Street/Highway 400 interchange project which is forecast in the 2018 Business Plan for construction in 2025 and 2026. City staff will work closely with the MTO to coordinate the alignment of the municipal and provincial components of the interchange project.
9. The UWTC has started to deteriorate rapidly since these investigations, especially during the recent winter months. This deterioration has required significant maintenance to achieve minimum maintenance standards. The UWTC has lasted 11 to 14 years since the respective construction. The UWTC has generally exceeded the design life that was expected.
10. As part of the 2017 detailed design, a full depth concrete removal and asphalt resurfacing strategy was finalized. This rehabilitation strategy included replacement of a much thicker pavement structure than is typically used on a resurfacing project (150mm vs 50mm), and does not impact the granular base of the roadway. The strategy also identified key areas to undertake base repairs in the areas that were subject to the rutting distresses addressed by the UWTC construction. The rehabilitation strategy was selected to try to balance the cost, construction duration, and effectiveness of the road resurfacing strategy, while minimizing future maintenance requirements, until the roadway is reconstructed as part of the interchange project. The proposed rehabilitation strategy will also allow the City to implement more typical road rehabilitation techniques (such as partial depth resurfacing) if further renewal activities are necessary in the event that the proposed interchange project doesn't occur in the anticipated timeframe. Partial depth resurfacing, similar to the works that occurred on Bayfield Street from Livingstone Street to the City limit in 2016 is significantly less expensive and can occur much more quickly than the rehabilitation strategy proposed in 2018.
11. The construction phase of the Bayfield Street Pavement Rehabilitation from Coulter Street to Cundles Road project is included in the 2018 Business Plan with a budget of \$850,000. Detailed design was completed and the contract was tendered in February 2018.
12. On February 21, 2018, the tender closed and four (4) bids were received for the project. The low bid was \$1,658,675.25. All of the bids received exceeded the estimated project budget, however, staff believe that the prices received accurately reflect the required scope of work.

ANALYSIS

13. The tendered costs were higher than anticipated, likely due to the use of specialized asphalt materials as well as costs associated with construction staging required to minimize impacts on traffic flow and to the surrounding businesses during construction. The work associated with these Bayfield Street improvements is unique and not typically completed as part of City projects, making it difficult to estimate current market costs.
14. Decisions were made to include a much thicker pavement structure to address localized base repairs to maximize design life and the effectiveness of the resurfacing strategy, ensure the roadway meets the expectations of the public, and minimize maintenance activities required until the roadway is widened and reconstructed. The costs associated with the thicker resurfacing strategy were not known at the time of the budgeting process as the design has specified an asphalt mix design that is newer to the industry, and has not been used by the City in the past. This modified asphalt specification, which includes specialized asphalt cement and aggregates, etc., is expected to provide a more durable product as the road ages under the very high traffic loads.
15. Daytime construction was not considered a viable alternative. The average annual daily traffic on Bayfield Street is approaching 50,000 vehicles per day, as such, daytime construction operations would result in significant traffic delays on both Bayfield Street and the Highway 400 interchange ramps, and have significant impacts on business access on Bayfield Street which were deemed to be too significant. Therefore, the scope of the project includes night time operations to minimize major congestion impacts that are anticipated. In addition, completing the work during the day would not be expected to yield cost savings as the construction duration may actually take longer due to delays in contractor and material/trucking access to the site. Provisions of night work is typical for the major arterial roads within the City, and was completed on Mapleview Drive in 2017 in association with road rehabilitation paving west of Bryne Drive to west of Reid Drive.
16. Provisions are included in the tender to ensure that the roadway will be subject to minimal lane restrictions during the daytime, and minimize impacts to businesses through provisions for asphalt driveway and roadway ramping while construction is not active during the day. During the daytime hours, all lanes are to be open to minimize any traffic disruptions. The specifications also include provisions to ensure one (1) lane of traffic in each direction is open at all times during the evening hours which allows for business access. Provisions for pay duty police officers are also included in the contract to ensure traffic can transition through the project limits safely during active construction.
17. A modification to the 2018 Road Resurfacing Program is proposed to offset the budget shortfall for the Bayfield project. The Road Resurfacing Program is intended to be a proactive approach to pavement management, which will maintain service levels and extend the life of roads, deferring costly and disruptive reconstruction. The Road Resurfacing Program is proposed to increase over the next seven (7) years in order to address the large number of roads that are currently in fair to good condition and are within the window of opportunity that resurfacing is possible and will not otherwise require a full reconstruction.
18. Engineering and Finance staff are suggesting that reallocating the funding is the most effective use of available funds given the City's financial condition and the health of the Federal Gas Tax Fund and Tax Capital Reserves.

ENVIRONMENTAL MATTERS

19. There are no environmental matters related to the recommendation.

ALTERNATIVES

20. The following alternative is available for consideration by General Committee:

Alternative #1 General Committee could choose to reinstate the majority of the initially approved budget for project 14-16-2510-1966 (2018 Road Resurfacing Program) by the amount received from the Connecting Links Grant funding (up to \$778,464).

This alternative is available if it were the desire of Council to closer achieve the scale of improvements (i.e. similar lane kilometres) originally planned both on Bayfield Street and the Road Resurfacing Program for 2018 by not reducing the Tax Capital Reserve component by the amount of grant funding received proposed in paragraph 3 of the recommended motion. This alternative would result in the approved budget for project 14-16-2510-1966 (2018 Road Resurfacing Program) to be reduced to \$181,536 as opposed to the \$960,000 per the recommended motion. Alternative additional road segments, including local road candidates, to potentially be included in the 2018 Road Resurfacing Program are being reviewed for possible implementation, subject to available funding. The financial details of this alternative are included in the financial section of this report.

FINANCIAL

- 21. The Bayfield Street Pavement Rehabilitation project is included in the 2018 approved capital budget. The total budget for the project is \$900,000 (\$50,000 for design in 2017 and \$850,000 for construction in 2018) with \$45,800 funded from the Connecting Links Program grant for the design component, and the remaining \$854,200 funded from the Tax Capital Reserve.
- 22. A total project budget of \$1,860,000 is required to cover all costs associated with the award of the contract, staff time, material testing and contingencies. Therefore, an additional \$960,000 is required to move forward with the construction phase of the project.
- 23. An application for additional Connecting Links Grant funding for the construction phase of this project was submitted in November 2017 and the City was advised in March 2018 that the application was successful. The City will receive a Connecting Links grant of \$778,464. Staff recommend that the grant funding be used in place of funding from the Tax Capital Reserve.
- 24. The table below represents the current and proposed funding plan for the Bayfield Street Pavement Rehabilitation – Coulter Street to Cundles Road project under the recommended motion:

Funding Source	Current	Proposed	Change
Tax Capital Reserve	\$ 854,200	\$ 75,736	\$ (778,464)
Federal Gas Tax	\$ -	\$ 960,000	\$ 960,000
Grant - Connecting Links	\$ 45,800	\$ 824,264	\$ 778,464
Total	\$ 900,000	\$ 1,860,000	\$ 960,000

25. The recommended motion includes an amendment to the approved budget for the Road Resurfacing Program. This amendment is intended to offset the budget shortfall for the Bayfield project, and would fully mitigate the impact on the Federal Gas Tax Reserve Fund, keeping the combined spending plan for the two projects the same as the current approval as summarized in paragraph 27. The current funding plan, and the proposed funding plan for the Road Resurfacing program under the recommended motion are outlined in the following table:

Funding Source	Current	Proposed	Change
Tax Capital Reserve	\$ -	\$ -	\$ -
Federal Gas Tax	\$ 3,150,000	\$ 2,190,000	-\$ 960,000
Total	\$ 3,150,000	\$ 2,190,000	-\$ 960,000

26. The alternative presented in this report would not impact the Bayfield Street project beyond what is noted in paragraph 24, however moving forward with the alternative rather than the recommended motion would result in changes to the funding plan for the 2018 Road Resurfacing Program project, specifically a net decrease of \$181,536 (rather than the decrease of \$960,000 that is proposed in the motion):

Funding Source	Current	Alternative	Change
Tax Capital Reserve	\$ -	\$ -	\$ -
Federal Gas Tax	\$ 3,150,000	\$ 2,968,464	-\$ 181,536
Total	\$ 3,150,000	\$ 2,968,464	-\$ 181,536

27. The following table summarizes the impact on the combined funding plans for the two projects (Bayfield Street Pavement Rehabilitation and Road Resurfacing Program). Under the recommended motion there is no net impact on the approved capital spending plan (noting that funding sources change). The Federal Gas Tax Reserve and the Tax Capital Reserve are both overcommitted, with a projected negative balance in 2021. Under Alternative #1, the Federal Gas Tax Reserve will go into a negative position in 2020 instead of 2021. The various reserve balances, and the funding plan for the capital plan will be re-examined through the 2019 business planning process. Under Alternative #1, the capital spending plan would increase by \$778,464, the amount of the Connecting Links grant.

Funding Source	Current	Recommended Motion	Alternative Motion
Tax Capital Reserve	\$ 854,200	\$ 75,736	\$ 75,736
Federal Gas Tax	\$ 3,150,000	\$ 3,150,000	\$ 3,928,464
Grant - Connecting Links	\$ 45,800	\$ 824,264	\$ 824,264
Total	\$ 4,050,000	\$ 4,050,000	\$ 4,828,464

LINKAGE TO 2014-2018 STRATEGIC PLAN

28. The recommendations included in this Staff Report support the following goals identified in the 2014-2018 Strategic Plan:
- Vibrant Business Environment
 - Responsible Spending
 - Well Planned Transportation

29. The project aims to maximize the design life of the roadway in the most economical way possible while improving traffic safety and the road network, and minimizing impacts to the business community both through the construction project and future maintenance activities.