

Memorandum

Date: July 23, 2024

To: Members of Council

From: Taylor Bliss, Acting Manager, Engineering Capital Design & Construction

Subject: Mountainview Road Detailed Design and Tree Restoration Review

MEMO HIGHLIGHTS

- This memo will provide an overview the Mountainview Road project changes from the original Environmental Assessment (EA) throughout the detailed design to the construction planned in 2024.
- Overview of the current design, tree removals and timing of the planned works.
- The roadway has an immediate operational need for rehabilitation due its poor pavement condition and poor drainage feature. Based on the 2022 Pavement Survey Investigation the average Pavement Condition Index (PCI) and Overall Condition Index (OCI) were respectively valued at 17.1 of 100 and 41 of 100.
- Commitment to replanting and reforestation plans
- An evaluation table of key design criteria is used to compare the proposed road works at each project stage.

DISCUSSION

Project Background - Evolution, Design to Construction

In 2017, the Town initiated the Environmental Assessment for Mountainview Road with the following primary objectives:

- Rehabilitate the road corridor to address the very poor pavement condition;
- Improve the stormwater management and drainage for the road platform; and
- Address the recommendations for active transportation set out within the 2017 Transportation Master Plan and (then draft) 2024 Multimodal Transportation Master Plan.

The Environmental Assessment prepared by Wood PLC was completed in 2019, and determined that the “Most Preferred” design alternative was a hybrid solution with an urban section between Cranston Drive and Walker Road West and a rural section south to Olde Base Line Road and north to Granite Stones Drive. New storm sewers connecting new catch basins to either an enhanced grass swale on the west side of the road, or to a main storm sewer line underneath the road to manage storm drainage conditions.

The urban section of Mountainview Road from Cranston Drive to Walker Road would include:

- 3.0m wide road lanes;
- 2.5m wide sidewalk along the east of the road;
- 1.8 m wide paved shoulder for Active Transportation;
- Concrete curb and gutter on both sides of the road; and
- New storm infrastructure.

The rural section of Mountainview Road south of Cranston Dr to Old Base Line Rd and North of Walkers Rd to Granite Stone Dr would include:

- 3.3m wide road lanes;
- 1.5m wide shoulder for Active Transportation; and
- Typical ditch profile on either side of the road with deeper ditches.

In 2022, the Town retained R.V. Anderson to complete the Detailed Design Program including: advancing the “Most Preferred Design Alternative” from the Environmental Assessment to detailed design, and completing the Preliminary Design Report and 30% Detailed Design.

During this detailed design, RVA flagged extensive schedule delays for construction as a result of the significant property impacts, and utility relocations required to accommodate the EA design. As such, RVA investigated the following design options to mitigate the substantial property impacts:

- The urban section of Mountainview Road between Cranston Dr and Walker Rd would include:
 - a. Steepen ditches from 3:1 to 2:1
 - b. Eliminate paved shoulders
 - c. Reduce the driving lane to 3 m and the sidewalk to 1.8 m wide

R.V. Anderson was removed from the project near the end of 2022.

In January 2023, the Town retained R. J. Burnside to complete a new detailed design and develop a “Tender Ready Design” package to respond to the roadway’s poor condition which does not meet the minimum maintenance standards for Operational work. The roadway is past its useful service life and requires immediate rehabilitation. The following guidelines, construction timing opportunities, and road conditions ratings were considered before authorizing this detailed design change:

- The 30% EA preferred design proposed substantial impacts to private property that would require land acquisition, major utility relocations and environmental concern mitigation surrounding the Provincially Significant Wetlands. Due to these challenges and anticipated costs, the schedule to implement the road design into construction would require an additional 4 to 6 years.
- Based on the 2022 Pavement Survey Investigation the average Pavement Condition Index (PCI) and Overall Condition Index (OCI) were respectively valued at 17.1 of 100 and 41 of 100 confirming the very poor condition of the roadway.
- The rehabilitation design would align with the 2017 and (then draft) 2024 Transportation Master Plans and the draft 2024 Active Transportation Master Plan.

- The rehabilitation design would upgrade the road platform by provide paved shoulders while avoiding private property impacts and utility relocations. This was achieved by reducing the paved shoulder width to 1.2m, eliminating the grade raise of road through a new geotechnical recommendation, utilizing drainage relief subdrains where necessary, and steepening the road backslopes to 2:1 where necessary.
- The rehabilitation road design is anticipated to provide a 20-year service life.

Following this design acceptance, the Engineering Capital team requested 2024 capital funding to construct the rehabilitation design for the roadway.

2024 Tree and Vegetation Impacts

During March 2024, a total 290 trees and shrubs (includes mature trees and smaller diameter vegetation) were removed in advanced of the proposed road rehabilitation works developed by RJ Burnside in order to avoid scheduling delays that could have been caused by the migratory bird breeding season that runs from April 1st to August 31st. Any clearing of trees and other vegetation after April 1st, has the potential to cause harm to migratory birds, their nests or eggs and would require a bird nest sweep by a qualified biologist.

In order to assess the tree removal impacts associated with each design option, a detailed review of the grading limits has been completed to verify the tree and vegetation disturbance and is summarized below. Please see the following disturbance widths/grading limits outlined below that would have been required to implement each design solution:

- The Wood PLC EA Preferred Alternative
 - 19m wide rural rehabilitation grading limit width
 - 24m wide urban design grading limit width
- R.V. Anderson 30% Detailed Design
 - 20-24m wide urban design grading limit width
 - 19m wide average rural rehabilitation grading limit width
 - 24m wide grading limit width within the slope confined road section area by the Town trailway intersect.
- R.J. Burnside Tender Ready Design
 - 18m wide average rural rehabilitation grading limit width
 - 9m wide average grading limit width within the slope confined road section area by the Town trailway intersect.

The scoped grading limits within the R.J. Burnside rehabilitation design resulted in smallest impact to the local trees and vegetation along Mountainview Road.

Engineering Criteria Table Summary

Please see the following table summary that outlines the specific criteria and road design standards for each design phase.

Engineering Criteria Table Summary:

Criteria/Design	Environmental Assessment Most Preferred Alternative 2019 (Wood PLC)	Detailed Design 2022 (R.V. Anderson)	60-100% Tender Ready Design 2023-2024 (R.J. Burnside) <i>Scope Change Established New Design Parameters</i>
Road Upgrade Type	Rural Upgrade with Urbanization	Rural Upgrade with Urbanization (based on EA)	Rural Upgrade
Design Status	Conceptual	30% Detailed Design (Preliminary Design Report)	60% to 100% Detailed Design. Road Rehabilitation Construction Tender will be posted for contractor bids with a construction completion date of Late November 2024.
Lane Configuration	Rural Section from Olde Base Line to Cranston Drive: 3.3m Drive Lane 1.5m Pave Shoulder Urbanization Section from Cranson Drive to Walker Road 3.0 m Drive Lane 1.8 m Paved Shoulder 2.5 m 'Future Sidewalk'	Matched EA preferred design No Paved Shoulder where adjacent slopes confined the area. - 1.8 m wide Sidewalk with guiderail starting at Cranston Drive and ending north of Walker Road.	3.3 m Drive Lane 1.2 m Paved Shoulder Paved Shoulders narrow in slope confined area
Storm Water Management	Curb & Gutter on both sides of the road (Urban) Catch Basins (Urban) Storm Sewers (Urban) Ditching (Rural/Urban)	Matches EA preferred design	Ditchline Stormwater Conveyance Curb & Gutter with a spillway located within the steep slope south of Caledon Trailway where paved shoulders narrow.

Drainage Improvements	<p>Corrects Drainage Issues:</p> <p>Directs runoff to the west side of the road within the urban section</p> <p>3:1 Sloped Ditchlines (Rural)</p>	Matches EA preferred design	<p>Corrects Drainage Issues:</p> <p>3:1 Sloped Ditchlines, Sub-drains where ditch lines constricted by local topography</p>
Road Service Life	20 Years	20 Years	20 Years
Road Grade Raise	120-150 mm	120 mm	None
Property Impacts (m² of private land to Acquire)	3776	3233	None
Utility Conflict/Relocations	Anticipated Hydro Pole and underground telecom line relocations flagged	Anticipated Hydro Pole and underground telecom line relocations, identified but not costed based on preliminary feasibility	None
Tree Removals (Based on Grading Limits)	>> 290 Please see the above Tree Removal section outlining the removal limits on Page 3 and 4.	>290 Please see the above Tree Removal section outlining the removal limits on Page 3 and 4.	290 tree and shrub removals completed in March 2024
Maintenance and Timing	<p>Increased maintenance cost to maintain road until the implementation of the new design (after property and utility).</p> <p>Higher Cost to maintain new proposed infrastructure.</p> <p>4 to 6-year program to complete the design, property acquisition and utility relocation process before construction implementation</p>	Matches EA preferred design timeline.	<p>Implementation would remove the need for additional maintenance efforts.</p> <p>Construction is scheduled to be completed within the 2024 calendar year.</p>
Transportation Master Plan (TMP) and Active Transportation Master Plan (ATMP) Compliance	Exceeds 2017 and 2024 TMP/ATMP Proposed Features	Exceeds 2017 and 2024 TMP/ATMP Proposed Features	Delivers Proposed Recommendations of both 2017 & 2024 TMP's and ATMP

Construction Cost Estimate (in original \$ Value, excl. Property and Utility)	\$5.8M	\$6.6M	\$1.8M
Construction Cost Estimate (in 2024 \$ Value, excl. Property and Utility)	\$6.9M	\$7M	\$2M

Future Road Design Recommendation

The EA preferred alternative design included an off-road pedestrian pathway or sidewalk that provides a pedestrian connection to the Caledon railway and Walker Road from the communities of Damascus Drive and Cranston Drive.

The 2024 rehabilitation design with paved shoulders can be used to support the future implementation of the EA preferred design as the proposed road attributes (paved road platform, improved road base, paved shoulders, & tree removals) are required for both projects. Each design includes providing the roadway paved shoulders and there is an opportunity that the future integration of the off-road path or sidewalk can be achieved with minimal road impacts. Within the urbanized sections of the road where storm sewers are required there will be unavoidable road cuts.

However, it is Engineering Capital Design and Construction recommendation that the off-road sidewalk is not pursued for detailed design or construction as the rehabilitation design provides the paved shoulders that satisfy the multimodal transportation and active transportation requirements outlined in each master plan. Please note that there is a 150m section of the roadway where the topography narrows the paved shoulders of the roadway from a 9m paved platform to a 6.6m paved platform requires further engineering to design and construction this feature. Additionally, a 20-year service life is anticipated for this roadway once the rehabilitation works have been completed.

The Active Transportation requirements that were reviewed within the 2017 EA did not consider the already existing local pathways off Cranston Dr, Man o War Ct, Damascus Dr and Olivers Ct that provide a connection to the Caledon Railway and Walkers Rd. The need for the sidewalk was briefly outlined to be an improvement as a Multi-Modal Facility, however justification was not provided to support this feature within the EA. These existing pedestrian pathways can be used to support the local active transportation needs of the community which aligns with the 2024 ATMP.

If the detailed design for EA preferred alternative is to be re-initiated, a new capital budget request for funding will be required.

Tree Compensation

The Town of Caledon plans to address the incurred mature tree losses that were necessary to prepare for the 2024 rural rehabilitation design construction program.

Capital Engineering will initiate a new scope of works to develop an enhanced restoration and reforestation plan for spring 2025 planting to account for all the tree removals to date. This restoration and reforestation design will investigate the opportunity to provide 1 to 1 tree compensation for the 290 tree removals with new. The primary objective is to provide tree plantings within the municipal right of way, however if additional suitable land is needed to support the number of plantings the Town will investigate private property planting opportunities. Please note that the off-road pedestrian pathway will require further substantial tree removals and vegetation grubbing to execute this construction.

FINANCIAL SUMMARY

The construction quotations from the contractor to complete the rural rehabilitation design will be received in early August 2024 and the works are expected to be completed by November 2024. This construction program work is funded by Capital Account 24-098.

The Restoration/Reforestation plan will be brought forward as part of the 2025 budget.

ATTACHMENTS

None.