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Report 2025-102

Report Title: **Defer Replacement of Structure No. 045111 on CR 45 from 2025 to a Future Year and Reallocate Budget for Rehabilitation of Trent River Bridge on CR 30 (near Peterborough County Boundary)**

Committee Name: Public Works

Committee Meeting Date: January 6, 2025

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Council Meeting Date: January 22, 2025

Strategic Plan Priorities: ☒ Innovate for Service Excellence
☐ Ignite Economic Opportunity
☐ Foster a Thriving Community
☒ Propel Sustainable Growth
☐Champion a Vibrant Future

Recommendation

"**That** the Public Works Committee, having considered Report 2025-102 'Defer Replacement of Structure No. 045111 on County Road 45 from 2025 to a Future Year and Reallocate Budget for Rehabilitation of Trent River Bridge on County Road 30 (near Peterborough County Boundary)', recommend that County Council authorize staff to defer the replacement of Structure No. 045111 located on County Road 45 immediately south of County Road 22 from 2025 to a future year; and

Further That the Committee recommend that County Council authorize staff to use the 2025 construction budget allocated for the replacement of Structure No. 045111 to complete

emergency rehabilitation of the Trent River Bridge located on County Road 30 immediately south of County Road 42, and approve any savings realized at the project completion relative to the estimated total project cost of $1,119,781 remaining in the 2025 budget to be used for other bridge construction projects."

Purpose

The purpose of this report is to advise Council of the requirement to defer the planned replacement of Structure No. 045111 on County Road 45 from 2025 to a future year and re-allocate the 2025 budget amount for this project to complete emergency rehabilitation of another structure.

Deferring this project, and re-allocation the construction budget, will allow for the completion of emergency rehabilitation of the Trent River Bridge on County Road 30 in Trent Hills.

Background

Structure No. 045111 is a concrete box culvert that is located on Count Road 45 immediately south of County Road 22 in Cramahe Township. This structured was identified through biennial OSIM inspections requiring to be replaced. The approved 2024 Public Works Capital Budget included funds for an engineering design to replace Structure No. 045111 on County Road 45. The engineering design is 90% complete with the final drawings and tender package expected to be completed by the end of 2024. Construction for the replacement of the structure is planned for 2025.

During recent routine patrol by County Operations staff, it was reported that the north expansion joint for the Trent River Bridge on County Road 30, immediately south of Count Road 42 in Trent Hills, had separated. There was also evidence of settlement in the asphalt surface adjacent to the expansion joint. There was no obvious explanation and therefore staff immediately retained an engineering consultant to complete a review and provide recommendations. It is important to note that expansion joints typically move between 25mm and 50mm. In this case the expansion joint has separated approximately 75mm to 100mm.

It should be noted that the expansion joint for this structure was not constructed at the bridge abutment as is typically seen. The expansion joint was constructed on what is known as a sleeper slab and is positioned within the approach of the bridge deck. The sleeper slab is supported by granular material.

The initial Engineering review concluded that core sampling is required to determine the extent of the settlement and if a void was present below the sleeper slab. Upon completion of the core samples, it was determined that there was no evidence of a void that could create a sink hole and that a closure was not required. The engineering review also concluded that the expansion joint had separated beyond normal limits due to poor drainage within the granular material below the sleeper slab. The saturated granular material caused the sleeper slab to shift through freeze/thaw cycles.

The engineering consultant recommended an immediate repair, as a temporary measure, until a more permanent rehabilitation could be completed. Staff retained a contractor to complete the recommended temporary repair and will continue to monitor the expansion joint until the

rehabilitation is completed. The temporary repairs and engineering review were funded from the 2024 Bridge Time and Material Repairs allocation.

Consultations

Staff consulted with the engineering consultant completing the design for structure No. 045111 and were advised that the replacement could be deferred for up to 1-2 years. This will allow the emergency rehabilitation of the Trent River Bridge to be completed without the need for additional budget amounts in 2025.

Legislative Authority / Risk Considerations

In accordance with O.Reg. 104/97 Standards for Bridges every bridge shall be kept safe and in good repair.

Discussion / Options

The permanent rehabilitation of the north expansion joint will include the removal and replacement of the expansion joint and sleeper slab. It will also include the implementation of drainage provision to mitigate the granular layer from becoming saturated and ultimately eliminating the potential for freeze/thaw issues in the future. Without this rehabilitation there is a high risk of further damage to the expansion joint and sleeper slab and in turn has a high potential of a bridge closure.

In addition to rehabilitating the north expansion joint for the Trent River Bridge on County Road 30 there is opportunity to capitalize engineering and construction benefits by completing a more comprehensive rehabilitation. The engineering consultant also recommended that a comprehensive rehabilitation of the structure is required for the following reasons:

1. The north expansion joint needs to be rehabilitated to ensure proper drainage of the granular layer below the sleeper slab occurs to avoid freeze/thaw movements.
2. The south expansion joint requires rehabilitation for similar reasons.
3. The concrete deck requires patching.
4. The waterproofing needs to be replaced as it is showing moderate to severe deterioration.
5. The asphalt surface has also deteriorated and exhibits severe delamination, cracking, and potholes.
6. Additional deck drains are required to reduce the amount of surface water draining to the expansion joints.

Completing a comprehensive rehabilitation at the same time as completing the repairs to the north expansion joint provides additional value to the County. Additional value items include reduced costs for traffic management and contractor mobilization and less public disruption. The inclusion of this work concurrently provides good life-cycle value for this asset.

Without this comprehensive rehabilitation the elements noted above will only deteriorate further and have the potential for a requirement to close the bridge. Delaying the rehab will also decrease the life cycle of the asset and increase future rehabilitation costs. It will result in duplication of engineering and construction efforts.

Financial Impact

Engineering and construction costs for the emergency rehabilitation of the Trent River Bridge are estimated to be $1,119,781, noting that the estimated construction cost is still to be confirmed at the completion of design.

Based on this estimate, approximately $10,500 from the replacement budget for structure No. 045111 is expected to be carried over into the 2025 budget. This amount along with the proposed construction budget of $800,000 for the replacement of structure No. 045111 results in $815,000 being allocated in the 2025 capital budget.

There was savings of $309,281 realized from the 2024 construction of the Burnley Creek Bridge rehabilitation project.

Staff recommend that the 2024 carry over amounts realized from structure No. 045111 and the Burnley Creek Bridge, along with the 2025 proposed construction allocation for replacement of structure No. 045111, be allocated to the Trent River Bridge engineering design and emergency rehabilitation project in 2025.

Member Municipality Impacts

Municipality of Trent Hills Road network will be impacted during the rehabilitation work due to a closure of County Road 30 and the requirement for a detour route. Staff will consult with Trent Hills staff regarding the implementation of a detour route.

Conclusion / Outcomes

Staff recommend that the replacement of structure No. 045111, located on County Road 45 immediately south of County Road 22, with planned construction in 2025 be deferred to a future year.

Deferring the replacement of structure No. 045111 will allow for the completion of the emergency engineering design and rehabilitation of the Trent River Bridge, located on County Road 30 immediately south of County Road 42 to be completed in 2025.

Staff also recommend that the proposed engineering and construction budget for the emergency rehabilitation of the Trent River Bridge be funded as follows:

1. 2024 carry over amounts realized from the Burnley Creek Bridge project
2. 2024 carry over amounts realized from the engineering design for structure No. 045111
3. The proposed 2025 construction budget for the replacement of structure No. 045111.

Attachments

N/A