



Subject: Pleasant Beach Retaining Wall Remediation

To: Council

From: Public Works Department

Report Number: 2023-197

Meeting Date: October 10, 2023

Recommendation:

That Public Works Department Report 2023-197 be received; and

That Council direct staff to replace the retaining wall located at the Pleasant Beach Road end for the total estimated cost of \$1,000,000.00; and

That the project be funded from the General Tangible Capital Asset reserve.

Purpose:

The purpose of this report is to replace the failed sheet piling retaining wall located within the Pleasant Beach Road allowance at the lake end.

Background:

Located at the southern limit of Pleasant Beach Road, along the east property line of the road allowance, the City has a sheet pile retaining wall in its asset inventory. This retaining wall supports both the City's road allowance and neighbouring private property. The retaining wall is approximately 3 to 4 meters higher than the elevation of the City's property at various locations along the wall. This elevation change allows access over the right of way to the waterfront through a gradual slope.

The retaining wall has partially collapsed compromising the wall as a whole and now requires replacement.

Discussion:

Staff requested a third-party engineering consultant to investigate the retaining wall and provide a preliminary cost estimate to replace the structure; the estimated cost is \$1,000,000.



Three options are being reviewed and are listed below in preferred order:

1. Sheet Pile Wall

The first option is to replace the failed infrastructure like for like with new sheet piling and support structure providing an estimated lifespan of 100 years. However, this design requires an agreement with the neighbouring property to install “tie-backs”. Tie-backs are placed underground and fastened to the backside of the retaining wall to act as additional stability. This design also requires the bedrock elevation to be sufficiently deep enough to permit the driving of the sheet piles into the earth.

2. Armour Stone Embankment

The second option is to remove the failed retaining wall and replace it with a terraced armour stone embankment. This design requires no agreement with the neighbouring property and has an estimated lifespan of 75 years. The drawback of this design is primarily the risk to the armour stone shifting during the most severe seiche events, resulting in a maintenance cost to upkeep. This option will also reduce the available width of the right of way.

3. Reinstall Sand Dune

The third option includes removal of the wall and reinstatement of the sand dune. The Sherkston Shores property, West of the Pleasant Beach right of way, shows significant deterioration to the sand dune due the extreme weather events where the water level rises and pulls the sand back into the lake. If the City were to reinstate the sand dune, it would ultimately see a similar fate and compromise the residential retaining walls to the East.

Staff are recommending that the wall be replaced like for like (Option 1). Should the on-site investigations determine that there is not enough bearing earth or tie-backs are not able to be set onto private property, staff will proceed with the Armour Stone Embankment (Option 2).

Realizing the short time remaining until the City typically sees major storm events, Staff are anticipating the need to follow a non-standard procurement process in order to replace the wall as soon as practicably possible.

Financial Implications:

The estimated cost to replace the Pleasant Beach Road retaining wall is \$1,000,000. It is recommended that the funding come from the City's General Tangible Capital Asset Reserve. As noted during the 2024 Capital and Related Project budget process that reserve is approximately \$1,600,000 at this time. The 2023 Trimester 2 and Year End forecast currently forecasts a surplus of approximately \$120,000. In the event that a 2024 operating budget surplus is recognized, Staff will be recommending to Council that it be directed to the General Tangible Capital Asset Reserve.

Strategic Plan Alignment:

The initiative contained within this report supports the following pillar(s) of the strategic plan:

- Environment and Climate Change
- Sustainable and Resilient Infrastructure

Conclusion:

Staff recommend that Council replace the Pleasant Beach Road retaining wall like for like (Option 1) to ensure continuity of the adjacent retaining wall and protect the road allowance and adjacent property from erosion.

Appendices:

- a. Appendix A: Shoreline Protection Assessment

Respectfully submitted,

Mat Pilon
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Report Approval:

All reports reviewed and approved by the Department Director and also the City Treasurer when relevant. Final review and approval by the Chief Administrative Officer.