

Date: 2020-11-22

Subject: **Recommendation Report – Driveway headwalls in the Lionhead Executive Estates Subdivision (Ward # 4)**

Contact: Borendra Sanyal, Senior Project Engineer - Bridges, Capital Works, Public Works & Engineering, Tel: 905-874-3597

Report Number: Public Works & Engineering-2020-437

Recommendations:

1. **THAT** the report titled: **Recommendation Report - Driveway headwalls in the Lionhead Executive Estates Subdivision (Ward # 4) (eSCRIBE item Number: Public Works & Engineering-2020-437)** to the Budget Committee Meeting of November 24, 2020, be received
2. **THAT** Staff be directed to include funds in the 2022 Capital Budget to replace all the deteriorating limestone headwalls in the Lionhead Executive Estates Subdivision, using cut stone (Option 4 outlined in this report) close to the originals and to be consistent with the material used in the repair of the other driveways.
3. And that prior to the work being done, the City require the residents execute such permissions to enter as may be required by the City to perform the work and confirming their agreement to the work being done

Overview:

- This report is to provide information on the options and costs to replace the headwalls in the Lionhead Executive Estates Subdivision and obtain Council direction on how to proceed.
- In the Lionhead Estate Subdivision there are 87 driveways which have headwalls. City has replaced the headwalls on 11 driveways as they were affecting the drainage in the ditch. The remaining 76 driveways with headwalls may need to be replaced.

- **The limestone used by the developer to construct the headwalls has failed prematurely and it is recommended that these headwalls be replaced by the City to ensure drainage in the area is not blocked.**
- **Currently Road Operations have been replacing the headwalls in the Lionhead Executive Estates Subdivision on a complaint basis using internal staff.**
- **Residents in Lionhead Estates subdivision petitioned that they would like to have all the headwalls replaced by the City and Council has requested additional information on the options and cost to consider as part of future budgets.**
- **Across the City preliminary estimate shows that there are approximately 2,216 driveways with headwalls of different types and sizes in other developments.**

Background:

- Driveway headwalls and drainage pipe culverts under driveways throughout the City have not been included in the City's asset management inventory as typically they are maintained by the property owners due to the fact that they solely provide access to the private property from the right of way. There are approximately 2,216 driveways with or without pipe culverts underneath and headwalls of different types and sizes across the City.
- The situation in Lionhead Executive Estates subdivision is unique because of the Limestone block used, premature deterioration of the stone materials and was constructed with pipe culverts under the driveways. The development was constructed in 2000-2003 and at the time, the limestone block headwalls appeared to be constructed correctly, but the stones used in the headwalls are failing prematurely.
- In recent years City's Road Operation staff repaired or replaced headwalls on 11 driveways on a 'as needed' basis using cut stone to match the aesthetic qualities of the neighborhood and to ensure the failing headwalls do not block the ditch drainage.

Current Situation:

- In 2018 and 2019, staff repaired 3 driveways with headwalls, which involved replacing the deteriorated natural stone blocks with the new pre-cut stone blocks. According to the information provided by the Road Operations staff, each of these walls repairs costs \$6,000 to \$7,000. The cost varies depending on the type and size of the headwall to be replaced.

- There are 87 driveways with headwalls which were made of stacked natural limestone block in the Lionhead Executive subdivision. These headwalls have been rapidly deteriorating since construction due to the disintegration of the limestone material used.
- The following are the options staff considered in providing a recommendation for Council to consider for regarding the repair of these driveway headwalls. The approximate costs indicated in the following options are based on estimate only. More precise estimate will be provided during 2022 budgets;
 - **Option 1-** City continues to repair or replace the driveway headwalls of Lionhead Executive Estates subdivision on an as needed basis, repairing approximately 4 to 5 driveways with headwalls per year. Cut natural stone has been used to match the existing material, which would have a cost of approximately \$50,000 per year. At this rate, it would take approximately 15 years to complete all the driveway headwall in this subdivision.
 - **Option 2-** The City tenders to remove and replace all of the driveway headwalls with precast concrete blocks as a capital project. The approximate cost would be \$500,000 to replace the headwalls on 76 driveways in Lionhead Executive subdivision. These precast concrete blocks would be similar to the ones used for the development on Creditview Road and some pictures are in the appendix to this report.
 - **Option 3-** The City tenders to remove and replace all the stone block driveway headwalls with the cast in place concrete driveway headwalls as a capital project. This option will be less costly, faster, more durable and sustainable. The aesthetics of these headwalls can be enhanced by adding texture, colors and decorative features with added premiums. The approximate cost would be \$400,000 to replace the headwalls on 76 driveways.
 - **Option 4-** The City tenders to remove and replace all the remaining stone block driveway headwalls on the 76 driveways using pre-cut natural stone blocks driveway headwalls as a capital project. This option will be the costliest among the four options but matches the upscale aesthetics of the neighborhood and would be consistent with the replacements that have been completed to date. The approximate cost would be \$700,000.

Subject to Council's direction on the repairing/replacement of these driveway headwalls, short descriptions of the scope of work of this project, materials examples and descriptions for each option , Plan of Headwall replacement from resident petition September 2020 and location of the Lionhead Executive Subdivision is attached in Appendix 1.

If Council decides to proceed with option 2 or 3 or 4, to tender the replacement of all the driveway headwalls, the anticipated schedule is listed below.

Description	Replacement of driveway headwalls of Lionhead Executive Estate Subdivision
Council Direction	November/December, 2020
Discuss option with residents and obtain signoff	Spring/Summer 2021
Prepare cross sections and obtain utility locates.	Summer/Fall 2021
2022 budget approval	January 2022
Tender project	February, 2022
Purchase Order Issued	April, 2022
Construction Start	May, 2022
Completion	December, 2022 (subject to weather conditions).

- As indicated earlier in this report, across the City there are approximately 2,216 driveways with headwalls made of different construction materials (e.g. concrete, stone, masonry, etc.) along with or without pipe culverts underneath. The City does not have these items in the asset management program as typically these are maintained by the property owners. Some of these culverts are very large and the cost to replace an individual culvert or small bridge could be over \$100,000.
- The replacement of the driveway headwalls in the Lionhead Executive Estates Subdivision are considered unique because of the Limestone block and due to the premature deterioration of the stone materials. As such, staff have taken the initiative in past years to replace the headwalls in order to maintain the storm water conveyance in that subdivision.

Corporate Implications:

Financial Implications:

The funding to repair the headwalls in the Lionhead Executive Estates Subdivision will be requested through future budget process, subject to council approval, and will be dependent on the option that staff is directed to proceed with.

The estimated cost for each option are summarized in the table below;

Options	Tax Funding	Total Cost	Cost Type
Option 1 - Repair or replacement of the headwalls of Lionhead Executive Estates subdivision based on complaints received, repairing approximately 4 to 5 driveways with headwalls per year, using stone blocks.	\$50,000	\$750,000	Recurring annual cost for approx. 15 years
Option 2 –Capital project to remove and replace all of the driveway headwalls with precast concrete blocks 76 driveways with headwalls	\$500,000	\$500,000	One - Time
Option 3 – Capital project to remove and replace all the stone block driveway headwalls with the cast in place concrete for 76 driveways with headwalls.	\$400,000	\$400,000	One - Time
Option 4:- Capital project to remove and replace all the remaining 76 stone block driveways with headwalls using pre-cut natural stone blocks driveway headwalls.	\$700,000	\$700,000	One-Time

Capacity:

- If Council decides to proceed with Options 2 or 3 or 4, this work could be done in one full construction season through Capital Works and external contractor.

Realty:

Realty Services will arrange the Permission to enter agreements with the property owners as required to facilitate the repairing of these driveway headwalls. Property owners would be requested to maintain the driveway headwalls after the repair/replacement.

Legal:

Legal Services will review and approve as to form the permission to enter agreements.

Purchasing Comments:

If Council direct Staff to proceed with Option 2 or 3 or 4, a public procurement process will be conducted with the lowest compliant bid eligible for contract award. Purchase approval shall be obtained in accordance with the Purchasing By-law.

All communication with Bidders involved in the procurement must occur formally, through the contact person identified in the Bid Document.

Other Implications:

Term of Council Priorities:

This report achieves the Strategic Plan priorities of sustainability, healthy and safe community, good government and a well-run City by improving the City services.

Living the Mosaic - 2040

Upgrading the Brampton's deteriorated infrastructures through planned repairing, replacements and rehabilitations will provide a mosaic of safe, integrated choices and added peace of mind to the Brampton's residents. Also, this will positively contribute towards the civic sustainability which is the Brampton's Vision for 2040.

Conclusion:

This report provides a recommendation to replace the limestone driveway headwalls in the Lionhead Executive Subdivision as a capital project in accordance with Option #4 in this report.

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Attachments:

1. Key Plan: Lionhead Executive Subdivision (Ward # 4)
2. Plan of Headwall replacement from resident petition September 2020.
3. Materials examples and descriptions for each option.