



**STAFF REPORT  
ACTION REQUIRED**

**Geothermal Heating/Cooling System – 4, 6, 9, 11, 12, 13,  
14 & 20 Laurier Avenue**

<b>Date:</b>	January 20, 2011
<b>To:</b>	Toronto and East York Community Council
<b>From:</b>	Director, Transportation Services Toronto and East York District
<b>Wards:</b>	Toronto Centre Rosedale – Ward 28
<b>Reference Number:</b>	Te11030te.row

**SUMMARY**

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This report is about a matter which Community Council has delegated authority from City Council to make a final decision.

Transportation Services is in receipt of an application from Douglas Worts, acting on behalf of the property owners of 4, 6, 9, 11, 12, 13, 14 & 20 Laurier Avenue, to install geothermal heating/cooling systems within the below-grade portions of the public right of way fronting the above-noted properties. Since the former City of Toronto Municipal Code Chapter 313, does not make provision for this installation Community Council approval is required.

Transportation Services has met with the applicant and reviewed the proposal and determined that the geothermal heating/cooling system will not impact negatively on the public right of way, and that permission could be granted to the owners for its installation and ongoing maintenance. At this time, plans of the proposed installations have not been received. The permits for this installation will only be issued once the plans are received by Transportation Services and all requirements are met.

The owners are in receipt of ecoEnergy grants from both the provincial and federal governments for this installation and the work must be completed by March 31, 2011.

## RECOMMENDATIONS

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### **Transportation Services recommends that Toronto and East York Community Council:**

1. approve the installation of the geothermal systems within portions of the public right of way fronting 4, 6, 9, 11, 12, 13, 14 & 20 Laurier Avenue subject to the applicant submitting drawings of the proposal and complying with any appropriate conditions as required by Transportation Services;
2. approve the installation of the geothermal heating/cooling system within portions of the public right of way fronting the homes of 4, 6, 9, 11, 12, 13, 14 & 20 Laurier Avenue, subject to the owner(s) of each property entering into an encroachment agreement with the City of Toronto, agreeing to but not limited to the following:
  - a. indemnify the City from and against all actions, suits, claims or demands and from all loss, costs, damages, and expenses that may result from such permission granted;
  - b. maintain the geothermal heating/cooling systems at their own expense in good repair and a condition satisfactory to the General Manager of Transportation Services and will not make any additions or modifications to the system beyond what is allowed under the terms of the Agreement;
  - c. obtain approval from Toronto Building, if required;
  - d. obtain clearance and/or sign-off from Heritage Preservation Services and satisfy any requirements that Heritage Preservation Services may have;
  - e. provide “as-built” drawings within 60 days of completing the installation of the geothermal heating/cooling system;
  - f. provide payment to cover the cost for the City to complete permanent repairs associated with the restoration of the pavement of the public right of way as determined by Transportation Services;
  - g. limit the life of the Agreement to the removal of the geothermal system or the date of demolition of the building abutting the geothermal system, whichever is the less;
  - h. pay for the costs of preparing the Agreements and the registration of the Agreements on Title;

- i. accept such additional conditions as the City Solicitor or the General Manager of Transportation Services may deem necessary in the interest of the City;
3. direct Legal Services and/or the General Manager of Transportation Services to extend the Encroachment Agreement to the new owner, in the event of sale or transfer of the property abutting the encroachment, subject to the approval of the General Manager of Transportation Services; and
4. request Legal Services to prepare and execute the Encroachment Agreements.

### **Financial Impact**

There is no financial impact to the City as a result of this report.

### **ISSUE BACKGROUND**

Transportation Services has met with Douglas Worts, 4 Laurier Avenue, who is acting on behalf of the residents of Laurier Avenue that are requesting permission to install a geothermal heating/cooling system within portions of the public right of way fronting their property. At this time, the residents of 4, 6, 9, 11, 12, 13, 14 & 20 Laurier Avenue are seeking approval to install a geothermal system that will service their homes.

### **COMMENTS**

The geothermal heating/cooling system is an established technology requiring a significant length of "ground loop" pipes buried underground. Heat is exchanged with the ground through those pipes. The ground heating/cooling system themselves are made of high density polyethylene which is essentially the same material used for natural gas lines. The estimated life-span of the ground loops exceeds 25 years. Manufacturers offer over 50 years of warranty for this type of pipe which do not corrode or support biological growth as proven with their use for natural gas and other chemicals.

In a worst case scenario, if a pipe was to break, the system will shut down that individual loop and the damaged pipes could be excavated and replaced in a scheduled non-emergency manner. The remaining loops can be separately valve controlled and any shortfall in heating will cause the system to revert to a backup boiler. The government approved fluid within the pipes is essentially water with an environmentally friendly anti-freeze that is non-toxic and offers no detrimental effect to the environment if it were to leak from the pipes.

Laurier Avenue is a small residential cul-de-sac comprised of 22 heritage single family homes. There is limited space in the front yards to accommodate the installations. Photos of Laurier Avenue are shown on Appendix 'A'.

It is uncertain where exactly the boreholes will be drilled to install the geothermal ground loops but in speaking with Douglas Worts preliminarily, there would be one or two ground loops installed to service one home, installed within the right of way fronting the property. Generally, geothermal systems consist of boreholes approximately 15 cm in diameter to be drilled into the pavement which will be connected to a main header. The pipes together with the main header will commence approximately 1.8 m below the grade of the pavement to a further depth of approximately 130 m. All installations will be below grade and once the project is complete, there will be no permanent effect on the use of the surface of the public right of way. The residents will be responsible, as a condition of approval, to pay for the restoration of the pavement within the public right of way as determined by Transportation Services.

These residents of Laurier Avenue have expressed their desire to reduce greenhouse gas emissions in the City of Toronto and to set a precedent that allows other Toronto residents to do the same. The residents of Laurier Avenue tendered a Request For Proposal for a consultant/contractor with a due date of January 15, 2011 and award date of January 31, 2011. At the time of writing this report, the contract award was not available.

The residents of Laurier Avenue have been awarded grants from Live Green Toronto and both the provincial and federal governments for the geothermal installations. However the work must be completed by March 31, 2011. To date, drawings of the proposed installations have not been received by Transportation Services. However, we would like to seek approval of the installation in concept, so that the funds provided by the grants are available.

### **Applicable regulation**

As there are no provisions within the former City of Toronto Municipal Code, Chapter 313, Streets and Sidewalks, to allow for the installation and maintenance of the proposed geothermal heating/cooling systems within the public right of way, Community Council approval is required.

## **Reasons for approval**

Transportation Services has reviewed the request and determined that the installation and maintenance of the geothermal heating/cooling systems will not impact negatively on the public right of way. The geothermal heating/cooling system is in keeping with City initiatives to reduce greenhouse gas emissions.

## **CONTACT**

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## **SIGNATURE**

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Andrew Koropeski, P.Eng.  
Director, Transportation Services  
Toronto and East York District

## **ATTACHMENTS**

Appendix 'A' – Photos

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