

## **Geothermal Heating/Cooling System – 100 Pembroke Street**

<b>Date:</b>	June 1, 2010
<b>To:</b>	Toronto and East York Community Council
<b>From:</b>	Manager, Right of Way Management, Transportation Services Toronto and East York District
<b>Wards:</b>	Toronto Centre Rosedale – Ward 27
<b>Reference Number:</b>	Te10059te.row

### **SUMMARY**

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This staff 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 a request from the owners of 100 Pembroke Street, to install a geothermal heating/cooling system within portions of the public lane abutting their building.

Transportation Services has reviewed the request and determined that the geothermal heating/cooling system will not impact negatively on the public right of way and permission should be granted to the owners for its installation and ongoing maintenance.

### **RECOMMENDATIONS**

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

1. Approve the installation of the geothermal heating/cooling system within portions of the public lane abutting 100 Pembroke Street, subject to the owners entering into a license 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 and providing of an insurance policy for such liability

for the lifetime of the Agreement in a form as approved by the Deputy City Manager and Chief Financial Officer and in the amount not less than \$2,000,000.00 or such greater amount as the Deputy City Manager and Chief Financial Officer may require;

- b. maintain the geothermal heating/cooling system 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;
  - d. obtain clearances and/or sign-offs from all affected utilities and satisfy all conditions imposed by any utilities that may be affected by the installation and maintenance of the geothermal heating/cooling system;
  - e. provide “as-built” drawings within 60 days of completing the installation of the geothermal heating/cooling system;
  - f. provide payment in the amount of \$15,800.00 to cover the cost for the City to complete permanent repairs associated with the restoration of the pavement of the public laneway and agree to pay all costs that may exceed this amount;
  - g. pay an annual fee of \$1,345.00 for the use of the public right of way as determined by the Director of Real Estate Services, Facilities & Real Estate, to be adjusted annually by the Consumer Price Index (CPI);
  - h. limit the life of the Agreement to the removal of the geothermal system or the date of demolition of the building at 100 Pembroke Street, whichever is the less;
  - i. pay for the costs of preparing the Agreement and the registration of the Agreement on title; and
  - j. accept such additional conditions as the City Solicitor or the General Manager of Transportation Services may deem necessary in the interest of the City.
2. Direct Legal Services and/or the General Manager of Transportation Services to extend the License 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.
  3. Request Legal Services to prepare and execute the Encroachment Agreement.

## **Financial Impact**

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

## **ISSUE BACKGROUND**

Transportation Services has received an application from the owners of 100 Pembroke Street requesting permission to install a geothermal heating/cooling system within portions of the public lane rear abutting their property.

The geothermal heating/cooling system is in keeping with City initiatives to reduce greenhouse gas emissions and Transportation Services is in support of this alternate form of energy generation encroaching within the public right of way. This application is the second instance for this type of use of the public right of way. It has been reviewed in consideration of its particular characteristics.

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 consists of a series of ground loops of high density polyethylene pipes. Polyethylene 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 were 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.

The building at 100 Pembroke Street is an 11-storey apartment building. The challenge on this site is the fact that the lot only has a 1.5 m wide strip of land spanning the 42 m length of the lot in which to install the boreholes. This would only allow installing 7-9 boreholes and 14 boreholes are required. The balance of the site is occupied by the building and a 2-storey underground garage. As a result, all of the pipes for the geothermal heating/cooling system cannot be installed on private property.

The owners of the property have indicated that the underground garage of the building does not allow for enough room for operating drill rigs for the project. Therefore, the pipes for the geothermal heating/cooling system cannot be installed on private property.

With respect to 100 Pembroke Street, the system will consist of 14 boreholes in total, 5-7 of which will be drilled within the public lane rear. The boreholes are approximately 15 cm in diameter and each loop will be connected to their respective shut-off valves by

supply and return pipes. The loops together with the return and supply pipes will commence a minimum of 1.22 m below the grade of the laneway to a further depth of approximately 183 m. Once the project is complete, there will be no permanent effect on the use of the surface of the laneway. The applicant will be responsible as a condition of approval to pay \$15,800.00 for the restoration of the laneway and agree to pay all associated costs that may exceed this amount.

Given the potential impact of this project on existing utility services, it is the applicant's responsibility to undergo a public utility review with a view of obtaining clearances from the affected utility agencies or satisfying their requirements prior to the issuance of a construction permit authorizing work within the public right of way. At the time of preparing this report, the applicant has not yet submitted the clearances from the affected utilities.

Staffs has consulted with Appraisal Services, Facilities Management, Corporate Services, to determine the annual rental license fee for the geothermal heating/cooling system within portions of the public laneway adjacent to 100 Pembroke Street. Appraisal Services has determined the annual net rental license fee to be \$1,345.00.

Details of the proposal are on file with Transportation Services.

Photos of the property together with the adjacent public laneway are shown on Appendix 'A'.

## **COMMENTS**

### **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, therefore we are required to report on this matter.

### **Reasons for approval**

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

## **CONTACT**

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## **SIGNATURE**

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Angie Antoniou  
Manager, Right of Way Management

**ATTACHMENTS**

Appendix 'A' – Photos

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