



**City of Richmond**

**Report to Committee**

**To:** Public Works and Transportation Committee    **Date:** May 3, 2004  
**From:** Robert Gonzalez, P.Eng.    **File:** 10-6375-03/2004-Vol 01  
Director, Engineering  
**Re:** **Potential Drainage Problem**

**Staff Recommendation**

That the staff report on a potential drainage problem related to raised lots and lanes be received for information.

*for* Robert Gonzalez, P.Eng.  
Director, Engineering  
(4150)

FOR ORIGINATING DIVISION USE ONLY					
ROUTED TO:		CONCURRENCE		CONCURRENCE OF GENERAL MANAGER	
Sewerage & Drainage.....	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>				
Development Applications .....	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>				
Law.....	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>				
<b>REVIEWED BY TAG</b>	YES <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>	<b>REVIEWED BY CAO</b>	YES <input type="checkbox"/>	N/A <input type="checkbox"/>

## **Staff Report**

### **Origin**

At the April 21, 2004 Public Works and Transportation Committee meeting, staff brought forward recommendations for Lane Standards. Upon conclusion of the meeting, Committee asked that staff provide information on a potential drainage problem in areas where lanes had been constructed of either gravel or pavement with no other utilities and where adjacent new developments were occurring, with the land being higher than the lane and the 'shoulder' paved back to the lane. Concerns were voiced that a problem could arise with drainage in the area because of this situation and staff were asked to prepare a report to Committee on the seriousness of the problem.

### **Analysis**

The City currently has approximately 117 lanes with a total length of about 33 kilometres, of which, approximately 11 kilometres (33%) have drainage in place. The lanes are located throughout the City, but are predominately found in the Shellmont, Broadmoor, Steveston and Burkeville areas as illustrated on the attached Appendix A.

City Policy 5038, attached as Appendix B, outlines Council policy for Lanes. In April 2004 Council adopted a new lane construction standard, which also includes a lane drainage system to be implemented on a pilot basis.

The cost to install drainage within the remaining 22 kilometres of lanes where drainage is absent is roughly estimated to be \$12.1 Million and would be funded through General Revenue. The City standard for drainage system design capacity, including lane drainage, is based upon a storm of magnitude that occurs only once every 10 years. The installation of lane drainage has been considered a lower priority in favour of completing other drainage related projects considered to be of higher importance.

With regard to developments where the developed land is higher than the lane, Bylaw 7230 requires that new developments be at least 0.9 metres above sea level and that they be self sufficient for drainage. Where lots are re-developed in previously established subdivisions, the requirement to raise the lot becomes part of the building permit, as is the requirement to install drains around the property perimeter, as illustrated on the attached Appendix C. The purpose of the perimeter drain is to prevent transmission of drainage from the higher lot to the adjacent lower lot(s) and lane.

The drawing attached as Appendix C indicates the requirement for a perimeter drain to be on three sides of the property, with the portion of the property fronting the road right-of-way being the exception. Any drainage that flows off the front of the property would normally be collected by the City drainage infrastructure within the road right-of-way. Drainage originating from the remaining portions of the lot is either captured by a perimeter drain and transmitted to the municipal connection, or will be absorbed into the ground. For the high rainfall events where the ground is saturated, drainage from the rear of the lot may flow into the lane and eventually find its way to the lowest point within the subdivision area. Rain falling directly into the lane that has

no drainage infrastructure will also eventually find its way to the lowest point within the subdivision area during high rainfall events.

The degree of seriousness of this drainage problem is directly related to the severity of the rainfall event. While flooding associated with lanes generally does not pose a health hazard, customer relations may suffer given the possibility of property damage and traffic issues. Operations staff recorded 429 Service Request calls for service related to flooding in 2003, with the majority of calls received for the extreme events on October 16 and November 28, 2003. Specific records were not kept to associate lanes with flood calls, however, field staff estimate that 10% of these calls originate from properties with lanes.

From a liability standpoint, it appears that there is not a great deal of risk to the City. If a resident complains that their property is flooded because the lane is not draining, the issue would come down to where the water was coming from - it likely would not all be coming from the lane and is more likely a result of inadequate drainage on the resident's property. If the resident's property had adequate drainage, the fact that the lane was flooded wouldn't pose a problem. Property owners are responsible for adequate drainage on their property, therefore, in the case of a resident's property flooding the lane due to inadequate drainage, the property owner is liable, not the City.

Historically, the City has had very few claims arising due to flooding lanes. In the last five years there has only been one claim which was denied. Consequently, this does not appear to be an area of great risk to the City.

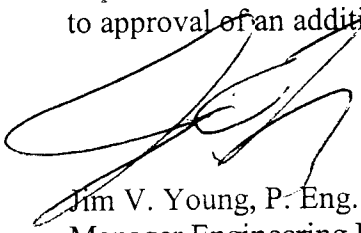
### **Financial Impact**

There is no financial impact.

### **Conclusion**

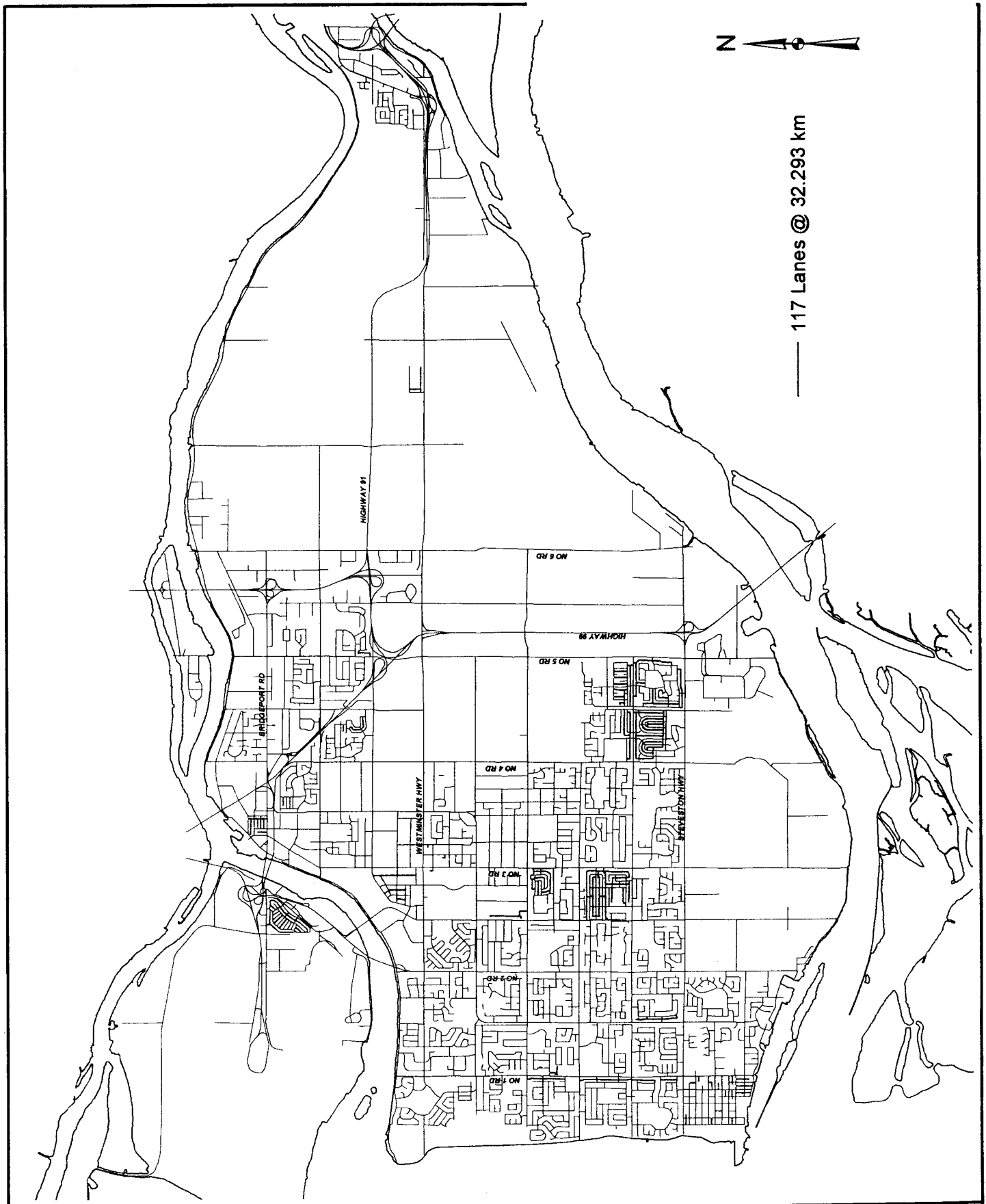
The seriousness of flooding related to lanes has been reviewed based upon several considerations including property damage, health, financial, customer service and legal viewpoints.

The pilot lane construction standard, adopted in April 2004, allows for drainage installation in laneways whereby any future developments from this time forward, will serve to diminish and eventually eliminate flooding associated with lanes over time, if this standard is fully implemented. Alternatively, the City may pursue a lane drainage infrastructure program subject to approval of an additional expenditure of approximately \$12.1 Million from General Revenue.



Jim V. Young, P. Eng.  
Manager Engineering Design and Construction  
(4610)

JVY:jvy



# Lanes



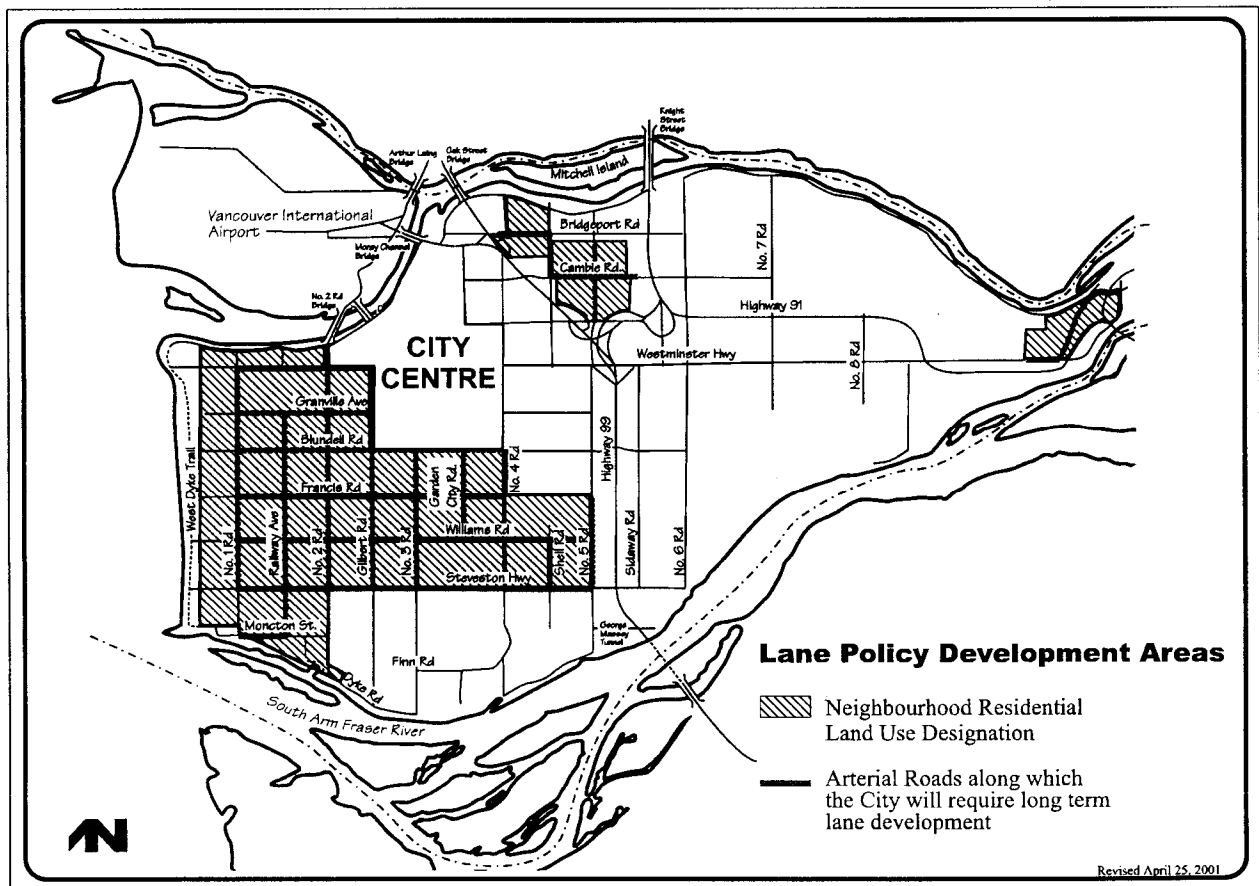
## Lane Policy

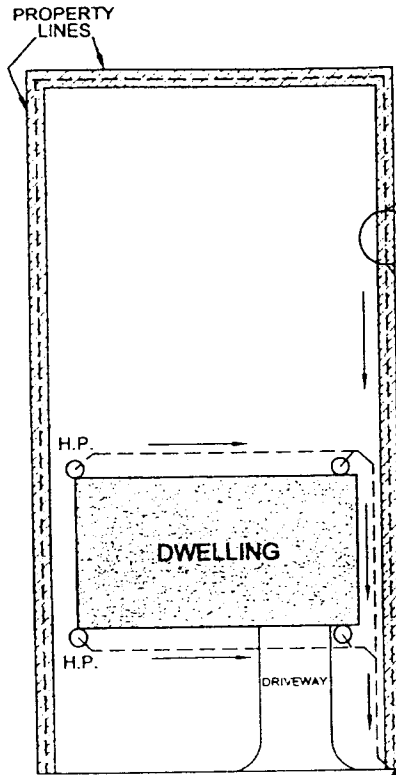
### POLICY 5038:

It is Council policy that:

1. Where the City approves Rezoning, Development Permit and/or Subdivision applications for properties which:
  - a) are outside the City Centre;
  - b) are designated by the Official Community Plan as “Neighbourhood Residential”;
  - c) front a major arterial road, or local arterial road that is part of the Bike Network or Francis Road between No.1 and No.4 Roads; and
  - d) are illustrated generally on the attached map, “Lane Establishment Policy Development Areas”;the City requires the applicant to:
  - e) provide land (eg, dedicate) at the rear and/or side of the properties for a lane and/or mid-block lane access; and
  - f) pay for construction, to City standards, of such lane and/or mid-block lane access.
2. A lane required under Section 1 must not exit directly onto a major arterial road, unless:
  - a) a mid-block vehicular access is approved by the City and constructed to current standards; or
  - b) land is dedicated and funding provided for the future construction of a lane and in the interim a temporary, single-width, shared access driveway is provided for use by vehicles accessing only those parcels located directly adjacent to the driveway on the understanding that any garage(s) is to be located at the rear of such property, to ensure that the access to the arterial road can be closed when the lane is operational.
3. In order to implement the provisions of Section 1, restrictive covenants may be required as part of a rezoning application in order to:
  - a) increase rear-yard setbacks;
  - b) ensure that where fill is added to raise the property, vehicular access to the lane is maintained;
  - c) ensure that garages, if any, are located at the rear of the property in question; and/or
  - d) ensure that when the lane is operational, access to the arterial road is closed.
4. Exceptions to the policy, which would be determined with each application, include where:
  - a) there is a lane already built to City standards;
  - b) the property is less than 30m in depth;
  - c) there is, or the City approves, an alternate access, such as a frontage road, shared access, or internal road;

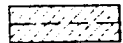
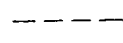
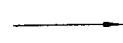
- d) Council authorizes an exemption through the rezoning or development permit process; or
  - e) the Subdivision Approving Officer authorizes an exemption through the subdivision process.
5. The main principles used by staff to determine the suitability of an alternate access referred to in clause c) of section 4 are that:
- (i) there are to be no additional accesses created to residential lots along arterial roads;
  - (ii) the proposed access will not impede the intended function of the arterial road; and
  - (iii) the type of access is consistent with the existing and/or anticipated form of development.
6. Notwithstanding the provisions of this policy, the City will continue to examine development applications in terms of meeting OCP objectives, Lot Size Policies, the Residential Lot Vehicular Access Regulation Bylaw and other requirements, standards and factors.

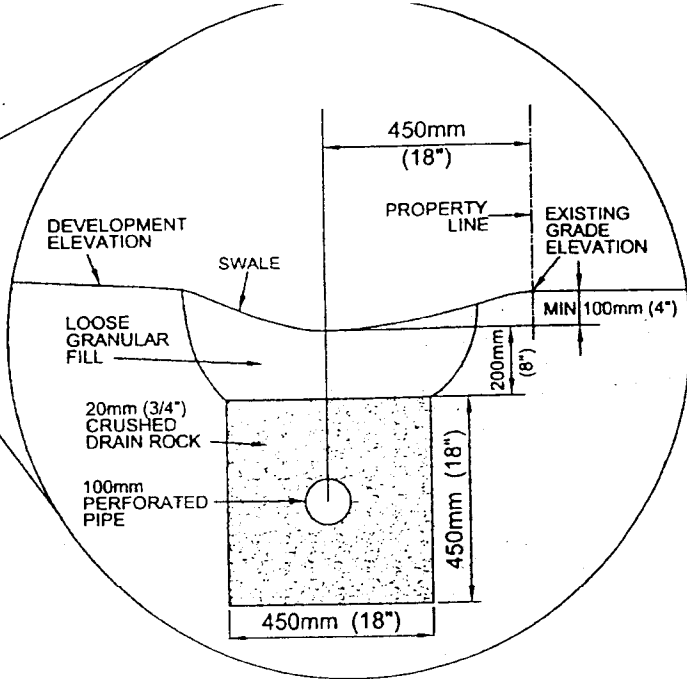




**TYPICAL LAYOUT**

**LEGEND**

-  100mm (4") perforated flexible pipe with large slots. 450mm (18") of 20mm (3/4") crushed rock around pipe.
-  100mm (4") C.S.A. approved solid sewer pipe.
-  Direction of flow and pipe grade (see note 6).
- H.P. High point of system.



**DETAIL OF TYPICAL PROPERTY LINE DRAINS WHERE PERIMETER DRAINS ARE REQUIRED**

**NOTES**

1. Changes of direction to be made with combinations of wye's and 45 degree bends.
2. Minimum of 200mm (8") cover required at any point of system.
3. All joints in solid plastic sewer pipe are to be glued.
4. The installation may vary depending on location of building and municipal connection.
5. Solid sewer pipe to be "properly" bedded in 150mm (6") sand or gravel.
6. All pipe to have uniform grade from any high point to the city connection or ditch high water level.
7. Any pipe under a driveway with less than 450mm (18") of cover to be C.S.A. approved D.W.V. plastic or equal.
8. When building permits are issued on adjacent lots of a subdivision without a storm service agreement, the requirement for property line drains between the lots may be eliminated upon review by the Supervisor, Plumbing/Gas Inspections.
9. See also P105-1 Typical Storm Sewer diagram for SFD and Duplex.

Perimeter drains are required for each lot of a new subdivision, infill lots, demolition and rebuilding in an existing subdivision, or where property is raised above or slopes towards the adjacent property.



City of Richmond

**Typical Storm Sewer Diagram for SFD and Duplex Where Perimeter Drains are Required**

Dr. No.: P105-2  
 Sheet No.: 1 of 1  
 Scale: NTS  
 Date: 2003/11/25