



CITY OF VANCOUVER

ADMINISTRATIVE REPORT

Report Date: October 14, 2008
Contact: Doug Manarin
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VanRIMS No.: 08-2000-20
Meeting Date: October 30, 2008

TO: Standing Committee on Planning and Environment
FROM: General Manager of Engineering Services
SUBJECT: Update on Status of Country Lanes

RECOMMENDATION

That Council endorse a pilot project for a new residential lane treatment and that staff identify a location where this treatment can be piloted from the list of approved Local Improvement lane paving projects in 2009. Funding of \$50,000 for the incremental costs of the pilot project is to be provided from the 2009 Streets Capital Budget for Lanes - Local Improvements (A1a6) subject to the 2009 Capital Budget process.

COUNCIL POLICY

On December 14, 2004, Council approved Centre Strip Lane Paving as the City's standard for residential lane paving projects as a replacement for the previous Full Width Paving standard.

On July 9th, 2002, Council approved the design and construction of three "Country Lane" demonstration projects.

Policies governing the Local Improvement process are set out in the Vancouver Charter and Local Improvements Procedure by-law.

PURPOSE

This report provides Council with an update on the status of the existing Country Lane pilot projects and presents an additional pilot lane treatment for residential lanes.

BACKGROUND

The Country Lane project was designed as an innovative lane treatment option. Three lanes were part of a pilot project and were constructed in 2002 and 2003 to test the proposed materials and construction methods for future Country Lane projects. The construction of the three pilot sites was fully funded by the City. The intent of the Country Lane design was to provide a more attractive lane design that would also provide improved environmental factors such as stormwater management through on-site infiltration and pollutant reduction. The Country Lane design was formally added as a Local Improvement lane paving option in late 2004.

DISCUSSION

The Country Lane project is an award-winning design that continues to spark public interest. The initial Country Lane pilot projects incorporated several stormwater management features and delivered a significantly enhanced public realm compared to a typical lane treatment. Although citizens continue to express interest in the Country Lane design, the much higher costs of the Country Lane (three to four times the cost of the standard residential centre strip lane option) has been a key reason why there has not been a Country Lane project advanced through the City's Local Improvement process since this design was added to the Local Improvement process in 2004.

In 2008 staff undertook an evaluation of the initial Country Lane projects and similar street and lane programs undertaken in other cities and a detailed report is included in Appendix A. It was determined that that pavers, structural grass, confined gravel, and concrete driving strips can be successful when used in the right locations, however these treatments add to the complexity and expense of a Country Lane.

Other jurisdictions, such as Chicago, are using permeable surfaces such as permeable asphalt and permeable concrete in their designs. Measures such as infiltration galleries, infiltrating catch basins and swales are also being used to provide similar improvements to stormwater management. Staff looked further into the use of permeable pavement systems for Vancouver, such as permeable asphalt, permeable concrete, and permeable pavers, and found that their use can be problematic due to the poor draining native soils in the City and our local climate conditions. These factors limit the opportunities to use these products without needing to construct an extensive underground drainage system to prevent potential flooding and associated damage.

This past summer staff sent surveys to residents living near the three Country Lane pilot sites to determine their opinions on the performance of the Country Lane projects. There were 29 surveys returned to the City (see Appendix B for the survey questions and Appendix C for the detailed survey results summary). The survey found that in general:

- a majority of residents are very satisfied with the lanes;
- a majority of residents feel that the Country Lanes are very attractive;
- the lanes are now perceived to be used more by the public (e.g. walking);
- there has been some perceived reduction in vehicle speeds;
- those residents who do some maintenance of the lanes (e.g. mowing, cleaning planted areas) enjoy this activity;
- structural grass (Golpla) is not a suitable walking surface and is generally not suitable for other active uses of the lane (e.g. road hockey) and the dry-mix concrete driving strips are not performing well; and

- a majority of residents would not pay a significant premium for a Country Lane design.

While most residents were happy with the Country Lanes, most residents would not pay significantly more for a Country Lane treatment than the typical cost of a standard residential centre strip lane treatment which was quoted as being \$1500. On average, the surveyed residents would be willing to pay approximately \$2167 for the Country Lane treatment they have received (about \$667 more). One third of all respondents would be willing to pay at least \$2500 (a minimum of \$1000 more) for a Country Lane treatment. One third of all respondents would not be willing to pay any additional costs for a Country Lane treatment.

Staff currently estimate that the existing Country Lane treatment would cost an average property owner about \$5000; this is significantly more than what residents appear to be willing to pay. Based on these results, staff propose to develop a new lane treatment with the goal of creating a simple, cost effective design that will continue to implement environmental features, such as stormwater management, in a socially and economically sustainable manner.

Lanes are used for a variety of functions including sanitation collection services (garbage, yard trimmings, and recycling) and access to on-site residential parking. These functions require that most of the lane area generally be a drivable surface. Lanes also act as utility corridors for Hydro and Telco's and can also be areas for informal recreation activities (e.g. road hockey, cycling, walking, etc.) for the adjacent residential properties. Lane treatments therefore must consider all of these uses. While there will be some opportunities for providing additional greenery and storm water management features at the edge of the lane, these areas must still be drivable and accessible to allow the lane to function for all of its intended purposes.

Staff propose to build on the success of the Centre Strip Lane Paving option adopted in 2004 as the new standard for residential lane treatment which replaced the previous full-width paving standard. The pilot project will incorporate improved stormwater management, improved appearance, and accessible public spaces while minimizing the life cycle costs of the new design. The proposed treatment for a standard 20ft (6m) lane will include an 8-10 ft paved surface with two 1.5 ft concrete bands and 3-4 ft vegetated shoulders. An illustration of the design concept is included in Appendix D. Additional features that may be incorporated include:

- infiltrating catch basins and/or galleries where soil conditions are suitable
- concrete banding to provide a durable edge and a narrower lane pavement
- permeable vegetated surfaces in the shoulder areas between garage aprons
- permeable pavements in the centre strip where local soil conditions are suitable

Staff evaluated the proposed pilot lane treatment concept against the previous Full Width paving standard, the current Centre Strip standard, and the Country Lane design in the following sustainability matrix:

Lane Paving Sustainability Matrix

	Full Width Paving	Centre Strip	Pilot Lane Treatment	Country Lane
Environmental				
Stormwater Management	Poor	Fair	Fair/Good	Best
Planting/Greenery	Poor	Fair	Fair	Good
Heat Island Reduction	Poor	Fair	Fair/Good	Best
Resource Footprint (Construction & Rehabilitation)	Fair	Good	Good	Fair/Good
Social				
Safety	Good	Good	Good	Good
Aesthetics	Poor	Fair	Good	Best
Functionality	Good	Fair/Good	Good	Fair
Accessibility	Best	Good	Good	Fair
Economic				
Est Construction Cost (120m lane)	\$ 70,000	\$ 50,000	\$ 85,000 - 100,000	\$ 180,000
Est Cost to Property Owners - (24 properties - PO Share of LI)	\$ 2,000	\$ 1,500	\$ 2,500 - 3,000	\$ 5,000
Maintenance Cost	Low	Low - Med	Med - Low	High
Est Life Cycle (Years)	40-60	20-40	30-50	20
Est Rehabilitation Cost - Minor Rehab	\$ 4,800	\$ 4,500	\$ 4,000	\$ 30,000
Est Rehabilitation Cost - Major Rehab	\$ 36,000	\$ 24,000	\$ 44,000	\$ 120,000

The pilot lane treatment provides a good balance between the environmental, social, and economic aspects of sustainability.

Staff propose to select a residential lane from the next group of approved Local Improvement lane paving projects, where local conditions are suitable, to test the proposed pilot lane treatment. It is proposed that for this pilot project the additional costs of the enhancements would be funded by the City and the residents would pay the quoted Local Improvement charges for the standard centre strip lane paving project. If successful, the pilot lane treatment could be offered as a future Local Improvement option.

FINANCIAL IMPLICATIONS

The incremental cost for the pilot lane treatment, estimated at \$50,000, would be funded by the City from the 2009 Streets Capital Budget for Lanes - Local Improvements (A1a6) and would be subject to the 2009 Capital Budget process. Should this treatment be implemented as a Local Improvement option in the future, it is anticipated that it would cost an average property owner an additional \$1000 to \$1500 more than the typical \$1500 cost for the standard centre strip lane treatment.

ENVIRONMENTAL IMPLICATIONS

The pilot lane treatment will incorporate additional stormwater management features and will continue to provide space for vegetation in the shoulder areas of the lane. The proposed banding in the design would provide a more durable edge treatment that will reduce pavement deterioration which will help to extend the service life of the lane design. An

extended life cycle results in fewer materials and energy being expended to maintain and rehabilitate the lane in the future.

SOCIAL IMPLICATIONS

The pilot lane treatment provides a lane that meets the functional needs of the residents, including garbage, yard trimming, and recycling collection services and property access. The design concept also provides an improved public realm that is suitable for pedestrians and recreational activities. The permeable vegetated shoulders help to introduce green planting areas into the lane.

IMPLEMENTATION PLAN

Staff will review possible sites for the pilot lane treatment from the list of approved 2009 Local Improvement lane paving projects. Staff will recommend a suitable site for construction of the pilot lane treatment and will confirm that there is support for the treatment from the adjacent property owners. Construction of the pilot project is planned for 2009.

CONCLUSION

The Country Lane projects completed in 2002 and 2003 are popular with neighbouring residents. However, due to the high cost of this treatment, no Country Lanes have been advanced through the Local Improvement process since it was added as an option in 2004. The proposed pilot lane treatment will be piloted in conjunction with the 2009 Local Improvement Lane Paving program and could in the future provide a more economical sustainable lane treatment option for residents.

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COUNTRY LANE PILOT PROGRAM REVIEW

Summary

In 2002 the Streets Division initiated the Country Lane Pilot program to demonstrate new construction methods that would improve the environmental impact of and the appearance of residential lanes. Three lanes were selected for the pilot and various sustainable construction materials and techniques were demonstrated. This report provides an up-date on the pilot program and offers initial research on other cities laneway programs. These insights will provide Engineering with new information on how future laneways should be designed.

Introduction

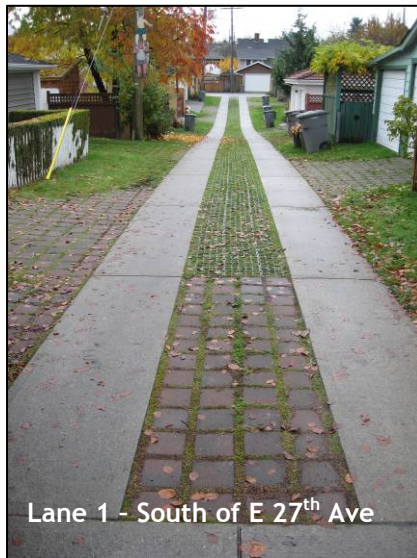
The Country Lane Pilot project consists of three lanes that were built in 2002 and 2003. The vision of the project is to incorporate the principles of economic, environmental, and social sustainability.

From an economic perspective, the costs to build a Country Lane were monitored against the City's then-standard full-width residential lane. Environmental factors were considered by showcasing a variety of alternative stormwater management techniques such as permeable pavers, structural grass, confined gravel, and recycled concrete. These measures can decrease runoff, improve water quality, and reduce the urban heat island effect. Social impacts were considered by involving the community, slowing traffic, expanding green space, and improving the attractiveness of the laneway. Studies show that in general, green space can create a safer environment, enhance community self esteem, reduce stress, increase health, increase community appeal, and lower crime.

Nearly four years have passed since completing the first Country Lane pilot projects. Residents have contributed to maintaining the lanes and keeping them litter-free. The lanes have increased community green space and have beautified the neighbourhood. The Street Division has been monitoring and reviewing the methods used and will incorporate the lessons learned into future laneway designs.

The three Country Lane pilot locations were:

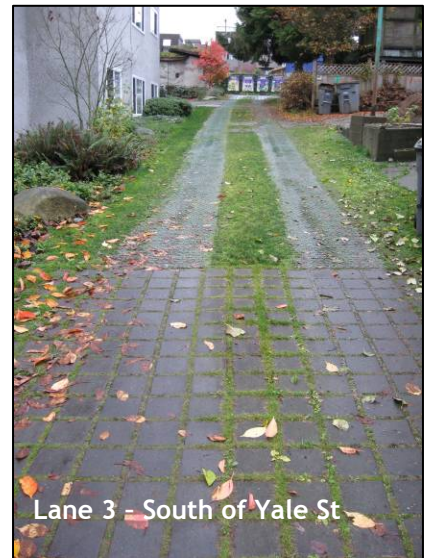
- South of East 27th Ave., between Fraser and Prince Albert St.
- East of Maple St. and south of West 5th Ave.
- South of Yale St., between North Slokan and North Kaslo St.



Lane 1 - South of E 27th Ave



Lane 2 - East of Maple St



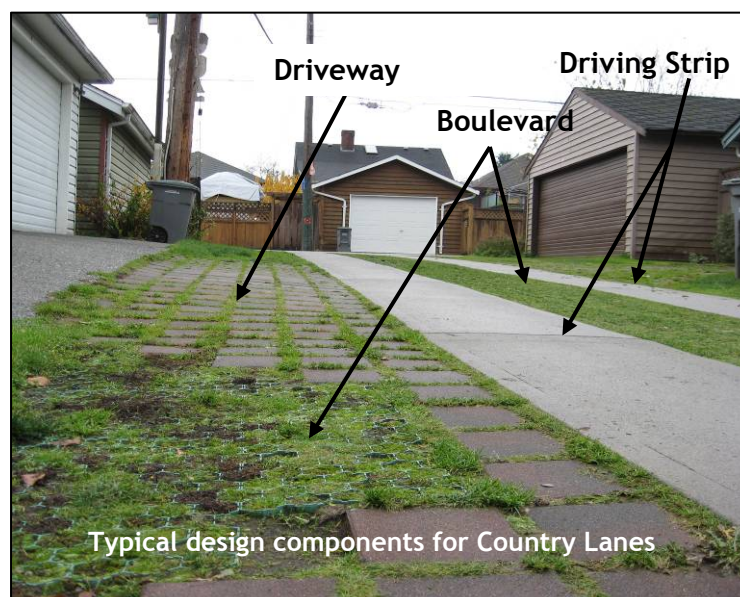
Lane 3 - South of Yale St

Results of Pilot

The Country Lane pictures, shown above, represent the general condition of the laneways as of November 2007. Engineering used several different materials to achieve the program's social and environmental objectives. Different materials were used in a variety of areas within the laneway to study which materials are best suited for various lane conditions.

The following materials were used on the three lanes:

- Concrete Driving Strips
- Structural Grass or Confined Gravel
- Concrete Pavers
- Recycled Concrete Sidewalk



Concrete Driving Strips

Concrete driving strips were used to provide a strong and durable driving base for heavy loading (i.e. 25 tonne garbage trucks). The amount of paved surface was minimized by laying the concrete in strips.

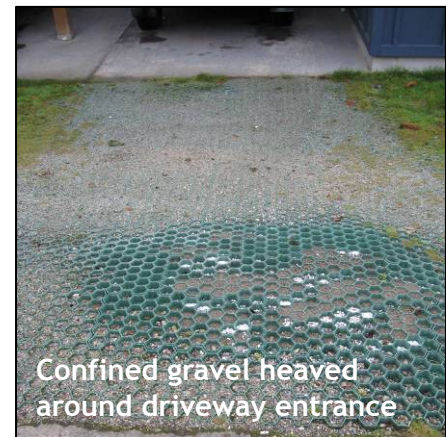
Two construction techniques were tested: standard concrete placed in a formed strip and roller compacted “dry-mix” concrete. The standard concrete strips, although the most expensive option, has performed well with no signs of degradation. The “dry-mix” concrete has shown early signs of deterioration along the edges and recently, pot holes have developed.



Structural Grass or Confined Gravel

Structural grass (Golpla cells filled with grass) or confined gravel (Golpla cells filled with gravel) was placed at the ground surface to provide a strong driving or walking base. Golpla, a series of rigid plastic honeycomb cells, was used in three areas: driving strips, boulevards, and driveway connections. The Golpla design allows stormwater to infiltrate and recharge the groundwater.

Confined gravel was installed in one lane as a driving strip. This material is inexpensive, has performed well, and seems to be ideal for lanes with low speed and low volume. Confined gravel cells were also used as driveway connections, with less success. These cells have lost their gravel contents and are beginning to uplift; this may become a significant maintenance issue. Minor settling has also occurred in some areas.



To test the seeding and growing success of structural grass, two seeding techniques were used: pre-grown or seeded in place. Pre-grown grass, although expensive, made the lane immediately green upon construction; however, seeded grass achieved the same growth after one growing season at a much lower cost.

Pavers

Permeable pavers were used to allow stormwater to infiltrate between their joints and into the ground. Installation and maintenance costs for pavers were expensive and time consuming.

Pavers were installed in driveways and at the entrance to the laneways. Properly placed pavers provided a durable driving surface and contributed to the improved look of the lanes. There was minor settling of the pavers and some have rotated slightly, posing a possible tripping hazard. Stormwater infiltration was reduced when grass grew between the



joints of the pavers.

Recycled Concrete Sidewalk

Recycled concrete sidewalk pieces were placed in driveway connections to provide a durable driving surface. Grass has growing between the pieces giving the design a unique look.

Some individual pieces are beginning to fragment and shift under vehicular weight. Spaces between stones have experienced moderate settlement and may pose a trip hazard. Broken concrete connections were expensive and time consuming to prepare and place.



Performance

Upon completion of the three trials in 2004, initial feedback from residents regarding the laneways' design and materials included poor grass growth, lack of maintenance by the City, and early deterioration of the third lane's "dry mix" concrete driving strip. However, since then, grass growth has been successful and residents have helped with some landscaping. Significant ponding has not been observed in any of the lanes. City crews are monitoring the laneways and have remarked that maintenance issues have appeared much earlier than in conventional lane designs.

Costs

Over the past four years, several dozen residents have inquired about redesigning their lane; however, many were concerned with the high costs. Initially, the cost of the Country Lane pilot was expected to be 50% higher than a conventional full width lane; however, the actual construction numbers indicate that costs are over 100% higher. Since the completion of the pilot project the conventional lane standard has changed from full width paving to a centre strip which has reduced costs, increased permeability, and increased aesthetics. Today, the cost of the Country Lane treatment compared to the centre strip treatment is actually three to four times as expensive. None of the resident's requests for Country Lanes have proceeded due to the high costs for this option.

Other Programs

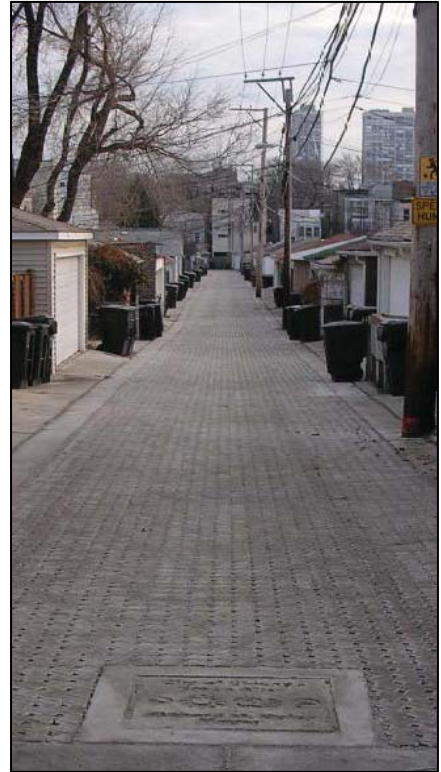
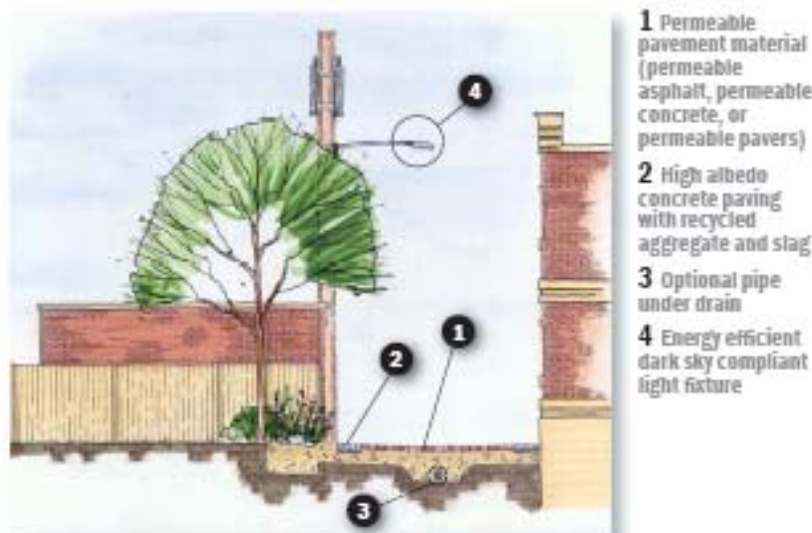
Vancouver's Country Lane program is among only a handful of other innovative laneway programs in North America and abroad. Chicago's Green Alley program focuses on stormwater management, while Melbourne and Sydney have programs which draw on the social benefits of revitalizing laneways. Seattle and Portland have programs that also focus on stormwater management and green space; however their programs relate to the streetscape and not the laneway. Comparing our experiences to these diverse programs gives us the opportunity to determine the next steps.

Chicago's Green Alley Program

In 2006, Chicago Department of Transportation (CDOT) initiated the Green Alley Program as a pilot project and has since installed over 25 green alleys. The program showcases sustainable

design techniques used to decrease stormwater runoff, reduce heat radiating from paved surfaces, incorporate recycled materials, and illuminate alleys with energy efficient, low glare lights. The Green Alley Program assesses and creates custom designs for each alleyway.

The alleyways include permeable pavements or infiltration basins below the pavement which collects and allows stormwater to seep into the ground. This design feature has resolved flooding issues in some alleyways. Chicago is currently refining the asphalt and concrete mixes in order to meet both the desired permeability and durability needed to support garbage trucks and passenger vehicles. Some mixes include recycled materials, such as slag (a by-product of metal processing) and old, ground-up rubber tires. Dark sky-compliant light fixtures have also been installed reduce light pollution and to direct light downwards.



The cost of a Green Alley varies depending on the design, length of the alley and materials used; however, the cost can range from approximately twice the City of Vancouver's cost to nearly four times the cost of a conventional centre strip lane. As the program expands and materials are bulk-ordered, Chicago expects the costs of the green alleys to approach that of a standard Chicago alley.

Australia's Laneway Programs

Melbourne and Sydney have a laneway program that is focuses on the downtown area and is geared towards changing the programming and use of the laneway. The program transforms urban lanes into shared use public amenities that focus on social aspects. It does not focus on residential laneway improvements.

Seattle's Street Edge Alternatives Project:

Staff have done some research into Seattle's Street Edge Alternatives Project (SEA Streets); however, the program is limited to street improvements and not laneways. As a result, costs are not applicable to City's laneway program. The SEA project uses alternative drainage and street design approaches by decreasing impervious surfaces and increasing swales, trees, and shrubs.

Portland's Green Streets Project

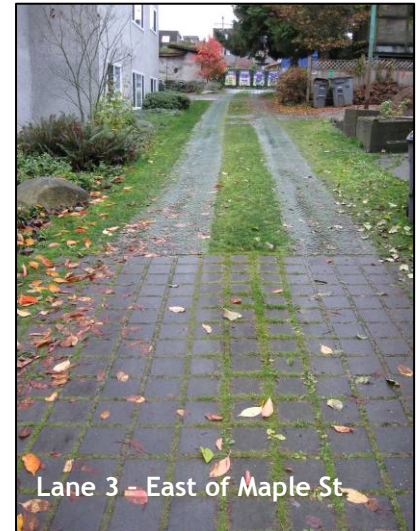
Similar to Seattle, Portland also focuses on streetscape design and not laneways. The program uses a sustainable stormwater strategy to manage stormwater, reduce flows, improve water quality and enhance watershed health in private and public developments.

Conclusion

After evaluating the Country Lane program, we have learned that pavers, structural grass, confined gravel, and concrete driving strips can be successful when used in the right locations. "Dry-mix" concrete driving strips and confined gravel driveway connections will not be used in future designs due to poor performance. Staff believe that the high cost of the current Country Lane designs has been the primary reason that no new Country Lane projects have proceeded under our standard Local Improvement processes.

COUNTRY LANES 2008 RESIDENT SURVEY

Country Lanes Review *We Want to Hear From You!*



June 20th, 2008

Dear Country Lane Resident:

It's been four years since the back lane in your block was redesigned as a Country Lane and our Engineering Department is interested in seeing how it is doing. The City of Vancouver is currently reviewing the first Country Lane pilot projects, so hearing back from you will help us find out what worked and how we can make future Country Lanes even better.

Please take five minutes to give us your comments and send them in by July 18th, 2008. Free postage is provided for your convenience. If you have any question on the survey please contact Rachel Harrison at 604.873.7757.

For more information on the Country Lanes Pilot Program, please visit our website at vancouver.ca/engsvcs/streets/design/enviro.htm

Yours truly,

Rachel Harrison
Streets Design Branch





1. Which Country Lane is in your block:
☐ Lane south of E 27th Ave ☐ Lane east of Maple St ☐ Lane south of Yale St
2. Does one of your property lines back directly onto this Country Lane?
☐ Yes ☐ No
3. I am generally happy with the Country Lane.
☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree
4. I find the Country Lane more attractive than a typical paved lane.
☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree
5. There are problems with drainage in the lane (e.g. standing water, puddles, flowing water).
☐ Yes ☐ No ☐ Don't know.
6. Now that the lane has improved, I feel that vehicles in the lane are driving:
☐ Much Slower ☐ Slower ☐ The Same ☐ Faster ☐ Much Faster ☐ N/A.

Don't know.
7. Now that the lane has been improved, I feel people walk down the lane and/or use this public space:
☐ Much More ☐ More ☐ The Same ☐ Less ☐ Much Less ☐ N/A.

Don't know.
8. How often do you do landscaping maintenance in the lane (e.g. cutting the grass, weeding, watering, shovelling, etc.)?
☐ Daily ☐ Weekly ☐ Monthly ☐ Yearly ☐ Never
9. If you do landscaping maintenance in the lane, how do you feel about doing this work?
☐ Very Enjoyable ☐ Enjoyable ☐ Neutral ☐ Unpleasant ☐ Very Unpleasant ☐ N/A.

Don't maintain.
10. The cost to construct a Country Lane can be significantly different than the cost to construct the City's standard lane treatment (centre strip of pavement). The City's standard lane treatment typically costs a property owner about \$1500. Based on your experience with the Country Lane in your block, how much would you be willing to pay to get a Country Lane treatment instead of a standard lane treatment?
☐ \$4000 + ☐ \$3000 ☐ \$2500 ☐ \$2000 ☐ \$1500

(\$2500 more)
\$(1500 more)
(\$1000 more)
(\$500 more)
(\$0 more - standard treatment cost)
11. Many different materials were used in the Country Lane design. Have these materials performed well in your laneway? Please briefly describe why they have been successful or unsuccessful.

Material		Successful?						Why?
		Very successful	Successful	Neutral	Unsuccessful	Very Unsuccessful	N/A - Don't Know or not in my lane	
Concrete driving strips								
Structural grass or confined gravel								
Pavers								
Recycled concrete sidewalk								

12. What I like about the lane:

13. What I dislike about the lane:

14. Additional comments I have:

COUNTRY LANE 2008 RESIDENT SURVEY RESULTS

Q. 3 I am generally happy with the Country Lane.

	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied	No Response
Maple	3	3	2	0	0	0
Fraser	9	3	1	0	0	0
Yale	6	1	0	0	1	0
Total	18	7	3	0	1	0

Q. 4 I find the Country Lane more attractive than a typical paved lane.

	Very Attractive	Attractive	Neutral	Not Attractive	Very Not Attractive	No Response
Maple	3	4	0	1	0	0
Fraser	9	0	4	0	0	0
Yale	7	0	0	0	1	0
Total	19	4	4	1	1	0

Q. 5 There are problems with drainage in the lane (e.g. standing water, puddles, flowing water).

	Yes	No	Don't Know	No Response
Maple	0	4	4	0
Fraser	0	11	2	0
Yale	1	7	0	0
Total	1	22	6	0

Q. 6 Now that the lane has improved, I feel that vehicles in the lane are driving:

	Much Slower	Slower	Neutral	Faster	Much Faster	Don't Know	No Response
Maple	0	1	3	0	0	4	0
Fraser	2	6	1	0	0	4	0
Yale	0	3	3	0	0	2	0
Total	2	10	7	0	0	10	0

Q. 7 Now that the lane has been improved, I feel people walk down the lane and/or use this public space:

	Much More	More	Neutral	Less	Much Less	Don't Know	No Response
Maple	2	1	3	0	0	2	0
Fraser	6	4	1	0	0	2	0
Yale	3	4	0	0	1	0	0
Total	11	9	4	0	1	4	0

Q. 8 How often do you do landscaping maintenance in the lane (e.g. cutting the grass, weeding, watering, shovelling, etc.)?

	Daily	Weekly	Monthly	Yearly	Never	No Response
Maple	0	1	0	0	7	0
Fraser	0	4	5	0	4	0
Yale	0	2	2	2	2	0
Total	0	7	7	2	13	0

Q. 9 If you do landscaping maintenance in the lane, how do you feel about doing this work?

	Very Enjoyable	Enjoyable	Neutral	Unpleasant	Very Unpleasant	Don't Maintain	No Response
Maple	0	1	0	0	0	5	2
Fraser	1	5	4	0	0	3	0
Yale	3	3	0	0	0	2	0
Total	4	9	4	0	0	10	2

Q. 10 The City's standard lane treatment typically costs a property owner about \$1500. Based on your experience with the Country Lane in your block, how much would you be willing to pay to get a Country Lane treatment instead of a standard lane treatment?

	\$1,500	\$2,000	\$2,500	\$3,000	\$4,000+	No Response
	(\$0 more)	(\$500 more)	(\$1000 more)	(\$1500 more)	(\$2500+ more)	
Maple	3	2	2	0	0	1
Fraser	3	2	3	2	1	2
Yale	2	2	1	1	0	2
Total	8	6	6	3	1	5

Q. 11a Concrete Driving Strips

	Very Successful	Successful	Neutral	Un-successful	Very Un-successful	Don't Know	No Response
Fraser	7	4	0	0	0	0	2
Yale	0	4	1	1	2	0	0
Total	7	8	1	1	2	0	2

Q. 11b Grass or Gravel filled "Gopla"

	Very Successful	Successful	Neutral	Un-successful	Very Un-successful	Don't Know	No Response
Maple	0	2	1	1	0	2	2
Fraser	1	3	4	1	1	1	2
Total	1	5	5	2	1	3	4

Q. 11c Pavers

	Very Successful	Successful	Neutral	Un-successful	Very Un-successful	Don't Know	No Response
Maple	4	0	0	0	0	2	2
Fraser	0	9	1	0	1	1	1
Yale	0	2	3	0	1	0	2
Total	4	11	4	0	2	3	5

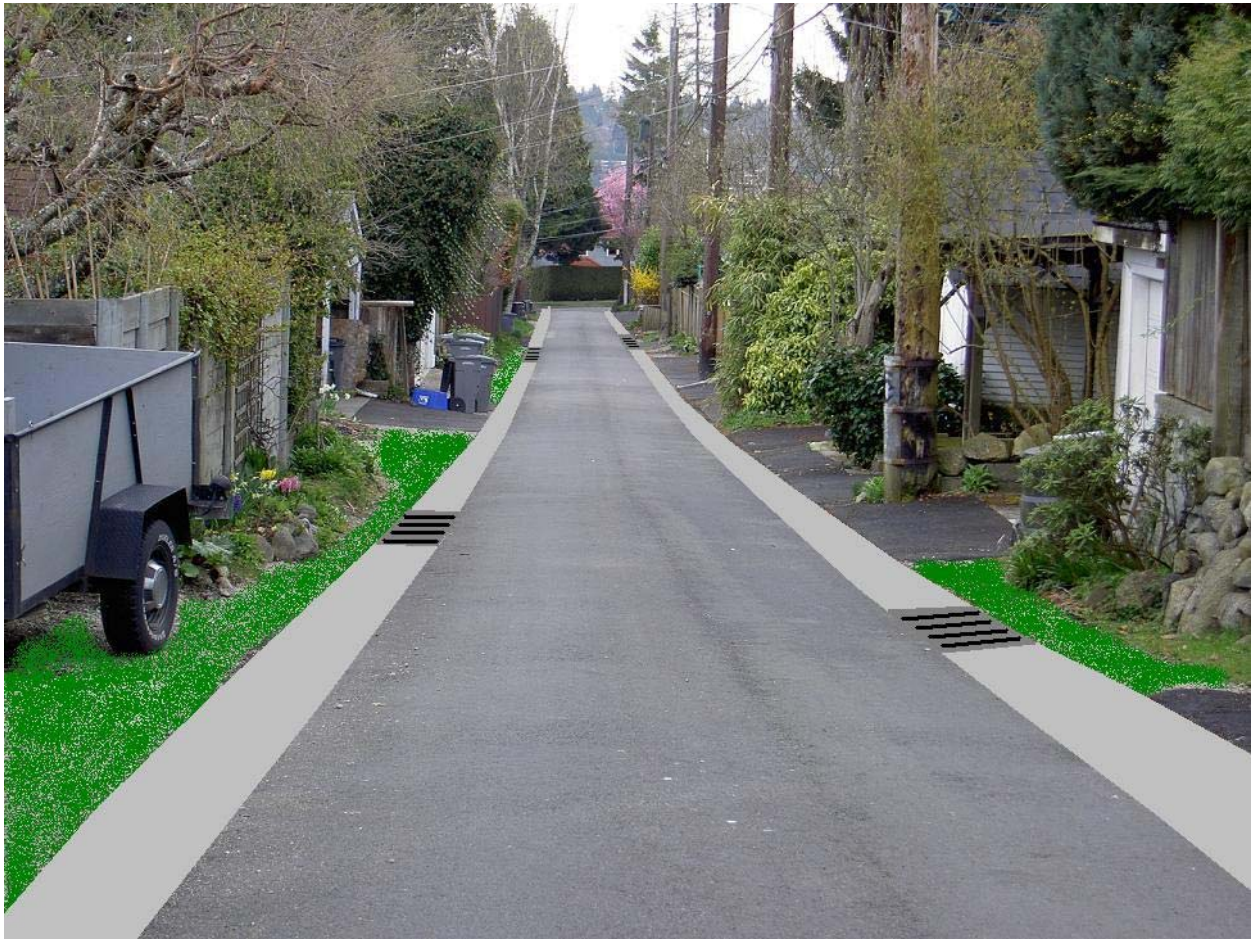
Q. 11d Recycled Concrete Pieces

	Very Successful	Successful	Neutral	Un-successful	Very Un-successful	Don't Know	No Response
Maple/ Total	3	0	0	0	0	2	3

LANE TREATMENTS - PHOTOS AND CONCEPTS



Typical Residential Centre Strip Lane (Lane South of W 24th Ave, Balaclava to Quesnel)



Proposed Lane Treatment Concept