UNIVERSITY OF BRITISH COLUMBIA

16th Avenue Consultation Report

6 February 2006

UNIVERSITY OF BRITISH COLUMBIA

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Contents

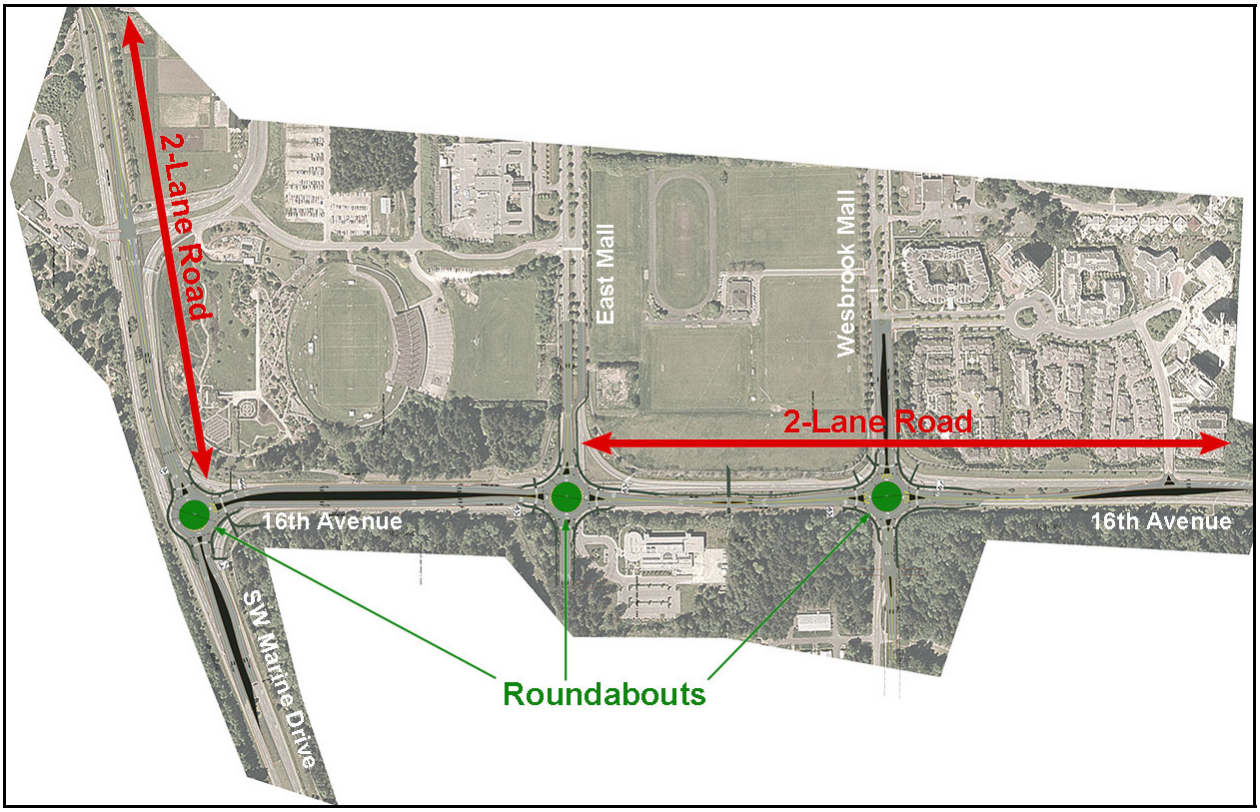
SUMMARY

UBC has proposed reducing the number of traffic lanes on 16th Avenue to two (one in each direction) and converting signalized intersections to roundabouts, to achieve the following safety and transportation objectives:

- Improve safety for all road users, including pedestrians, cyclists and motorists.
- Discourage speeding.
- Reduce the number of traffic lanes.
- Improve connections to South Campus.
- Efficiently accommodate future traffic volumes.
- Minimize environmental impacts.

As illustrated in Figure A, the scope of the project includes a reduction to two lanes (one in each direction) on 16th Avenue between East Mall and Pacific Spirit Park, and on SW Marine Drive north of 16th Avenue, plus three roundabouts at the Wesbrook Mall, East Mall and SW Marine Drive intersections.

Figure A — 16th Avenue Project



The consultation process for the 16th Avenue Project included two open houses, presentations to AMS, the Faculty Association, the UNA and various UBC committees, and material available on the Internet. A total of more than 175 persons attended the two open houses, and 41 persons completed feedback forms. Community feedback indicates solid support for the project — 76% of persons providing written feedback and almost all persons providing verbal feedback indicated their support for the project.

The most significant feature of the 16th Avenue Project is the proposed conversion of the three signalized intersections to roundabouts. Table A provides a summary comparison between roundabouts and traffic signals, based on the objectives identified above. In all areas, roundabouts provide the same or greater benefits than traffic signals, and achieve all of UBC's objectives for the project.

Table A — Comparison of Roundabouts and Traffic Signals on 16th Avenue

Criteria	Measure	Roundabouts	Signals
Safety	Number and severity of crashes	✓	×
Speeding	85th percentile speeds	✓	×
Traffic operations	Average vehicle delay	✓	×
Road lanes	Number of lanes	✓	×
Environmental	Vehicle emissions, noise	✓	×
Cost	Construction, operating and societal costs	✓	✓
Overall		✓	×

The estimated construction costs for the 16th Avenue Project total approximately $5.5 million. This estimate includes roundabouts at the three intersections, and reducing 16th Avenue to two lanes east of East Mall and on the section of SW Marine Drive north of 16th Avenue (removing the existing median in both cases). In comparison, the cost to reduce 16th Avenue and SW Marine Drive to two lanes but retain signalized intersections is estimated to be approximately $4.5 million. The difference is the cost of the three roundabouts — $300,000 each for the Wesbrook Mall and East Mall roundabouts, and $400,000 for the SW Marine Drive roundabout.

Societal costs are lower for roundabouts than for traffic signals. Operations and maintenance costs are similar (the cost of maintaining and upgrading traffic signal equipment is offset by the costs of maintaining the landscaping in the roundabouts), whereas costs associated with crashes are considerably lower for roundabouts.

It is important to note that the entire 16th Avenue Project need not be constructed at once. UBC could phase construction, beginning with the Wesbrook Mall roundabout, and constructing the SW Marine Drive roundabout last. The 16th Avenue section of the project (including roundabouts at Wesbrook Mall and East Mall) would cost approximately $3.3 million, and the SW Marine Drive section of the project would cost approximately $2.2 million.

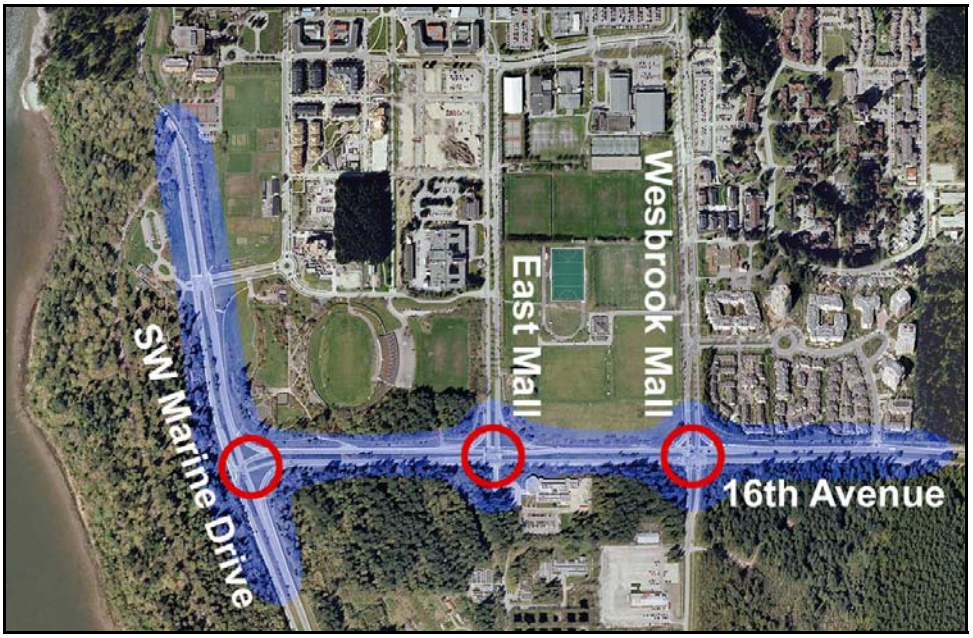
1. INTRODUCTION

UBC has proposed reducing the number of traffic lanes on 16th Avenue to two (one in each direction) and converting signalized intersections to roundabouts, to address safety issues and achieve other transportation objectives. In preparation for this project, UBC initiated a consultation process to inform the campus community about the proposed changes to 16th Avenue, and to solicit feedback regarding the features of the proposed concept. This report provides a description of the proposed 16th Avenue Project, and a summary of community feedback regarding the project.

1.1. Scope

The scope of the 16th Avenue Project includes the section of 16th Avenue through UBC, as illustrated in Figure 1. It also includes a section of SW Marine Drive from the 16th Avenue intersection to the beginning of the existing two-lane section north of Stadium Road. Any changes to East Mall and Wesbrook Mall would be undertaken separately from the 16th Avenue Project.

Figure 1 — Scope of 16th Avenue Project



Both 16th Avenue and SW Marine Drive are provincial roadways under the jurisdiction of the Ministry of Transportation (MoT). Consequently, the MoT must approve the 16th Avenue Project before it can be constructed. To date, MoT staff have indicated support for the project.

1.2. Objectives

The 16th Avenue Project was developed in order to achieve several safety, transportation and community objectives:

- **Improve safety for all road users, including pedestrians, cyclists and motorists.** Safety has been an on-going issue on 16th Avenue, particularly at the Wesbrook Mall/16th Avenue intersection, which has the highest crash rate of any intersection on campus. With the planned development of the South Campus Northeast Sub-Area Neighbourhood, addressing safety issues on 16th Avenue is even more important.

- **Discourage speeding.** Currently, the posted speed limit on 16th Avenue is 60 km/h, but motorists routinely exceed this, often by a wide margin. Excessive speeds have been a factor in many of the automobile crashes on 16th Avenue. Similarly, speeding is also an issue on the section of SW Marine Drive north of 16th Avenue.

- **Reduce the number of lanes on 16th Avenue west of Pacific Spirit Regional Park and on SW Marine Drive north of 16th Avenue.** As a result of work undertaken recently, UBC has determined that most major roads on campus are overbuilt, with more capacity than will ever be required. Most roads can be reduced to two lanes — one through lane in each direction — and still provide more than sufficient capacity.

- **Improve connections to South Campus** — the area south of 16th Avenue. With the impending development of a residential community, a commercial centre, a school and community facilities in South Campus, there is a need to improve connections to South Campus from the rest of the campus, and minimize the effect of 16th Avenue as a barrier or obstacle between the two parts of the campus.

- **Efficiently accommodate future traffic volumes.** UBC wants to ensure that while the number of road lanes are reduced, traffic is accommodated as efficiently as possible and unnecessary delays to traffic are avoided.

- **Minimize environmental impacts** associated with the road network, including stormwater runoff, noise at intersections and vehicle emissions.

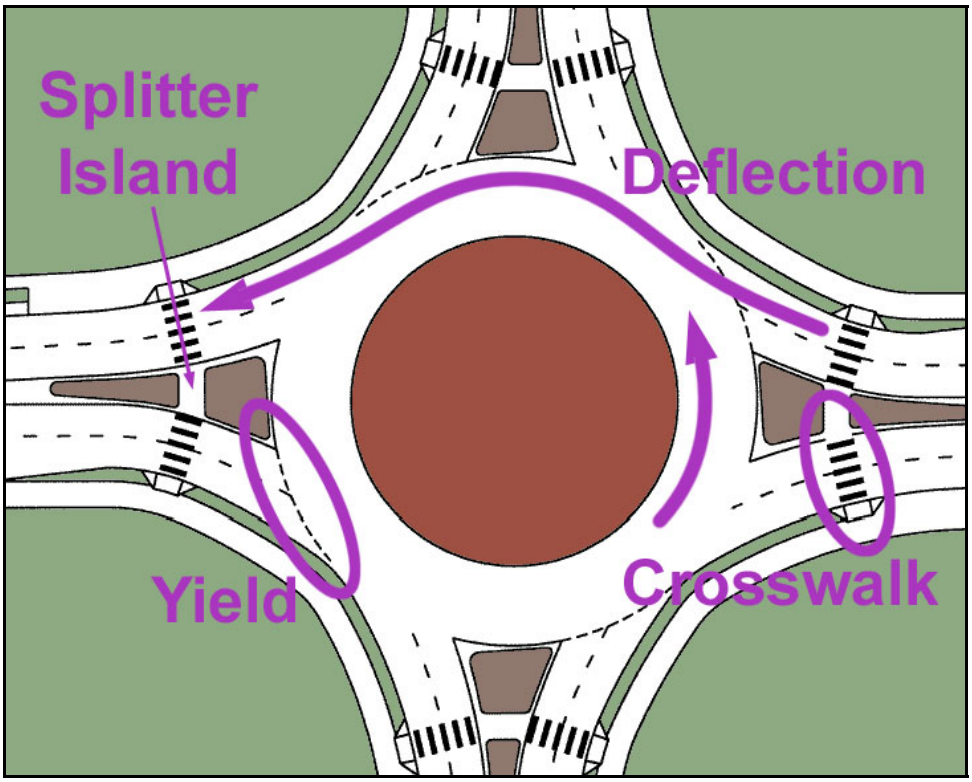
2. ROUNDABOUTS

The three proposed roundabouts are a key feature of the 16th Avenue Project. This section describes the characteristics of a roundabout and the benefits which roundabouts provide.

2.1. What Is A Roundabout?

A roundabout is a circular intersection around which vehicles travel in a counter-clockwise direction. Roundabouts are distinguished by several characteristics, illustrated in Figure 2 and described below.

Figure 2 — Roundabout Characteristics



- **Yield on entry.** Yield control is used on all entries to a roundabout. No traffic control is used on the circulatory roadway, and circulating traffic has the right-of-way.
- **Deflection.** Vehicles travelling through a roundabout intersection are deflected around the centre island. This deflection reduces vehicle speeds and reinforces the yield on entry.
- **Splitter islands** are raised islands located on each approach, between opposing directions of traffic. Splitter islands are used to create an appropriate angle of entry, which is a critical element of a roundabout design. Too shallow an angle of entry enables motorists to enter the

roundabout at high speeds. Too sharp an angle of entry requires motorists to come to a near stop, even when there is no other traffic in the roundabout, and can also create conflicts within the roundabout. Splitter islands also provide a median area at the pedestrian crossing, enabling pedestrians to cross one direction of traffic at a time.

- **Crosswalks** are set back from the roundabout approximately 7 m. This means that motorists encounter pedestrians separately from traffic in the roundabout, and consequently are not distracted from noticing and yielding to pedestrians.
- **Counter-clockwise circulation.** All vehicles circulate around a roundabout in a counter-clockwise direction. The roundabouts on 16th Avenue are designed to accommodate heavy trucks, buses and other large vehicles.

As well as understanding what roundabouts are, it is also important to understand what roundabouts *are not*:

- Roundabouts are not the same as traffic circles used for traffic calming purposes on local streets in Vancouver and other communities. Traffic circles are circular islands in the centre of the intersection, and are used as an alternative to stop sign control.
- Roundabouts are not the same as turning circles, such as the turning circle in Hampton Place or the two turning circles in South Campus. These turning circles are simply circular roadway features. They do not incorporate the geometric features of a roundabout.
- Roundabouts are not the same as rotaries, such as those in Edmonton and Halifax. Rotaries are circular roadways designed for higher speeds, and require that traffic entering the rotary merges with moving traffic in the rotary.

The roundabouts proposed for 16th Avenue are *multi-lane* roundabouts. This means that some entries and exits to the roundabouts will have two lanes, and some portion of the circulatory roadway will have two lanes. Other entries and exits and portions of the circulatory roadway will be a single lane. An examples of a multi-lane roundabout is illustrated in Figures 3 and 4 (both are views of the same roundabout). Apart from the landscaping, this roundabout closely resembles the roundabouts that are proposed for the East Mall and Wesbrook Mall intersections (the SW Marine Drive intersection will be similar, but will only have three legs rather than four as at the other intersections).

Figure 3 — Example Multi-Lane Roundabout (Rome NY)

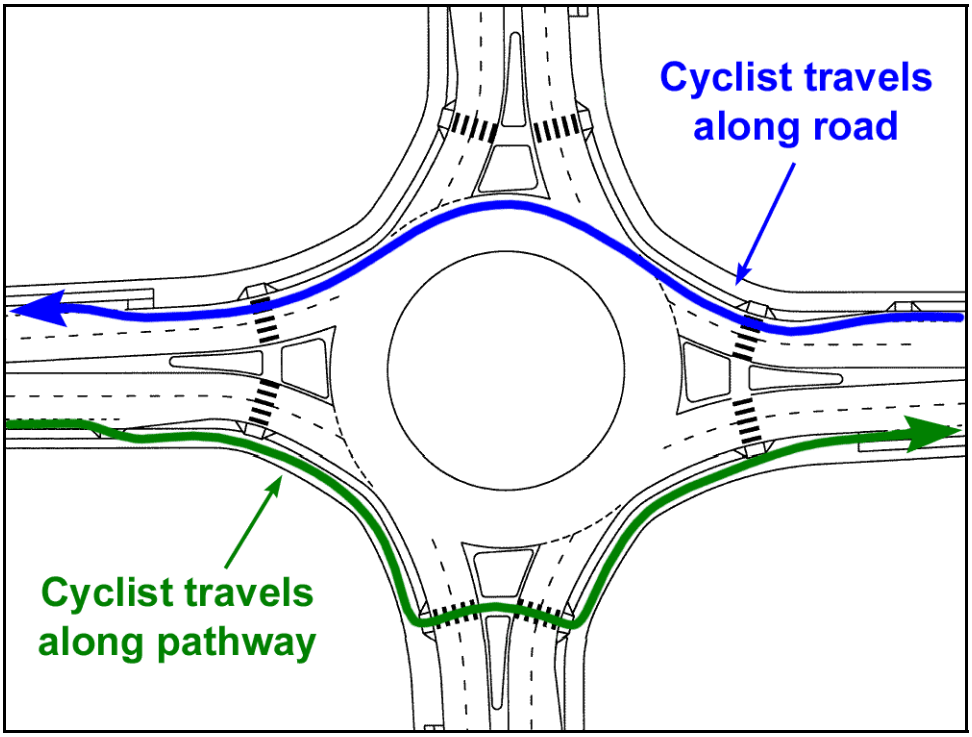
Source: New York State Department of Transportation

Figure 4 — Example Multi-Lane Roundabout (Rome NY)

Source: New York State Department of Transportation

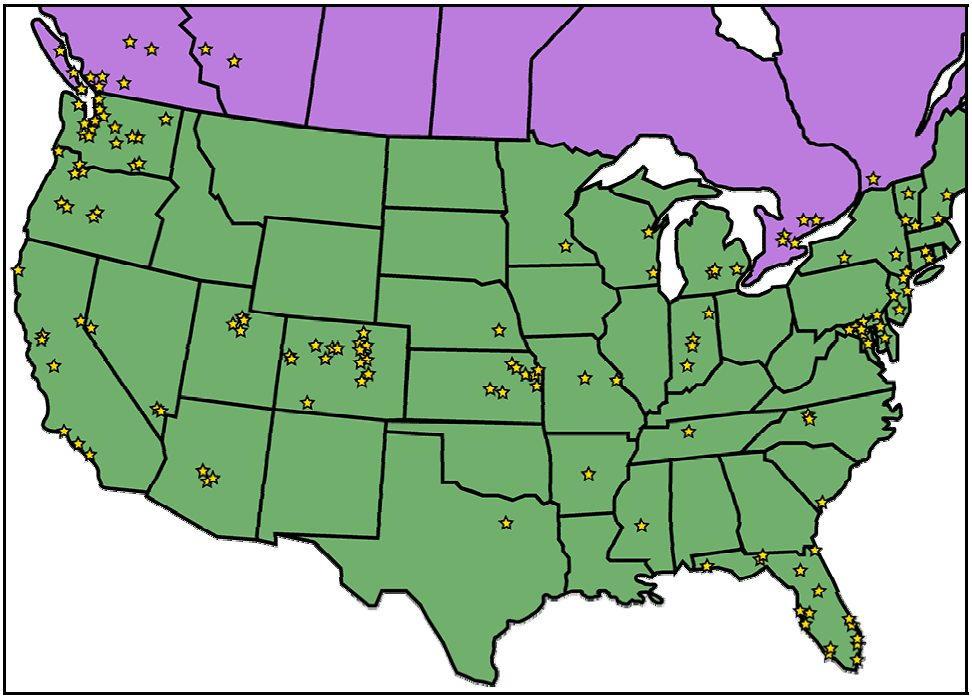
Many cyclists will be comfortable sharing the roadway with motor vehicles in a roundabout. Cyclists who might not feel comfortable in traffic within a roundabout have the option of travelling around the roundabout on pathways, as illustrated in Figure 5. Ramps lead from the bicycle lanes to the pathways, and back to the bicycle lanes.

Figure 5 — Cyclist Routes Through a Roundabout



Roundabouts are used throughout Canada and the United States. Currently, there are more than 500 roundabouts in North America, as illustrated in Figure 6, with dozens more in the planning stages. There are roundabouts in B.C. in Vancouver, North Vancouver, Burnaby, New Westminster, Surrey, Coquitlam, Chilliwack, Kelowna, Kamloops, Saanich, Comox, Ladysmith and Dawson Creek. There is a small roundabout on the UBC campus at the West Mall/Stadium Road intersection.

Figure 6 — Roundabout Locations in North America



2.2. Benefits of Roundabouts

Roundabouts offer numerous benefits. The primary benefit is safety. Roundabouts reduce vehicle speeds through an intersection, and as a result improve safety for all road users — pedestrians, cyclists and motorists. Key safety benefits include:

- **Reduced speeds.** Speeds through multi-lane roundabouts range from 25 km/h to 40 km/h, depending on the movement a vehicle makes (left turn, right turn or straight through). In all cases, speeds are lower than through conventional intersections, where there are effectively no restrictions on vehicle speeds.

- **Reduced number of crashes.** As a result of lower speeds, the number of crashes at roundabouts is lower than at conventional intersections. The Insurance Institute for Highway Safety conducted a study of 7 intersections in the U.S. converted to multi-lane roundabouts. Overall, there was a 15% reduction in crashes following conversion to roundabouts. A study of seven intersections in New York converted to multi-lane roundabouts found that the total number of crashes declined by 8%. Preliminary results from the NCHRP 3-65 project currently underway in the U.S. indicate a 67% reduction in crashes at signalized intersections converted to multi-lane roundabouts.

- **Reduced severity of crashes.** Not only do roundabouts reduce the number of crashes, but more importantly, they significantly reduce the severity of crashes. The study of seven

intersections in New York converted to multi-lane roundabouts showed a significant 73% reduction in the number of crashes involving injuries. What these findings mean is that in general, most crashes which occur at roundabouts are low-speed crashes involving property damage only. As well, low-speed collisions with pedestrians are far less likely to result in serious injury or death — in a collision at 30 km/h, there is a 5% chance that the pedestrian will be killed, whereas at 55 km/h the chance of a pedestrian being killed is 50%.

- **Pedestrian and cyclist safety.** Roundabouts are safer for pedestrians and cyclists. Experience at roundabouts in the U.S. and Europe has shown reduction in pedestrian–motor vehicle crashes of 33% to 100% (the latter meaning that there have been no crashes since the conversion to a roundabout). Studies have also shown a 50% reduction in cyclist–motor vehicle crashes. It should be noted that these results include both single-lane and multi-lane roundabouts.

Other benefits of roundabouts include:

- **Reduced delays to pedestrians** as compared with signalized intersections or actuated pedestrian crossings. Pedestrians crossing a roundabout incur no delay waiting for a signal to walk. By eliminating delays to pedestrians, roundabouts avoid problems associated with signalized intersections, including jaywalking, pedestrians entering the road at the end of the pedestrian clearance interval just before the signals change, and pedestrians who press the signal pushbutton and then cross before the signals change.

- **Reduced delays for traffic.** The Center for Transportation Research and Training at Kansas State University conducted an analysis of intersection delays for various types of intersection control. The conclusion was that with traffic volumes of more than 800 vehicles per hour, delays would be lower at a roundabout than at stop-controlled or signalized intersections. With traffic volumes of 800 vehicles per hour or less, only two-way stop control offers slightly lower delays than a roundabout — all-way stop control and signalized intersections still involve more delay than a roundabout. At higher traffic volumes, average delays at a roundabout would be half the delays at a signalized intersection.

- **Reduced queue lengths.** The Center for Transportation Research and Training also conducted an analysis of queue lengths for various types of intersection control. The conclusion of the analysis was that 95th percentile queue lengths for roundabouts would be less than queue lengths for two-way and all-way stop controlled intersections and signalized intersections, for traffic volumes ranging from 400 vehicles per hour to 1,800 vehicles per hour. At higher traffic volumes, queue lengths at a roundabout would be half the queue lengths at a signalized intersection.

- **Increased capacity.** The Center for Transportation Research and Training also conducted an analysis of the capacity of various types of intersection control, and concluded that roundabouts offer the greatest capacity. Under similar traffic conditions, a roundabout would reach a degree of saturation of 0.85 at 1,900 vehicles per hour. In comparison, a signalized

intersection would reach the same degree of saturation at 1,550 vehicles per hour, all-way stop control at 1,200 vehicles per hour, and two-way stop control at 1,000 vehicles per hour.

- **Reduced traffic noise.** Because many vehicles do not stop at a roundabout, do not idle waiting to enter the intersection, and do not accelerate from a stop, traffic noise at a roundabout is typically less than at a conventional intersection. In addition, landscaping and other features of a roundabout also help to deflect and reduce traffic noise.

- **Reduced vehicle emissions.** As with traffic noise, vehicle emissions at roundabouts are reduced because many vehicles do not stop at a roundabout, do not idle waiting to enter the intersection, and do not accelerate from a stop. On average, vehicles spend less time travelling through a roundabout than through a signalized intersection, and as a result emit less pollutants during the time spent travelling though the intersection.

- **Minimum number of road lanes.** The capacity of a road network is determined by the capacity of the intersections. The capacity of the roads is typically far higher than the capacity of the intersections. What this means is that in many cases, although four lanes may be needed on a road at a conventional intersection, only two lanes are needed to accommodate the traffic travelling along the road between intersections. Roundabouts provide an opportunity to construct roads with fewer lanes, and increase road capacity at the intersection by flaring the approach into two lanes and/or constructing a dual-lane roundabout. The result is narrower roads, less pavement, less impermeable surface area, and reduced costs.

- **Enhanced appearance.** Roundabouts typically incorporate landscaping, particularly in the centre island, which enhances the overall appearance of the intersection and adjacent roadways.

3. 16th AVENUE CONCEPT

This section presents the current concept for the 16th Avenue Project, incorporating lane reductions and roundabouts on 16th Avenue and SW Marine Drive. It is important to note that although the concept has been reviewed by Ministry of Transportation, TransLink and Coast Mountain Bus Company staff, minor changes may be made as the design is finalized.

3.1. Design

Figure 8 illustrates the overall 16th Avenue Project, including the reduction to two lanes (one in each direction) on 16th Avenue east of East Mall and on SW Marine Drive north of 16th Avenue. Figures 9 through 11 illustrate the three roundabouts at the Wesbrook Mall, East Mall and SW Marine Drive intersections.

Figure 8 — Overall Concept

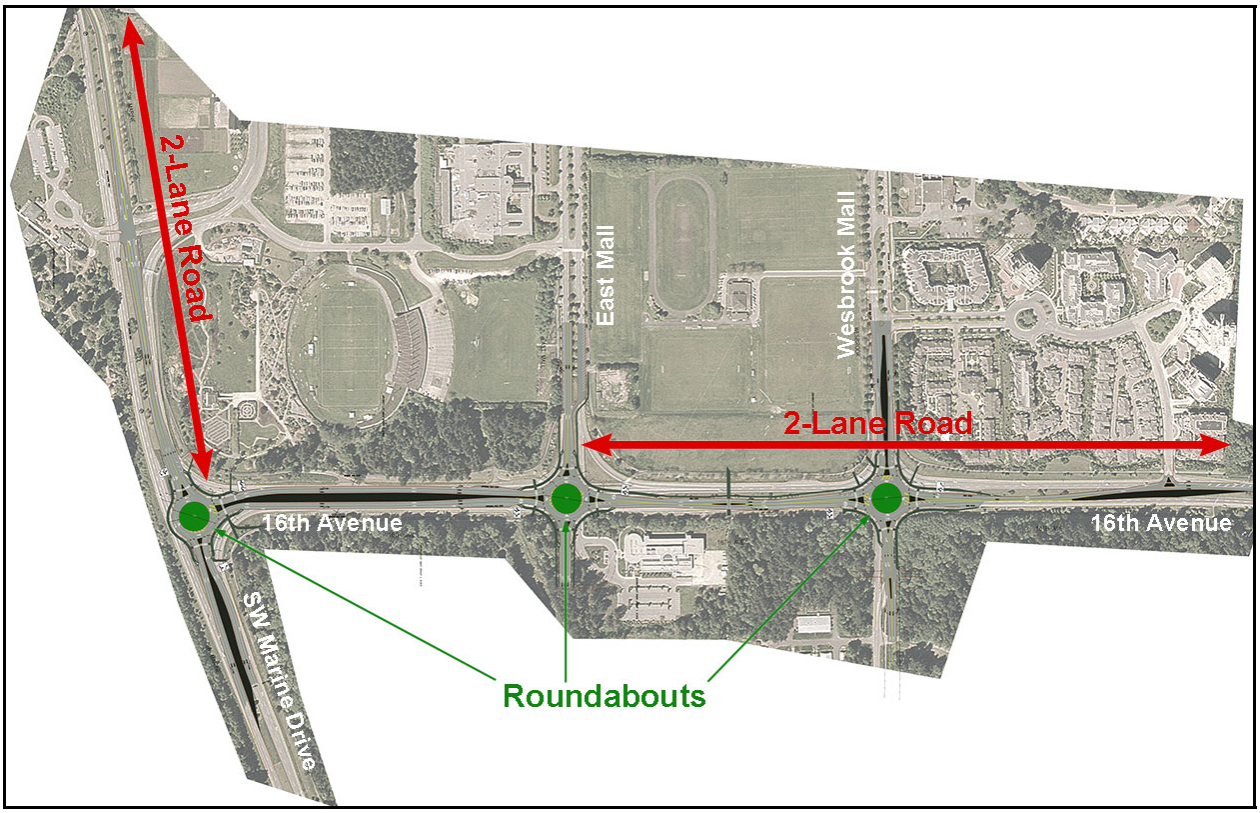
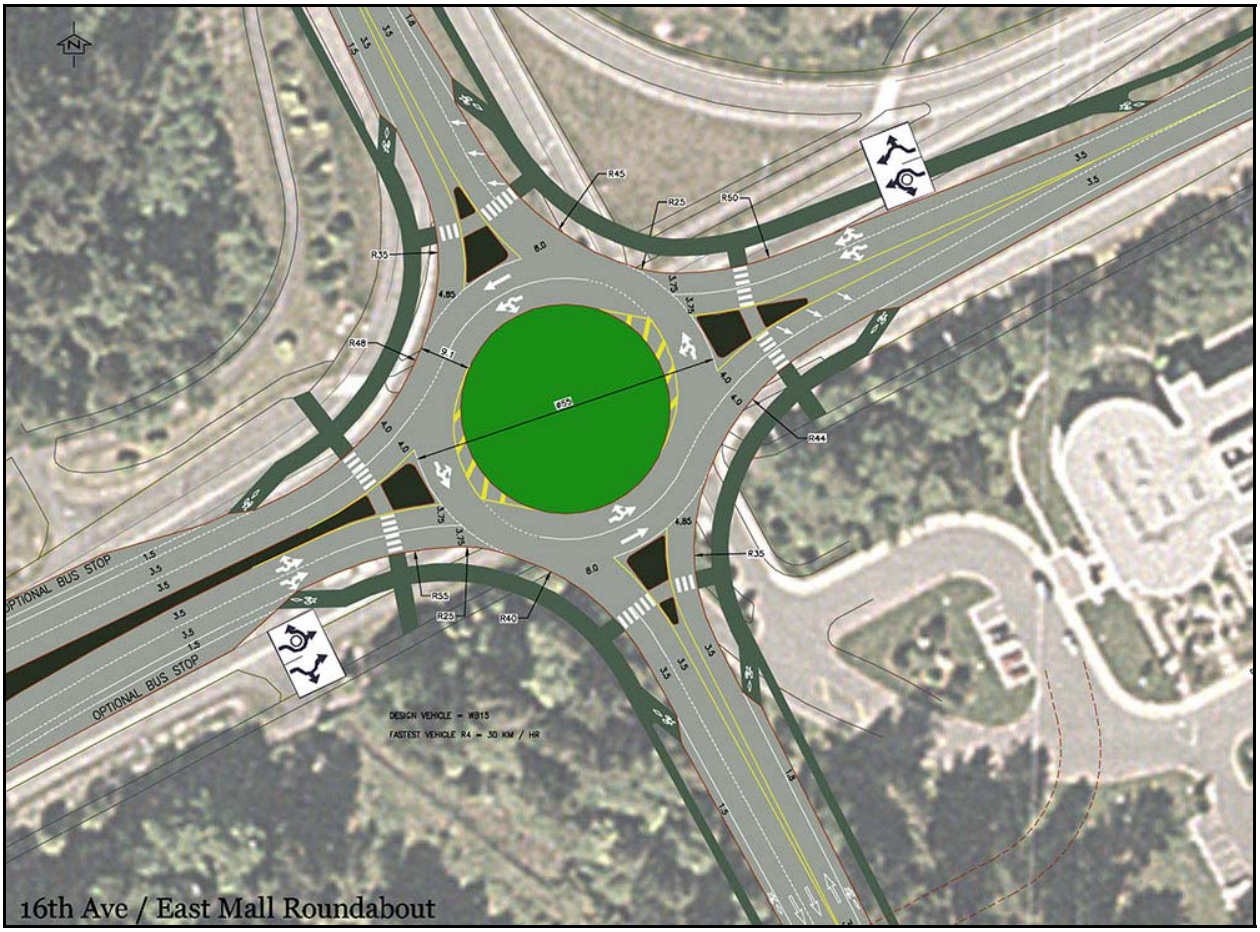


Figure 9 — Wesbrook Mall Intersection

As illustrated in Figure 8, the Hampton Place access on 16th Avenue would remain restricted to right turns into and out of Hampton Place. The roundabout at Wesbrook Mall would provide an additional option for Hampton Place residents travelling to Vancouver via 16th Avenue. Residents would be able to turn onto westbound 16th Avenue from Hampton Place, and then make a legal and safe U-turn at Wesbrook Mall by driving around the roundabout to reach eastbound 16th Avenue.

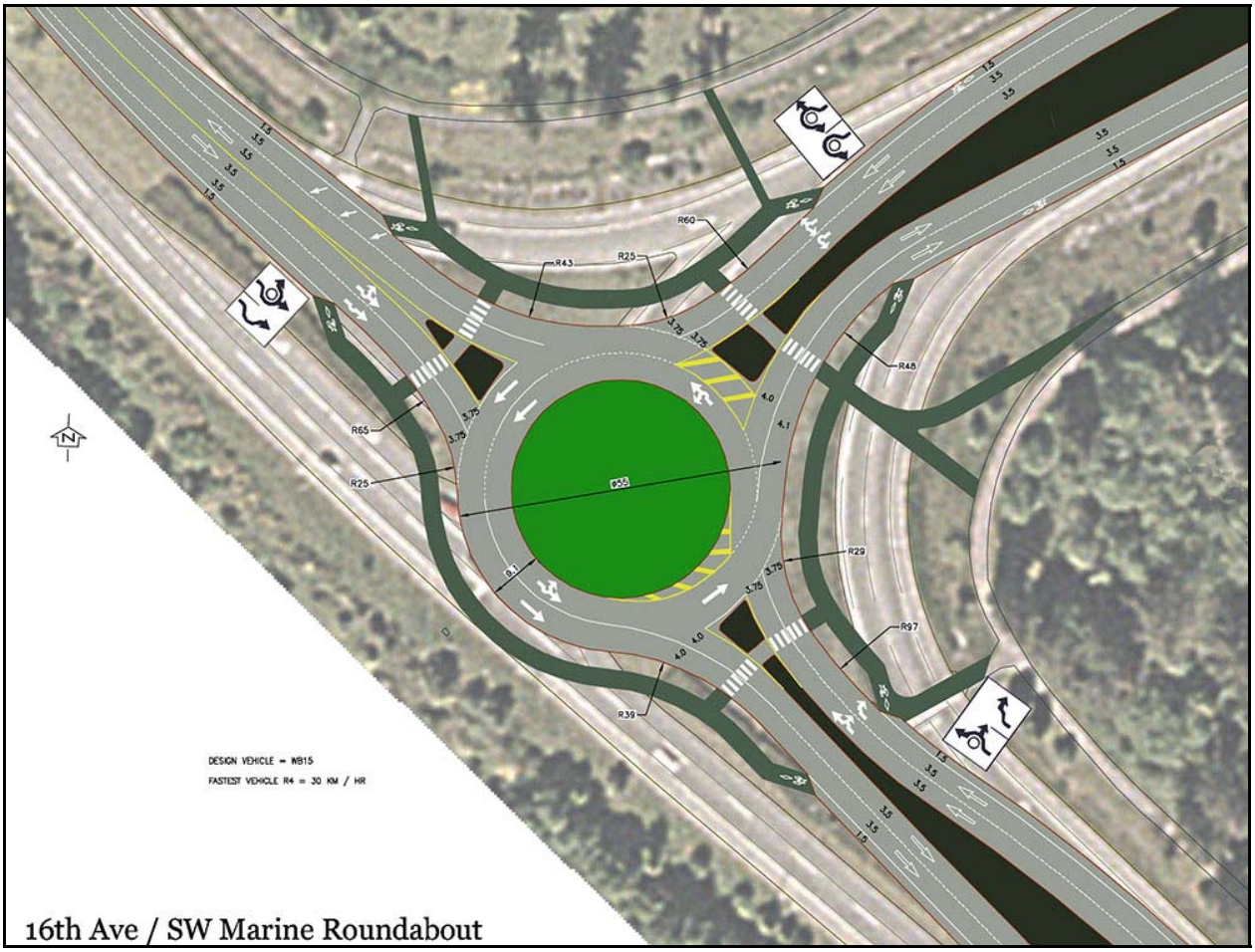
The key feature of each roundabout is signs and lane markings to guide motorists, to balance traffic volumes between the two lanes entering the roundabout and within the roundabout, and to minimize the potential for conflicts. Lane assignments are indicated by signs in advance of the roundabout, and pavement markings on the entry lanes and within the roundabout.

Figure 10 — East Mall Intersection



Bus stops have been located so as to accommodate all bus movements, particularly buses which turn left at the Wesbrook Mall intersection, and must therefore enter the roundabout in the lefthand lane. It should be noted that discussions are on-going with Hampton Place residents regarding the locations of bus stops near Hampton Place. These bus stop locations can be determined independently of the 16th Avenue Project, as the proposed conversion of the Wesbrook Mall intersection does not preclude any potential bus stop locations.

Figure 11 — SW Marine Drive Intersection



3.2. Two-Lane Roads

The proposed concept for the 16th Avenue Project includes reducing the following sections of existing four-lane roads to two lanes — one through lane in each direction:

- 16th Avenue, between East Mall and Pacific Spirit Park
- SW Marine Drive, north of 16th Avenue

The existing four-lane section of 16th Avenue between SW Marine Drive and East Mall will be retained. This means that the 16th Avenue Project can be divided into two separate projects for the purposes of construction phasing — 16th Avenue from East Mall to Pacific Spirit Park (including two roundabouts), and the SW Marine Drive (including one roundabout).

Reducing four-lane roads to two lanes will not affect the future traffic capacity, as road network capacity is determined by intersections, not roads. Current and future traffic volumes are less

than the capacity of a two-lane road. A single traffic lane can accommodate up to 2,000 vehicles per hour, whereas the maximum forecast traffic volume in the future is 900 vehicles per hour per lane.

Road network capacity is determined by the capacity of intersections. Forecast future traffic volumes are less than the capacity of the proposed roundabouts, and are less than the capacity of signalized intersections. This means that the intersections will have adequate capacity to accommodate future traffic volumes, regardless of whether they are roundabouts or traffic signals, and consequently the road network will have adequate capacity to accommodate future traffic volumes with two-lane roads.

3.3. Roundabouts *vs.* Traffic Signals

Table 1 provides a summary comparison between roundabouts and traffic signals, based on the objectives identified in Section 1.2. In all areas, roundabouts provide the same or greater benefits than traffic signals, and achieve all of UBC's objectives.

Table 1 — Comparison of Roundabouts and Traffic Signals on 16th Avenue

Criteria	Measure	Roundabouts	Signals
Safety	Number and severity of crashes	✓	×
Speeding	85th percentile speeds	✓	×
Traffic operations	Average vehicle delay	✓	×
Road lanes	Number of lanes	✓	×
Environmental	Vehicle emissions, noise	✓	×
Cost	Construction, operating and societal costs	✓	✓
Overall		✓	×

As described in Section 2.2, converting intersections to roundabouts has been shown to reduce crash rates, particularly injury crashes. Based on this experience, the reduction in crash rates has been estimated for the Wesbrook Mall and East Mall intersections on 16th Avenue, as summarized in Table 2 (crash data for the SW Marine Drive intersection are not available). Overall, converting these two intersections to roundabouts is estimated to reduce crashes by almost half, and more importantly, to reduce injury crashes by 75%.

Table 2 — Annual Crashes on 16th Avenue

	Wesbrook Mall		East Mall	
	Traffic Signals Actual	Roundabouts Estimated	Traffic Signals Actual	Roundabouts Estimated
Property damage	1.0	0.9	0.5	0.4
Injury	1.4	0.3	0.1	0.1
Fatality	0	0	0	0
Totals	**2.4 crashes/year**	**1.2 crashes/year**	**0.6 crashes/year**	**0.5 crashes/year**

Source: ICBC data for 1 January 1995 – 31 December 2002

Another benefits of converting the intersections on 16th Avenue to roundabouts is that existing and future traffic volumes can be accommodated more efficiently, with less delay. Table 3 provides a summary of future traffic conditions based on forecast 2021 traffic volumes when all development described in the UBC Official Community Plan has occurred. On average, motorists will experience 60% less delay with roundabouts than with traffic signals. All three roundabouts will operate at level of service A — the best possible level of service — at all times.

Table 3 — Traffic Operations on 16th Avenue (Forecast 2021 Traffic Volumes)

Intersection	Peak Hour	Roundabouts		Traffic Signals	
		Average Delay	Level of Service	Average Delay	Level of Service
Wesbrook Mall	AM	9.7 sec	A	26.2 sec	C
	PM	8.8 sec	A	15.0 sec	B
East Mall	AM	9.5 sec	A	30.1 sec	C
	PM	7.4 sec	A	25.7 sec	C
SW Marine Drive	AM	9.8 sec	A	17.8 sec	B
	PM	8.8 sec	A	18.1 sec	B
Average per intersection		**9.0 sec**		**22.2 sec**	

3.4. Costs

The estimated construction costs for the 16th Avenue Project total approximately $5.5 million. This estimate includes roundabouts at the three intersections, and reducing 16th Avenue to two lanes east of East Mall and on the section of SW Marine Drive north of 16th Avenue (removing the existing median in both cases). It includes adding bicycle lanes, relocating bus stops and adding illumination. This estimate does not include any significant utility relocation nor any significant additions to the drainage system, and was prepared without the benefit of geotechnical information.

In comparison, the cost to reduce 16th Avenue and SW Marine Drive to two lanes but retain signalized intersections is estimated to be approximately $4.5 million. The $1 million higher cost for the three roundabouts ($300,000 each for the Wesbrook Mall and East Mall roundabouts, and $400,000 for the SW Marine Drive roundabout) reflects the additional excavation and roadworks required to construct roundabouts, and additional costs of traffic control during construction.

Long-term operating costs for roundabouts are similar as for traffic signals, as summarized in Table 4. Essentially, the cost of maintaining and upgrading traffic signal equipment is offset by the costs of maintaining the landscaping in the roundabout. Societal costs associated with crashes are significantly lower for roundabouts.

Table 4 — Operating Costs and Crash Costs

	Roundabouts	Traffic signals
Operating costs: • Traffic signals • Landscaping	 $0 $23,000/year	 $25,000/year $0
Crash costs	$12,000/year	$40,000/year
Totals	**$35,000/year**	**$65,000/year**

It is important to note that the entire 16th Avenue Project need not be constructed at once. UBC could phase construction, beginning with the Wesbrook Mall roundabout, and constructing the SW Marine Drive roundabout last. The 16th Avenue section of the project (including roundabouts at Wesbrook Mall and East Mall) would cost approximately $3.3 million, and the SW Marine Drive section of the project would cost approximately $2.2 million.

3.5. Implementation

Apart from construction and traffic management during construction, the only significant implementation issue associated with roundabouts is motorist education. Experience in other communities indicates that it can take up to six months for motorists to adapt and learn how to drive a roundabout. Although there is no indication that crash rates are higher during the first few months, complaints can be expected.

Table 5 summarizes the results of a survey of public opinion conducted prior to and following construction of a roundabout in New York state. These results indicate what agencies across North America have experienced — concerns and misconceptions are by and large eliminated once people experience driving through a roundabout, and most people recognize the benefits that roundabouts provide.

Table 5 — Public Acceptance of Roundabouts in New York State

	Low Acceptance	Moderate Acceptance	High Acceptance
Before construction	29%	59%	12%
After construction	3%	42%	55%

Many agencies have found that complaints and confusion can be minimized through education. Prior to and following construction of roundabouts on 16th Avenue, UBC intends to implement a proactive communication and education campaign, incorporating road signs, flyers, newspaper advertisements and/or web materials

Converting the existing intersections on 16th Avenue to roundabouts provides an additional education opportunity. Motorists will be able to see the roundabouts "evolve" and drive around them through the construction zones. Consequently, when the roundabouts are completed, most motorists will already be familiar with them.

4. CONSULTATION

This section provides a summary of the feedback received from the UBC community and others regarding the 16th Avenue Project.

4.1. Activities

The consultation process for the 16th Avenue Project included the following activities:

- Community open houses were held on 10 January and 30 January 2006. The first open house presented the roundabout concept and solicited feedback, and was attended by approximately 75 persons. The second open house reported back to the community regarding the feedback received, and attracted over 100 persons. The open houses were advertised in the Ubyssey, the V6T News and the Vancouver Courier Westside Edition, through notices distributed to all UBC departments, and on the Campus and Community Planning, Live@UBC, AMS Events and TREK Program Centre web site calendars. The University Neighbourhoods Association and Transportation Planning Advisory Committee members were also notified via e-mail.

- Presentations were made to the following groups, organizations and UBC departments. Although efforts were made to coordinate a presentation to the Graduate Student Society, this was not possible due to scheduling difficulties.
  - Alma Mater Society
  - Faculty Association
  - University Neighbourhoods Association
  - UBC Community Liaison Committee
  - UBC Transportation Committee
  - UBC University Town Committee
  - UBC Transportation Planning Advisory Committee

- A discussion document was available on the web, on the Campus and Community Planning web site at http://www.planning.ubc.ca/corebus/transportation.html. This document described the objectives of the 16th Avenue Project, the features and benefits of roundabouts, and the benefits of reducing roads to two lanes.

- Community input was solicited through feedback forms distributed at the open houses and submitted on-line. A total of 41 persons responded by the deadline of 24 January 2006.

4.2. Feedback

A total of 41 persons completed feedback forms. Table 6 provides a summary of the input provided through feedback forms. Overall, there is solid support for the 16th Avenue Project — 76% of persons who provided a clear indication of their support indicated that they supported the project. Only nine persons indicated that they did not support the project. In addition to the feedback form responses, verbal feedback was provided at the two open houses, where more than 75 persons verbally indicated their support for the 16th Avenue Project, and approximately 5 persons verbally indicated that they did not support the project.

Table 6 — Summary of Feedback

Support	Support the 16th Avenue Project	28	76%
	Do not support the project	9	24%
		37	100%
Features people like	Safety, particularly pedestrian safety	7	17%
	Reduced traffic speeds	8	20%
	Larger buffer between 16th Avenue and Hampton Place	8	20%
	Landscaping and appearance	5	12%
	Reduced traffic delays	3	7%
	Reduced noise	2	5%
	Legal U-turns	1	2%
Features people would change	Begin 2 lanes further east of Hampton Place	5	12%
	Enhance pedestrian crossings	3	7%
	No roundabout at SW Marine Drive	3	7%
	Keep roads 4 lanes	4	10%
Affiliations	Undergraduate student	6	15%
	Graduate student	1	2%
	Staff	6	15%
	Faculty	10	24%
	Alumni	3	7%
	Non-UBC employee	1	2%
	Visitor	0	–
	Student in residence	1	2%
	Other UBC (on-campus) resident	27	66%
	Non-UBC (off-campus) resident	5	12%

The significant changes suggested by persons who completed feedback forms are to begin the transition on 16th Avenue from the existing four-lane road to a two-lane road further east than the UBC/Pacific Spirit Park boundary, and to enhance pedestrian crossings. Where possible and subject to Ministry of Transportation approval, revisions will be made to the 16th Avenue Project to respond to these requests.

5. REFERENCES

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