

Consolidated Clause in Works Committee Report 9, which was considered by City Council on December 14 and 16, 2005.

**1b****Bicycle Lane Guidelines and Royal York Road Pavement Marking Options (All Wards)**Ruling by Council:

City Council on December 14 and 16, 2005, ruled the following staff Recommendation (2) contained in the Recommendations Section of the report (September 26, 2005) from the General Manager, Transportation Services, out of order, at as it would have been a re-opening of a previous decision of Council:

“(2) Royal York Road between Mimico Creek and Usher Avenue be marked with shared use lane markings, as illustrated in Figure 1, as a pilot project; and”.

City Council on December 14 and 16, 2005, subsequently:

- (1) referred the balance of this Clause back to the Works Committee for further consideration, in order to provide an opportunity for Councillor Moscoe to address the Committee; and
- (2) also referred the balance of this Clause to the Community Councils, with a request that the Community Councils provide comments on the Bicycle Lane Guidelines to the Works Committee.

Council also considered additional material, which is noted at the end of this Clause.

---

City Council on December 5, 6 and 7, 2005, postponed consideration of this Clause to its special meeting on December 14, 2005.

Council also considered additional material, which is noted at the end of this Clause.

---

City Council on November 24, 2005, postponed consideration of this Clause to its next regular meeting on December 5, 2005.

Council also considered additional material, which is noted at the end of this Clause.

---

*City Council on October 26, 27, 28 and 31, 2005, postponed consideration of this Clause to its special meeting on November 24, 2005.*

*Council also considered additional material, which is noted at the end of this Clause.*

---

**The Works Committee recommends that City Council:**

- (a) adopt the staff recommendations in the Recommendations Section of the report (September 26, 2005) from the General Manager, Transportation Services; and**
- (b) amend the confidential report (September 27, 2005) from the City Solicitor by deleting the following Recommendation (2):**

**“(2) a copy of this report be forwarded to the Toronto Cycling Committee, in camera, for its information”;**

**and receive the report for information; and that further, in accordance with the Municipal Act, discussions pertaining to this report be held in camera as the subject matter relates to solicitor-client privilege.**

Action taken by the Committee:

The Works Committee received the communication (August 9, 2005) from the Toronto Cycling Committee.

**The Works Committee submits the report (September 26, 2005) from the General Manager, Transportation Services.**

Purpose:

The purpose of this report is to respond to various requests by City Council, North York Community Council and Works Committee on design options for bicycle lanes and signed bicycle routes.

Financial Implications and Impact Statement:

There are no immediate financial implications resulting from the adoption of this report.

Recommendations:

It is recommended that:

- (1) City Council endorse a minimum bicycle lane width of 1.5 metres on roads with curbs, and 1.2 metres on roads without curbs;**

- (2) Royal York Road between Mimico Creek and Usher Avenue be marked with shared use lane markings, as illustrated in Figure 1, as a pilot project; and
- (3) the appropriate City officials be authorized to take the necessary action to give effect thereto.

Background:

The Works Committee, at its meeting on April 27, 2005, recommended that, among other things, a pavement width of 9.1 metres for Royal York Road between Mimico Creek and Usher Avenue be endorsed. In addition, the Works Committee requested the Acting General Manager, Transportation Services, to report to the Toronto Cycling Committee and the Works Committee on:

- (i) the inclusion of a 1.25 metre signed bike route, identified by an edge line, on each side of Royal York Road between Mimico Creek and Usher Avenue within the recommended 9.1 metre pavement width; and
- (ii) since the City is encouraging cyclists to use Royal York Road, whether marking the road would provide a higher level of protection for cyclists than no marking.

The Works Committee made this request on the understanding that a decision on bicycle pavement markings could be made in the Fall 2005, before the anticipated completion of the reconstruction of Royal York Road, and that the Cycling Committee should be consulted on the recommended pavement marking design.

At its meeting on May 17, 18 and 19, 2005, City Council amended Clause 1 of Report 5 of the Works Committee by adding the following:

“That the Acting General Manager, Transportation Services, be directed to:

- (i) develop a ‘bike-route’ pavement marking design that will complement the bike-route signs to be applied on each side of Royal York Road between Mimico Creek and Usher Avenue, within the recommended 9.1 metre pavement width, that encourages drivers to travel to the left side of their travel lane, by painting a solid white edge line 1.25 metres from the curb face, and that emphasizes the presence of the bike route on this section of Royal York Road, thereby improving the margin of safety and comfort for cyclists;
- (ii) install signage indicating that the bike lane narrows, at the point where the bike lanes narrow from 1.50 metres to 1.25 metres; and
- (iii) report to the Works Committee on the feasibility of:
  - (a) using this type of pavement marking on other City of Toronto roads in the future; and

- (b) retrofitting existing bike paths which currently are marked with signage only.”

At its meeting on July 19, 20 and 21, 2005, City Council received Clause 9 of Report 6 of the North York Community Council which advised that, among other things, the North York Community Council requested the Acting General Manager, Transportation Services to report to the Works Committee and the Planning and Transportation Committee on the feasibility of establishing a made in Toronto bicycle lane standard. The intention of this report was to establish whether the City of Toronto should adopt a minimum bicycle lane width less than the generally accepted industry guideline of 1.5 metres.

#### Comments:

##### Bikeway Network:

A key element of the Toronto Bike Plan is the 1000 kilometre Bikeway Network. The Bikeway Network, as presented in the Bike Plan, currently consists of three types of bikeways:

- (1) Bicycle Lanes - these lanes are typically 1.5 m to 2 m wide, and designate a space on the roadway exclusively for the use of cyclists. Motor vehicles are not allowed to drive, park or stand in the bicycle lane, but right turning cars and trucks can enter the lane at intersections to complete their turn.
- (2) Off-Road Paths - these paths include trails through parks, along the boulevards of major arterial roads, and within hydro or rail corridors. Cyclists, in-line skaters and pedestrians often share these paths.
- (3) Signed Routes - Signed routes are typically installed on quiet, residential, local/collector streets. Such streets have a single lane in each direction, and daily traffic volumes generally less than 8,000 vehicles. Apart from bikeway signs, there are generally no physical changes made to the roadway.

These bikeways are critical in achieving the vision of the Toronto Bike Plan, “to create a safe, comfortable and bicycle friendly environment in Toronto, which encourages people of all ages to use bicycles for everyday transportation and enjoyment.”

##### Bicycle Lane Design Guidelines:

After the approval of the Bike Plan, staff began development of Toronto Bicycle Lane Design Guidelines. A key issue in the guidelines is bicycle lane width. The Transportation Association of Canada (TAC), Bikeway Geometric Design Guide discusses bicycle lane width in terms of a general concept of Bicycle Operating Space. This is comprised of three elements:

- (1) a 1.0 m bicycle design envelope which reflects the width of the bicycle and variations in tracking;
- (2) a 0.2 m–0.5 m clearance to fixed objects on the side of the road; and
- (3) a 0.5 m–1.5 m clearance to traffic in the adjacent lane.

Where curbs are present, the above elements result in a minimum bicycle lane width of 1.5 metres to accommodate the bicycle operating space and edge clearance. Without curbs, a 1.2 metre minimum width is acceptable because cyclists can travel closer to the edge of the roadway without risking contact with the curb.

In light of the above, staff developed the following bicycle lane width guideline, after a review of national and international bicycle lane design documents. Where curbs are present, the bicycle lane width, the distance from the face of the curb to the centre of the lane line, should be between 1.5 metres and 2.0 metres.

A wide bicycle lane (1.8 to 2.0 metres) is recommended under one or more of the following conditions:

- (1) where lateral obstructions, such as utility poles, are within 300 mm of the edge of curb;
- (2) where the bicycle lane is on a bridge or underpass;
- (3) where the posted speed limit is 60 km/h or greater;
- (4) where the adjacent traffic lane is 3.6 m or greater;
- (5) where the bicycle lane is between two traffic lanes; and
- (6) for all contra-flow bicycle lanes.

The recommended bicycle lane widths described above are consistent with industry guidelines throughout North America.

#### Impacts of Substandard Bicycle Lanes:

If bicycle lanes less than 1.5 metres are provided, cyclist comfort and safety are compromised in one of two ways:

- (1) If cyclists choose to remain to the right of the bicycle lane line, they must move into the area immediately beside the curb. Catch basins typically occupy 0.7 metres of this edge space. Road debris, leaves and, during the winter months, snow and ice tend to accumulate in this area. In addition, when the pavement surface deteriorates, conditions are often worst in the edge space. As a result, the City of Toronto's safety programs have, for many years, advised cyclists to ride one metre from the curb to avoid hazards associated with the road edge. A 1.5 metre wide bicycle lane enables cyclists to ride comfortably about 1.0 metre from the curb and stay within the lane.
- (2) If cyclists choose to avoid the edge space because they do not feel safe riding so close to the curb, they will encroach into the adjacent traffic lane. Such encroachment is not anticipated by drivers, since they expect the marked bicycle lane to be sufficiently wide to completely contain cyclists. Further, when the adjacent traffic lane is also narrow, such as the 3.3 metre width recommended on Royal York Road, drivers overtaking cyclists will often pass too closely because the presence of the line between the bicycle and traffic lane implies there is sufficient space. About 12 percent of all bicycle-motor vehicle collisions involve drivers overtaking cyclists. To prevent overtaking collisions, the City of Toronto's Pass Bikes Safely campaign, launched in 2000, advises drivers to "allow at least one metre between your car and the cyclist" when overtaking. It is difficult for drivers to judge this safe passing distance when overtaking cyclists in a substandard bicycle lane.

### Recommended Bicycle Pavement Markings for Royal York Road:

Based on the existing traffic volumes, Royal York Road does not meet the criteria for a “signed bicycle route”. To be included as part of the City’s Bikeway Network Royal York Road would require bicycle lanes due to existing traffic conditions. However, the 9.1 metre roadway width is too narrow to accommodate two 3.3 metre wide traffic lanes and two 1.5 metre wide bicycle lanes, the minimum lane widths recommended for a roadway width Royal York Road’s characteristics. City Council’s direction to paint an edge line 1.25 metres from the curb face on Royal York Road between Mimico Creek and Usher Avenue recognized the need to establish continuity for the bicycle lanes that will be provided to the north and south of this section.

Installation of a 1.25 metre edge line on Royal York Road from Mimico Creek to Usher Avenue will result in the reductions in cyclist comfort and safety noted above. While not signed as a bicycle lane, the edge line will be assumed to be a bike lane line by most motorists and cyclists and they will behave accordingly. Cyclists will be encouraged to ride closer to the curb than may be appropriate for the conditions. Drivers will be encouraged to pass cyclists more closely because they perceive cyclists to have sufficient space in the “bicycle lane”.

The Transportation Association of Canada is developing new Guidelines for the Design and Application of Bicycle Traffic Pavement Markings, which we anticipate will be adopted and published in 2006. Transportation Services is participating on the Project Steering Committee along with representatives from several Canadian municipalities. The draft TAC guidelines (September 2005) recommend that “edge lines in urban areas should not be used to demarcate substandard width bicycle lanes”. This recommendation has been supported by all members of the project steering committee. As a result, the Transportation Services Division does not recommend using edge lines to mark bicycle facilities where there is insufficient space for bicycle lanes.

A more effective method for increasing cyclist comfort on the 9.1 metre wide section of Royal York Road is the installation of shared use lane markings, as illustrated in Figure 1. These are sometimes referred to as “bike and chevron” or “sharrow” markings. Current Canadian design guidelines do not address shared use lane markings. However, the Transportation Association of Canada draft Guidelines for the Design and Application of Bicycle Traffic Pavement Markings (described above) make recommendations on the use of shared lane markings and we anticipate this will be adopted as part of the final document in 2006. The guidelines for the use and placement of these markings will be consistent with specifications adopted by the cities of Chicago and San Francisco. The draft TAC guidelines state that shared use lane markings may be used on roadways with lanes that are wide enough for side-by-side bicycle and vehicle operation, but not wide enough for a bicycle lane. The centre of these markings would be 1.0 metre from the curb. The markings would be placed approximately 10 metres beyond each intersection and spaced at intervals every 75 metres or less.

Shared use lane markings are intended to accomplish three goals:

- (1) Better positioning of cyclists – as noted above, many cyclists choose to ride in the edge space immediately beside the curb. Shared use lane markings will provide a visual cue on the preferred position for cyclists.

- (2) Better positioning of motorists – the shared use lane markings identify to motorists the proper position for cyclists. This enables motorists to better gauge the timing and spacing required for safely overtaking cyclists.
- (3) Increased comfort for cyclists – the marking of bicycle space on the roadway has resulted in a reduction of cycling on the sidewalk in the San Francisco pilot study.

Royal York Road meets the criteria for use of shared use lane markings; therefore staff recommend a pilot study of this measure be conducted between Mimico Creek and Usher Avenue. Staff will work with the Toronto Cycling Committee to monitor and evaluate the shared use lane markings and report back, if necessary, on any future modifications.

When the Bike Plan was adopted the recommended Bikeway Network consisted of three bikeway types: bicycle lanes, off-road paths and signed routes. All of these bikeways are linked by a common bikeway sign which identifies the bikeway route number. The shared use lane markings would represent a fourth bikeway type.

#### Consultation with the Toronto Cycling Committee:

The rationale for the bicycle lane width guideline and the shared use lane marking option for Royal York Road were presented to the Toronto Cycling Committee, at its meeting on July 18, 2005. The Cycling Committee made the following three recommendations to the Works Committee:

- (1) Royal York Road, between Mimico Creek and Usher Avenue, be marked using shared-lane markings, as a pilot project;
- (2) the use of an edge-line marking on Royal York Road, between Mimico Creek and Usher Avenue, or as a method to mark a bicycle lane, not be used; and
- (3) the Toronto Cycling Committee reiterate to the Works Committee that the minimum width of a bicycle lane should be 1.5 metres and that bicycle lanes are the preferred option regarding bicycle route pavement markings.

#### Conclusions:

The 1.5 metre minimum width for bicycle lanes is based on the operating requirements of cyclists and a minimum separation from the right edge of the road and from adjacent motor vehicle traffic. An edge line will be perceived both by motorists and cyclists as a bicycle lane. If the edge line is less than 1.5 metres from the curb, it will function as a substandard bicycle lane. The Transportation Association of Canada is developing bicycle pavement marking guidelines which conclude that edge lines in urban areas should not be used to demarcate substandard width bicycle lanes. The Transportation Services Division recommends that Council adopt 1.5 metres as the minimum width for bicycle lanes on roads with curbs and 1.2 metres as the minimum width where there are no curbs which is consistent with current industry guidelines. Further, the Transportation Services Division does not recommend using edge lines to mark bicycle facilities where there is insufficient space for bicycle lanes. The Transportation Services Division also recommends that shared use lane markings be installed on Royal York Road between Mimico Creek and Usher Avenue as a pilot project.

Contact:

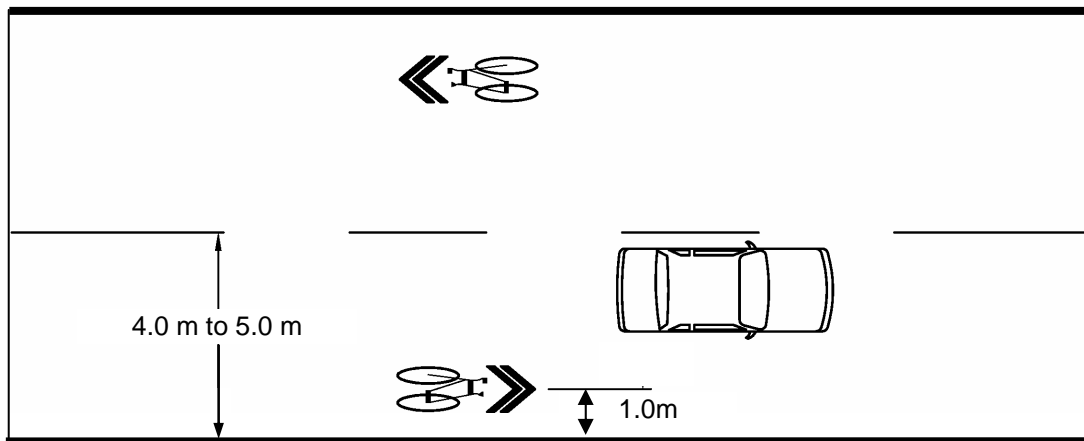
Daniel Egan  
Manager, Pedestrian and Cycling Infrastructure  
Transportation Services Division  
Tel: (416) 392-9065  
Fax: (416) 392-4808  
Email: [degan@toronto.ca](mailto:degan@toronto.ca)

List of Attachments:

Figure 1: Shared Use Lane Marking

---

Figure 1: Shared Use Lane Marking



**The Works Committee also submits the following communication (August 9, 2005) from the Toronto Cycling Committee.**

Recommendations:

The Toronto Cycling Committee on July 18, 2005, recommended that:

- (1) Royal York Road, between Mimico Creek and Usher Avenue, be marked using shared-lane markings, as a pilot project;
- (2) the use of an edge-lane marking on Royal York Road, between Mimico Creek and Usher Avenue, or as a method to mark a bicycle lane, not be used; and
- (3) the Toronto Cycling Committee reiterate to the Works Committee that the minimum width of a bicycle lane should be 1.5 metres and that bicycle lanes are the preferred option regarding bike route pavement markings.

Action taken by the Committee:

The Toronto Cycling Committee requested that the Chair, Toronto Cycling Committee, forward a communication giving background information regarding the position taken by the Toronto Cycling Committee, together with a copy of the Power Point presentation from the Manager, Pedestrian and Cycling Infrastructure, Transportation Services Division, and a copy of the report from the Acting General Manager, Transportation Services Division, which will be presented to the Works Committee on September 14, 2005, to the Mayor and Members of Council for their information.

Background:

The Toronto Cycling Committee on July 18, 2005, had before it the attached communication (May 25, 2005) from the City Clerk advising that City Council on May 17, 18 and 19, 2005, considered Works Committee Report 5, Clause 1, and has forwarded a copy to the Toronto Cycling Committee with a request that the Toronto Cycling Committee provide comments on the design of these pavement markings.

The Manager, Pedestrian and Cycling Infrastructure, Transportation Services Division, made a Power Point presentation regarding bike lane designs.

(A copy of the attachment referred to in the communication from the Toronto Cycling Committee was forwarded to all Members of Council with the agenda of the Works Committee for its meeting on October 11, 2005, and a copy is on file in the office of the City Clerk, City Hall.)

---

The Works Committee also considered a confidential report (September 27, 2005) from the City Solicitor responding to the request of the Works Committee on April 27, 2005, to report on the legal and risk factors associated with marking the edge line on Royal York Road between

Mimico Creek and Usher Avenue; and that further, in accordance with the Municipal Act discussions pertaining to this report were held in camera as the matter relates to the receiving of advice that is subject to solicitor-client privilege.

The following persons appeared before the Works Committee:

- Pat Litherland;
- Crawford Murphy; and
- Rhona Swarbrick.

---

**City Council – October 26, 27, 28 and 31, 2005**

*Council also considered the following:*

- *Communication (October 24, 2005) from Stephen Targett, Advocacy for Respect for Cyclists forwarding a petition from approximately 2,181 individuals. [Communication 9(a)].*

- 
- *Confidential report (September 27, 2005) from the City Solicitor [Confidential Communication C.4(a)]. This report remains confidential in its entirety, in accordance with the provisions of the Municipal Act, 2001, as it contains information which is subject to Solicitor-Client Privilege.*

---

**City Council – November 24, 2005**

*Council also considered the following:*

- *Communication (October 24, 2005) from Stephen Targett, Advocacy for Respect for Cyclists forwarding a petition from approximately 2,181 individuals. [Communication 4(a)].*

- 
- *Confidential report (September 27, 2005) from the City Solicitor [Confidential Communication C.4(a)]. This report remains confidential in its entirety, in accordance with the provisions of the Municipal Act, 2001, as it contains information which is subject to solicitor-client privilege.*
-

***City Council – December 5, 6 and 7, 2005***

*Council also considered the following:*

- *Communication (October 24, 2005) from Stephen Targett, Advocacy for Respect for Cyclists, forwarding a petition from approximately 2,181 individuals. [Communication 2(a)].*

\_\_\_\_\_

- *Confidential report (September 27, 2005) from the City Solicitor [Confidential Communication C.2(a)]. This report remains confidential in its entirety, in accordance with the provisions of the Municipal Act, 2001, as it contains information which is subject to solicitor-client privilege.*

\_\_\_\_\_

***City Council – December 14 and 16, 2005***

*Council also considered the following:*

- *Communication (October 24, 2005) from Stephen Targett, Advocacy for Respect for Cyclists, forwarding a petition from approximately 2,181 individuals. [Communication 2(a)].*

\_\_\_\_\_

- *Confidential report (September 27, 2005) from the City Solicitor [Confidential Communication C.2(a)]. This report remains confidential in its entirety, in accordance with the provisions of the Municipal Act, 2001, as it contains information which is subject to solicitor-client privilege.*