Submission from Mr. Ed Treijs

Standards for bollards and off-road paths

The City of Toronto has extensive standards and procedures. For example, to put in traffic calming:

- there are procedures to establish the issue
- there are consultations with stakeholders
- there are standards for the implementation, based on independent, published criteria

What about the bollard installation?

1. What is the data that there is a problem? How was it gathered? What does analysis of the data reveal?

2. Meeting was held between City departments and "manager of the Boulevard Club". Where are the representatives of the other outside group affected: bicyclists?

3. "20 km/h Trail speed limit"--this is not found in a search of City of Toronto bylaws, nor is it found in the bicycle plan.

4. City's regulation on bollards:
   - call for a height of not more than 1 metre--313-50 B (6)
   - regulate that if you "*construct, place or maintain benches, ornaments, statues, retaining walls, toe walls, planters, doors, bay windows, air-conditioning units, exhaust ducts, sprinkler systems, bollards and trees which encroach upon any street,*" then "*All installations shall be set back a minimum of forty-six hundredths (0.46) metre from the rear edge of the City sidewalk or a minimum of two and onetenth (2.1) metres from the City curb where no sidewalk is present."*--313-50 A.

   The City does not want bollards placed in people's way, but does so for cyclists on municipal property.

5. Bicycle Plan states: "*Ensure the safe and comfortable year round operation of bikeways through design, signage, enforcement and maintenance;*" also "*Safety: Does the route provide protected crossings, such as traffic signals, at arterial roads? Does the route avoid situations where cyclists may feel unsafe or uncomfortable, for example, interchanges with the 400 series highways, or does it provide a safe crossing of such barriers?*" and "*Other instances where innovative designs may be required are:· intersections of off-road paths and arterial roads;*" leading to the recommendation: "***5-2: Demonstrate Innovative Designs***

That the City research, design and demonstrate innovative measures to enhance the bikeway network".
The bollards are not an innovative design, they are not safe, bicyclists certainly feel unsafe and uncomfortable, and they do not enhance the bikeway network.

6. If we look at the automobile equivalent to what these bollards are supposed to do, "traffic calming", we see that the City of Toronto traffic calming policy (2003) document:
   a. refers to Canadian Guide to Neighbourhood Traffic Calming http://www.ite.org/traffic/tcstate.htm - cgntc which has sections such as "*Applicabilitiy and Effectiveness of Traffic Calming Measures: Describes a wide range of traffic calming measures, and includes tables identifying the benefits and applicability of each type of measure. These tables are intended to assist users of this Guide in selecting measures which would be appropriate and effective in addressing specific neighbourhood traffic problems.*"
   b. States that Physical traffic calming be considered only on the local and collector classification of roads

   The point here being that i) the bicycle version is done without consideration to any standards, and ii) has been done on a major arterial-equivalent bicycle route.

Safety of the bollard installation

There's a long-circulating joke, found in many variations on the Web. The gist goes something like this:

> The way to make driving safer is to replace all those air bags and protective devices in cars with a 20 cm steel spike in the middle of the steering wheel, pointing straight at the driver's chest. That car will then be driven safely, you bet!

The bollards, as installed, fit the joke all too well.

1. The bollards are placed so that bicyclists must make skilful, exact maneouvres in order to avoid them. This means that, *unless bicyclists make these skilful, exact maneouvres*, they **will hit the bollards**.

2. The bollards are supposed to reduce the incidence of car/bicycle collisions.
   - The cars are an intermittent hazard.
   - The bollards are present, and a hazard, twenty-four hours a day, seven days a week. They are especially hazardous when it's dark, rainy, or slippery. They are not lit, and there are no advance warning signs. See Photo #1 for the ineffective painted warning.

3. People can't concentrate on two separated hazards at the same time. Bicycles approaching the driveway have to look out for the bollards and concentrate on threading the gaps. Cars are therefore out of the line of their sight and attention. If the cyclist concentrates on the cars, then they will hit the bollard--see the IBikeTO web site comment.

4. After going through the middle of a gap in the first row of bollards, Trail users must swerve either left or right to avoid the second row of bollards. Which way will they go? Who knows! The staggered rows are not set up to promote a consistent path, so you must guess what line other users will use. During summer, 100-300 bicyclists use the trail per hour (figure from Sean Wheldrake). See Photo #3 for multiple bicycles passing through the bollard rows.

5. The new bollards encourage bicyclists to intrude on pedestrian space. The southern gap in the new bollards is 180 cm; the northern gap is 139 cm. Bicycles head for the southern gap, which is on the concrete "pedestrian" section of the trail. See Photo #3. The sightlines between the southern edge of the Trail and the Boulevard Club exit are poor due to the hedge--see Photo #1. Bicycles moving off-route to get around the bollards is a concern voiced by the new Boulevard Club manager in e-mail.

6. The new bollards are high enough to do serious abdominal injury to any cyclist hitting one--see Photo #4 for height comparisons.

7. The bollard configuration makes it almost impossible to pass through for:
   - recumbent bicycles with longer wheelbases
   - tandem bicycles
   - adult tricycles
   - bike trailers

8. The bollards are not even properly effective in the goal to "slow bicycles down".
   1. Experienced cyclists on good-handling bikes can pass through the entire installation at speeds in excess of 30 km/h.
   2. On the other hand, bicycles get wobbly as they slow down, and ultimately they fall over. Less-experienced cyclists may not be able to slow down enough to make it through the gaps while maintaining balance and control. See Delft University of Technology site for information about bicycle dynamics and stability: http://www.tudelft.nl/live/pagina.jsp?id=95c52a8b-37c2-4136-ad98-97aea768d9b7&lang=en.

Concluding comments

1. The new bollard configuration at the Boulevard Club driveway has received a large amount of criticism from bicyclists and bicycling advocacy groups, and the Boulevard Club does not find it to be the ideal solution either. Unless the City can point to generally-accepted standards that allow and recommend this configuration, it must respond constructively to the criticism. This amounts to rethinking the intersection, and demonstrating innovative design as called for in the Toronto Bike Plan.

2. The lack of standards leaves the City exposed to lawsuits from bicyclist injured in the intersection.
   Look at the Hannah Evans decision of a few years back:
   http://www.rnbc.info/Press Room/Court Ruling on Bike Routes.htm
   http://www.sgmlaw.com/Page388.aspx

   > A Toronto cyclist, who was injured when the driver of a parked car opened his car door in her path, has won her lawsuit against the City of Toronto.
   > Hannah Evans was riding on a marked bicycle route on Queen Street West in April 2002, when she was "doored" by a driver leaving his parked car. She sued the City, alleging that it had been negligent in failing to ensure that the roadway was safely designed for all users, including cyclists. Extensive evidence established that "dooring" accidents on Toronto's major east-west arteries, such as Queen and Dundas Streets, are the most common and serious hazard for Toronto cyclists. Nevertheless, the City denied that it should be required to do anything about it.
   >
   > A Toronto Small Claims Court judge disagreed. Deputy Judge Winer recognized that cycling has increased in popularity, and is promoted by the City, because of its health and environmental benefits. He also found that the *design of the lanes on Queen Street West was unsafe for cyclists, that the City knew it was unsafe, and that "they should have done something" to make the street safe for all users, including cyclists.*

   The bollards are City-installed items, on City property, on a multi-use path that is clearly marked on the Toronto Bicycle map. The City has received numerous complaints from individuals and groups, citing the safety defects in this installation. When it comes to a lawsuit, what proof will the City be able to offer that the installation is "safe"?

3. The Martin Goodman Trail is a busy recreational trail, with 100-300 bicycles per hour in this part of the trail in summer (source: Sean Wheldrake of Transportation Planning). There are few officially-marked east-west bicycle routes in this part of the city; the closest alternative is way up north at Davenport Road. (Cyclists

typically use Queen Street as the other through route in the area. Queen is problematic due to: narrow spaces between parked cars and streetcar tracks; taxis; drivers scooting into parking spots without signalling; jaywalkers.... etc.)
The lake shore in this area is a natural transportation corridor. In this corridor:

- The City has built, and maintains, Lake Shore Blvd., a high-speed (nominally 60 km/h) six-lane arterial for motor vehicles (bicycling Lake Shore Blvd. is only for the very brave, especially travelling in the rush hour direction).
- The City has built, and maintains, the Gardiner Expressway, a (nominally 90 km/h) six-lane freeway. (Bicycles are not permitted on the expressway.)
- The railway tracks carry frequent GO trains (bicycles are not allowed on rush-hour trains, and obviously they can't ride on the right-of-way).
- The City is looking to run the West Waterfront LRT through this area

City residents using their bicycle for transport (as urged to, in the City's Bike and Green plans) are naturally drawn/forced to use this corridor as well. Instead of the 12 high-speed lanes granted to motor vehicles, transportation cyclists in the lake shore corridor are faced with a forest of bollards, and a supposed 20 km/h speed limit. The City needs to recognize that, as City residents increasingly use their bicycles as transportation, the City infrastructure must to be upgraded in order to accommodate riders who are expecting to be able to ride, safely, at speeds beyond 20 km/h.

Appndix A: Communication from Gord Perks regarding the bollards

Following posting is taken from Councillor Gord Perks' web page, http://gordperks.wordpress.com/2007/10/20/bollards-on-the-martin-goodman-trail/

Footnotes added to comment on highlighted points made in Councillor's posting.

> As you are aware, the Martin Goodman Trail is a multi use trail (pedestrian, cyclists, rollerblades, scooters, etc) as well as vehicular traffic (patrons for the Boulevard Club, Palais Royale, deliveries, etc), that runs along the waterfront, fronting the Palais Royale, the Royal Canadian Legion and the Boulevard Club. An on site visit was conducted to discuss the on going issue of the intersection of this multi used trail. At this site visit, many things were noted. Vehicular traffic accessing the Boulevard Club from the east bound Lakeshore Blvd, would "gun" it when a opening appeared in the westbound lanes of the Lakeshore Blvd to make the crossing safely. Often, the drivers would not pay attention to the users of the trail and this has caused some very near misses. The cyclists traveling westbound on the MGT, in excess of the posted speed limit of 20km per hour[1], would not pay attention to the fact that a driveway was present[2] and again, near misses would transpire. Pedestrian and Cycling Infrastructure as well as Parks, Forestry and Recreation as well as the Manager of the Boulevard Club[3] attended the meeting. It was decided that the current markings for both the users of the trail and vehicular traffic were very confusing. The pavement markings are one step in the process.[4] A stop

[1] There is no speed limit bylaw for the City's off-road trails. The HTA does not apply. A bicycle travelling at 21km/h on the MGT is not a reckless criminal; it is not breaking any law.

[2] The excess of bollards in the area does not help. Immediately east of the Boulevard Club driveway is a stub access drive with a locked gate immediately south of the Trail, presumably used by Parks Department vehicles only. Although there is minimal to no traffic using this access, it is "protected" by a two rows of some seven or eight bollards each.

[3] The Boulevard Club (which is not a City department) had a representative at the meeting. Why weren't outside representatives from the bicycling community invited? Was there any notice given of this meeting? Consultation?

[4] The pavement markings are yellow on white concrete which is not enough contrast. There is a CAUTION between the two rows bollards on the east side--see Photo #1 and #2; note how washed-out the markings appear. No markings are visible on the west side in Photo #3. This pavement marking does not give any warning in advance. There no signage or other advance warning for Trail users that a non-standard bollard configuration--different from all other installations--is present. The only sign Trail users

sign has been adjusted at the Boulevard Club, and soon traffic signs will be installed on the Lake Shore alerting vehicular traffic[5] to the users along the Martin Goodman Trail. Cross hatching, like what is painted in the intersection of Bay and King, have been painted in the cross over of the Boulevard Club entrance and the Martin Goodman Trail in an effort to alert vehicular traffic not to block this section[6]. Also, bollards have been replaced to the east and west of the Boulevard Club entrance, and additional bollards have been off set for added safety[7]. Again the focus of present and future measures will be safety. This situation will be monitored[8] and any future improvements will take into consideration all users of the trail. The most important factor to keep in mind when looking at possible solutions is safety. Pavement markings will also be painted on the MGT in front of the Palais Royale to alert the users of the trail of potential multi-use traffic.[9] The Palais Royale currently uses temporary stanchions when they hold events to have their patrons exit the facility in a safe manor without impeding on the users of the trail. If you have any further questions, please do not hesitate to contact Meri Newton in my office. You can reach her at 416-338-5178 or via email at mnewton@toronto.ca.

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see is a small "Caution Driveway" sign that must date from the 1980s on the westbound approach.

[5] No signs of any kind installed as of December 8--over three months since the bollards were installed.

[6] How is this working for the downtown intersections that were marked? This effort has clearly failed at the Boulevard Club crossing.

[7] More bollards means more safety. Presumably the Martin Goodman Trail can become 100% safe if it's nothing but bollards.

[8] How exactly is the situation being monitored? Where is the data?

[9] No painted markings as of late November.

Appendix B: On-line comments regarding bollards at Boulevard Club

The following are comments found on-line by entering "bollards martin goodman trail" into Google search. This does not show discussions carried on in mailing lists and other communications that are not publicly archived on the Web. The comments include a lot of concerns about safety; the common theme is that the bollards are dangerous to cyclists. There is also criticism of the way the bollards were implemented.

http://www.ibiketo.ca/node/1536
I Bike TO website--long item including correspondence with Mr. Leis, and 15 comments, including correspondence with Councillor Perks' office.
Here's one comment:

> **Bollards hurt**
>
> On September 3rd, 2007 anthony says:
>
> My daughter hit these extra bollards shortly after they were installed. Perhaps adult cyclists are a bit more attentive to both bollards and traffic, but my daughter was paying more attention to what the cars were doing and how she was going to need to react and did not notice the extra bollards. A bit of road rash, and a lesson learned, but still.
>
> Although I have seen cyclists and motorists collide there, I have seen more cyclists collide with bollards since they've been installed. There must be a better way of doing things than this.

http://spacing.ca/wire/?p=2253
Spacing web site. Link to Toronto Star article on bollards. 12 comments including another analysis of Councillor Perks' letter, and the following comment from "David":

> The driveway can't be a "two way stop", as cars enter the driveway directly from the Lakeshore (there is no room to have traffic "stop" whereby they would not be partly blocking the rightmost lane of the eastbound Lakeshore). I find people leaving the club generally to be respectful (or afraid) of traffic on the trail (I'm a trail user, not a club user).
>
> I see several problems with this intersection:
>
> 1) Cars entering the facility, (coming from the east) often have infrequent, short breaks in traffic coming from the west, and are forced to make the turn and enter the "intersection" quickly. Same problem happens when cars exit, and want to go westbound.
>
> 2) Regardless of how much respect cars give trail users I expect there is poor visibility (I believe more so for cars leaving, and especially of trail traffic moving westbound)

3) Cyclists (myself included) coming from the east frequently come down the hill at fast speeds, and don't like to lose momentum. I presume the intent of the bollards are to slow trail traffic down to the "posted" speed limit of 20kph.

4) The bollards have the tendancy to "spread" out trail traffic (that would otherwise be moving in one lane per direction) across the entire width of the area, including the trail, sidewalk, and into portions of the driveway.

I don't know what a good solution to these problems are, but I can tell you the new bollards are way too close together to be safe, even for cyclists moving along at 20kph. I believe they make it MORE difficult for cyclists to avoid cars that may be stuck in the intersection, attempting to enter the Lakeshore, because they remove the ability of cyclists to manouver, and "pick a line" behind a car which may be present.

http://www.thestar.com/News/article/251322
Toronto Star article on bollards, including reports of bicycles hitting bollards. Excerpts:

Metal poles installed on either side of a laneway that crosses the Martin Goodman Trail were meant to reduce collisions between vehicles and people on bicycles, but cyclists are now smashing into the poles.

(....)

A while ago, metal poles, or "bollards" were installed at the laneway, to slow down bike riders. It may have been well-intended, but Jeff Green called to say some cyclists misjudge the clearance between the staggered poles, which has caused a few to smash into the them.

Green said he has twice encountered bikers who were sent crashing to the ground after failing to safely negotiate the bollards.(....)

http://www.torontocat.ca/main/?q=node/64
Toronto Coalition for Active Transportation. TCAT is collecting accident statistics for the Boulevard Club installation, with phone number and e-mail for making reports.

http://www.nowtoronto.com/issues/2007-08-23/news_upfront.php
Now Magazine. Up Front article, critical of new bollards:

Call it the mystery of the disappearing – and then reappearing – bollards. According to Councillor Gord Perks's constituency assistant Meri Newton, the posts outside the Boulevard Club along the Martin Goodman Trail are not newly erected, at least not officially. They're replacements for bollards that somehow "went missing" and were never reinstalled – until recently, that is, and presumably for cyclists' own safety. Newton says they're meant to slow down cyclists who've been exceeding the 20 km/h speed limit on the

trail (What? Where's the sign?) and creating "a very dangerous situation" for other trail users. Doesn't explain why bollards haven't been erected at other points where Martin Goodman crosses driveways. We suspect the old boys in the Benzes at the posh Boulevard Club had a little something to do with this theft of public rec space.

Appendix C: Dimensions

Martin Goodman Trail width in the Boulevard Club area:

- 5.90m overall
- 4.0m asphalt ("bicycle section")--north side
- 1.9m concrete ("pedestrian section")--south side

Boulevard Club driveway width:

- ~10m clear width
- ~17m width at curb cut to Lake Shore Blvd.

Bollard spacing:

- Old bollards: gaps of 1.5m
- New bollards: gap of 1.39m north side, 1.8m south side

Distance between the rows of bollards:

- 1.65m

Resulting diagonal gap:

- ~1.75m

Angle of diagonal gap to Trail travel direction:

- over 45 degrees

Height of bollards:

- Old bollards: ~0.85m
- New bollards: 1.12m