

ONTARIO
SUPERIOR COURT OF JUSTICE
TORONTO SMALL CLAIMS COURT

IN THE MATTER OF *Hannah E. Evans v. Toronto (City)*,
Toronto Small Claims Court File No. T64013/02;

AFFIDAVIT OF NANCY SMITH LEA
(SCHEDULE "A")

I, NANCY SMITH LEA, of the City of Toronto, in the Regional Municipality of Metropolitan Toronto, MAKE OATH AND SAY:

Background and Qualifications:

1. I am a senior research officer at the Ontario Institute for Studies in Education of the University of Toronto where I have been employed since 1990. I have a B.A. in psychology (1984) and a M.A. in sociology and equity studies (2001). My research for my master's thesis (titled "Cycling Safety: Shifting from an Individual to a Social Responsibility Model") included an in-depth literature review of bicycle transportation

books and current articles about cycling published in urban planning, transportation engineering, and injury prevention journals.

2. My published articles include "*Colliding Modes of Transportation: Issues of Inequity and Unsustainability*" published in the peer-reviewed *Environments Journal* (2000), "*Urban Cycling Safety: Individual or Social Responsibility?*" In the National Center for Bicycling and Walking Forum (2003) and "*Toronto Cyclists Fight for Respect*" in the *Planners Network Journal* (2002). I have been a guest lecturer on the effect of Toronto transportation policies on cyclists at Brock University (1999) and was an invited panelist (title "*Bicycle Safety: By Design or Behaviour Modification?*") at the Ontario Cycling Association annual conference (1996).

3. I was a member of the committee formed by the Regional Coroner of Toronto which met over a two-year period between 1996 and 1998 to prepare the research and analysis leading to the 1998 Coroner's Report on Cycling Fatalities in Toronto, 1986-1996: Recommendations for Reducing Cycling Injuries and Death. At the request of the City of Toronto's Transportation Services Division, I provided input into the 2003 staff report: City of Toronto Bicycle/Motor-Vehicle Collision Study.

4. I have been actively involved in working towards improving cycling conditions in Toronto since 1993. I have been a member of the Spirit of Spadina Coalition (1993-96), the Toronto Centre for Appropriate Transportation (1993-95), the Toronto City Cycling Network Planning Committee (1993-96), a co-founder of Advocacy for Respect for

Cyclists (1996-present), and a board director and treasurer of the Community Bicycle Network (2002-present). I am also a graduate of the City of Toronto's CAN-BIKE II cycling skills program (1993). In these roles, I have participated in the planning and implementation of numerous City of Toronto cycling initiatives, including participation in working groups, preparing submissions to Committees of City Council, informal and formal meetings with City staff and Councillors, and participating in the study and analysis of cycling issues in Toronto.

Introduction:

5. I have conducted an analysis of the site of the collision involving Hannah Evans, and I have reviewed the relevant literature respecting cycling safety and minimum engineering and planning requirements for safe access for cyclists on urban streets.

6. I have also reviewed relevant documents from the City of Toronto planning process in respect of cycling safety and infrastructure.

7. I have obtained data from the City of Toronto Mapping Services in respect of the measurements of the roadway at the location of the collision involving Hannah Evans, and I have reviewed that data in the context of generally accepted engineering and planning principles as they relate to the minimum safety requirements for cycling infrastructure.

8. I have completed the following analysis of the circumstances in which Hannah Evans was injured on or about April 14, 2002.

Definitions:

9. I have incorporated the following generally accepted definitions for terms used herein:

Bike Lane – “a portion of a roadway which has been designated by striping, signing and pavement markings for the preferential or exclusive use of bicycles.”¹

Bike Route – “a road that has the physical ability to accommodate the recommended guidelines for bicycle use. On bicycle routes cyclists share the roadway with motorized traffic as there is no physical separation between cyclists and other users of the road.”²

Bike Route System – “a system of bikeways designated by the jurisdiction having authority with appropriate directional and information route markers, with or

¹ American Association of State Highway and Transportation Officials (AASHTO) (1999), Guide for the Development of Bicycle Facilities, hereinafter “***AASHTO Guide***”, attached at Tab 1, at p. 2.

² Metropolitan Toronto Transportation Department Planning Branch (October 1993), Review of Bicycle Facilities on Metropolitan Roads, hereinafter “***Metro Report***”, attached at Tab 2, at p. 102.

without specific bicycle route numbers. Bike routes should establish a continuous routing but may be a combination of any and all types of bikeways.”³

Bikeway – “a generic term for any road, street, path or way which in some manner is specifically designated for bicycle travel, regardless of whether such facilities are designated for the exclusive use of bicycles or are to be shared with other transportation modes.”⁴

Vehicle – “includes a motor vehicle, trailer, traction engine, farm tractor, road-building machine, bicycle and any vehicle drawn, propelled or driven by any kind of power, including muscular power, but does not include a motorized snow vehicle or a street car”⁵

Appropriate location for cyclist on roadway:

10. The bicycle is included within the definition of a “vehicle” in the Ontario Highway Traffic Act.⁶ All vehicles, including bicycles, are required by law to operate upon the “roadway” which is defined as “...the part of the highway that is improved, designed or ordinarily used for vehicular traffic...”⁷ A Metropolitan Toronto By-law prohibits the riding of bicycles with a tire size over 61 cm on the sidewalk. As the

³ *AASHTO Guide*, Tab 1, at pp. 2-3.

⁴ *Ibid*, at p. 3.

⁵ Ontario *Highway Traffic Act*, RSO 1990, C. H-8, s. 1(1).

⁶ *Ibid*.

⁷ *Ibid*.

Metropolitan Toronto Uniform Bylaw applies to all former Municipalities, this bylaw is now in force throughout the amalgamated City of Toronto.⁸

11. The cyclist in the Collision was therefore appropriately traveling on the roadway.

Prevalence of the known hazard to cyclists:

12. According to the staff report entitled City of Toronto Bicycle/Motor-Vehicle Collision Study, authored by the City of Toronto Transportation Services and released to the public on November 25, 2003 (the *City Report*):

- On Queen Street West, bicycles account for 14% - 17% of vehicles.⁹
- “Dooring” -- or a cyclist being struck by a car door -- is downtown Toronto’s most frequently reported bicycle/motor vehicle collision.¹⁰
- Bicycle-motor vehicle collisions were concentrated mainly on arterial roads particularly the central east-west routes.¹¹ Almost all cases of “dooring” occurred on arterial roads in central Toronto with high-turnover curb-side parking.¹²

⁸ *Can-Bike Skills Program Instructor Kit*. (Summer 2001). Ontario Highway Traffic Act Bicycle Violations, p. 6.10. Available: www.city.toronto.on.ca/cycling/pdf/hta.pdf

⁹ Toronto Transportation Services (2003), City of Toronto Bicycle/Motor-Vehicle Collision Study, hereafter, the ***City Report***, attached at Tab 3, at p. 3.

¹⁰ *Ibid*, at p. 41.

¹¹ *Ibid*, at p. i.

¹² *Ibid*, at p. 41 & p. 61.

- The *City Report* acknowledges that “dooring” is the type of collision which is most likely to result in injuries, that injuries resulting from dooring are generally more serious than average, and that dooring is “a very serious concern for urban cyclists”.¹³
- The report acknowledges that arterial roads are the streets most heavily used by cyclists yet many have not incorporated bicycle infrastructure into their design.¹⁴

13. Concerns about the conditions on Toronto’s main east-west arterial roads were also articulated in the Regional Coroner for Toronto’s report entitled A Report on Cycling Fatalities in Toronto: 1986-1996: Recommendations for Reducing Cycling Injuries and Death, released in 1998 (the “*Coroner’s Report*”):¹⁵

- The *Coroner’s Report* found that 33 of 38 (87%) of cyclist fatalities occurred on arterial roads.
- The *Coroner’s Report* also recommended that the City examine “physical infrastructure improvements to prevent collisions”, both site specific or systemic change (Recommendation #4), and develop a comprehensive

¹³ *Ibid*, p. 41.

¹⁴ *Ibid*, p. 41 & p. 61.

¹⁵ W. J. Lucas, MD, CCFP, Regional Coroner for Toronto (1998), A Report on Cycling Fatalities in Toronto 1986-1996, hereinafter, the *Coroner’s Report*, attached at Tab 4.

network of on-street bicycle lanes and routes to enhance bicycle safety (Recommendation #14).

- The City participated in the preparation and development of the *Coroner's Report*; the City in fact requested and publicized the need for the Coroner to examine issues affecting cycling safety in the City; and the City was aware of the conclusions and recommendations of the *Coroner's Report*.

14. The City recognizes that there are two ways to plan specifically for bicycle safety on arterial roads: either marked on-street bicycle lanes or a wide curb lane – the accepted standard for which is a minimum width of 4.0 metres. The city of Toronto is aware that such improvements are required to reduce the number of “dooring” collisions.¹⁶

Circumstances of the Collision:

15. The “dooring” incident in this case (the “Collision”) occurred on the north side of Queen Street West between John Street and Beverley Street at approximately 260 Queen Street West. Queen Street was an arterial roadway under the jurisdiction of Metropolitan Toronto [“Metro”] until 1998 and thereafter has been an arterial roadway under the jurisdiction of the City of Toronto. The characteristics of the street in this location can be generally described as: four lanes for automobile traffic, without markings, integrating two sets of streetcar tracks in the centre of the street and on-street parking along the curbs in off-peak hours.

16. This portion of Queen Street was signed as a *bike route* at the time of the collision and connects John Street to the Beverley Street marked *bike lane*. There is no direct lawful alternative route traveling westbound to reach the marked bike lane that runs north on Beverley Street without riding on this portion of Queen Street. The Municipality of Metro Toronto identified this route as a recommended bicycle route as early as 1991, and the route continued to be signed as such until after the collision in 2002.¹⁷

17. Measurements provided by the City of Toronto show that on the block between John Street and Beverley Street, the maximum roadway width of Queen Street West is 13.3 metres. (The roadway on this block varies in width from 12.6 metres just west of Beverley to 13.3 metres just west of John St.).¹⁸

18. If we assume four lanes of equal width on Queen Street West at the site of the “dooring”, then each lane would be up to 3.325 metres wide.

19. I have conducted a series of measurements of the street configuration at the scene of the Collision. I have identified the following configuration:

- Distance from curb to centre of roadway: 6.57 m

¹⁶ See *City Report* at p. 57, *Coroners Report* at p. 9, *AASHTO Guide* at p. 17, *Bike Plan, infra*, at p. 4-6.

¹⁷ See Toronto **1991 Bicycle Routes and Guide Map attached at Tab 5**; and see subsequent maps; and see **photographs taken on Queen Street West, attached at Tab 6**.

¹⁸ Tierney, K. (Aug 5, 2003), personal communication.

- Distance from curb to streetcar rail: 4.07 m

- Distance from curb to passing streetcar: <3.79 m¹⁹

- Distance from curb to edge of parked cars:²⁰
 - i. 2.14 m
 - ii. 1.92 m
 - iii. 2.35 m
 - iv. 2.06 m
 - v. 2.04 m

- Width of car doors:²¹
 - i. 1.13 m
 - ii. 1.24 m
 - iii. 1.06 m
 - iv. 1.07 m
 - v. 1.08 m

- Width of handlebars on the bicycle involved in the Collision:
 - .65 m

¹⁹ The streetcar route is demarcated by a concrete zone in the centre of the roadway which extends to 3.79 m from the curb on the north side. However, I observed that the passing streetcars occupy slightly more space than the demarcated zone, meaning the streetcars extend closer to the curb than 3.79 m.

²⁰ I measured the distance from the curb to the edge of five different cars parked at the scene of the collision at the time I took my measurements of the roadway.

²¹ I measured the width of doors on five different cars parked at the scene of the collision at the time I took my measurements of the roadway.

20. A research report prepared by the former Municipality of Metropolitan Toronto entitled A Review of Bicycle Facilities on Metropolitan Roads (the “*Metro Report*” at Tab 2) states that if it is not possible to provide the minimum guidelines as outlined below, the route should not be identified as bicycle compatible.²²

21. The *Metro Report’s* guidelines for the minimum width on bicycle routes for a curb lane with parking with a posted speed of 40 km/hr are 4.0 m, but 4.3 m is desirable.²³ The recommended curb lane widths for shared use are similarly adhered to in the Toronto Bike Plan: “Shifting Gears” (2001) (the “*Bike Plan*” at Tab 7).²⁴

22. The width of the curb lane on Queen Street West at the site of the collision is .675 metres less than the minimum width required for a bike route and about one metre less than what is desirable for a bike route.

23. The AASHTO (American Association of State Highway and Transportation Officials) Guide for Development of Bicycle Facilities (the “*AASHTO Guide*”) is the standard used by transportation planners in Canada and the U.S. It sets out the following standards:

²²*Metro Report*, Tab 2, at p. 103.

²³*Ibid*, at p. 104.

²⁴Toronto Bike Plan: “Shifting Gears” (2001), hereinafter, the “*Bike Plan*”, attached at Tab 7, at p. 4-6.

- On signed bike routes, “4.2 m of usable lane width is the recommended width for shared use in a wide curb lane.” This should be increased to 4.5 m on stretches of roadway with steep curves, drainage grates, raised reflectors and on-street parking.”²⁵
- Three of the criteria that should be considered prior to signing a bike route are as follows: “street parking has been removed or restricted in areas of critical width to provide improved safety”; “wider curb lanes are provided compared to parallel roads”; and “shoulder or curb lane widths generally meet or exceed width requirements.”²⁶

24. The *Metro Report* similarly identifies on-street parking as a hazard for cyclists, since several accident types involving cyclists can occur (motor vehicle doors being opened, collisions with stationary motor-vehicles, and motor-vehicles exiting and entering parking spaces). It recognizes that a wider curb lane is required in order to minimize such collisions.²⁷

25. Given the dimensions of Queen Street West, at the site of the collision, the most viable option for securing the safety of cyclists is to remove on-street parking and install a dedicated bike lane.

²⁵ *AASHTO Guide*, at p. 17.

²⁶ *Ibid*, at p. 19-20.

26. The *Metro Report*, published by the Metropolitan Toronto Transportation Department, indicates that the current configuration of Queen Street West is inadequate for it to be identified as a safe bike route.²⁸

27. The *AASHTO Guide* states that on streets that are unsuitable for bicycle travel at present, “it would be inappropriate to encourage bicycle travel by designating the routes as bikeways.”²⁹

28. The *AASHTO Guide* also states that “signing of shared roadways should indicate to bicyclists that particular advantages exist to using these routes compared with alternative routes. This means that responsible agencies have taken actions to assure that these routes are suitable as shared routes and will be maintained in a manner consistent with the needs of bicyclists.”³⁰

29. Queen Street West, at the site of the collision, does not meet these guidelines.

30. The *Metro Report* states that “Metropolitan Toronto has liability concerning any bicycle facility within its jurisdiction. All facilities should be designed to meet or exceed the minimum guidelines in order to minimize liability.”³¹

²⁷*Metro Report*, at p. 57.

²⁸*Metro Report*, at p. 194-196.

²⁹*AASHTO Guide*, at p. 7.

³⁰*Ibid.*

³¹*Ibid*, p. 90.

31. Queen Street West was identified as a bike route in the 1991 Bicycle Routes and Guide Map prepared by the Planning and Development Department of the (former) City of Toronto and published by the Toronto City Cycling Committee. The signage demarcating the section of Queen St. between York and Beverley Streets was in place at the time of the collision. The signage continued to be maintained in place by the City until after the Plaintiff's Claim in this proceeding was filed, and has since been removed.

32. I have been advised by Martin Reis, and I believe it to be true, that he took the photographs attached to this affidavit as Exhibit 6 subsequent to the date of the Plaintiff's claim in this proceeding. I have visited the site of these photographs recently and have confirmed that the bike route signs are no longer posted in these locations.³²

33. The above analysis demonstrates that the City of Toronto did not maintain bike routes, including Queen Street West, to the recognized minimum standards required for safe access for cyclists.

³² See photographs attached at Tab 6.

Toronto Purports to Make All Streets Safe for Cyclists:

34. The City of Toronto published the City of Toronto *Bike Plan* in June 2001. It was subsequently adopted by City Council.³³

35. In the *Bike Plan*, the City recognizes that “bicycles should be afforded the same consideration as motor vehicles on the City’s street system”³⁴ and that “every street should be made as safe and comfortable for cyclists as possible.”³⁵ The City acknowledges that to meet this goal it is necessary to adopt “bicycle friendly street policies that give bicycles the same consideration as vehicles on the City’s street system.”³⁶

36. The City is aware that “bicycle usage can be increased by improving the road system to make it more compatible with bicycle use.”³⁷

37. The *Coroner’s Report* states that “Expanding the existing network of on-street bicycle routes and off-street trails is widely recognized as an important measure to enhance safety for cyclists. The on-street component of this network includes a range of design options which respond to the wide range of needs and abilities of cyclists and the different types of roadways. These design options include: bicycle lanes which clearly define a separate space for cyclists, signed bicycle routes which identify alternative

³³ *Bike Plan, supra.*

³⁴ *Bike Plan*, at p. 4-1

³⁵ *Ibid.*

³⁶ *Ibid.*

routes for cyclists typically on lightly traveled local streets, and wide curb lanes on arterial roads which make it possible for cyclists and motorists to share the lane.”³⁸

Appropriate Facilities for Safe Access for Cyclists:

38. Many European countries have sharply reduced cyclist deaths by implementing a wide range of improvements for bicycles and as a result fatality rates for cyclists have fallen to less than a fifth of the American level.³⁹

39. Studies have consistently found that bicycle facilities increase the safety of cyclists. For example, a study examining the safety of cycling in different countries found significant differences between the Netherlands which has a high proportion of its citizens cycling on specially designed facilities and Britain which has few cyclists and a poorly established cycling infrastructure. A comparison of death and injury rates per 100 million kilometres traveled, revealed that, for both pedestrians and cyclists, death and injury rates "are much lower in the Netherlands than in Britain."⁴⁰

40. Moritz (1998) surveyed 2,400 experienced club cyclists and found that “the more serious crashes are more likely to happen on major streets without bike facilities... Of additional interest is the experience of these cyclists ... on streets either signed as a bike

³⁷ *Metro Report*, at p. 93.

³⁸ *Coroner's Report*, at p. 9.

³⁹ Pucher, J. & Dijkstra, L. (February, 2000), *Making Walking and Cycling Safer: Lessons from Europe*. *Transportation Quarterly*, Vol. 54, No. 3. Washington: Eno Transportation Foundation, Inc., “**Pucher & Dijkstra**”, attached at Tab 8, at p. 7

⁴⁰ Preston, B. (1997), *The safety of walking and cycling in different countries*, in Tolley, R. (Ed.) *The greening of urban transport: planning for walking & cycling in western cities*. Edition II, Chichester: John Wiley & Sons., pg. 42

route or having bike lanes. Crash rates on these facilities are significantly lower than all other facility types.”⁴¹

41. In conclusion, it is generally accepted in the literature that there are minimum infrastructure requirements for safe cyclist access to arterial roadways, including but not limited to: a wide curb lane at least 4.0 metres wide, a marked bike lane or a separated bike path. The City of Toronto has consistently claimed that the safety of cyclists is a priority and has encouraged and promoted cycling as an official policy. Despite this fact, the City has knowingly failed to provide appropriate facilities for cyclists on City streets, including Queen Street West, which at the time of the collision was signed as a bike route.

42. I have attached as exhibits to this affidavit copies of the following documents referred to herein:

- Exhibit 1: *AASHTO Guide*
- Exhibit 2: *Metro Report*
- Exhibit 3: *City Report*
- Exhibit 4: *Coroner's Report*
- Exhibit 5: *1991 Toronto Cycling Map*
- Exhibit 6: Photographs of street signage
- Exhibit 7: *Bike Plan*
- Exhibit 8: *Pucher & Dijkstra*

⁴¹ Moritz, W. (March 30, 1998), Adult Bicyclists in the United States - Characteristics and Riding Experience in 1996. Revised copy of paper presented at the Transportation Research Board, 77th Annual

Exhibit 9: *Moritz*

43. I make this affidavit in support of the Plaintiff’s claim in this matter, and for no other improper purpose.

Sworn before me at the City of Toronto)
in the Province of Ontario this ____)
day of _____, 2004,)
)
)
)

Nancy Smith Lea

Commissioner for taking oaths