

MISSISSAUGA CIVIC CENTRE KEY INITIATIVES 2012

Transportation Association of Canada

Sustainable Urban Transportation Award 2012

CITY OF MISSISSAUGA

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1. Introduction

The 'Mississauga Civic Centre Key Initiatives' nomination by the City of Mississauga has been invited for a full submission to outline what unique transportation initiatives have been undertaken in Mississauga Civic Centre and how they will contribute to the development and enhancement of sustainable urban transportation. The Mississauga Civic Centre district is envisioned in the 'Downtown21 Master Plan'¹ as a common and connected civic space that extends over five blocks from Burnhamthorpe Road to Rathburn Road between Living Arts Drive and Duke of York Boulevard. Not only it is home to the City's premiere public institutions and amenities including the City Hall, Central Library, Living Arts Centre and Square One Shopping Mall, the Civic Centre district is recognized by its key initiatives, such as the City's first single-lane downtown roundabout, 'flush' Square

¹ Downtown21 Master Plan:
<http://www.mississauga.ca/portal/residents/downtown21>

One Drive, 'ceremonial' Duke of York Boulevard, Scholars' Green Park, and the new Sheridan College Post Secondary Institution, Hazel McCallion Campus². This submission will focus only on a number of key initiatives, endorsed by the Master Plan – it will illustrate how these initiatives are aligned with key strategies specified in the New Vision for Urban Transportation, which will lead into transforming cities to be more efficient, environmentally friendly and desirable to live in.

2. Development and Enhancement of Sustainable Urban Transportation

Key initiatives³ within Mississauga Civic Centre have contributed to the development and enhancement of a sustainable transportation plan in an urban context with social, economical, and environmental benefits. Some of the key benefits include safe student access to Sheridan college; efficient operation of vehicles at low speed, continuous traffic flow through the roundabout; accommodation of all modes of transportation, including public transit, pedestrians, cyclists and emergency vehicles; an aesthetically pleasing, flexible and traffic calmed 'flush' street and on-street paid parking achieved through traffic lane conversion.

Mississauga Civic Centre has undergone a conversion to a single lane roundabout at

² New Sheridan College Campus:
<http://www.sheridancollege.ca/About%20Sheridan/Mississauga%20Campus.aspx>

³ Key initiatives:
<http://www5.mississauga.ca/marketing/websites/sheridan/downloads/2011-Sheridan-Campus-Images.pdf>

one of its conventional signalized intersections. Safety has increased for all users and traffic delays have been reduced without compromising traffic capacity. The 'flush' Square One Drive extension, which continues as the west leg of the roundabout, incorporates an innovative curvilinear design which safely accommodates pedestrians, cyclists, passenger vehicles, trucks and buses at a slower operating speed. Running through 'Scholar's Green' park, the 'flush' Square One Drive nicely integrates with the new College campus. Several green initiatives have been utilized in this project, including the application of LED street lights and sustainable stormwater management practices, such as permeable pavement, on-site water retention techniques and a wide planted centre median.

2.1. Enhancing Sustainability - Social

The social implications of the key initiatives allow the basic access needs of pedestrians, students and cyclists to be met safely and in manner consistent with human and environment health. The presence of a single-lane roundabout in Mississauga Civic Centre is an initiative in the direction of the City's Vision Statement articulated in the Strategic Plan: "Mississauga will inspire the world as a dynamic and beautiful global city for creativity and innovation, with vibrant, safe, and connected communities; where we celebrate the rich diversity of our cultures ... A place where people choose to be." Based on the social attributes of sustainable urban transportation, the key initiatives are aligned with three out of

five City's Strategic Pillars for Change⁴, intended to provide guidance towards the creation of a city for the 21st century: (1) Move – The roundabout feature will help with clean air and healthy lifestyle by providing accessible features to accommodate transit vehicles as a preferred, affordable and accessible transportation choice. The roundabout in conjunction with the 'Flush' road extension adds capacity to the transportation system, through additional links in the street network and active mobility choices; (2) Belong – Mississauga Civic Centre thrives on its social and cultural diversity. It has attracted Sheridan College post-secondary institution which has become an internationally recognized centre of higher learning, where youth want to be; where 1,700 young professionals choose to be part of; (3) Connect – the 'Flush' Square One Drive extension, the 'Ceremonial' Duke of York Boulevard, Scholar's Green Park and the roundabout, together have created a more walkable and connected mixed-use neighbourhood that gives residents and visitors the ability to engage safely in all aspects of their everyday lives, within walking distance and easy access. Scholar's Green Park in particular brings the college and community together in the heart of the city as a great public space with opportunities for every one to enjoy. The park's unique features offer a place for creative thought and respite, complementary to the learning environment of the educational institution.

⁴ Strategic Pillars for Change:
<http://www.mississauga.ca/portal/discover/ourfuturepillars>

2.2. Enhancing Sustainability – Economic

Based on the economic attributes of sustainable urban transportation, the key initiatives discussed in this document are aligned with the fourth pillar of the City’s Strategic Pillars for Change: Prosper – the key initiatives support a strong global business future, fostering a prosperous and sustainable economy that develops talent, attracts innovative business, meet employment needs, strengthen arts and culture and create partnerships for innovation.

The Mississauga Civic Centre roundabout has been part of promoting efficient land use, while creating beautiful and unique streets. At significantly lower cost, this roundabout facilitates better utilization of space and does not require storage lanes and turn lanes to operate efficiently, leading to freeing up space for other important purposes such as on-street parking and pedestrian refuge areas. On-street parking opportunities also benefit customers and businesses in the community, and improve economic development. Intersections controlled by roundabouts significantly reduce vehicle delay, leading to less idling and ultimately are considered more environmentally friendly.

2.3. Enhancing Sustainability – Environmental

Based on the environmental attributes of sustainable urban transportation, the key initiatives are aligned with the fifth pillar of the City’s Strategic Pillars for Change: Green – the key initiatives have been designed and implemented in support of Our Future Mississauga being a city that co-exists in harmony with its ecosystems,

with improved green landscaping features, where fuel consumption and air and noise pollution are reduced. The utilization of sustainable stormwater management techniques, ‘Scholar’s Green’ Park and other soft green opportunities, such as the roundabout and the ‘flush’ street will help in recognizing Mississauga as a city that values its shared responsibility to leave legacy of a clean and healthy natural environment.

3. Degree of Innovation

The recent key initiatives implemented in Mississauga City Centre bring forward different levels of innovation pertaining to technical and financial aspects and process, including performance monitoring and consultation.

3.1. Innovation – Technical

The Mississauga Civic Centre single-lane roundabout is an innovative type of intersection traffic control; it processes all modes of transportation safely and efficiently with less severe collisions expected. Its unique geometric features promote slower operating speeds on a continuous basis with fewer conflict points. It employs less hard surface, offering more opportunities for landscaping. The center island of this roundabout is reserved for planting beds of flowers and future art piece. At this roundabout, curb lanes have been converted to on-street parking spaces, spaces for street trees, landscaping, and seating areas, where appropriate. Due to less hard surface areas associated with this feature, accumulation of less storm water runoff is expected. The roundabout does not require electricity to operate which is significant advantage in general, particularly during power outages.

Conventional intersections require pedestrians to cross multiple driving lanes, exposing them to vehicular traffic for longer periods of time. The single-lane roundabout is designed to allow safe crossing of traffic lanes at significantly shorter distance: pedestrians cross only one driving lane at a time, facing traffic from one direction – a distance of 3.5 metres for each direction, with a pedestrian refuge area in the middle. Although this requires the pedestrians to wait for a vehicular traffic gap, slow vehicle speeds and the need for the motorist to yield before entering the roundabout result in sufficient gaps.

The fourth leg of this roundabout consists of the extension of Square One Drive from Duke of York Boulevard to Living Arts Drive, which is constructed as a two-way ‘flush’ street, providing the safest walkable and drivable environment for students, faculty, and the general public. Its curbless edges provide a continuous flush surface through the parkland space encouraging slow and safe speeds, while maintaining the same volumes as a conventional street. Additionally, this flush street benefits all users by providing flexible space for college needs such as loading for the building.

The City of Mississauga is leading the way with the implementation of light emitting diode (LED) street lighting to significantly reduce future energy and maintenance costs. Converting Mississauga’s street lights to more energy efficient luminaires will provide significant long term financial benefit to the City. By projecting hydro and maintenance costs over the next eight years, a complete conversion to LED lighting indicates a 50% saving for the City by 2020 and moving forward, a

reduced carbon footprint by lowering future energy consumption for street lighting, compared to the existing conventional lighting infrastructure. Furthermore, this form of lighting promotes higher safety, providing better visibility to all users.

The innovative nature of the key initiatives discussed in this document goes beyond just the hard landscape: The integration of green utilities like soil, trees and water into the Mississauga Civic Centre has significantly enhanced design sustainability and has helped alleviate some of the most pressing ecological challenges – including air and water quality, rising temperatures, flooding and erosion from daily rainfall events. The sustainable stormwater management deployed in the vicinity of the roundabout, Sheridan College and the ‘flush’ street is an innovative approach. In this practice, a modular suspended pavement system is used which uses soil volumes to support potential large tree growth with powerful on-site stormwater management providing storage and water quality measures. The water runoff accumulated across the hard road surface is redirected into catch basins, through curbless edges along the ‘flush’ street; the water received from the catch basins will be stored in large volumes in stormwater management devices and then gradually released through a filtering process, producing cleaner water prior to merging with the main sewer system.

Concern for the environment is at the centre of the design for Scholars’ Green Park. The park incorporates sustainable materials and green technologies in many of its features. The landscape is as visually impressive as it is inviting, with outdoor café areas, grass quadrangles and fixed

chess tables. The pavilion and gallery, outdoor classroom and public squares offer flexible gathering spaces for the City and Sheridan College.

3.2. Innovation – Process (Performance Monitoring)

With the opening of Mississauga’s first urban roundabout in August, 2011, web-based performance monitoring tools, including on-site cameras have been programmed to continuously monitor vehicular and pedestrian traffic patterns in and around the roundabout. Operational reviews are completed to determine traffic performance of this new feature, for all users, including pedestrians and cyclists.

Mississauga’s city-wide LED street lighting conversion also includes the installation of a brand new state-of-the-art street lighting monitoring system with the ability to detect malfunctioning street lights multiple times a day and transmit this information wirelessly. Currently, street lights are monitored by a manual night patrol system whereby the streets are monitored for any malfunctioning activities. The new monitoring system checks the status of street lights, power loss, malfunctions, energy consumption in real time, and has the capability of dimming a luminaire, which can provide additional energy savings and extend the life of the luminaires.

3.3. Innovation – Process (Consultation and Awareness)

Implementation of key initiatives discussed in this document required significant consultation in addition to the mandated legislated process. Key stakeholders in this project included

Square One Shopping Mall, a major regional shopping mall, Sheridan College, an educational institution and other local developers; all significantly impacted. Through a systematic consultation approach, all concerns were successfully mitigated and key stakeholders subsequently recognized the benefits of the project components.

The preliminary design for the Mississauga’s first single lane roundabout and the extension of Square One Drive was subject to a Municipal Class Environmental Assessment with a mandate for one mandatory point of public consultation. City of Mississauga exceeded the basic requirements for the process to ensure full public and agency awareness of the project and components. Key stakeholders were involved from the early stages of the process and were kept involved and informed throughout the process. The design for the roundabout has undergone multiple peer reviews from urban design and operational perspectives. Furthermore, it was presented to the Mississauga Accessibility Advisory Committee for review and input.

To ensure residents and visitors are aware of how to safely use a roundabout, Mississauga Communications deployed several tactics to raise awareness and provide education, including interactive animation⁵, brochure, and website – these measures contributed to increased support from the public and other key stakeholders. Letters of notice to the residents and agencies, City reports, posters and gateway signs, multiple

⁵ Roundabout animation and brochure: www.mississauga.ca/roundabouts

information booths and social media were all used as other means of communication. The process consisted of phases for before and after roundabout opening to ensure adequate attention was given to all areas. City Corporate Communications also worked closely with key stakeholders to help raise awareness and to educate the public.

3.4. Innovation – Financial

Through a unique and innovative partnership, the City and Sheridan College constructed the new Mississauga campus, and Scholar's Green Park – which will help transform Mississauga's downtown into a vibrant centre and connected community. In just six short months after launching the City's new Strategic Plan⁶, Mississauga Council approved the purchase of 3.46 ha of land and a lease agreement that together have made the new campus a reality and will deliver on a number of the City's strategic goals.

As part of Mississauga's Civic Centre LED street light project, the City is eligible to offset a portion of the capital cost of this conversion project. This approach provides financial incentives for replacing existing street lights with high-efficiency lighting. Based on the forecasted reduction in electricity consumption during the first year after the conversion to LED is complete, this joint application with Mississauga's hydro provider will provide a significant financial incentive.

⁶ Mississauga Strategic Plan:
<http://www.mississauga.ca/portal/discover/conversationmississauga>

4. Transferability to Other Canadian Communities and Organizations

The City of Mississauga is progressively addressing needs similar to many other Canadian cities by transforming its Civic Centre district to a more urban, vibrant and walkable space, supporting accessible transit in a sustainable environment. The City has welcomed neighbouring municipalities to learn about the use of modern urban roundabouts in a downtown context and 'flush' streets, through in-house workshops and site tours. These initiatives have also generated research opportunities for local educational institutions.

Staff thoroughly researched the benefits of LED street lighting and tested the waters by launching a pilot project. It is the right time to move toward LED street lighting and the City of Mississauga will be one of the first Canadian cities to implement a city-wide LED lighting program and other municipalities are watching to see how the project goes.

Key initiatives discussed in this document successfully set the framework for an economically viable transformation, gradually moving towards a sustainable living space, which is vibrant, connected, and safe. The basis for a successful transfer of any of the specified initiatives is that the interested agency or municipality analyze each case for appropriate context conditions and success factor and barriers in the implementation process. City of Mississauga has proven to be willing to provide any type of support in the design and implementation process, from experience, as well as research of the initiatives.

5. Added Value

The successful implementation of the key initiatives discussed in this document has strengthened relationships amongst the City and key downtown stakeholders, while working through concerns which were raised throughout the consultation process. Close coordination of detailed design of the Mississauga Civic Centre roundabout and its construction with Square One Shopping Mall will provide opportunities for more efficient consultation process in the future. Through a unique and innovative partnership between the City and Sheridan College, the two parties have constructed a new campus and a community park which will help transform Mississauga's downtown into a vibrant centre and connected community. Here youth, new Canadians and businesses will learn, experience and invest in the people and assets that contribute to the quality of life and success of our citizens and business community. The City has built strong partnerships for this innovative undertaking by leveraging opportunities with Sheridan College Institute, during the college's Phase I implementation, leading to Sheridan College Campus Phase II development, with an expected opening in 2015. Mississauga's more friendly and attractive Civic Centre district continues to enhance its transportation infrastructure and development opportunities through sustainable transportation approaches discussed in this document.

APPENDIX – Mississauga Civic Centre Key Initiatives (Photos)

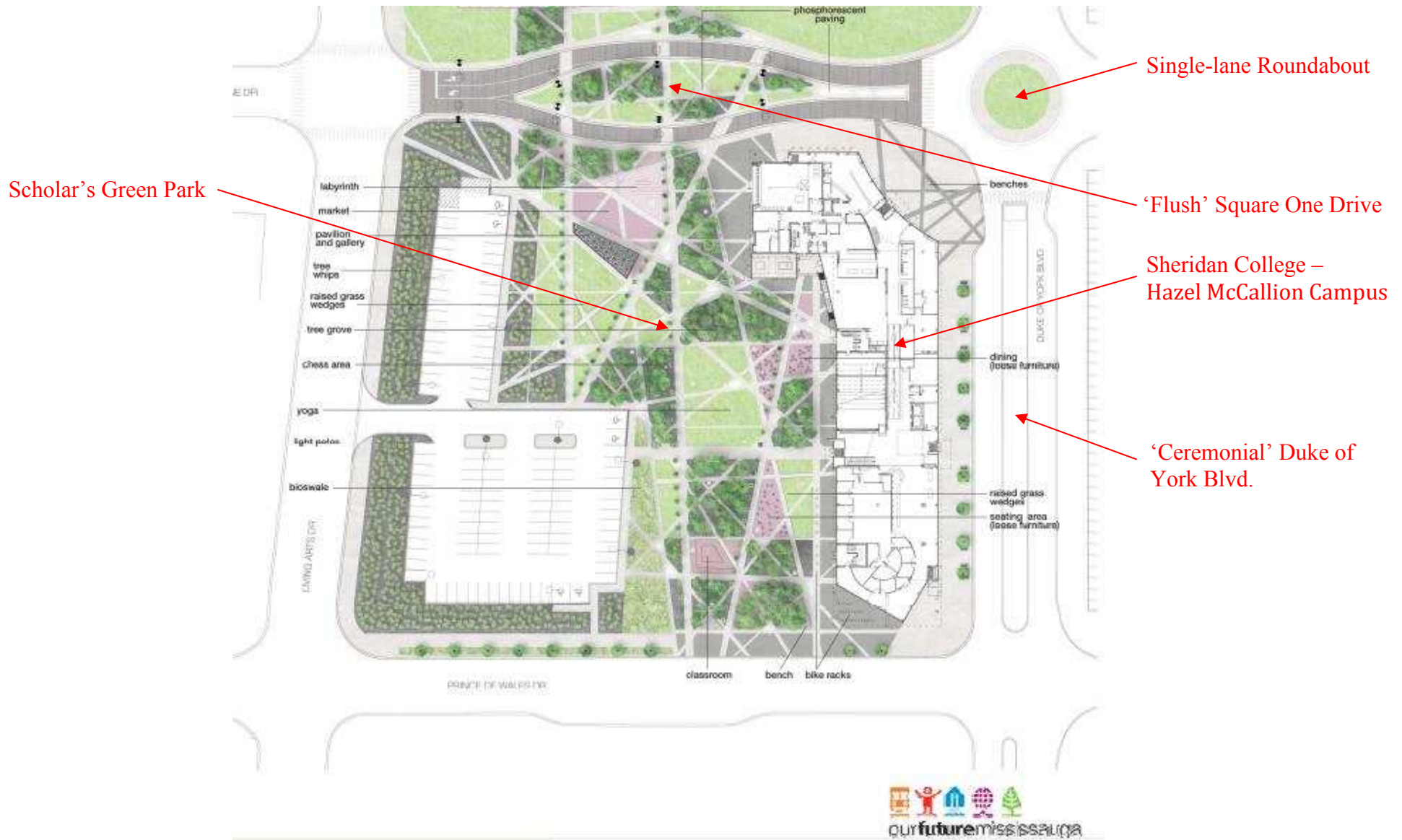


Image 1 - Mississauga Civic Centre Key Initiatives (Summary)



Image 2 - Roundabout at Square One Drive and Duke of York Boulevard



Image 3 - 'Flush' Square One Drive with planted central median



Image 4 - 'Ceremonial' Duke of York Boulevard with on-street parking



Image 5 - Scholar's Green Park



Image 6 - Sheridan College – Hazel McCallion Campus



Image 7 - LED Street lights – LED street lights (Left) provide a more uniform distribution of white light, compared to the yellow-orange hue produced by traditional HPS lighting