

# KING STREET - MIDLAND REJUVENATION



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PREPARED FOR:



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**Engineer**  
For professional engineers in private practice

SUBMITTED BY:

**TATHAM**  
ENGINEERING

in conjunction with **ENVISIONTATHAM**





FIGURE 1: KING STREET AFTER CONSTRUCTION

# PROJECT SUMMARY

The King Street Rejuvenation project was necessitated by significant deficiencies with the form and function of downtown Midland. The Town retained Tatham Engineering and Envision-Tatham to help improve the area road corridors, which included the development of a consistent style and cross section, redesign of all above and below ground infrastructure along King Street, and provision of administration and inspection services during construction. The road was reopened to the public in August 2021.



# INNOVATION



**FIGURE 2: KING STREET DURING CONSTRUCTION**

Over the years, the Town completed many localized improvement projects within the downtown area. While creating a “made in Midland” character, this left a disjointed and inconsistent downtown with limited connectivity between blocks and along surrounding streets. To remedy this, a full-scale rejuvenation project was undertaken, including:

- reconstruction of approximately 850 metres of road (King Street and side streets);
- replacement of sanitary and storm sewers, and watermains;
- replacement of sanitary and water services to property line (often the building foundation given the zero lot frontages);
- new storm services to within fronting buildings (ie. through foundation walls) to facilitate the separation of sanitary and storm flows thus reducing sanitary treatment demands;
- provision of traffic signals, including 2 new installations, to ensure safe crossing opportunities of King Street for downtown pedestrians;
- installation of decorative streetlights, including pedestrian level lighting, to improve safety for pedestrians and motorists alike;
- landscape improvements founded on a Silva Cell soil system; and
- streetscape improvements, including local art installations, within the boulevard areas.



# FLEXIBLE STREET

As several downtown businesses desire outdoor patio and retail space to engage patrons, a key goal of the Town was a functional and flexible road. Movable bollards were implemented to allow parking bays to be converted to patio or retail space while maintaining a separate pedestrian corridor. These “flexible spaces” were designed at the same grade as the boulevard, thereby ensuring ease of access and continuity of accessibility. Given the number and proximity of bollards, a range of parking/patio configurations are possible – from single spaces to entire blocks.



## 170 BOLLARDS INSTALLED



**FIGURE 3: BOLLARD PLACEMENT TO FACILITATE ON-STREET PARKING**



**FIGURE 4: BOLLARD PLACEMENT TO FACILITATE PATIO USE**



# SILVA CELLS

The incorporation of Silva Cells, a proprietary soil cell from Deep Root, provides an integrated tree, soil and stormwater system that will foster the development of large, mature trees within the downtown. The modular system allows space for tree roots to flourish below ground while supporting concrete unit pavers above ground.

Utilizing the natural grade of King Street (downhill towards the harbour), a custom feeder system was constructed to redirect the majority of “first flush” rainwater from the storm sewer system into the soil cells, thus providing a passive tree watering system requiring minimal maintenance to operate. The Soil Cells also provide nutrient and suspended solids removal which enabled the project to forgo large oil-grit separators whilst still meeting environmental targets. With annual/biannual flushing, the system will retain capacity and provide benefit for decades.



**FIGURE 5: CONSTRUCTION OF SILVA CELL SYSTEM**



**FIGURE 6: STREET TREES POSITIONED WITHIN SILVA CELLS**



# COMPLEXITY

As reported in **Simcoe.com**, the project, which is one of the largest endeavours undertaken by the Town, was completed on time and on budget despite proceeding through Covid-19. Originally scheduled as a 2-year construction project, additional resources were added such that the road, underground and surface works were largely completed within a single season, thereby avoiding extended impacts to the downtown businesses. To further mitigate impacts, the Contractor maintained a full-time construction liaison who provided updates to the BIA and the Town, and addressed specific construction concerns on an individual basis.

During the design and construction periods, past uses and practices were brought to light including shortcomings in historical records and as-built information which posed challenges with respect to the identification, location and confirmation of underground services, utilities and infrastructure.



**FIGURE 7: REMNANTS OF BURIED RAILWAY**



Further to a known previous gas station, an abandoned railway was unexpectedly uncovered during construction, necessitating the safe removal and disposal of creosote-treated railway ties and surrounding contaminated soils.



## INFRASTRUCTURE CONFLICTS

Under the initial infrastructure design, dating 80+ years, the King Street storm sewer (north-south) passed through the larger Bayshore Drive trunk sanitary sewer (east-west). This crossing was re-designed and reconstructed using several smaller diameter pipes to ensure compliance with current standards and practice, without compromising system capacities.



**FIGURE 8: SUPPORTING UTILITIES DURING INSTALLATION OF SILVA CELLS**



**FIGURE 9: WELL POINT DEWATERING**

Concrete encased utility ducts were also exposed where as-built drawings identified standard ducts, necessity modifications to the Silva Cell and storm sewer systems during construction.

Lastly, due to the proximity of the harbour, well point dewatering was required to support the infrastructure works.



# SOCIAL AND/OR ECONOMIC BENEFITS



**FIGURE 10: HIGHLY VISIBLE & INTEGRATED MID-BLOCK PEDESTRIAN CROSSING**

The King Street Rejuvenation project converted a routine road and infrastructure reconstruction project into a thorough, well planned, well executed, attractive and sustainable downtown with limited disturbance to residents and businesses. Through creative implementation, the Silva Cells and subdrain system became more affordable through the elimination of the large oil-grit separator originally proposed. The improved tree growth will reduce the amount of stormwater runoff, reduce greenhouse gasses and improve comfort within the downtown area, enabling visitors to stay longer and enjoy all downtown Midland has to offer. Reduction in storm flows and elimination of combined sanitary and storm infrastructure will also lessen the demand on the remaining system and ultimately the treatment plant.

This project has provided the Town residents, businesses and visitors a place to shop, eat, socialize and celebrate for generations. Improvements in accessibility (updated ramps and sidewalks, enhanced pedestrian lighting, consistent grades and pedestrian friendly, flexible streetscape) implemented throughout downtown will ensure all members of the public are able to make use of the amenity. In addition, future events and festivals will be able to make use of the upgraded space to expand their scope and scale, lending to their success and longevity.

The Neezhoday Park, adjacent to the library, is dedicated to Andrew Mixemong, a local elder who tragically passed away in 2012. Neezhoday, Andrew's Ojibwe name meaning two hearts, is a fitting memorial to recognize the significance of Indigenous people to the history of the Town, and the future that is yet to come.

**“ It looks phenomenal. I welcome everyone to get out, shop local and support our downtown merchants. Supporting our small business is now more important than ever. ”**

**SIMCOE NORTH MPP  
JILL DUNLOP**



**FIGURE 11: NEEZHODAY PARK**



# ENVIRONMENTAL BENEFITS

Prior to this project, heavy precipitation events would result in a bypass of the pump station and direct outlet to the harbour, causing potentially negative impacts to the Georgian Bay environment. To address this, Tatham undertook flow monitoring, smoke testing and comprehensive field inspections of all existing infrastructure along King Street to identify locations of cross-connected sewers, abandoned pipes, and sources of infiltration and inflow. Based on these investigations, over 1 km of abandoned/out of service pipe was identified for removal including multiple cross-connections and overflow bypass pipes. To reduce the amount of roof water and ground water entering the sanitary sewer, storm services were provided

to all buildings (through the foundation walls) along King Street to allow for internal adjustment to roof water leaders and sump discharge. The combination of these approaches combined with minor pump station upgrades and the implementation of Silva Cell systems will drastically reduce the frequency of bypass events.



**FIGURE 12: STORM SEWER THROUGH FOUNDATION WALL**



**FIGURE 13: TREE PLANTED WITHIN SILVA CELL SYSTEM**

The use of Silva Cells with stormwater fed subdrains allows for an efficient and environmentally friendly method of both watering and sustaining the boulevard trees and improving quality of stormwater runoff. As stormwater travels through the soil cell system, dissolved nutrients, hydrocarbons and total suspended solids are removed through the slow process of infiltration and absorption. The growth of healthy and mature trees will in turn lead to increased evapotranspiration and interception of rainfall, reduced levels of greenhouse gasses and improved microclimates, particularly during the summer months, within the downtown area.

**100 STREET TREES PLANTED**



# MEETING CLIENT'S NEEDS

While the client for this project was the Town of Midland, the downtown businesses and residents had an equally important role in helping to establish the initial project needs, objectives and philosophy. Through various public consultation events and workshops, and collaboration with Town Council, Town staff and a Project Steering Committee (with representation from Town committees, Council and the BIA), consensus was achieved regarding the key project elements and design criteria. As project milestones were achieved, confirmation of the respective elements and criteria through ongoing consultation ensured continued support for the project.

“The goals, when we sat down at the table, were to make this pedestrian friendly with a flexible streetscape so we could change the functionality quickly. We also wanted to reduce pressure on the wastewater system and eliminate overflow. We have met all of those goals.”

**MIDLAND MAYOR  
STEWART STRATHEARN**



**FIGURE 14: KING STREET BEFORE CONSTRUCTION**

Limiting the impact of construction on businesses was a significant priority throughout the design and construction periods. In this regard, the Tender clearly detailed the Town's objectives and desires, and utilized a proposal format whereby contractors were required to provide details with respect to construction, traffic and access management including the provision of a liaison person. Further to these measures, improvements to rear access laneways and development of comprehensive signage aided this effort.

The Town of Midland recently completed a **video to share the downtown improvements**, demonstrating the overall satisfaction and pride of their new downtown.



**FIGURE 15: KING STREET AFTER CONSTRUCTION**