



# Clark Avenue Multi-Modal Transportation Corridor Retrofit

## Project Overview

# HON. MAURIZIO BEVILACQUA P.C. MAYOR

 Our Clark Avenue Project serves as a catalyst for future transportation developments here in our community.

It demonstrates our focus to advance connected, active and multi-modal transportation and transit.

Working in collaboration with York Region, we remain committed to improving and building a more integrated transportation network in our city and beyond.

Vaughan leads with innovation at the forefront.

 [View full video message from Mayor Bevilacqua](#)



## CLARK AVENUE PROJECT

# Content

- Project Overview | 1
- Outcomes | 3
- Innovation | 7
- Transferability | 9
- Acknowledgements | 11
- Appendix



## CLARK AVENUE PROJECT

# Project Overview



The Clark Avenue Multi-Modal Transportation Corridor Retrofit Project has become a catalyst for high-quality, active, and multi-modal transportation projects in the City of Vaughan.

Spanning 4.5 kilometres, the project supports an evolving City with upgraded and cost-effective transportation infrastructure.

- 8,500m<sup>2</sup> of pedestrian and accessibility improvements
- 4.5kms of in-boulevard cycling facilities, the City's first retrofit cycle tracks
- Intersection and transit stop improvements at 3 locations to accommodate the potential future expansion of bus rapid transit along Clark Avenue. The project scope also included transit stop upgrades at 29 other locations (on behalf of York Region and York Region Transit)
- 16 signalized intersection and 12 stop-controlled intersection/commercial entrance operational improvements
- 80,000m<sup>2</sup> pavement rehabilitation
- 1 culvert remediation

**This project has received a combined \$2.15M in funding from regional and provincial governments in recognition for its contributions to sustainable mobility.**

It has been identified as a key project in support of advancing active and multi-modal transportation, while ensuring operational and road safety improvements, in the [2018-2022 City of Vaughan Term of Council Service Excellence Strategic Plan](#).



**View the Clark Avenue Project Video**

# CLARK AVENUE PROJECT

## Project Overview



**pedestrian & accessibility improvements**



**in-boulevard cycling facilities**



**new bus rapid transit stops & upgrades**



**signalized & stop-controlled intersection improvements**



**pavement rehabilitation**



**culvert remediation**



Refer to Appendix (pages A7 to A11) for Project Photo Gallery

## Community Feedback

I think the City is doing excellent work with the Bathurst, Centre, and now Clark bike paths. They are so much better than on road painted bike lanes.

| M.M., Vaughan Resident

I'm happy about the project coming along, as a resident of the area I'm looking forward to being able to use these new bike paths.

| P.G., Vaughan Resident

## Outcomes

### 1. CONNECTED & INTEGRATED TRANSPORTATION NETWORK

**Increased prominence and accessibility of sustainable transportation for all ages and abilities with physically separated pedestrian and cycling infrastructure and transit improvements**

- 8,500m<sup>2</sup> of pedestrian and accessibility improvements
- 4.5kms of new in-boulevard cycling facilities (cycle tracks)
- Improvements at 3 intersections to accommodate the potential future expansion of bus rapid transit along Clark Avenue, and 29 other transit stop upgrades
- 16 signalized intersection and 12 stop-controlled intersection /commercial entrance operational improvements for pedestrians and cyclists


The sidewalk and accessibility improvements, new cycle tracks and transit upgrades provide increased opportunities for citizens of all ages and abilities to walk and ride bikes, supporting active lifestyles by conveniently connecting people, places, and neighbourhoods.

**Expanded on other recent and planned transportation investments in the area**

- Expands upon other major transit and cycling network improvements in the area including the existing 5.5kms of dedicated bus lanes, raised cycle tracks and wide sidewalks in the area opened in January 2020 as part of an overall 12.6km regional bus rapid transit system (VivaNext Rapidway Project on Centre and Bathurst Streets)
- Connection to the proposed 7.4km subway extension and Clark Avenue Subway Station (Yonge North Subway Extension Project) and intermodal hub at the easterly limit which is York Region's top transit priority by 2030
- Connection to a 15km trail (Bartley Smith Greenway) and future 100km Vaughan Super Trail at the westerly limit
- Integration of future cycling facilities at three cross streets (New Westminster Drive, Atkinson Avenue and Hilda Avenue) to avoid intersection re-work when these facilities are implemented
- Connection to existing Dufferin Street Buffered Bike Lanes as well as other planned cycle tracks and buffered bike lanes

**Connected surrounding communities to parks, libraries, community centres, shopping centres, places of worship, schools, major trail system and future subway extension**

- Trail System (Bartley Smith Greenway & Vaughan Super Trail) at westerly limit
- Future subway extension and Clark Avenue Subway Station at easterly limit
- 1 synagogue
- 2 libraries and 2 community centres
- 2 district parks
- 3 schools
- 5 mixed-use residential developments
- 8 commercial and service developments



**There are 25 destinations which now have comfortable & direct pedestrian & cycling access from Clark Avenue**



**Refer to Appendix (pages A1 to A4) for Destination Maps**

# CLARK AVENUE PROJECT

## Outcomes



**NEW BIKE PATHS  
COMING SOON**

Cycling  
Improvements  
Coming to Clark  
Avenue West

VAUGHAN WSP

**New bike paths  
coming soon**

Paths along Clark Avenue  
will create greater  
connections for  
the community

[www.vaughan.ca/news/Pages/New-bike-paths-coming-soon.aspx](http://www.vaughan.ca/news/Pages/New-bike-paths-coming-soon.aspx)

## 2. STRONGER RELATIONSHIPS WITH STAKEHOLDERS & CITIZENS FOR FUTURE TRANSPORTATION PROJECTS

**Identified common goals, aligned priorities, and integrated transportation plans of various City departments, upper-tier municipality, local transit agency, adjacent landowners, and developers, paving the way for future transportation projects**

Integrated six different priorities and projects into one assignment, reducing rework, costs, and public inconvenience.

- Sidewalk, accessibility improvements and cycle tracks as per the Active Transportation Program
- Road Rehabilitation Program
- Transit improvements on behalf of the local transit agency
- Intersection and operational improvements on behalf of upper-tier municipality
- Culvert remediation (a culvert along the corridor was identified to be in poor condition during the construction phase and a change order was issued for immediate remedial measures)
- Traffic signal upgrades required for a new residential development (delivered under the scope of this project on behalf of the developer to avoid construction conflicts and meet occupancy timelines)

Projects like that on Clark Avenue go a long way to protecting vulnerable users, supporting active transportation, and providing a connected network for our citizens to access Vaughan in more sustainable and healthy means.

| York Region Cycling Coalition (YRCC)

# CLARK AVENUE PROJECT

## Outcomes

This renewal was a transformational, extraordinary infrastructure project – one of the largest such projects ever for Ward 5 – Thornhill. Ultimately, this complex multi-faceted project resulted in the creation of a complete street that meets the needs of the immediate residential community and allows movement of public transportation, private vehicles, bicycles and pedestrians in a safe and pleasant environment. It is not only an efficient street, but one that is pleasant to be on whatever your means of travel.

| Alan Shefman, Ward 5 Councillor, City of Vaughan

### Ongoing communication and coordinated work to minimize disruption to the local community that has seen significant changes and construction activity in recent years

- Communicated project updates and construction activities to citizens on a regular basis including start and stop times, location, lane closures and contact details and progress
- Worked with the local Councillor to minimize disruption to the local community by minimizing nightwork, minimizing sidewalk and vehicular lane closure and coordinating construction activities around religious holidays for citizens
- The City is planning a ribbon cutting ceremony in June 2021 to celebrate the completion of this significant project with the community and offer education on how to use the new cycle tracks and navigate intersection improvements
- Enhanced wellness and quality of life for citizens of all ages and abilities through safe and comfortable mobility, increased opportunities for walking, cycling and transit, conveniently connecting people, places, and neighbourhoods in support of active lifestyles





# CLARK AVENUE PROJECT

## Outcomes

The City of Vaughan collaborated with the Regional Municipality of York's Transportation Services Department, through its Capital Planning and Delivery Branch and York Region Transit, to advance intersection and transit stop improvements at three locations on Clark Avenue. These improvements accommodate the potential expansion of bus rapid transit services to the proposed Yonge Street Subway extension. Upgrades were also completed at 28 other existing transit stops, many of which were located in physically constrained areas along the corridor. The City of Vaughan worked very closely with the Region to ensure the design and construction of each transit stop safely connected with cycling facilities along Clark Avenue, as well as meeting the current and future on-street operational needs.



| York Region

### 3. DELIVERY & FISCAL EFFICIENCIES

**Advanced construction of planned intersection and transit improvements by two years and saved approximately \$1M by combining municipal and regional projects and coordinating work**

To reduce rework, costs and public inconvenience, the City of Vaughan partnered with York Region to consolidate its needs for intersection and transit stop improvements required to accommodate the potential expansion of bus rapid transit on Clark Avenue.

By consolidating mobilization and demobilization activities, eliminating re-work or throwaway costs and capitalizing on lower unit costs with increased quantities, a combined savings of approximately \$1M could be realized for the City and the Region.

**Capitalized on lower traffic volumes and weather conditions to accelerate the completion of the project in a compressed six-month schedule, despite coordination requirements**

The original contract, awarded June 2020, set a completion date for the cycle tracks by December 2020 (as per funding requirements) and road rehabilitation work completion by August 2021. Due to the COVID-19 pandemic and resulting lower traffic volumes, it was identified through the monthly schedule review, that work could be accelerated well ahead of schedule with multiple tasks occurring concurrently. With the advanced completion of the cycle track and favourable weather conditions in November, the road rehabilitation successfully proceeded meeting minimum standard temperatures for asphalt paving. Within 3 weeks, milling and paving operations were complete. Substantial performance was achieved in early December for the project including the cycle tracks and road rehabilitation work.

**Leveraged multiple funding sources from all levels of government and development charges to advance the project**

- \$908K from the 2017 Ontario Municipal Commuter Cycling Program (OMCC)
- \$1.14M from the 2020 York Region Pedestrian & Cycling Municipal Partnership Program (MPP)
- \$4.7M Development Charges as a result of the City successfully including over \$100M for pedestrian and cycling specific projects and Transportation Demand Management (TDM) programs in the 2018 Development Charges Bylaw Update

**Applied best practices to successfully advance the project through the various phases**

- Effective project management practices to monitor, report on status, risks and issues, engage stakeholders and strong project governance attributed to the success of this initiative.

# Innovation

## 1. CONVENIENT & COMFORTABLE TRAVEL OPTIONS

**Improved mobility for all street users.** Physically separated spaces for people travelling by foot, bike, bus, or car, making street-level interactions a safer and more predictable experience

## 2. DESIGN EXCELLENCE

**Lane narrowing and reduced turning radii** resulted in significant technical benefits which in turn realized substantial cost savings and facilitated rapid implementation.

- 1.8m total average pavement width narrowing, increased boulevard space by 8,100m<sup>2</sup>
- Decreased operating speeds by up to 20km/hr closer to posted speed limits while operational improvements maintained overall motorist travel times
- Minimized impacts to existing trees along the corridor and avoided the removal of 42 mature trees
- Eliminated conflicts with over 60 existing utility poles and light standards avoiding the need for relocation or otherwise substandard cycle track design
- Offset the increased impervious area from the added cycle tracks, eliminating the need for Ontario Ministry of Environment, Conservation and Parks (MECP) Environmental Compliance Approval and any requirements for storm sewer upgrades and storm water management measures.

**Intersection improvements** decreased exposure and risk for people walking and biking. In the last 10 years, cities across Canada have significantly expanded their pedestrian and cycling networks, opening the door for a dramatic increase in the number of people walking and biking. Though intersections remain a crucial component in developing safe and comfortable infrastructure, they are often an underdeveloped part of the network. The Clark Avenue Project included:

- Signal upgrades, overhead cyclist detection on all approaches, accessible standalone pedestrian and cyclist push button poles and pedestrian signal countdown displays
- Protected intersection elements and cross-rides at major intersections to accommodate future connecting in-boulevard cycle tracks
- Reduced pedestrian and cyclist crossing distances through curb radii reductions and high visibility markings including green surface treatment cross-rides and zebra marking crosswalks
- Marked roadway level crossings at driveways and minor intersections to improve safety
- Piloting of 'no right turns on red' signage, advance left-turning signals and a seven-second advance pedestrian signalling system at two regional intersections undertaken separately by the Regional Municipality of York

**Side inlet catch basins** provided a cyclist-friendly design while avoiding the need to relocate almost half of the 90 catch basins within the project limits



Refer to Appendix (pages A5 to A6) for Design Extracts

# Innovation

## 3. FLEXIBILITY FOR THE FUTURE

### **Maximized in-boulevard cycle track width to flexibly accommodate emerging micro-mobility in the future**

The cycle track was designed as a 1.5m dedicated one-way asphalt path with a 0.6m coloured concrete buffer adjacent to the 0.2m curb providing a 2.3m clearway to flexibly accommodate emerging micro-mobility in the future that may require more operating width. This was possible by narrowing the vehicular lane widths in accordance with current City of Vaughan and Transportation Association of Canada (TAC) standards.

### **Integrated planned cycling facilities within the intersections of three cross-streets to provision for future connecting cycle tracks**

The City's Pedestrian and Bicycle Master Plan identifies a priority network of physically separated pedestrian and cycling infrastructure. The Clark Avenue Project integrated planned cycling facilities within the intersections of three cross-streets to provision for future connecting cycle tracks. This forward thinking will eliminate the need for intersection rework and facilitate the seamless expansion of the cycle track network in the Thornhill community.



 Refer to Appendix (pages A7 to A11) for Project Photo Gallery

# CLARK AVENUE PROJECT

## Transferability



The process, achievements, innovations, and lessons learned in this project can be applied to other Canadian municipalities.

**The Transportation Association of Canada's (TAC) Geometric Design Guide for Canadian Roads (GDG) and the 2021 Ontario Traffic Manual (OTM) Book 18: Cycling Facilities, used for this project, are fundamental reference documents for transportation design practitioners in Ontario and across Canada.**

Many municipalities are advancing sustainable mobility projects and experiencing challenges, often space constraints, associated with retrofitting existing roadways to incorporate active and multi-modal transportation. The third edition of the GDG, released in 2017, included guidance to support narrower vehicular lane widths in urban areas as well as new pedestrian and cycling integrated design focused chapters.

The 2021 OTM Book 18 puts emphasis on designing facilities for all ages and abilities and includes progressive solutions for mitigating conflicts between different road users. As detailed in the innovation section, the new guidance was used to narrow lane widths and reduce turning radii as well as develop design solutions to meet the needs of a range of road users for the Clark Avenue Project and yielded significant operational, environmental and fiscal benefits that can be realized by other Canadian municipalities as well.



## CLARK AVENUE PROJECT

# Transferability



### **All Canadian municipalities have a variety of stakeholders and partnerships that can be leveraged to build seamless multi-modal transportation systems**

All Canadian municipalities have other levels of governments with road allowances that contain infrastructure owned or operated by different stakeholders and agencies. By identifying common goals, aligning priorities, and integrating transportation plans and capital programs of City departments, upper-tier governments, local transit agency, adjacent landowners, etc. Canadian municipalities can achieve planning, design, and implementation excellence in building seamless multi-modal transportation systems.

### **Projects, like the Clark Avenue Project, can be used to deliver on many federal and provincial mandates related to active and multi-modal transportation**

Canadian municipalities have a responsibility to support provincial and federal mandates. The Clark Avenue Project highlights how other Canadian municipalities can use active and multi-modal projects to deliver on the following provincial and federal mandates:

- Turning investment into infrastructure assets for the community, creating long-term economic growth and attracting new investment.<sup>1</sup>
- Reducing carbon emissions and creating sustainable communities. With the Transportation sector contributing 25% of Canada's emissions, active and multi-modal transportation projects are critical to helping reduce carbon emissions.<sup>2</sup>
- Mitigating congestion and making it easier for people to travel across urban growth areas
- Increasing land value around active and multi-modal transportation corridors and creating sustainable communities
- Supporting active and healthy lifestyle. In 2015, over 7.8 million Canadians 18 years and older were living with obesity. Changing the built environment is a cost-effective way to increase physical activity and decrease obesity rates.<sup>3</sup>

<sup>1</sup> 2016 Investing in Canada Plan

<sup>2</sup> 2020 Federal Climate Plan

<sup>3</sup> 2017 Chief Public Health Officer's Report on the State of Public Health in Canada



Canada 

Ontario 

# CLARK AVENUE PROJECT

# Acknowledgements



**WSP Canada Inc. | Design**



**Four Seasons Site Development Ltd. | Construction**



**Province of Ontario**



**York Region**



**York Region Transit**





[vaughan.ca/ClarkAve](http://vaughan.ca/ClarkAve)

## Infrastructure Development City of Vaughan

