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Project Summary

The National Capital Commission retained Morrison Hershfield to develop an innovative signalization layout to provide pedestrians and cyclists a safe crossing to the Rideau Canal and downtown area. High speeds and large traffic volumes made crossing difficult and potentially dangerous without a creative crossing solution. The configuration uses new features to improve the safety and connectivity of the crossing for active transportation users at this important node, creating an increase in cycling and pedestrian usage.



Innovations

The intersection of Colonel By Drive and Clegg Avenue is a Tee intersection that ends at the Rideau Canal. This intersection had various issues with large traffic volumes travelling at high speeds, lack of sidewalks, no signalized crossing, and pedestrians and cyclists competing for a safe route to and from the multi-use pathway along the Canal.

Morrison Hershfield developed an innovative signalization layout that added cross-rides, which allow cyclists to remain on their bikes and safely cross through intersections. They are generally connected to dedicated cycling facilities such as segregated bike lanes, cycle tracks and other cycling infrastructure. An East-West cross-ride was designed to allow cyclists access to and from the Canal multi-use pathway at Colonel By Drive. A North-South cross-ride was also design to maintain connectivity and improve the crossing safety at Clegg Avenue. AODA-compliant crosswalks were created at all legs of the intersection to provide pedestrians safer access. The cross rides are some of the first in the City of Ottawa, and the configuration of the pedestrian and cycling links to achieve the required connectivity is unique in the City.

The unusual situation resulting from the proximity of the two intersections combined with the desire lines of the active transportation users required a unique solution. At the outset, it was acknowledged by all stakeholders that the current use patterns required users to make unsafe maneuvers and the desire lines to the Canal were blocked by the traffic on Colonel By Drive.

In order to segregate pedestrians and cyclists while optimizing the flow along the desire lines, the final solution combined the active transportation corridor along Echo Drive with the signalized intersection at Colonel By Drive and Clegg Street accommodating all modes of transportation.

A bidirectional cross-ride was placed on Clegg Street to accommodate cycling traffic on Echo Drive. The cross-ride connected both legs of Echo Drive as well as uni-directional cycle tracks on each side of Clegg Street.

Uni-directional cross-rides were used to cross Colonel By Drive and crosswalks were used on all three legs of the signalized intersection. This allowed segregation of active transportation users on a small footprint while providing movement along all desire lines. Providing these facilities transformed this unsafe, dysfunctional area into an active transportation mode providing high mobility and safe crossings along all desire lines.



Complexity

The proximity of Echo Drive rendered the design significantly more challenging. It was too close to be treated as a separate intersection, and including it would be highly undesirable for both implementation and usability. The south leg of Echo Drive was already closed to vehicular traffic, which inspired the idea of also closing the north leg. This allowed better focus on improving connectivity for active transportation users. Innovative concepts were developed by Morrison Hershfield and presented to the public.

The intersection represented additional challenges being a junction between municipal and federal roads. Throughout the process, Morrison Hershfield had to balance the desires of both owners in order to develop a solution that would not only meet their needs but those of the general public as well.

Additional challenges included a major reconstruction project planned on a nearby arterial road. The preliminary design, detailed design, approvals and construction all had to be completed within a nine-month period so that the intersection improvements could be in place to handle the additional diverted traffic generated by this other construction. This area does not allow large vehicles, but due to nearby construction it was proposed that buses detour through the intersection during the reconstruction project. As a result the intersection design had to accommodate buses in the short term. Since the intersection design requirements for larger vehicles such as buses are not conducive to urban design, particularly urban intersection design, with high active transportation traffic a solution to accommodate both had to be developed.



Social and/or Economic Benefits

This project, although focused on a single intersection resulted in an increase in the quality and safety of three active transportation corridors and allowed for much easier and safety interconnectivity between these corridors. In addition the community immediately east of Colonel By Drive now has a safe, convenient access point to the Rideau Canal and the linear park lands adjacent to it. This increase in safety and convenience for active transportation was achieved without negative impact on vehicular traffic mobility or safety. This project produced an important active transportation node that supports both commuter and recreational uses.

The intersection also provided an important transit detour which would not have been possible without both the physical design of the intersection to enable buses to use it but also the accelerated planning, design, approvals, and construction schedule that enabled the infrastructure to be in place prior to the commencement of the adjacent reconstruction project. The alternative transit route would have required buses to travel on local, residential streets that were not intended for bus traffic; the result of having to use that alternative detour would have been negative impacts to the residential neighbourhoods from both noise and traffic, a reduction in the transit service on the affected routes due to delays, and increased costs resulting from the long term use of the local roads by a high volume of buses.



Environmental Benefits

Improvements to this intersection have provided many intentional and unintentional environmental benefits. With the installation of the signalized intersection, residents, commuters and tourists are provided with a safe crossing to the Canal multi-use pathway and downtown core of Ottawa. With increased traffic, and LRT construction there has been an increase in cycling commuter traffic through this intersection to get to the downtown core.

The design of this intersection was also intended to accommodate pedestrian and cycling traffic from the planned future foot bridge intended to cross the Canal at this location. This crossing will connect the multi-use pathways on either side of the Canal, opening up the two neighbourhoods.

There is a large Oak tree in the North-East corner of the intersection that the National Capital Commission expressed their concern with its proximity to the road and potential removal to accommodate the new sidewalk and cross-ride. Morrison Hershfield was not only able to modify the intersection design to save the tree but also install turf pavers to allow for grass to regrow.

Another feature to this project is the interconnected traffic signals. The design and use of these signals allow control of signal timing and provide a reduction in traffic delays and unnecessary idling.



Meeting the Client's Needs

The National Capital Commission initiated this project to address safety concerns associated with active transportation users wanting to cross Colonel By Drive to access the Rideau Canal pathway and linear park. The City of Ottawa was initially involved as a stakeholder being a property owner and the operator of the proposed traffic signals; the City of Ottawa then recognized the advantages of having these facilities in place prior to the Main Street reconstruction in order to accommodate diverted traffic and as a potential bus detour as well as solving safety concerns for cyclists on Echo Drive crossing Clegg Street. The Morrison Hershfield design team was challenged to find a design solution for the multiple issues in very short timeline and then further challenged when they were asked to accommodate buses in the new intersection design. The team developed many design alternatives, worked collaboratively with all of the stakeholders including the public such that a final design concept was found that met all parties' requirements, and finalized the design with all necessary approvals such that the project was completed prior to the start of construction on Main Street. Both the National Capital Commission and the City of Ottawa were extremely satisfied with the result and the community association prepared a letter commending the design.

Additional Photos





