

Development of the Assiniboine Avenue Bikeway in Winnipeg, Manitoba

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ABSTRACT

In 2009, the City of Winnipeg identified Assiniboine Avenue for the development of an active transportation facility as part of a larger project entitled “Building the Network”. The route provides an alternative to Broadway and St. Mary Avenues to access downtown Winnipeg, with traffic using the north- and southbound one-way street system to get to their destinations in the downtown.

Assiniboine Avenue is currently one of the most highly utilized roads for cycling in Winnipeg due to its location downtown and its proximity to the most densely populated neighbourhood in the city. The route serves the densely populated residential, commercial and office land uses of the South Broadway Community. Assiniboine Avenue also provides access to riverfront property along the north side of the Assiniboine River in Winnipeg. Assiniboine Avenue is situated between the Manitoba Legislative Building and The Forks, a large tourism and recreation destination.

The paper examines the alternate options developed, a determination of their traffic impact on Assiniboine Avenue and adjacent streets and the evaluation process used to decide the recommended option. The paper also examines the development of design elements required to ensure that the neighbourhood was still serviced by emergency services and large trucks such as moving vans.

This paper tracks the process of converting this urban collector street servicing significant pass through and short-cutting traffic into the city’s first ‘cycle track’ with conversion of sections to one-way vehicle operation, diversion of through traffic and creation of a showcase project for active transportation.

INTRODUCTION

In Winnipeg, and in communities across Canada, the demand for active transportation has grown significantly in recent years. Active Transportation (AT) is becoming more attractive to Winnipeggers looking to cut transportation costs, lessen their carbon footprint and improve their health and quality of life. These “human-powered”, environmentally friendly modes of transportation are increasingly utilized and accepted beyond recreation and leisure, and, even in a city blanketed in snow for six months a year, are becoming commonplace for commuting to work, school, shopping or other destinations

Until 2010, public cycling facilities in Winnipeg have included shared roadways and routes, sharrows, widened curb lanes, bike lanes, multi-use pathways, Sunday closures, regulatory signage, and improved bicycle locking and storage facilities. But, the approval of a 2005 Active Transportation Study (1) commissioned by the City and its subsequent Implementation Plan (2), became the impetus for not only new AT routes throughout the city, but also the introduction of new and innovative active transportation facilities to Winnipeg.

As part of these new plans, the City identified five proposed bikeways within its AT Network to undergo a Traffic Impact Study, Community Profile and Community Facilitation Project (3). The City engaged Marr Consulting Services along with sub-consultants Scatliff+Miller+Murray and Stantec to undertake the project and work with the City’s engineers, planners, active transportation coordinator and an Active Transportation Advisory Committee. The project was branded “Building the Network”; its intention to more fully engage the public in planning active transportation initiatives.

This paper focuses on one of the projects that was part of “Building the Network”, the conversion of Assiniboine Avenue into a showcase cycling facility in downtown Winnipeg.

BACKGROUND ON ASSINIBOINE AVENUE

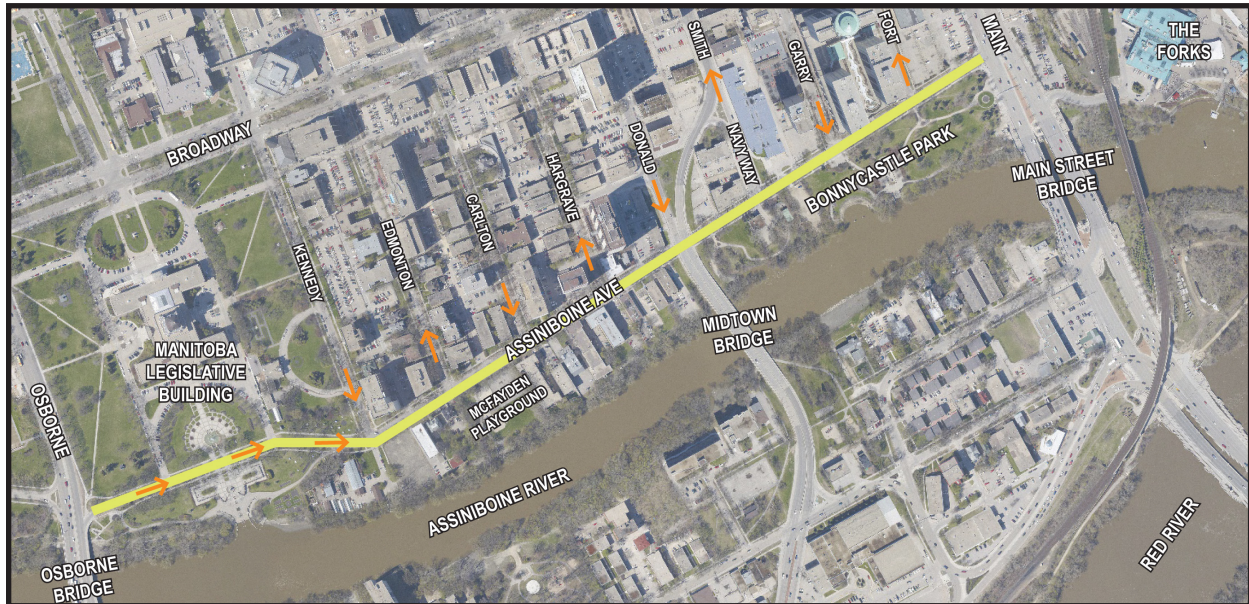


Figure 1: Assiniboine Avenue in downtown Winnipeg

Assiniboine Avenue is situated along the southern limit of Winnipeg's downtown, running parallel to the Assiniboine River and Broadway Avenue. The route starts at Osborne Street on the west side of the Manitoba Legislative grounds. This first section operates as a one-way road and provides access from northbound Osborne Street to parking lots on the grounds of the Manitoba Legislature and to the local street network which stretches from Kennedy Street to Main Street.

East of Kennedy Street, Assiniboine Avenue provides access to high density residential development in the neighbourhood as well as to the local street network serving the southern limits of downtown Winnipeg. However, Assiniboine Avenue also attracts non-local vehicular traffic wishing to avoid the higher volume parallel routes of Broadway, St. Mary Avenue and York Avenue.

The local streets that intersect Assiniboine Avenue for the most part operate as one-way pairs. From west to east:

- Kennedy Street: southbound
- Edmonton Street: northbound
- Carlton Street: southbound
- Hargrave Street: northbound
- Navy Way: two-way, north- and southbound as it provides access from the Midtown bridge to Assiniboine Avenue, and from Assiniboine Avenue to northbound Smith Street, a major northbound arterial paired with southbound Donald Street.
- Garry Street: southbound
- Fort Street: northbound

Assiniboine Avenue terminates at Main Street with all eastbound traffic required to turn right onto southbound Main Street.

The route serves residential, commercial and office land uses along the route. There is on-street parking along most of the south side of the route. A total of 67 stalls are provided along with several loading zones and restricted parking areas. The on-street parking provided on Assiniboine Avenue is considered an important aspect of the street as many residences and businesses have limited off-street facilities due to the age of the neighbourhood. The street pavement is approximately ten metres wide and sidewalks are located on both sides.

Assiniboine Avenue is also located adjacent to several public spaces and recreational facilities, including:

- Manitoba Legislative Grounds
- McFadyen Playground
- Bonnycastle Park
- Assiniboine Riverwalk

SELECTION OF ASSINIBOINE AVENUE AS AN ACTIVE TRANSPORTATION ROUTE

Assiniboine Avenue is on the desire line for bike commuters headed downtown from Osborne Village (the highest density residential neighbourhood in the city) and neighbourhoods farther south, as well as from Wolseley and neighbourhoods farther west. It is well used by cyclists year round as it is a relatively quiet street and offers a good AT alternative to Broadway Avenue, the nearest parallel route, which is poorly suited to cycling due to heavy traffic volumes and signalization.

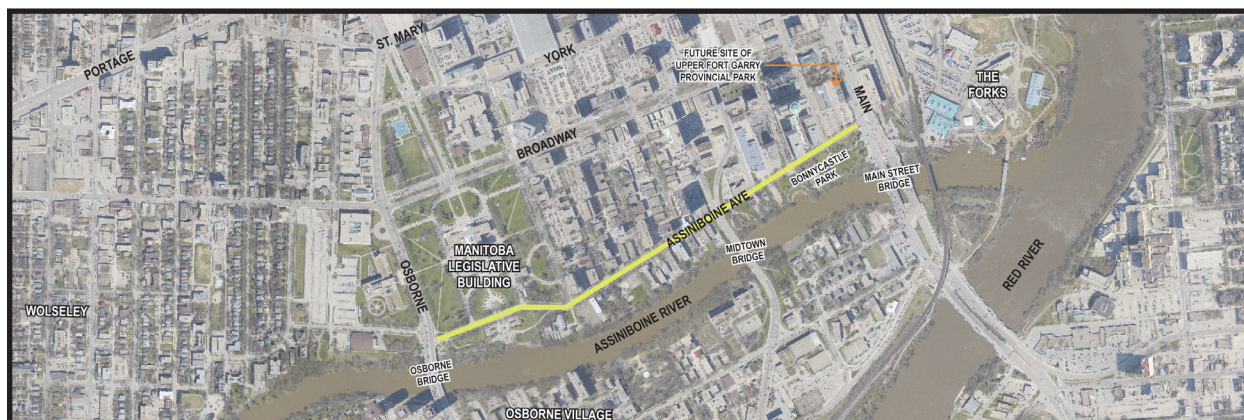


Figure 2: Assiniboine Avenue in relation to surrounding neighbourhoods of Osborne Village and Wolseley

Assiniboine Avenue also links The Forks and the Manitoba Legislative Building, two major Winnipeg attractions, and will soon connect to the new Upper Fort Garry Provincial Park.

Project consultants identified Assiniboine Avenue as an ideal site for the creation of a showcase Active Transportation route in Winnipeg. The relatively low traffic volumes, wide pavement, current high levels of use by cyclists and pedestrians and stunning old Elm tree canopy were thought to be the perfect combination of attributes for such a facility. The system of one-way streets that start or terminate at Assiniboine Avenue also create great connections to the downtown of Winnipeg. Many of these streets are already designated as cycle routes with painted bike lanes and travel lanes adjusted to accommodate cyclists.

In identifying Assiniboine Avenue as a premier active transportation route, the project team also noted several issues that would make the transition from a local collector street and cut-through route to a true cycle and pedestrian friendly facility difficult:

- maintaining access and understanding traffic flow to properties with private driveways on the south side of Assiniboine Avenue
- large mature street trees prevent pavement widening, or construction of off-road facility
- on-street parking inventory critical to residents in area
- moving van and delivery vehicle access to buildings
- minimizing transit route disruption
- residential buildings catering to physically handicapped demand universal accessibility design and Handi-Transit access

ACTIVE TRANSPORTATION TREATMENT OPTIONS FOR ASSINIBOINE AVENUE

As a result of the specific advantages and constraints of the Assiniboine Avenue corridor, four options were identified by the City (3) for additional study:

Option 1 – Closure of Assiniboine between Main and Fort

The complete closure of Assiniboine Avenue at Main Street to divert all of the traffic using the Assiniboine Avenue intersection at Main Street to Broadway Avenue.

Option 2 – Bike Lanes

The removal of all parking on Assiniboine Avenue to allow for painted bike lanes on the pavement.

Option 3 – One-way Conversion

Change Assiniboine Avenue to a one-way eastbound operation to reduce traffic.

Option 4 – Bike Route Signage

Sign Assiniboine Avenue as a bike route.

PRELIMINARY ANALYSIS

An initial analysis was conducted on each of the options to determine what high-level impacts may be relative to the established evaluation criteria. The criteria included:

- Safety
- Connectivity and enhancement of network
- Neighbourhood impacts and acceptability
- Traffic impact (emergency vehicles, transit)
- Appropriateness: cyclist needs
- Pedestrian benefit, transit connections
- Traffic Impact (private vehicles)
- Parking
- Visibility (promoting AT)
- Innovation
- Aesthetics and seasonality
- Overall preference and why
- Cost

The primary concern expressed about these options was the impact that a change in traffic patterns would have on Broadway, which already had some capacity concerns under existing conditions. The project team reviewed the existing traffic patterns on Assiniboine Avenue, Broadway and all north/south streets between and including Osborne Street and Main Street to identify the existing traffic capacity issues. Other concerns were related to the loss of on-street parking in the neighbourhood, improvement in accessibility and impact on future and existing development in the area.

Specific analysis of each initial option showed the following:

Option 1 – Closure of Assiniboine between Main and Fort

This option was dismissed after an initial assessment of traffic diverted to Broadway. The north-bound left turn at Broadway was already over capacity and the additional traffic from the closure of Main at Assiniboine would exacerbate the problem even more.

Option 2 – Bike Lanes

While there was no change in traffic flows anticipated, approximately 67 parking stalls would be affected on the south side of Assiniboine Avenue. The impact this would have on the local residents and businesses was deemed to be unacceptable and not supported politically.

Option 3 – One-way Conversion

This would divert vehicles that would normally make a northbound left turn from Main Street onto Assiniboine Avenue, up to Broadway or St. Mary Avenues.

Option 4 – Bike Route Signage

Adding signage would have no effect on the traffic flows; however it would do little to provide an optimized bike route. It essentially left the road the way it was.

NEW TREATMENTS: ONE-WAY LOOPS AND CYCLE TRACK

After a preliminary review of potential impacts and limitations of the four initial options, the project team felt other treatment were necessary. One treatment was the creation of a series of one-way traffic loops between Kennedy and Hargrave Streets.

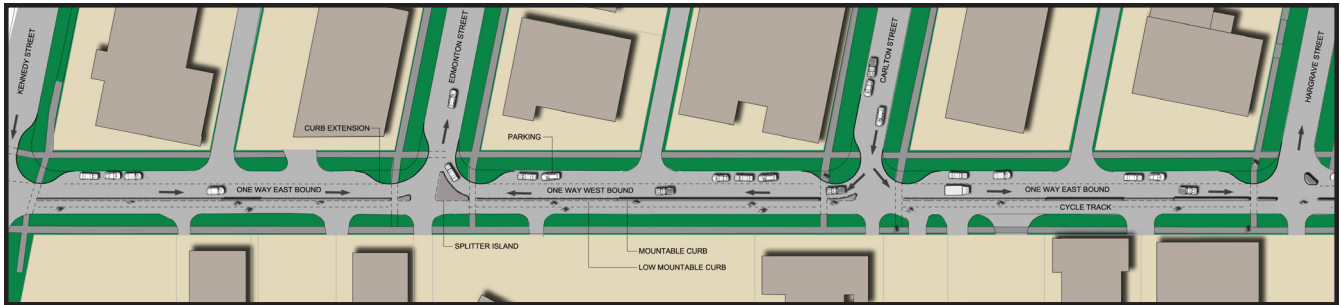


Figure 3: One-way loop system for vehicular traffic

The creation of the one-way traffic loops allowed a cycle track which would consist of two-way bike lanes physically separated from vehicular traffic lanes, parking lanes and sidewalks by a curb or median barrier.

These treatments were combined resulting in the removal of parking on the south side of Assiniboine Avenue and partially restoring parking on the north side of Assiniboine Avenue (24 of 35 stalls reinstated) to form a fifth option for the route.

TRAFFIC ANALYSIS OF OPTIONS

Under existing conditions, traffic volumes in the peak hours range from 200 to 300 vehicles per hour (vph) two-way at the west end to about 800 two-way vph at the east end.

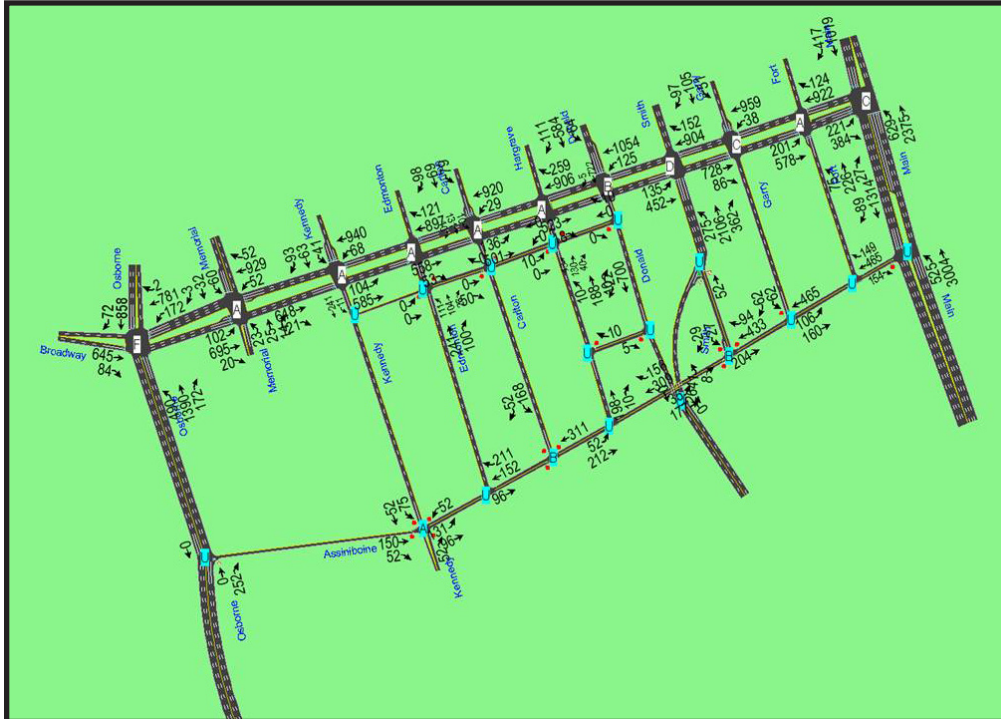


Figure 4: Existing AM traffic volumes

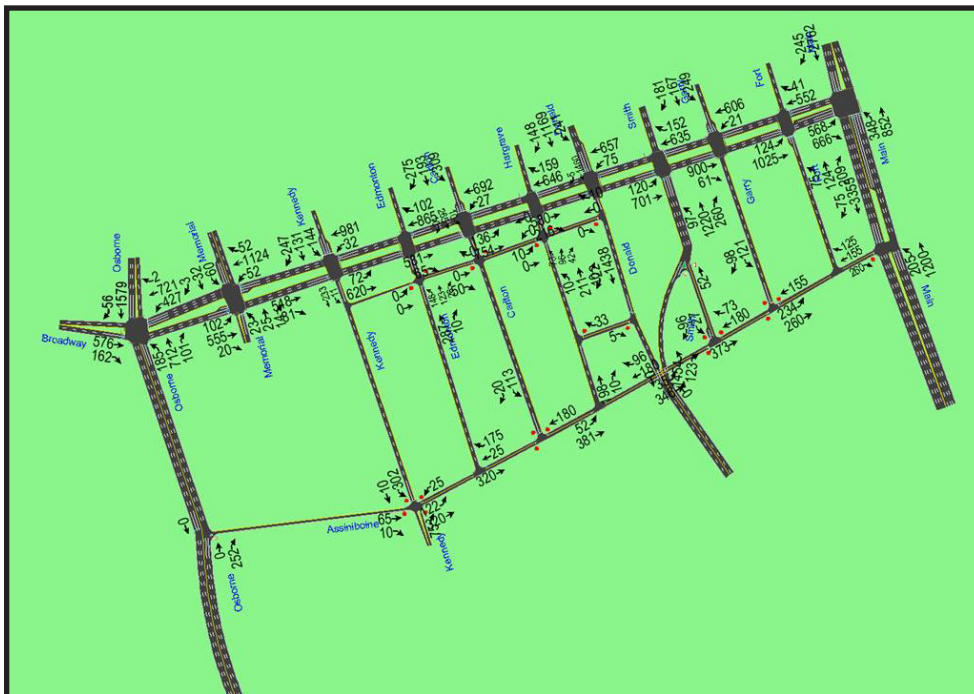


Figure 5: Existing PM traffic volumes

To analyze the impact that the options would have on circulation patterns and intersection capacity it was necessary to complete a trip assignment exercise. This was accomplished by moving traffic as per the proposed change in traffic patterns and road configuration. Trip assignments would also have to take into account parking lot destinations, and make some assumptions as to origins and destinations of traffic.

While the trip assignment numbers were deemed reasonable by reviewers, the project did not have the resources to do a comprehensive trip assignment model. The traffic counts available from the City of Winnipeg were for different years, different times of the year and when tabulated, required significant manipulation to create a balanced traffic flow diagram. An existing Synchro model was provided by the City of Winnipeg, and the traffic data was adjusted where more current counts were available. The traffic volumes of the existing model were then balanced to the more current counts.

OPERATING CONDITION REVIEW

The primary concern for the Assiniboine options was the impact that a change in traffic patterns would have on Broadway, on Main Street and on the local streets between Assiniboine and Broadway. Because the trip assignment was somewhat arbitrary, a relative comparison between the options was deemed to be the most appropriate way to compare the impact of the changes. For this reason the intersection capacity utilization (ICU) output from Synchro for the intersection was recorded and used in comparison.

Under existing conditions, traffic along Broadway operates with an ICU of about 60% in the AM peak hour except at the intersection of Smith (101%), due to a large northbound volume entering the downtown. In the PM peak, traffic on Broadway operates with an ICU of about 60% except for the intersection of Donald (81%), due to a heavy southbound movement and Main (98.3%), due to generally heavy movements. On Assiniboine, the ICU ranges from 38% at Carlton to 77% at Fort in the AM peak. Similar conditions exist in the PM peak hour. Existing conditions would be maintained under Options 2 (bike lanes) and 4 (bike route signage).

Both Options 1 (closure of Assiniboine between Main and Fort) and 3 (conversion of Assiniboine to one-way eastbound) would cause an increase in traffic along Broadway as it would have to accommodate Assiniboine's westbound traffic. Option 1 would also see an increase of traffic on Broadway as it would have to accommodate Assiniboine's eastbound traffic at Main. In the AM peak period, the greatest impact would be at the intersection of Broadway and Smith, with an ICU of 108.8%, an increase from 101% under existing conditions. In the PM peak period, the greatest impact would be at the Main and Broadway intersection, where the ICU went from 98.3% to 103.8%. Both options were rejected due to the adverse effects on Broadway operations.

Option 5, which involved the creation of one-way "loops" for vehicular traffic on Assiniboine, would have the least impact on traffic flow at critical locations in the area network, including the intersections at Main and Assiniboine, and Main and Broadway. Because existing traffic

patterns at the east end of the route would remain unchanged, traffic at Broadway's east end would not be affected. At the west end of the route, some of Assiniboine Avenue's traffic would be diverted to Broadway where capacity was not an issue with ICU's of about 60%. Only the side streets would experience significant changes. Implementing this option would have a net positive effect on traffic in the south Broadway neighbourhood, balanced by a loss of parking in the Hargrave to Main section of Assiniboine.

PUBLIC CONSULTATION AND INVOLVEMENT

One of the recommendations contained in the 2005 Active Transportation Study (1) pertained to the need for the City of Winnipeg to educate and inform citizens about AT and, wherever possible and appropriate, provide an opportunity for public input. Drawing on the experience of Winnipeg's first bike boulevard on Argue Street (created under WinSmart) (3), the City of Winnipeg recognized that an enhanced public consultation process is required to achieve "buy in" among citizens of Winnipeg, both for the overarching principles behind AT (promoting healthy and environmentally friendly activities to enhance the city's quality of life) and also for the physical "street level" facilities required to make AT a reality in Winnipeg.

Using a comprehensive approach, the project team engaged the following stakeholder groups:

- City Councillors
- Winnipeg Parking Authority
- Area business improvement districts, major commercial property owners, managers and developers
- Universal design advocates
- Winnipeg Transit
- Provincial government representatives
- Local residents and business owners

A public working session, open house and information mailings were completed as well. The options that were studied, as well as final recommendations, were illustrated clearly with storyboards, maps and diagrams. Participant feedback was solicited both informally through conversation and formally through comment forms and questionnaires.



Figures 6 & 7: Storyboards, maps and diagrams were shared with the public at consultation events

Public feedback favoured the following facilities:

- a one-way loop system
- a cycle track
- maintaining parking
- maintaining 2-way traffic flow between Hargrave and Main Streets
- allow for improved pedestrian accommodation by narrowing street crossings and providing refuge islands

Feedback from the public and stakeholders also confirmed concerns over accessibility and the need for traffic calming along the route.

IMPACTS AND SELECTION OF PREFERRED OPTION

Based on the analysis of traffic flow, operating conditions and public feedback, the creation of one-way loops and a cycle track , “Option 5”, was chosen for further design development (Figure 7).

The preferred option involved the creation of the Assiniboine Avenue Bikeway by installing a two-way cycle track the entire length of Assiniboine, with traffic calming by a one-way loop system between Kennedy and Hargrave. Two-way traffic would remain between Main and Hargrave. This solution would significantly improve the cycling environment while minimizing impacts on vehicle traffic flow on both Assiniboine and Broadway. In addition, it would fulfill the City’s Active Transportation Study criteria by introducing a new and innovative AT facility – a cycle track – to Winnipeg.

The project team realized disruption of through vehicular traffic on Assiniboine Avenue would cause some re-routing of local traffic. This would be seen as an inconvenience to some and a major disruption to others, including possible school bus re-routing, business and residential access and maintenance activities. Additionally, impacts to on-street parking would be significant and need to be communicated to local residents and business operators. Overall, the consensus among team members, the City and the AT Advisory Committee was that the benefits of the cycle track concept would be significant and establish its priority as a preferred facility type in the City’s AT network.

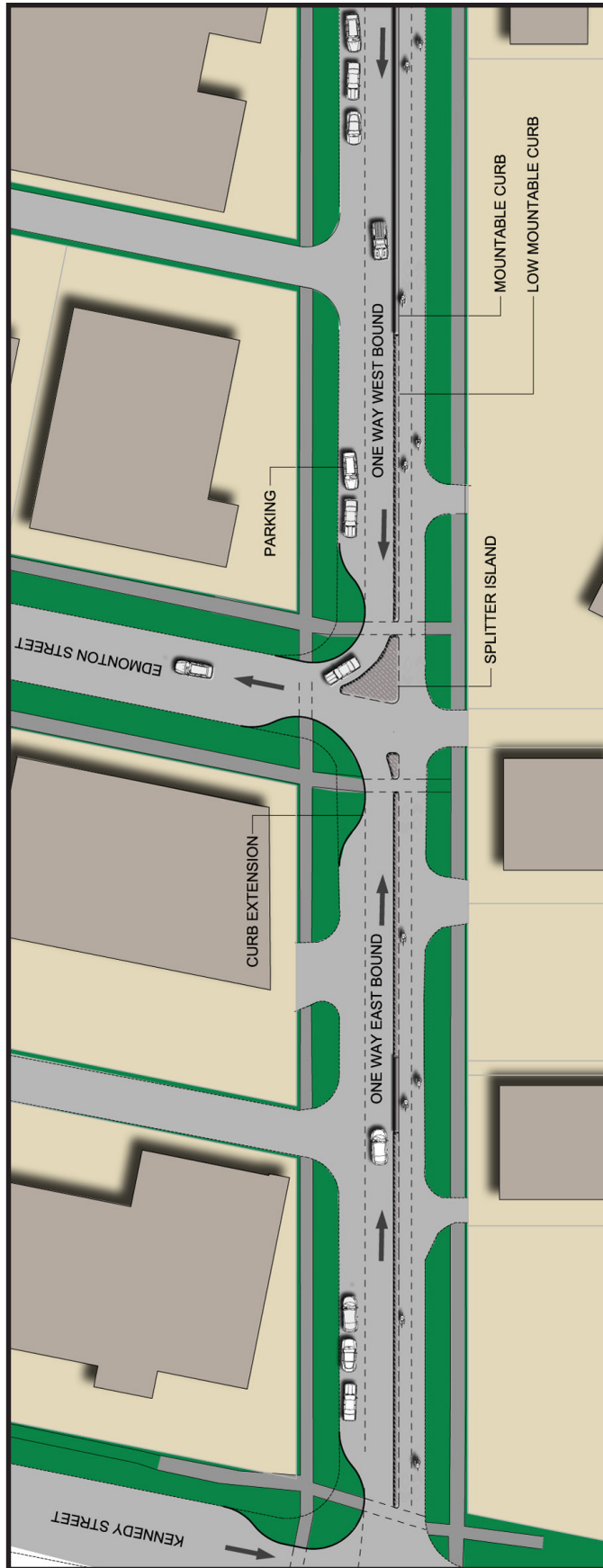


Figure 8: Plan overview of preferred option (preliminary design)

PRELIMINARY ROUTE DESIGN SYNOPSIS

The preliminary design was finalized once public consultation was completed. The general consensus was that, with the proposed design, the project team had achieved its goal of creating a showcase AT facility for Winnipeg. The details of the preliminary design are as follows:

Osborne to Kennedy

- Retain existing multi-use pathway from Osborne to Kennedy on south side of Assiniboine. Improve connection of multi-use pathway to Kennedy by widening current sidewalk to minimum 3.5 metres.
- Convert existing 4-way stop sign at Kennedy and Assiniboine to a 3-way stop as traffic between Kennedy and Edmonton will be converted to eastbound only.
- Connect multi-use pathway to cycle track through the use of pavement markings, change in surface texture or slightly elevated/mountable curb on south side of Assiniboine at Kennedy.
- Install curb extensions on Kennedy at Assiniboine.
- Change east lane on Kennedy from travel lane to parking lane.

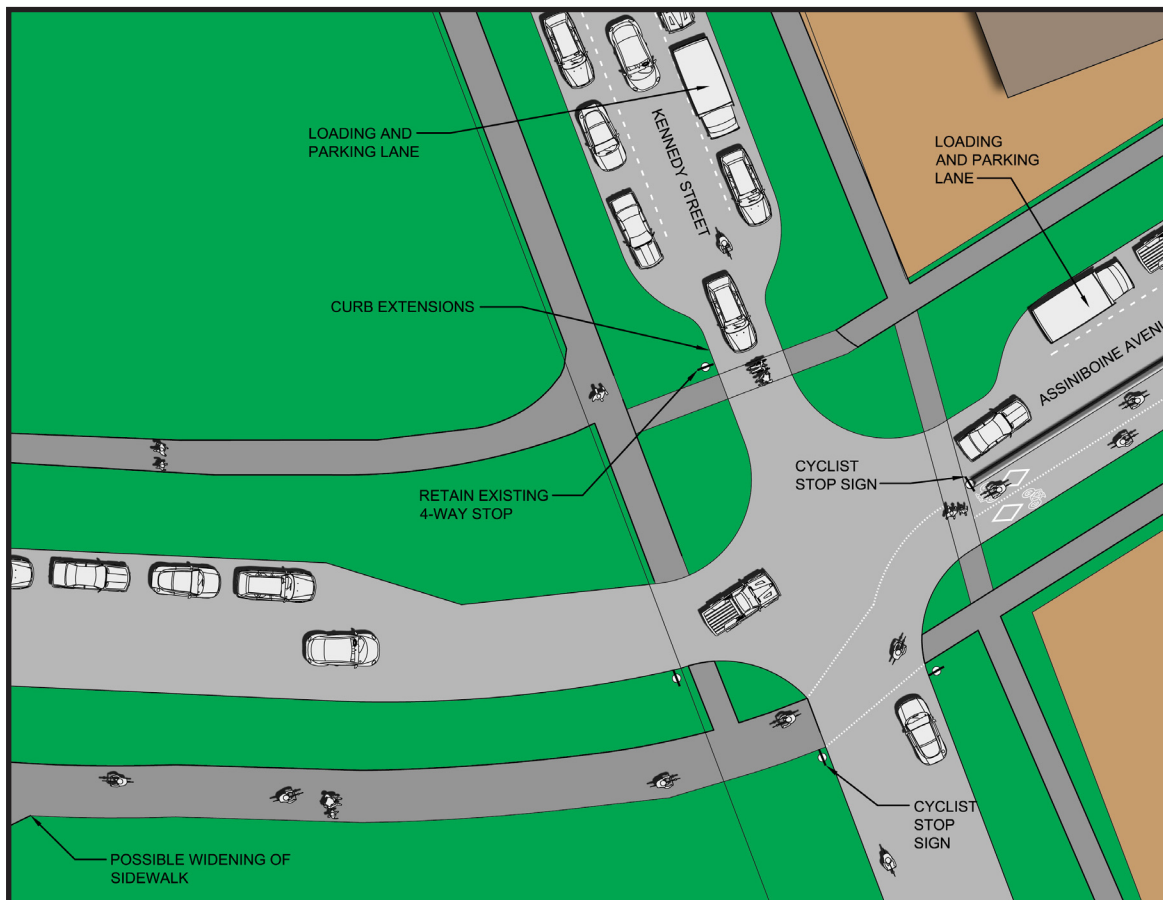


Figure 9: Kennedy at Assiniboine preliminary design

Kennedy to Hargrave

- Move parking from south side to north side of Assiniboine between Kennedy and Hargrave.
- Create one-way loop system on Assiniboine including traffic diverters at Edmonton, Carlton and Hargrave to eliminate through traffic at intersections and force either left or right turns. Traffic flow would be as follows:
 - Eastbound from Kennedy to Edmonton
 - Westbound from Edmonton to Carlton
 - Eastbound from Carlton to Hargrave
- Add a 3.5 metre wide two-way cycle track beside the south curb from Kennedy to Main. 3.0 metre wide cycle track with 0.5 metre wide mountable curb as barrier. Traffic diverters in one-way system to include openings at intersections to facilitate access to/from side streets. Access to private approaches maintained by adding curb cuts or lower curbs.

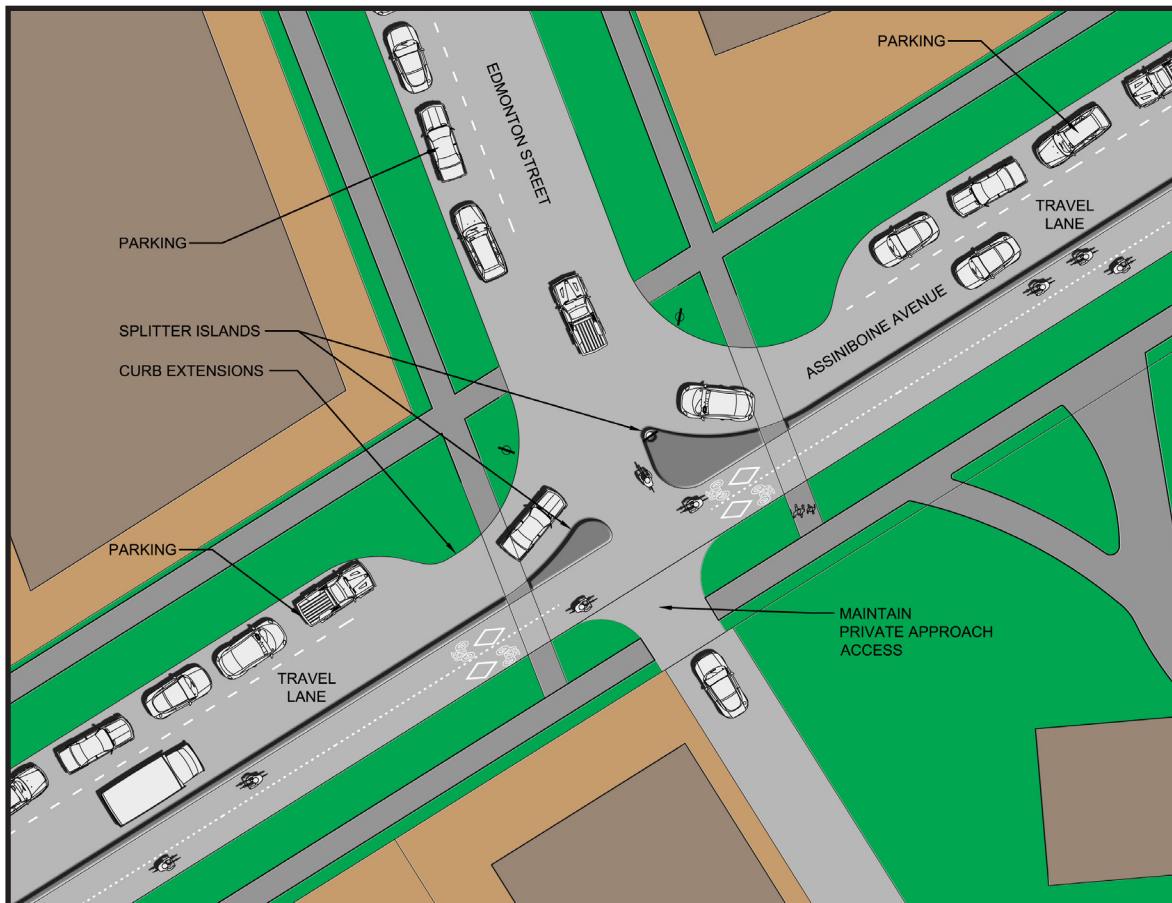


Figure 10: Edmonton at Assiniboine preliminary design



Figure 11: Cross-section east at Edmonton, street view

Hargrave to Main

- Cycle track continues under Midtown Bridge. Two-way vehicle traffic. No parking.
- At Navy, establish cyclist stop sign for cycle track.

As of July 9, 2010 the route is slated for construction in summer 2010. Although impacts and successes of the project cannot be assessed until after its completion, project partners and the City of Winnipeg are confident that a focus on public consultation and extensive analysis of route options and conditions have maximized the opportunities presented on the route and minimized negative impacts. Noticeable increase in cyclist usage, neighbourhood reaction and traffic flow on adjacent streets will be key indicators of the project's success.

CONCLUSIONS AND LESSONS LEARNED

During the detailed design phase a number of issues arose that offered the project team and other communities undertaking AT development valuable lessons learned.

1) Balancing Neighbourhood Needs and AT Priorities

The project team sought to balance the enhancements to Assiniboine Avenue as an AT route with neighbourhood needs and plans for development. This included considerations for maintaining parking wherever possible, reducing non-local "cut-through" traffic, and design that accommodated local park redevelopment plans. Establishing one-way loops from Kennedy to Hargrave would deter use of Assiniboine as a short-

cut route while maintaining local access. Loss of on-street parking required design changes from Garry Street to Main Street as local businesses were extremely concerned about the impact of reduced parking availability, which would be compounded by the anticipated loss of parking at the future development site of the Upper Fort Garry Provincial Park. As a result, the decision was made to move the cycle track off-street from Garry Street to Main Street in order to maintain the on-street parking.

2) Universal Design & Accessibility

A provincially sponsored multi-family residential building on this route relies on Handi-Transit services for several of its residents. Changing the traffic patterns on Assiniboine made it difficult to provide the building with Handi-Transit service. The project team had to re-examine the design to determine the best way to provide access. In order to continue to provide this service, traffic between Hargrave and Carlton was changed from eastbound to westbound and between Navy and Hargrave from two-way to one-way westbound to ensure that the transit service could remain adjacent to the curbside of the building. This resulted in changing traffic flow from Navy to Carlton to one-way westbound. This conversion had little effect on traffic volumes as it shifted only minor traffic flows, but did allow westbound traffic to use Assiniboine from Main to Edmonton.

Additionally, the project team became aware that a second multi-residential building located on Kennedy at Assiniboine has several suites dedicated to residents with disabilities and who also rely heavily on Handi-Transit. The former Handi-Transit loading zone on Assiniboine had been removed due to the installation of the cycle track. The project team designed a solution that was an improvement for all users by designing a new accessible loading bay on Kennedy.

3) Tie-in with Future Development Projects

The future redevelopment of the Upper Fort Garry site and some private properties south of Assiniboine all came up during the design process as potential complications to the Assiniboine Bikeway. Through extensive consultation with effected groups some compromises and improvements were made to accommodate future development.

- Upper Fort Garry site (Figure 2): The site proponents are seeking a greener connection between Broadway and the Assiniboine River, to enhance the environment and site safety for visitors. There is ongoing discussion about the closure of Assiniboine, but because the Upper Fort Garry site redevelopment is still several years into the future, the cycle track, which was moved off-road to maintain on-street parking, will proceed and any changes to the current site configuration would accommodate the cycle track connection to Main Street. This approach was favourable to fort site proponents as their primary concerns focused on automobile traffic. The cycle track development had additional benefits for the same group's plans for the redevelopment of Bonnycastle Park, an underutilized urban green space where safety was an ongoing concern. Some vegetation that inter-

rupted cyclist sight lines will be removed as part of the cycle track construction, creating an impetus for other positive changes to the park that will improve the enjoyment of this green space in the heart of the city.

- Private lot redevelopment: The redevelopment of a private lot south of Assiniboine raised questions about tenant access across the cycle track to the proposed new high-rise condo unit. Accommodations for private driveways are being made in the cycle track design.

4) Political Considerations

The design and implementation of the Assiniboine Bikeway took place during an election year for the City of Winnipeg. As there can be a certain amount of political sensitivity to change during an election year, the project team recognized that a focus on clear, concise project communications and comprehensive public consultation would be imperative to building momentum and support for the project at the political level. City Councillors were kept abreast of the impacts, changes and benefits of the bikeway throughout the process and were provided with specific responses to constituent questions when requested.

5) The Unexpected

Last minute changes created challenges for the project team but also provided opportunities to improve the urban environment through better design.

The opportunity to create a “showcase” active transportation facility on Assiniboine Avenue became possible through the coordinated effort of the contracted project team, the City’s engineers, planners, Active Transportation Coordinator and the volunteer Active Transportation Advisory Committee. While a number of options were initially identified for review, each of the original options suffered from undesirable impacts or simply didn’t live up to the potential of the route. A fifth option was developed and then refined; it was a bit more radical in concept, but proved to be technically sound, addressed most of the concerns related to initial options, and made good on the City’s criteria of introducing a new and innovative AT facility to Winnipeg.

The design took advantage of the one-way streets in the area, creating a series of one-way loops which freed up pavement area for the cycle track and retained most of the on-street parking. It also allowed for improved pedestrian accommodation by narrowing street crossings and providing refuge islands. Almost the entire facility was contained on the existing pavement surface area.

By moving into the south boulevard at the east end from Garry Street to Main Street, on-street parking was preserved where it was required most. This design fit in well with plans to redevelop the existing park in the area to address related safety issues.

The Assiniboine Avenue Bikeway is the result of a collective vision of many people: the project team, the City of Winnipeg administration, the municipal, provincial and federal politicians, AT users, area residents and business leaders all of whom were supportive of innovative ideas and

creating safe facilities for active transportation, and who provided constructive criticism and accepted creative solutions to their concerns. Once the project is complete in the fall of 2010 project partners will analyze its impacts and influence on the surrounding neighbourhood and AT users as well as in the city as a whole as a precedent setting design.

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