

Bassett Street Corridor Transportation Plan



DEPARTMENT OF



February 11, 2019

TRANSPORTATION

Final Report

1.0 Introduction

The Bassett Street study area spans from Gorham Street to just past Wilson Street, including on the one-block stretch of Wilson Street between Bassett Street and Broom Street. It also includes the local stub south of Wilson Street, and the corridor extended through Brittingham Park to North Shore Drive. The street grid in this area is at a 45° angle – for simplicity, the convention used is that Broom and Bassett Street run “north-south” and perpendicular streets run “east-west”. The corridor represents a logical connection between the University area John Nolen Drive and Lake Monona. A concurrent Wilson Street corridor study is evaluating the Broom Street/Wilson Street intersection and its connection to John Nolen Drive.



Figure 1.0-1 Study corridor location

Bassett Street will be resurfaced in 2019 between Dayton Street and West Washington Avenue in order to replace aging pavement and replace a 4-inch water main installed in 1887 that has experienced chronic water main breaks. Coordinating with the project, MG&E will be installing a new electrical duct package. The purpose of this planning study is to look at the Bassett Street corridor as a whole and develop a plan. The City can then reconstruct Bassett Street knowing that the curb and pavement will be consistent with the plan and serve the corridor in the future. A public engagement process includes the context of the whole corridor, including travel patterns, bike facility needs, and transit use.

2.0 Project Goals

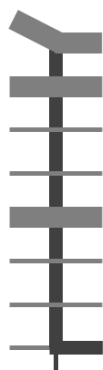
The following goals were established and refined at a November 26, 2018 public meeting with residents. The goals serve as a template from which alternatives are both developed and evaluated. Table 2.0 summarizes these goals.

Goal	Discussion
Provide safety for all modes of transportation	Any improvements should maintain or improve safety for all modes – pedestrians, bicyclists, transit users, and motorists.
Provide a comfortable bike connection from University Avenue to Lake Monona	Madison has a robust bike network. However, a strong north-south link connecting the Capital City Trail and the UW campus suitable for riders of all ages and abilities is lacking.
Satisfy parking needs	On-street parking in the corridor is heavily utilized and many residents and businesses lack off-street parking. Loading zones are particularly important for adjacent businesses.
Preserve a healthy tree canopy and terraces	Trees and terraces are important for aesthetics and livability.

Goal	Discussion
Provide safe and comfortable pedestrian crossings	Higher pedestrian volumes can be found traveling both along and crossing the corridor due to the high densities and mixed uses.
Preserve existing infrastructure investments	North Bassett Street was reconstructed from Gorham Street to Dayton Street in 2017. To the extent possible, an alternative should complement the existing investment, and not require modifications to the recently reconstructed section.
Provide a corridor plan for Bassett Street	It may be years before South Bassett Street and Wilson Street are resurfaced or reconstructed. Having a corridor plan will help Bassett Street fulfill its purpose in the city's transportation network.
Maintain or improve public transit service	Metro has about 450 buses traveling along the Broom/Bassett pair during the week.
Improve operation and safety of Bassett Street and West Washington Avenue intersection	There are a high number of crashes at the Bassett Street/West Washington Avenue intersection. Motorists turning left onto West Washington Avenue from the right lane is a common crash type.

3.0 Existing Conditions

Bassett Street is a one-way street, southbound only, with two travel lanes. It operates as a one-way pair with northbound-only Broom Street. The dominant southbound travel pattern on Bassett Street continues around a sharp 90° curve to the left to Wilson Street. New raised one-way cycle tracks are present from Gorham Street to Dayton Street, including a contra-flow northbound lane. A marked on-street bike lane is present from Dayton Street to Main Street. Parking is present on the right side for most of the corridor, and on the left side on Wilson Street.



Cross Street	Crashes	Crashes per Million Vehicles Entering
Gorham	13	0.25
Johnson	11	0.26
Dayton	15	0.85
Mifflin	15	0.77
Washington	32	0.94
Main	16	1.37
Doty	7	0.85
Wilson	3	0.52

Figure 3.0-1 Crashes and crash rates on Bassett Street

Traffic counts are about 6,800 vehicles per average weekday North of West Washington Avenue and 4,500 vpd south of West Washington. West Washington Avenue and Broom Street are the only traffic signals. Figure 3.01-1 illustrates crashes at intersections along the corridor. The West Washington Avenue intersection has 32 crashes in the five-year period between 2013 and 2017, several of these crashes were caused by southbound motorists turning left from the right lane.

Metro Transit provides fixed-route bus service along Bassett Street on weekdays only. Bus routes 1, 10, 19, and 38 turn right from Johnson Street and serve four bus stops along the corridor. Service is provided about every 15 minutes throughout most of the day. At Broom Street, Routes 1, 19, and some

38 buses continue on Wilson Street to the Capitol Square while most Route 10 buses and some Route 38 buses turn right toward John Nolen Drive and the east side.

Parking in the corridor is part of the Residential Permit Parking Program (parking is restricted to two hours, but neighborhood residents with a permit can park for up to two days) is well used. Generally, on-street parking is present on the right side of Bassett Street south of Dayton Street and on the left side of Wilson Street. There is space for about 14 cars to park on-street on North Bassett, 16 between West Washington and Wilson, and 10 on Wilson Street. A four-day parking occupancy study found that parking on Bassett Street was about 70 percent used during the day and nearly 100 percent used overnight. Besides accommodating the parking needs for residents, several retail and service organizations rely on on-street parking, such as ABC for Health at Mifflin Street and a small retail area at Main Street. Figure 3.0-2 illustrates the parking occupancy on Bassett Street.

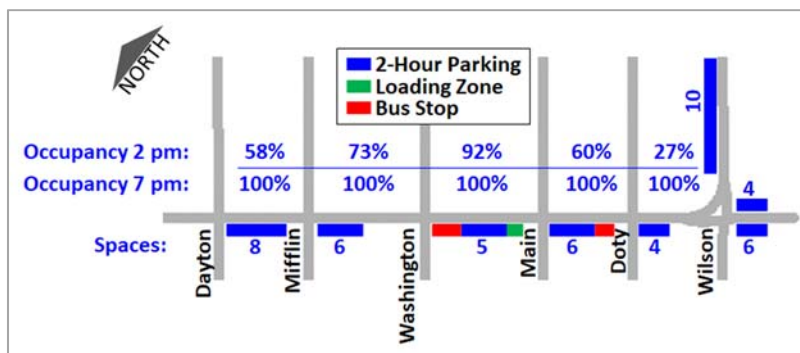


Figure 3.0-2 Parking occupancy

Bassett Street is classified as a secondary bike route in the 2015 Bicycle Transportation Plan (Madison Area Transportation Planning Board). However, a stronger connection between University Avenue and John Nolen Drive has been expressed as a need. For example, there are no bike lanes south of Main Street. (See Figure 3.0-3) Consequently, new raised cycle tracks were constructed on Bassett Street between Gorham Street and Dayton Street in an effort to strengthen this connection. The road was also narrowed to two southbound travel lanes in 2017. The directional cycle tracks (one on each side) provide continuity to and from the University Avenue bike lanes. South of Dayton Street, a southbound marked bike lane is present adjacent to the on-street bike lane. While the street width remains the same or gets wider, the marked bike lane is not present south of Main Street. Northbound bikes travel in similar marked bike lanes along Broom Street, then turn left on Dayton Street and right on Bassett Street to access the new northbound cycle track.



Figure 3.0-3 City of Madison Bike Map

Sidewalks and marked crosswalks exist along the corridor; however, complaints were received about substandard facilities and vehicles failing to yield to pedestrians. The angled crosswalk at the curve where Bassett Street becomes Wilson Street has particularly poor sightlines for south/westbound

pedestrians. At Broom Street for pedestrians crossing Wilson Street, no pedestrian signals are present and the crosswalk has little separation from vehicle lanes.

In public meetings, some participants referenced an emerging trend in bike facility design - “All Ages and Abilities.” Advocated by national organization like the National Association of City Transportation Officials (NACTO) and the Federal Highway Administration (FHWA), the goal of “All Ages and Abilities” bike facilities that are safe and comfortable for “interested but concerned” bike rider. These potential riders have concerns riding in traffic with high volumes and or travel speed. All Ages and Abilities facilities address this concern by constructing protected or separated facilities. An example of an on-street protected bike facility that meets this criteria is the protected bike lane in Minneapolis shown on the right, separated from traffic by parked cars. The People for Bikes organization indicate that by 2016 protected bike lanes had been implemented in 82 cities in 34 states. Currently Madison does not have a protected bikeway plan.



Figure 2.0-4 Minneapolis Star Tribune - Bikers use a protected bike lane on 1st Avenue North

4.0 Alternatives

Initial alternatives were presented at a public meeting on December 11, 2018. Based on comments received at that meeting, the alternatives were further refined and presented at a public meeting on January 28, 2019. The following paragraphs summarize the alternatives. See the appendix for cross sections.

A. Bassett Street

Alternative 1 – Buffered Bike Lanes. Alternative 1 largely keeps traffic flow, bike facilities, and parking similar to the existing conditions. The two general purpose travel lanes are narrowed, allowing for a slightly wider bike lane and painted buffer.

Alternative 2 – Contra-flow Bike Lanes. Alternative 2 introduces contra-flow bike lanes on Bassett Street at street level. This is accomplished by removing one travel lane between Broom Street and West Washington Avenue and all parking between West Washington Avenue and Dayton Street. The alternative would provide continuous bike facilities between University Avenue and the new raised cycle tracks on North Bassett Street, and the Capital City Trail.

Alternative 3 – Protected Bike Lanes. Alternative 3 switches the bike and parking lane and uses the parked cars as a barrier between bike and general purpose traffic. This concept is relatively new but has been deployed successfully in other cities and is an accepted practice in several design guidebooks including NACTO and FHWA. One consideration with this design is visibility at driveways. A southbound vehicle turning right into driveways may have difficulty seeing bikes behind the parked cars. To address this concern, the FHWA Separated Bikeway Design Manual gives guidelines for restricting parking prior

to a driveway. Using these guidelines Alternative 3 removes about one parking space before each driveway and intersection.

B. Wilson Street

Several changes on Wilson Street are possible. The existing curb-to-curb width of 40 feet is wider than 38-foot dimension on Bassett Street. This width could allow narrowing the street, providing more space for trees and terraces. The existing parking on the left side could be moved to the right side, providing a more conventional layout and improving the weave between bikes and autos turning right at the Broom Street intersection. Buffered bike lanes could also be added within the available space. Protected bike lanes are not recommended for several reasons. The added on-street parking on the right side will be relatively short and it would be important for traffic to see bicyclists as they merge right towards John Nolen Drive. At this same location many bikes will be merging left to cross Broom Street towards a possible Broom Street side path. Also, the bus stop mid block is a Metro Transit time point and buses will need to wait there, so an island bus stop is not possible.

C. Intersections

Intersection improvements are common to all alternatives. At the West Washington Ave intersection, alternatives would convert the left lane approach to left-turn-only. This would reduce the number of crashes associated with vehicles in the through lane mistakenly turning left onto West Washington.

Pedestrian improvements include new continental “zebra” crosswalks as well as potential rectangular rapid flashing beacons (RRFB) at either Dayton Street or Mifflin Street, and at either Main Street or Doty Street.

Transit improvements include bus islands at West Washington Avenue and/or Doty Street as well as relocating the Doty Street bus stop to far side. Bus island stops eliminate the conflict between buses and bikes at bus stops and eliminate pull-out delay for buses.

D. Screened Alternatives

A raised cycle track on Bassett Street, similar to what exists north of Dayton Street, was eliminated from consideration for this section of Bassett Street. The numerous driveways would require an irregular profile for the raised cycle track as it crossed each driveway. Additionally, a raised cycle track would eliminate the terrace, trees, and require utility relocations – all contrary to the stated project goals.

A protected bike lane on Wilson, similar to Alternative 3 on Bassett Street, was eliminated from consideration. The protected bike lane would only be about 300 feet and provide little benefit. Additionally, a protected bike lane at this location is incompatible with an existing bus time point, where buses that are ahead of schedule wait to get back on schedule.



Figure 3.0-1 Example of a bus stop island, separating bus and bicycle traffic.

Converting Bassett Street to two-way traffic flow was also eliminated from further consideration. Discussions at the public meetings indicated that the one-way pair of Bassett Street and Broom Street functions well. There was no reason to change this traffic flow pattern. These same discussions indicated that if appropriate bike facilities were available on both streets, two-way bike traffic on Wilson and Bassett Street was not necessarily needed.

5.0 Evaluation

The three alternatives were evaluated against the established project goals, and are summarized in Table 5.0-1.

Table 5.0-1 Alternative Evaluation Matrix

Goal	Alternative 1 Buffered bike lanes	Alternative 2 Contra-flow bike lane	Alternative 3 Protected	
Safety for all modes	All satisfy with improved geometrics			
Provide comfortable bike accommodations	Buffered bike lanes	Standard bike lanes, one in each direction	Protected bike lanes	
Satisfy parking needs	Same North, + South	-14 North	-7 North	+8 South
Safe pedestrian crossings	Rapid flashing beacons and continental crosswalks			
Preserve tree canopy	All preserve tree canopy. Construction may affect some trees.			
Preserve infrastructure	No changes to recently constructed portions of Bassett Street			
Provide corridor plan	All provide a corridor plan			
Maintain/improve transit	All include potential bus stop islands and accommodate BRT			
Improve West Washington Intersection	All include improvements at West Washington			
Key	Does not satisfy goal	Somewhat satisfies goal	Satisfies goal	

Safety – All alternatives would convert the left lane approach at the West Washington Avenue intersection to left-turn-only to address a common crash problem. Alternative 3, if implemented south of West Washington, may slow travel speeds by reducing the number of travel lanes and adding parking on the east side of the street. All alternatives would include enhanced pedestrian crossing markings (see subsequent discussion on pedestrian crossings.)

Comfortable Bike Accommodations – The provision of bike accommodations is a differentiator among the three alternatives. Alternative 1 provides buffered bike accommodations in the southbound direction. North of West Washington this would not be considered an All Ages and Abilities accommodation because of the higher traffic volumes. South of West Washington, buffered bike lanes do satisfy the All Ages and Abilities accommodation. Alternative 2 provides a contraflow buffered bike lane in the north direction, and a conventional bike lane in the south direction on Bassett Street. This accommodation does not satisfy the All Ages and Abilities criteria. During public involvement meetings, participants indicated that appropriate accommodations on Broom Street would eliminate the need for a northbound bike movement on Bassett Street. Alternative 3 provides the best bicycle accommodations and meets the All Ages and Abilities criteria by providing a protected bike lane along Bassett Street

Satisfy Parking Needs – Satisfying parking needs is another differentiator among the three alternatives. Generally, Alternative 1 does not impact the parking supply on Bassett. Alternative 2 removes all of the parking north of West Washington Avenue – a total of 14 spaces. Alternative 3 removes 7 parking spaces north of West Washington, yet adds 8 spaces south of West Washington as it adds parking to the

east side of the street. The removal of spaces north of West Washington is necessary to provide adequate sight distance of cyclist for automobiles entering a driveway. Figure 5.0-1 illustrates the parking effects of the three alternatives.

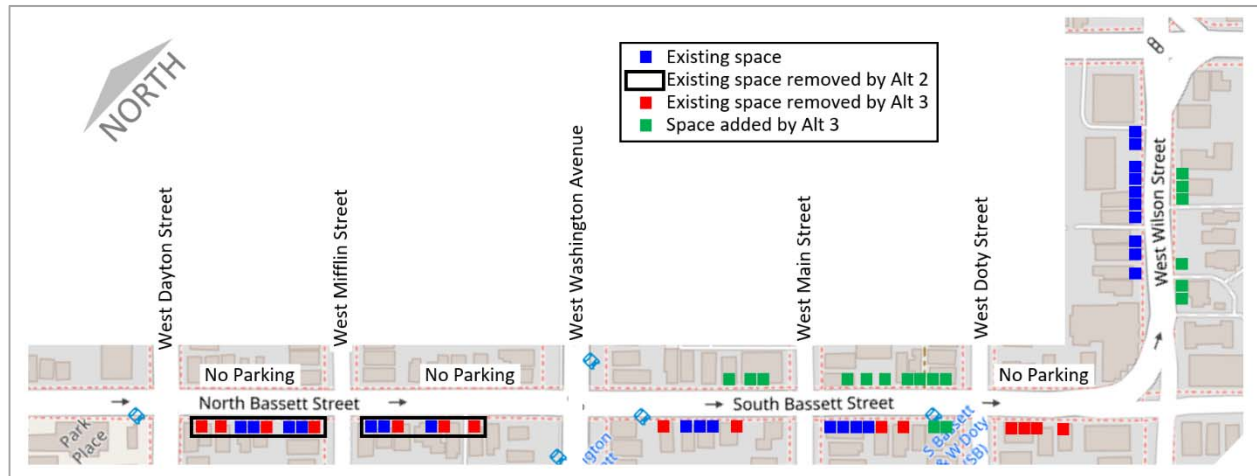


Figure 5.0-1 Parking impacts of alternatives

Safe Pedestrian Crossings – As mentioned, all alternatives will include new continental “zebra” crosswalks as well as potential RRFB at either Dayton Street or Mifflin Street, and at either Main Street or Doty Street.

Preserve Tree Canopy – Because the face of curb to face of curb dimensions will remain unchanged with all three alternatives, the canopy will be maintained.

Preserve infrastructure – All alternatives would preserve the recently completed Bassett Street improvements north of West Dayton.

Provide a corridor plan – All alternatives provide a plan for both current and future improvements on Bassett Street.

Maintain/improve transit – All alternatives will maintain the number of Metro stops, while relocating one to a more advantageous location. Additionally, all alternatives include bus stop islands on the south portion of Bassett Street, to eliminate the conflict between cyclists and buses.

Improvement of West Washington Ave Intersection – All alternatives reconfigure the north approach of the Bassett Street/West Washington Avenue intersection.

In summary, Alternatives 1 and 3 provide a contrast – Alternative 1 maintains all of the existing parking with modest improvements to the bike facilities while Alternative 3 removes some of the on-street parking on North Bassett Street in order to introduce protected bike lanes.

6.0 Public Engagement

As mentioned, three public meetings were held at the Madison Senior Center, 330 W. Mifflin Street. Meeting 1, November 26, 2018, laid out project goals and objectives and existing conditions.

Meeting 2, December 11, 2018, introduced two broad alternatives – Alternative 1 which, at the time, was effectively replacing the existing cross section and including a marked bike lane along the length of the corridor; Alternative 2 with standard and contra-flow bike lanes; and several Wilson Street alternatives.

Meeting 3, January 28, 2019, revised Alternative 1 to include buffered bike lanes, eliminated Alternative 2, introduced Alternative 3, showed the recommended approach on Wilson Street, and proposed moving forward with Alternative 3 using a phased approach. The meetings generated numerous comments. Common comments include:

- The need to slow cars down, particularly where South Bassett turns into Wilson Street.
- A concern over lack of parking, particularly at ABC for Health, near the Mifflin Street intersection.
- Both support and opposition for the proposed bicycle facilities. One stated Bedford provided an alternative corridor for cyclists.

A summary of the meeting comments is available with request.

7.0 Recommendation

The study team recommends a staged implementation of Alternative 3 using a pilot project. Bike lanes separated by a parking lane are new to Madison. A pilot project on North Bassett Street allows the city to monitor the performance before implementing further recommendations. After construction has been completed between Dayton Street and West Washington Avenue in 2019, Alternative 3 will be striped on those two blocks. Following a successful pilot of the concept, South Bassett Street and Wilson Street will be striped and signed accordingly with added parking on the right side of the street and conventional buffered bike lanes.

If the pilot project on North Bassett Street does not meet expectations, Alternative 1 can easily be implemented simply by changing the striping and signing on Bassett Street.

Reasons for this phased implementation of Alternative 3 recommendation include the following:

- Better bicycle accommodations are needed between University and John Nolen Drive, as evidenced by previous bike infrastructure investments on Bassett Street.
- The relatively low volumes on Bassett Street make it a good candidate to test protected bike lanes. This test could provide needed information on how to maintain these facilities during the winter months, as well as how driveways and protected bike lanes interact.
- Because the proposed protected bike lane is at street grade and uses the same face of curb to face of curb dimension, it is easily converted back to a conventional buffered bike lane if the pilot project proves unsuccessful.

This recommendation will remove half the on-street parking on North Bassett Street (7 of 14 spaces). On South Bassett Street and Wilson Street, the lost parking spaces are replaced by added parking on the left side, increasing overall on-street parking from 26 to up to 34 spaces. If this parking loss is looked at as part of a small area of 1-block in each direction, about 7 percent of the parking spaces will be removed. It is hoped that the benefits derived from the protected bike lanes will outweigh the effects of this loss.

The recommendation also includes modifying the West Washington intersection so that the left lane approach is left-turn-only to reduce crashes associated with motorists incorrectly turning left from the right through lane. The left-hand receiving lane will be removed using paint and/or delineators. The removal of the left through lane at West Washington supports added parking on South Bassett until the additional lane is needed for the Broom Street approach. The removal of one lane on South Bassett Street will improve the crosswalk at the curve towards Wilson Street and may also reduce speeding in the corridor.

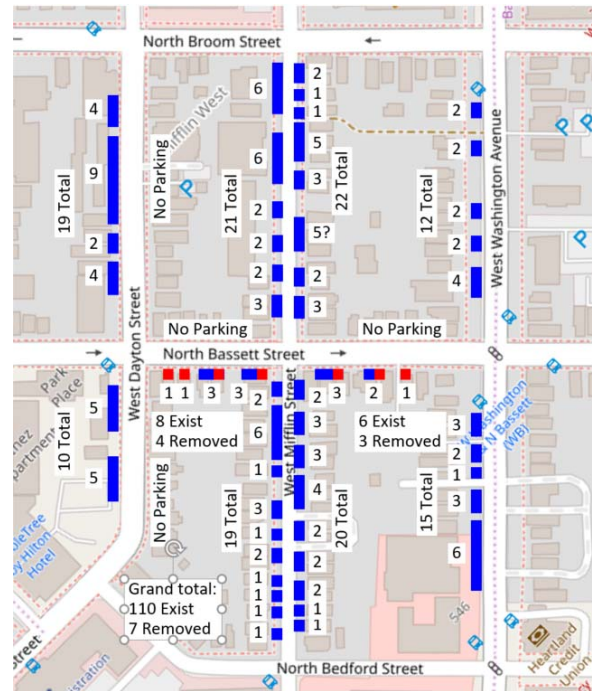


Figure 7.0-1 Alternative 3 parking impacts

Long-term recommendations, associated with South Bassett Street and Wilson Street include:

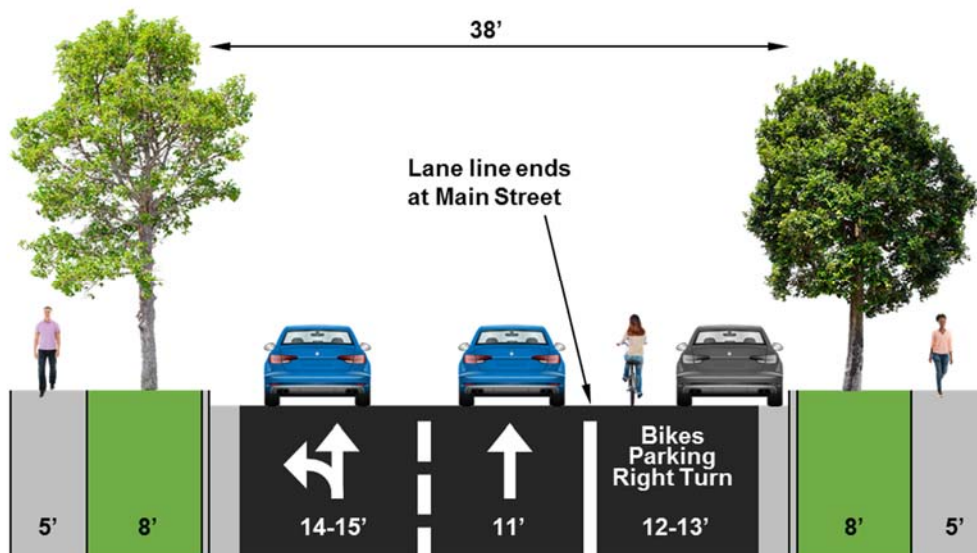
- Replacing 2-foot gutter pans adjacent to bike lanes with 1-foot gutter pans. The curbs in the corridor are in good condition so they will be left in place until the end of their useful life.
- Installing rectangular rapid flashing beacons (RRFBs) at either Dayton Street or Mifflin Street and at either Main Street or Doty Street.
- Constructing bus stop islands at West Washington Avenue and far side Doty Street as funds are available. If bus rapid transit (BRT) uses Bassett Street, the BRT station should be prioritized.
- Considering a shared-use path through Brittingham Park when the connection to the Capital City Trail is made.
- Reconstructing the Wilson Street and Broom Street intersection to remove the right turn slip lane and install a conventional curb return with improved crosswalks. Install a new shared-use side path on the east side of Broom Street between John Nolen Drive and Doty Street (this recommendation is outside the planning study area but is key for connecting Bassett Street cyclists to the Capital City Trail).
- Improving signage and crossings to facilitate the bike route northbound on Broom Street, turning left to Dayton Street and right to the Bassett Street cycle track. Improve definition of the existing raised cycle tracks to discourage use by pedestrians.

Appendix 1 Cross Sections and Figures. All cross section dimensions are to face of curb.

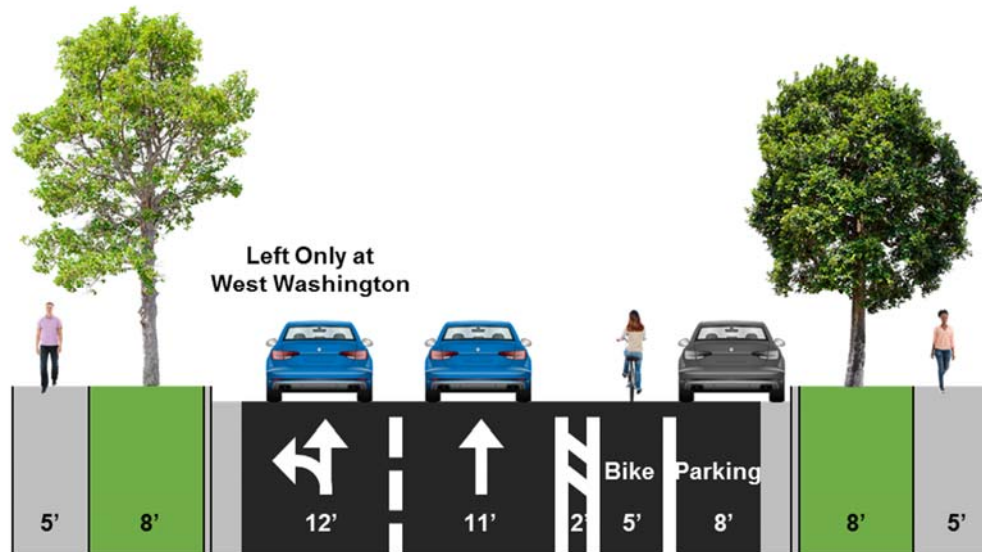
Location Map



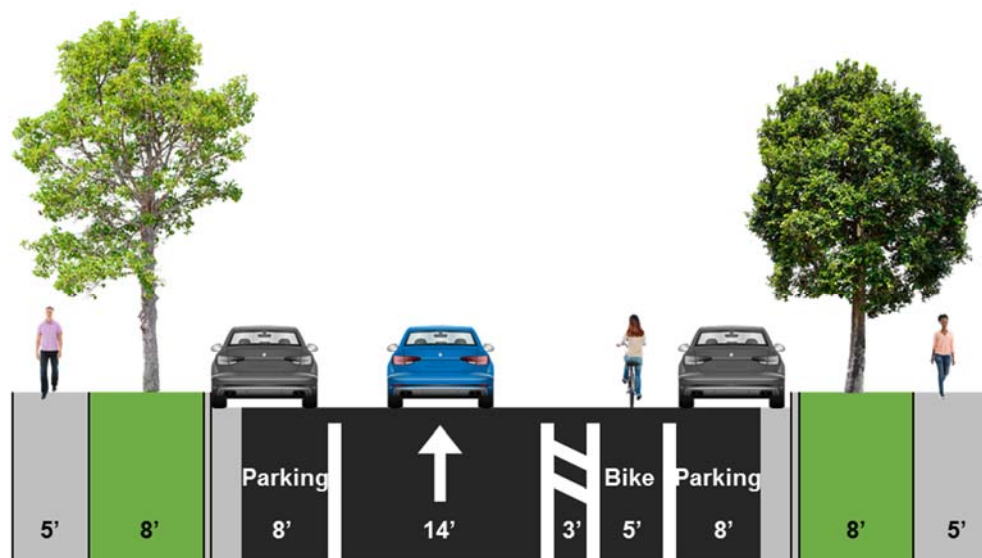
Bassett Street Existing Cross Section



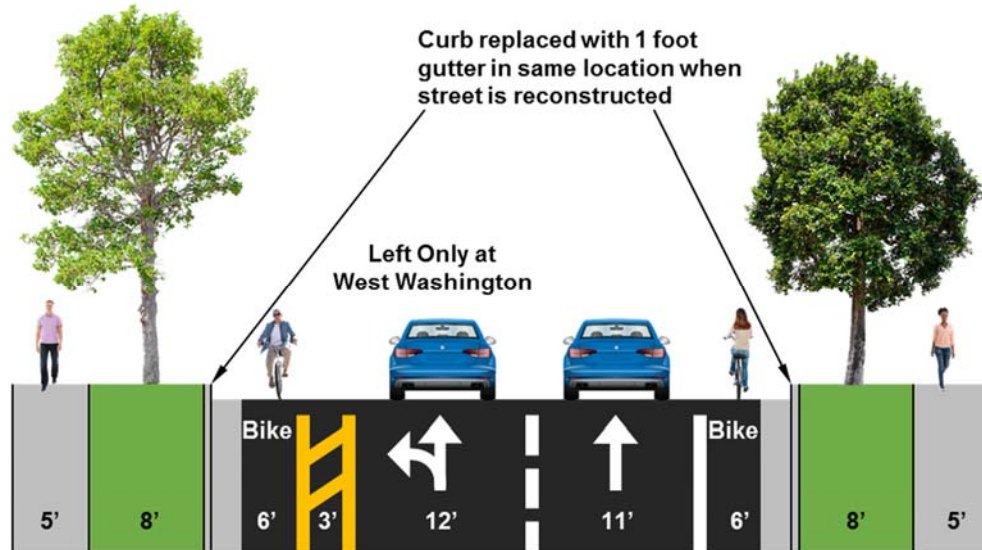
Alt 1: Buffered Bike Lane N. Bassett



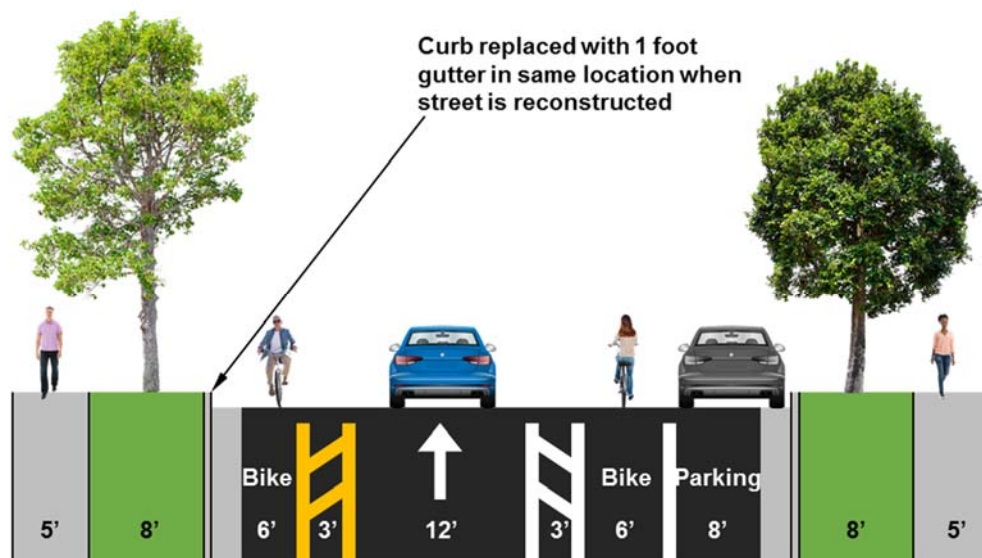
Alt 1: Buffered Bike Lane S. Bassett



Alt 2: Contra-flow Lane N. Bassett

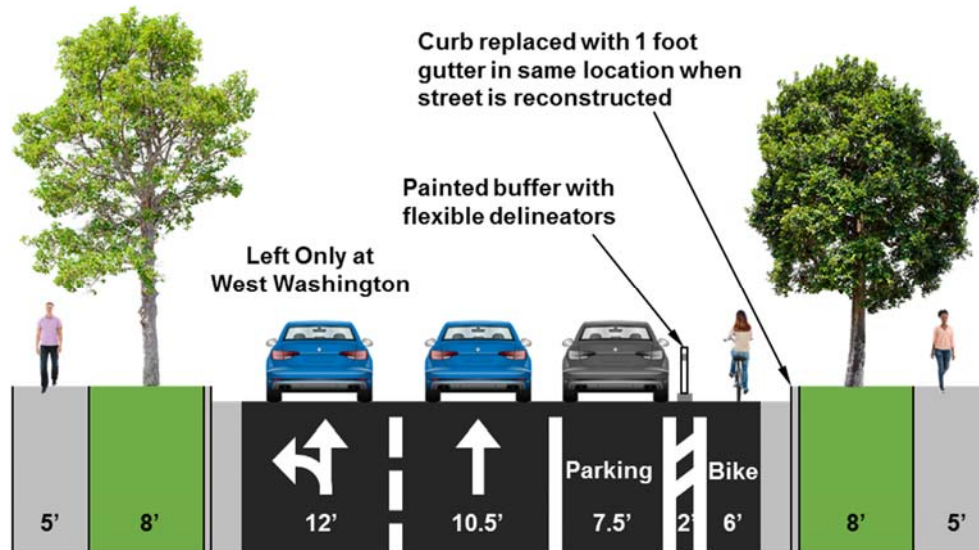


Alt 2: Contra-flow Lane S. Bassett



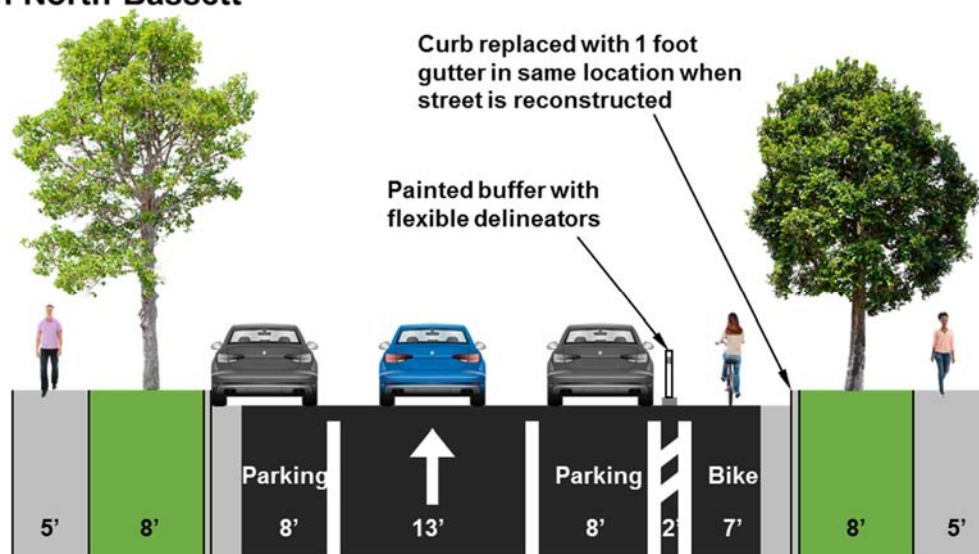
Alt 3: Protected Bike Lane N. Bassett

Implement 2019 following reconstruction

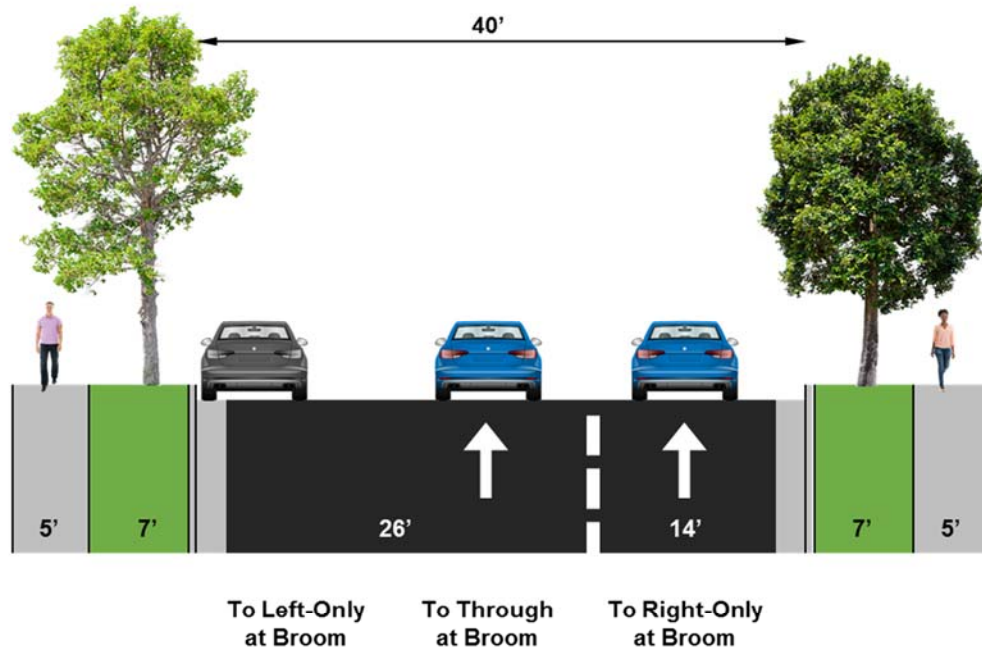


Alt 3: Protected Bike Lane S. Bassett

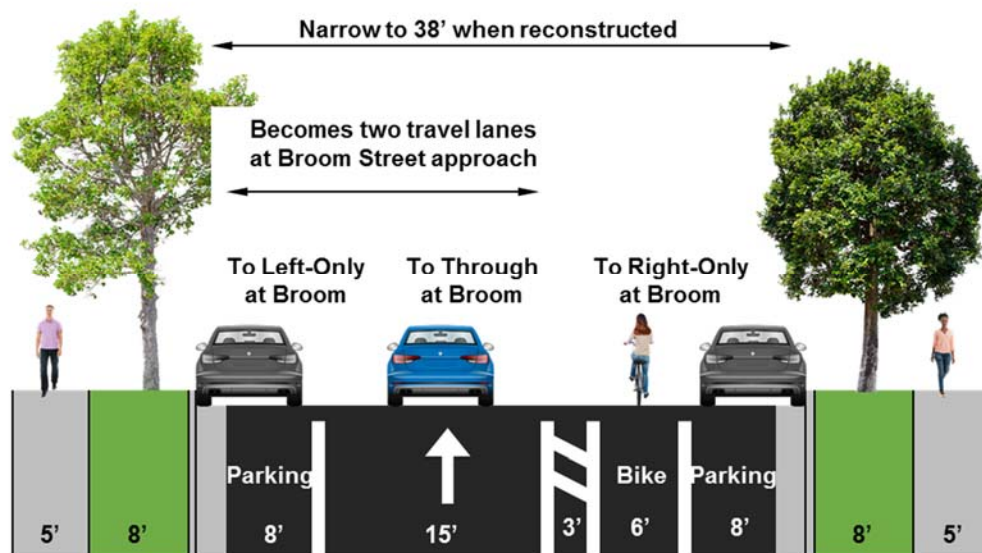
Implement 2020 following successful pilot on North Bassett



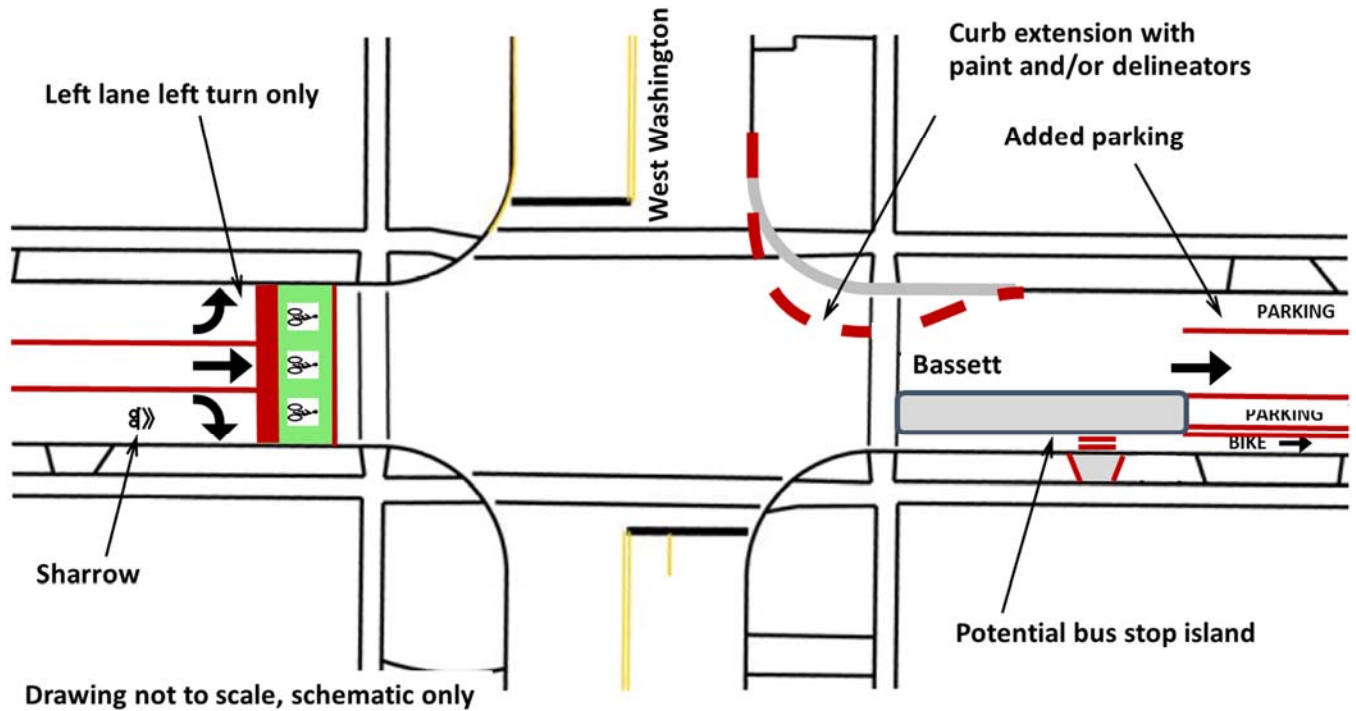
Wilson Street Existing Cross Section



Wilson Street Buffered Bike Lanes



West Washington Avenue



Wilson and Broom Street

