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MEMORANDUM

FROM: Public Safety and Transportation Committee

THROUGH: Brandie Schaeffer, Town Manager

FROM: Denise Harris, Planning Manager

DATE: August 8, 2019

SUBJECT: Waterloo/Chestnut Intersection Improvements

Background

In 2017 the Town conducted a Walkability Audit on Waterloo Street with multiple adults, students, and residents participating. In the existing conditions section of the final report it states:

> *"The intersection of Chestnut Street with Waterloo provided a good example of common issues along the corridor. The slightly offset layout of the intersection – South Chestnut has a median divider that means traffic coming from South Chestnut Street onto Waterloo is not lined up opposite North Chestnut – creates enough ambiguity among both motorists and pedestrians (especially school students) that motor vehicle traffic tends to dominate proceedings even though there is a marked crosswalk on Waterloo. Drivers are watching for other cars as they turn out of S Chestnut, and may not see or have enough time to react to pedestrians crossing Waterloo in the crosswalk.*
>
> *These issues are exacerbated by the fact drivers are often picking up speed as they come down the hill on Waterloo Street. Walkability audit participants shared several stories of cars being hit in that intersection and even shared pictures of recent crashes. This intersection is a key link between the neighborhoods on Winchester Street and Waterloo Street, and serves as a popular walking route for students and residents accessing the schools and businesses on Waterloo Street…In general, participants noted that even with the presence of a police officer and a speed trailer on Waterloo the day of the audit, traffic was still traveling quite fast for a busy two-lane road with limited right-of-way and a lot of local foot as well as motor vehicle traffic. Traffic calming measures, such as alternating parking to create chicanes, would reduce vehicle speeds and provide more of a buffer between the travel lanes and sidewalk."*

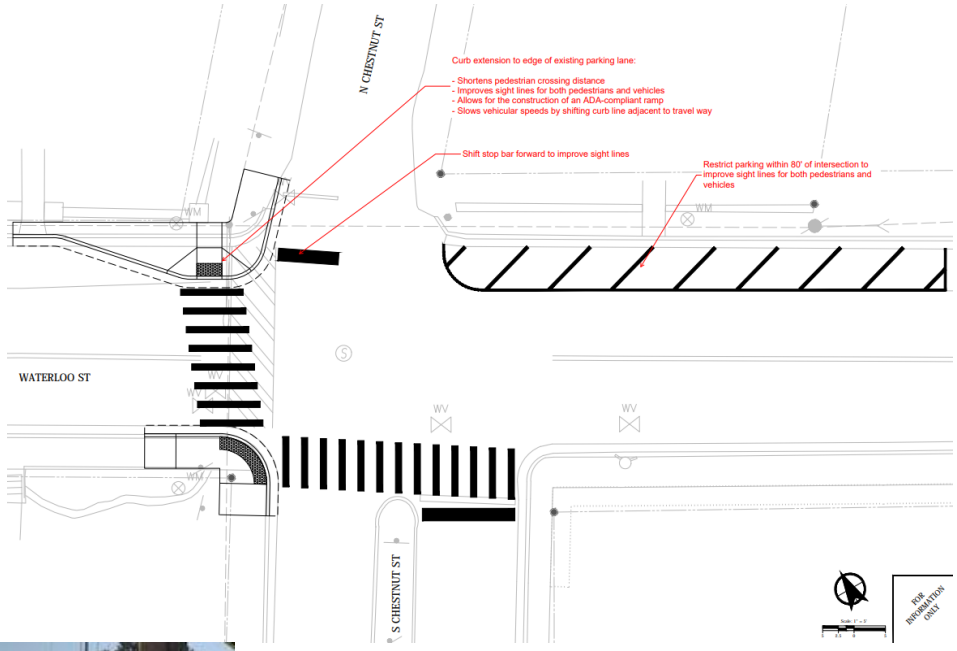
Short term recommendations in the report included installing bulb outs and moving on-street parking to the sidewalk side to protect pedestrians while introducing chicanes to calm traffic.

Concepts for Consideration

Last year's CIP funded the development of a design to bring these recommendations to fruition. Staff would like to present these concepts to the committee and ultimately ask Town Council to support a Revenue Sharing application to help fund the improvements. Additionally, there is an opportunity to leverage the State of Good Repair funds approved for Waterloo Street by incorporating the additional improvements now.

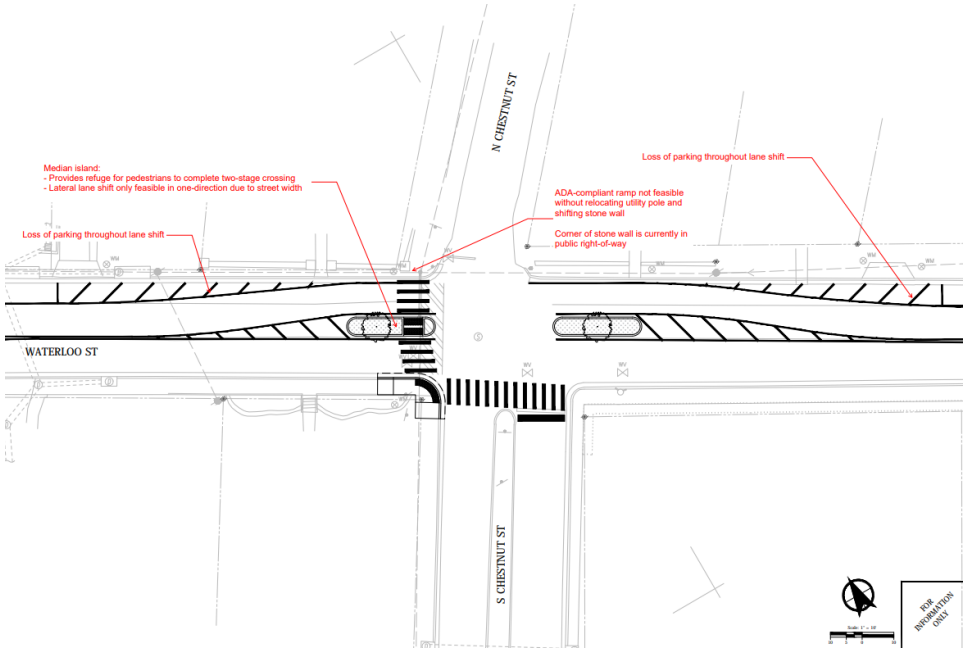
Concept 1

Concept 1 provides for a bulb out and increased site distance on N. Chestnut by pulling forward the stop bar while moving the on street parking back. It also introduces ADA ramps. It does not include any traffic calming on the travel lanes of Waterloo nor resolution to site distance issues on the west side of Waterloo. This option does not require right-of-way or utility easement modifications.



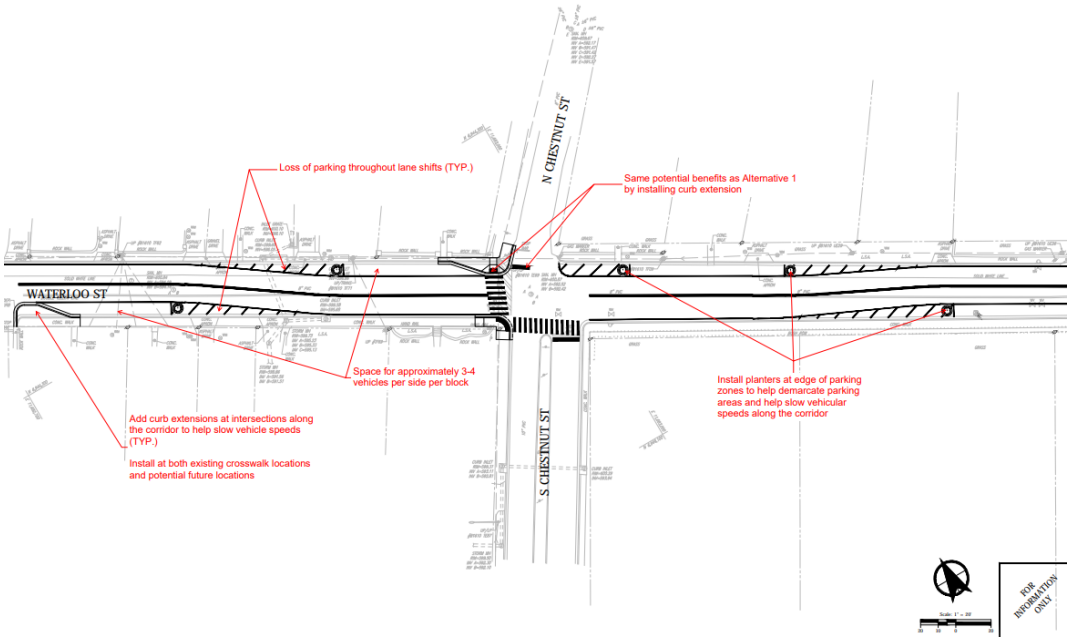
Concept 2

Concept 2 incorporates medians to provide pedestrian crossing refuge, as well as increases the site lines for vehicles on N. Chestnut Street. However, this concept does not incorporate traffic calming techniques for vehicles on Waterloo heading east. Unlike Concpets 1 and 3 it can not be "built upon" with additional sidewalk improvements on Chestnut due to the lack of a bump out with ADA ramp compliance. Indeed, this Concept terminates the crosswalk as it does today into an unprotected area seen in the picture below.



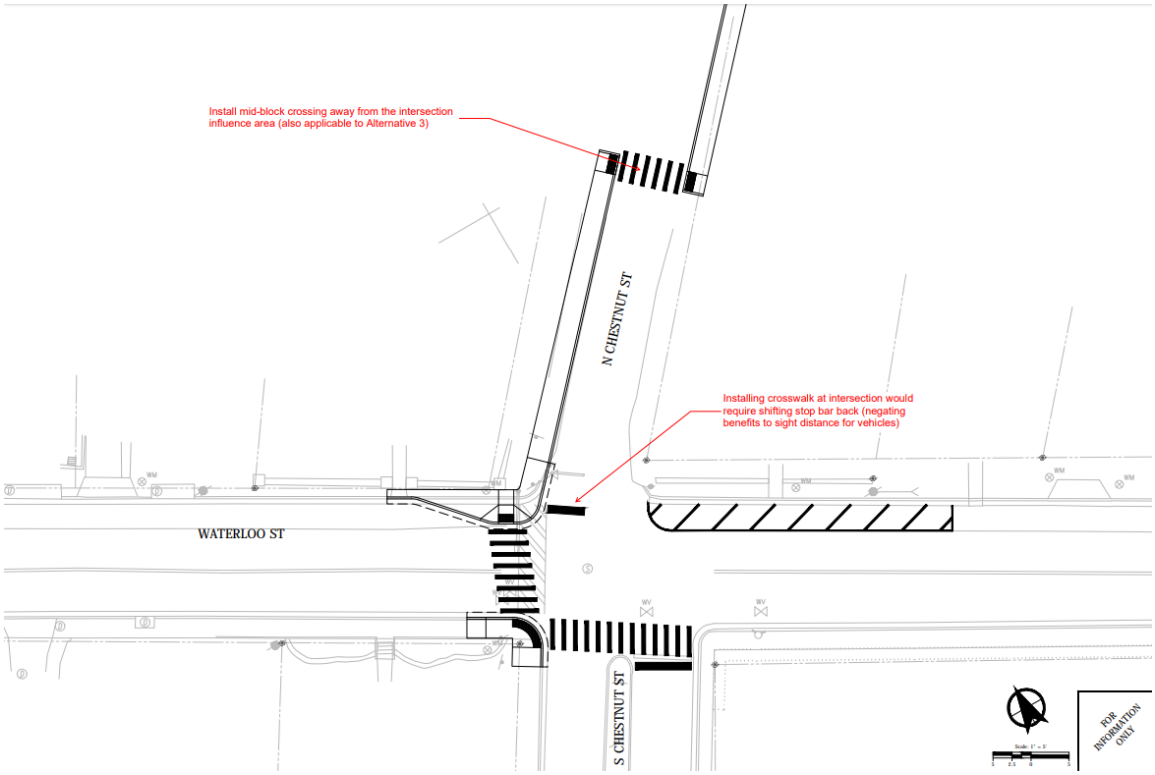
Concept 3

Concept 3 is the same intersection improvement as Concept 1; however, it takes a more comprehensive traffic calming approach on Waterloo. By introducing chicanes and alternating the on street parking, as recommended in the Walkability Audit, vehicles traveling on Waterloo are more likley to stay within the 25 mph speed limit. Speed is a factor on this stretch of road due to the long site lines. It is further exasperated by sunrises and sunsets that tend to blind drivers on Waterloo. This Concept also repeats the bump out improvements by introducting the treatment at Warrenton Blvd. Additional benefits for consideration are the introduction of greenscaping.



Concept 1 and 3 Addition

The benefit of the approach of Concepts 1 and 3 are they allow for a future sidewalk to be installed on N. Chestnut Street without additional right-of-way or utility relocations. If the Waterloo crosswalk was moved to the east side of the intersection, there would be the need to engage in these additional costs.



Next Steps

The Town is applying for a Revenue Sharing grant to help fund improvements at this location. The review of the Committee will be taken under advisement before presenting to the Town Council a resolution for the Revenue Sharing application. Refinements will continue to the preferred concepts and outreach to the neighborhood will be conducted.

Following pages are excerpts from the *2017 Walkability Audit Report* relating to this intersection.

Existing Conditions and Observations

The Waterloo corridor is the most direct route from Old Town to Broadview Avenue and points further west, including Fauquier High School and the Warrenton Aquatic and Recreation Facility (WARF). East of Broadview Avenue, Waterloo Street has one travel lane in each direction, on-street parking on the north side of the street, and a sidewalk on only one side of the road.

West of Broadview Avenue, Waterloo Road has one travel lane in each direction, and on-street parking and a sidewalk on the south side of the street until the intersection with Piedmont Street. West of the intersection with Piedmont Street, on-street parking is permitted on both sides of the street and there is a sidewalk on both sides of the road.

Waterloo Street heading west; sidewalk on one side only.

The intersections along Waterloo Street create the biggest barriers to walking along the corridor. Minor intersections near Warrenton Middle School are challenging for pedestrians because parked cars block the view of oncoming traffic, and the intersections lack ADA compliant curb ramps and high visibility crosswalk markings. Restricting parking within 20 feet of the intersection, posting advance pedestrian crossing signs and adding high visibility crosswalks would improve the pedestrian experience at these intersections.

Main entrance to the Middle School on Waterloo with uncontrolled crossings.

The intersection of Chestnut Street with Waterloo provided a good example of common issues along the corridor. The slightly offset layout of the intersection – South Chestnut has a median divider that means traffic coming from South Chestnut Street onto Waterloo is not lined up opposite North Chestnut – creates enough ambiguity among both motorists and pedestrians (especially school students) that motor vehicle traffic tends to dominate proceedings even though there is a marked crosswalk on Waterloo. Drivers are watching for other cars as they turn out of S Chestnut, and may not see or have enough time to react to pedestrians crossing Waterloo in the crosswalk.

Potential reconfiguration of the main school access with a raised intersection, example from Cambridge, MA

These issues are exacerbated by the fact drivers are often picking up speed as they come down the hill on Waterloo Street. Walkability audit participants shared

Chestnut and Waterloo Streets

several stories of cars being hit in that intersection and even shared pictures of recent crashes. This intersection is a key link between the neighborhoods on Winchester Street and Waterloo Street, and serves as a popular walking route for students and residents accessing the schools and businesses on Waterloo Street. This walking pattern will increase if the County chooses to relocate the Warrenton Branch Library to this intersection.

In general, participants noted that even with the presence of a police officer and a speed trailer on Waterloo the day of the audit, traffic was still traveling quite fast for a busy two-lane road with limited right-of-way and a lot of local foot as well as motor vehicle traffic. Traffic calming measures, such as alternating parking to create chicanes, would reduce vehicle speeds and provide more of a buffer between the travel lanes and sidewalk.

The large Broadview Avenue intersection has free-flowing right turn lanes on all four corners and long delays for pedestrians waiting to cross with the traffic signals. The intersection is a significant barrier to the High School, WARF, medical facilities, and other nearby destinations for people traveling by foot and bicycle. For pedestrians walking the length of the Waterloo corridor, they must cross both Waterloo and Broadview at this intersection to stay on the sidewalk. Participants noted a wide variety of crossing locations and methods as people navigated this intersection as efficiently and conveniently as possible – often outside the "official" crosswalks, signs, signals and markings.

Major Takeaway

During the walk audit, the study team spent time observing the free-flow right turn lane on the northwest corner of the Broadview/Waterloo intersection. As it is currently designed, there are two locations for pedestrians to cross the right turn lane, one at each end of the slip lane.

While this configuration provides pedestrians with direct routes to the sidewalks in both directions, audit participants were struck by the fact that almost every driver turned their head to check for merging traffic as they reached the second crossing point (closest to Frost Road). Thus, at the critical moment when they should be checking to see if there are pedestrians approaching the crosswalk, their heads are turned in the opposite direction.

When there is oncoming traffic, drivers keep their heads turned over their left shoulders until they see a gap, and often proceed through the intersection without looking directly ahead or back to the right. If drivers do not see any oncoming traffic, they will accelerate through the crosswalk. A better design would have a single marked crosswalk located closer to the midpoint of the turn lane, well before the point where most drivers turn their heads to look back over their shoulders while maintaining the principle that pedestrians will cross at the shortest point. This would have not have been obvious without observing driver behavior as part of the walking audit.

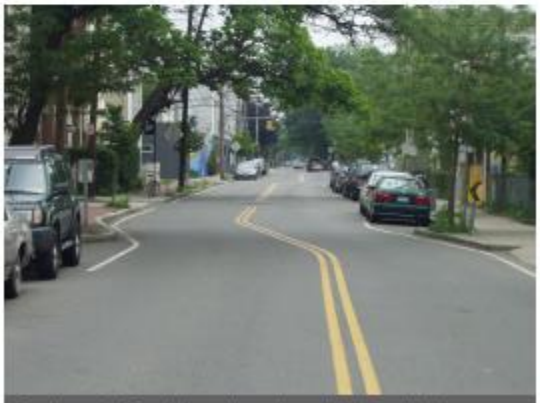

Broadview and Waterloo Intersection. At this crossing point, driver's heads are turned away from the crossing to look for merging traffic.

Short-Term Recommendations

Temporary bulb-outs at an intersection in Alexandria, VA

This section of new sidewalk on a major road in Jacksonville, FL maintains a level surface for the sidewalk and a more steeply sloping driveway apron for motor vehicle access.

1. Install bulb-outs (C.6.) on Waterloo Road at N. Chestnut Street to daylight the intersection for pedestrians and provide pedestrians a visible place to wait to cross the Waterloo Road. Consider adding bulb-outs to S. Chestnut Street at Waterloo Road to reduce crossing distance for pedestrians.
2. Switch parking lane from the north to south side of Waterloo Road from N. Chestnut to Garrett Street (except for the section in front of the middle school). This would provide a buffer to the sidewalk and create a modest chicane along the length of Waterloo Road to help reduce vehicle speeds.
3. Replace parking lane with new sidewalk (A.5.) between the existing marked crosswalks at the school entrance and Frazier Road; install Rectangular Rapid Flashing Beacon (RRFB) or Hawk Signal at one of the two crossings.



Creating a traffic calming chicane by switching parking to alternate sides.

This Rectangular Rapid Flashing Beacon installation is at a school crossing on a busy neighborhood street in Seattle.