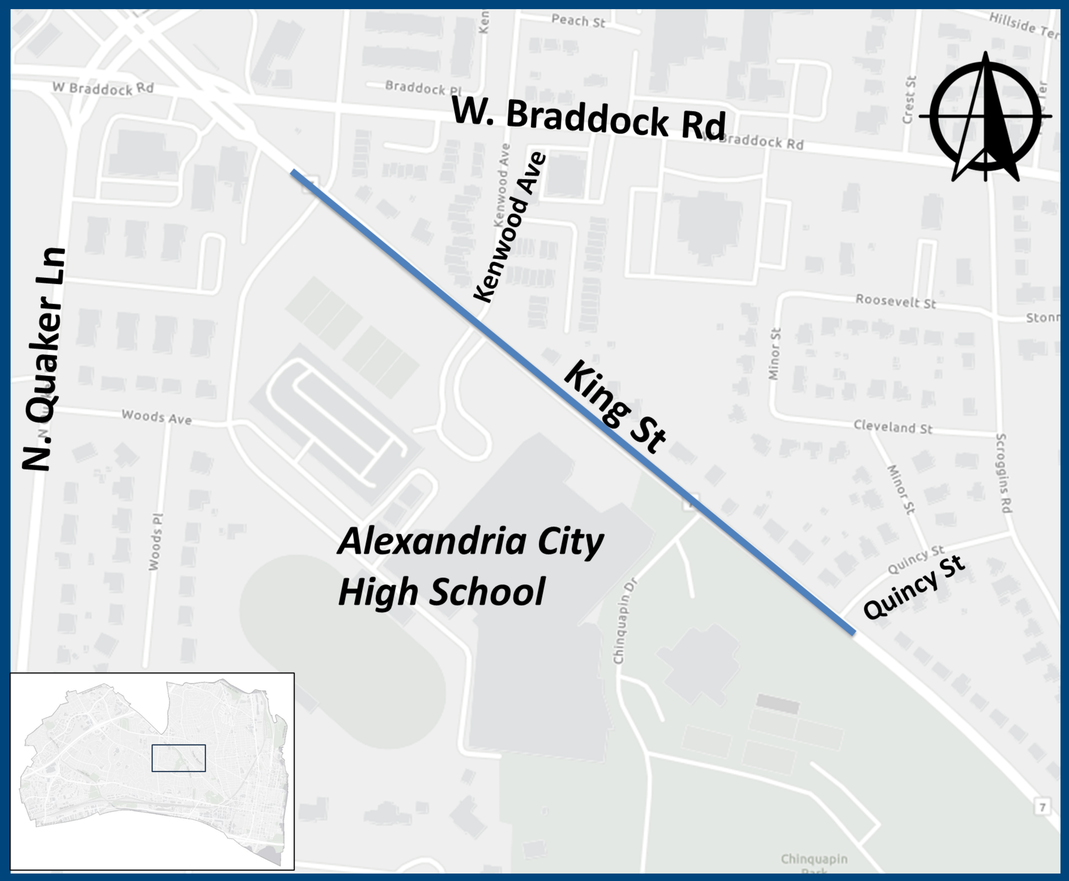
KING STREET ACCESS & SAFETY IMPROVEMENTS STUDY AT ALEXANDRIA CITY HIGH SCHOOL

PROJECT GOAL

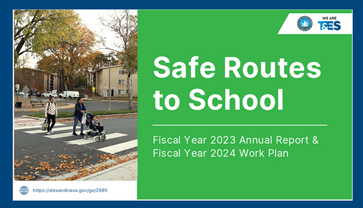
Identify improvements that enhance the day-to-day operations and safety of all roadway users and can be implemented in a short time period.



IDENTIFIED NEEDS

Virginia Statewide Transportation Plan (VTrans) identified this segment of King Street as a safety improvement location for pedestrians and access location for transit.

The Alexandria Mobility Plan identifies this segment of King Street as a priority bicycle gap location in the City.



Safe Routes to School Audit in 2023 identified a number of opportunities for the site, including:

- Treatments to improve safety and pedestrian visibility and yielding
- Better facilities for bus stops where overcrowding occurs
- Evaluation of a bike facility between Braddock Road and Chinquapin Drive
- Addressing the pick-up and drop-off issue near Alexandria City High School

For more information, visit the project website at
ALEXANDRIAVA.GOV/GO/6530

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KING STREET ACCESS & SAFETY IMPROVEMENTS STUDY AT ALEXANDRIA CITY HIGH SCHOOL

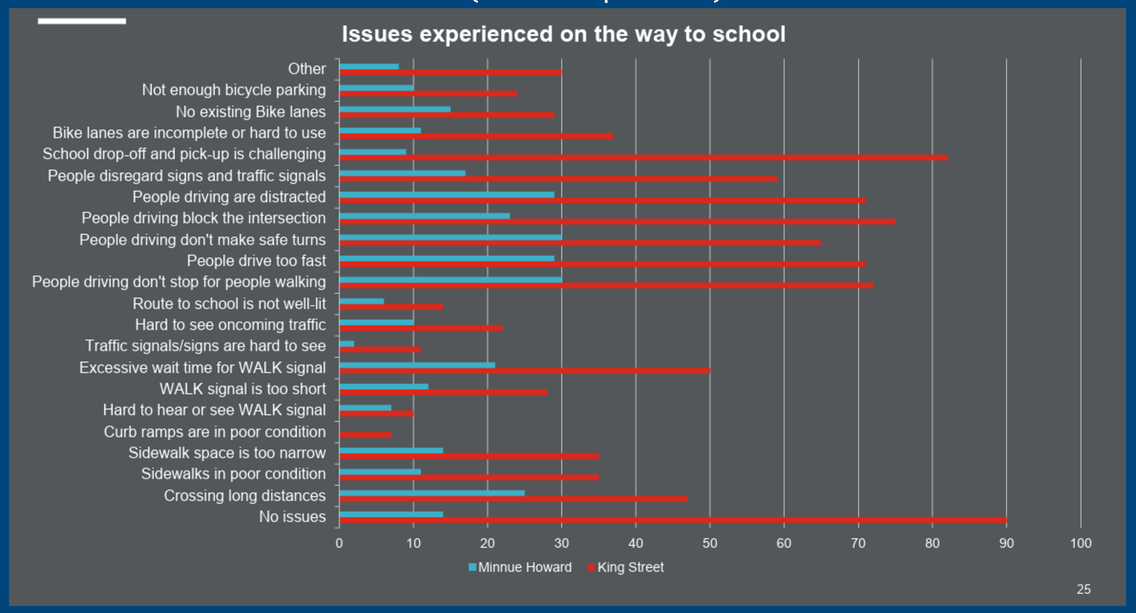
SAFE ROUTES TO SCHOOL

Safe Routes to School (SRTS) is a program that promotes walking and bicycling to school through infrastructure improvements, enforcement, safety education, and encouraging walking and bicycling to school. In order to create safer routes to schools, City Staff routinely undertake Walk Audits, or plans, to identify concrete opportunities to increase safety for students walking and biking to school and to create a safer community for all.

In 2023, City Staff completed a walk audit for Alexandria City High School. The audit process included community outreach, data analysis, and recommendations. A full copy of the report is available on the project site.

2023 COMMUNITY FEEDBACK

(369 responses)



SRTS SITE OBSERVATIONS

- Parents/guardians picking up students on King Street park in the right turn lane and buffered bike lane.
- At Chinquapin Drive and King Street, drivers pull onto the crosswalk and make right turns on red (Right Turns on Red are legal at this location).
- Students cross King Street both at crosswalks and mid-block, where there are no crosswalks, to access bus stops when there is standstill traffic.
- Many parents park along the buffered bike lane on King Street, forcing bicyclists into traffic and creating gridlock, blocking the intersection (of King Street and Kenwood Avenue) and crosswalks.

SRTS RECOMMENDATIONS

- **<u>King Street & Kenwood Avenue</u>**
  - Install Leading Pedestrian Intervals
  - Explore shifting westbound bus stop to be closer to the intersection; widen sidewalk where feasible to provide additional waiting space.
  - Provide bus shelter for eastbound bus stop in front of school.
  - Install treatments on eastern King St crossing to increase pedestrian visibility and slow left turns.
  - Explore converting eastbound curbside travel lane to a separated bike lane to encourage parents to use the formal pick-up on campus.
- **<u>King Street & Chinquapin Drive:</u>**
  - Evaluate installing an all-day No Turn on Red (NTOR) restriction or a dynamic NTOR restriction based on school hours.

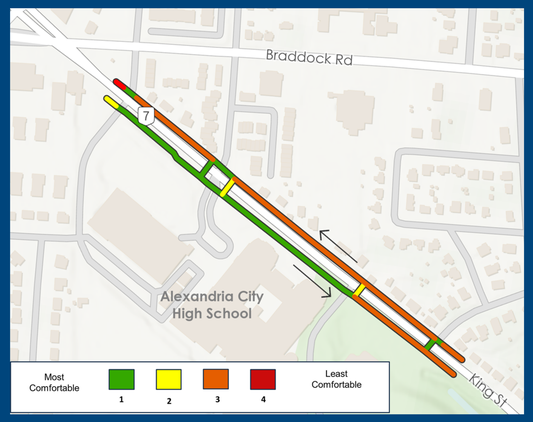
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KING STREET ACCESS & SAFETY IMPROVEMENTS STUDY AT ALEXANDRIA CITY HIGH SCHOOL

EXISTING CONDITIONS

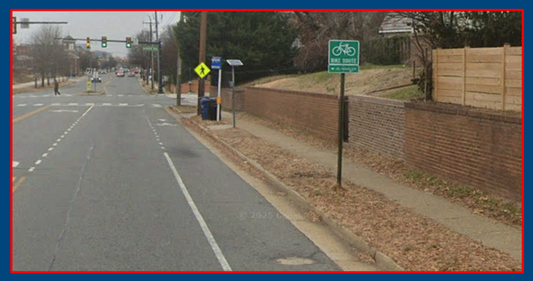
PEDESTRIAN LEVEL OF COMFORT



Pedestrian Level of Comfort measures how safe, pleasant, and easy it feels to walk in a space.

Comfortable and safe sidewalks:

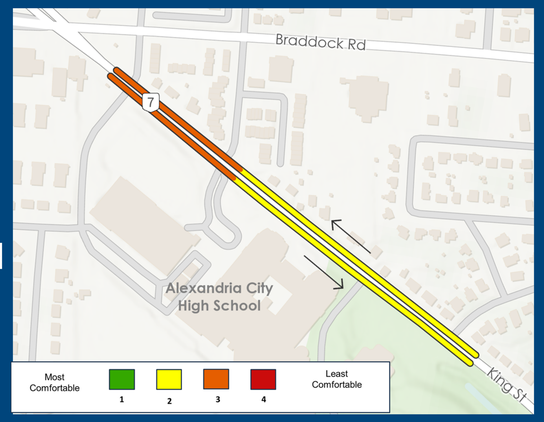
- Protect people from fast traffic and unsafe conditions
- Welcome everyone—including kids, seniors, and those with mobility challenges
- Promote a healthier and active lifestyle
- Increase sustainability and create healthier neighborhoods with less reliance on driving



What can improve the pedestrian level of comfort?

- Slower, calmer traffic
- Safe and visible crosswalks
- Wide, well-maintained sidewalks
- Shade trees and greenery

BICYCLE LEVEL OF TRAFFIC STRESS



Bicycle Level of Traffic Stress measures how comfortable it feels to bike on a street or path. It considers traffic speed, volume, bike lane design, and how safe riders feel.

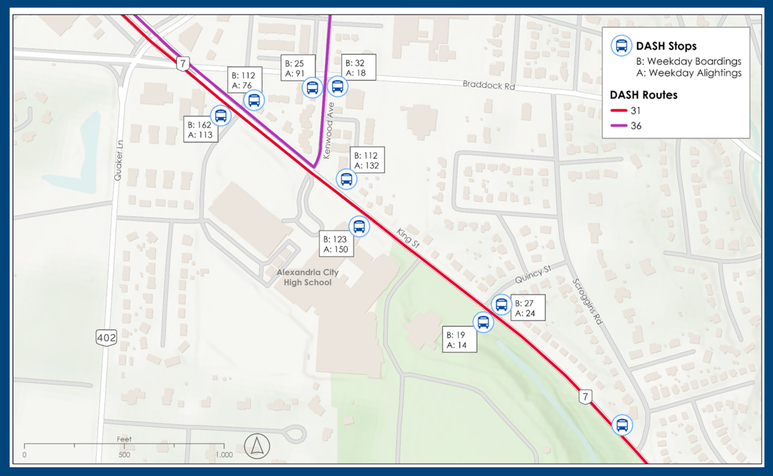
Low-stress routes:

- Reduce crash risk and encourage safer biking behavior
- Support people of all ages and abilities who wish to bike
- Offer active transportation options for errands, community, and recreation
- More bikes on the road mean fewer cars, less traffic, lower emissions, and healthier communities
- Improve equity by connecting neighborhoods and ensuring everyone has safe travel options—not just drivers



What creates low-stress bikeways?

- Protected bike lanes or off-street trails
- Fewer cars and lower speeds
- Safe intersections with bike signals
- Clear markings and separation from traffic
- Comfortable, shaded routes
- Connected networks, not isolated bike lanes



TRANSIT STOP DATA

- The project area is served by DASH routes 31 and 36.
- The graphic summarizes average weekday boardings and alightings.
  - The stops are heavily used during arrival and dismissal times for the high school, often resulting in overcrowding of the bus stops along the north side of King Street.
- The stops also see heavy use outside of the school year and during AM and PM peak times, indicating a number of commuters rely on the stops.

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KING STREET ACCESS & SAFETY IMPROVEMENTS STUDY AT ALEXANDRIA CITY HIGH SCHOOL

VEHICLE LEVEL OF SERVICE BY INTERSECTION

	AM Peak	School Arrival/ Dismissal	PM Peak
Radford & King Streets	A	D	A
Kenwood Avenue & King Street	D	E	C
Chinquapin Drive & King Street	C	B	B

EXISTING CONDITIONS

RADFORD ST KENWOOD AVE



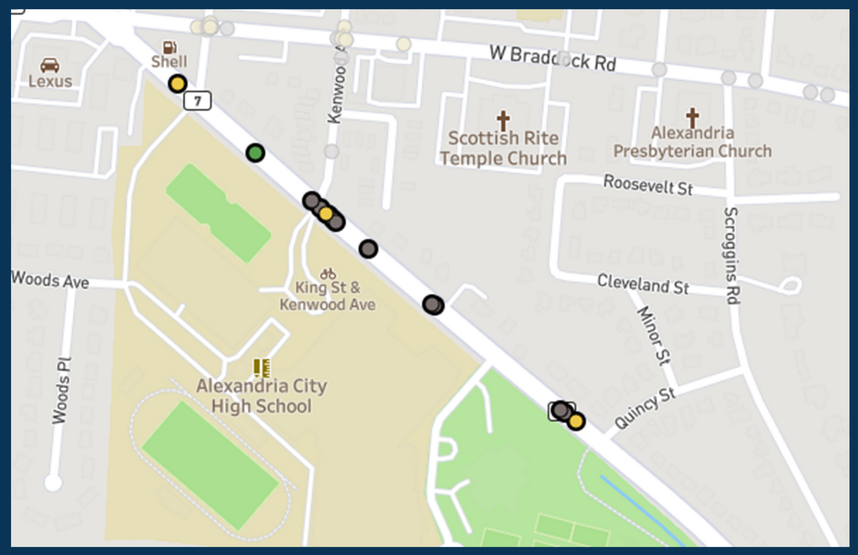
CHINQUAPIN DR

VEHICLE OPERATIONS: LEVEL OF SERVICE

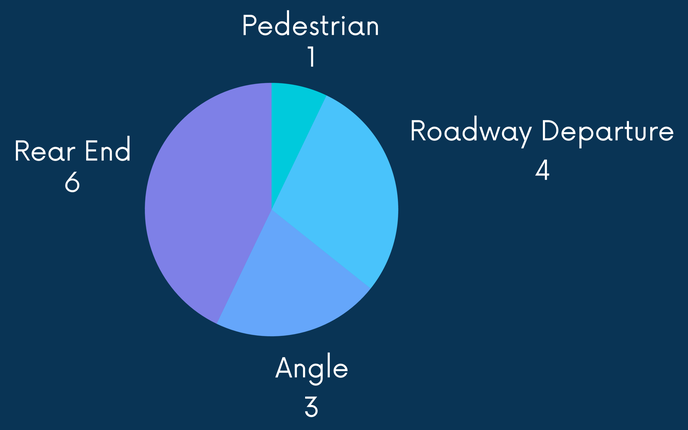
A Vehicle Level of Service is a grading system from A to F used to measure how efficiently vehicles move through a road or intersection. It's based on factors like travel speed, delays at signals, traffic volume, and driver comfort and convenience.

A: Free-flowing traffic, no delays
B - C: Stable flow with minimal delays
D: Noticeable congestion, some delays
E: At or near capacity, long delays
F: Overloaded, frequent stop-and-go

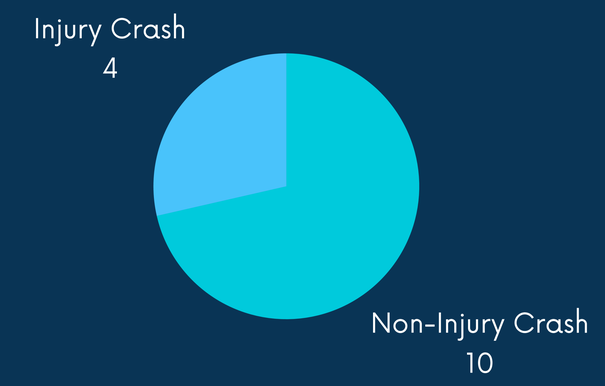
CRASH DATA 2021-2024



CRASHES BY TYPE



INJURY CRASHES



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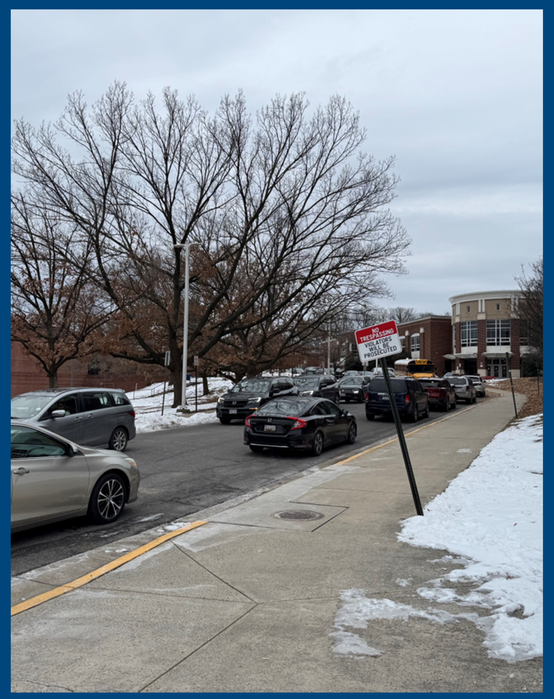
KING STREET ACCESS & SAFETY IMPROVEMENTS STUDY AT ALEXANDRIA CITY HIGH SCHOOL

OBSERVED CHALLENGES



Pedestrian Crossings

- Frequent mid-block crossings especially during school drop-off and pick-up
- Crossing during "Don't Walk" signals
- Long wait times at signals for pedestrians
- Crosswalks do not align with preferred crossing locations or existing bus stops



Vehicle Backups

- Traffic signal timing, particularly at Chinquapin Drive, fails to adapt to changes in traffic volume during school arrivals and departures, leading to prolonged wait times for vehicles.
- Congestion at Kenwood Avenue promotes aggressive driving behaviors, such as entering the intersection to make a left turn during the yellow or red light phases.



School Pick-Up & Drop-Off

- The misuse of the right-turn lane in front of the school for illegal parking during arrival and dismissal leads to long traffic queues on King Street.
- This situation causes backups at the Kenwood Avenue intersection, which results in hazardous driving behaviors, including late merging and aggressive maneuvers.



Crowded Sidewalks

- Bus stops on the north side of King Street are heavily used and often have large numbers of students waiting for the bus.
- Crowded conditions may make it difficult for other pedestrians to pass groups of students.

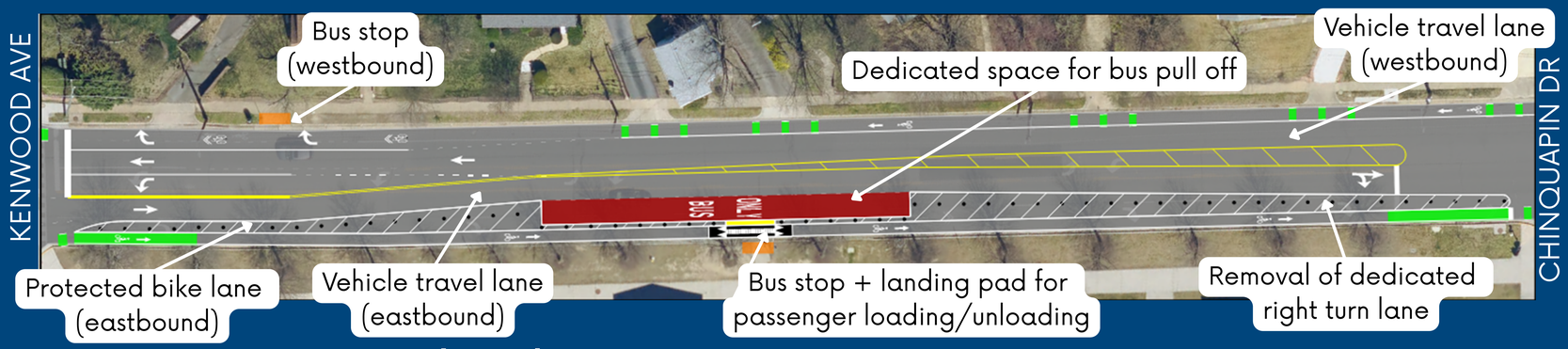
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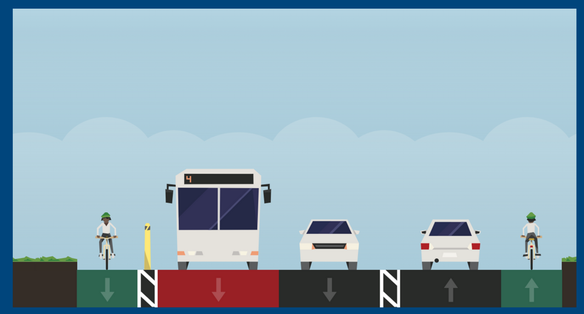
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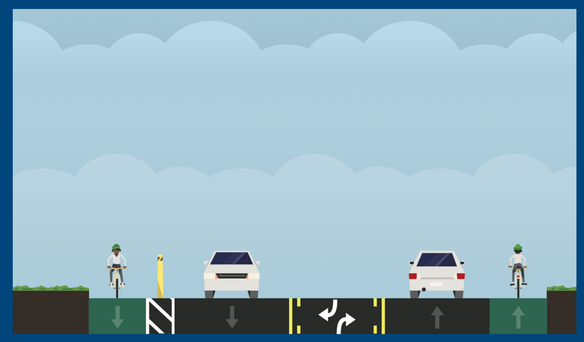
DESIGN CONCEPTS

OPTION 1: Protected Bike Lane + Bus Pull Off

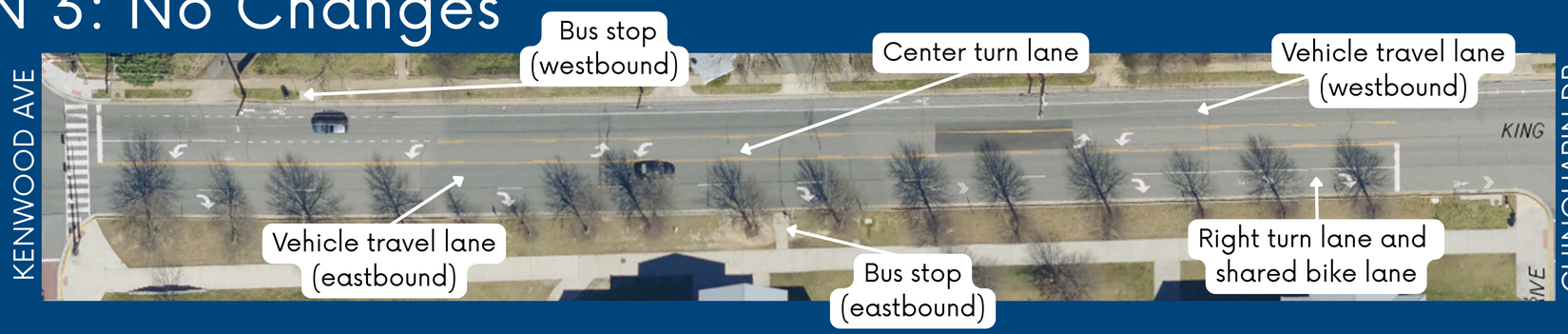


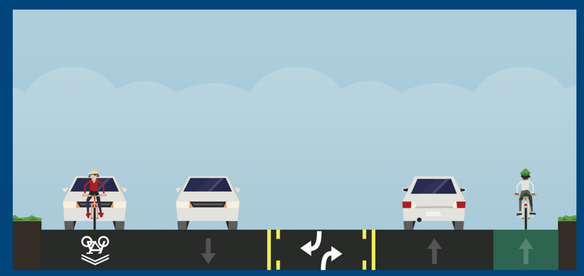


OPTION 2: Protected Bike Lane + Center Turn Lane



OPTION 3: No Changes





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KING STREET ACCESS & SAFETY IMPROVEMENTS STUDY AT ALEXANDRIA CITY HIGH SCHOOL

ADDITIONAL TREATMENTS



HIGH VISIBILITY CROSSWALK

A high-visibility crosswalk uses bold, reflective markings to clearly show where pedestrians are crossing the street.

Benefits:

- May increase driver awareness of pedestrians, reducing the potential for crashes at busy or higher-speed roads.
- Reflective materials make pedestrians more visible after dark or in poor weather.
- Drivers are more likely to yield at crosswalks that are easier to see.

CONSOLIDATED BUS STOPS

The project proposes to combine the three bus stops on the north side of King Street into one stop. Combining stops can improve the efficiency and reliability of the transit service while maintaining accessibility.

Benefits:

- Faster travel times with less stopping and starting
- Improved reliability and easier to stay on schedule
- Shorter trip times for riders
- Easier to maintain and fewer bus stops

LEADING PEDESTRIAN INTERVALS (LPI)

A Leading Pedestrian Interval gives pedestrians a 3-7 second head start to begin crossing the street before vehicles get a green light. Pedestrians can begin crossing the street, which increases their visibility to drivers.

Benefits:

- LPIs make pedestrians more visible to turning drivers, especially at busy intersections.
- They reduce the risk of crashes between pedestrians and turning vehicles.
- They are a low-cost signal timing change with no new infrastructure required.

TRAFFIC SIGNAL ADJUSTMENTS

Traffic signal adjustments involve changing the timing, coordination, or operation of traffic lights to improve how vehicles, pedestrians, and bikes move through an intersection. This can include changing light durations, adding protected turns, and synchronizing signals across blocks.

Benefits:

- Reduces delay by more efficiently moving vehicles and people through an intersection
- Improves safety by reducing conflict points and potential red-light running

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