



Kimley»»Horn

Duke Street Safety Improvements



Outline





Project Background

Project Overview

- The goal of this project is to **enhance traffic safety for all roadway users** at the intersections of Duke Street and South Patrick Street and Duke Street at South Henry Street.
- More than 35 crashes have occurred at each intersection since 2014. The two intersections rank among the City's high-crash sites.

This project is supported by the City's Vision Zero efforts to eliminate fatal and severe crashes and aligns with the goals of the Alexandria Mobility Plan.

Study Area



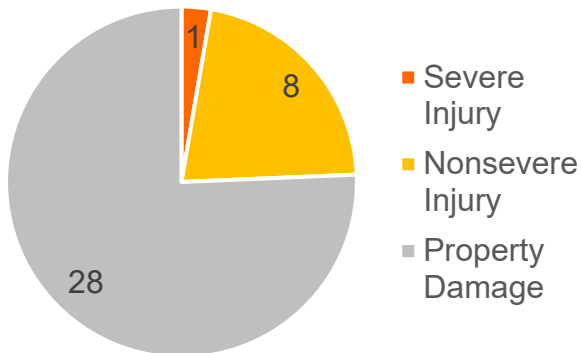


Existing Conditions & Community Input

Crash Trends

2015-2022

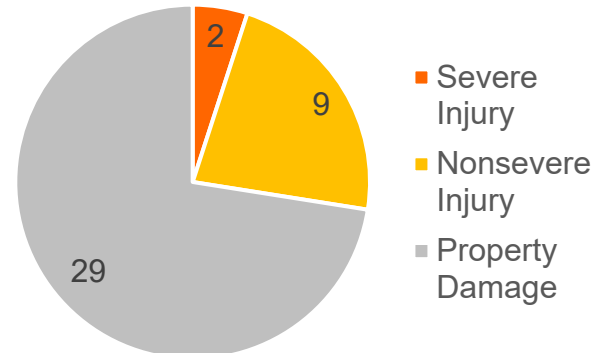
South Henry Street



Total crashes: 37

- Pedestrian crashes: 2
- Angle crashes: 14

South Patrick Street



Total crashes: 40

- Pedestrian crashes: 2
- Angle crashes: 17

Crash factors at both intersections include:

- Distraction
- Impairment
- Speed
- Failure to Yield/Stop

Community Input

The City received over 340 responses to the project feedback form in February 2023.

South Henry Street

- **67%** say S Henry is unsafe or very unsafe
- **67%** say S Henry is difficult to navigate
- Top concerns:
 - People drive too fast
 - Unsafe turns
 - People disregard signs and signals

South Patrick Street

- **47%** say S Patrick is unsafe or very unsafe
- **41%** say S Patrick is difficult to navigate
- Top concerns:
 - People drive too fast
 - Unsafe turns
 - People block the intersection

Community Input: *South Henry Street*

“Drivers in the double right lanes to veer onto South Henry don’t see the traffic lights which make it dangerous for pedestrians having the signal to cross Duke.”

“Cars turning right onto Henry from Duke and those turning left from Duke onto Henry (both traveling in the direction of 495) don’t seem to know who has the right of way. They both have a green light for a portion of the same time and there have been numerous close calls.”

“Drivers are all in a hurry, run the light, drive too fast and never, ever pay any attention to pedestrians. Period. Our safety is completely in our hands. When possible I either cross Route 1 at Wilkes or Prince.”

“Two neighbors have been hit in the Duke/Henry intersection. I fear ever time I cross there. I use a flashing light at night when walking the dog. ”

“The intersection is very dark with poor streetlight coverage. ”

Community Input: *South Patrick Street*

“...people drive fast, they turn aggressively, they run through red lights, and during rush hour in traffic backed up considerably, people get frustrated, and there is Road rage.”

“Drivers block the intersection, turn without looking and drive too fast. Both my husband and I have almost been hit when walking, numerous times.”

“As both a pedestrian and a driver at that intersection, I notice far too much speeding.”

“I find it very hard to see pedestrians at this intersection at night. It should be lit better. Pedestrians wear reflective gear and put flashing necklaces on their children so they are soon [sic] - they shouldn't have to do that.”

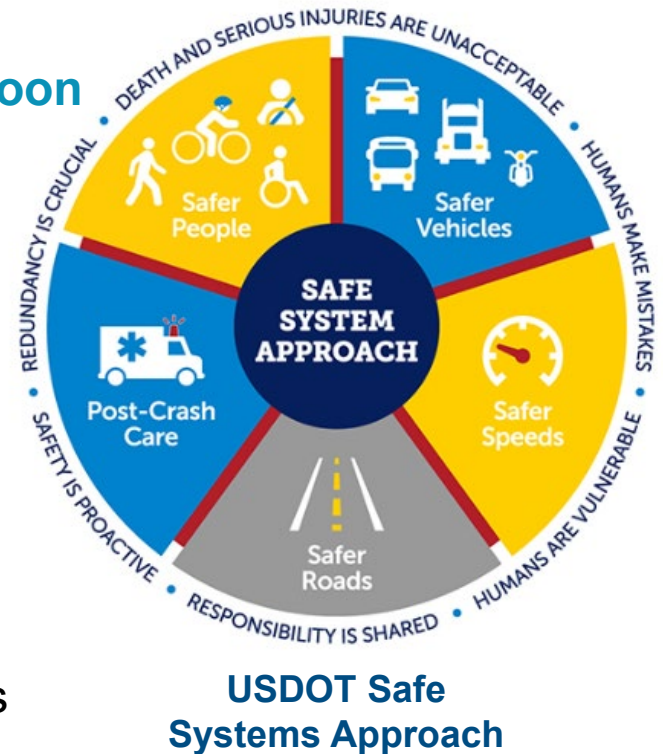
“...most is caused by people speeding through to make the light. I hate traffic cameras, but this needs a red light camera as well as a speeding camera.”

Safety Audit Summary

Staff performed a Road Safety Audit on typical weekdays during the morning peak hour, afternoon peak hour, and in the evening.

Objectives:

- Holistically observe from both driver and pedestrian perspectives
- Gain insight on driver and pedestrian behaviors and interactions
- Assess the functionality of existing infrastructure through qualitative observation
- Identify potential safety hazards for all road users
- Identify potential measures to eliminate/mitigate safety problems



Safety Audit Findings

Observed issues related to:

- Signal operations
- Roadway geometry
- Visibility
- ADA accessibility
- Traffic
- Lighting



This crossing at South Patrick Street is not ADA accessible, and the utility poles block visibility of pedestrians waiting to cross.

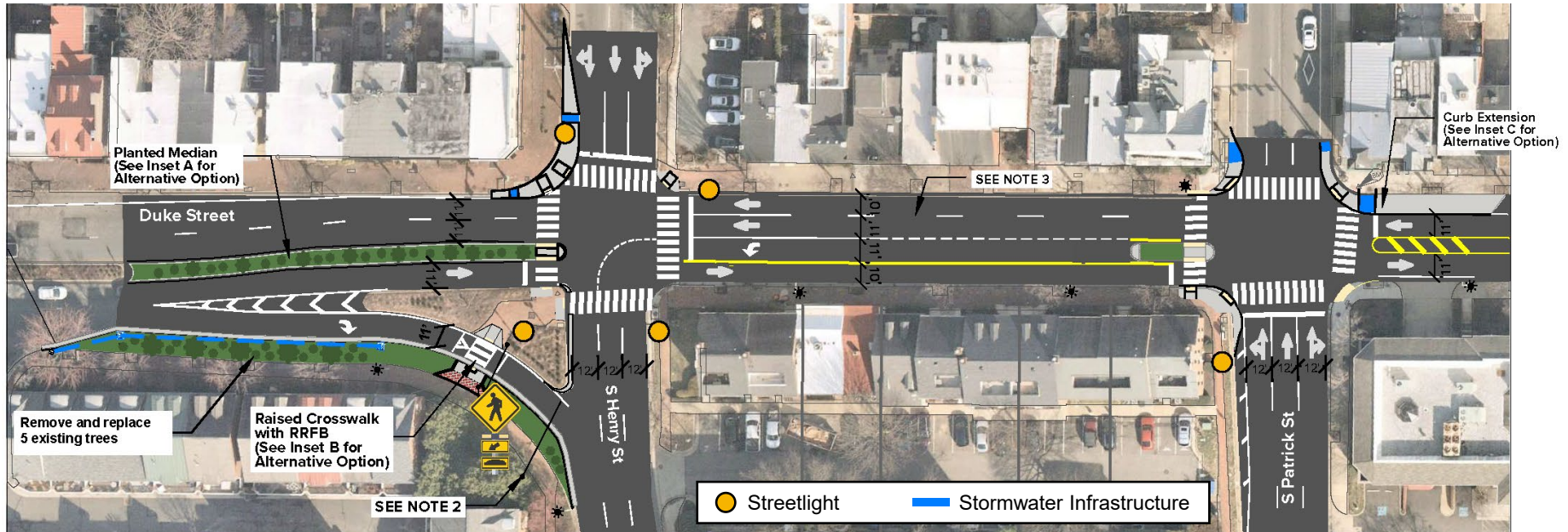


The slip lanes from Duke to South Henry Street encourage high-speed turns, and drivers were observed not stopping for pedestrians with the right-of-way.



Concept Designs

Concept Designs



South Henry Street treatments:

- Planted median with pedestrian refuge to calm traffic*
- Remove 1 lane from slip ramp to calm traffic and increase safety
- Raised crosswalk in slip lane with flashing pedestrian beacons*
- Curb extensions to calm traffic and provide more pedestrian space
- Increased street lighting
- Leading Pedestrian Intervals and No Turn on Reds

South Patrick Street treatments:

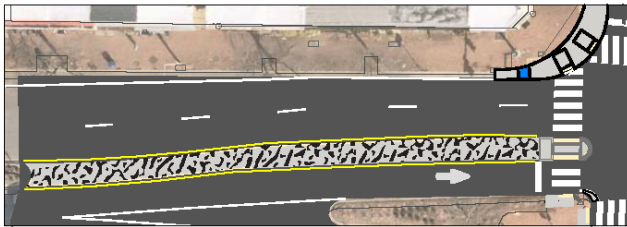
- Median refuge for west crosswalk
- Curb extensions to calm traffic and meet ADA standards
- Painted median to better align eastbound travel lanes*
- Increased street lighting
- Leading Pedestrian Intervals and No Turn on Reds

**Alternative considerations on next slide*

Concept Designs

Alternative Options

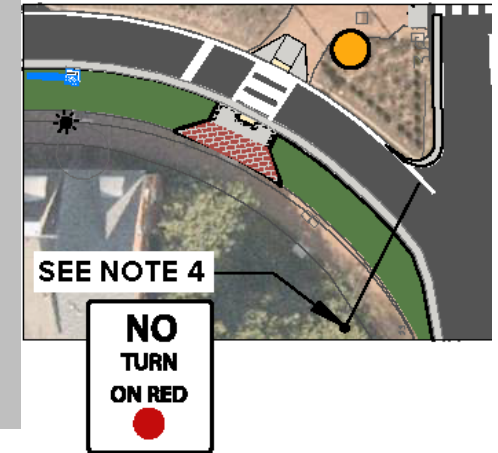
INSET A: Artistic Median Option at S. Henry



As a **short-term alternative to a tree-lined median**, a painted, artistic median could be installed while still providing a built pedestrian refuge. This would retain usable “clear” space for emergency vehicles traveling through the intersection and still provide placemaking to the area. A separate process would be required to select the artwork design.

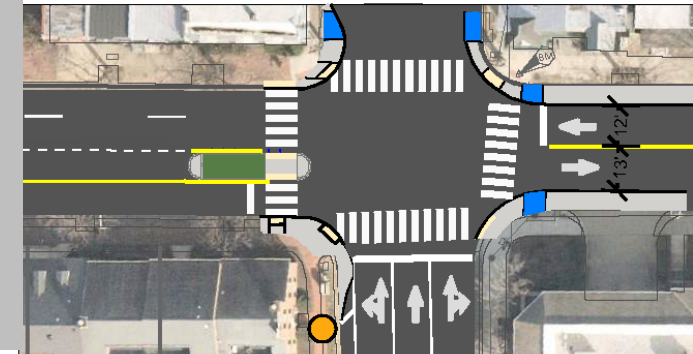
As an **alternative to a raised crosswalk with flashing beacons**, the existing signal would remain with a new No Turn on Red restriction. This would increase pedestrian safety from the existing condition while still giving drivers clarity on when it is safe to proceed with their turn. **After further investigation, staff recommend this option over the raised crosswalk with flashing beacons due to increased crash risk from lack of signal control for the slip ramp.**

INSET B: Alternative Crosswalk Option at S. Henry



INSET C: Alternative East Leg Curb Extensions at S. Patrick

As an **alternative to a painted median on the east leg of the intersection**, curb extensions could be accommodated on the north and south side for pedestrian safety and comfort, though this would result in unaligned eastbound travel lanes.



Note: Red light cameras may be considered in the future.

Other Options Considered

Removal of the eastbound slip lane at Duke Street & Henry Street and creation of a dedicated right-turn only lane.

- This option was explored and omitted. While removing the slip lane would reduce turning speeds, it would also increase the number of vehicles people walking would have to interact with at one time when crossing South Henry Street, thereby increasing the amount of exposure for people walking.

Replacing the westbound left turn lane from Duke Street to South Henry Street with a pedestrian refuge.

- This option was explored and omitted. Eliminating the dedicated westbound left turn lane would increase queuing and delay to unacceptable levels and would provide minimal benefit to people walking, as few drivers are turning left from South Henry Street to eastbound Duke Street.

Traffic Considerations

Duke & South Henry

- The existing left lane of the eastbound slip ramp holds only up to 7-8 vehicles.
- Depending on the time of day, 70-90% of drivers use the right lane of the slip ramp.
- By removing the left lane of the slip ramp:
 - Some additional queuing is expected on eastbound Duke Street in the PM peak period
 - An additional 30 seconds of delay is expected in the PM
 - This additional delay is expected to be minimized by optimizing signal timing along the Duke Street corridor

Duke & South Patrick

- Little to no additional queuing or delay is expected as a result of the design treatment options at this intersection.
- Existing delay at this intersection is expected to be improved by optimizing signal timing along Duke Street.



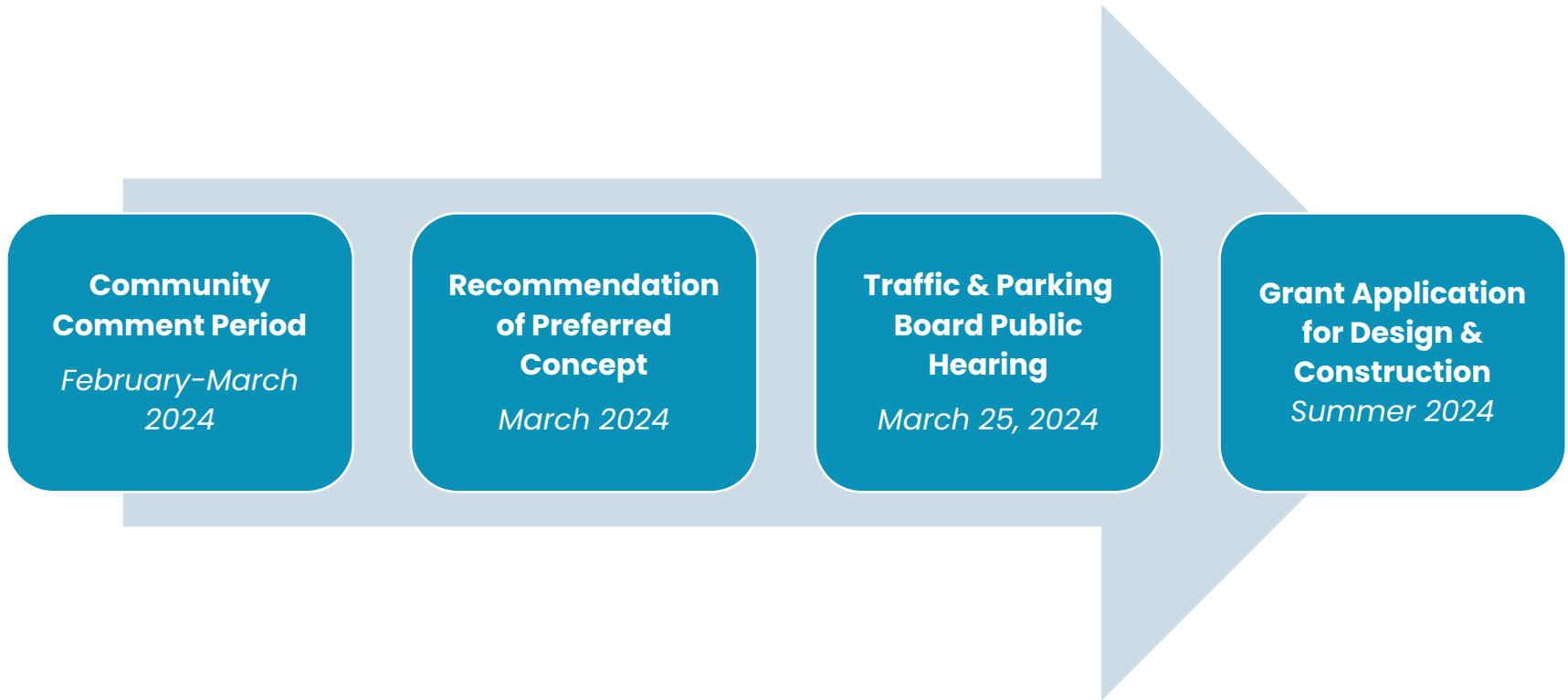
Next Steps

Share Your Feedback



Complete the [online feedback form](#) by **March 6.**

Next Steps



Additional information, including the full concept designs, can be found on the [project webpage](#).