

# **APPENDIX D**

## **Peer Corridors Summary**



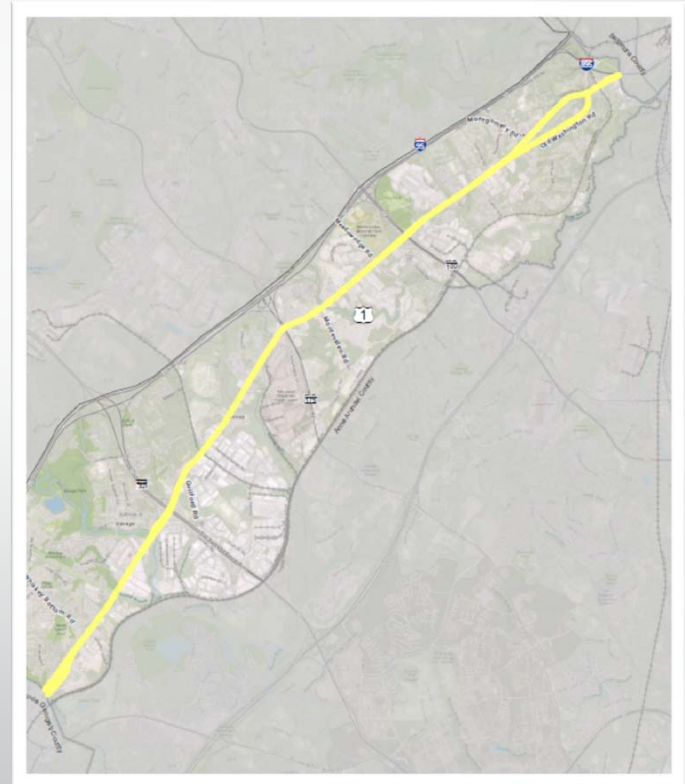
# US 1

## Peer Corridor Review Pedestrian and Bicycle Safety Enhancement

US 1 SAFETY EVALUATION  
NOVEMBER 2017

# US 1, Howard County, MD

- US 1
- State Owned
- 4 Lanes with Turn Lanes
- AADT 30,000
- Speed Limit Range 45 to 50 MPH
- Bus Transit
- 11 miles in length

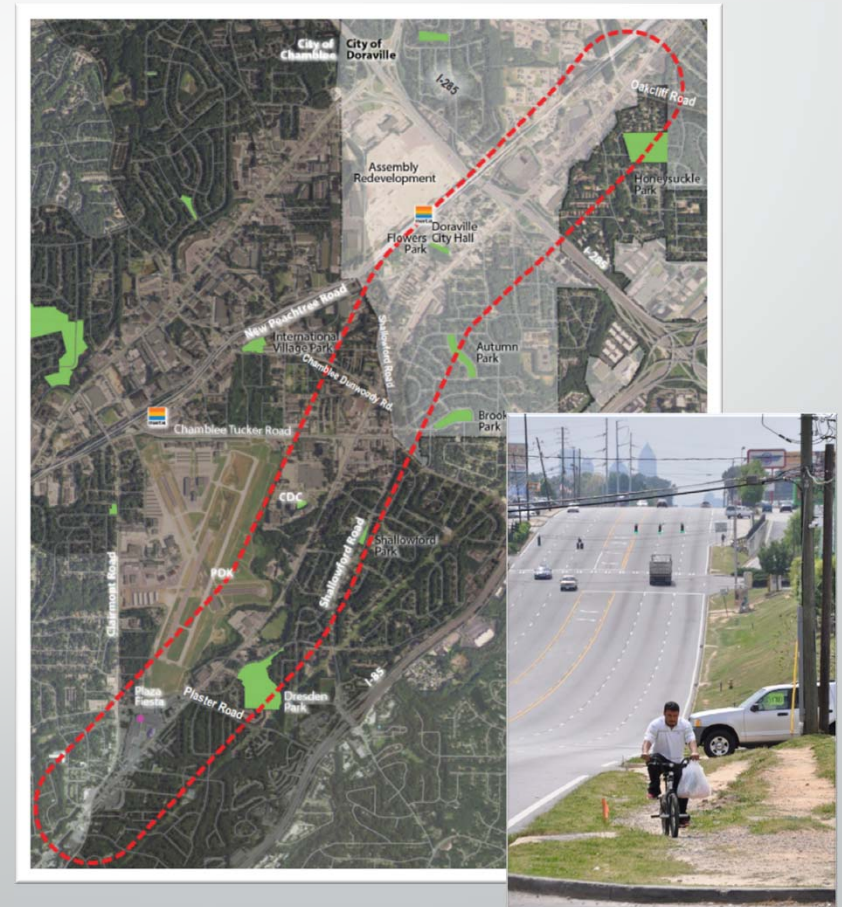


# Peer Corridors

- Route 13 (Buford Highway), Atlanta, Georgia
- US 1 (*Fuller Road to Courthouse Road*), Stafford, Virginia
- DE 1 (*Lewes-Rehoboth Canal Bridge to the Nassau Bridge of Five Points*), Sussex County, Delaware
- MD 26 (*Liberty Road between Champan Road and Baltimore City Line*), Randallstown, Baltimore County, Maryland

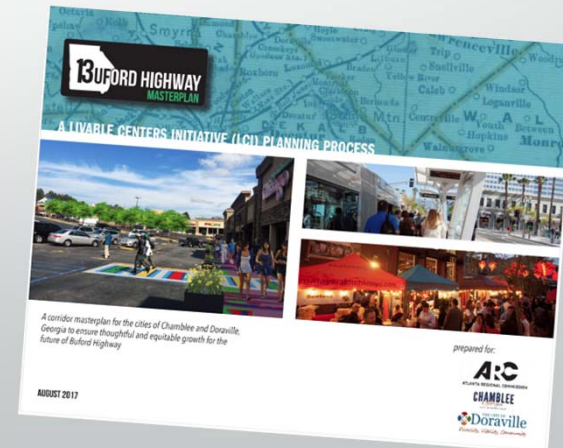
# Buford Highway, Atlanta, Georgia

- Buford Highway, Route 13
- State Owned
- 6 Lanes with Turn Lanes
- AADT 25,000
- Speed Limit Range 35 to 45 MPH
- Bus Transit
- 6 miles in length



# Buford Highway, Atlanta, Georgia

- Mixed-use corridor running through inner-ring suburbs
- Metropolitan Atlanta Rapid Transit Authority (MARTA) busiest bus route (route 39) on Buford Highway with the most ridership and most frequent service of the bus system
- Several intersections along corridor are constrained in their capacity and have congestion, specifically during peak travel times
- Corridor crash rate is mostly higher than statewide average for functional classification
- Corridor underwent study to:
  - Make Buford Highway safer
  - Prevent displacement of immigrant communities and their businesses
- 2016 Grant produced plan that addresses **connectivity, affordable housing and pedestrian safety**





# Buford Highway, Atlanta, Georgia

## Buford Highway Masterplan Goals:

- Increase use of alternatives to driving alone
- Develop transportation projects and other programs to improve accessibility
- Expand mixed land uses
- Utilize transit
- Support further development in study area

Plan introduced 23 big ideas in order to improve the corridor, these ideas include but are not limited to:

- Enhanced Buses and Bus Stops
- Increasing Mid-Block Crossings and Consolidated Driveways/ Curb Cuts
- Unified Travel Speed
- Urban Design Standards
- Tactical Urbanism Projects
- Cohesive Bike-Pedestrian Plan
- Unified Business Organization

[https://www.dropbox.com/s/o6ey1p9ajdfhlmg/BuHi%2oLCI%2oFINAL%2o\(9.22.17\).pdf?dl=0](https://www.dropbox.com/s/o6ey1p9ajdfhlmg/BuHi%2oLCI%2oFINAL%2o(9.22.17).pdf?dl=0)

# Buford Highway, Atlanta, Georgia

## Buford Highway Masterplan Takeaways:

- **Public Engagement**
  - Community engagement done in a variety of ways through interviews, open houses, community forums, online, multi-language flyers and surveys and a master plan steering committee with diverse community members
- **Corridor Transformation Ideas**
  - Step by step outer lane reconfiguration as well as median and curb extensions to enhance corridor
  - Implement unified (lower) travel speed throughout corridor
  - Create engaging pedestrian pathways between existing shopping centers
- **Implementation Strategies**
  - Categorized and lead agency identified between municipalities, Georgia DOT, MARTA
  - Cost (where known) and timeframe also specified

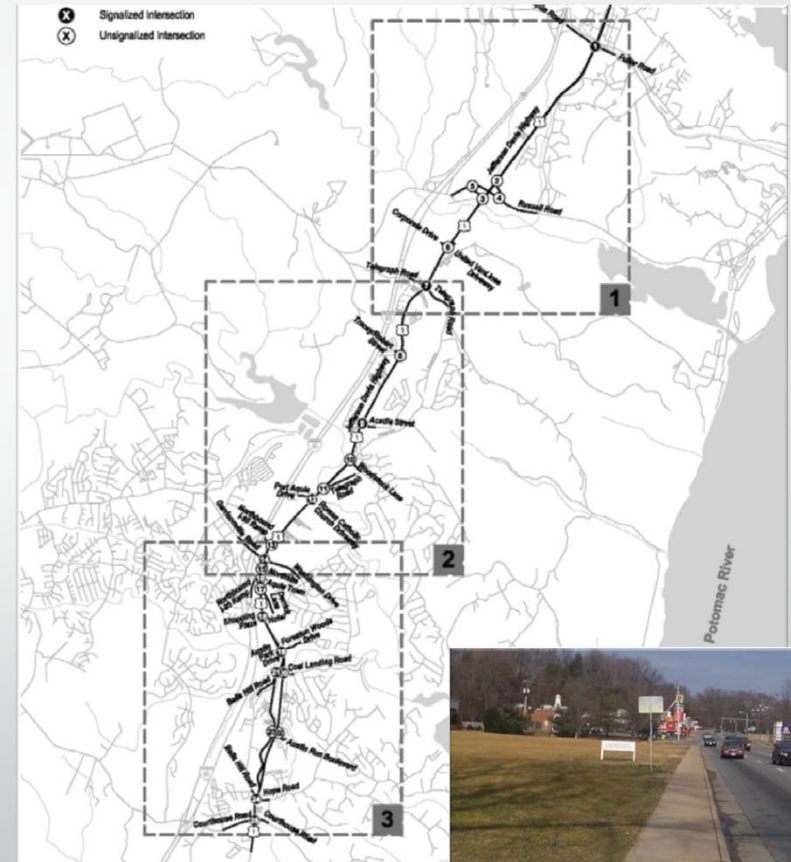


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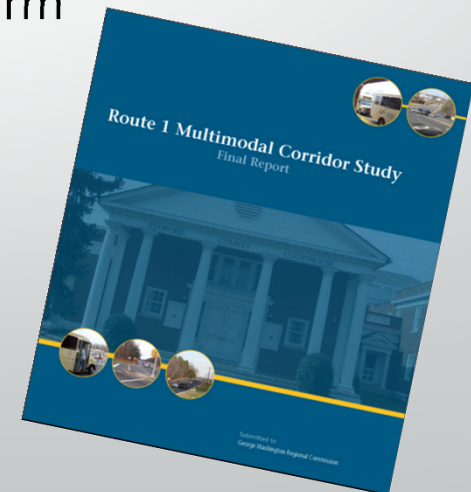
# US 1, Stafford, Virginia

- US 1 (Fuller Rd to Courthouse Rd)
- State owned
- 4 Lanes with Turn Lanes
- AADT 21,000
- Speed Limit Range 35 to 45 MPH
- Bus Transit
- 10 miles in length



# US 1, Stafford, Virginia

- US 1 carries significant commuter traffic and provides local access to residential, commercial and office land uses
  - Fredericksburg Area Transit (FRED) provides local bus service along the corridor
  - VRE (heavy rail) has two stops parallel to corridor
  - Existing pedestrian and bicyclist conditions were found to be fairly poor
- The *Route 1 Multimodal Corridor Study* recommends both **physical** and **operational** improvements broken down into three implementation phases: short, mid and long-term



# US 1, Stafford, Virginia

Route 1 Multimodal Corridor Study makes the following recommendations:

- Plan recommends some future traffic conditions to increase LOS, these changes include but are not limited to:
  - Widen US 1 from 4 to 6 Lanes
  - US 1 left turn movements to operate in protected phasing only
  - Reconfigure several intersections to change traffic patterns
  - Apply corridor-level access management programs that can be implemented to improve traffic operations
- Improve existing bus stop conditions to increase visibility, increase additional amenities, ADA-compliant landing pads, lighting and sidewalk access
- Increase comfort, safety and mobility of pedestrians and bicyclists within the study area
- Facilities should be provided to safely accommodate cyclists of all abilities and improve wayfinding throughout corridor
- Pedestrian improvements at intersections and appropriate facilities for all modes of transportation to surrounding land uses

<https://www.fampo.gwregion.org/wp-content/uploads/2016/02/Route-1-Multimodal-Corridor-Study-Final.pdf>

# US 1, Stafford, Virginia

## Route 1 Multimodal Corridor Study Takeaways:

- Recommendations
  - Corridor recommendations broken down by category and short, mid and long-term, cost identified for each project
  - Specific improvements for each opportunity area identified
  - Corridor broken down into various types of uses and cross sections recommended to meet needs for movement in area
  - TDM efforts explained for corridor to increase overall transportation efficiency



Table 33: Estimated Short-Term Pedestrian/Bicyclist Recommendation Costs

Item	Quantity	Unit	Cost per Unit	Cost	ROW (25%)	Contingency (25%)	TOTAL Cost
High Visibility Crosswalk	17	each	\$ 800	\$ 13,600	\$ -	\$ 3,400	\$ 17,000
Pedestrian Countdown Signals	8	pair	\$ 8,000	\$ 64,000	\$ -	\$ 16,000	\$ 80,000
Warning Signs	4	each	\$ 2,000	\$ 8,000	\$ -	\$ 2,000	\$ 10,000
Wayfinding Program							
Bike Racks							
<b>Total</b>							

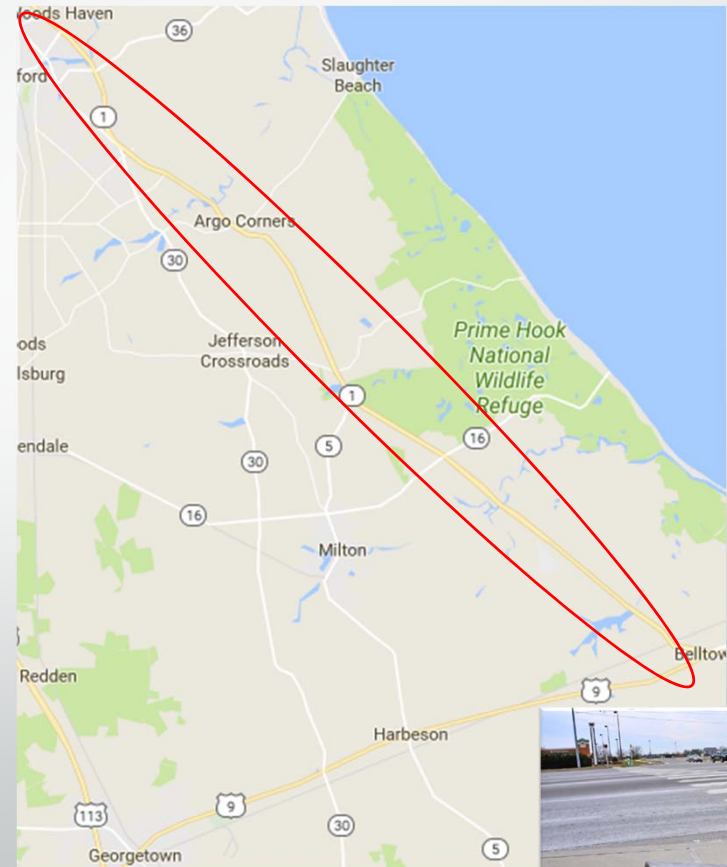
Table 37: Summary of Recommendation Costs by Phase and Mode

	Short-term	Mid Term	Long Term	Total
Roadway	\$4,089,750	\$7,050,750	\$48,139,750	\$59,280,250
Transit	\$95,398	\$342,746	\$ -	\$438,144
Ped/Bike	\$180,650	\$1,496,260	\$19,967,700	\$21,644,610
<b>Total</b>	<b>\$4,365,798</b>	<b>\$8,889,756</b>	<b>\$68,107,450</b>	<b>\$81,363,004</b>

<https://www.fampo.gwregion.org/wp-content/uploads/2016/02/Route-1-Multimodal-Corridor-Study-Final.pdf>

# DE 1, Sussex County, Delaware

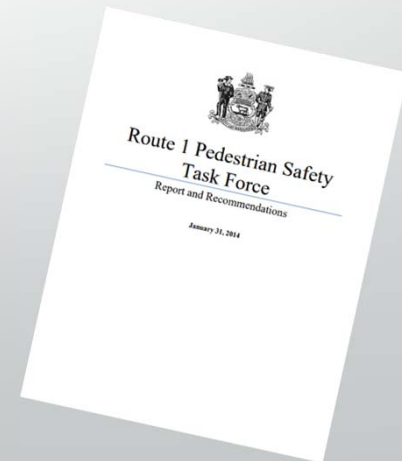
- DE 1, Lewes-Rehoboth Canal Bridge to the Nassau Bridge of Five Points, Delaware
- State Owned
- 4 Lanes with Median
- AADT 60,000
- Speed Limit Range 45 to 55 MPH
- Bus Transit
- 12 miles in length





# DE 1, Sussex County, Delaware

- DE 1 in Sussex County has had several fatal accidents
- Corridor needs significant change to improve pedestrian safety
- Lawmakers and community leaders created the *Route 1 Pedestrian Safety Task Force* to recommend options to improve pedestrian safety
- The Route 1 Pedestrian Safety Task force made a number of recommendations and handed them to DelDOT to continue work along DE 1 and consider common sense solutions to the safety problem





# DE 1, Sussex County, Delaware

The Route 1 Pedestrian Safety Task force Report makes the following recommendations:

- Supports several DeDOT plans including
  - Add six new ADA compliant crosswalks
  - Give pedestrians safe crosswalk options
  - Consider HAWK beacons
  - Provide for continuous sidewalks
  - Improve lighting
  - Evaluate road signage to reduce sign clutter while adding useful warning signs
  - Align bus stops with new crosswalks
- Physical improvements such as fixing sidewalks, adding crosswalks, updating road striping and adding additional lighting
- Reduce access points to DE 1 by considering reconfigurations of current access points and not allowing new ones
- Education of pedestrians and cyclists as to where they are permitted to walk and ride as well as rules of the road and potential hazards
- Further monitoring of traffic speed and discussion needed to consider reducing the speed limit

<http://legis.delaware.gov/TaskForceDetail?taskForceId=275>

# DE 1, Sussex County, Delaware

## The Route 1 Pedestrian Safety Task force Report Takeaways:

- Task Force Structure
  - In response to fatal accidents along DE 1, Task Force was created to look at the corridor in the region
- Recommendations
  - Support current DelDOT plans, additional common sense solutions for safety problems
  - Emphasis on public education to ensure safety of residence and visitors of the corridor



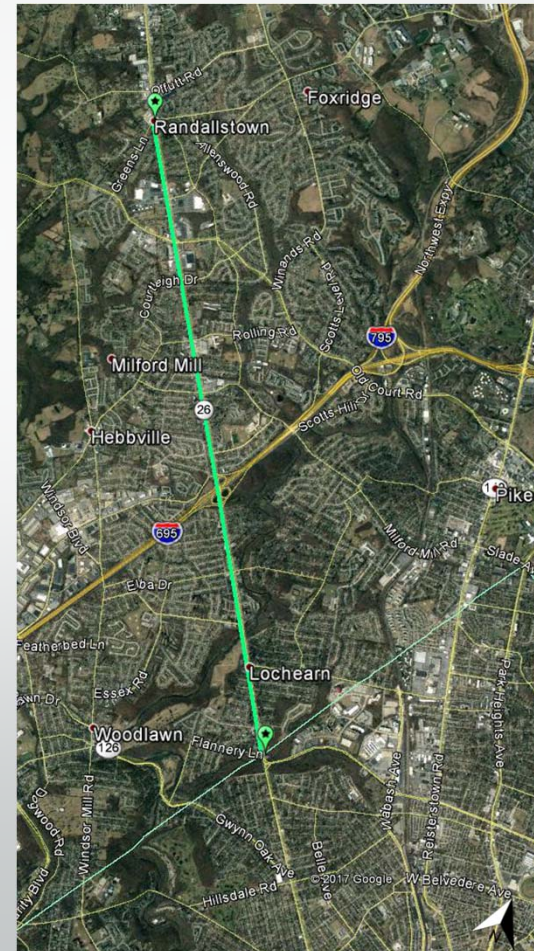
## Two Successful HAWK Implementations along DE 1

- Crossings at Holland Glade Road & Country Club Road
  - Pedestrian safety system allows pedestrian to signal which side of highway they are standing, having lights activated to stop traffic along closest lanes so person can cross into median. Once in median, pedestrian presses a second button to stop traffic and continue crossing to other side
  - HAWK signal has lowered wait time for pedestrian while allowing traffic to move freely and with minimal disruption



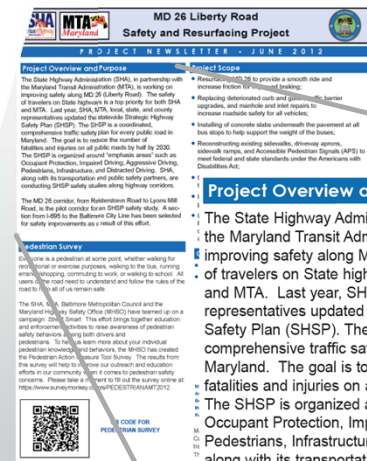
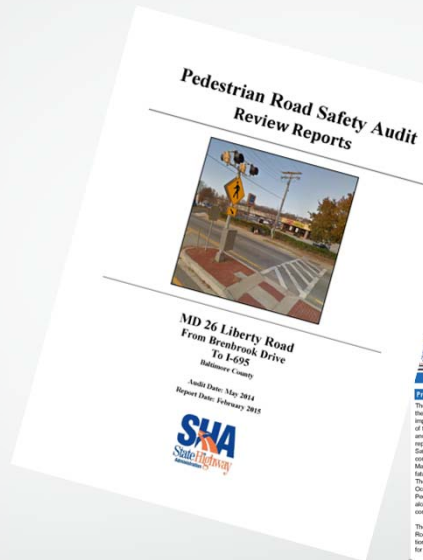
# MD 26 Baltimore County, MD

- MD 26, Liberty Road
- State Owned
- 4 Lanes with Median
- AADT 35,000-40,000
- Speed Limit Range 35 MPH
- Bus Transit
- 5 miles in length



# MD 26 Baltimore County, MD

- Multiple studies addressing safety, crash history, and congestion
  - Pedestrian Roadway Safety Audit
  - Strategic Highway Safety Plan *Pilot Corridor*
  - Arterial Congestion Management Study



- The State Highway Administration (SHA), in partnership with the Maryland Transit Administration (MTA), is working on improving safety along MD 26 (Liberty Road). The safety of travelers on State highways is a top priority for both SHA and MTA. Last year, SHA, MTA, local, state, and county representatives updated the statewide Strategic Highway Safety Plan (SHSP). The SHSP is a coordinated, comprehensive traffic safety plan for every public road in Maryland. The goal is to reduce the number of fatalities and injuries on all public roads by half by 2030. The SHSP is organized around "emphasis areas" such as Occupant Protection, Impaired Driving, Aggressive Driving, Pedestrians, Infrastructure, and Distracted Driving. SHA, along with its transportation and public safety partners, are conducting SHSP safety studies along highway corridors.

The MD 26 corridor, from Reisterstown Road to Lyons Mill Road, is the pilot corridor for an SHSP safety study. A section from I-695 to the Baltimore City Line has been selected for safety improvements as a result of this effort.



# MD 26 Baltimore County, MD

## Findings

- Bus stops not aligned with crossings leading to pedestrian crossings at undesigned locations
- Visual clutter and excessive signage detracting from pedestrian warning signage effectiveness
- Prevalence of crashes under dark conditions
- Low illumination levels
- Degradation of crosswalk markings and signage
- Narrow sidewalks
- Speeding
- Frequency of driveways and lack of access management leading to pedestrian-vehicle conflicts
- Pedestrian crashes occurring at midblock, driveways, and unsignalized locations (70 ped midblock crashes occurring over 5 years)
- 28% of corridor crashes occurring at signalized intersections

# MD 26 Baltimore County, MD

## Actions

- Install designated mid-block crossing locations utilizing flashing warning beacons and a median crossing island
- Roadway rehabilitation to reduce obstacles for vehicles and improve braking friction
  - Resurfacing, Repair to broken curbs & manholes
- Improve pedestrian infrastructure
  - Gaps in sidewalk, install Accessible Pedestrian Signals
- Consolidate and relocate bus stops to designated pedestrian crossing while improving sight distance at crossings
- Implement a pedestrian safety education and enforcement initiative

## *Recommended, but not yet Implemented*

- Installed pedestrian activated flashers
- Evaluate commercial access and implement access management strategies to consolidate, eliminate, and limit access (e.g. shared driveways, side road entrances)
- Install a non-traversable fence to discourage crossings at undesigned locations
- Evaluate lighting conditions, specifically at designated mid-block crossings



EXISTING MID-BLOCK MEDIAN CROSSING ISLAND



# Conclusion

- The three peer corridors are similar to US 1 in Howard County, with safety concerns and roadway geometry that do not accommodate all modes of transportation
- Each address the needs in the corridor slightly differently, through masterplans, task force, or corridor study

# Toolbox

	Recommendations	Buford	US 1 Stafford	DE 1 Sussex	MD 26 Baltimore Co.
Pedestrian	Consolidate Curb Cuts	X	X	X	--
	Designated Mid-block Crossings	X	X		X
	Enhanced Bus Stops (e.g. landing pad, seating, shelter, real-time info)	X	X	X	--
	High Visibility Crosswalks	--	X	X	--
	Inter-parcel walking connections	X	X	X	--
	Intersection Retro-fit (e.g. ped ramps & signals, curb extensions)	X	X	X	X
	Landscaped Buffers	X	X	X	--
	Landscaping & Amenities	X	X	X	--
	Median Refuge Island	X	X	--	X
	New signals/beacons	X	--	X	X
	Pedestrian Level Lighting & Crosswalk Illumination	X	X	X	--
	Sidewalk Widening	X	X	X	--
	Multi-Use Paths	X	X	X	--
	Share the Lane/Sharrows	--	X	--	--
Bicycle	Shoulder Improvements (e.g. widening, resurfacing)	--	X	X	--
	Wayfinding & Signage Improvements	X	X	X	--
	Widen Curb Lanes	--	X	X	--
Vehicle	Access Management	X	X	--	--
	Improved Signal Timing / Phasing	--	X	X	--
	Travel Speed (i.e. Uniform Posted Speed Limit)	X	X	--	--
Process	Enforcement Efforts	--	--	X	--
	Task Force	X	--	X	--
Other	Education Campaign Initiatives	X	--	X	X
	Rezoning to support a pedestrian environment	X	X	--	--
	Tactical Urbanism (e.g. Pop up Events, Parklets, Temporary Art Installations)	X	--	--	--
	TDM Strategies	X	X	--	--