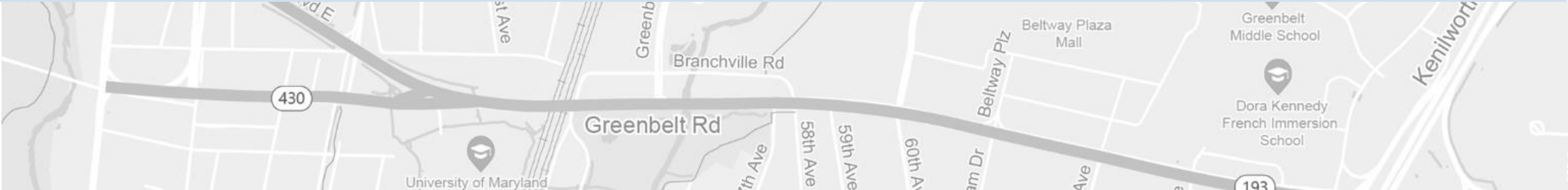
Greenbelt Road Corridor Plan
Preliminary Recommendations

City of Greenbelt, Maryland
Council Work Session

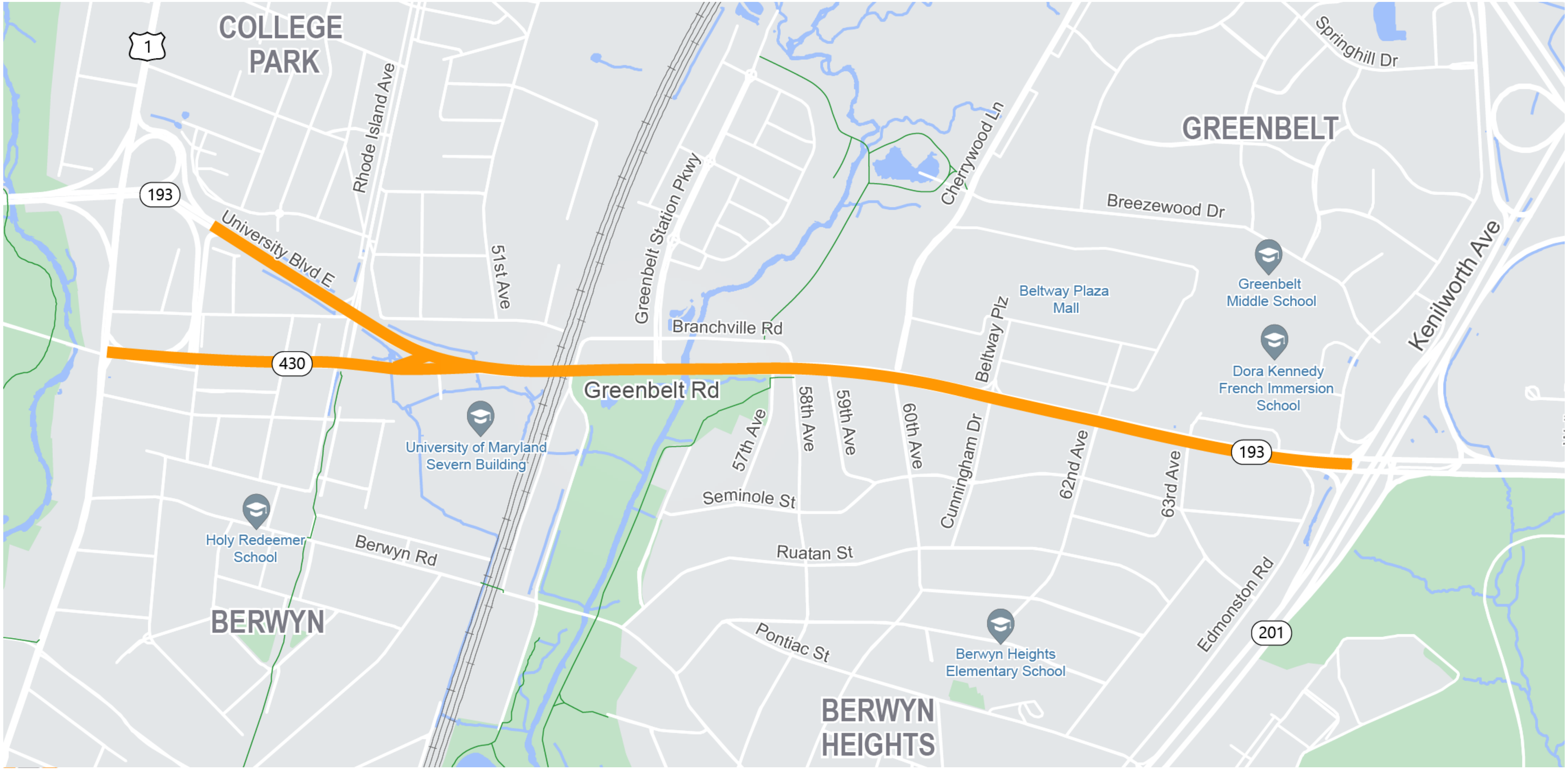
March 23, 2022



Agenda

- Overview
  - Study Area
  - Corridor Studies
- Corridor Vision
  - Goals
  - Previous plans and studies
  - Community feedback
- Preliminary Recommendations
  - Right-size the corridor to demand
  - Make the corridor comfortable for walking and biking
  - Improve transit service
  - Connect residential neighborhoods, parks, and trails

Study Area


COLLEGE PARK
1
193
University Blvd E
Rhode Island Ave
51st Ave
Greenbelt Station Pkwy
Cherrywood Ln
Springhill Dr
GREENBELT
Breezewood Dr
Greenbelt Middle School
Beltway Plaza Mall
Beltway Plz
Branchville Rd
Dora Kennedy French Immersion School
Kenilworth Ave
430
Greenbelt Rd
University of Maryland Severn Building
57th Ave
58th Ave
59th Ave
60th Ave
Cunningham Dr
62nd Ave
63rd Ave
193
Seminole St
Ruatan St
Holy Redeemer School
Berwyn Rd
BERWYN
Pontiac St
Berwyn Heights Elementary School
Edmonston Rd
201
BERWYN HEIGHTS

Transportation Project Process

Needs Identification
- What issue(s) need to be addressed?

Planning
- What could address the issue(s)?
- What does the community want?
- What is feasible?

Engineering
- What works from a technical perspective?
- What are the trade-offs?
- How much does it cost?
- How does it get built?

Design
- What works from a design perspective?
- What are the physical and environmental constraints?
- How much does it *really* cost?

Programming
- Which agency is going to pay for this?
- Which agency is going to maintain this?
- Which agency is going to build this?

Construction
- Who is going to build this and how much will it cost?
- Did this get built correctly?

Maintenance & Evaluation
- What needs to be fixed?
- What issue(s) remain?
- What new issue(s) need to be addressed?

Public Input

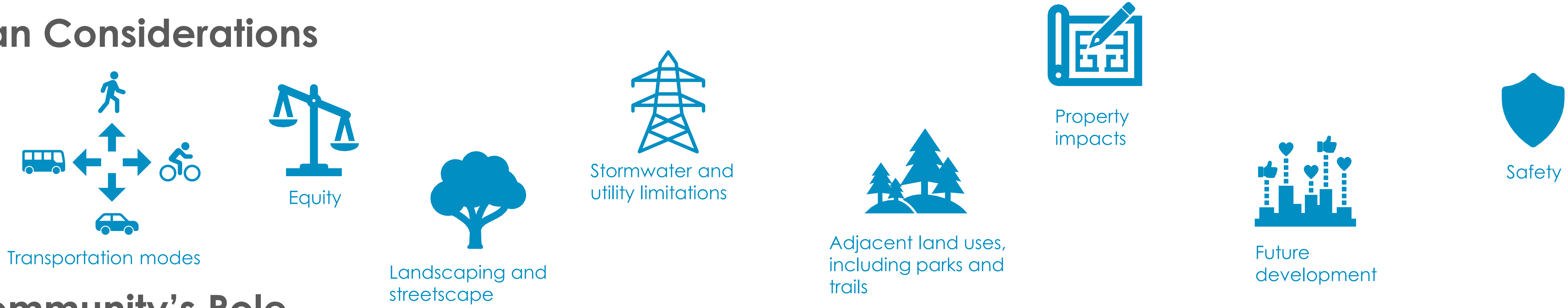
The Greenbelt Road Corridor Plan is here

Corridor Studies

Purpose of Corridor Plans

Enable early conversation and exploration of community needs, resulting in recommendations that support a cohesive vision for the corridor.

Plan Considerations



Community's Role

To share needs, lived experiences, priorities, and ideas. This input helps develop recommendations and inform agency decision-making.

Outcome

Documentation of expectations for project areas that can be carried forward, referenced, and considered by decision-makers and the public.

Corridor Study Schedule

October	November	December	January	February	March	April	May	June

19th — Study Begins

9th — Technical Staff Kick-off Meeting

10th — Visioning Meeting; Open virtual comment map

23rd — **City Council Work Session**

31st — Close virtual comment map

30th — Final Report

EXISTING CONDITIONS

IDENTIFY IDEAS

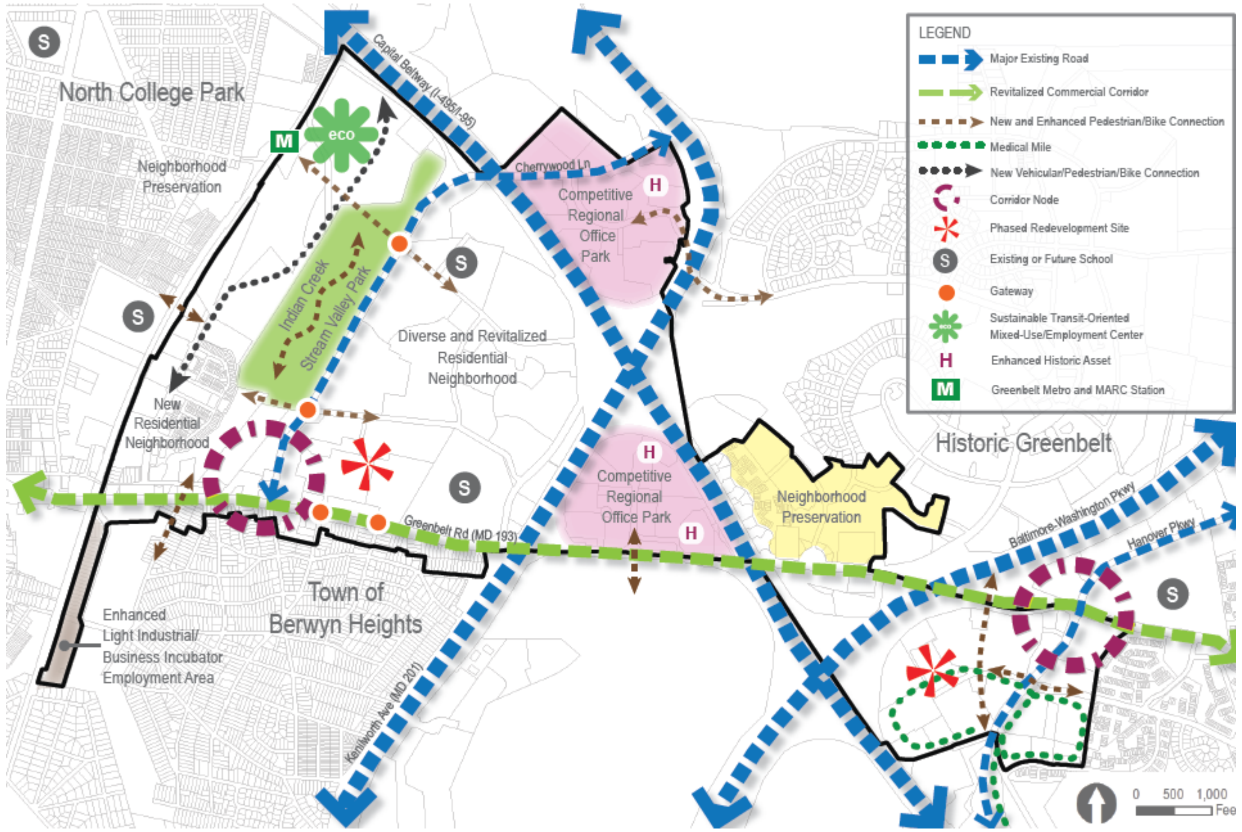
RECOMMENDATIONS

Corridor Vision

- Goals
- Previous plans and studies
- Community feedback

Previous and Ongoing Plans and Studies

- **Greenbelt Metro Area and MD 193 Corridor Sector Plan**
  - Create a **unifying experience along the MD 193 Corridor** to tie the sector plan area together and **foster a shared sense of character and place**.
  - Build **pedestrian- and bicycle-friendly**, low- to moderate-density commercial development that **distinguishes MD 193 as an important corridor in the county**.
  - **Reduce traffic conflicts by implementing access management** techniques such as reducing curb cuts on MD 193, encouraging transit use, introducing pedestrian and bicycle facilities, and encouraging alternate routes for through-traffic.
  - **Support public sector reinvestment** in the reconstruction of the MD 193 Corridor to **improve safety and connectivity** and complement new land use regulations and new development.



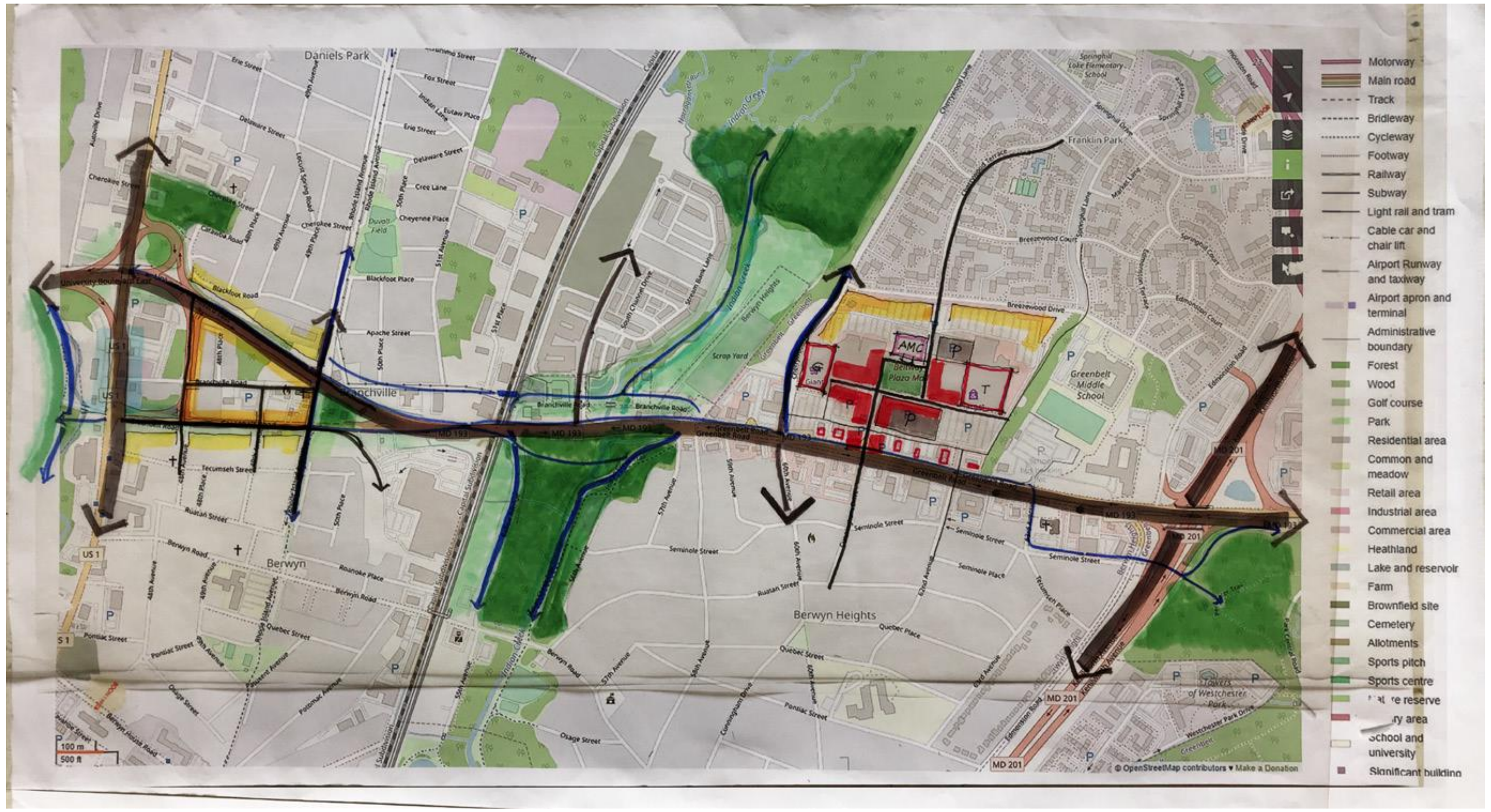
Previous and Ongoing Plans and Studies

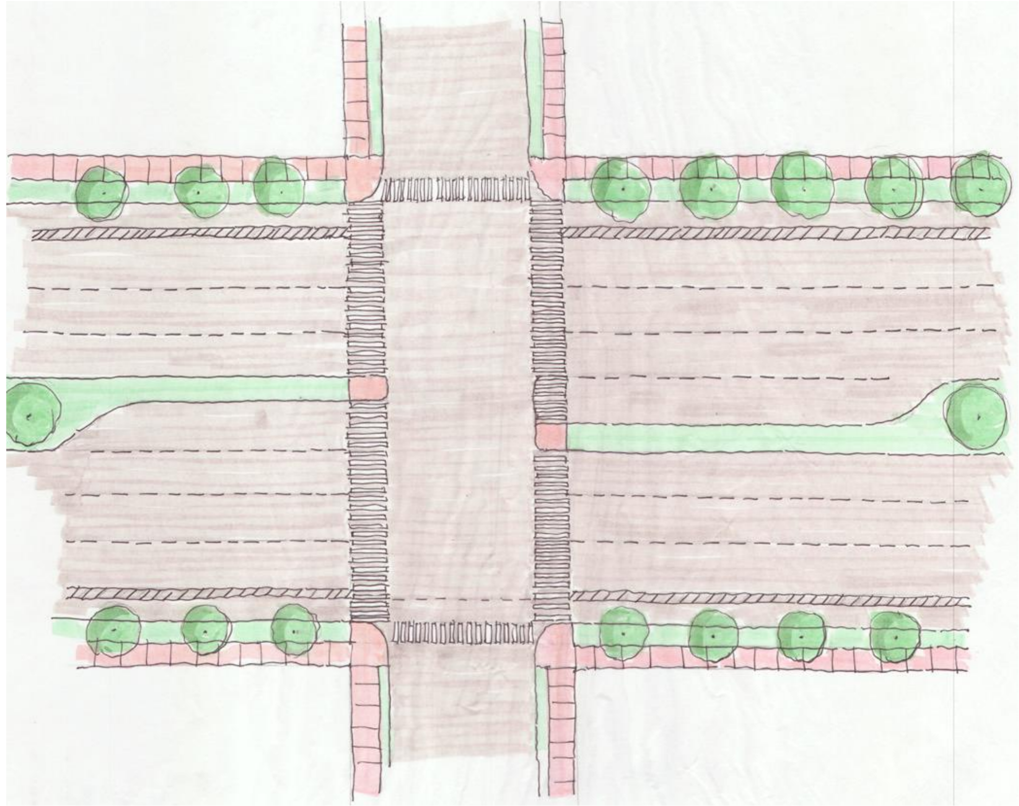
- 2013 Greenbelt Bus Stop Safety and Accessibility Report
- 2014 Greenbelt Pedestrian and Bicyclists Master Plan
- 2017 Greenbelt Senior Mobility and Accessibility Needs and Barriers Study
- 2018 Creating a Future for Greenbelt Road/MD-193 (ULI Study) (Below)

Improve walking, biking, transit to provide "comfortable" facilities

Improve connections and crossings

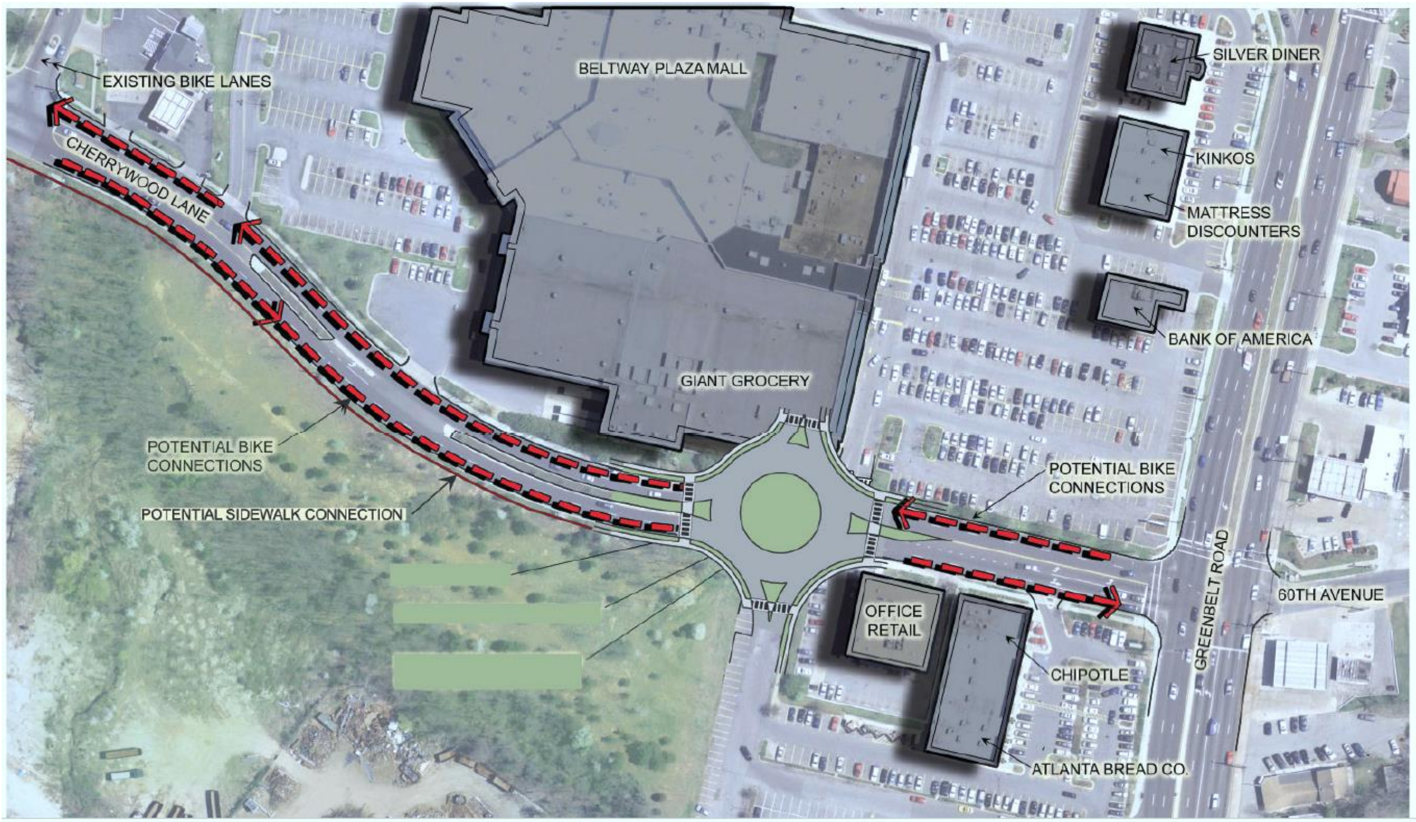
Meet ADA standards and thresholds

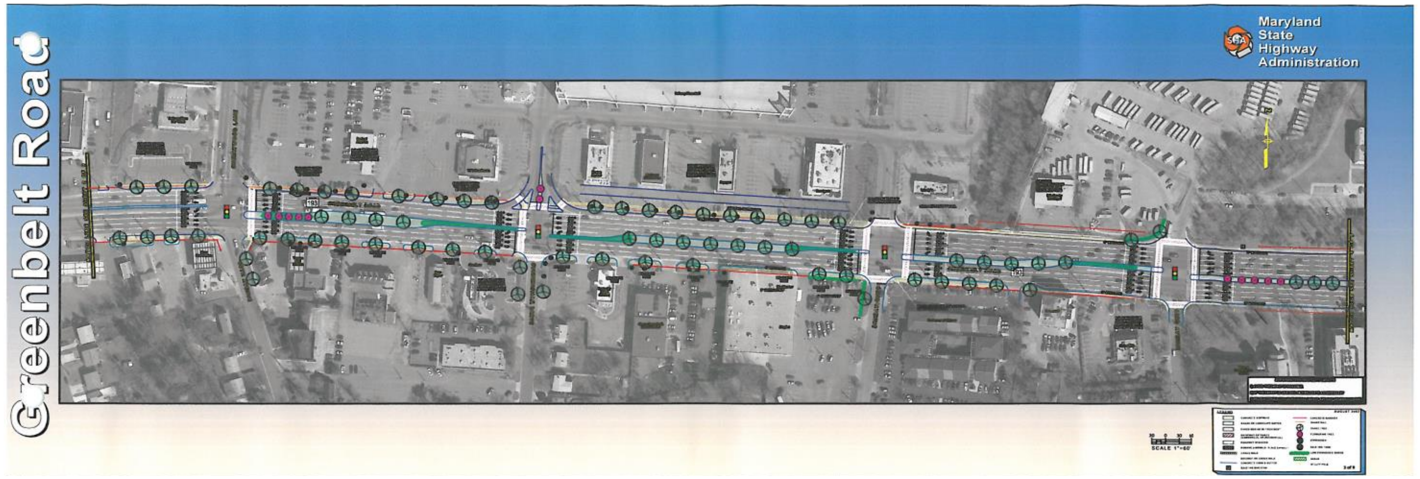




Previous and Ongoing Plans and Studies

- **Walkable Bikeable Berwyn Heights**
- **Greenbelt Pedestrian Bicycle Plan (Top Right)**
- **US 1 (College Avenue to MD 193) Segment 1 Highway Reconstruction** ($1.4M corridor planning study, $50M phase 1 project total cost)
- Variety of area-wide shared-use paths and trails and new bicycle facilities on Rhode Island Avenue and Cherrywood Lane
- **2003 Maryland SHA Design (Below Right)**





What we heard

- What is **one word** you would use to describe Greenbelt Road?

Eyesore
Concrete
Too many gas stations
Loud
Unwalkable
Unplanted
No Trees
noisy
Yearns to be a business district
Unkempt
sewer
Busy
traffic
Racetrack
Scary
Pavement
Outdated
highway
Overused
Speeding
Dirty
inhuman
Autooriented
Fast
Stroad
Ugly
Wide
Not inviting
sloppy
Commerical
Barrier
mineral
Unsafe
Old
without shade
Carcentric
Congested
Dangerous
Unfriendly
Disjointed
danger
Drivethru
Not bike-friendly
Unbikeable
Trash covered
Main road
Any idea when Phase 2 study will commence?

What we heard

» **What goal areas or considerations are most important to you?** Please feel free to suggest new ones.

Goals

- Facilitate the **comfortable, equitable, and safe movement of all people along and across Greenbelt Road** (MD 193), whether they are **walking, biking, riding transit, or driving**.
- Provide **key connections** to residential communities, businesses, neighborhoods, parks, and trails along and across the corridor.
- Support **livability and economic development by improving access** to, through, and across the corridor.
- Create a greener and more human-scale environment to serve the people living along the corridor.

Preliminary Recommendations

- Make the corridor comfortable for walking and biking
- Right-size the corridor to demand
- Improve transit service
- Connect residential neighborhoods, parks, and trails

Right-Size the Corridor to Demand

- Reducing the number of lanes on Greenbelt Road (MD 193) would allow for:
  - Expanding walking areas
  - Providing separated bike lanes
  - Providing dedicated bus lanes
  - Reduces pedestrian crossing width
  - Landscaping and stormwater management

The only way to make this bike/ped/transit rider friendly is to reduce lanes and slow traffic.

The corridor should serve people living there, not the commuters.

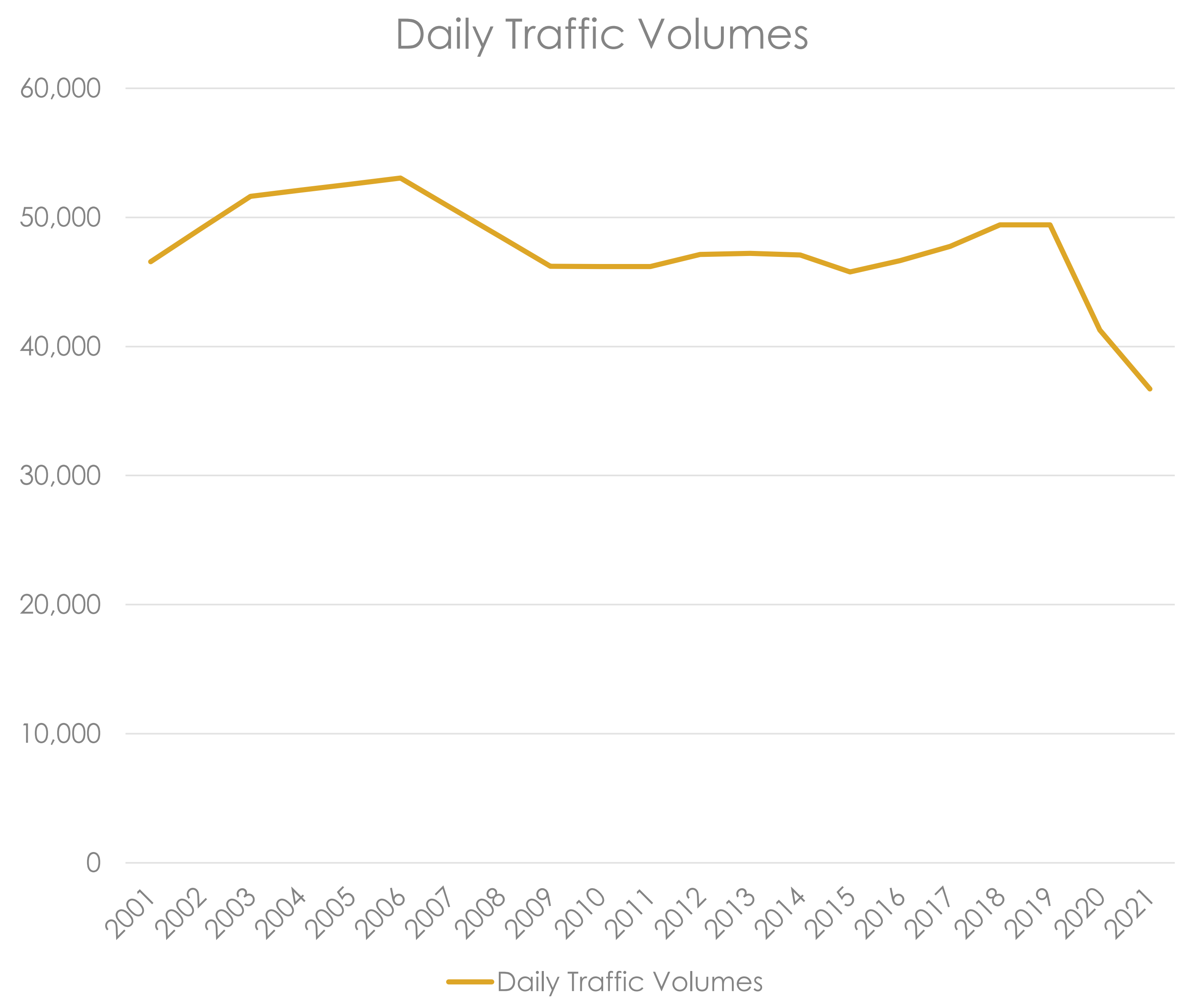
I just want a safe way to walk or bike from my home in Berwyn to the mall. There is no way to do this currently that feels safe. Either I walk/ride on a poorly maintained sidewalk next to high-speed traffic on 193, or on Ballew Ave. with no sidewalk.

This is our Main Street!

If you blocked vehicle traffic on the bridge, there wouldn't be a loss of accessiblity to drivers. Both stumps hit beltway interchanges almost immediately. This car-route is redundant, except to local traffic

Matching the Demand

- Daily traffic volumes have decreased over the past 20 years to approximately **36,700** in 2021
  - Six Through Lane Divided Roadway "Capacity" is approximately **56,100**
  - Four Through Lane Divided Roadway "Capacity" is approximately **37,300**
- These planning-level numbers indicate a lane reduction could be feasible, and a more thorough analysis is warranted
- Factors like employer work-place flexibility, transportation costs (gas prices), transit usage, and changes in land-use all factor into whether traffic volumes will "rebound"



Maryland SHA

Internet Traffic Monitoring System (I-TMS) (maryland.gov)

Testing a Lane Reduction

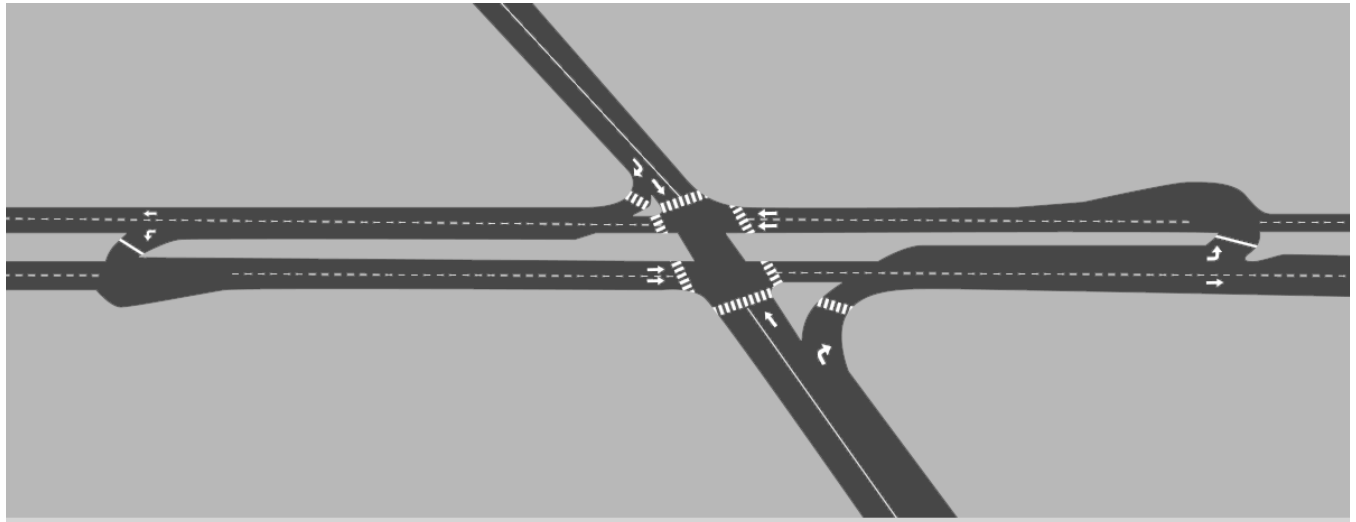
	Existing Roadway Configuration	Removal of One Through Lane in Each Direction
Critical Lane Volume (CLV)	1180	1535
Volume-to-Capacity Ratio (V/C)	0.74	0.96
Level-of-Service (LOS)	C	E
Number of Conflicting Travel Lanes for a Pedestrian Crossing Greenbelt Road	7-8	5-6

- **Weekday evening peak-hour volumes** from the "**Total Traffic**" (annual growth in traffic volumes, background developments, and site development) volumes in the approved *Beltway Plaza Traffic Impact Analysis* at the **Cherrywood Lane/MD 193 intersection**
- Peak-hour volumes indicate a lane reduction could be a feasible option, but more analysis would be needed to confirm. "Mitigations" may allow the vehicle mobility to be similar to the existing roadway configuration, even with a reduction in the number of through lanes.

Innovative/ Unconventional/ Alternative Intersections

- Designs modify vehicle, pedestrian, and bicycle movements to provide new options to reduce delay, increase efficiency, and provide safer travel for road users
- Each design reconfigures left-turn movements to reduce the number of through lanes to “right-size” the corridor to demand and provide additional opportunities

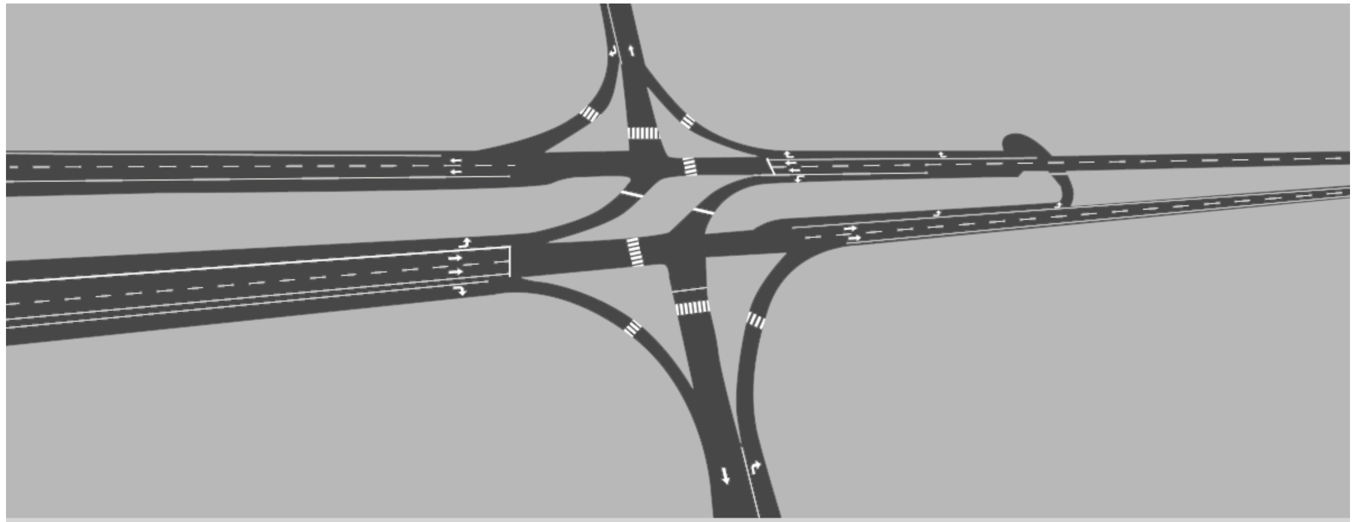
Median U-Turn



U-turn required for left-turn on to side street. Standard forward movement on main road.

U-turn required for left-turn on to main road. Standard right-turn on to main road.

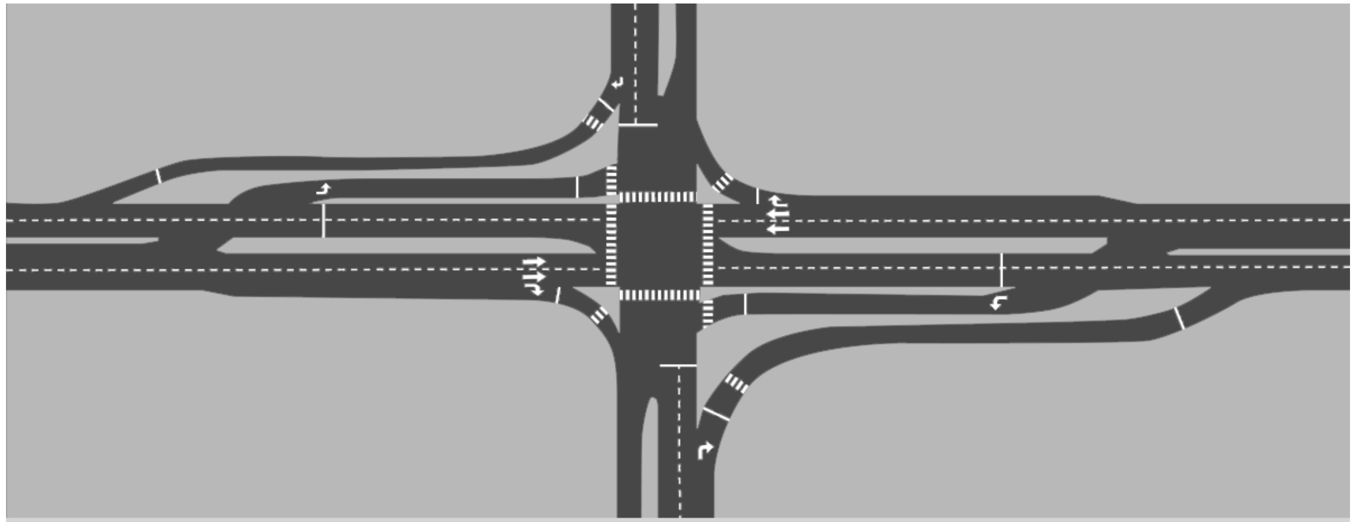
Restricted Crossing U-Turn



Standard left- and right-turn on to side street. Standard forward movement on main road.

U-turn required for left-turn on to main road. Standard left-turn on to side street.

Displaced Left-Turn



Dedicated left-turn lane on to side street before intersection.

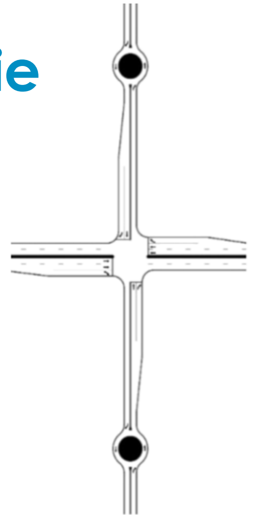
Standard right- and left-turn on to main road. Standard forward movement on side street.

Standard right-turn on to side street. Standard forward movement on main road.

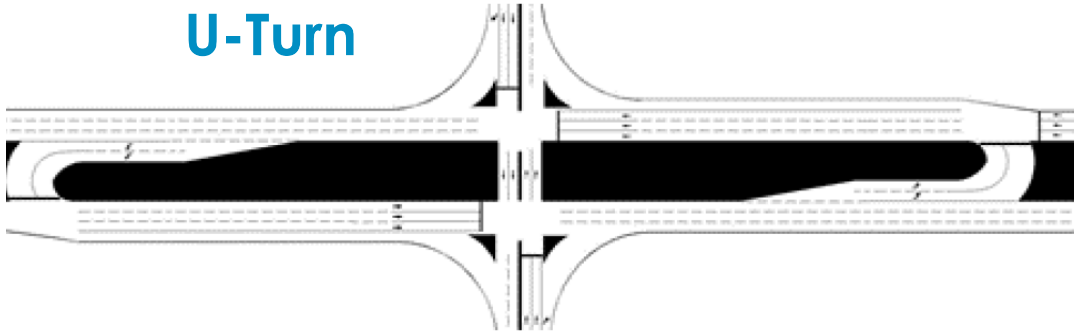
Preliminary Review of Innovative/ Unconventional/ Alternative Intersections at Cherrywood Lane/Greenbelt Road

	Existing Roadway Configuration	Removal of One Through Lane in Each Direction	Bowtie	Full Displaced Left-Turn	Median U-Turn	Partial Displaced Left-Turn	Partial Median U-Turn	Quadrant Roadway	Restricted Crossing U-Turn	Thru-Cut
Critical Lane Volume (CLV)	1180	1535	1420	1270	1481	1300	1452	1430	1303	1371
Volume-to-Capacity Ratio (V/C)	0.74	0.96	0.89	0.79	0.93	0.81	0.84	0.89	0.81	0.86
Level-of-Service (LOS)	C	E	D	C	E	C	D	D	D	D
Number of Conflicting Travel Lanes for a Pedestrian Crossing Greenbelt Road	7-8	5-6	5	5	4-5	6	4-5	4-6	5-6	5

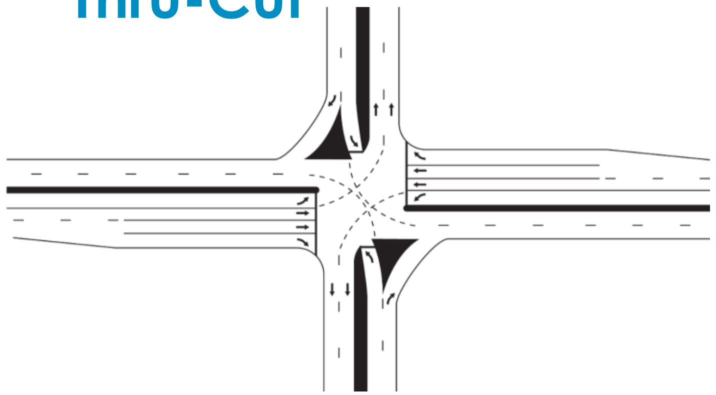
Bowtie



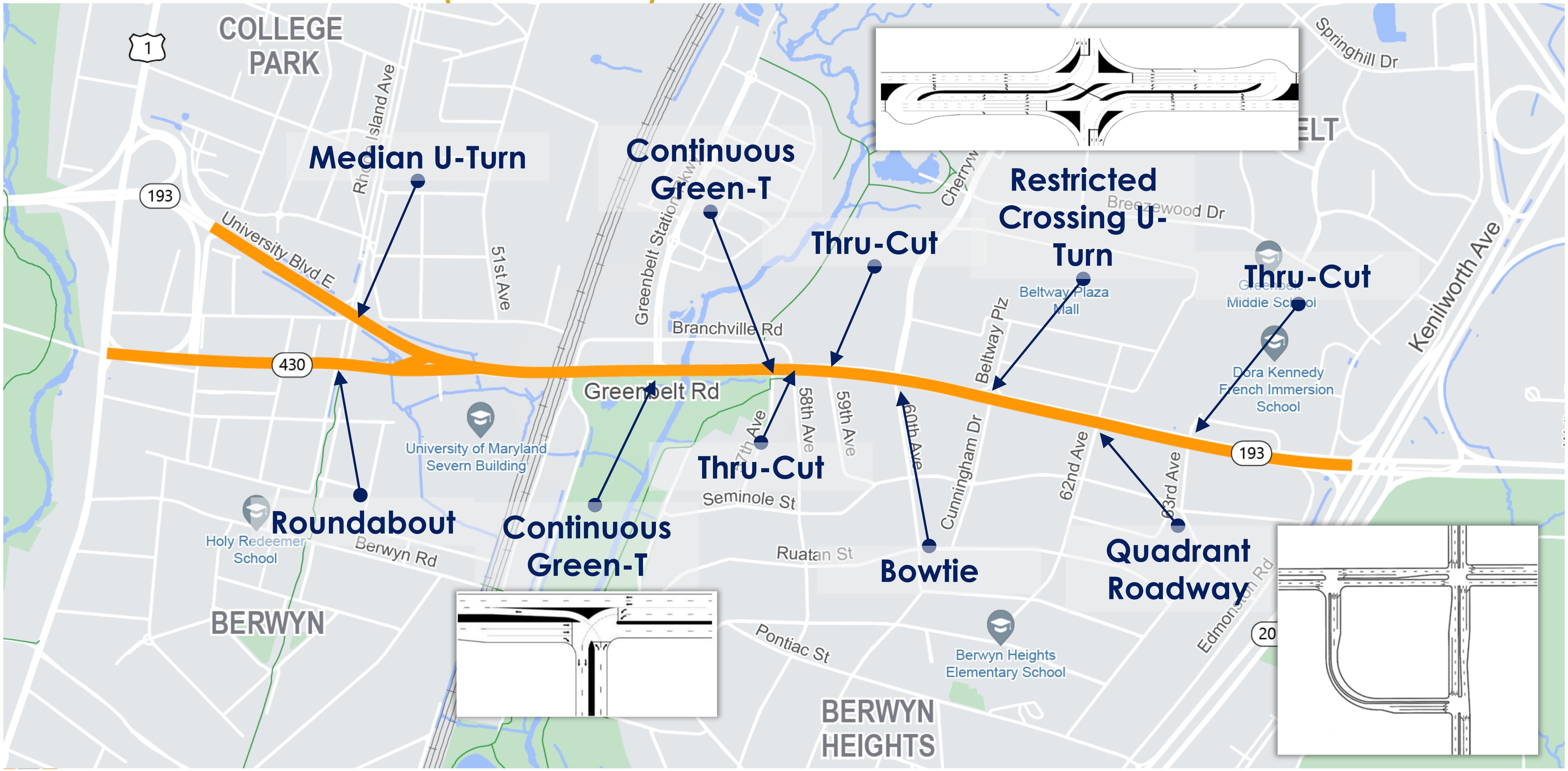
Median U-Turn



Thru-Cut

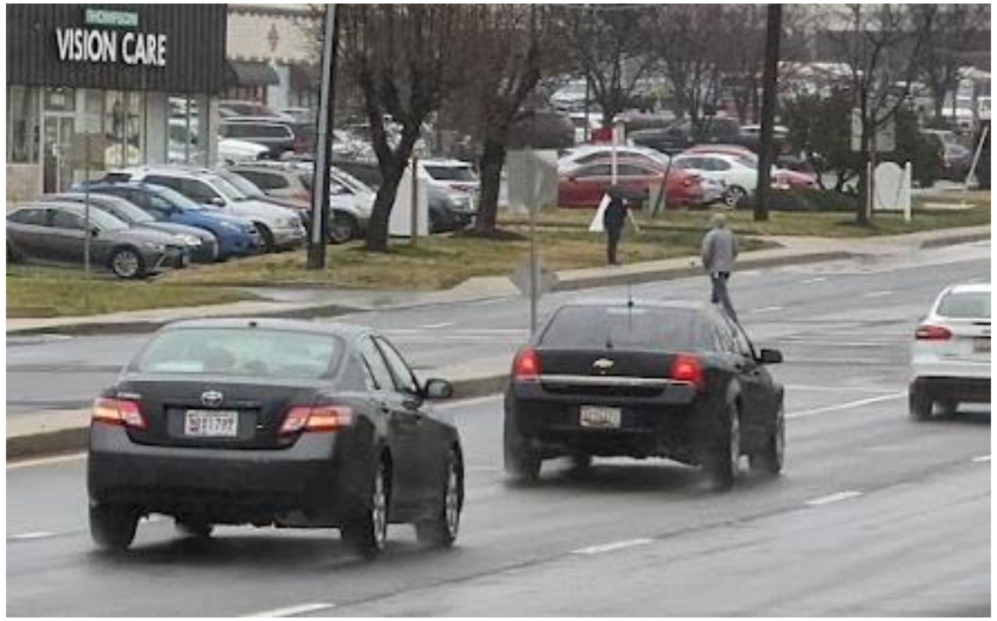


Potential Starting Points for Alternative Intersections on Greenbelt Road (MD 193)



Walking Along Greenbelt Road

- Current environment is hostile and uninviting for people walking
- Fewer people are likely to walk in less comfortable environments, and for those who must, the experience is more uncomfortable than it might be with a different design.
- "Pedestrian Level of Comfort" measures how comfortable it is to walk.
  - The four main scores are:
    - *Very comfortable (score = 1)*
    - *Somewhat comfortable (score = 2)*
    - *Uncomfortable (score = 3)*
    - *Undesirable (score = 4)*



Pedestrian Level of Comfort

Sidewalks should be buffered from car traffic. Vegetation or tree lined buffers would really improve walking and the appearance of the street.

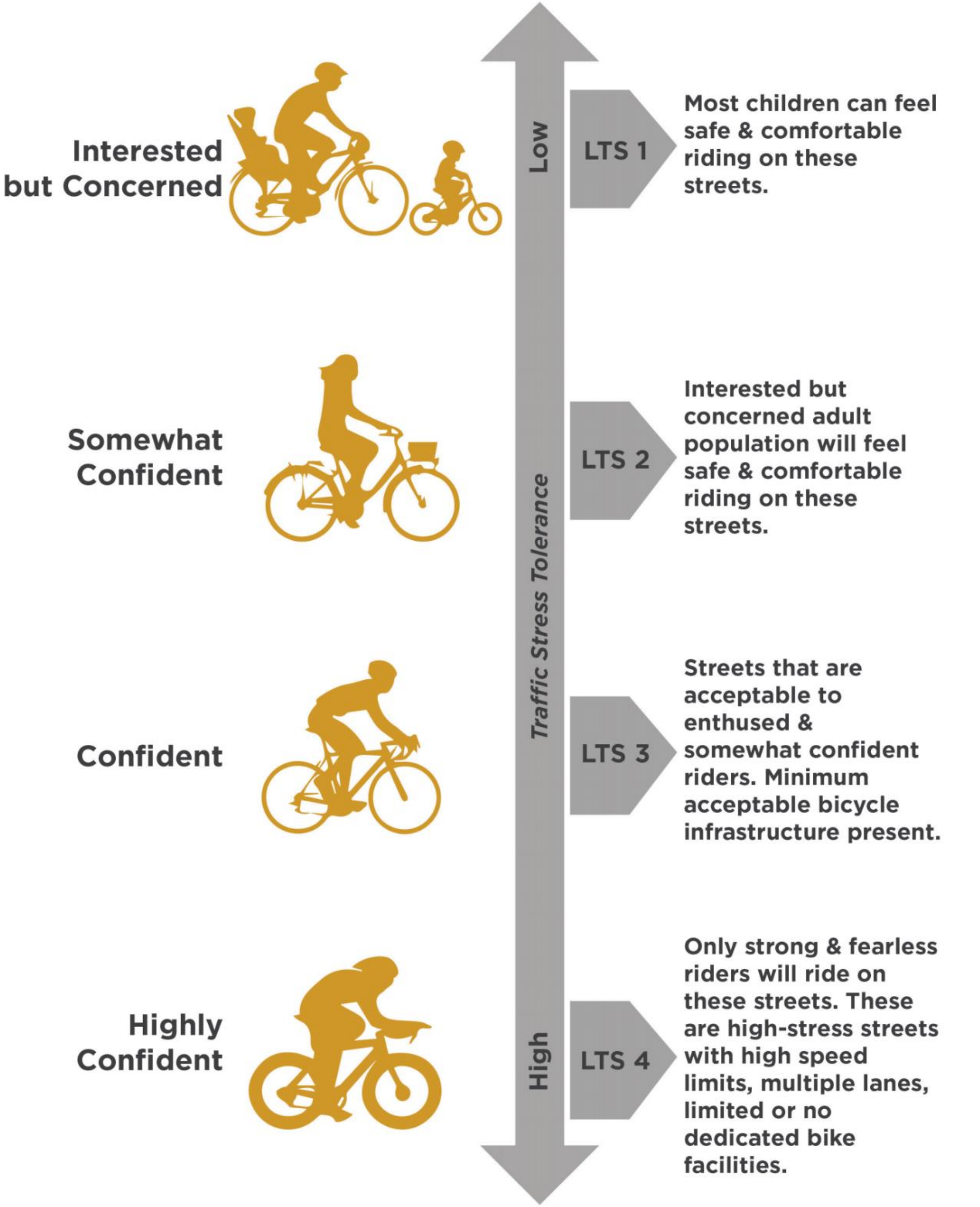
- Greenbelt Road is **“Undesirable”**
- To be **“somewhat comfortable”** or better, any of the following need to happen:
  - Reduce speed to 35 mph with a separated bike lane, five-foot sidewalk, and two-foot buffer from the roadway (**14 feet** required from edge of curb)
  - Keep the speed limit at 40 mph with a separated bike lane, five-foot sidewalk, and five-foot buffer from the roadway (**19 feet** required from edge of curb)
  - Keep the speed limit at 40 mph with a five-foot sidewalk and eight-foot buffer from the roadway (**13 feet** required from edge of curb)

	PATHWAY WIDTH	POSTED SPEED LIMIT	PATHWAY BUFFER WIDTH / ON-STREET SEPARATION											
			0 ft to <2 ft			2 to <5 ft			5 to <8 ft			≥8 ft		
			No DPL or SBL	DPL or 1SBL	2SBL or DPL & SBL	No DPL or SBL	DPL or 1SBL	2SBL or DPL & SBL	No DPL or SBL	DPL or 1SBL	2SBL or DPL & SBL	No DPL or SBL	DPL or 1SBL	2SBL or DPL & SBL
URBAN	No walkway		Use “No Pathway” Table											
	< 5ft	< 25 mph	4	3	1	4	3	1	3	2	1	2	1	1
		25 mph	4	3	1	4	3	1	3	2	1	2	1	1
		30 mph	4	3	1	4	3	1	3	2	1	2	1	1
		35 mph	4	3	2	4	3	2	3	2	1	2	1	1
		>= 40 mph	4	4	3	4	3	2	3	2	2	2	1	1
	≥5 to 8 ft	< 25 mph	2	2	1	2	2	1	2	1	1	1	1	1
		25 mph	2/3*	2	1	2/3*	2	1	2	1	1	1	1	1
		30 mph	4	3	1	3	2	1	2	1	1	1	1	1
		35 mph	4	3	2	3	2	2	3	2	1	2	1	1
		>= 40 mph	4	4	3	4	3	2	3	2	2	2	1	1
	≥8 to 10 ft	< 25 mph	2	2	1	2	1	1	1	1	1	1	1	1
		25 mph	2	2	1	2	1	1	1	1	1	1	1	1
		30 mph	4	3	1	3	2	1	2	1	1	1	1	1
		35 mph	4	3	2	3	2	2	3	2	1	2	1	1
		>= 40 mph	4	4	3	4	3	2	3	2	2	2	1	1
	≥10 ft	< 25 mph	2	1	1	2	1	1	1	1	1	1	1	1
		25 mph	2	2	1	2	1	1	1	1	1	1	1	1
		30 mph	3	2	1	3	2	1	2	1	1	1	1	1
		35 mph	4	3	2	3	2	2	3	2	1	1/2^	1	1
		>= 40 mph	4	4	3	4	3	2	3	2	2	1/2^	1	1

PLOC Methodology 3 (mcatlas.org)

Biking Along Greenbelt Road

- Sentiment from the February 10th Visioning Meeting indicates that even "highly confident" riders are not comfortable riding on Greenbelt Road, and take parallel or alternative routes instead
- People biking were observed on sidewalks
- Greenbelt Road is Level of Traffic Stress (LTS) 4

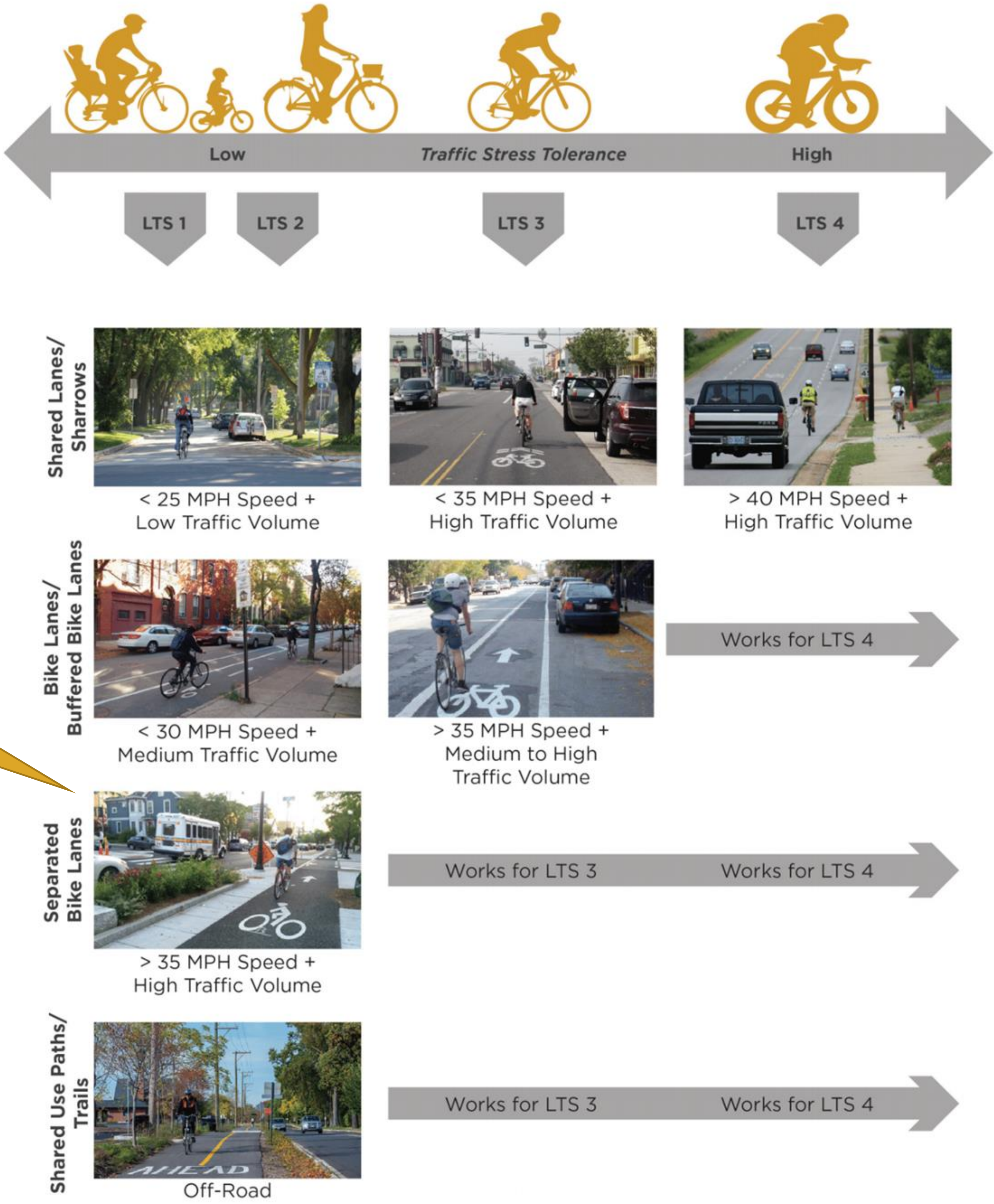


Biking Along Greenbelt Road

» Even "highly confident" riders do not ride on Greenbelt Road

» Greenbelt Road is LTS 4

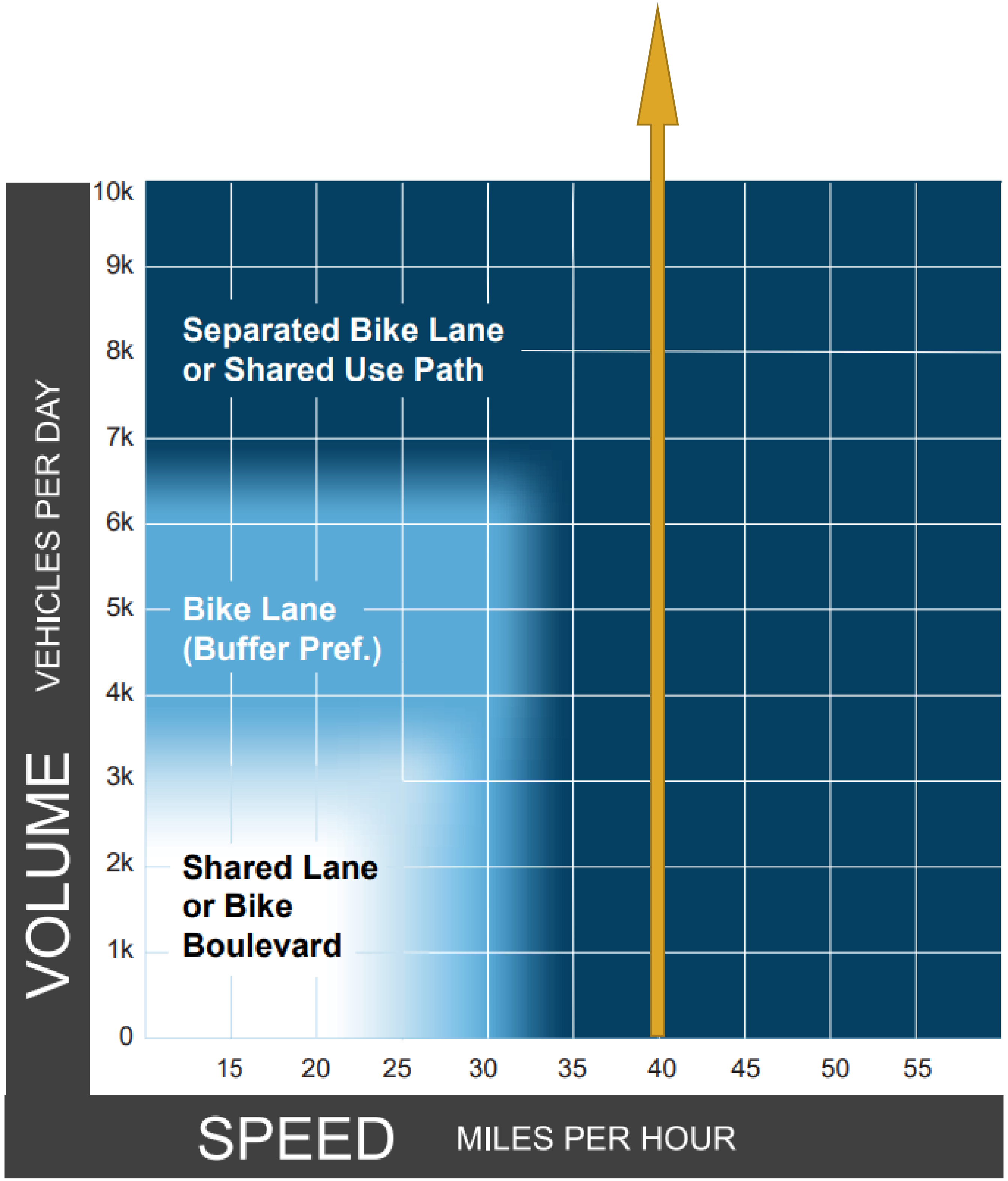
[A] separated bike lane [is] the difference between me taking a bike versus car to get groceries



Bicycle Facility Selection

Roadway Context				All Ages & Abilities Bicycle Facility
Target Motor Vehicle Speed[*]	Target Motor Vehicle Volume (ADT)	Motor Vehicle Lanes	Key Operational Considerations	
Any		Any	*Any of the following:* high curbside activity, frequent buses, motor vehicle congestion, or turning conflicts[‡]	**Protected Bicycle Lane**
< 10 mph	Less relevant	No centerline, or single lane one-way	Pedestrians share the roadway	**Shared Street**
≤ 20 mph	≤ 1,000 – 2,000		< 50 motor vehicles per hour in the peak direction at peak hour	**Bicycle Boulevard**
≤ 25 mph	≤ 500 – 1,500			
	≤ 1,500 – 3,000	Single lane each direction, or single lane one-way	Low curbside activity, or low congestion pressure	**Conventional or Buffered Bicycle Lane, or Protected Bicycle Lane**
	≤ 3,000 – 6,000			**Buffered or Protected Bicycle Lane**
	Greater than 6,000			**Protected Bicycle Lane**
	Any	Multiple lanes per direction		
Greater than 26 mph[†]	≤ 6,000	Single lane each direction	Low curbside activity, or low congestion pressure	**Protected Bicycle Lane, or Reduce Speed**
		Multiple lanes per direction		**Protected Bicycle Lane, or Reduce to Single Lane & Reduce Speed**
	Greater than 6,000	Any	Any	**Protected Bicycle Lane**
High-speed limited access roadways, natural corridors, or geographic edge conditions with limited conflicts		Any	High pedestrian volume	**Bike Path with Separate Walkway or Protected Bicycle Lane**
			Low pedestrian volume	**Shared-Use Path or Protected Bicycle Lane**

NACTO Urban Bike Design Guide



FHWA Bikeway Selection Guide

Bicycle Facility Option Considerations

One-Way Separated Bike Lanes

- Requires implementation on both sides of the roadway
- Requires the most cross-section width
- Opportunity to "pilot"
- Intuitive for people walking, biking, and driving
- Separates people walking and biking
- Requires conflicts (transit stops, driveways, side streets) to be addressed on both sides of the roadway
- Requires substantive barriers between people biking and traffic to be comfortable for most riders

Two-Way Cycle Track

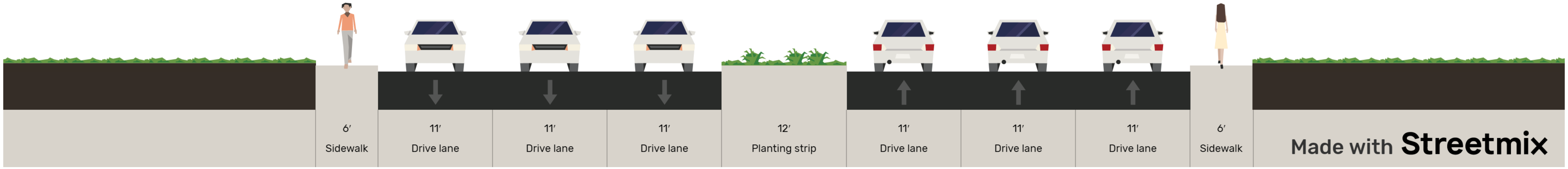
- Can be implemented on one side of the roadway
- Minimizes cross-section width
- Opportunity to "pilot" but not as simple as one-way separated bike lanes
- Not intuitive for people walking, biking, driving
- Creates asymmetrical roadway with disparate access for people on one side of the roadway
- Separates people walking and biking
- Requires signal timing restrictions (no turns on red)
- Conflicts (transit stops, driveways, side streets) only need to be addressed on one side of the roadway

Shared-Use Paths

- Can be implemented on one side of the roadway at a time (both sides is preferable long-term)
- Requires less cross-section width than one-way separated bike lanes, but less than two-way cycle track
- No pilot opportunity
- People walking and biking have to share the same space
- Requires conflicts (transit stops, driveways, side streets) to be addressed on both sides of the roadway

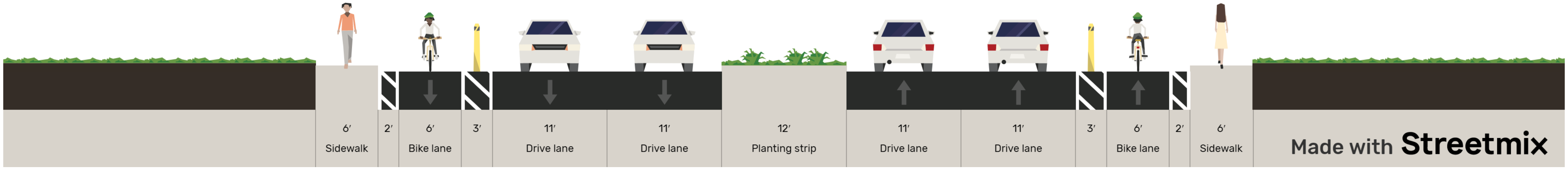
Identifying a Long-Term Vision

Existing



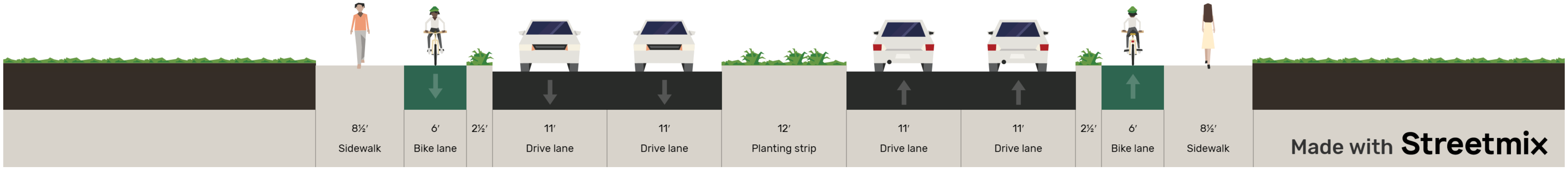
Identifying a Long-Term Vision

Separated Bike Lanes (Pilot)



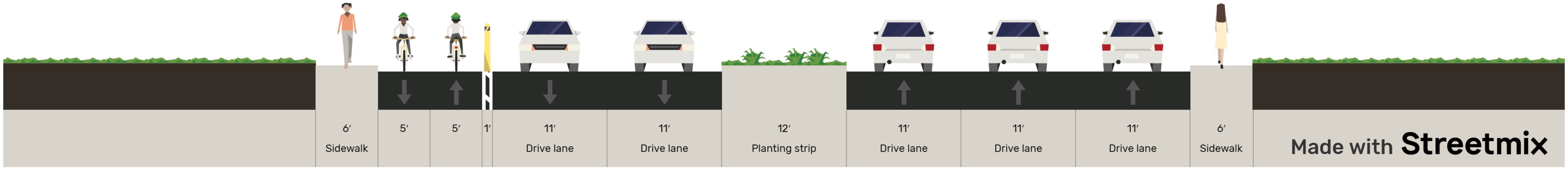
Identifying a Long-Term Vision

Separated Bike Lanes (Long-Term)



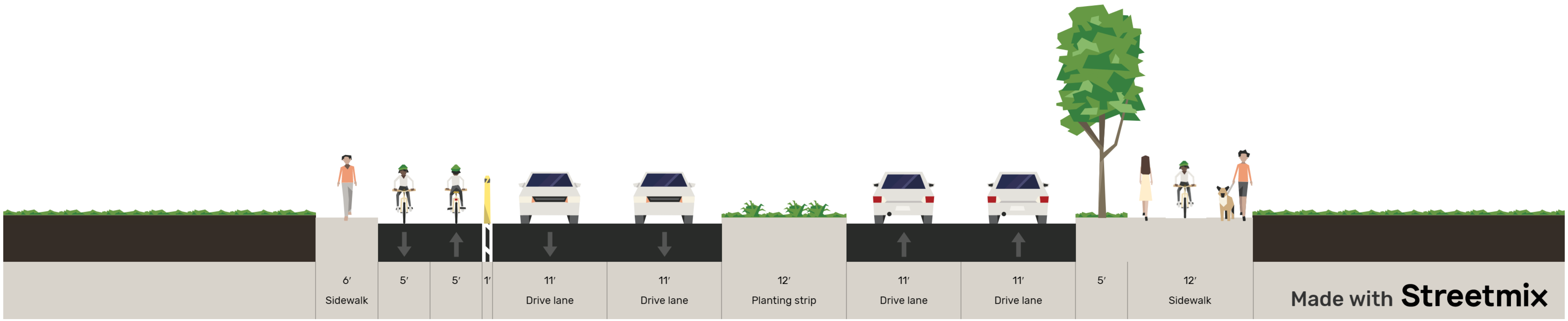
Identifying a Long-Term Vision

Two-Way Cycle Track (Keep Five Travel Lanes)



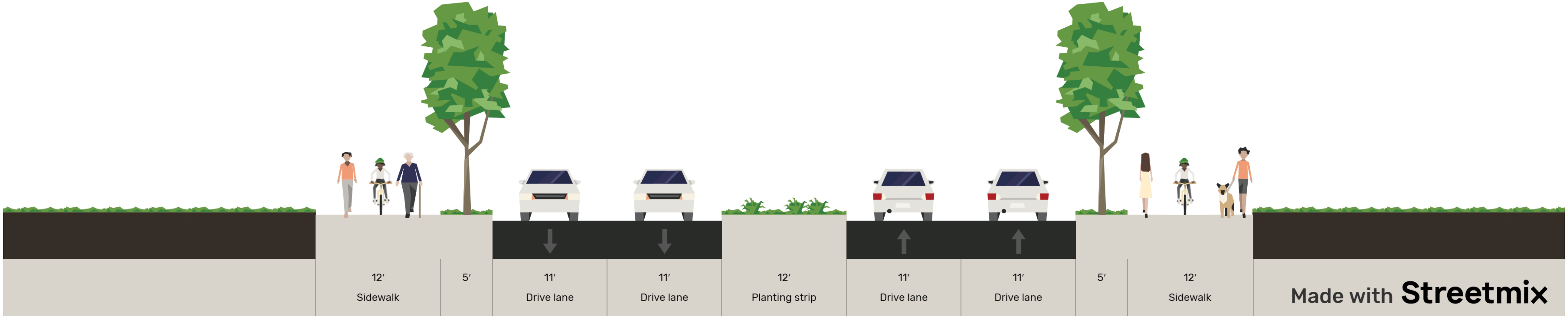
Identifying a Long-Term Vision

Two-Way Cycle Track (Shared-Use Path on Opposite Side)



Identifying a Long-Term Vision

Shared-Use Path on Both Sides

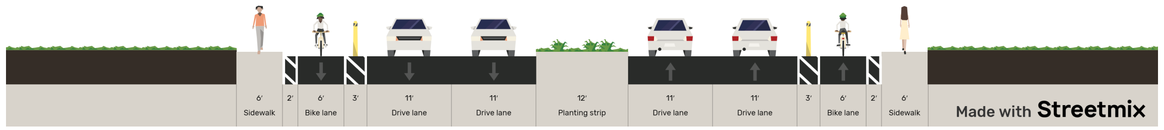


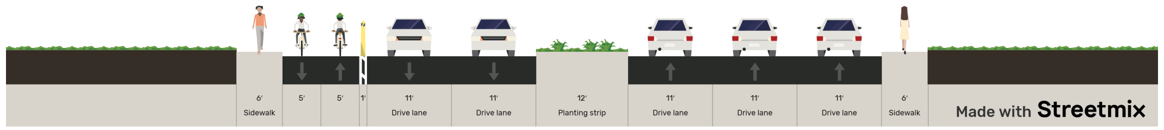
Long-Term Vision Summary

Separated Bike Lane Option

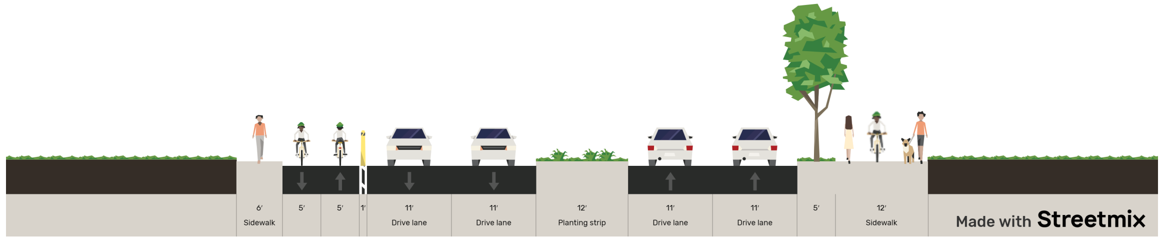
Cycle Track/ Shared-Use Path Option

Short-Term

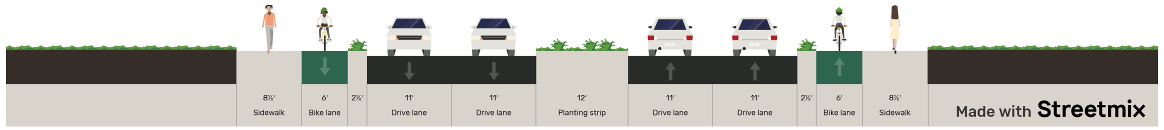


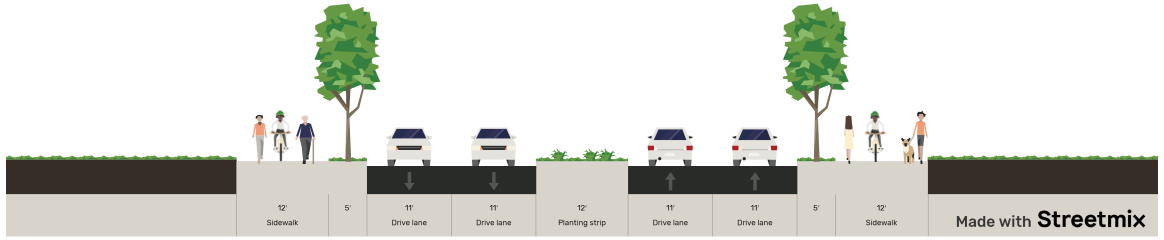


Mid-Term



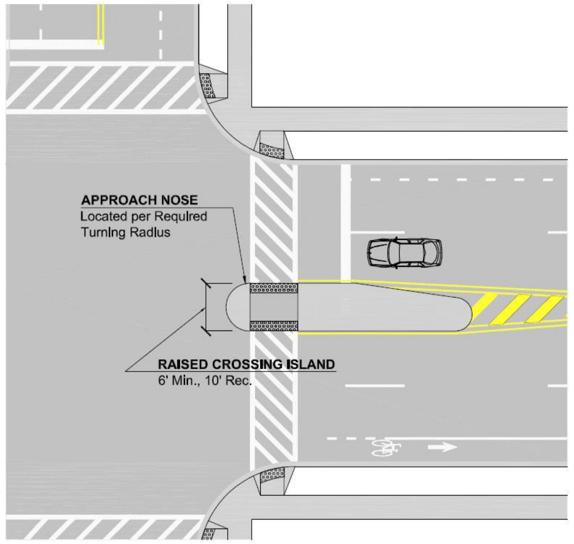
Long-Term

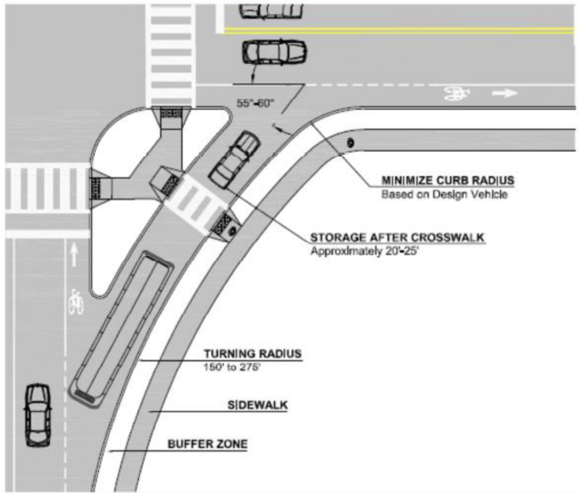




Crossing Greenbelt Road

- Add marked high-visibility crossings
- Consider signalized mid-block crossings
- Provide median refuge islands
- Remove or constrict right-turn slip lanes
- Remove right-turn deceleration/acceleration lanes





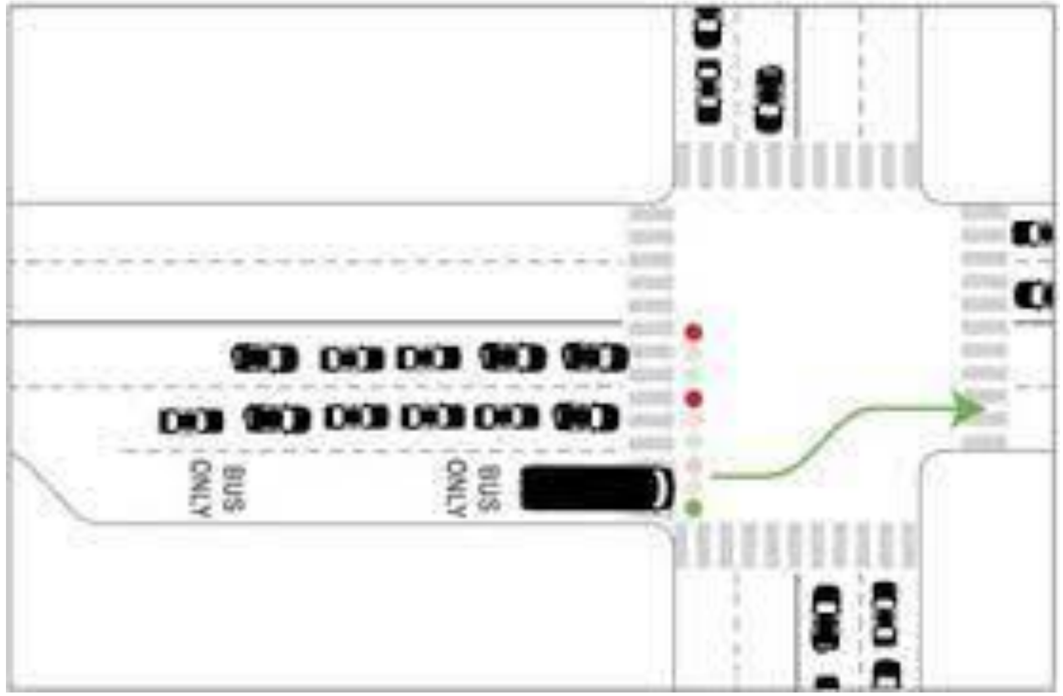
Short-term Walking and Biking Recommendations

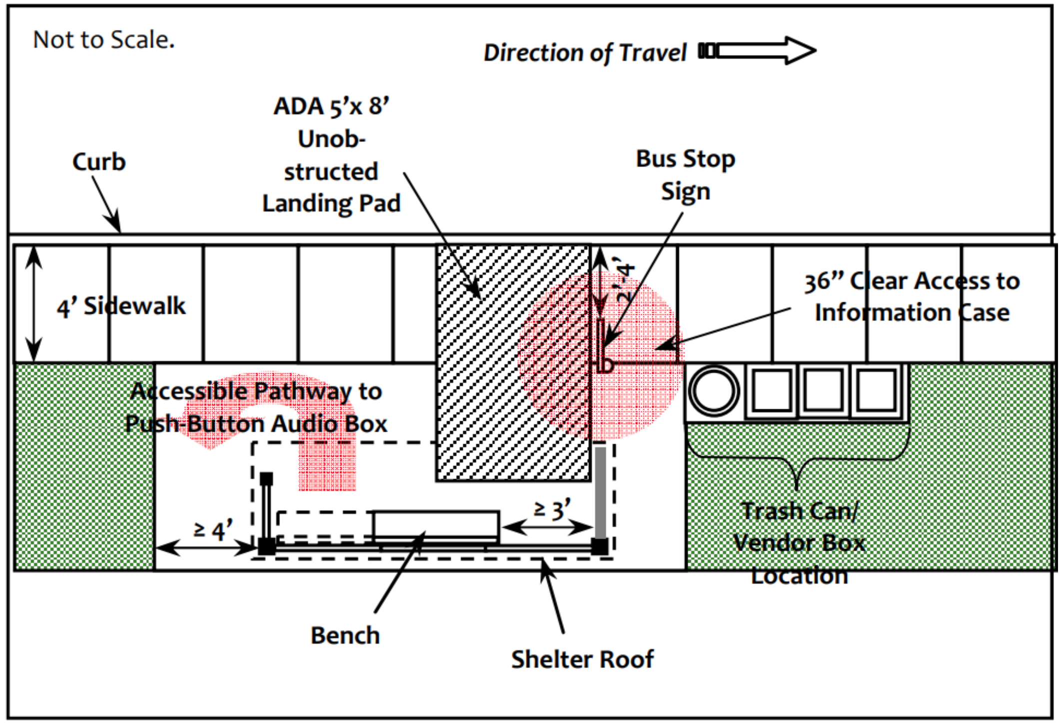
- Pilot a separated bike lane on Greenbelt Road – coordinate with SHA on traffic analysis and signal timing adjustments, and WMATA on transit considerations
- Remove or redesign slip lanes
- Improve walking conditions on the bridge
- Remove or constrict right-turn acceleration/deceleration lanes
- Provide a sidewalk connection on the north side of Greenbelt Road adjacent to Beltway Plaza

[The southbound right-turn from Rhode Island Avenue] slip lane should be closed. It is especially unsafe for people on bikes using Rhode Island Ave because it encourages high vehicle speed at a location where low speed and caution should be the priority

Improve Transit Service

- Improve signal timing and coordination, including signal priority for transit vehicles
- Add queue jump lanes in place of right-turn acceleration/ deceleration lanes
- Upgrade all transit stops to meet ADA requirements with seating (15 or more boardings per day) or shelter (50 or more boardings per day), including sufficient landing zone, sidewalk width, and clear zone
- Improve walking and biking access to all transit stops and consider options for minimizing circuitous bus routing (i.e. through Beltway Plaza) with improved multimodal connections
- Provide amenities including bicycle racks, micromobility docks, trash and recycling receptacles at all stops

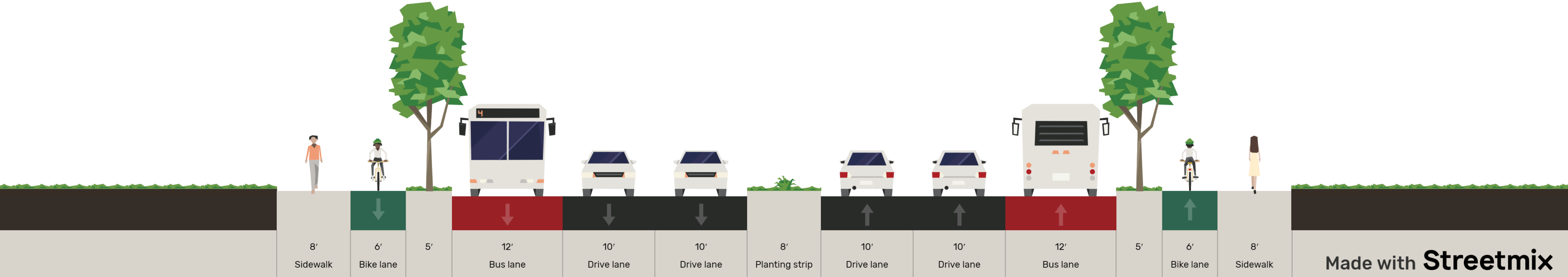




Sidewalk Adjacent to Curb

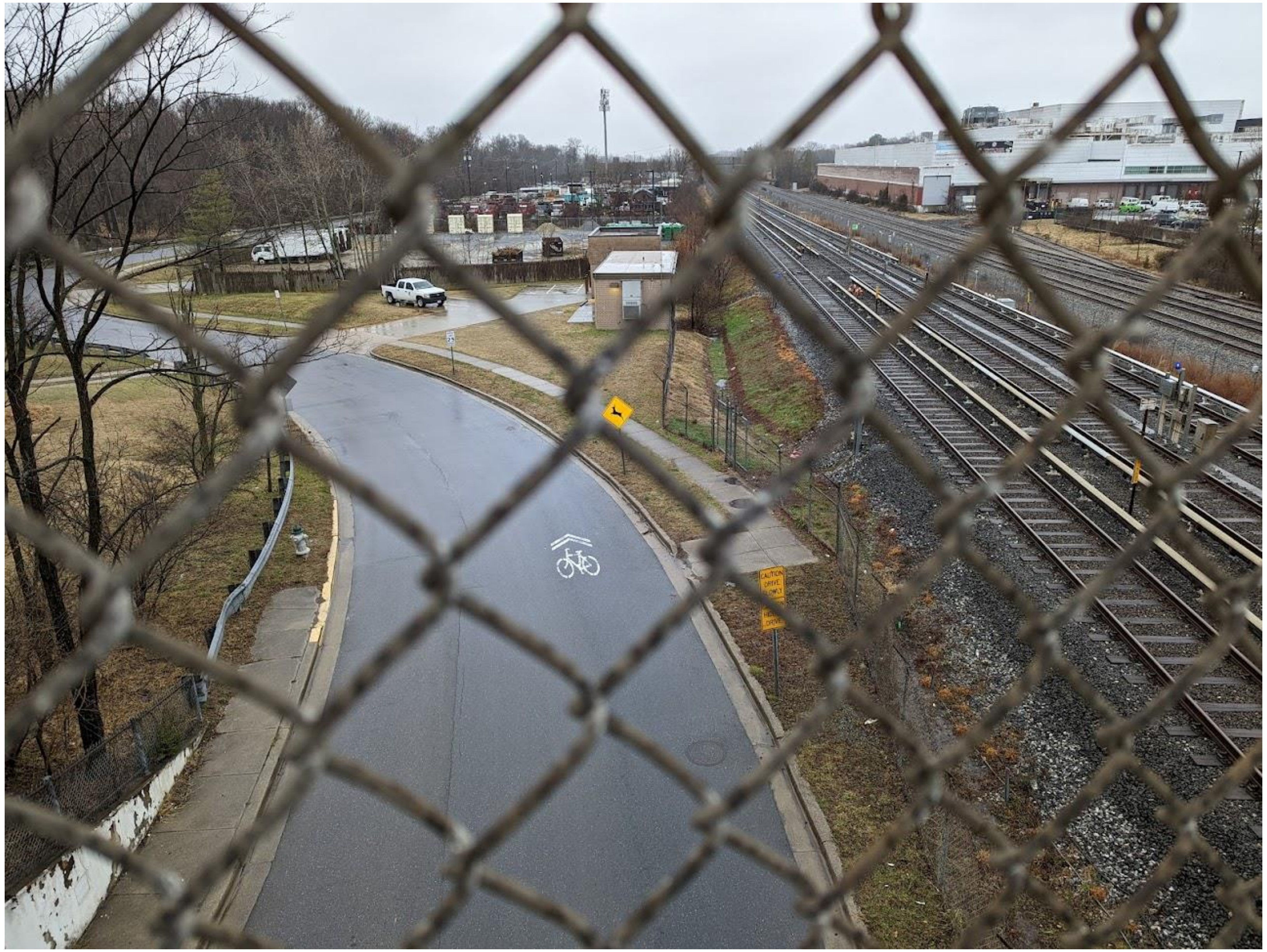
Transit Along Greenbelt Road

- Long-term
  - Consider dedicated outside bus lanes after redevelopment increases transit ridership
  - In constrained areas (the bridge), cars and transit could share a lane to ensure walking/biking facilities are continuous
  - Realizing the cross-section below requires approximately 20 additional feet (10 feet on each side) of space along the corridor



Connections to Neighborhoods, Parks, and Trails

- Identify priority crossing locations along Greenbelt Road (Rhode Island Avenue, 57th Avenue, Cherrywood Lane)
- Improve Branchville Road to provide low-stress bicycle connections, and work with Berwyn Heights to connect Branchville Road to the Indian Creek Trail
- Provide wayfinding guidance to connect the Indian Creek Trail across (or under) Greenbelt Road



Connections to Neighborhoods, Parks, and Trails

Improve Access

- Manage driveway and side street access to Greenbelt Road
  - Reduce conflicts with people walking and biking
  - Allow for the eventual construction of continuous walking and biking facilities
  - Provide stormwater and environmental amenities
  - Improve roadway capacity and facilitate right-sizing the road to demand

"Access management is the programmatic control of the location, spacing, design, and operation of driveways, median openings, interchanges, and street connections to a roadway."

Percentage of driveway crashes by movement

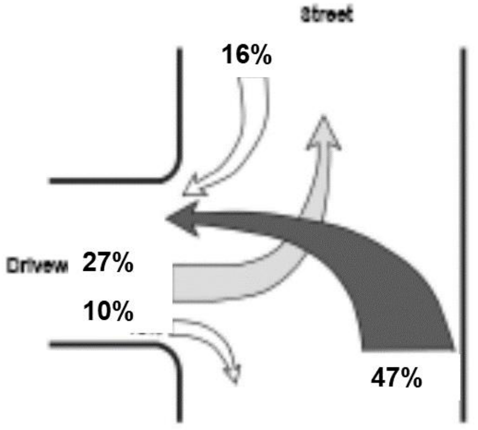
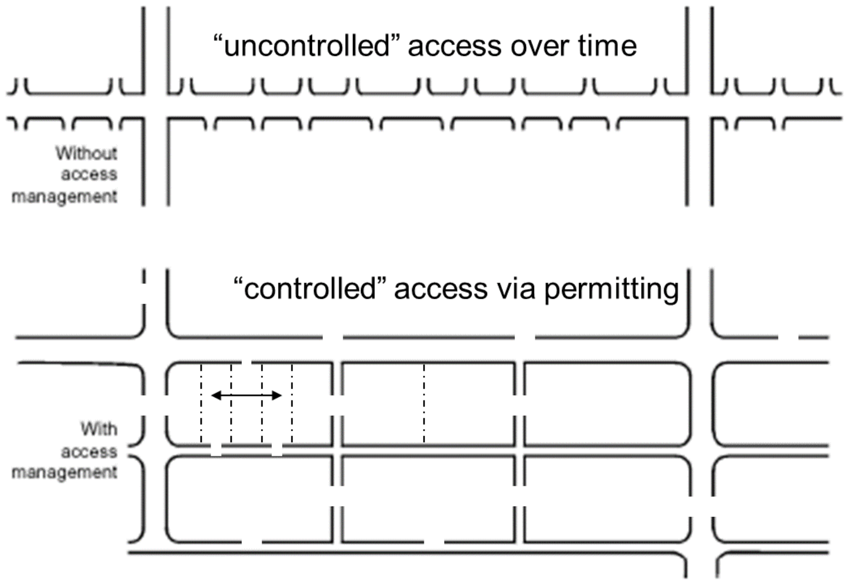
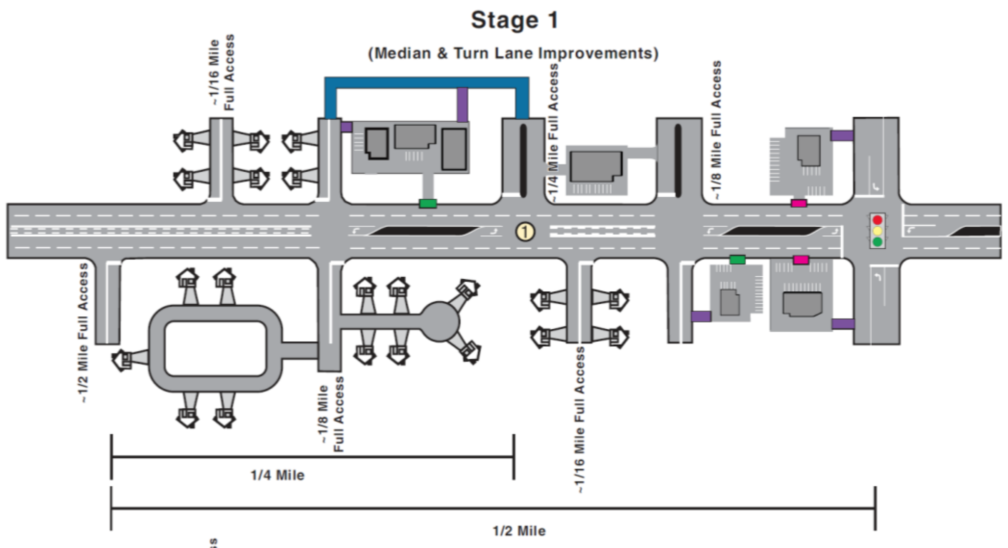


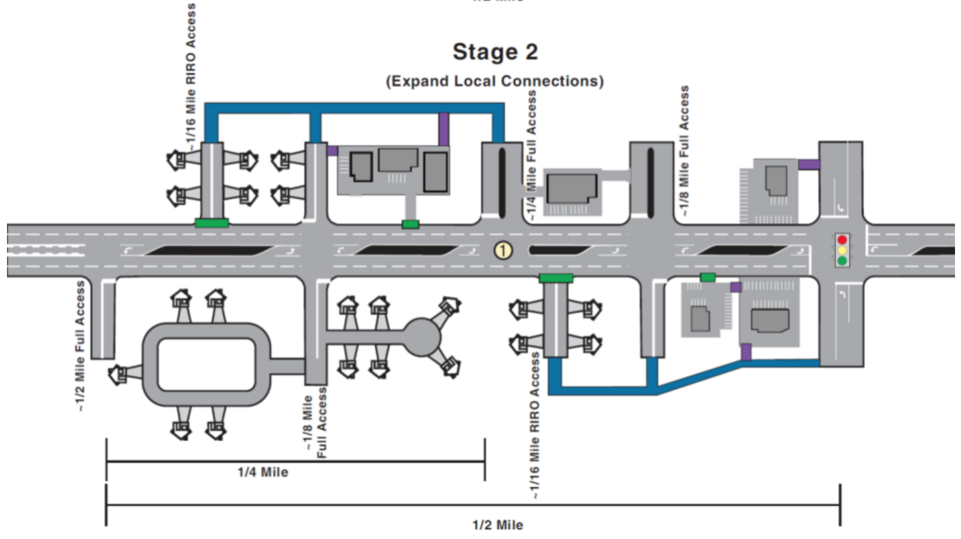
FIGURE 1-6 Percentage of driveway crashes by movement (1).

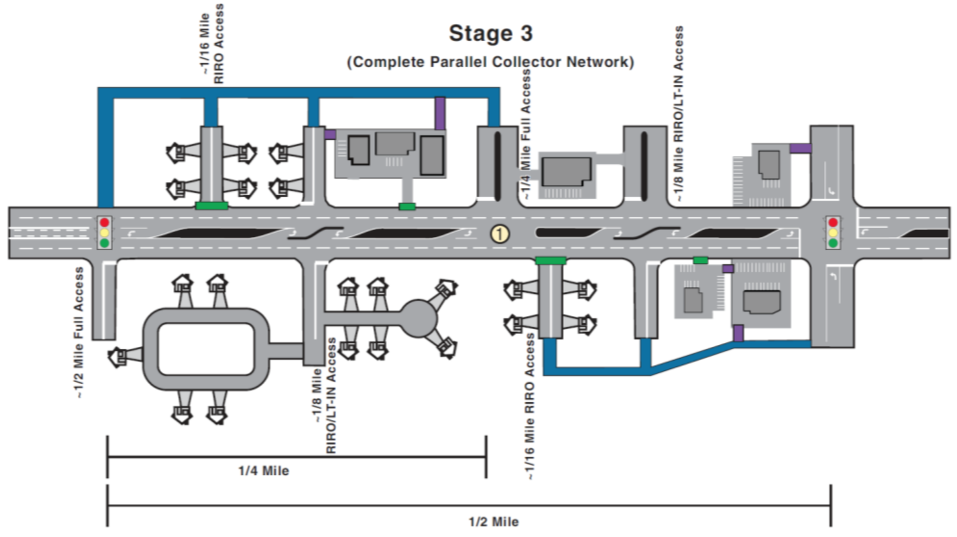


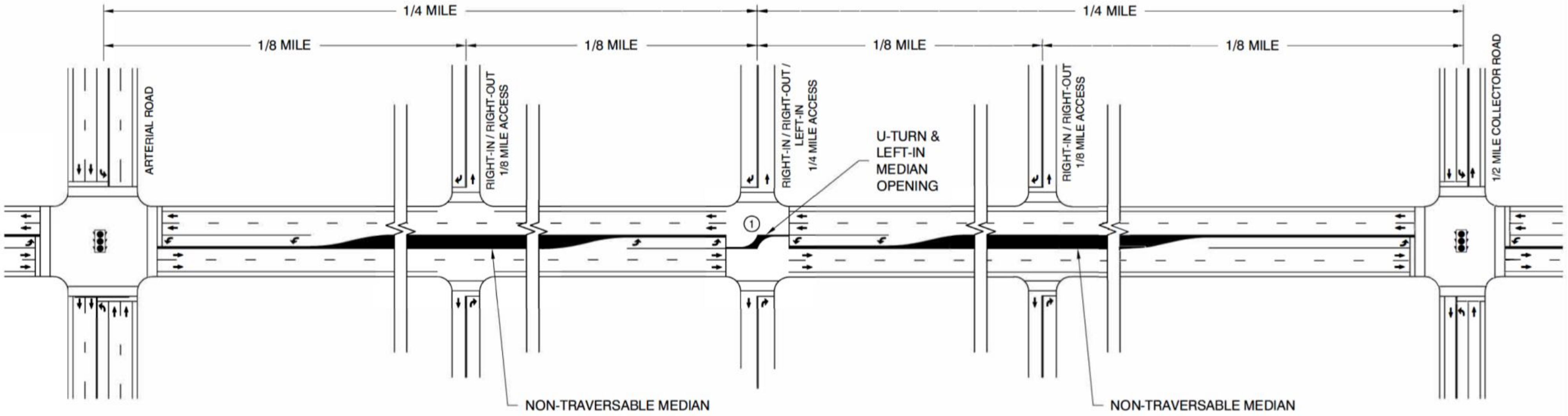
Improve Access

- Close and consolidate driveways
- Provide additional parallel connections and provide access via side streets
- Minimize full-movement driveways and reduce turning movements at side streets







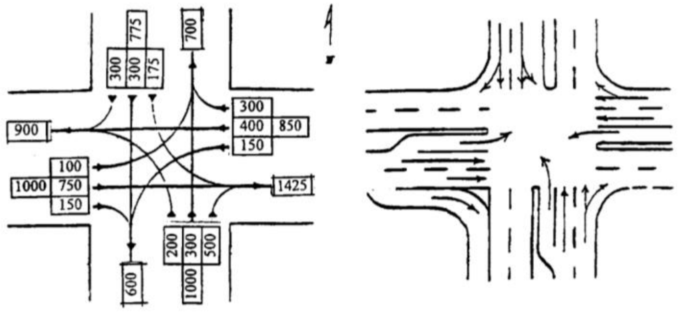


Appendix

Definitions

Critical Lane Volume (CLV)

» The sum of traffic volumes that cross at a single point in an intersection. Using an assumed maximum capacity of 1600, the available capacity and "level of service" can be identified at a planning level.



Turning Volumes   Intersection Geometrics

Volume-to-Capacity Ratio (V/C Ratio)

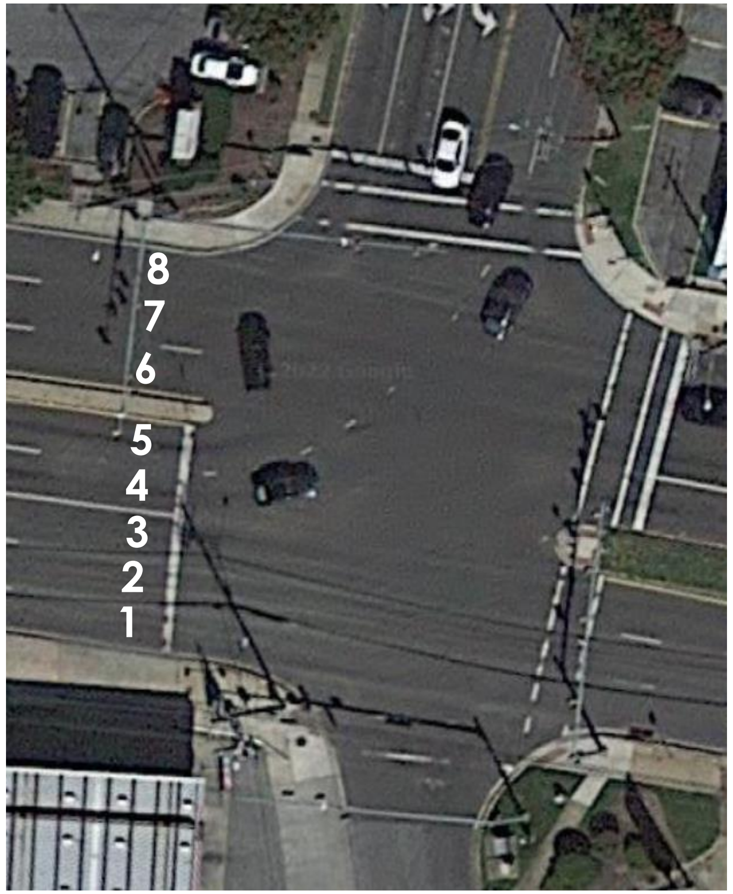
» Roadway demand (vehicle volumes) compared to roadway supply (carrying capacity). Useful indication of whether the physical geometry provides sufficient capacity for the intersection.

Level of Service (LOS)

» Qualitative measure used to relate the quality of motor vehicle traffic service. LOS "D" or "E" are considered acceptable for peak hours. LOS "B" or "C" are considered acceptable for off-peak hours.

Number of Conflicting Travel Lanes for a Pedestrian Crossing Greenbelt Road

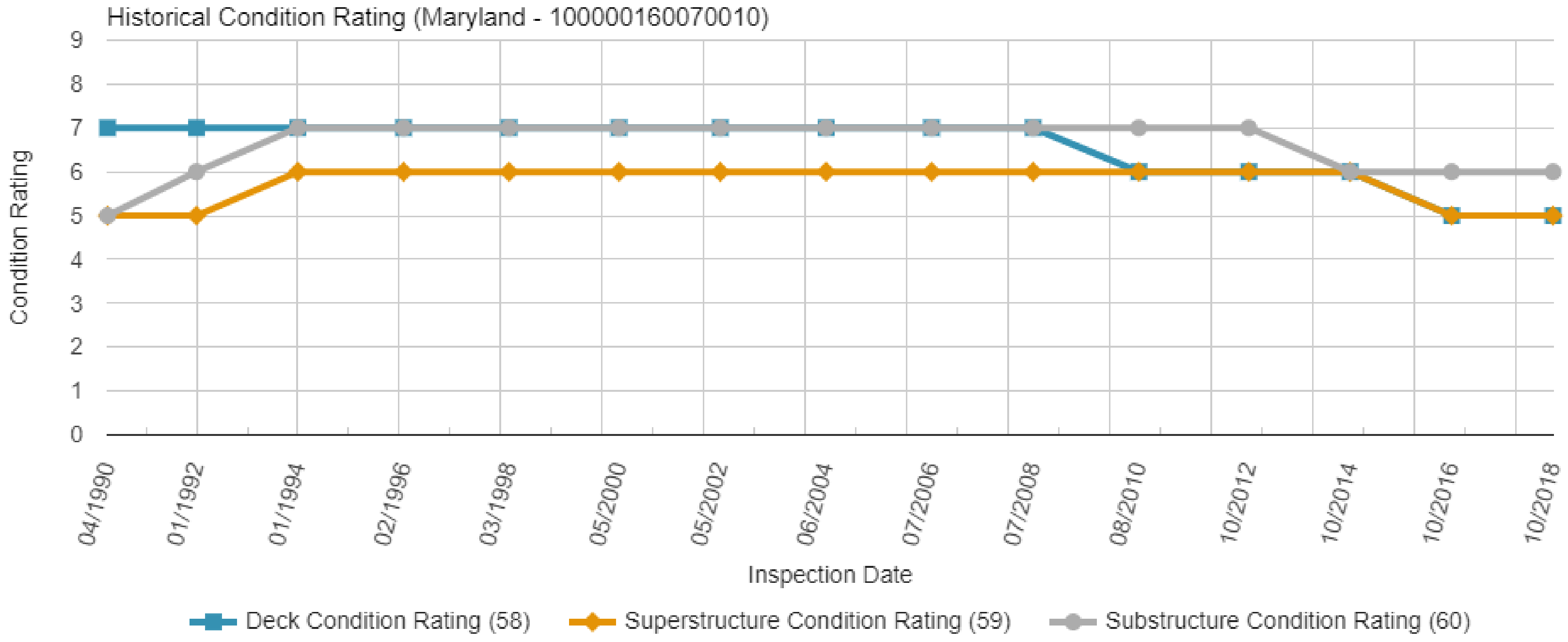
» Total number of travel lanes a pedestrian needs to navigate to cross Greenbelt Road (see example to the right).



Bridge Information - LTBP InfoBridge (dot.gov)

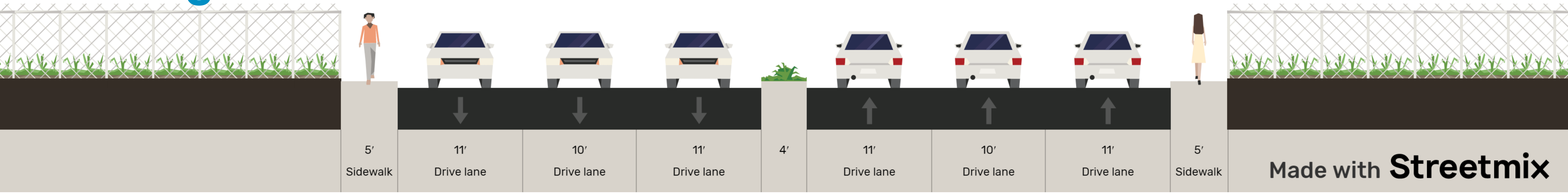
Bridge

- Built in 1942, Reconstructed in 1988
- Sidewalk width of 4.3 feet (right curb); 4.9 feet (left curb)
- Roadway (curb to curb) width of 67.9 feet; 83.3 feet deck width
- Deck Condition Rating: 5 - Fair Condition
- Superstructure Condition Rating: 5 - Fair Condition
- Substructure Condition Rating: 6 - Satisfactory Condition

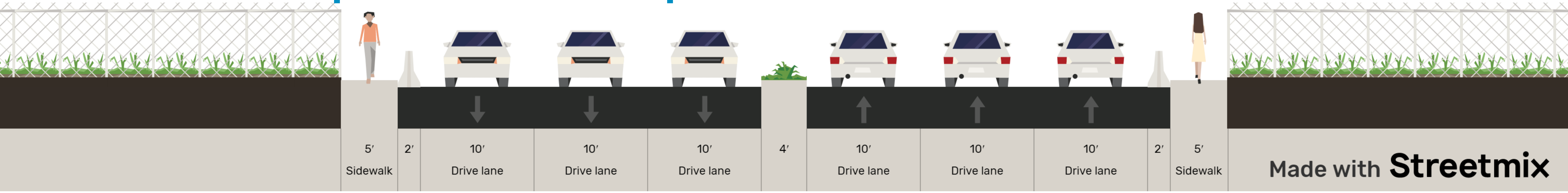


Short-Term Bridge Options

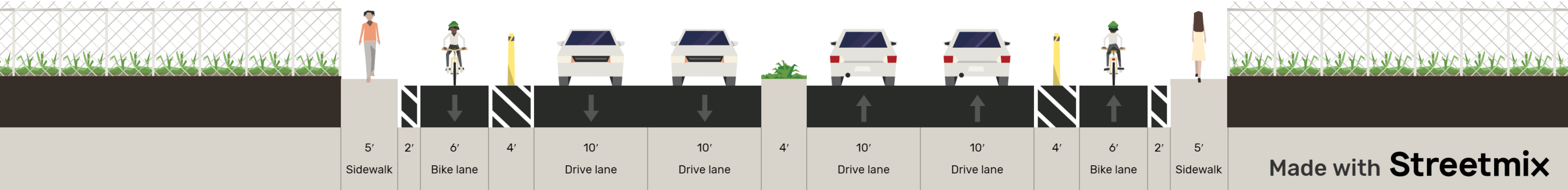
Existing



Short-Term Option without Separated Bike Lane Pilot

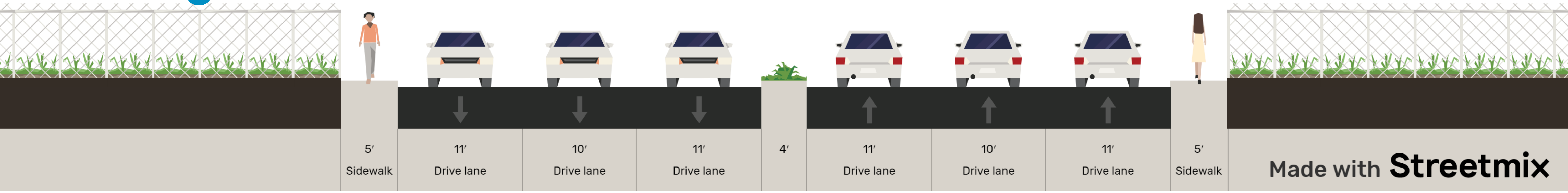


Short-Term Option with Separated Bike Lane Pilot



Long-Term Bridge Options

Existing



Long-Term Option with Separated Bike Lane