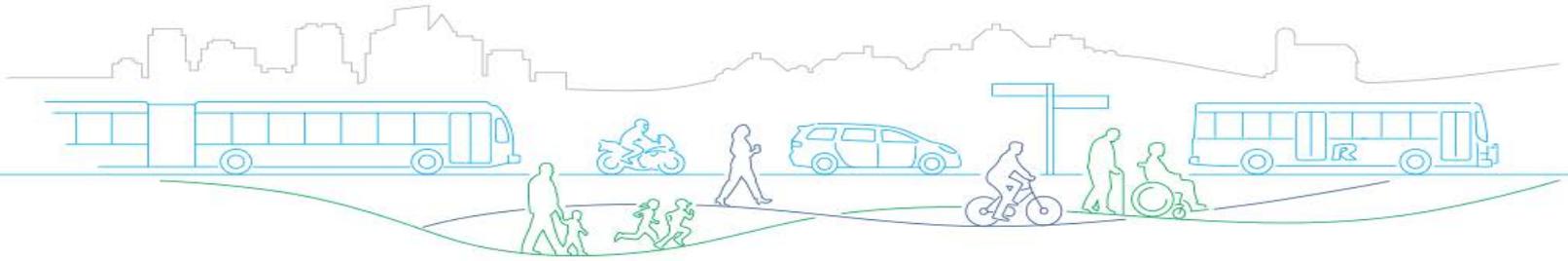


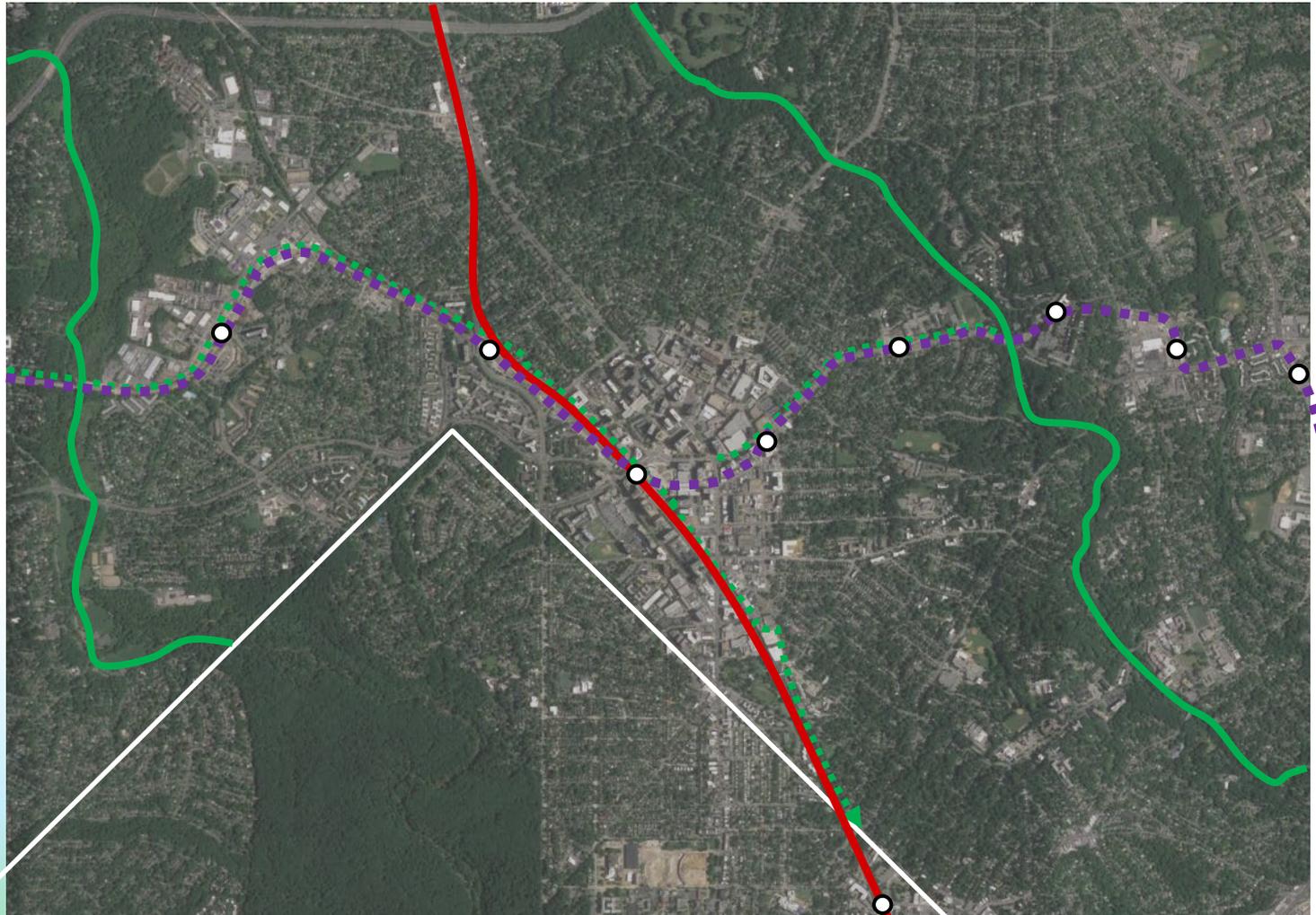


LESSONS LEARNED FROM BUILDING AN 8 TO 80 NETWORK IN SILVER SPRING



Silver Spring Context

2



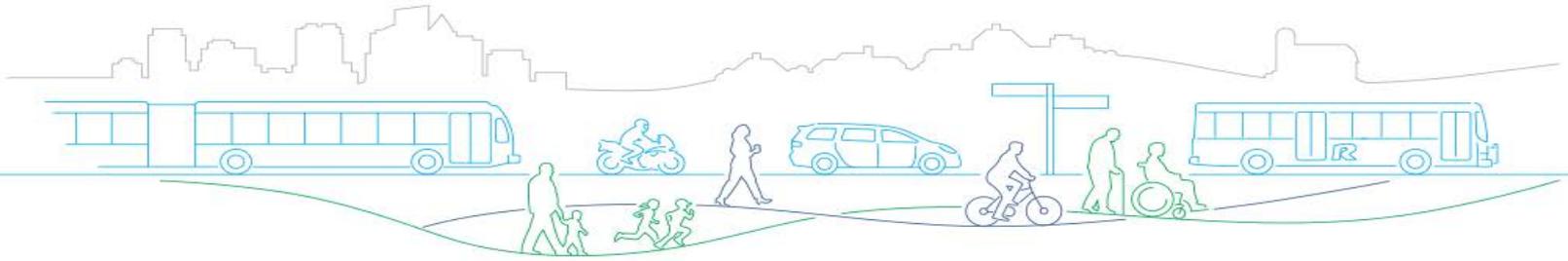


Focusing on key areas

3

- Bicycle & Pedestrian Priority Area (BiPPA) program (2015).
- Focuses quick implementation in key areas.
- Concentrated rather than distributed effort.

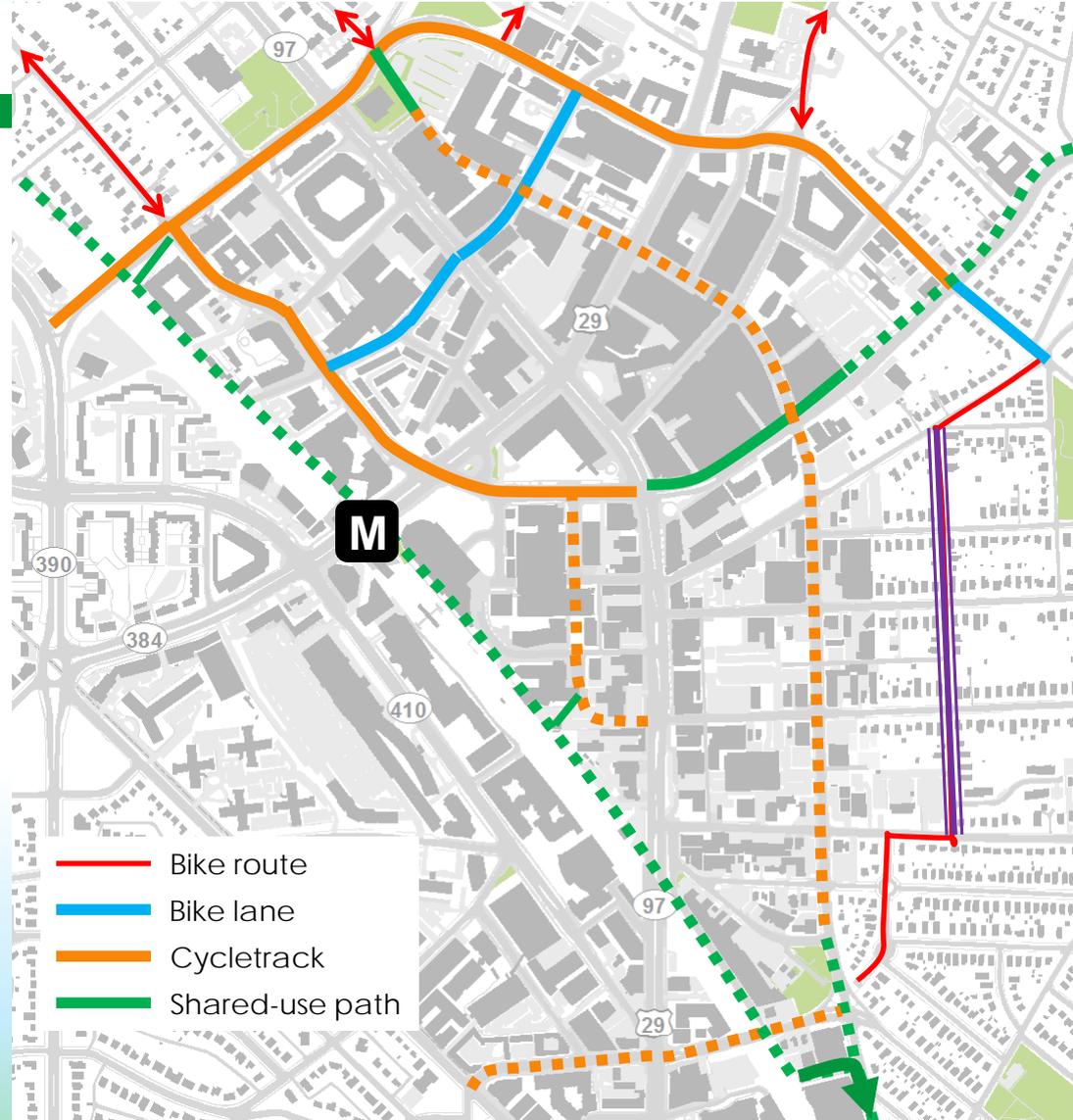


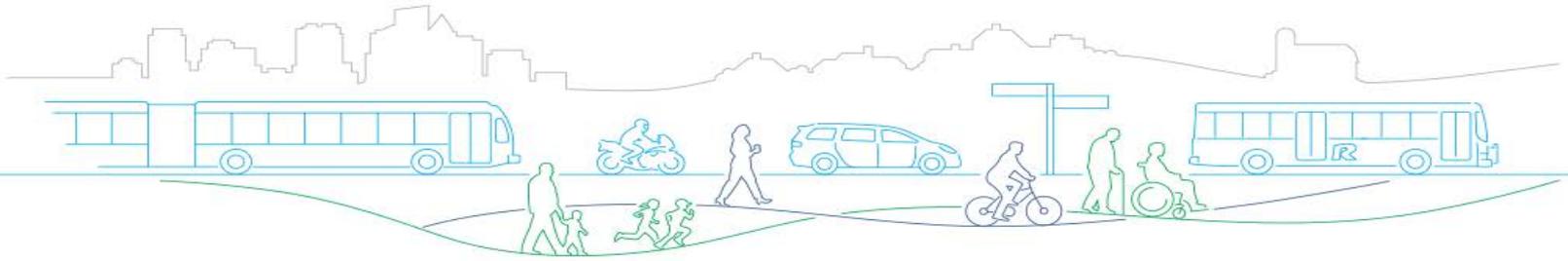


Silver Spring network

4

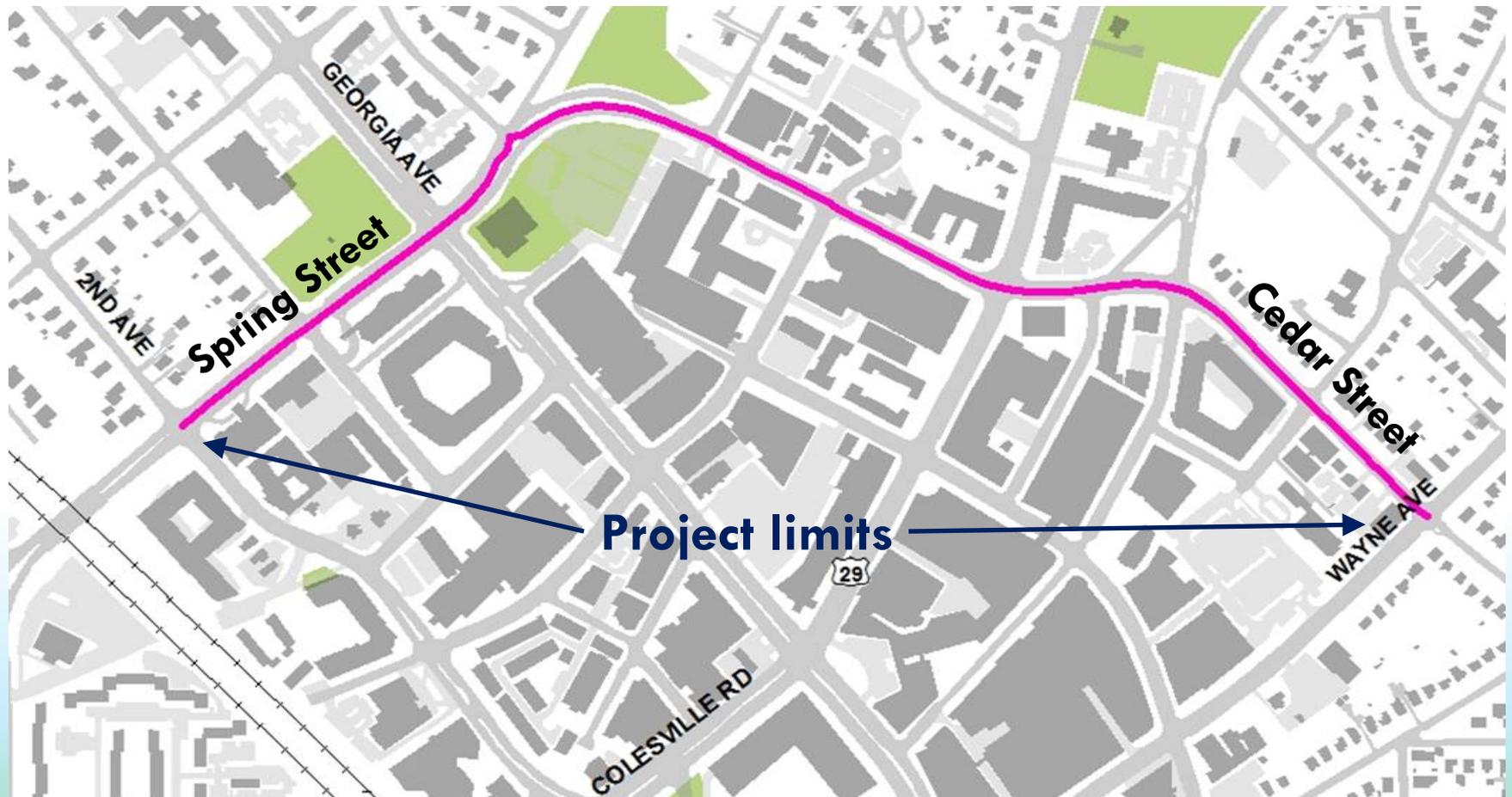
- Pre-existing bikeways
- Major regional trail network under construction
- Early BiPPA improvements
- Facilities in development





Spring Street / Cedar Street

5



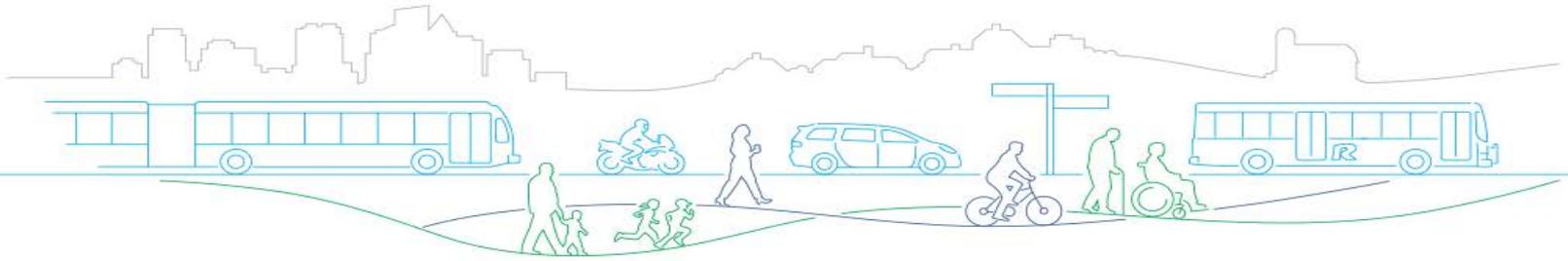


Spring Street / Cedar Street (2017)

6

- Facility type
 - One-way separated bike lane
 - Separation: paint and flexposts
- Started with this project because it was (relatively) easy
 - Build ridership
 - Proof of concept
 - Test out new features



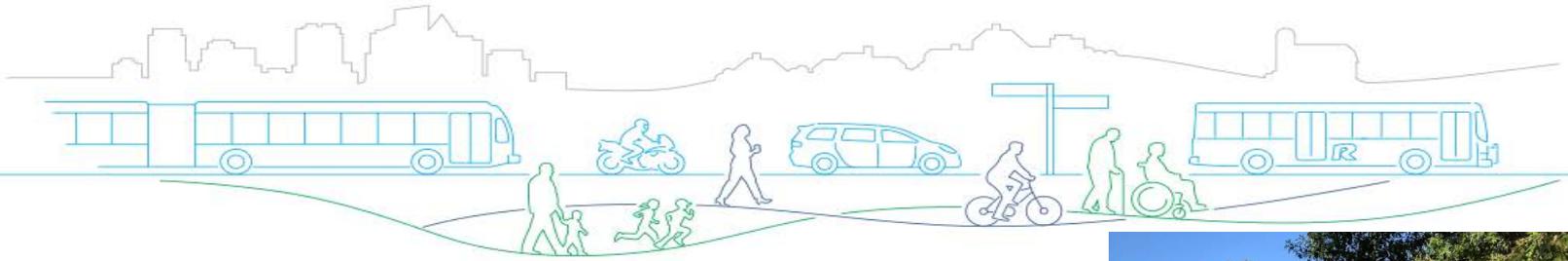


Before and after: Spring Street

7

- Minimal parking impact.
- No utility relocation.
- Lane narrowing alone made room for separated bike lanes.

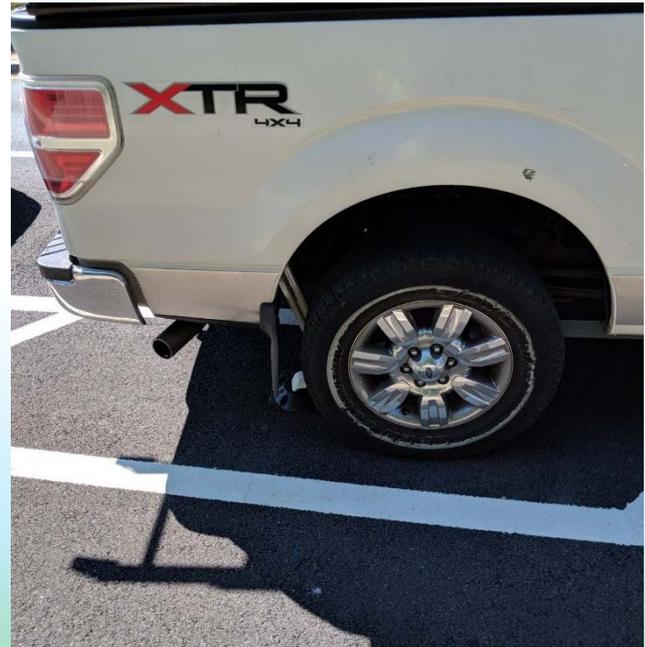




Upgrade later

8

- Initial barriers: paint and flexposts
 - It was all we could get approved in 2016
 - Shortcomings became clear early on
 - Not effective at keeping vehicles out of the bikeway
 - Difficult to keep in place
 - Replacement / repair lagged



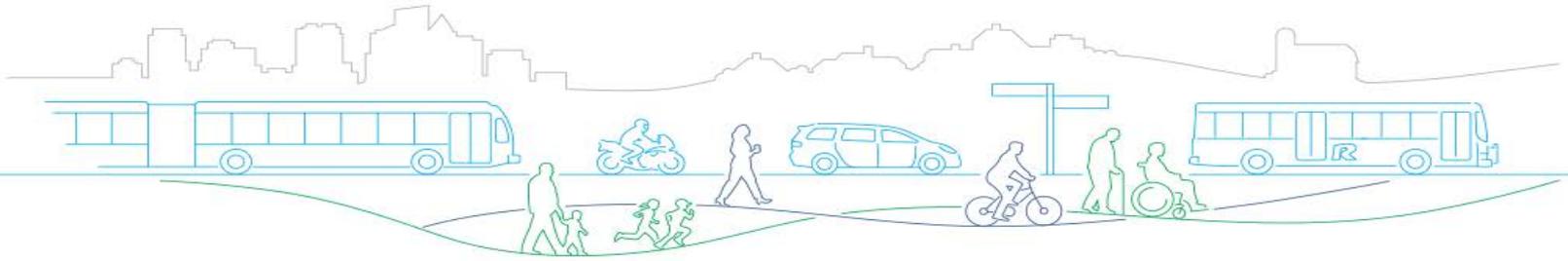


Upgrades to Spring Street

9

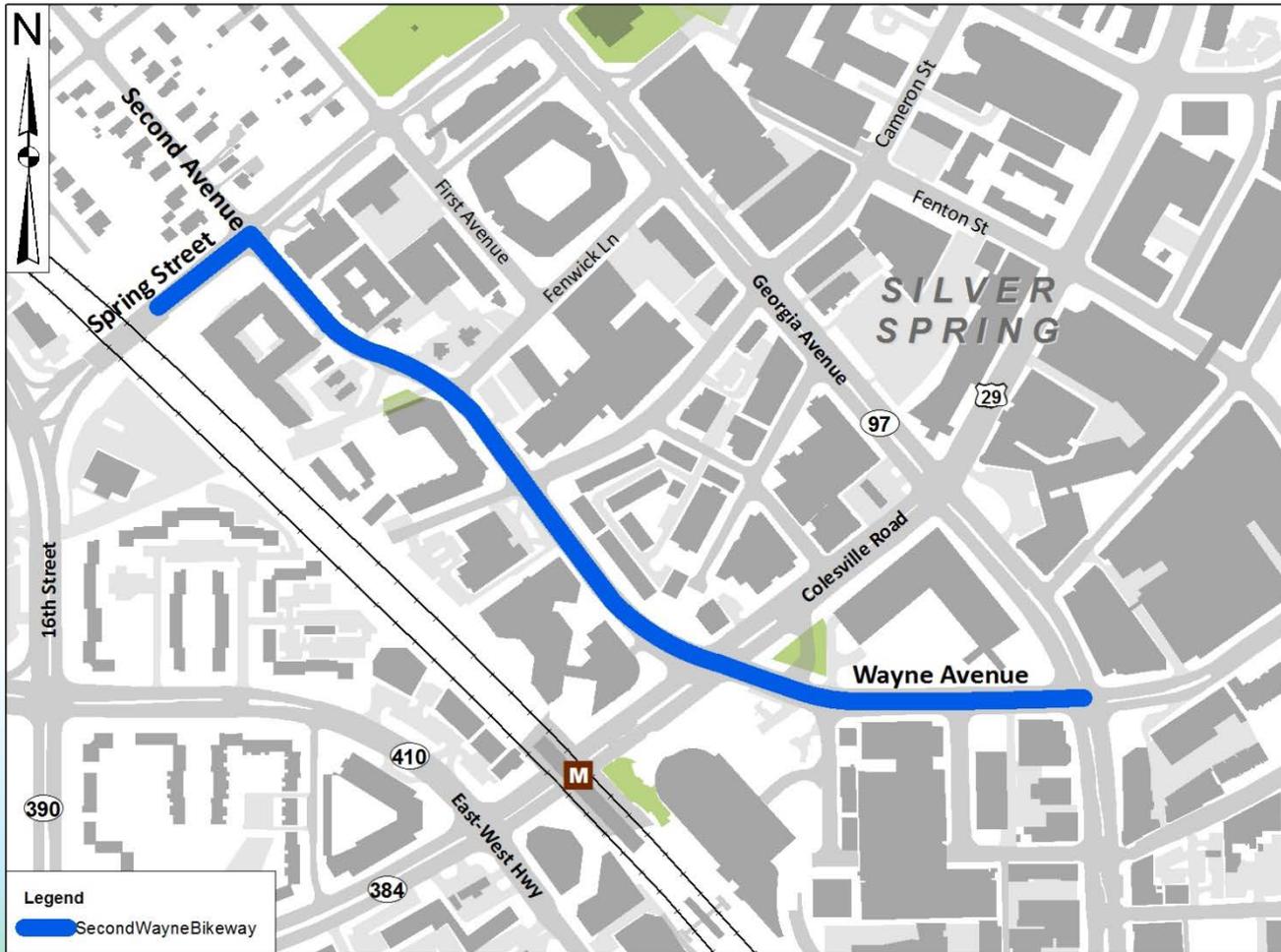
- Upgrade in 2019
 - Sold other divisions on a limited application
 - Concrete curb (2 blocks), rubber parking blocks (1 block)
 - More resilient
 - More effective
- Now approved for use everywhere

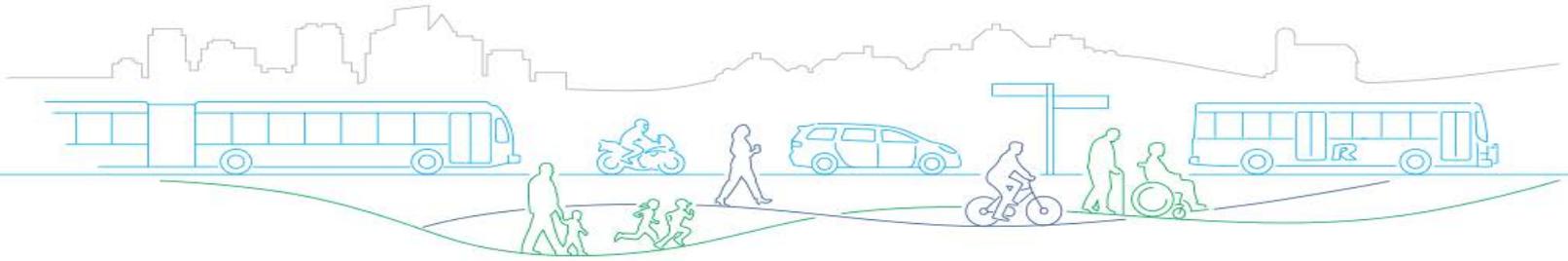




Second Ave / Wayne Ave

10





Second Ave / Wayne Ave (2019)

11

- Facility type
 - Two-way separated bike lane / cycletrack
 - Separation: “retrofit” concrete parking stops + flexposts



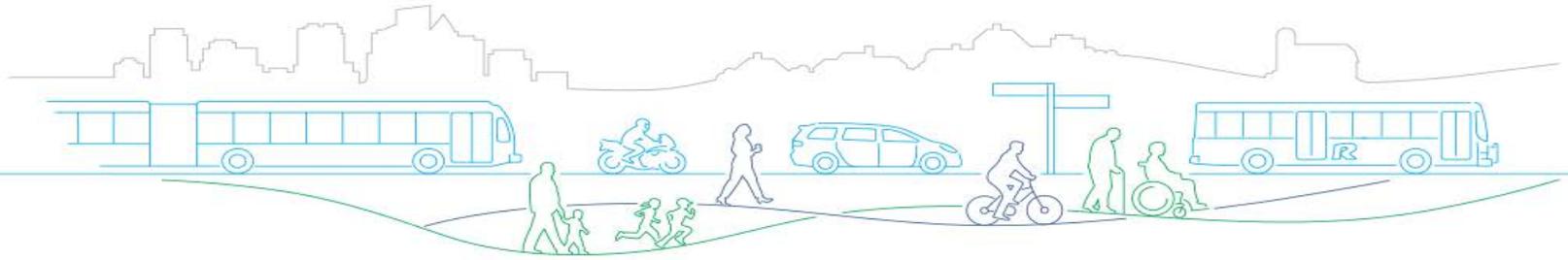


Pick your battles strategically

12

- We wanted bike signals on Spring Street, but there was no way to win that battle in 2016.
- Wayne Ave at Colesville is the first bike signal in Maryland.
- This was the “perfect” case, so it was hard for SHA or DOT staff to reject it out of hand.
- Now that one is operating, it’s a lot easier to move others forward.
 - MCDOT has several intersections in design right now that will include bike signals.





Be bold

13

- First **protected intersection** in the Mid-Atlantic.
- Goal was to test out the treatment for further implementation.
- Design took several months and rounds of refinement and public engagement.
- More coming to the County soon.

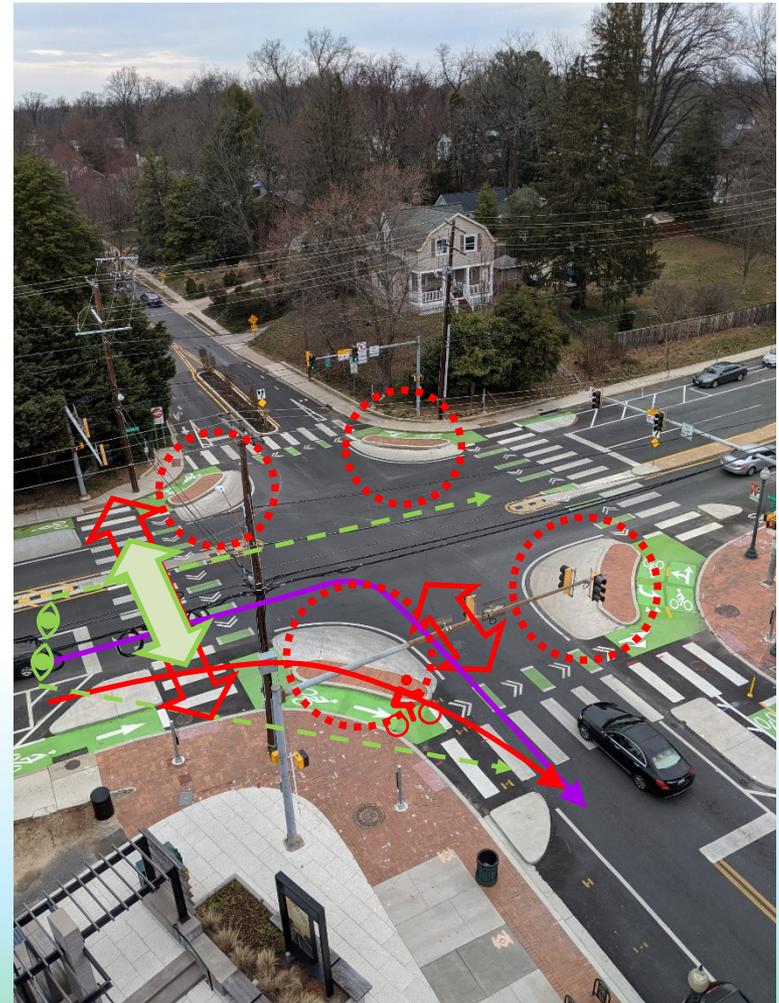


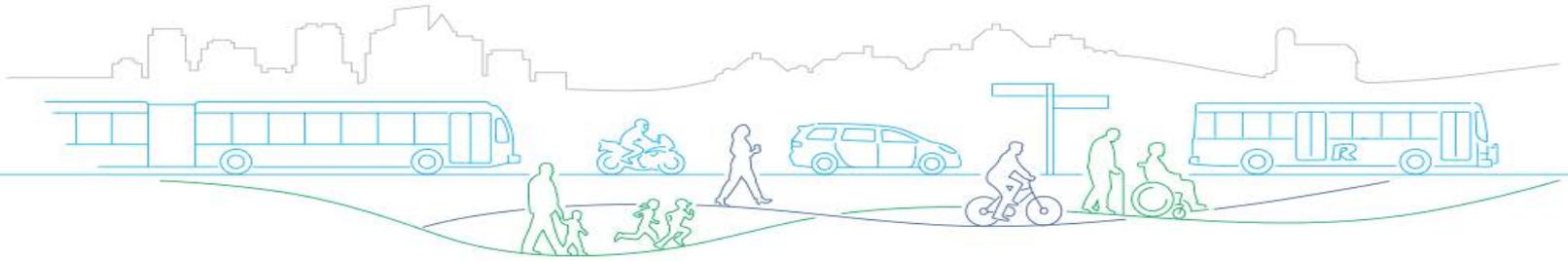


Protected intersection

14

- Components:
 - Corner islands & aprons
 - Set back crossings
 - Advanced bike stop line
- Effects:
 - Slower turning speeds
 - Improved visibility
 - Bike head start
 - Reduced exposure

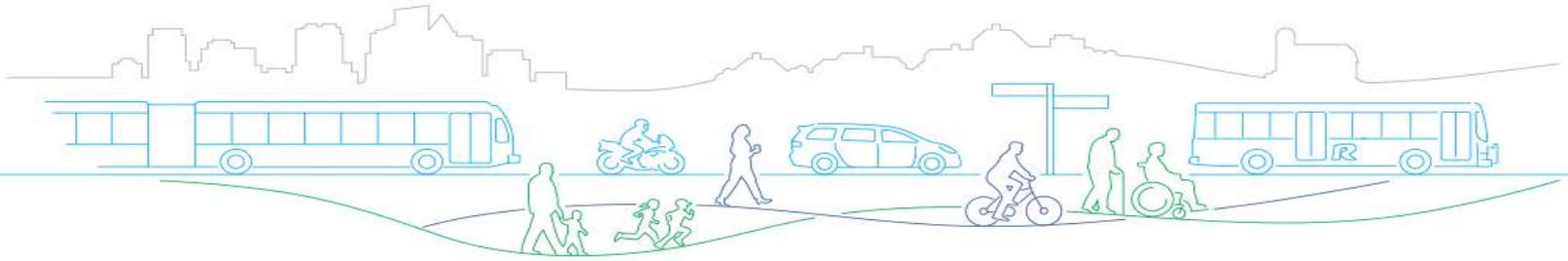




Protected intersection

15

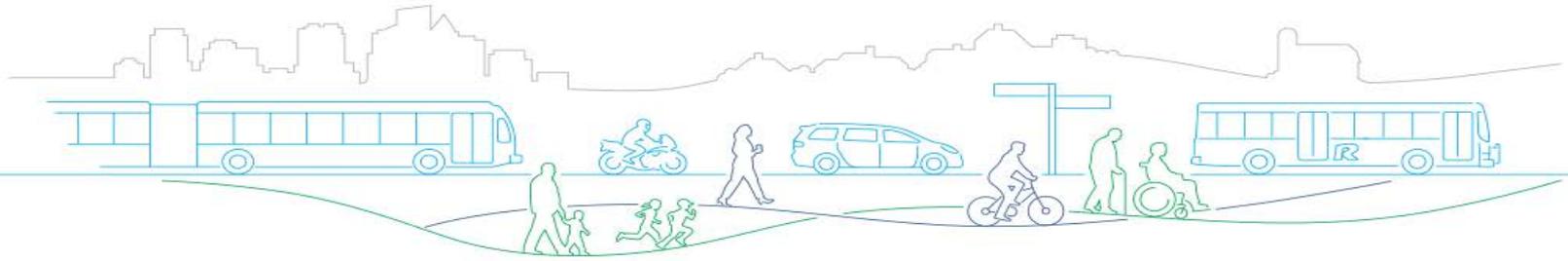




Protected intersection

16

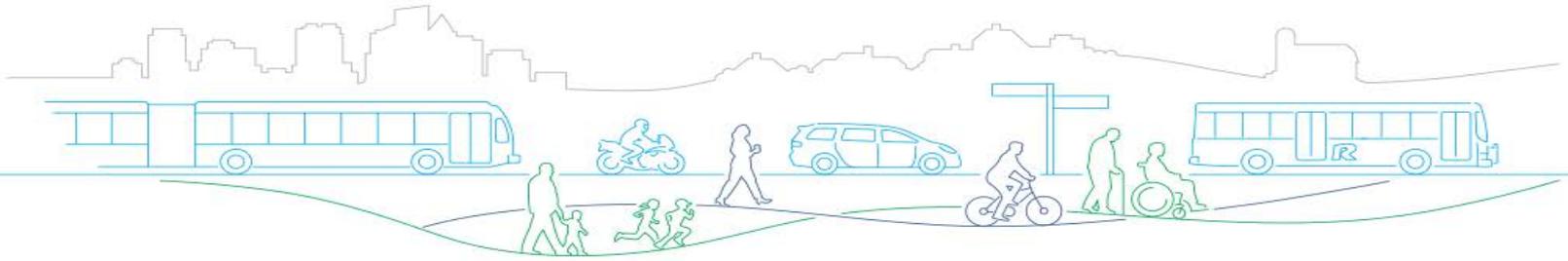




How does it impact speeds?

17

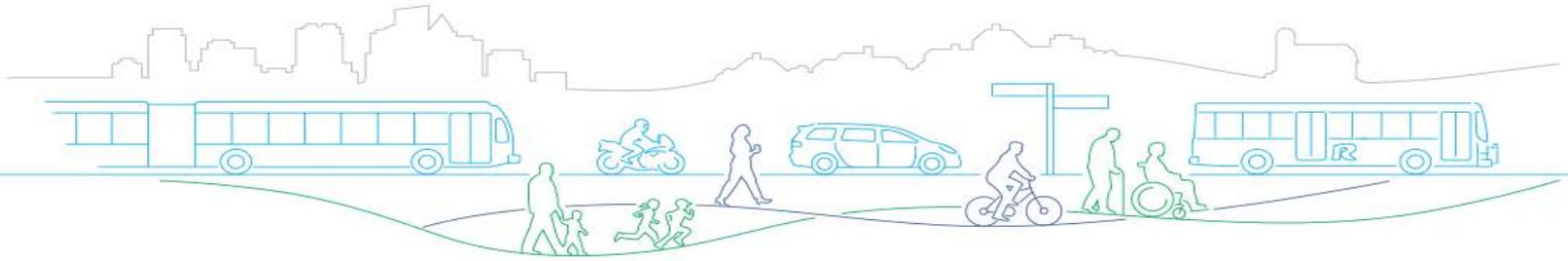




How does it work for trucks?

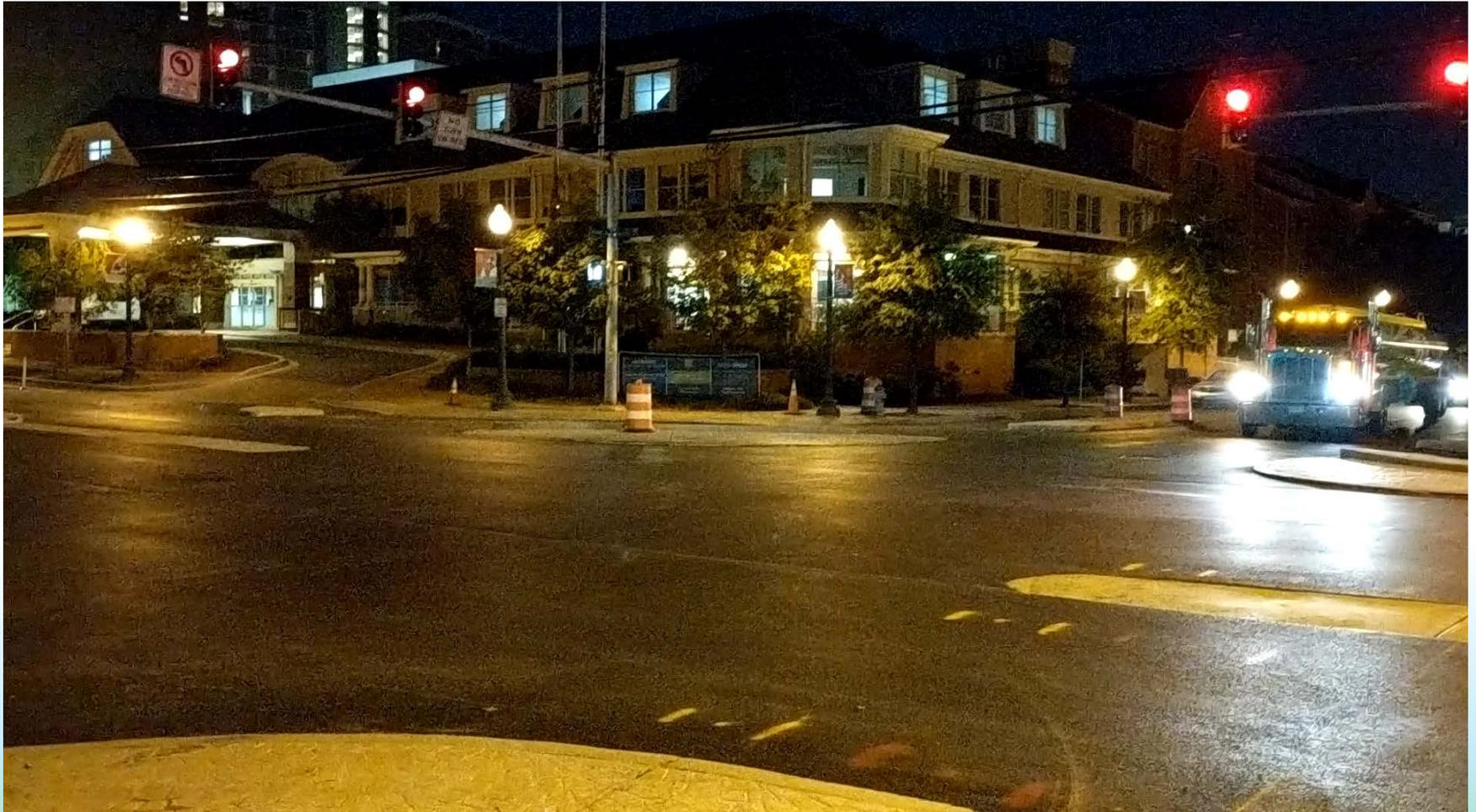
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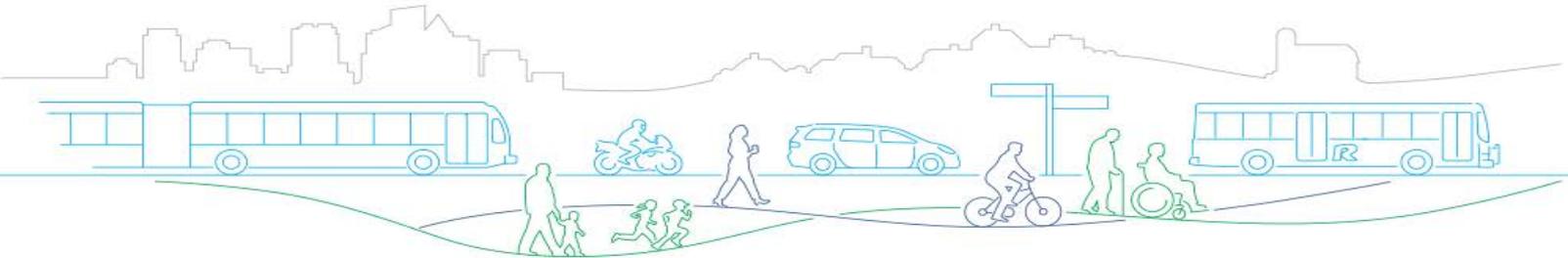




But, like, what about really big trucks?

19





Coordinate with your Fire Department

20



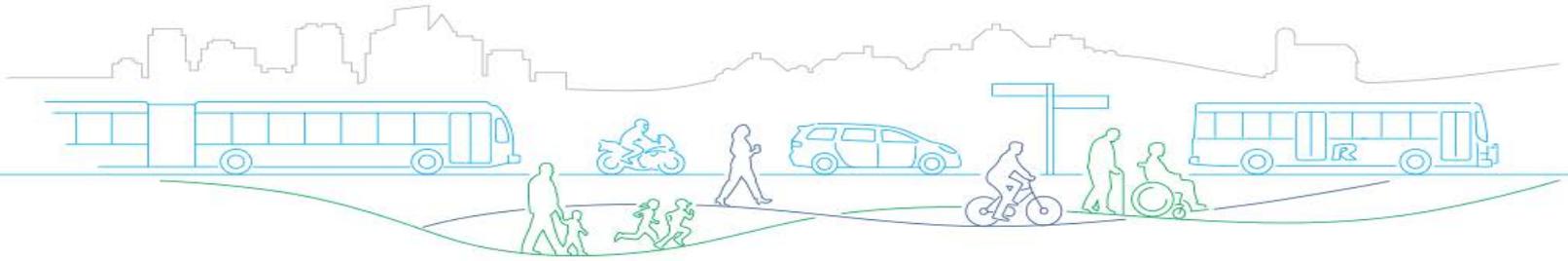


Left turn hardening – quick response

21

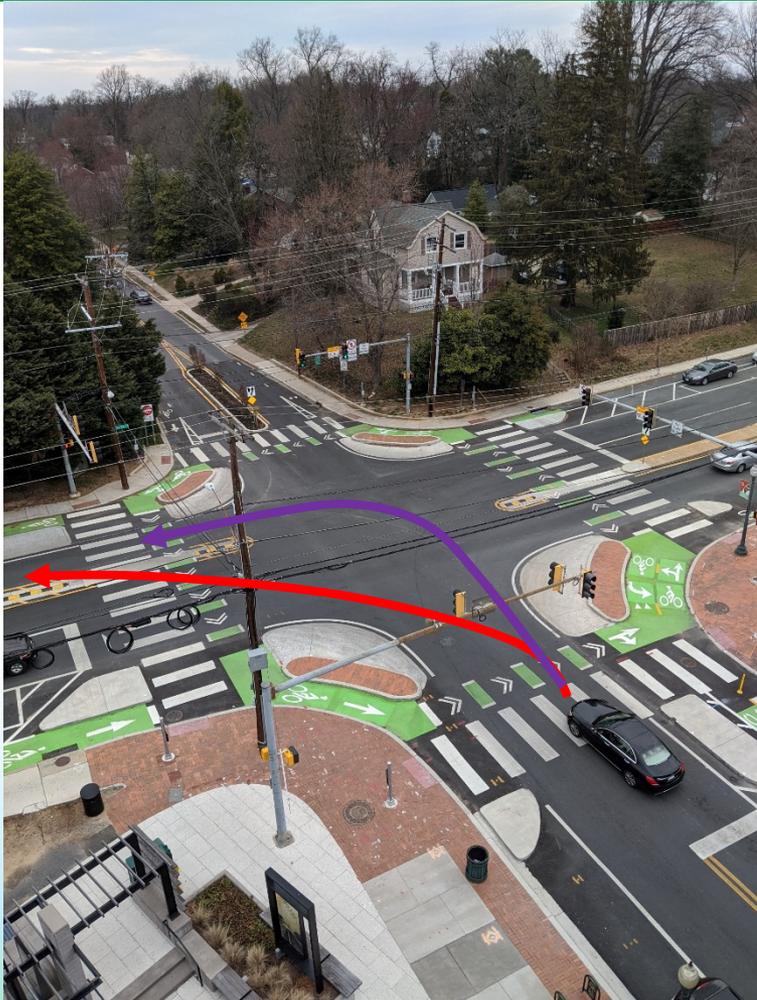
- Don't wait for the concrete to dry. Fix issues as soon as they appear.
- The intersection is great at reducing right turn speed, but needed additional help for left turns.

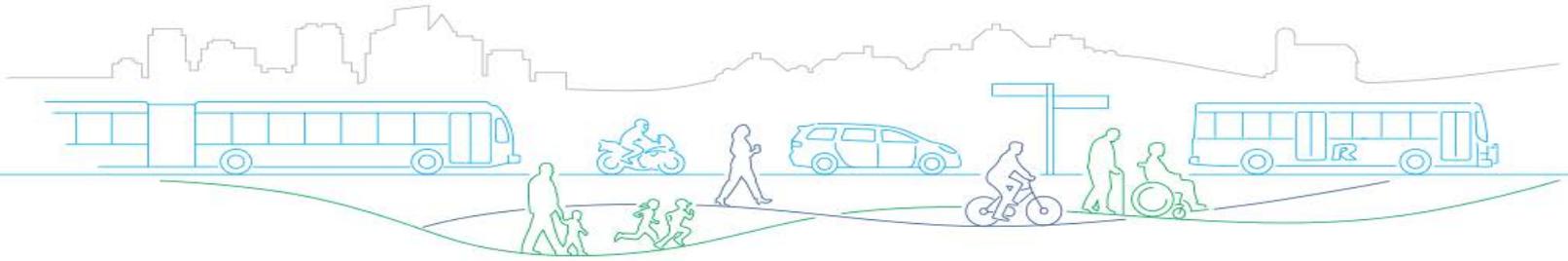




Left turn hardening – quick response

22



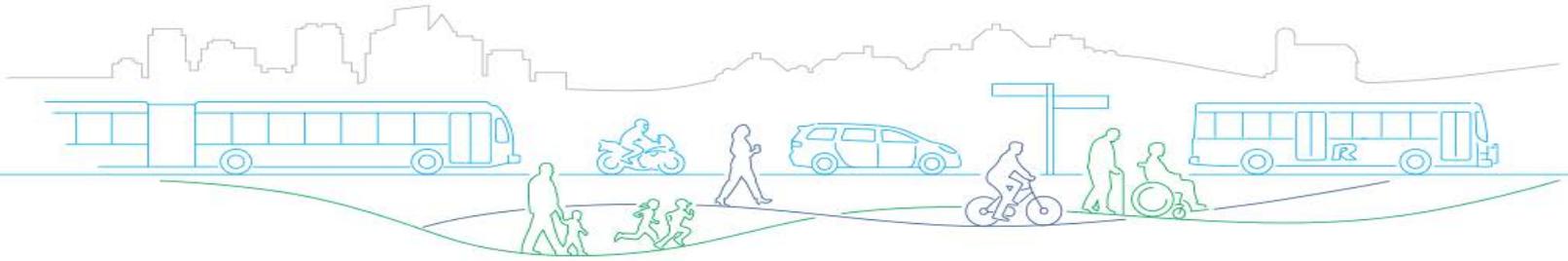


Don't make the bikeway turns too tight

23

- Sharpness of the turn leads some bikes to skip by going over the apron.
 - Path cyclists are supposed to take
 - Path some are taking to avoid turn
 - Path I'd design if I were doing it again (if sufficient ROW)





Thinking outside the box

24

- Buses (2 per hour) need to cross into the shadow of the parking lane when turning left.
- If someone were to illegally park, it would block the bus.
- Solution: An apron instead of painted hatching.





Floating bus stop evolution

25

- In 2017, the County built its first floating bus stops, with 4 on Spring/Cedar.
 - Found that the 8' min platform isn't wide enough.
 - Channelized bike lanes present navigation challenges for wheelchair users.
 - All 4 are being rebuilt soon to upgrade them to our best-practices.

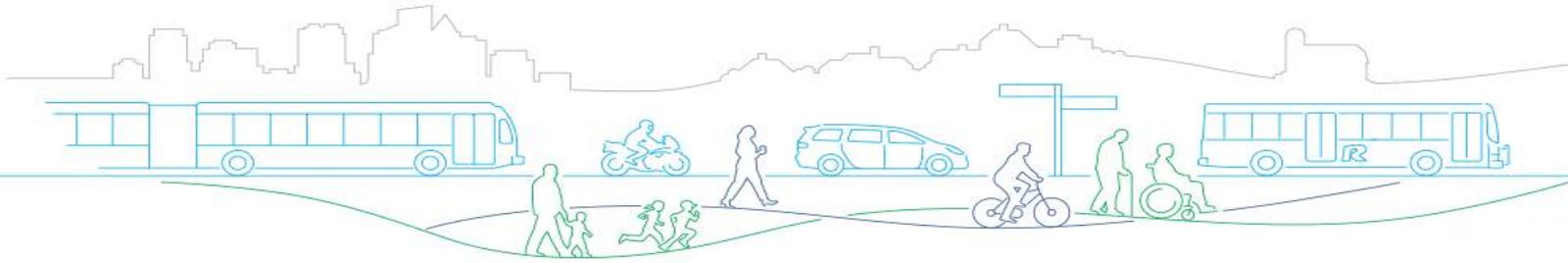




Floating bus stop: concerns

27

- Wheelchair users may have challenges navigating the channelized bikeway.
- Blind & low vision users may have difficulty finding the floating bus stop crosswalk from the sidewalk.
- Blind & low vision users cannot see or hear oncoming cyclists.

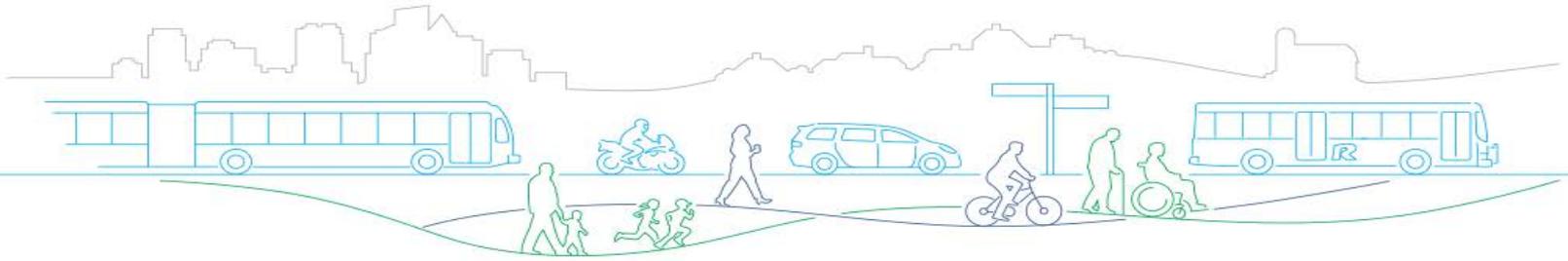


Access & safety treatments

28

- Bus door detectable surface
- Ramp area
- Railings



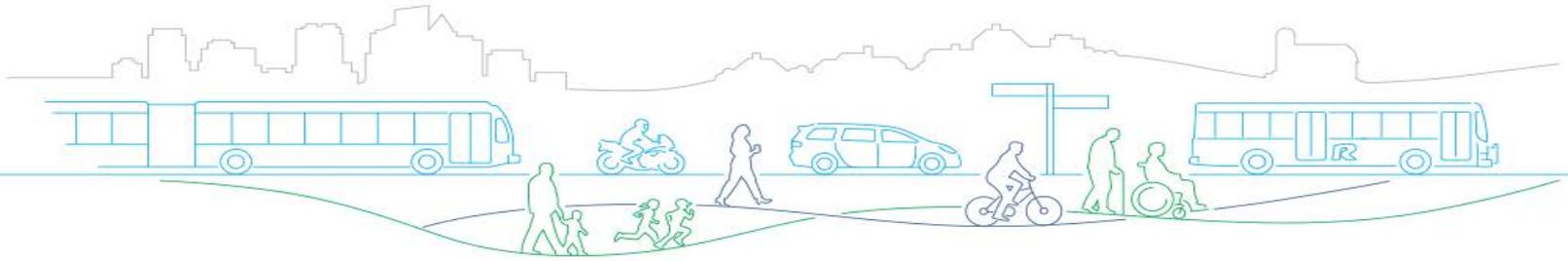


Navigation treatments

29

- Lighting
- Crosswalks
- Detectable surfaces
- 2" curb reveal
- Longitudinal detectors
- Orientation flexpost



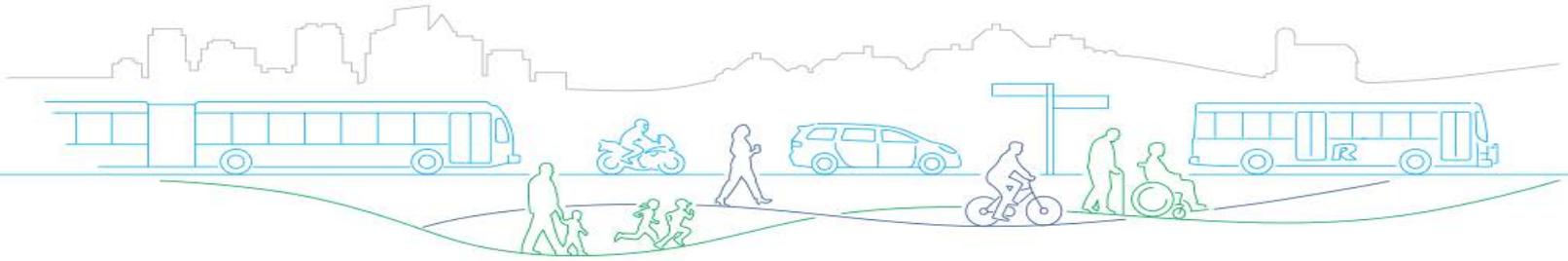


Calming treatments

30

- Sharks' teeth
- Green conflict zone
- Center posts
- Signage

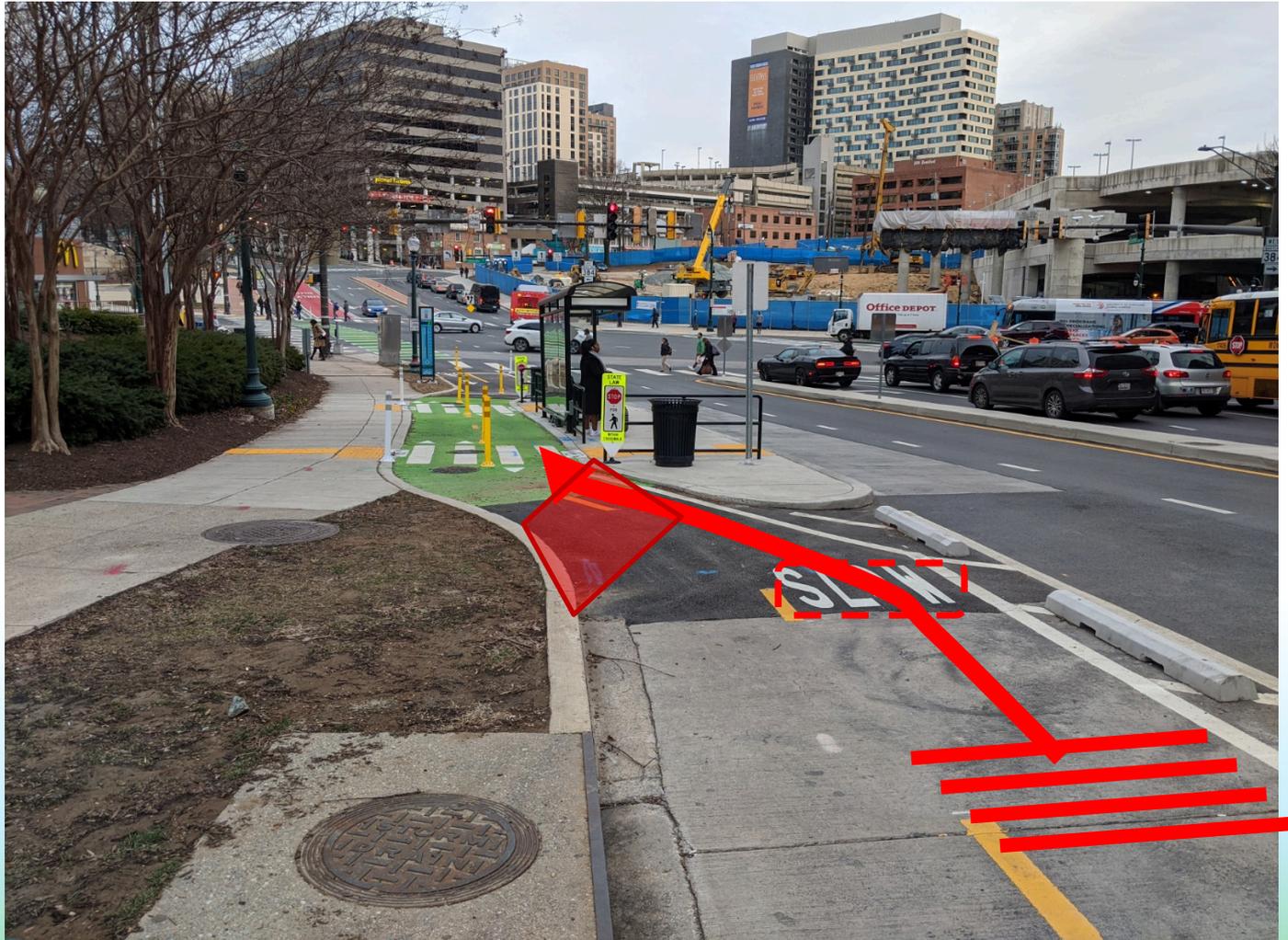




Calming treatments

31

- Lateral deflection
- Vertical deflection
- "slow"
- Rumble strips (added since photo was taken)





Designing Streets for People with Vision Disabilities

32

- Based on the feedback from people with vision disabilities, MCDOT applied to MWCOCG for a TLC grant to study how to better design streets for people who have a vision disability.
- The study was completed June 30, and will be posted to our website soon.
- Recommendations for sidewalks, crossings, bus stops, lighting, public engagement, and staff training.
- The study also included a pilot design for an intersection in Silver Spring.

Designing Streets for People with Vision Disabilities

Accessible Design Testing and Training Facility

An accessible design testing and training facility would enable people with vision disabilities to experience and provide feedback on nonconventional street and outdoor public space design concepts and technologies. The facility could be used by Orientation and Mobility specialists to update their knowledge and train people with vision disabilities, and would enable planners and engineers to test designs before deploying them. The facility could also be used to better understand the impacts of nonconventional designs and specialized surfaces, such as [guidance strips](#), on people who use various assistive mobility devices, such as wheelchairs and walkers.



Figure 4: The City of Portland built a mock-up of a "shared platform" bus stop in a parking lot, so that staff from different City agencies and representatives of several advocacy groups, including the Oregon Commission of the Blind and Oregon Walks, could experience the design and provide feedback on how it operated before the City moved forward with constructing a shared platform stop.

Concerns About Existing Approaches

- There is currently no place locally or regionally where pedestrians with vision disabilities can test and provide feedback on nonconventional street and outdoor public space design concepts and technologies before they are implemented.
- There is currently no place locally or regionally where Orientation and Mobility Specialists can train pedestrians with vision disabilities on nonconventional street design concepts and technologies without exposing them to these concepts and technologies in real-world street conditions.

Recommended Guidance

- An accessible design testing and training facility should be established in Montgomery County or at another location in the Metropolitan Washington region that is accessible to Montgomery County residents.

of vision disabilities should be included in the transportation planning process from start to finish. Transportation planning for people with vision disabilities is not the case of street design that has not been tested locally or are not tested for federal accessibility requirements, such as shared spaces, separated bike lanes, roundabouts or roundabout intersection designs.

Designs, and budgets should be developed to meaningfully engage people with vision disabilities. Meaningful engagement of people with vision disabilities prior to decisions and informing proposed designs in ways that are accessible, such as e.g., by providing tactile design elements on street designs.

A plan should be developed that clarifies how people with vision disabilities can be proactively engaged at each

stage. People with vision disabilities should have an opportunity to meet with stakeholders, e.g., by forming a stakeholder committee or advisory group.

People with vision disabilities or organizations that represent them, such as the National Federation of the Blind, AARP, or the local Center for Independent Living, can also provide valuable insights on accessibility needs for people with vision disabilities. To identify additional contacts in other local groups, it may be helpful to reach out to the local government ADA Compliance Manager. People with vision disabilities should be invited to attend project meetings if they require any special accommodations to participate.

Materials and equipment that are intended for the public must be accessible to people with vision disabilities. Best practices for meetings and meeting materials that are accessible to people with vision disabilities are outlined in Appendix C: Proposed Guidance for Temporary Construction and Routine Maintenance and Construction.

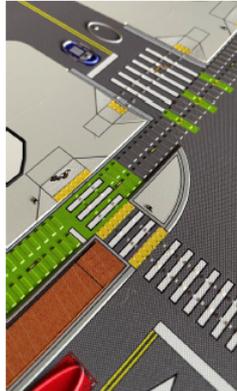


Figure 2: Tactile graphic developed for this project showing a preliminary concept for the intersection of Fenton Street and Ellsworth Drive in downtown Silver Spring.

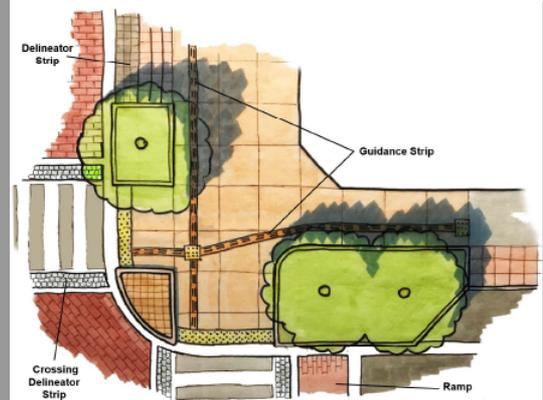


Figure 34: Illustration of how guidance strips, delineator strips and other tactile cues can be used to help pedestrians with vision disabilities stay within the pedestrian access route and find crossings in a shared space or flush street design. The street shown here is a flush street, but the arrangement of tactile cues shown here could also be applied to a shared space.

Flush Streets

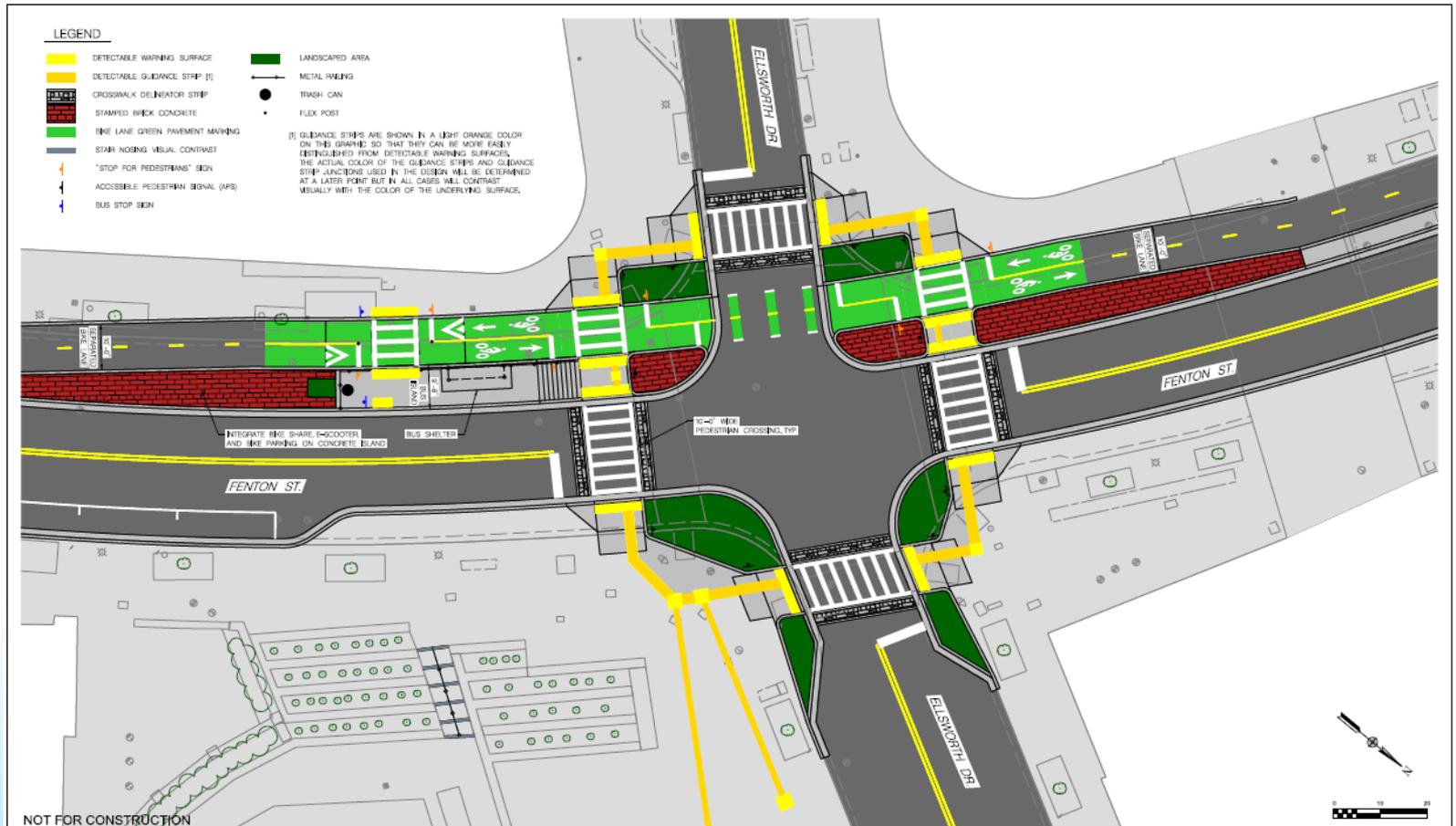
A flush street is a street without curbs that operates as a conventional street much of the time but can be closed to motorists for festivals, farmers markets, and other activities.

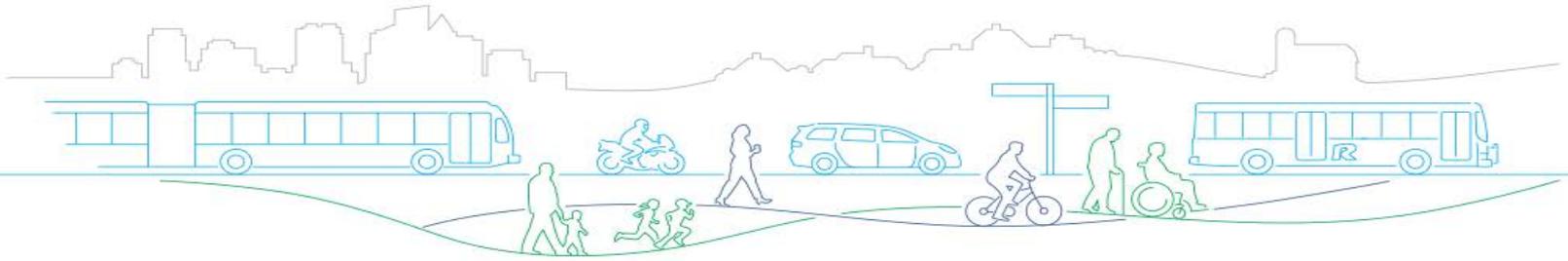
Despite the lack of curbs, flush streets have sidewalks and vehicular travel lanes that are clearly delineated. There are traffic controls and designated crosswalks as on other conventional streets, and pedestrians are expected to use the sidewalk and cross at designated crosswalks, except when the street is closed to vehicular traffic.

If tactile guidance or contrasting furniture zones are not provided, flush streets can be challenging for people with vision disabilities to navigate due to the lack of curbs.

Designing Streets for People with Vision Disabilities

34

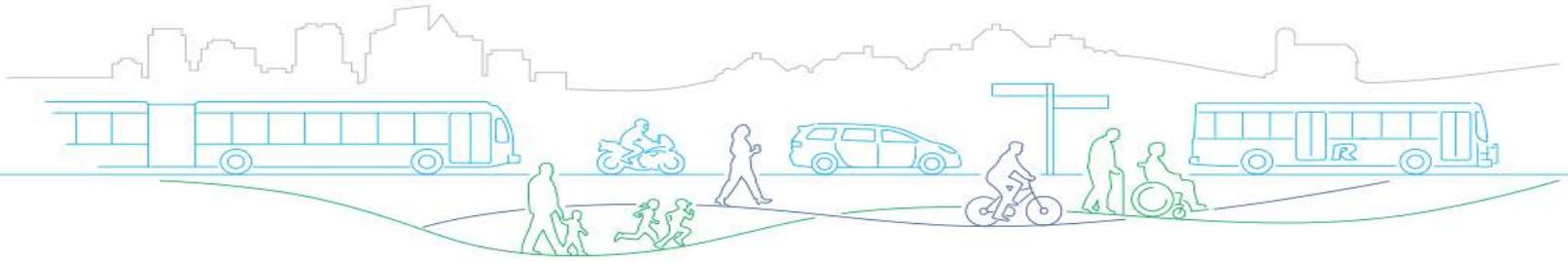




Designing Streets for People with Vision Disabilities

35

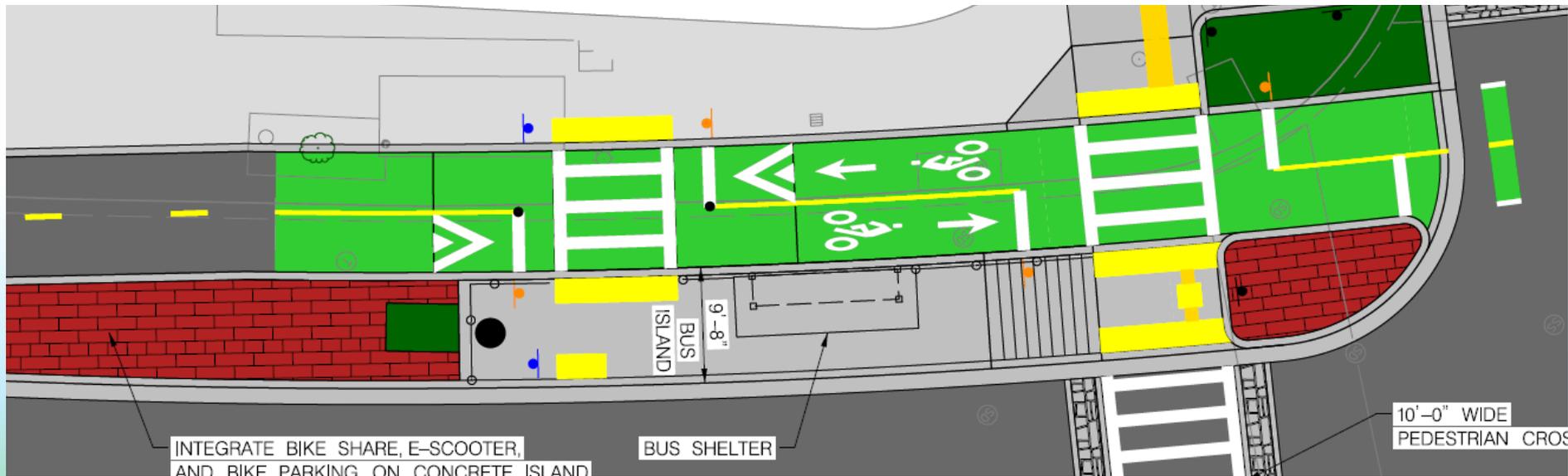


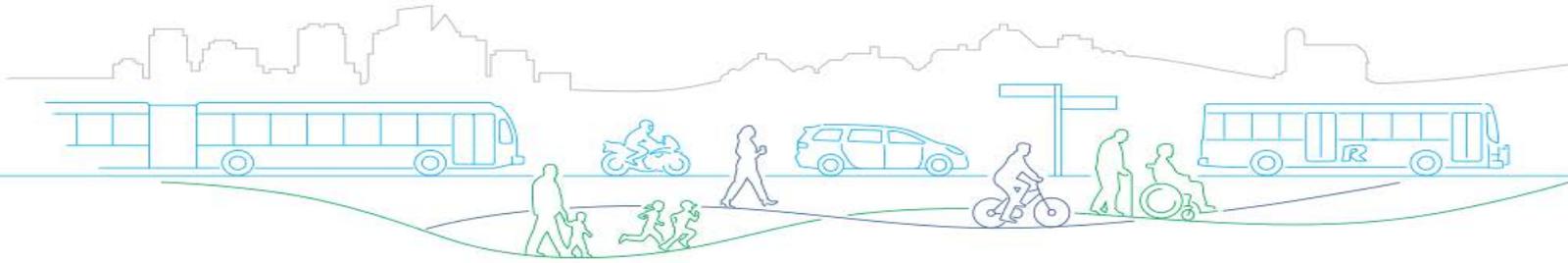


Floating Bus Stops, Version 2.5

36

- Co-locate with signal
- Raised speed table at one end
- Sign on sidewalk in addition to on platform
- Tactile Walking Surface Indicators



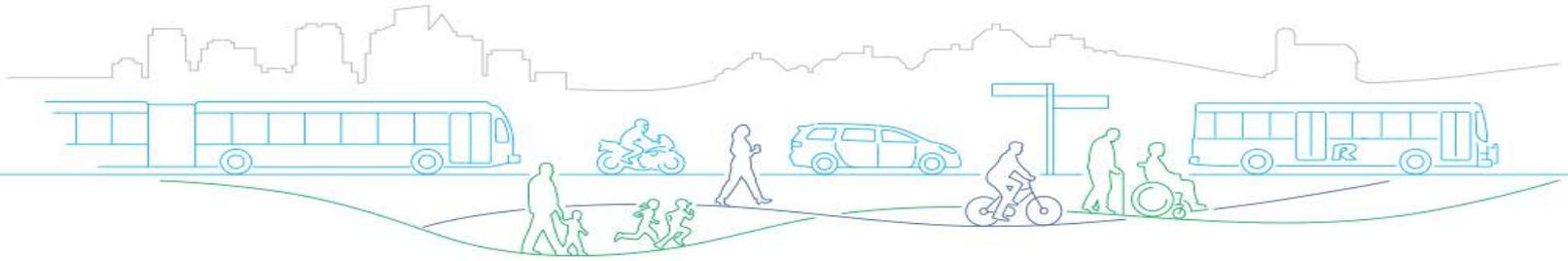


Grove Street Neighborhood Greenway Pilot

37

- Residential street one block east of Fenton.
- No sidewalks.
- Large volume of cut-through traffic.
- Fears of spillover from Fenton Street Cycletrack.



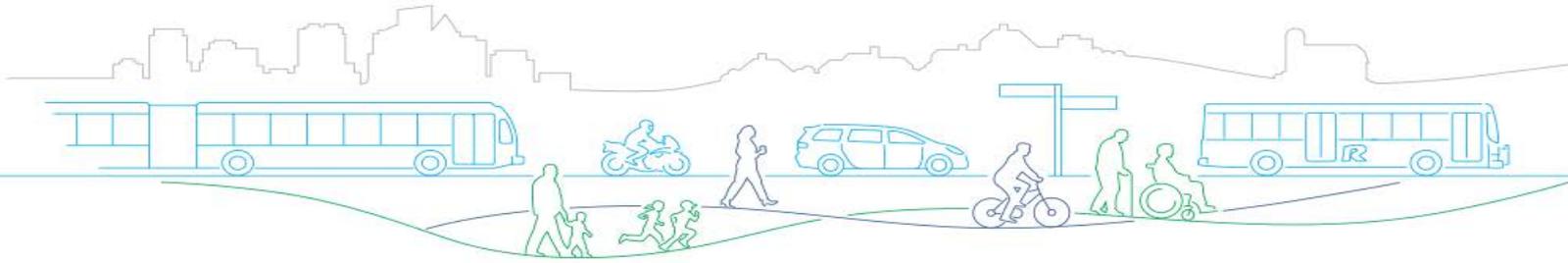


Going forward

38

- With every project, we evolve to incorporate better treatments.
- Fenton Street Cycltrack will tie the different projects together.

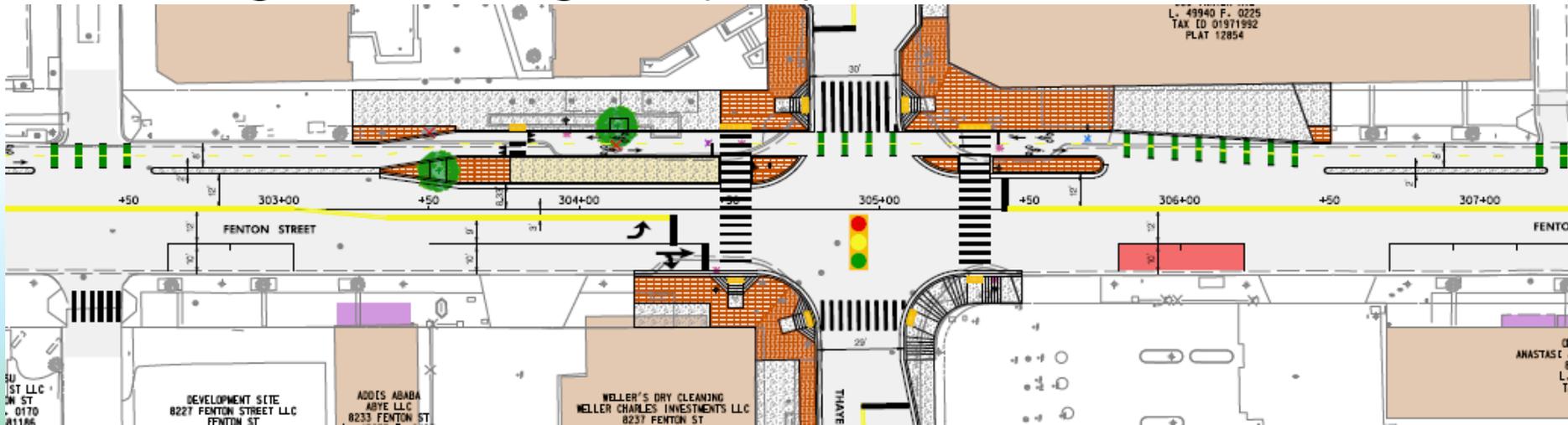


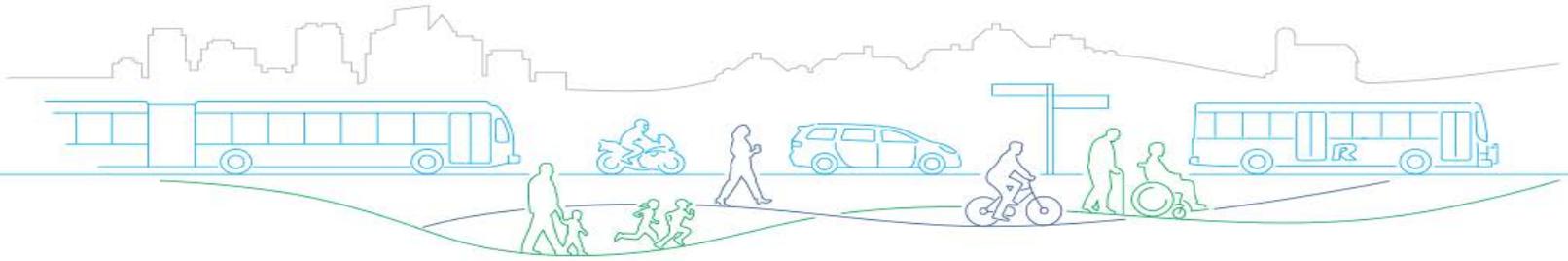


Fenton Street – Tying it all together

39

- Fenton connects to other projects (including proposed bikeways).
- It also brings together all our learned techniques and builds upon them.
- Protected intersections, bike signals, stormwater management, floating bus stops, heat island treatments, loading zones, design for people with vision disabilities.





Thank you!

40

Matt Johnson, AICP

Project Manager

Montgomery County DOT

Matt.Johnson@MontgomeryCountyMD.gov

240.777.7237