



West Falls Church Active Transportation Study Advisory Group Meeting #2

VDOT Bicycle and Pedestrian Treatments

https://www.virginiadot.org/programs/bikeped/biking_and_pedestrian_treatments.asp

January 24, 2022, at 7:00pm
Teams Virtual Meeting



High-Visibility Crosswalks

Appropriate for:

- High-volume pedestrian crossings
- Crossings ¼ mile between busy residential areas and schools or recreational areas
- Within ¼ mile of major transit transfer locations
- Crossings in urban areas and at shared use path crossings

Cost: About \$8 per linear foot



Rectangular Rapid Flashing Beacon (RRFB)

Often used with:

- Crosswalk visibility enhancements
- Pedestrian refuge islands
- Advance Pedestrian Crossing warning signs and/or STOP HERE signs and markings

Cost: \$4,500 to \$52,000 (average, \$22,250)





Pedestrian Crossing Treatments (cont.)



Pedestrian Hybrid Beacon (PHB)

- Roads with three or more lanes that have Annual Average Daily Traffic (AADT) above 9,000.
- Midblock and intersection crossings where the roadway speed limits are equal to or greater than 40 mph.
- Only installed with marked crosswalks and pedestrian countdown signals.

Cost: \$230,000 to \$265,000



Raised Crosswalk

- On average 10-feet wide and three to six inches above road grade.
- May be constructed flush with adjacent curb or with pedestrian ramps on both the curb and raised crosswalk.
- Must be fully accessible for those with visual or physical disabilities.
- Installed on two- or three-lane roads with a speed limit of 30 mph or less and an AADT below 9,000.

Cost: \$5,000 to \$8,000



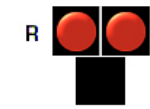
1. Dark Until Activated



2. Flashing Yellow Upon Activation



3. Steady Yellow



4. Steady Red During Pedestrian Walk Interval



5. Alternating Flashing Red During Pedestrian Clearance Interval



6. Dark Again Until Activated

Legend

- FY Flashing yellow (circular)
Y Yellow (circular)
R Red (circular)
FR Flashing red (circular)





Left-Turn Hardening

- Use of modular curbs, vertical delineators, and striping at intersections to reduce left-turning speeds and to prevent “corner cutting”.
- Especially useful at intersections with high volumes of pedestrians and where speeds of left-turning vehicles are an issue.
- Flexible delineators and modular medians are designed to be mountable, so clear zone requirements do not apply.

Cost: \$2,000-\$4,500 per intersection

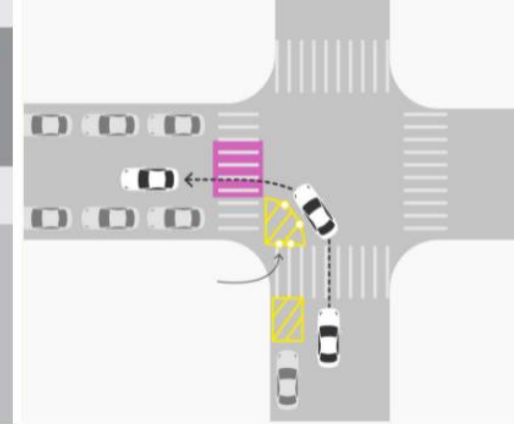


Speed Management via Signal Timing Strategies

- Dwell-on-Red: Signals revert to an all-red phase when there is no vehicular traffic demand, thereby reducing nighttime speeding when volumes are typically low.
- Pedestrian Recall: Pedestrian phase activates every signal cycle regardless of pedestrian presence.
- Signal coordination: Design corridor progression for a safe speed (i.e., the posted speed limit).



Centerline Hardening ([IIHS](#))



Slow-turn Wedge ([Quartz](#))

See also:

- VDOT's Neighborhood Traffic Programs
- \$200 Speeding Fine Program
- Cut Through Traffic and Watch for Children Sign Program
- VDOT's Policy for Speed Display Signs



Pedestrian Signal Control Treatments

- Protected pedestrian signal phase: Conflicting turning vehicular movements do not occur during the pedestrian signal phase.
- Two-stage signal-controlled directional crossing: Pedestrians cross the roadway in two separate movements.
- Pedestrian scramble: Exclusive pedestrian phase that stops all traffic at an intersection and allows pedestrians to cross in any direction (including diagonal).
- Leading Pedestrian Interval (LPI): Gives pedestrians three to seven seconds to begin entering the crosswalk before conflicting vehicles are given the green light.

Cost:

- Pedestrian signal phasing at unsignalized crossings: \$65,000 to \$250,000
- LPIs and exclusive pedestrian phases: \$500 to several thousand dollars
- Two-stage directional pedestrian crossing: \$2,000 with no new signal infrastructure; over \$40,000 with new signal infrastructure





Smart Lighting

- Smart lighting, or adaptive lighting, is a type of pedestrian device that once activated, increases a pedestrian's or bicyclist's visibility to drivers through illumination.
- Cost efficiency by having the lights be dimmed or off except when a pedestrian is detected.
- Alternative to static lighting in locations with light pollution concerns, especially in urban residential environments, by limiting illumination only to occasions when pedestrians are present.

Cost:

- Varies considerably depending on type, scale, detection type, electrical service, etc. \$15,000 to \$150,000





Side Path

- Side paths are shared use paths that run parallel and adjacent to a roadway.
- Side paths are typically at least 10 feet wide; however, 12-foot width is preferred. Side paths may be narrowed to eight feet where right of way or engineering constraints prohibit 10-foot width.



Cost: Varies from \$250,000 to \$5,000,000



Shared Use Path

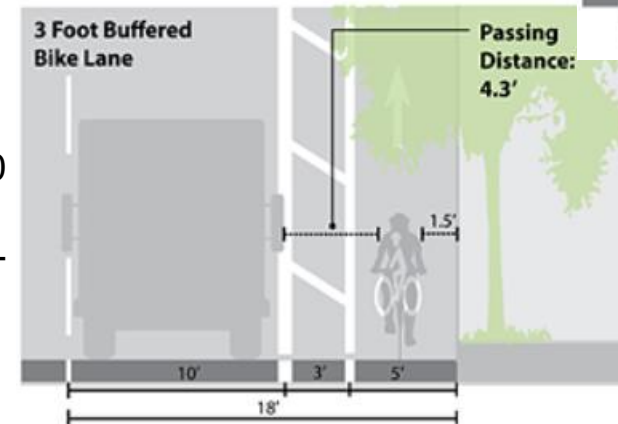
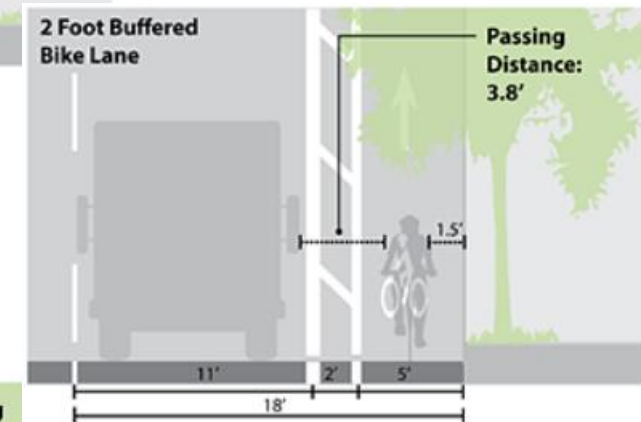
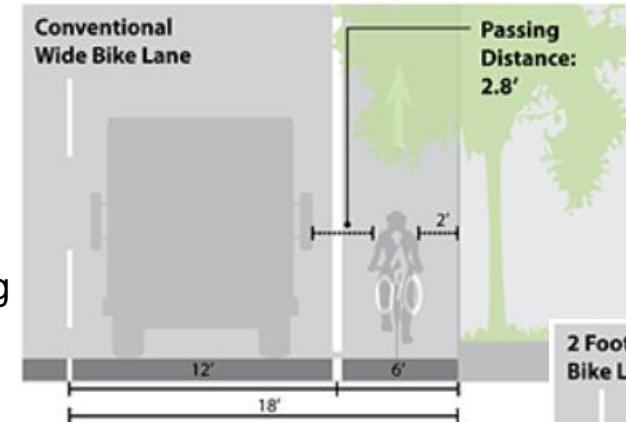
- Often parallel other geographic features such as waterways, former or active rail roads, utility corridors, or highways.
- Serve as an extension to sidewalks and on-street bicycle facilities.
- Not the same as trails, which have different design guidelines. VDOT uses the word “trails” to refer to natural surface paths.
- Typically at least 10 feet wide with a 2-foot shoulder and a minimum 3-foot clearance between edge of path to lateral obstructions. Less than 10 feet should be avoided except where constraints preclude a wider width.
- Shared use paths have a typical design speed, on average, of 18 mph.



Traditional Bicycle Lane

- One-way facilities running along the curb, shoulder, or on-street parking lane that carry bicycle traffic in the same direction as motor vehicle traffic.
- Often installed on streets with moderate average daily traffic, speed limits below 35 mph, and with high transit vehicle volumes.

Cost: \$85,000 - \$320,000 per mile



Buffered Bicycle Lane

- Appropriate on streets with higher speeds, volumes, or truck traffic
- Recommended on streets without parking when AADT exceeds 6,000 and design or posted speeds are between 30-35 mph.
- Recommended on streets with parking when AADT is between 3,000-6,000 and design or posted speeds are between 25-35 mph.

Cost: \$85,000 - \$320,000 per mile



Separated Bicycle Lane

- Also known as a cycle track or protected bicycle lane.
- Provides both horizontal and vertical separation between bicyclists and adjacent vehicles.
- Often installed on streets multiple lanes, high traffic volumes and speeds, and high demand for parking.
- Appropriate on streets with high bicycle volumes.

Cost: \$215,000 - \$760,000 per mile



Contraflow Bicycle Lane

- Most appropriate on low speed, low volume one-way streets, or streets with large numbers of bicyclists riding the wrong way.
- Most successful on streets with few intersecting access points and where bicyclists can safely transition to other infrastructure at the end of the contraflow lane.

Cost: \$85,000 - \$320,000 per mile





Bicycle Treatments at Intersections



Green Pavement Markings

- Help increase the visibility of bike facilities and remind motorists to watch for bicyclists.
- Can be used in conjunction with any type of bicycle lane (traditional, buffered, separated, or contraflow).

Cost: Pavement marking materials from \$2 - \$20 per square foot, bicycle lanes from \$85,000 - \$320,000 per mile



Bikes at Roundabouts

- Designed to control vehicle speeds such that the difference in speed between bicyclists and motorists are minimized.

Cost: Varies, but typically high cost





Bicycle Treatments at Intersections (cont.)



Bike Boxes & Two-Stage Left-Turn Box

- Typically installed at signalized intersections with high volumes of vehicles and bicycles.
- Appropriate at locations with frequent bicyclist left-turns, motorist right-turns, or where a bicycle lane transitions to the left side of the street.
- Typically installed at signalized intersections where at least one intersecting road has more than one lane.

Cost: \$2 - \$20 per square foot



Protected Intersection

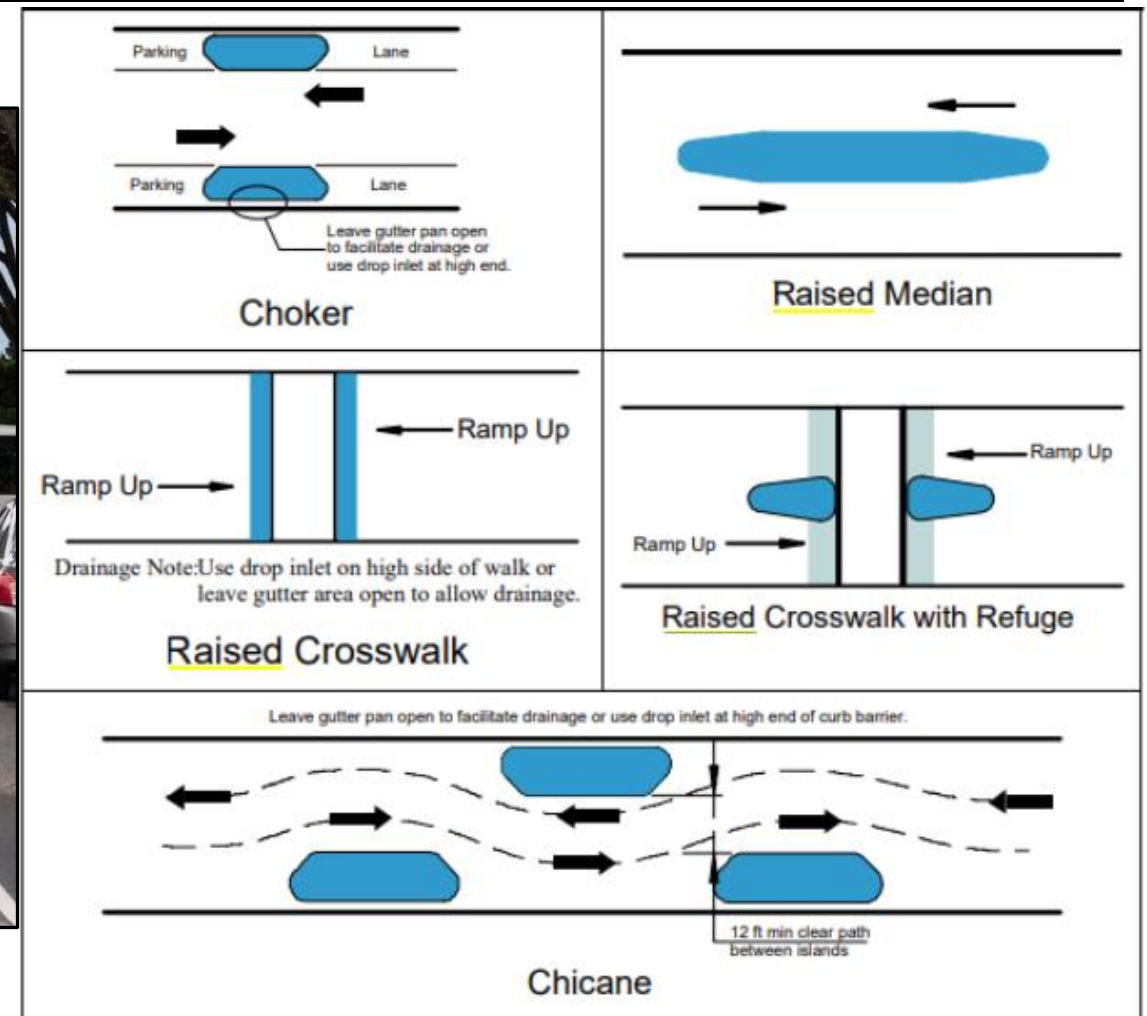
- Collection of intersection treatments that are designed to maintain the separation provided by bicycle lanes through the intersection.

Cost: Varies (may include bicycle lanes, curb ramps, corner islands, high-visibility crosswalks, signage)





Other Potential Solutions



Residential Traffic Administration Program (RTAP):

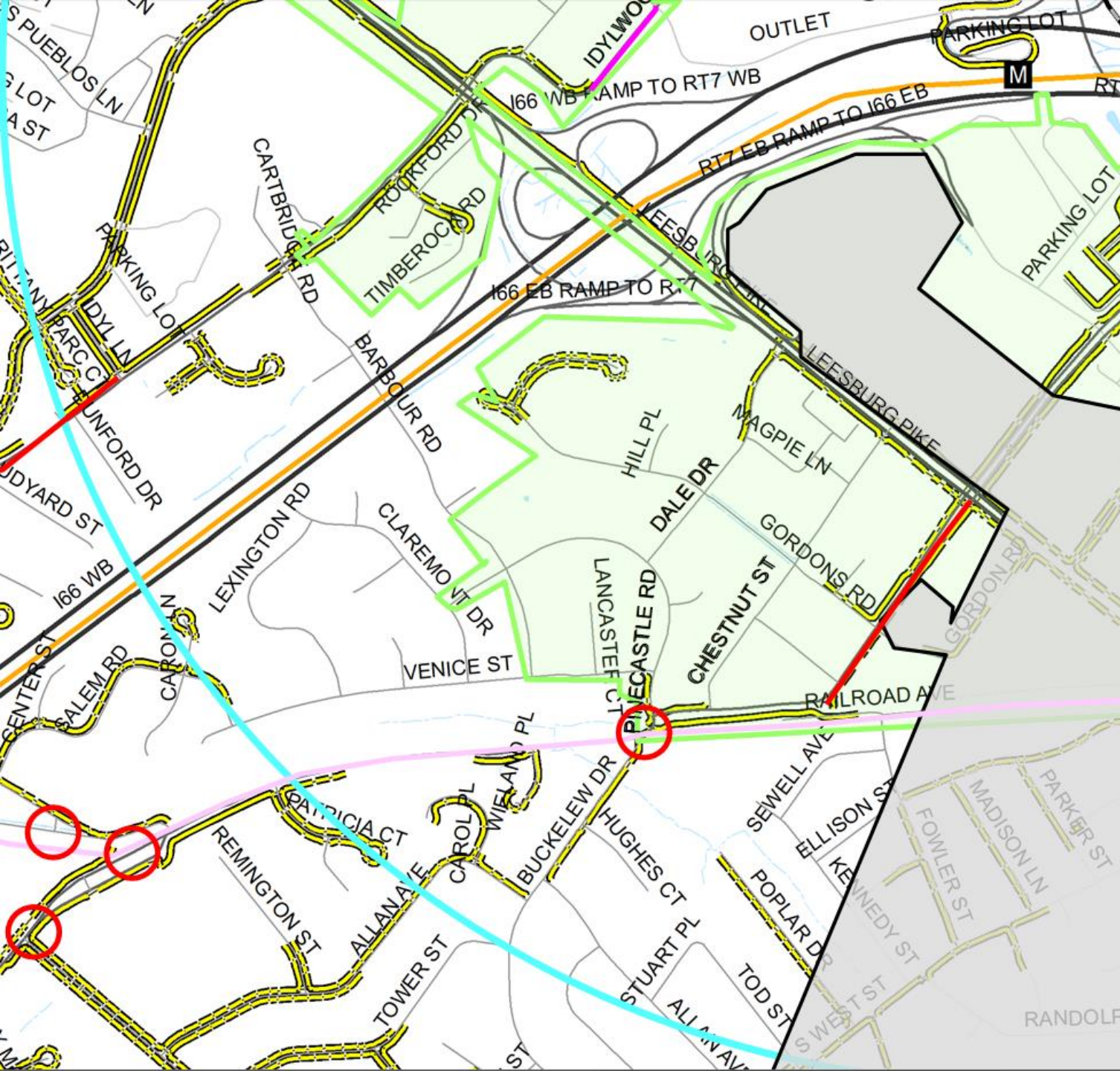
<https://www.fairfaxcounty.gov/transportation/residential-traffic-administration>

Legend

- Completed Project
- Planned Project
- Sidewalks
- 1 Mile Buffer
- 1 Mile Walkshed
- Jurisdictional Border
- Regional Trail
- Orange Line
- Silver Line

West Falls Church Study Area: One-mile Radius





Southwest Quadrant

Legend	
	Completed Project
	Planned Project
	Sidewalks
	1 Mile Buffer
	1 Mile Walkshed
	Jurisdictional Border
	Regional Trail
	Orange Line
	Silver Line

2019 Annual Average Daily Traffic (AADT)

- Leesburg Pike Route 7 (I-66 - Falls Church) 30,000 vehicles
- Shreve Road (Buckelew Drive, W&OD Trail - Route 7) 10,000 vehicles
- Idylwood Road (Gallows Road - Route 7) 11,000 vehicles
- Chestnut Street (Route 7 - Gordons Road) 990 vehicles
- Barbour Road (Idylwood Road - Leighton Drive) 1,400 vehicles

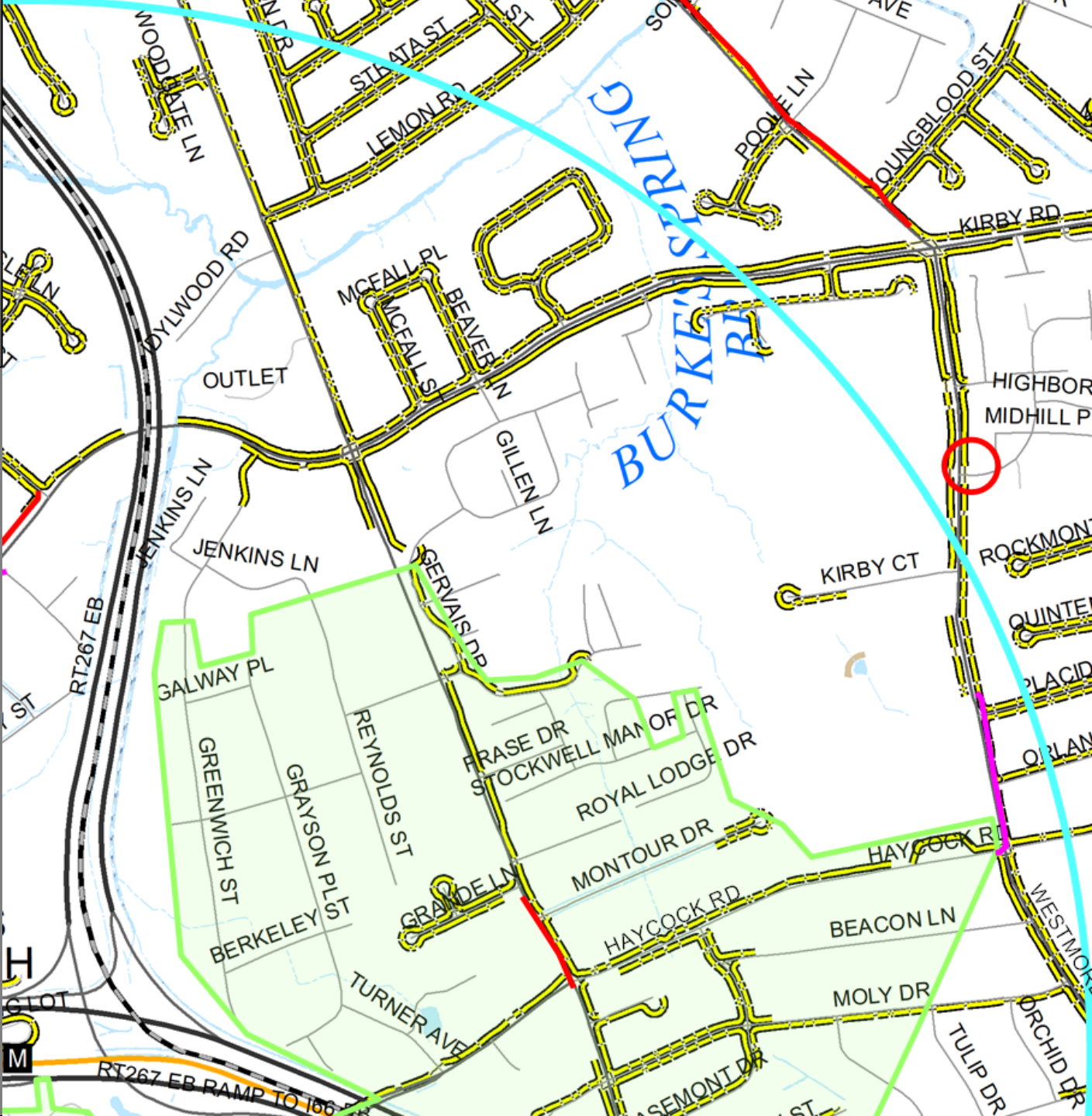
Legend

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Northeast Quadrant

2019 AADT

- Haycock Road (Great Falls Street - Westmoreland) 6,400 vehicles
- Great Falls Street (Kirby Road - Haycock Road) 10,000 vehicles
- Kirby Road (Great Falls Street - Westmoreland Street) 11,000 vehicles
- Great Falls Street (Lemon Road - Kirby Road) 11,000 vehicles
- Westmoreland Street (Kirby Road - Haycock Road) 9,000 vehicles

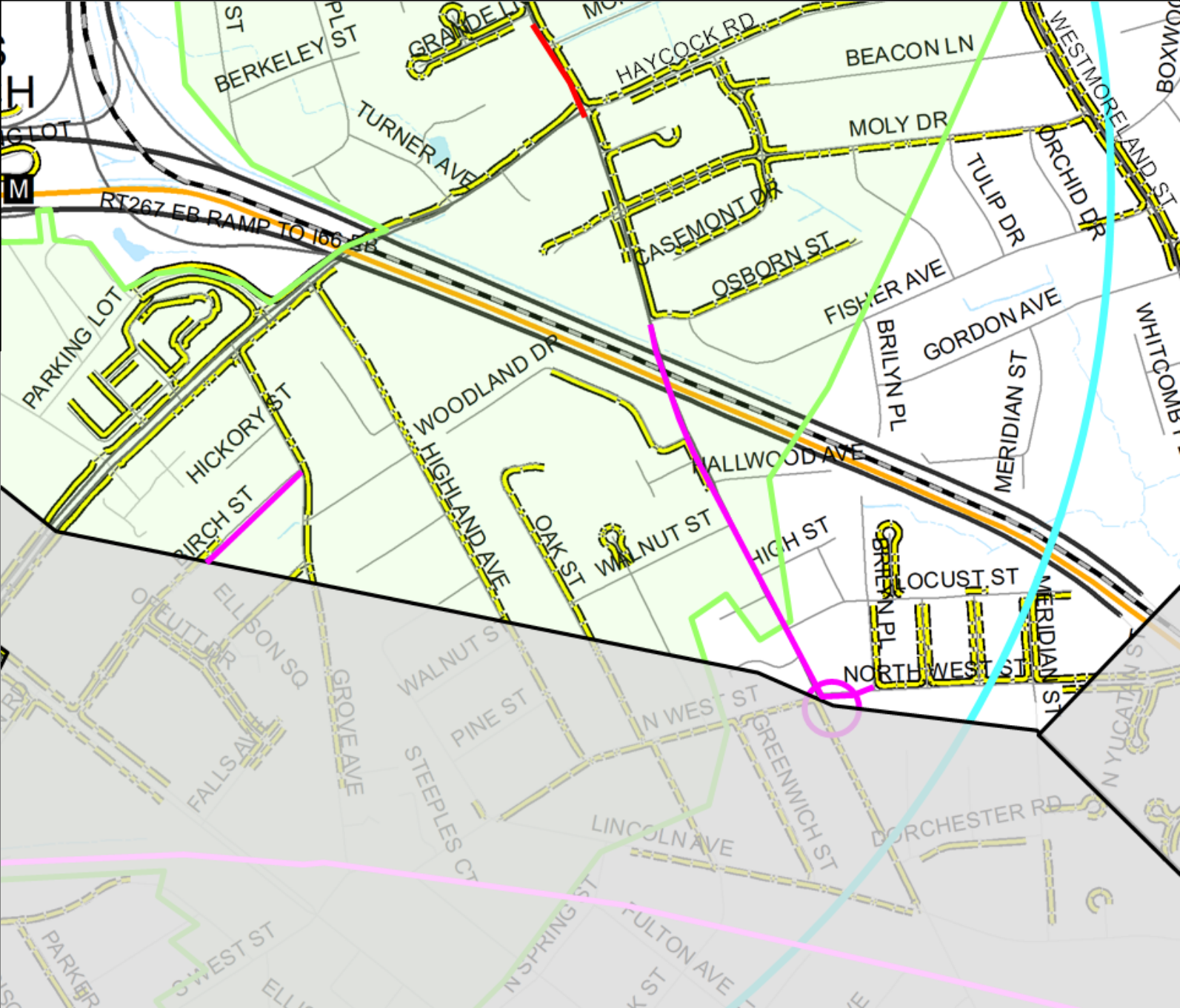


Legend

- Completed Project
- Planned Project
- Sidewalks
- 1 Mile Buffer
- 1 Mile Walkshed
- Jurisdictional Border
- Regional Trail
- Orange Line
- Silver Line

Southeast Quadrant

- 2019 AADT**
- Haycock Road (Route 7 - Great Falls Street) 12,000 vehicles
 - Haycock Road (Great Falls Street – Westmoreland Street) 6,400 vehicles
 - Great Falls Street (Haycock Road - Falls Church) 8,900 vehicles
 - Grove Avenue (Haycock Road - Birch Street) 2,100 vehicles
 - Highland Avenue (Haycock Road - Mt Daniel Drive) 1,400 vehicles





Pedestrian Level of Comfort

- Developed for Montgomery County Planning Department in Fall 2019. ([Pedestrian Level of Comfort \(mcatlas.org\)](https://mcatlas.org))
- Point-based: rates pathways and crossings (controlled and uncontrolled) based on factors that contribute to or detract from perceived comfort.
- Scores adjusted to account for VDOT and Fairfax County standards.

Level of Comfort

1= Very Comfortable

2= Comfortable

3= Somewhat Comfortable

4= Uncomfortable

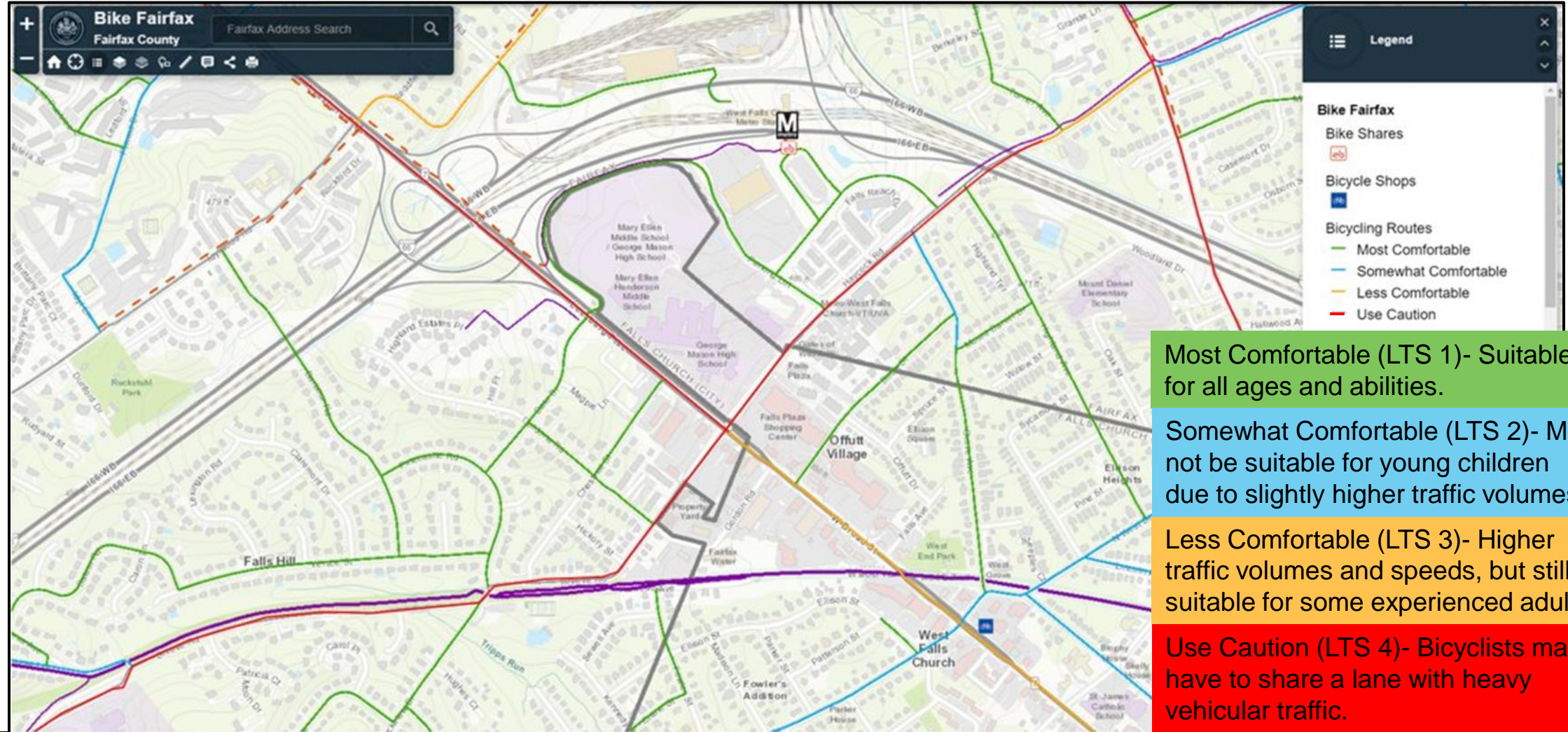
5= Very Uncomfortable



Pathway width	Posted speed	Buffer width	Parking	Street trees	PLOC
4'	35mph	2'	No	No	Very Uncomfortable



Bicycle Level of Traffic Stress



Most Comfortable (LTS 1)- Suitable for all ages and abilities.

Somewhat Comfortable (LTS 2)- May not be suitable for young children due to slightly higher traffic volumes.

Less Comfortable (LTS 3)- Higher traffic volumes and speeds, but still suitable for some experienced adults.

Use Caution (LTS 4)- Bicyclists may have to share a lane with heavy vehicular traffic.



County of Fairfax, Virginia



<https://www.fairfaxcounty.gov/transportation/bike-walk/activefairfax>





Community Meeting: Two sessions

- February 9th from 7:00 pm – 8:30 pm
- February 12th from 9:30 am – 11:00 am

FCDOT to complete existing conditions analysis

Technical Group Meeting #2:

- Week of February 28th

Advisory Group Meeting #3:

- Week of March 7th

