CONTENTS

PURPOSE

The purpose of this task is to evaluate potential design alternatives utilizing a “complete streets” approach to better accommodate all modes along Route 119 from Tarrytown to White Plains and present them to the public to collect input on preferred options.

Design Considerations

Street Element Design Guidelines

In order to help the Consortium develop a more complete transportation system along Route 119, we propose several ‘complete streets’ interventions to enhance the public realm, facilitate more walking and bicycling, and make Route 119 a safer route to travel for all road users. These proposals are informed by street design methodologies outlined below.

Streets are composed of multiple component parts, each of which serve a context-specific purpose. The elements of residential streets for example, serve different purposes than those on industrial or commercial streets.

The Sidewalk Zone is the pathway for pedestrians, and it extends from the building façade to the curbside and is the accessible pathway for pedestrians. While some of this zone is reserved for pedestrian travel exclusively and needs to have a minimum width, it also includes street furniture and greenspace.

The roadway or cartway is the pathway for motorized and non-motorized vehicles, and it is typically composed of the curbside lane, travel lanes and the median/turning lane/pedestrian island. Curb side lanes can have one or a combination of uses, such as parking lanes and/or bicycle lanes. Travel lanes are dedicated to motorized vehicles running in the same direction, and the median/turning lane/pedestrian island is the space used for turning traffic, to provide a physical separation of travel lanes, or ultimately, to provide a pedestrian refugee for long crossing points in wide streets.

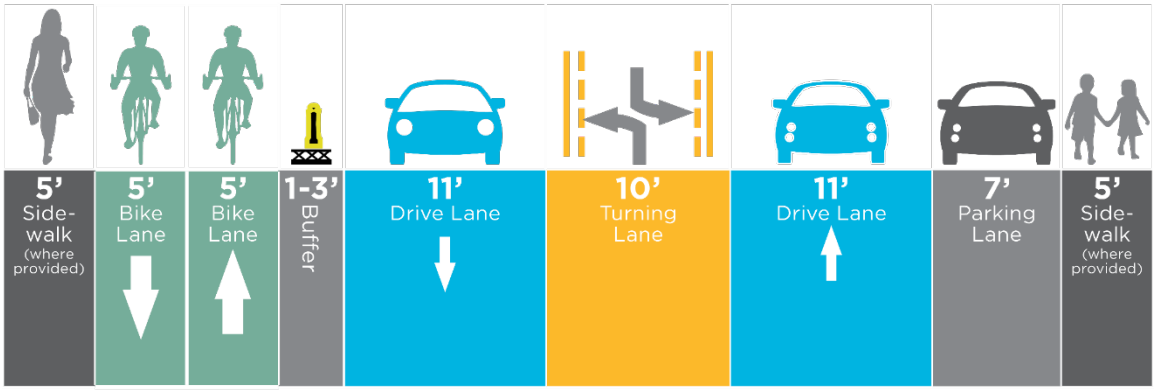
Streets can function with one travel lane per direction and a center turning lane to accommodate left turns when their average daily volumes is 25,000 or lower. If the number of traffic lanes is higher, the extra capacity encourages higher traffic speeds and weaving movements. A similar effect occurs when travel lanes are too wide and the density of crossing is too low, as vehicles tend to increase their speeds due to the lack of obstacles, even in residential areas.

In practice, street elements must be designed according to guidelines outlined in Figure 1. The pedestrian sidewalks should have a minimum of 5’ of clearance space for through pedestrian traffic in industrial and low-density areas, and 6’ elsewhere.

Vehicle travel lanes should be 11’ wide, but may be 10’ wide where no significant traffic of heavy vehicles or transit occurs, to discourage high speeds. Turning lanes should be 10’ wide, and physical medians may be as little as 5’ wide.

Curbside lanes can accommodate several uses: parking lanes should be 7’ wide, while bicycle lanes should have a minimum width of 5’ per direction and, depending on the adjacent traffic volumes, a minimum of a 1’ to 3’ buffer, although bicycle facility infrastructure may vary as indicated in the next chapter.

Figure 1 Street Design Guidelines



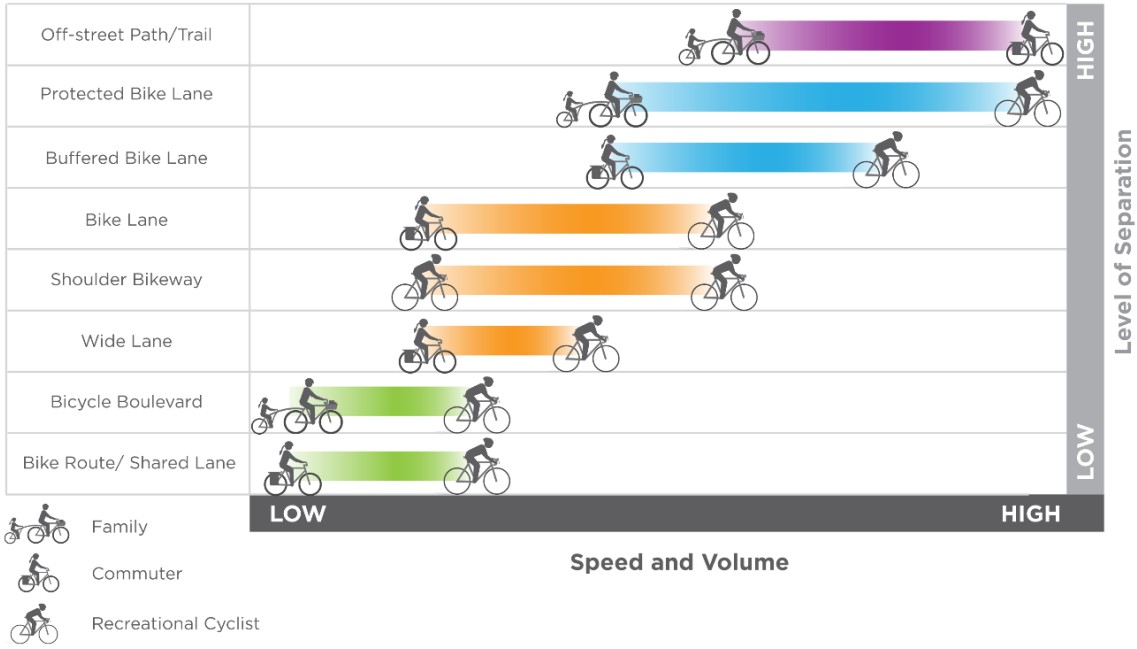
Bike Facility Types

As indicated in Figure 2, bike infrastructure design should be based on the street's basic design and motor vehicle traffic conditions such as vehicle speed and volume. Protected bicycle lanes are encourages in streets with targeted motor vehicle speeds above 20 mph and daily traffic volumes higher than 3,000 vpd (vehicles per day). Below this threshold, a shared space with motor vehicles (sharrows) or with pedestrians might be considered on bidirectional streets with no centerline or single lane one-way streets. As a summary:

- People riding bicycles and walking generally feel more comfortable with a larger separation from moving vehicle traffic
- People riding bicycles and walking generally feel more comfortable crossing streets when vehicles are traveling at slower speeds

- The types of facilities that are comfortable to recreational cyclists are unlikely to be comfortable for children and novice riders

Figure 2 Appropriate Bicycle Facility Type Based On Street Speed and Traffic Volume



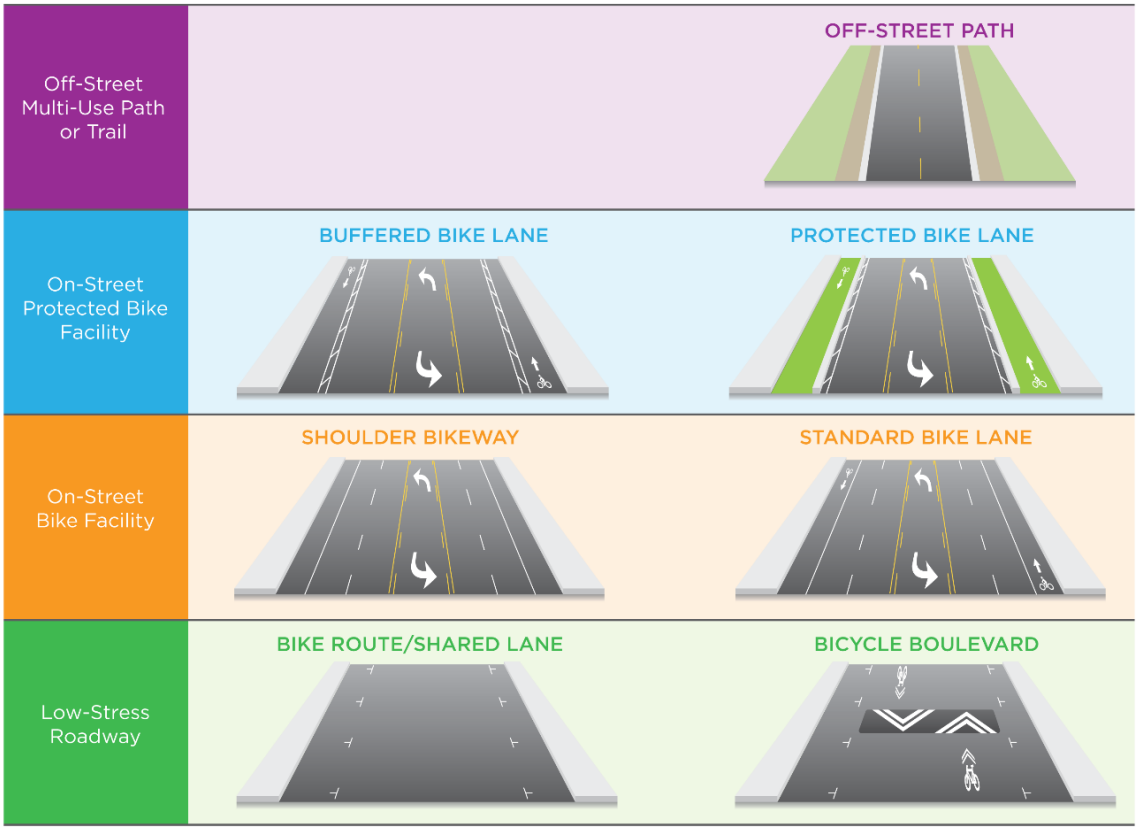


Figure 3 Design Considerations by Bike Facility Type

Facility Type	Definition	User Type	Design Considerations	Impact
Sidepath	People walking and bicycling share a path in the approximate location of the sidewalk	Family	Extra attention to design details at driveways and intersections is needed to increase visibility or separation of people bicycling against the flow of adjacent or turning traffic	This facility type will require the acquisition of right of way outside of the paved/curbed roadway, and requires sweeping with sidewalk equipment.
1-Way Protected Bike Lane	Exclusive use by bicycles, including vertical separation between the bikeway and through motor vehicle traffic; one way travel for people on bikes in same direction of motor	Family	▪ Separation may be accomplished by on-street parking, flexible posts, planters, or grade separation. ▪ 1-way protected bicycle lanes pose fewer challenges at intersections because people on bicycles and motorists are traveling in the same direction	▪ May be accomplished on sections of Route 119 without parking or lane modifications where 12’ of excess roadway exists ▪ Requires sweeping with sidewalk equipment
2-Way Protected Bike Lane	Exclusive use by bicycles, including vertical separation between the bikeway and through motor vehicle traffic; two way travel for people on bikes	Family	▪ Separation may be accomplished by on-street parking, flexible posts, planters, or grade separation. ▪ Extra attention to design details at driveways and intersections is needed to increase visibility and separation of people bicycling against the flow of adjacent or turning traffic	▪ May be accomplished on sections of Route 119 without parking or lane modifications where 11’ of excess roadway exists ▪ Requires sweeping with sidewalk equipment
Buffered Bike Lane	Striped lane for one way bicycle travel, with curb or parking lane on right side and a 2-3 foot buffer from moving traffic on left side	Commuter	Parking-adjacent bicycle lanes place riders in the door zone so are not suitable for location with frequent parking turnover	▪ May be accomplished on sections of Route 119 without parking or lane modifications where 16’ of excess roadway exists ▪ Requires sweeping with sidewalk equipment
Bike Lane	Striped lane for one way bicycle travel, with curb or parking lane on right side and moving traffic on left side	Commuter	Parking adjacent bicycle lanes place riders in the door zone so are not suitable for location with lots of parking turnover	May be accomplished on sections of Route 119 without parking or lane modifications where 10’ of excess roadway exists
Bike Boulevard	People walking and bicycling share lane with motor vehicle traffic, traffic volumes and speeds are very low	Family	Not suitable for Route 119	Moves facility off of Route 119
Shared Lane	People bicycling share lane with motor vehicle traffic	Recreational	Existing conditions	No impact

EXISTING CONDITIONS

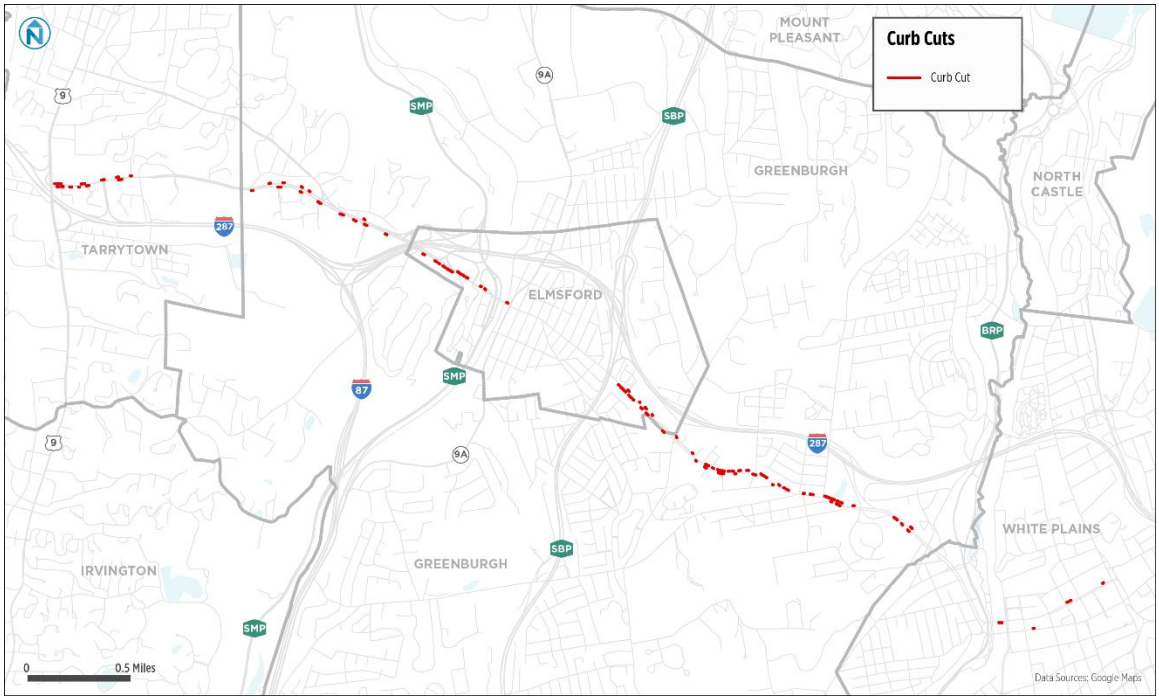
Route 119's right-of-way changes significantly within the study area, with most ranging from 60 and 80 feet wide, while other segments vary from 40 feet at its narrowest to almost 140 feet at its widest. The average width is 75.7 feet. The narrowest portions of the route are located in downtown White Plains, Elmsford, and near the intersection with Route 9 in Tarrytown. The widest portions are just west of downtown White Plains and near its intersections with I-287 and Route 100A.

Route 119 varies substantially in terms of number of total lanes, from three to ten. It is on average five lanes wide. For roughly half of its length in the corridor, the route has four lanes, with two lanes in either directions. For much of the rest of its length, the route is made up of a continuously variable number of lanes. There are notable differences in the number of lanes in each direction in downtown White Plains, where Route 119 splits into two one-way segments and portions of the route contain up to five lanes in one direction and no lanes in the other. Additionally, segments of Route 119 in western Elmsford and eastern Tarrytown have three lanes in one direction and two in the other.

Average Daily Traffic Volumes vary significantly along the corridor. A connector to major roadways such as I-287 and I-87, Route 119 has its highest volumes in White Plains, with over 40,000 vehicles per day, and decreases west of the NY-100 Central Ave intersection to 25,000-30,000 vehicles per day. In Greenburgh, traffic volumes reach the minimum, with 11,000 vehicles per day, despite having a cross section of 2-3 lanes per direction. As indicated in Figure 5, curb cuts are densely concentrated and evenly distributed on both sides of the corridor in suburban areas.

Figure 4 **On-Street Parking and Average Daily Traffic**

Figure 5 **Curb Cuts**



PROPOSED DESIGN

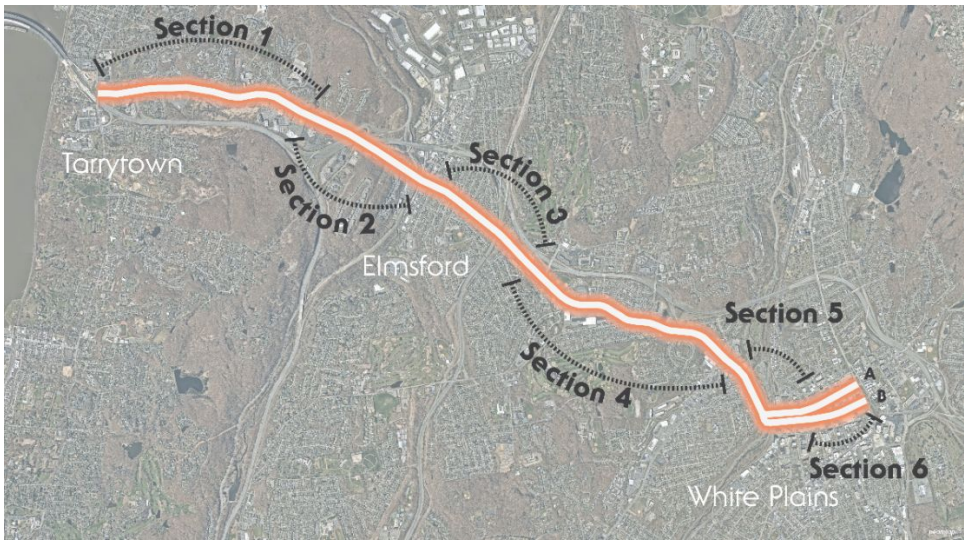
Corridor Segments

We have divided the corridor is six segments similar in terms of traffic volumes and cross-section.

Figure 6 Corridor Segments – Existing Conditions

Segment	Description	Existing Conditions
1	Route 9 intersection – Benedict crossing at former Xerox Corporation site	▪ AADT 2015: 11,500 ▪ ROW curb to curb: 57' ▪ 2 travel lanes per direction+central turning lane
2	Benedict crossing at former Xerox Corporation site (Tarrytown) – Saw Mill River Rd (Elmsford)	▪ AADT 2015: 29,000 ▪ ROW curb to curb: 88'-112' ▪ 3 travel lanes per direction+central turning lane/median
3	Saw Mill River Rd – Old Rd (Elmsford)	▪ AADT 2015: 19,500 ▪ ROW curb to curb: 59'-64' ▪ 2 travel lanes per direction+on-street parking on each side
4A	Old Rd (Elmsford) – Greenvale Cir.	▪ AADT 2015: 20,000 ▪ ROW curb to curb: 64' ▪ 2 travel lanes per direction+central turning lane
4B	Greenvale Cir. – Westchester County Center (White Plains)	▪ AADT 2015: 27,000 ▪ ROW curb to curb: 88' ▪ 3 travel lanes per direction+central turning lane
5	Westchester County Center– Bronx St (White Plains)	▪ AADT 2015: 27,000-43,000 ▪ ROW curb to curb: 117'-135' ▪ 4 travel lanes per direction+median
6	Bronx St - Broadway (White Plains)	▪ AADT 2015: 23,000-44,000 ▪ ROW curb to curb: 60' ▪ 2 travel lanes+2 turning lanes per direction

Figure 7 Division of Route 119 Segments



Proposed Designs by Segment

We have proposed 2-3 design alternatives per road segment based on the existing cross-section, traffic volumes, density of curb cuts, and existence of sidewalk on each side.

Segment 1 - Route 9 to Benedict Avenue Crossing (Former Xerox Site)

Three conceptual design options were created for Segment 1:

- Option 1: Remove one travel lane per direction and add protected dual bike lane on one side
- Option 2: Remove one travel lane per direction and add protected bike lane in each direction

- Option 3: Remove one travel lane per direction and add shared use path on north side

Figure 8 **Segment 1 – Existing Conditions**

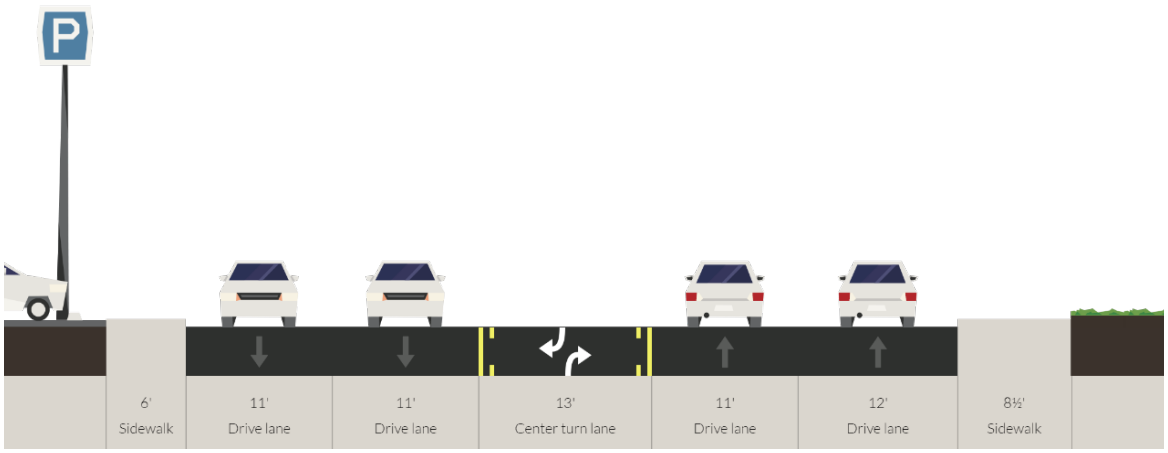


Figure 9 **Segment 1 – Option 1: Road Diet and Buffered Dual Bike Lane on the North Side**

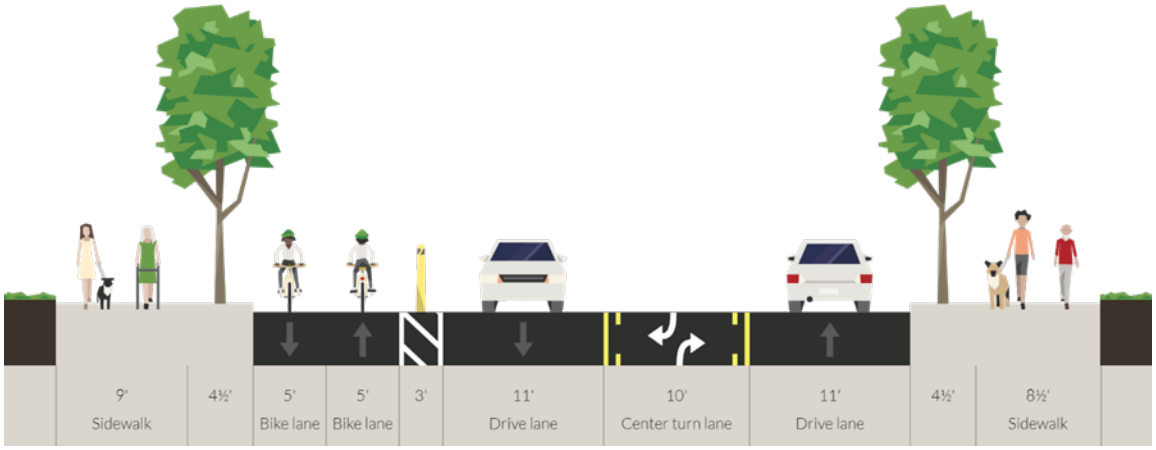


Figure 10 **Segment 1 – Option 2: Road Diet and Buffered Bike Lane in Each Direction**

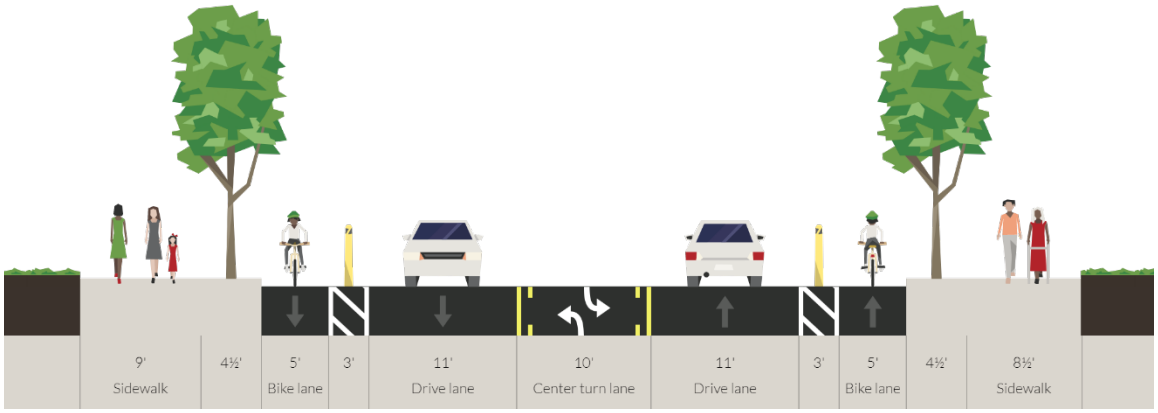
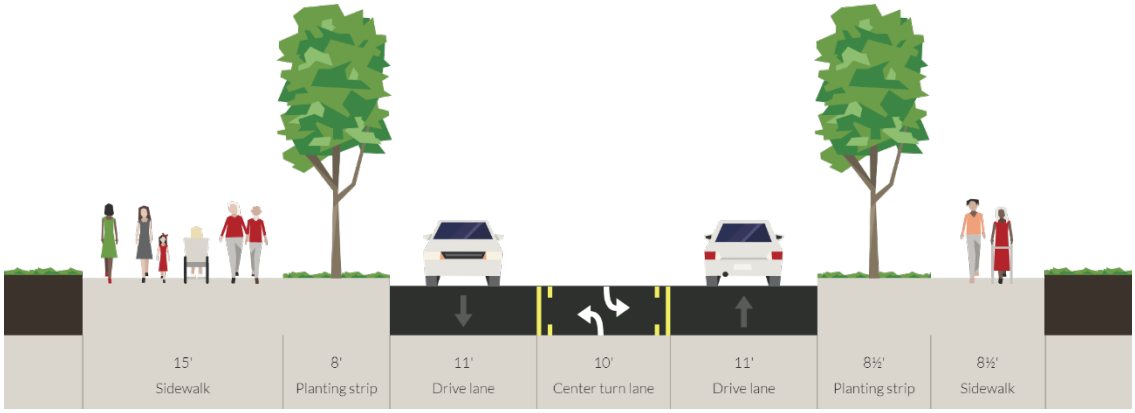


Figure 11 **Segment 1 – Option 3: Road Diet and Shared-Use Path on the North Side**



Segment 2 - Benedict Avenue Crossing (Former Xerox Site) to Saw Mill River Road

Two conceptual design options were created for Segment 2:

- Option 1: Remove one travel lane per direction and add protected dual bike lane on south side, sidewalks on both sides of road, and central turning lane.
- Option 2: Remove one travel lane on south side and add shared use path on south side

Figure 12 Segment 2 – Existing Conditions

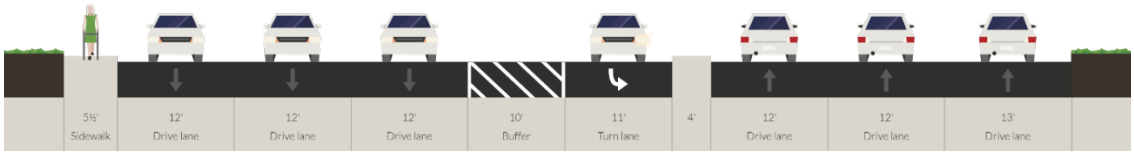


Figure 13 Segment 2 – Option 1: Road Diet and Buffered Dual Bike Lane on the South Side

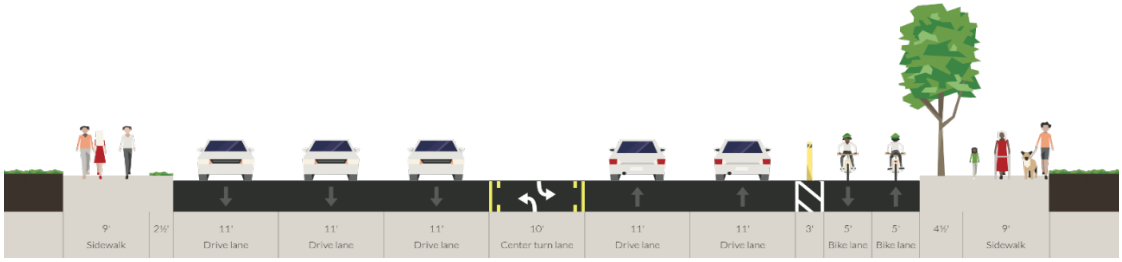
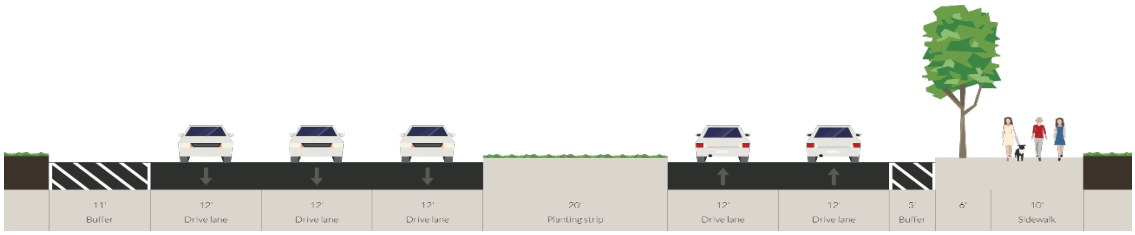


Figure 14 Segment 2 – Option 2: Road Diet and Shared-Use Path on the South Side



Segment 3 - Saw Mill River Road to Old Road (Elmsford)

Three conceptual design options were created for Segment 3:

- Option 1: One travel lane per direction, central turning lane, parking on both sides, buffered bike lanes on both sides of road
- Option 2: Bike boulevard on Barney Street
- Option 3: One travel lane per direction, parking on both sides, central turning lane, eastbound buffered bike lane on north side of road, bike boulevard westbound on Barney Street

Figure 15 **Segment 3 – Existing Conditions**

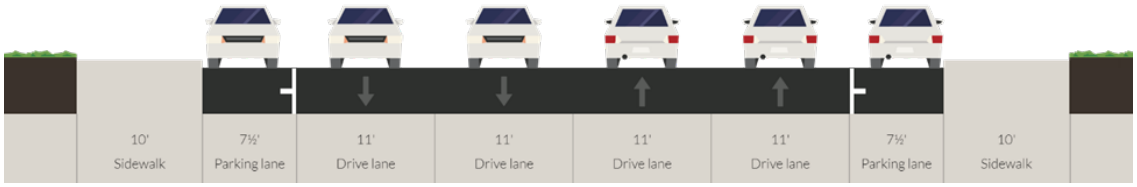


Figure 16 **Segment 3 – Option 1: Road Diet And Parking Buffered Bike Lanes in Each Direction**

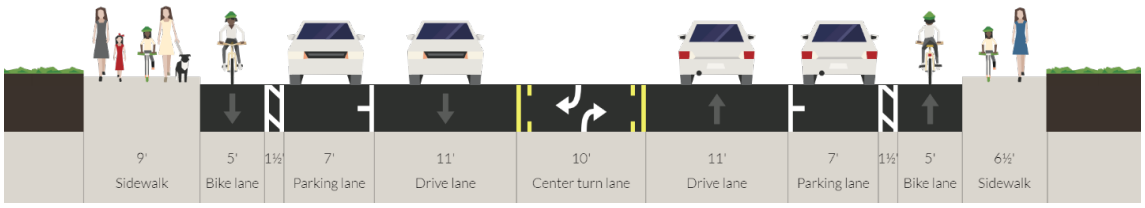


Figure 17 **Segment 3 Option 2: Bike boulevard on Barney Street**

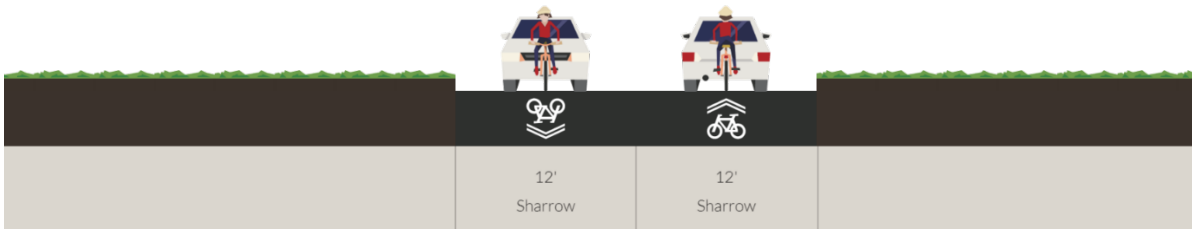
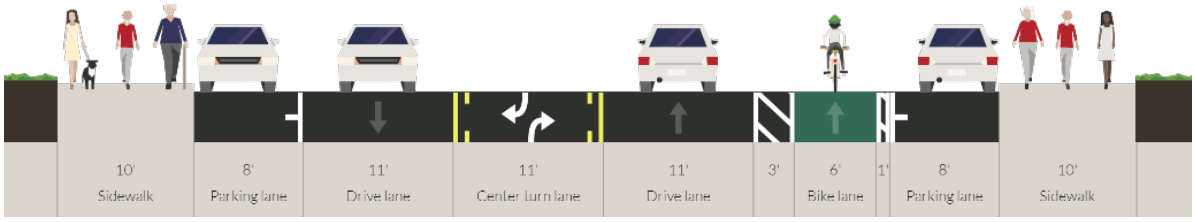


Figure 18 **Segment 3 – Option 3: Road Diet And Buffered Bike Lanes for Eastbound Bicycle Traffic, Redirect Westbound Bicycle Traffic to Barney Street**



Segment 4 - Old Road to Westchester County Center

Two conceptual design options were created for Segment 4:

- Option 1: Reduce travel lane width to 11 feet and turning lane to 10 feet and add protected bike lane on each side of road
- Option 2: Remove one travel lane per direction, central turning lane, buffered bike lane on each side of road, and extension of sidewalks on both sides of road

Figure 19 **Segment 4A: Old Rd. to Greenvale Cir. – Existing Conditions**

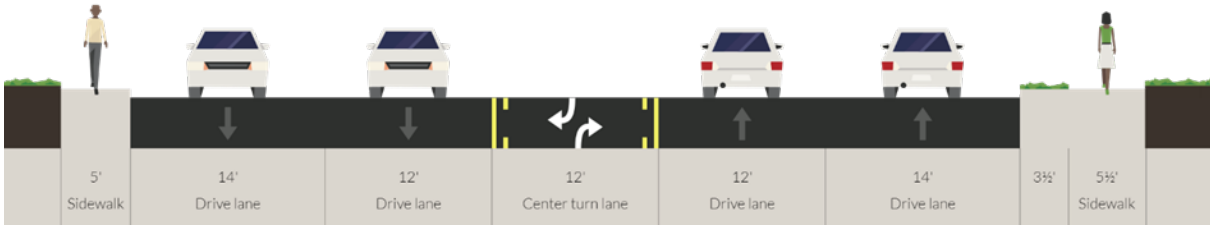


Figure 20 Segment 4A – Option 1: Restripe and Add Buffered Bike Lanes in Each Direction

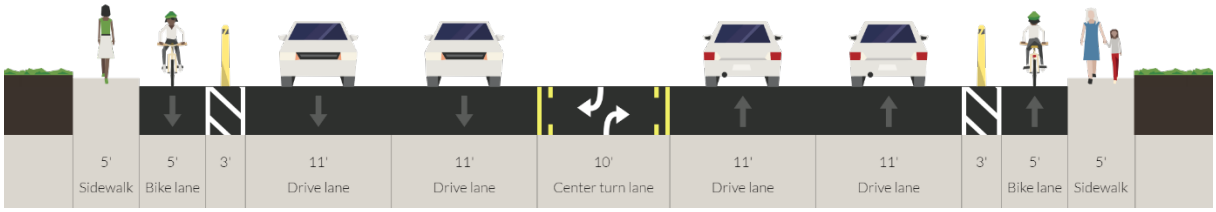


Figure 21 Segment 4A – Option 2: Road Diet and Buffered Bike Lanes in Each Direction

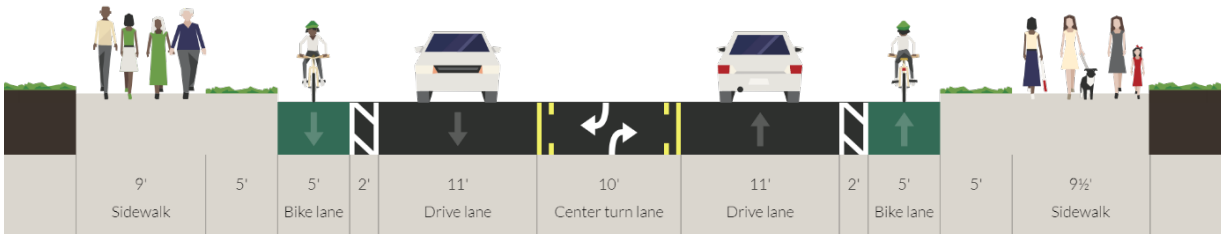


Figure 22 Segment 4B: Greenvale Cir. To Westchester County Center – Existing Conditions

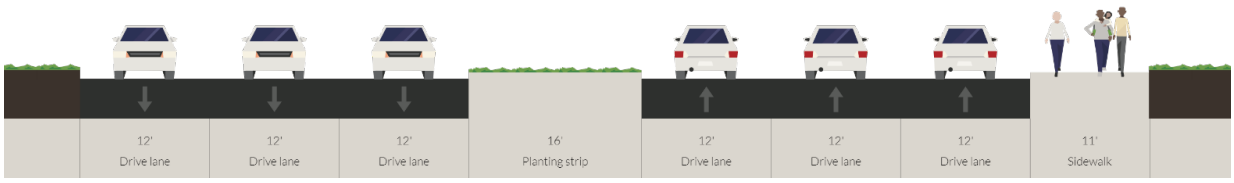
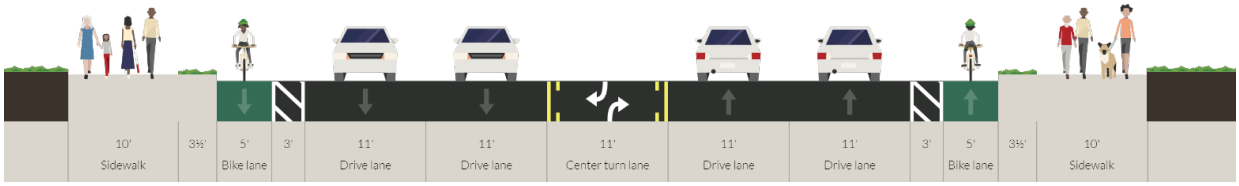


Figure 23 Segment 4B – Option 1: Road Diet and Buffered Bike Lane in Each Direction



Segment 5 - Westchester County Center to Bronx Street

Two conceptual design options were created for Segment 5:

- Option 1: Remove one travel lane per direction, add buffered bike lane on both sides of road, and widen sidewalks on both sides of road
- Option 2: Bike lane is diverted off Route 119 onto Bronx River Pathway and merges with Route 119 again at White Plains Rail Station

Figure 24 Segment 5 – Existing Conditions

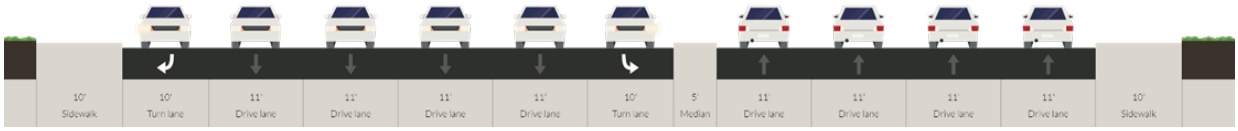


Figure 25 Segment 5 – Option 1: Road Diet and Buffered Bike Lane in Each Direction

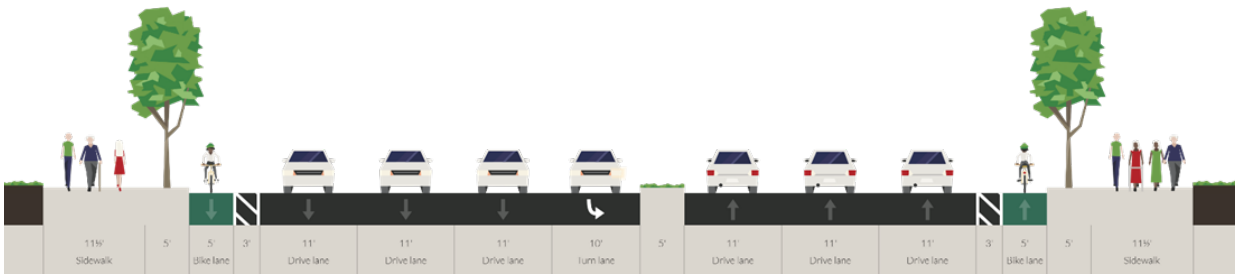


Figure 26 **Segment 5 – Option 2: Redirect Bicycle Traffic to the Bronx River Pathway at Westchester County Center**

Segment 6 - Bronx Street to Broadway (Downtown White Plains)

Two conceptual design options were created for Segment 5:

- Option 1: split the bike path in the appropriate bidirectional flows along Hamilton avenue and Main Street as follows:
  - **Hamilton Avenue:** remove one travel lane per direction and add a protected bike lane on the north side of the roadway

- **Main Street:** narrow travel lanes and a add buffered bike lane on south side of the roadway

▪ Option 2: Connect Bronx River Pathway to current White Plains bike lane network

Figure 27 Segment 6 – Existing Conditions (Hamilton Ave)

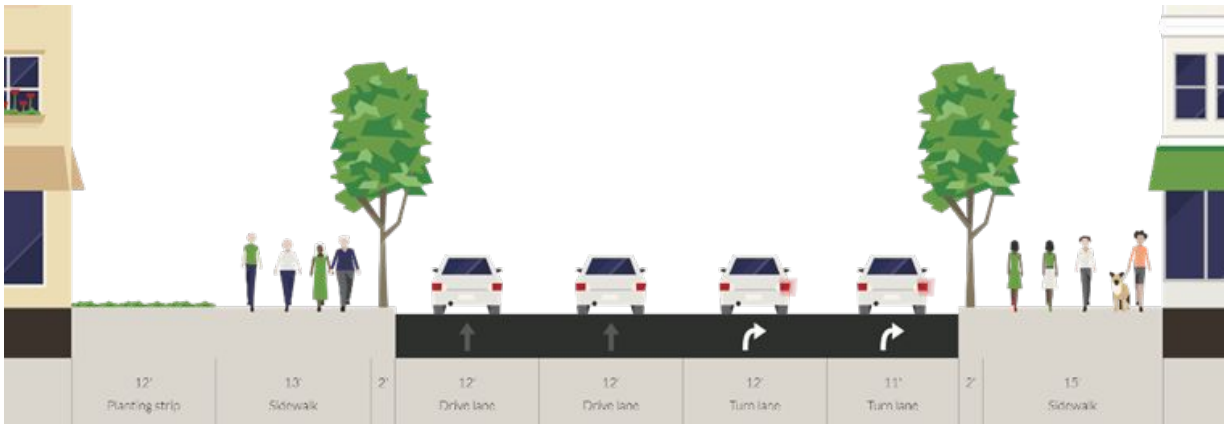


Figure 28 Segment 6 – Option 1 (Hamilton Ave): Road Diet and Westbound Buffered Bike Lane

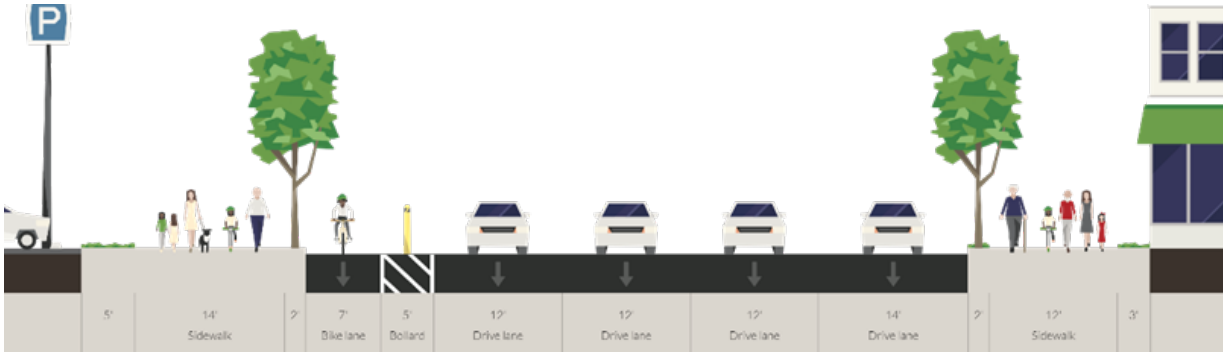


Figure 29 **Segment 6 – Option 1 (Main St): Restripe and Eastbound Buffered Bike Lane**

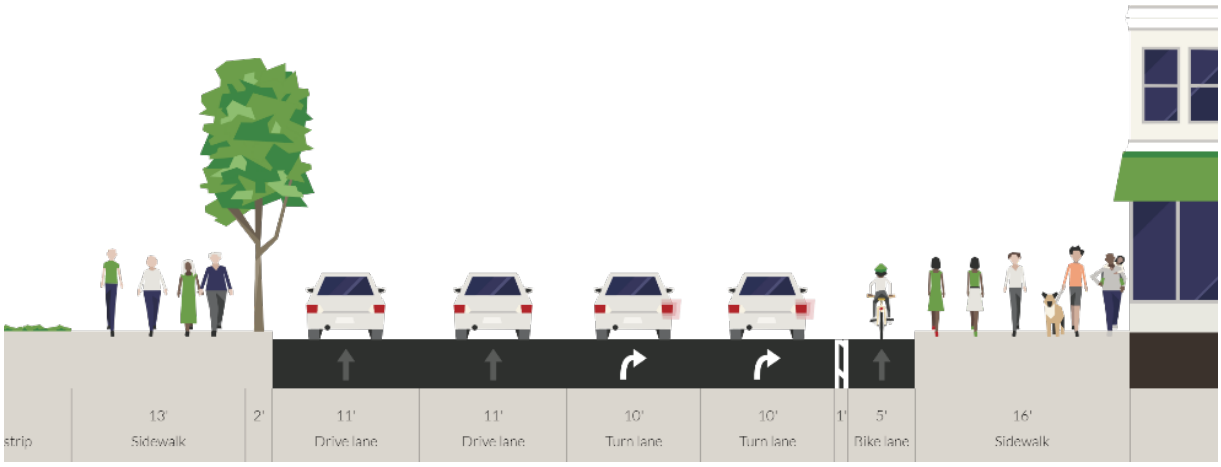
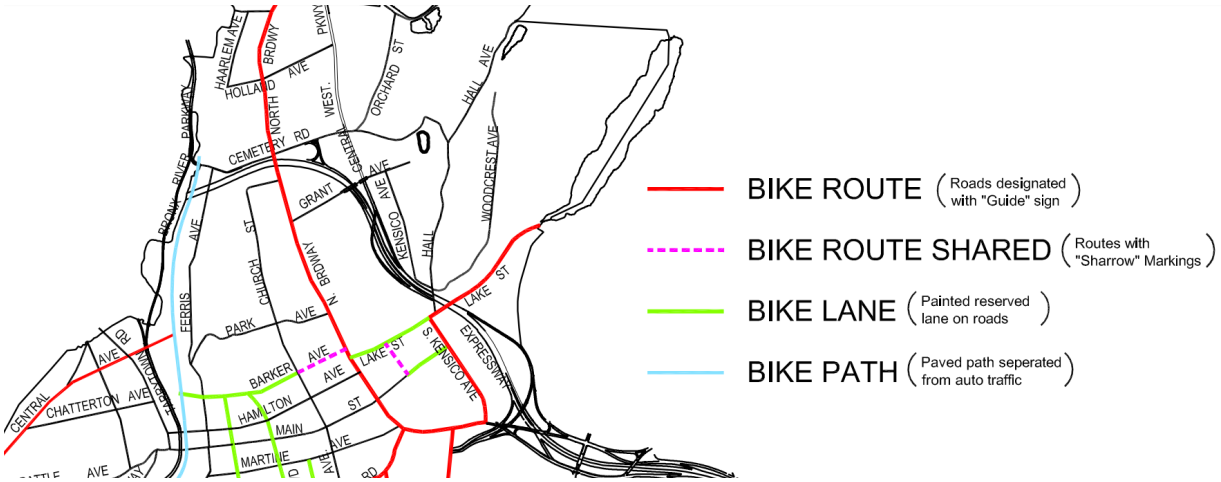


Figure 30 **Segment 6 – Option 2: Existing White Plains Bike Network**



Source: http://www.cityofwhiteplains.com/DocumentCenter/View/2956

PUBLIC OUTREACH

In the Spring of 2018 the Route 119 project team conducted a series of public engagement events in which participants were asked to choose their preferred design options per corridor segment. These events included:

- An in-person Open House in Elmsford Town Hall on Thursday April 26
- In-person mobile public input workshops at the following locations on Sunday May 6:
  - The Bagel Emporium, Tarrytown
  - Westchester County Center/Bronx River Parkway, White Plains

  - Greenburgh Public Library, Elmsford
- An online survey in which participants were asked to identify their comfort using various transportation modes along Route 119 under current and improved conditions, and were also asked to choose their preferred design options per corridor segment:
  - The survey received over 220 responses, about two-thirds of which came from residents of the municipalities encompassing Route 119. The remaining one-third of responses came mostly from residents of other municipalities in Westchester County, New York City, or other nearby locations.

The goals of the selected engagement activities were twofold:

- Present and detail conceptual a series of Complete-Street cross section alternatives for each of six Route 119 segments to the public
- Allow the public to identify which cross-section alternative for each segment would be most desirable and/or appropriate; and to express any other ideas, thoughts, or concerns they may have about the design options

Results and Key Findings

User Comfort

Very few respondents reported being comfortable walking along (15%), crossing (about 33%), taking transit (19%), or riding a bicycle along (4%) Route 119 in its current configuration. However, of those not already comfortable using the corridor now, a majority indicated a willingness to walk, take transit, or ride a bicycle along Route 119 if the conditions were made more comfortable for them to do so. Of respondents who are not comfortable under current conditions:

- Two-thirds indicated that they would be comfortable walking with improved pedestrian conditions
- About 50% indicated a willingness to take transit if pedestrian access to transit and amenities (shelters, benches, etc.) was improved.
- Just over 50% indicated that they would be comfortable riding a bicycle with separated bicycle infrastructure of some kind.

Design Preferences

The sections below describe the conceptual design options for each generalized segment of Route 119, and show the community-preferred design option for each segment. Both Online survey respondents and the mobile workshop attendees had clear consensus favorites for the preferred alternatives for Segments 1-4 and Segment 6. However, opinions were split between online survey respondents and mobile workshop attendees on the preferred alternative for Segment 5, with survey respondents preferring to divert active uses to the nearby Bronx River Trail, and workshop attendees preferring the active uses to remain on the Route 119 corridor.

In general, the preferred design choices reveals the following:

- Respondents generally prefer street design options that provided the most separation of transport modes and the greatest degree of protection.
- Respondents prefer on-street bike lanes to shared-use side paths.

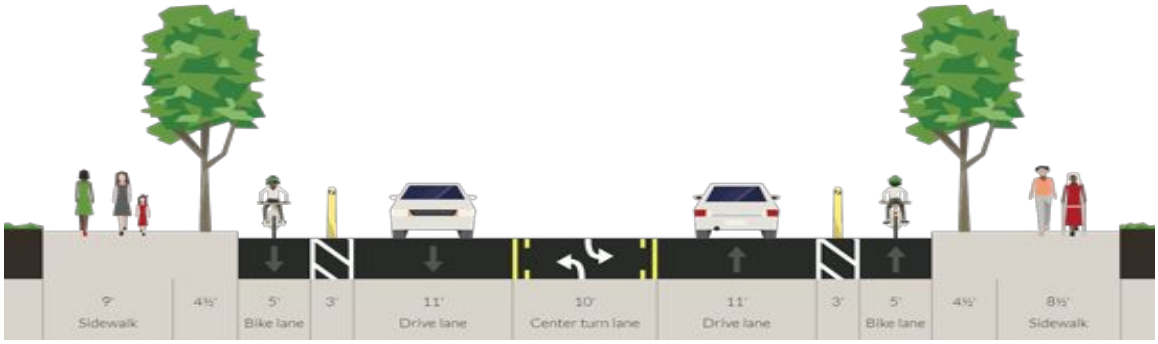
Segment 1 - Route 9 to Benedict Avenue Crossing (Former Xerox Site)

Of the options for Segment 1:

- 69% of in-person event voters preferred Option 2.
- 64% of online survey respondents preferred Option 2

The preferred generalized cross section for Segment 1 is found in Figure 31.

Figure 31 Preferred Conceptual Cross Section for Segment 1



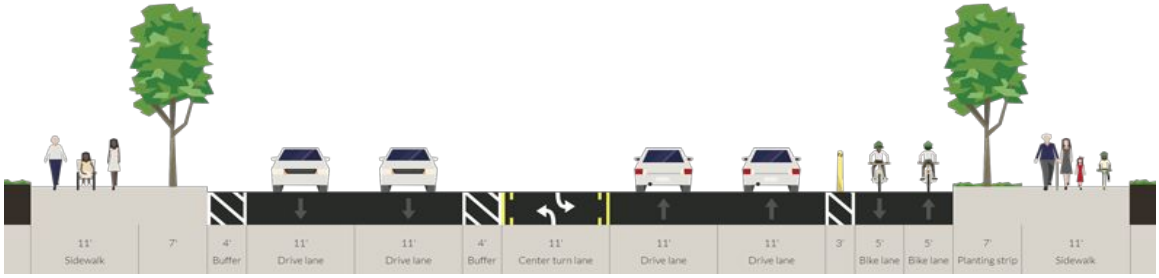
Segment 2 - Benedict Avenue Crossing (Former Xerox Site) to Saw Mill River Road

Of the options for Segment 2:

- 93% of in-person event voters preferred Option 1
- 76% of online survey respondents preferred Option 1

The preferred generalized cross section for Segment 2 is found in Figure 32

Figure 32 Preferred Conceptual Cross Section for Segment 2



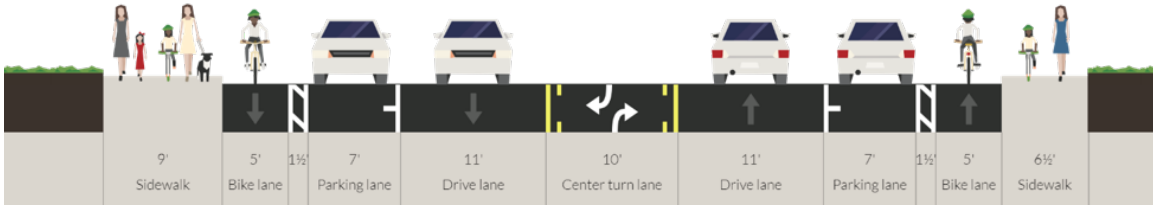
Segment 3 - Saw Mill River Road to Old Road (Elmsford)

Of the options for Segment 3:

- 95% of in-person event voters preferred Option 1
- 59% of online survey respondents preferred Option 1

The preferred generalized cross section for Segment 3 is found in Figure 33

Figure 33 Preferred Conceptual Cross Section for Segment 3



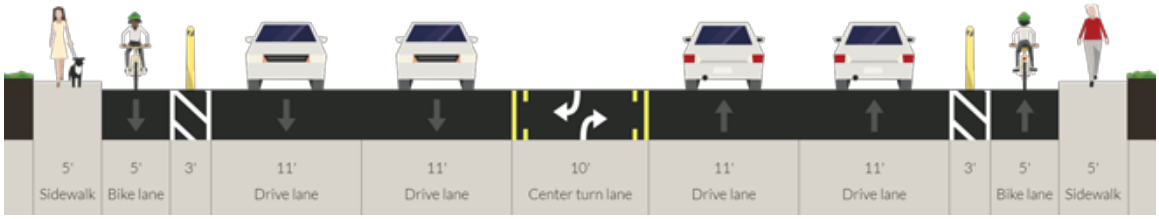
Segment 4 - Old Road to Westchester County Center

Of the options for Segment 4:

- 84% of in-person event voters preferred Option 1
- 66% of online survey respondents preferred Option 1

The preferred generalized cross section for Segment 3 is found in Figure 34

Figure 34 Preferred Conceptual Cross Section for Segment 4



Segment 5 - Westchester County Center to Bronx Street

Of the options for Segment 5:

- 66% of in-person event voters preferred Option 1 (34% preferred Option 2)
- 57% of online survey respondents preferred Option 2 (43% preferred Option 1)

It should be noted, however, that Option 1 links directly with the preferred option for Segment 6, while Option 2 does not.

The generalized cross section for Option 1 is found in **Figure 35**. The diverted-route path of Option 2 is found in Error: Reference source not found.

Figure 35 Preferred Route for In-Person Voters (Option 1) - Segment 5

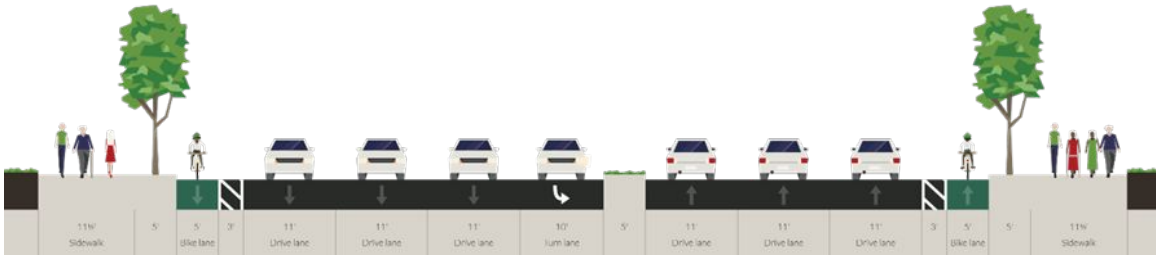
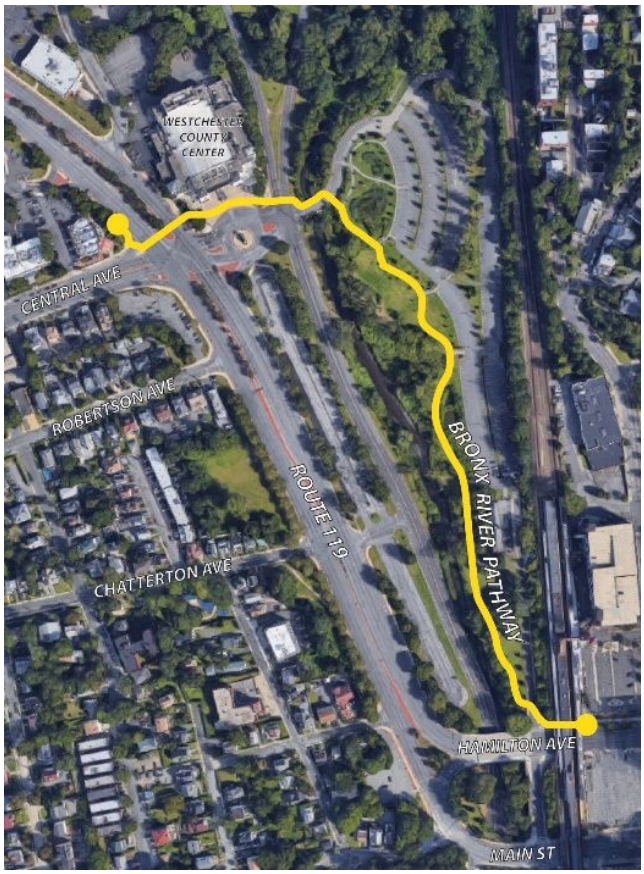


Figure 36 Preferred Route for Online Voters (Option 2) - Segment 5



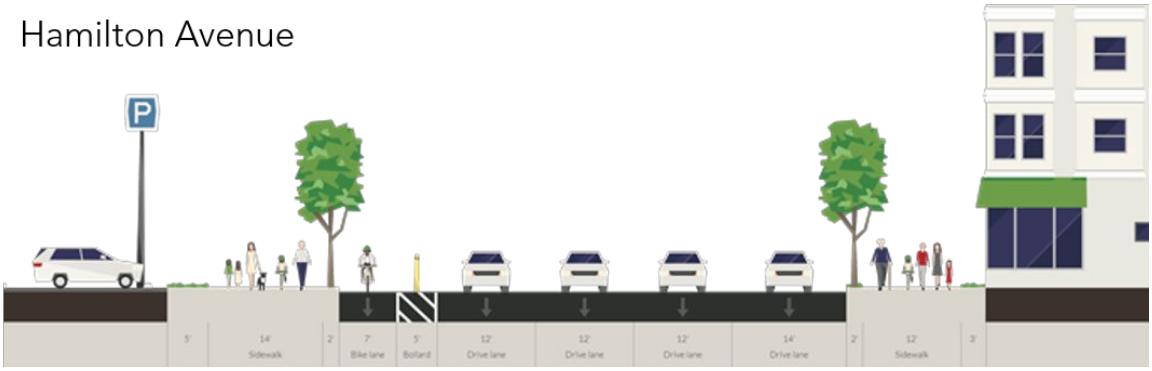
Segment 6 - Bronx Street to Broadway (Downtown White Plains)

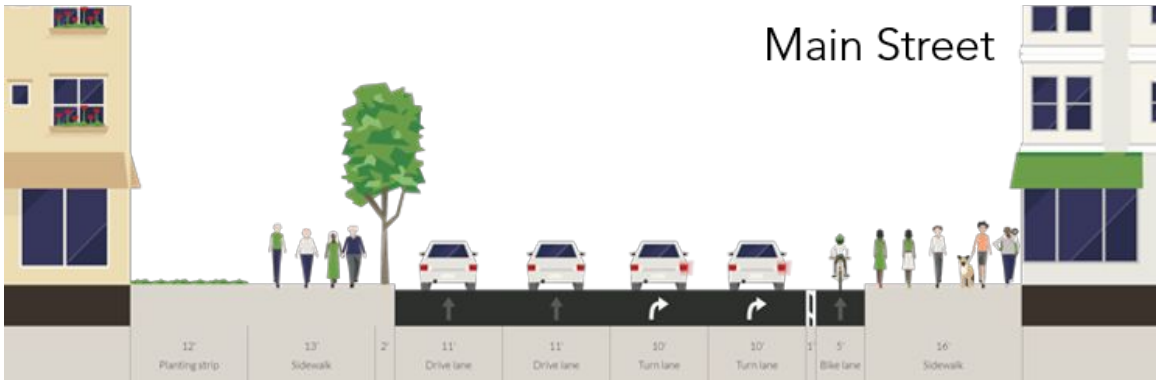
Of the options for Segment 6:

- 75% of in-person event voters preferred Option 1
- 58% of online survey respondents preferred Option 1

The preferred generalized cross section for Segment 6 is found in Figure 37.

Figure 37 Preferred Conceptual Cross Section for Segment 6 – Hamilton Avenue and Main Street




Main Street
12'
Planting strip
13'
Sidewalk
2'
11'
Drive lane
11'
Drive lane
10'
Turn lane
10'
Turn lane
1'
5'
Bike lane
16'
Sidewalk