



# SAFE ROUTES *to* TRANSIT

## Bordentown Station

November, 2020

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### ABOUT DVRPC

DVRPC is the federally designated Metropolitan Planning Organization for the bi-state, nine-county Greater Philadelphia Region. DVRPC works with a variety of stakeholders, including municipal, county, and state representatives, to address issues of transportation, land use, environmental protection, and economic development. For more information, see [www.dvrpc.org](http://www.dvrpc.org) and [www.dvrpc.org/SafeRoutesToTransit](http://www.dvrpc.org/SafeRoutesToTransit).

### DVRPC Project Contact

Cassidy Boulan, AICP  
Senior Transportation Planner  
215.238.2832  
[cboulan@dvrpc.org](mailto:cboulan@dvrpc.org)

# Project Background

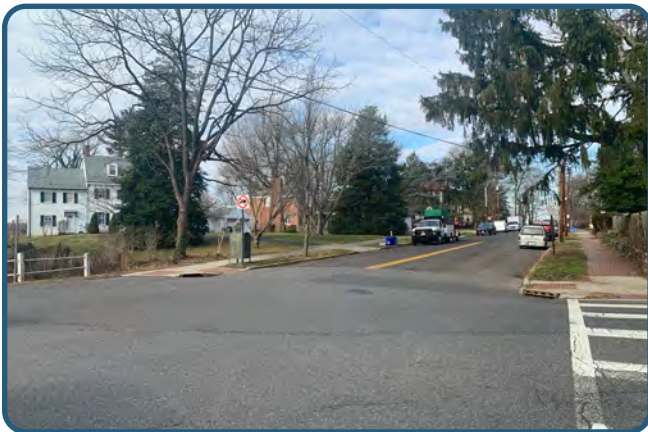
## Safe Routes to Transit Program

The Delaware Valley Regional Planning Commission's (DVRPC's) Safe Routes to Transit projects seek to assist municipalities in bridging the gap between planning and implementation by identifying potential funding sources early in project development. DVRPC assists municipal or county project sponsors to shape projects and perform planning-level design that make strong applications for funding sources, such as the Transportation Alternatives Program. In the fall of 2018, the City of Bordentown applied for the Safe Routes to Transit Program.

DVRPC provided technical assistance with a focus on low-cost, high-impact interventions around Bordentown Station, a station on New Jersey Transit (NJ Transit's) River LINE light rail. The interventions were designed to improve pedestrian and bicycle access and safety. The primary issues identified by the City of Bordentown for this program were:

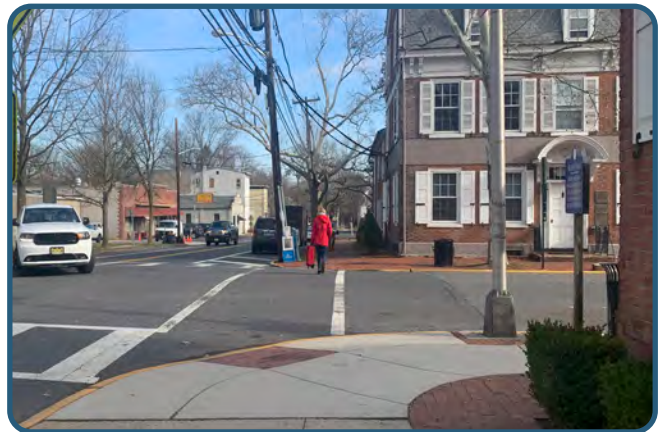
- poor visibility at intersections;
- sidewalk gaps and lack of compliance with the Americans with Disabilities Act (ADA);
- lack of cycling infrastructure; and
- inadequate lighting coverage.

*There are unmarked crossings near the station, such as at the intersection of Park and Prince streets.*



Source: DVRPC (2020)

*Some crosswalks are faded or lack continental striping, reducing pedestrian visibility.*



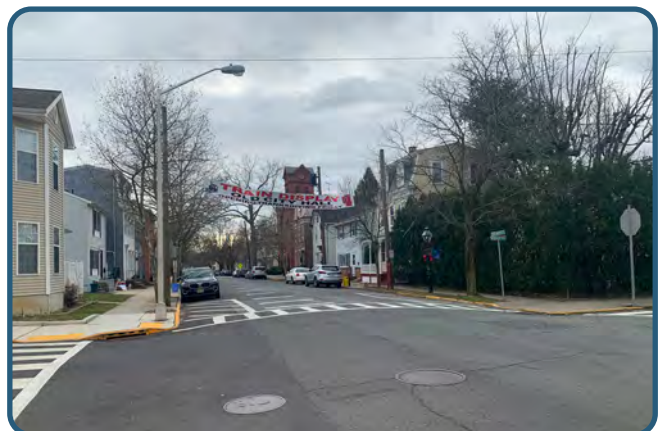
Source: DVRPC (2020)

*Intersection geometry creates some areas where turning speeds are uncontrolled and crossings are long.*



Source: DVRPC (2020)

*Inconsistent stop signs at intersections leads to ambiguity.*



Source: DVRPC (2020)

## Project Timeline

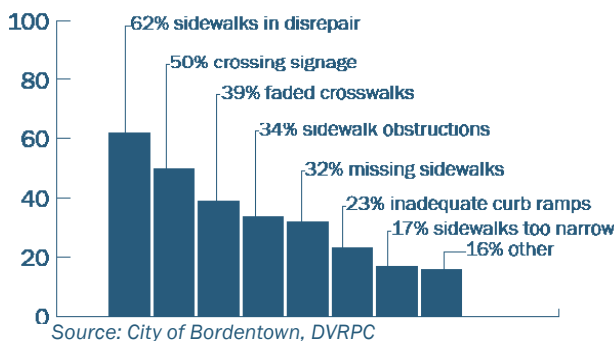
The City of Bordentown applied for technical assistance through DVRPC's Safe Routes to Transit Program in 2018. Working with Bordentown and Burlington County, the project was elevated to a standalone DVRPC work program project in Fiscal Year 2020. A stakeholder committee was formed in the fall of 2019 with representatives from the City of Bordentown, NJ Transit, Burlington County Engineering Department, Burlington County Bridge Commission, Cross County Connection transportation management association, and the New Jersey Department of Transportation (NJDOT). Stakeholders first met in October 2019 to identify issues in the station area and review relevant data. The DVRPC project team conducted field work through the remainder of the fall and winter, then compiled applicable examples of pedestrian and bicycle access infrastructure, which were presented for discussion with stakeholders in January. Draft recommendations for Bordentown's priority intersections and corridors were presented in March and May.

Concurrently, the city began preparing for a formal re-examination of its Master Plan, which was adopted in 1983. A survey was developed by municipal and county planners to solicit feedback on broad topics that may be considered in the Master Plan Update. DVRPC provided questions related to the Safe Routes to Transit project, which were adapted and integrated by the survey designers. Responses were gathered throughout the late winter and early spring, with some key results summarized in Figures 1 and 2. As the Master Plan re-examination process continues, the city intends to seek further input from residents and stakeholders about the recommendations in this report and other goals, objectives, and actions pertaining to the growth and development of Bordentown in the years ahead.

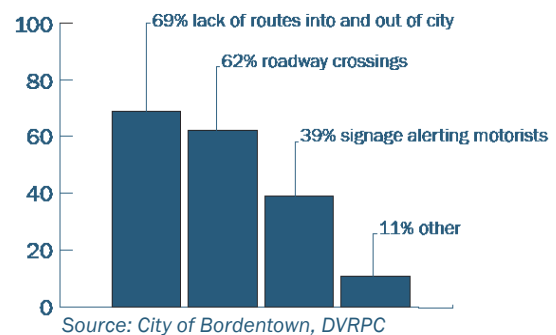
During the study, plans for the Cranberry Park development on Park Street were reviewed by city and county officials. The DVRPC team worked to ensure congruency between these ongoing plans and DVRPC's recommendations. Finally, in the spring of 2020, the city was awarded a grant through DVRPC's Transportation and Community Development Initiative. The grant will fund a planning study to further enhance Bordentown's streetscape and parking resources.

### Q4: What makes Bordentown great? 93 percent of survey respondents said walkability.

**Figure 1 Survey Q33, What are the biggest pedestrian safety issues?**



**Figure 2 Survey Q28: What are the biggest bicycle safety issues?**



## Relevant Planning Initiatives

The DVRPC team reviewed the following documents to ensure recommendations built upon those made by previous and overlapping studies.

- *Burlington County Highway Master Plan*, DVRPC (2019);
- *Bordentown/Ocean Spray Redevelopment Plan*, Interface Studios, prepared for City of Bordentown (2015);
- *Burlington County Bicycle Master Plan*, Cross County Connection, prepared for Burlington County (2013–14);
- *Traffic Calming Alternatives for Routes 130/206*, DVRPC, prepared for City of Bordentown (2012);
- *130/206 Safety Audit*, DVRPC, prepared for Bordentown City, Bordentown Township, & Burlington County (2012);
- *Congestion Management Process (CMP) Pamphlet*, DVRPC (2012);
- *Route 130/206 Bicycle and Pedestrian Plan*, Michael Baker, prepared for City of Bordentown & Township (2011);
- *Bike and Pedestrian Study—Intersection and Gateway Design Concept*, City of Bordentown (2006);
- *City of Bordentown Master Plan—Open Spaces*, City of Bordentown (2005); and
- *Bordentown City Bicycle and Pedestrian Circulation Study*, Bordentown City Environmental Commission (2005).

# Existing Conditions

The following section summarizes station area conditions, including spatial characteristics and safety data that highlight opportunities for strategic multimodal improvements around Bordentown Station.

## STUDY AREA

Bordentown Station is the northernmost River LINE station in Burlington County, situated at the western edge of the city and less than five minutes' walking distance from Bordentown's downtown area on Farnsworth Avenue. The River LINE's Trenton Transit Center terminus is an approximately 10–15-minute ride to the north, while Camden's Walter Rand Transportation Center is a roughly 45–50-minute ride to the south.<sup>1</sup>

With respect to safely accessing the station on foot or by bicycle, stakeholders narrowed the study's priority locations to five intersections and two corridors. They are numbered below and labeled in Figure 4.

### Intersections:

1. Park Street & Prince Street;
2. Park Street & Farnsworth Avenue;
3. Farnsworth Avenue & Crosswicks Street;
4. Farnsworth Avenue & Burlington Street; and
5. Prince Street & Burlington Street.

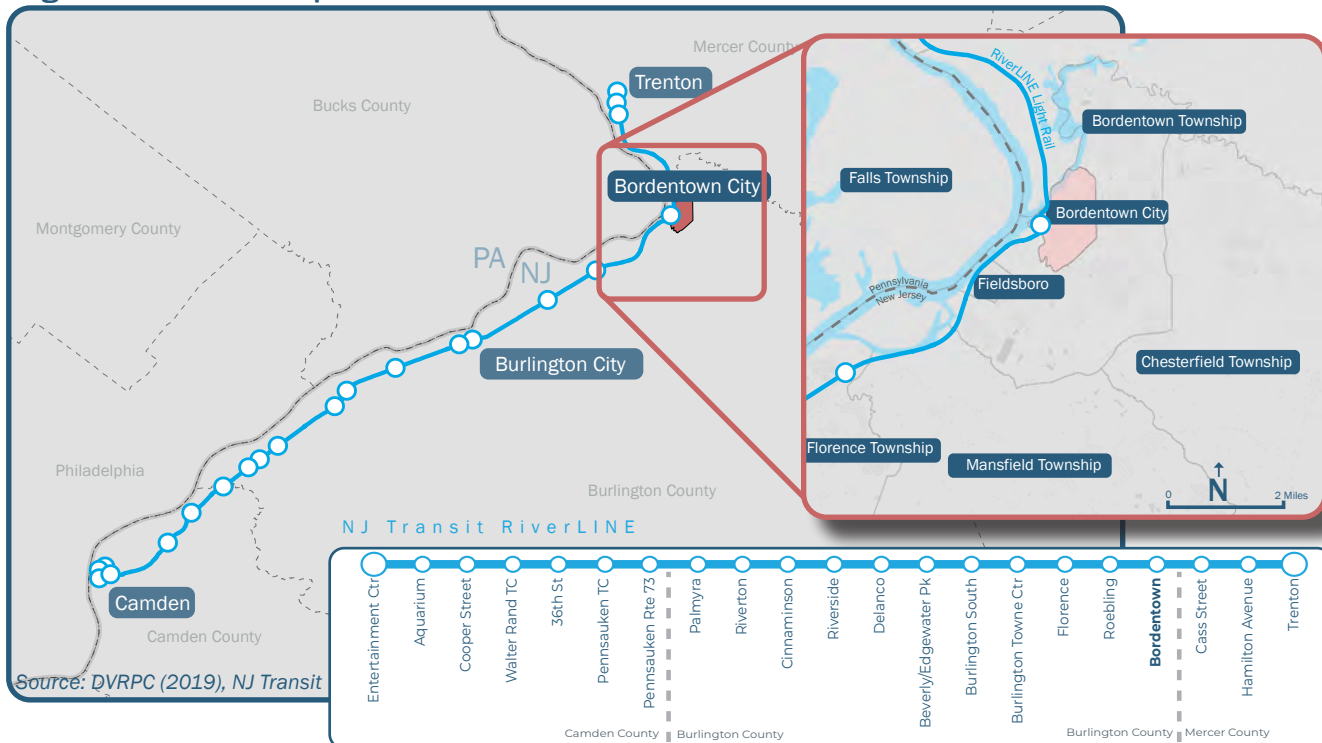
### Corridors:

6. Prince Street, from Park Street to Burlington Street; and
7. Park Street, from River LINE Station to Route 206.

Although the focus of this study is bicycle and pedestrian access to transit, recommendations broadly consider safe routes between the station and Bordentown's downtown business district, adjacent residential neighborhoods, existing and future apartment communities to the east of downtown, and other nearby destinations.

The Delaware River Heritage Trail (DRHT) also passes through the station area, with an off-road multiuse path connecting the city to points north via Farnsworth Avenue, and on-road segments designated to the south via Burlington Street. Prince and Burlington streets are designated as planned segments for the regional Circuit Trail system, although existing directional signage guides trail traffic along Farnsworth Avenue. Figure 3 shows the NJ Transit River LINE and the location of Bordentown along the line, while Figure 4 shows a detailed study area map.

**Figure 3 Overview Map**



<sup>1</sup>NJ Transit Timetables, accessed via [www.njtransit.com/light-rail-to](http://www.njtransit.com/light-rail-to).

Figure 4 Study Areas and Points of Interest



## Pedestrian Conditions and Sidewalk Network

Sidewalks make walking safe and accessible because they provide a designated, separate space for pedestrians.

Figure 5 illustrates the existing sidewalk network.

The primary sidewalk issues in Bordentown are sections where driveways take the place of sidewalks and the lack of sidewalks leading to new and existing multifamily developments on Park Street. Some sidewalk segments are in disrepair, and ADA-compliant curb ramps are not present at all intersections.

Right of way at intersections is not always clear, producing confusing and potentially dangerous outcomes for pedestrians. Visibility is low at some intersections due to topography, obstructed sight triangles, or low lighting.

## Road Ownership: County and City Roads

Burlington County Routes 662 and 528 are displayed in Figure 5 and traverse the study areas. All other roads and intersections shown in Figure 5 fall under the jurisdiction of the City of Bordentown. Road ownership determines which agencies must approve changes to the roadway. Where city and county roads converge, communication between the city and county is necessary to share costs and responsibilities, as well as to create Shared Service Agreements (SSAs) to clarify maintenance responsibilities, where necessary.

*A pedestrian walking along an area with no sidewalk along Park Street, just southwest of the Park Apartments.*



Source: Google Streetview (2020)

*Some curb ramps at-- major intersections are not ADA compliant.*



Source: DVRPC (2020)

Figure 5 Sidewalk Presence and Roadway Ownership



## Bicycle Level Of Traffic Stress

The primary dedicated bicycle infrastructure in Bordentown is the Delaware River Heritage Trail (DRHT). It includes off-road trail segments, as well as a signed on-road, mixed-traffic corridor through the downtown area, eventually connecting to a planned trail segment west of the city. In order to determine where new bicycle interventions could have the biggest impact on improving the cycling experience, DVRPC's Bicycle Level of Traffic Stress analysis was used to assess the comfort of bicycle routes in the station area.<sup>2</sup>

Level of Traffic Stress (LTS) is a road classification technique that estimates bicyclists' level of comfort while using the road. DVRPC's LTS assignment is based on the number of lanes, effective vehicle speed, and presence of a bicycle facility (e.g., bike lane, signed designated bike route, sharrow, or multiuse trail). The table below outlines the characteristics of each LTS level.

LTS analysis can help identify segments where investment in new or enhanced bicycle infrastructure could connect comfortable streets that are currently separated by roadways with high levels of stress. The least comfortable cycling routes in the study area are rated LTS 3, meaning only the most confident and enthusiastic cyclists are likely to use them because they produce moderate levels of stress.

In the study area, there are three LTS 3 roads running east to west (Park Street, Crosswicks Street, Burlington Street) and two LTS 3 roads running north to south (Prince Street and Farnsworth Avenue). These streets form core connections with one another and the center of Bordentown.

LTS is just one element used for analysis and recommendation of bicycle facilities. Other factors considered were connections to existing trail networks, road width, parking, and future planning projects.

Although outside of the study area, the southwestern leg of Burlington Street shown in red in Figure 6 is the only LTS 4 street near the downtown area. Greater bicycle connectivity could be achieved with improvements to this street, which is also a planned segment of the DRHT.

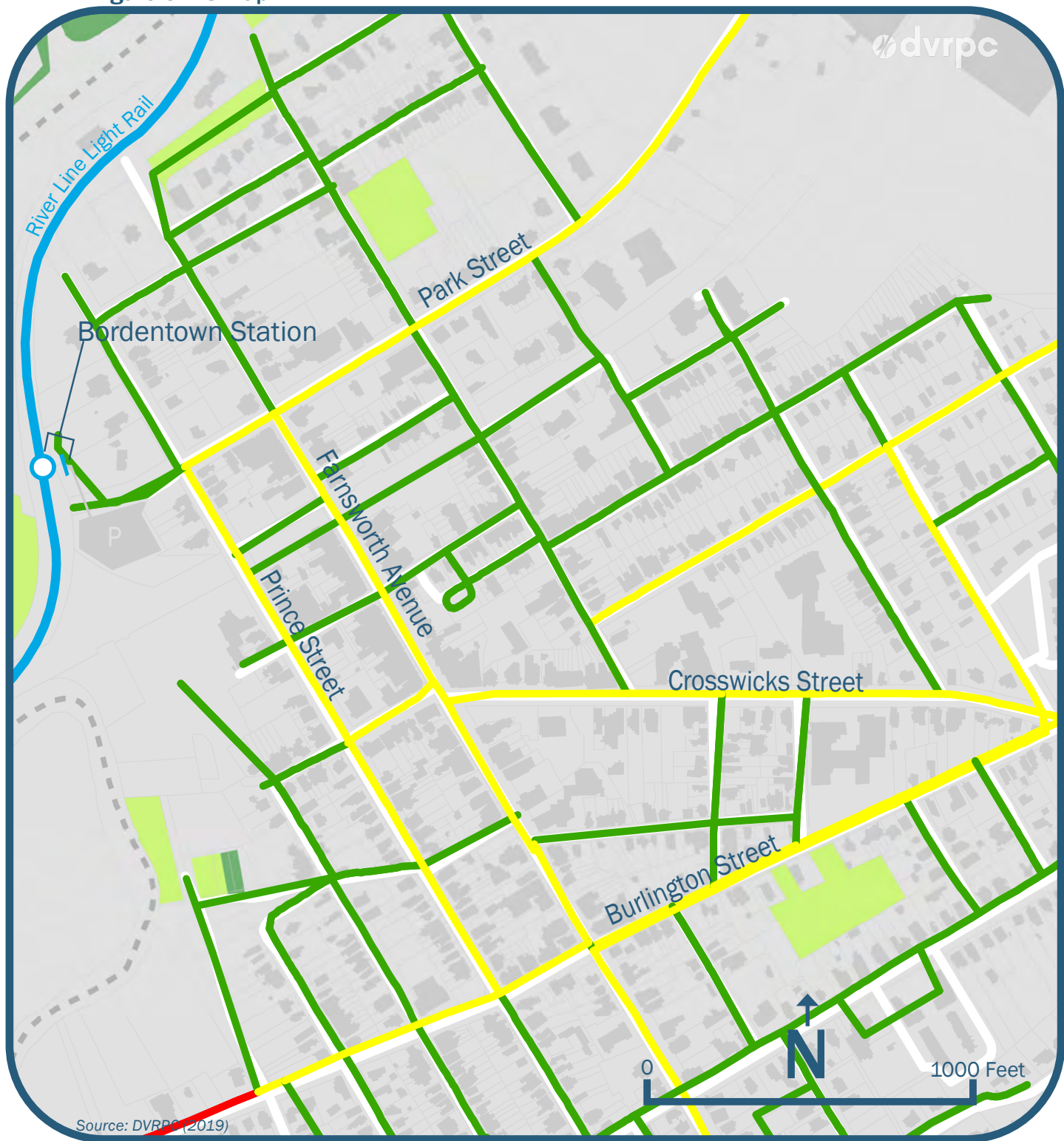
| LTS | Comfortable Enough For (Cyclist Type) | Characteristics  |
|-----|---------------------------------------|--|
| 1   | Most People                           | Relaxing<br>Suitable for children  |
| 2   | Interested, but Concerned             | Suitable for most adults<br>Presenting little traffic stress                             |
| 3   | Enthusied and Confident               | Moderate traffic stress<br>Comfortable for those already riding bikes in American cities |
| 4   | Strong and Fearless                   | High traffic stress<br>Multilane, fast moving traffic                                    |

Sources: M Mekuria et al., "Low-stress bicycling and network connectivity", Mineta Transportation Institute, No. Report 11-19, 2012.; Geller, R. "Four Types of Cyclists," Portland Bureau of Transportation, Portland, OR, 2006. Accessed August 11, 2016, [www.portlandoregon.gov/transportation/article/264746](http://www.portlandoregon.gov/transportation/article/264746).

<sup>2</sup>DVRPC, *Bicycle LTS and Connectivity Analysis (2017, 2019)*




Figure 6 LTS Map



Source: DVRPC (2019)

**Level of Traffic Stress (LTS)**

- LTS 1 
- LTS 2 
- LTS 3 
- LTS 4 

## Lighting Analysis

Safe Routes to Transit also includes lighting and other improvements to address both real and perceived perceptions of safety around a station and pedestrian visibility to drivers, which is especially important during the fall and winter months. Lighting conditions in Bordentown are generally acceptable, but the area around the station may benefit from more illumination.

DVRPC's team mapped existing lighting around the station and throughout the study area. Each point was then given a 10-foot radius, representing the fixtures' light-shed. This is illustrated in Figure 7, which shows the gaps in lighting around the station area connecting to the city core.

Lighting gaps were observed primarily on Prince Street. Stakeholders also expressed interest in providing additional lighting just north of Park Street and Farnsworth Avenue, as many residents park or walk from the area. There are also lighting gaps along Park Street, which is a critical connection between the downtown area and the Cranberry Park planned development, as well as existing multifamily housing.

Lighting along Farnsworth Avenue is primarily pedestrian scale, while much of the other lighting is intended for motorist visibility.

Note that the map only displays lighting in the focus area and does not consider lighting outside of the study area.

*Existing light fixtures at the station, oriented away from sidewalk*



Source: DVRPC (2020)

Figure 7 Lighting Analysis



## Crash Analysis

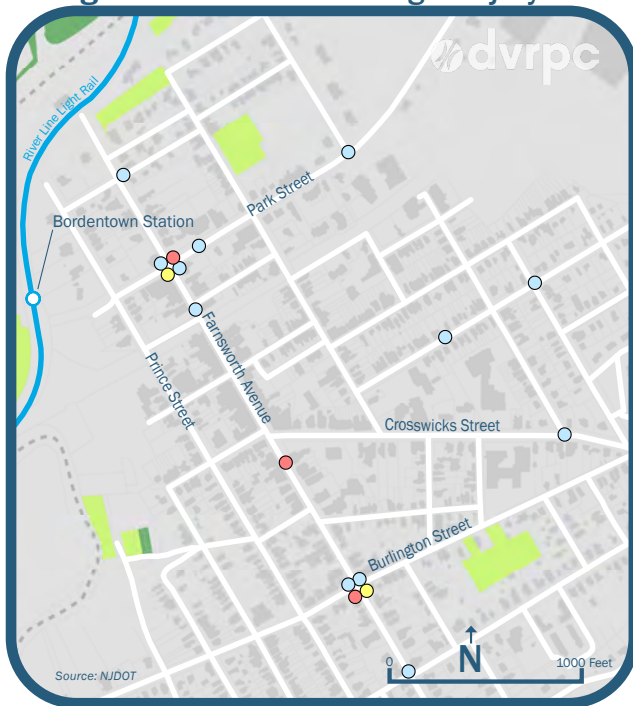
Because pedestrians and cyclists are vulnerable road users, crashes put them at heightened risk of injury and death. Figure 8 shows crashes that resulted in injury from 2010–2016. Research has shown that a history of vehicle crashes—even those that occur only between vehicles—suggests the presence of traffic safety issues and can discourage walking and biking in a given area.

From 2010–2016, crashes in Bordentown occurred most frequently at intersections along Farnsworth Avenue, with one notable cluster at Park Street and another at Burlington Street. As shown in Figure 9, three crashes involved pedestrians and three crashes involved bicyclists over the six-year period. Figure 10 shows where all reported crashes occurred within the study area by crash type.<sup>3</sup>

Many of the crashes in the city are classified as "struck parked vehicle," where injury and major damage are unlikely. Right-angle crashes are also common in the city, and are clustered around gateway intersections into the downtown. Right-angle crashes may be exacerbated by uncontrolled stops or improper yielding.

According to the safety study *Reducing Speeding-Related Crashes Involving Passenger Vehicles*, published by the National Transportation Safety Board (NTSB), higher speeds are a major contributor to the number of crashes, as well as the severity of crashes, especially when vulnerable road users like pedestrians and cyclists are involved. Introducing traffic-calming techniques can reduce speeds and make a difference in lowering crashes, thereby improving pedestrian and cyclist safety and experience.<sup>4</sup>

**Figure 8 Crashes Resulting in Injury**



**Crashes by Injury 2010–2016**

- Injured Pedestrian (3)
- Two injured motorists/passengers (2)
- One injured motorist/passenger (13)

**Figure 9 Pedestrian and Cyclist Crashes**



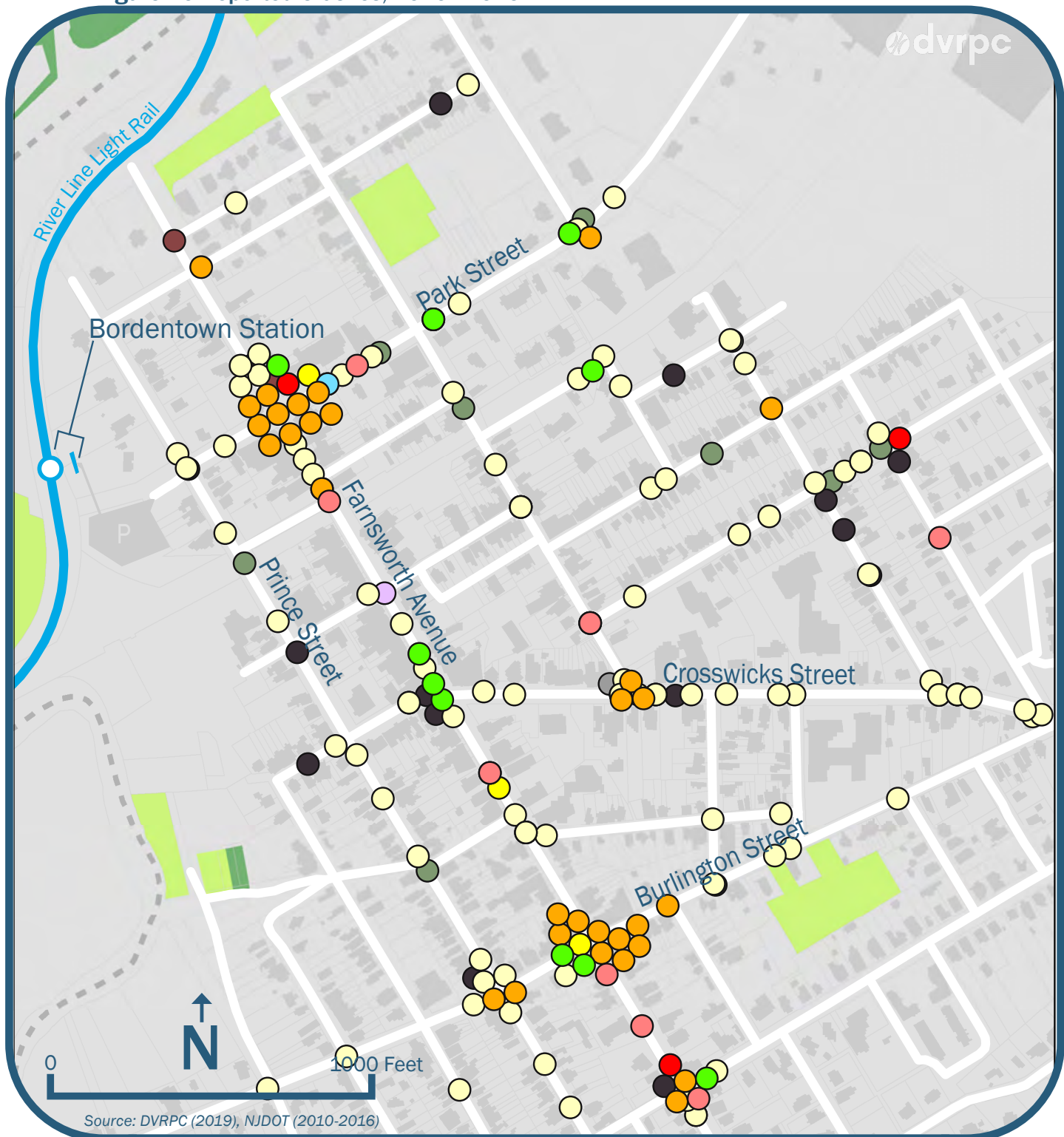
**Pedestrian- and Bicycle-Involved Crashes 2010–2016**

- Pedestrian
- Cyclist

<sup>3</sup> NJDOT (2019).

<sup>4</sup> National Association of City Transportation Officials (NACTO), *NACTO Design Guide* (2009).

Figure 10 Reported Crashes, 2010–2016



Source: DVRPC (2019), NJDOT (2010-2016)

**2010–2016 Crashes: NJDOT**

- |   |   |
|---|---|
| <span style="color: yellow;">●</span> Pedestrian                      | <span style="color: purple;">●</span> Opposite Direction Side Swipe |
| <span style="color: red;">●</span> Cyclist                            | <span style="color: yellow;">●</span> Struck Parked Vehicle         |
| <span style="color: green;">●</span> Same Direction Rear              | <span style="color: brown;">●</span> Left U Turn                    |
| <span style="color: pink;">●</span> Same Direction Side               | <span style="color: black;">●</span> Backing                        |
| <span style="color: orange;">●</span> Right Angle                     | <span style="color: grey;">●</span> Encroachment                    |
| <span style="color: lightblue;">●</span> Opposite Direction (Head on) | <span style="color: olive;">●</span> Fixed Object                   |

## Intersection & Corridor Conditions

The project stakeholder committee narrowed the study's priority locations to five intersections and two corridors:

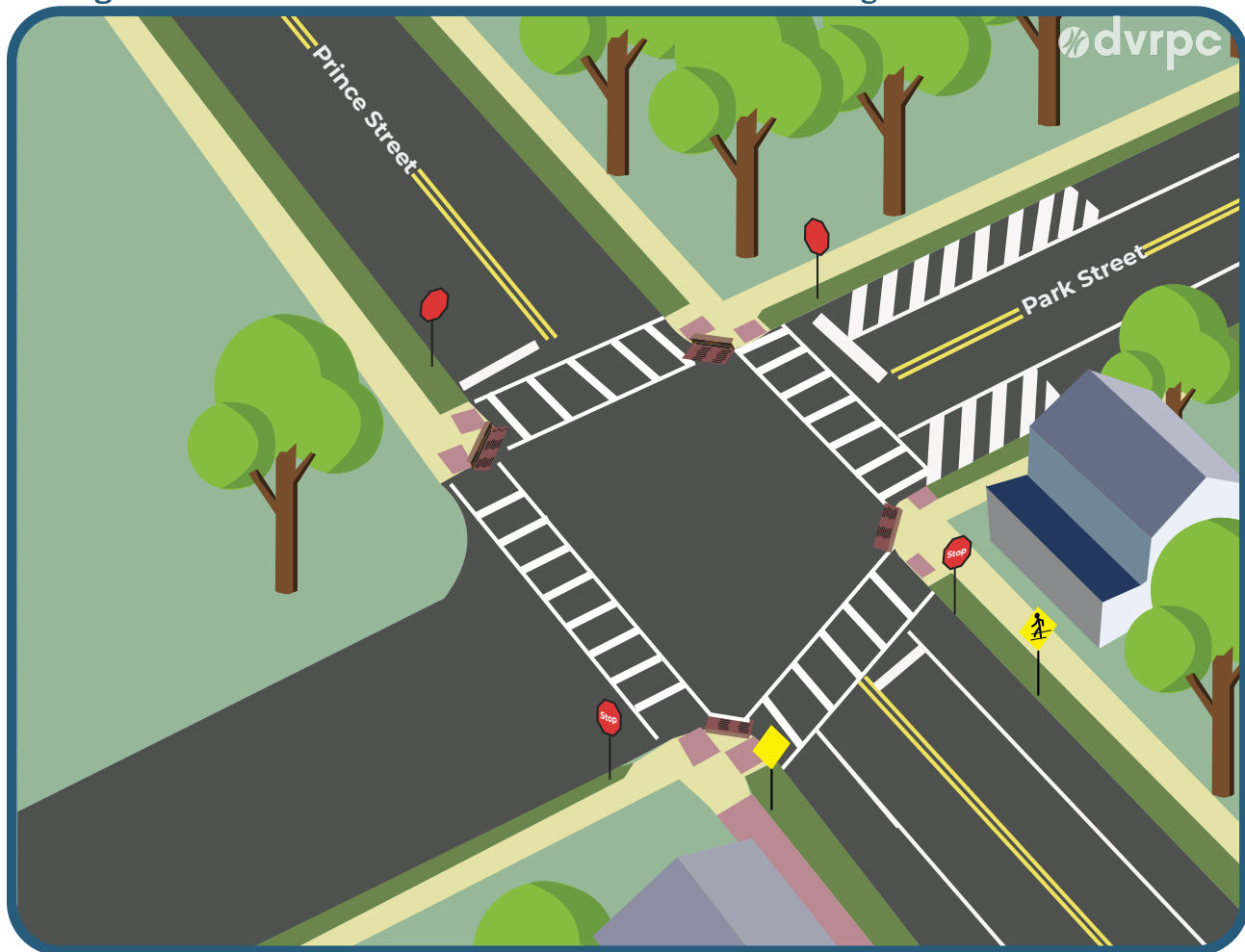
### **Intersections:**

1. Park Street & Prince Street;
2. Park Street & Farnsworth Avenue;
3. Farnsworth Avenue & Crosswicks Street;
4. Farnsworth Avenue & Burlington Street; and
5. Prince Street & Burlington Street.

### **Corridors:**

6. Prince Street, from Park Street to Burlington Street; and
7. Park Street, from the River LINE Station to Route 206.

The following pages describe the existing conditions at each location. Figures 11 through 15 illustrate the current layout of each intersection, including any stop controls, sidewalks, crosswalks, pavement markings, signage, and curb ramps. The accompanying text discusses safety issues specific to each focus area.

**Figure 11** Intersection of Park Street & Prince Street: Existing Conditions

\*Not to scale

### Park Street & Prince Street: Existing Conditions

The intersection is newly controlled by a four-way stop sign. During the course of this study, stakeholder feedback and field observations suggested that the inconsistent directionality of two-way stop signs creates confusion throughout downtown. The new all-way stop should resolve some safety issues for crossing pedestrians by slowing vehicles and preventing uncontrolled turns and through-traffic on Prince Street.

There are four striped “ladder” crosswalks at the intersection (perpendicular and parallel stripes). Crosswalks on the northern and western legs were newly painted with the addition of two new stop signs.

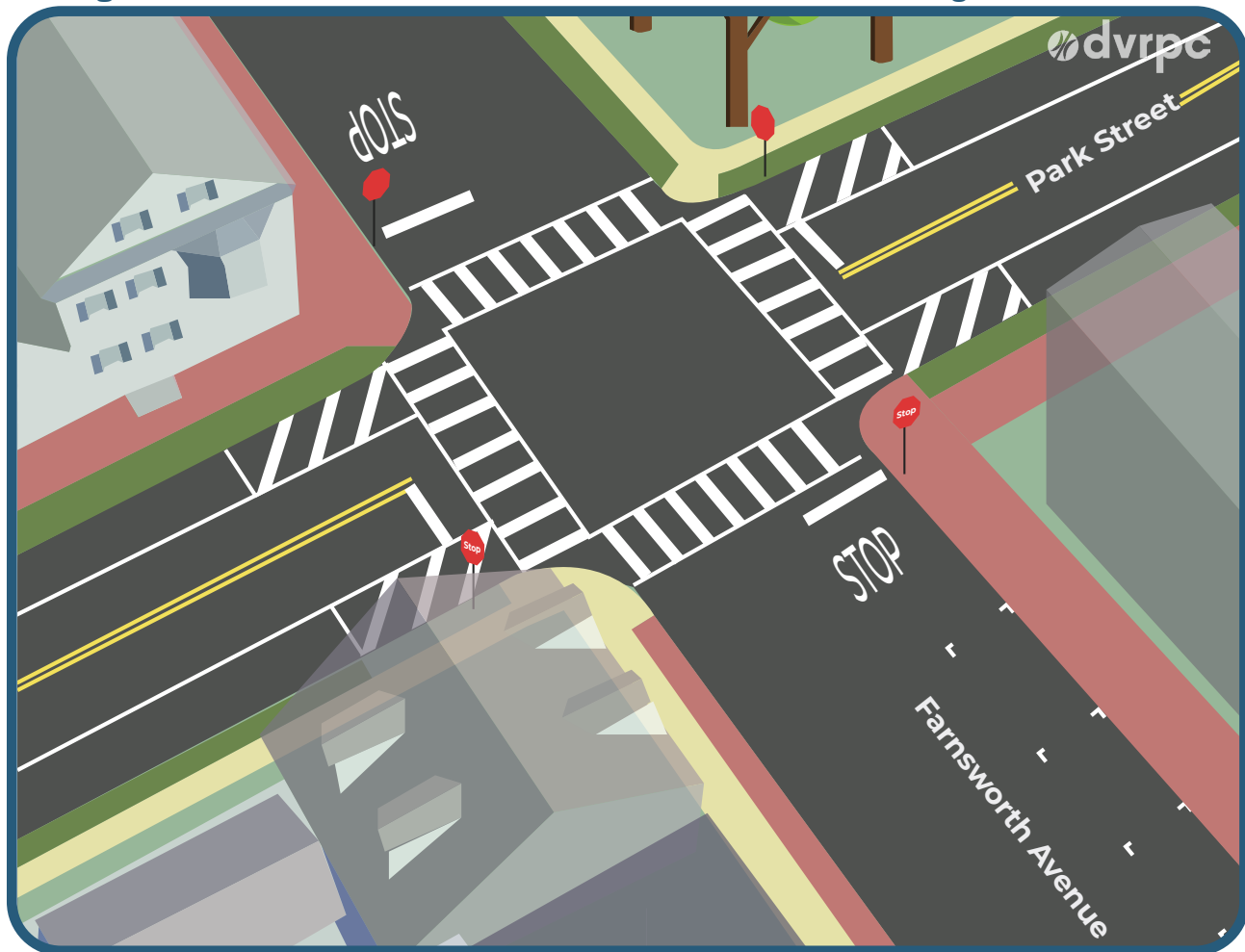
Striped shoulders prohibit parking on Park Street near the northeast and southeast corners. This clear space helps to improve the visibility of approaching vehicles and pedestrians at the intersection. However, because the shoulders are not physically protected (e.g., curbing, landscaping, delineator posts), it is still possible to illegally park on top of

them and thereby block the sight triangles.

Two curb ramps are present at each corner, although marked crosswalks are not provided on the north and west sides of the intersection. All ramps have detectable warning surfaces to provide accessibility to the visually impaired.

Stakeholders noted that large recreational vehicles use the intersection to access the riverfront and expressed a desire to maintain space for turning movements for such vehicles.

Although bicycle parking is provided at the River LINE station, no bicycle facilities are present on either street. Sidewalks on the southwest leg of Park Street, leading from the intersection to the station, are in poor condition and not of adequate width for two-way foot traffic or people using mobility devices. Street lighting is limited to a single mast on the southeast corner.

**Figure 12 Intersection of Park Street & Farnsworth Avenue - Existing Conditions**

\*Not to scale

### Park Street & Farnsworth Avenue: Existing Conditions

The intersection is newly controlled by a four-way stop. During the course of the study, stakeholder feedback and field observations suggested that the inconsistent directionality of two-way stop controls creates confusion throughout downtown. The new all-way stop should resolve some safety issues for crossing pedestrians by slowing vehicles and preventing uncontrolled turns and through-traffic on Park Street. Pavement markings on Farnsworth Avenue include "STOP" warnings and stop bars, but they are currently faded and difficult to see.

"Ladder" crosswalks (perpendicular and parallel stripes) span Park Street (CR 662) and Farnsworth Avenue. Crosshatched markings were recently added on the northern and southern legs of the intersection by Burlington County to convert "standard" crosswalks into ladder crosswalks.

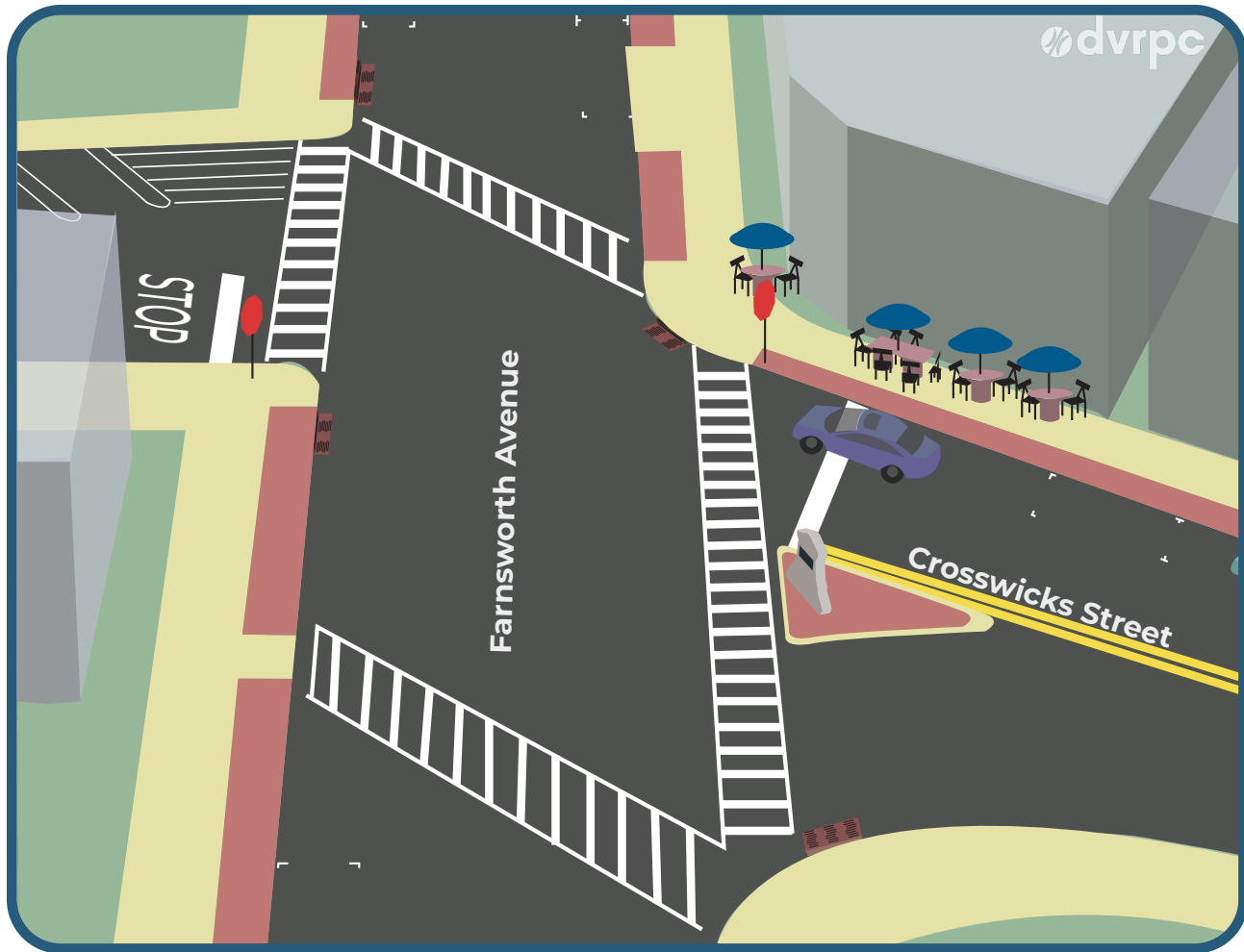
Striped shoulders delineate areas where parking is prohibited near corners on Park Street only. The shoulders are intended to improve the visibility of approaching vehicles and pedestrians. They also

allow adequate space for NJ Transit buses to turn. However, because the shoulders lack a vertical element (e.g., curbing, landscaping, delineator posts), it is still possible to illegally park on top of them and thereby block the sight triangles. Without additional striped shoulders and proper enforcement of parking regulations, the safety of the intersection is compromised.

One diagonal curb ramp is available at each corner to provide access to crosswalks in both directions. All ramps have detectable warning surfaces to provide accessibility to the visually impaired. Clear space is provided at the bottom of all curb ramps for people using mobility devices (e.g., wheelchairs) to safely wait before crossing.

Although stylized lamps line Farnsworth Avenue, street lighting at the intersection is limited to two masts, with one on each of the southern corners. DRHT signage is placed near the northern corners, guiding trail traffic to the south and west.



**Figure 13 Intersection of Crosswicks Street & Farnsworth Avenue - Existing Conditions**

\*Not to scale

### Farnsworth Avenue & Crosswicks Street: Existing Conditions

The intersection is controlled by two stop signs. Vehicles on Farnsworth Avenue have the right of way and vehicles approaching from Crosswicks and Walnut streets must stop. A monument and traffic island divide Crosswicks Street but do not function formally as a pedestrian refuge. The staggered arrangement of Crosswicks and Walnut streets makes it difficult to see and predict the behavior of other users and creates an unsafe environment for pedestrians to cross at any segment.

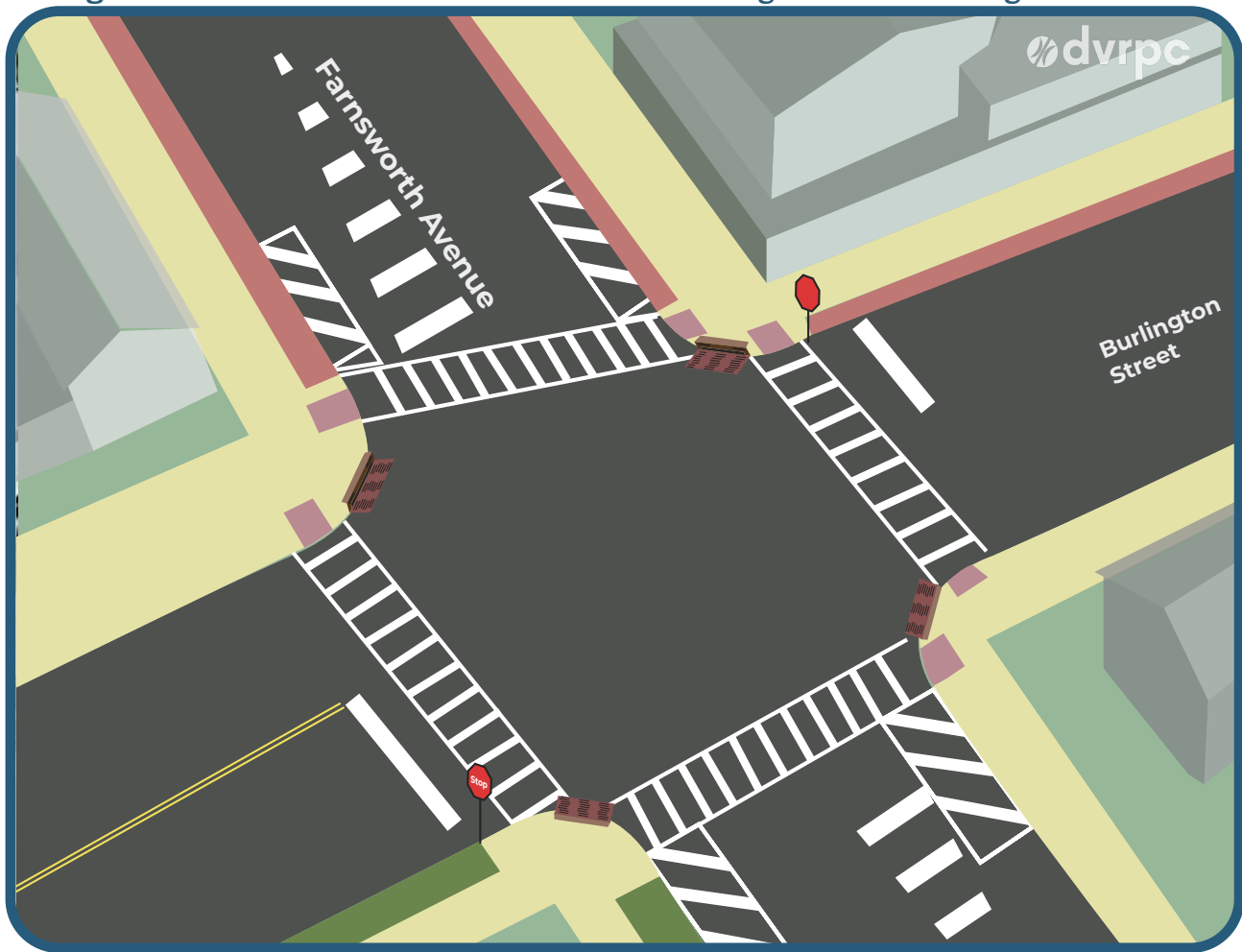
“Ladder”-style crosswalks span all legs of the intersection. The southern crosswalk is offset from Walnut Street by several feet, and both crossings of Farnsworth Avenue are diagonal rather than perpendicular. Most crosswalks are very long, which lengthens the time pedestrians must spend away from safer refuge on the sidewalk. Decreasing the width and angle of the intersection approaches can shorten crossings and reduce vehicle turning speeds.

One striped shoulder on Walnut Street prohibits

parking near the northwest corner, while all other corners have several feet of yellow-painted curbs. Regular enforcement is needed to maintain clear sight lines.

Each corner has one diagonal curb ramp to enter crosswalks in both directions. These ramps lack a detectable warning surface and no clear space is painted for the crosswalks. This creates dangerous crossing conditions for people with visual impairments or who use mobility devices or strollers. Sidewalks are also commonly used for outdoor dining, which can encroach on pedestrian space and be obstructive for people with disabilities or who use mobility devices or strollers.

DRHT signage guides bicycle traffic to Farnsworth Avenue. However, no public bicycle racks are available downtown. Furthermore, the highly active Farnsworth Avenue may not be an ideal route for bicycle through-traffic as they travel to off-road routes outside city limits.

**Figure 14** Intersection of Farnsworth Avenue & Burlington Street: Existing Conditions

### Farnsworth Avenue & Burlington Street: Existing Conditions

\*Not to scale

The intersection is controlled by a two-way stop, with vehicles on Farnsworth Avenue having the right of way and vehicles approaching from Burlington Street having to stop. Perpendicular striping was added to Farnsworth Avenue in 2019 to calm traffic speeds. Stakeholder feedback and field observations suggest that the inconsistent directionality of two-way stops creates confusion throughout downtown. In 2020, Burlington County added "CROSS TRAFFIC DOES NOT STOP" signage. Uncontrolled turns and through-traffic from Farnsworth Avenue create an unsafe environment for pedestrians trying to cross at any segment. Safety at this intersection remains a priority because it is a key walking route to the city's public schools.

"Ladder"-striped crosswalks span all four legs of the intersection, but are relatively narrow. This can indirectly favor vehicle traffic by allocating less space to pedestrians as they navigate the intersection. Wider crossings would be more visible to motorists and therefore safer for people walking. The angle of

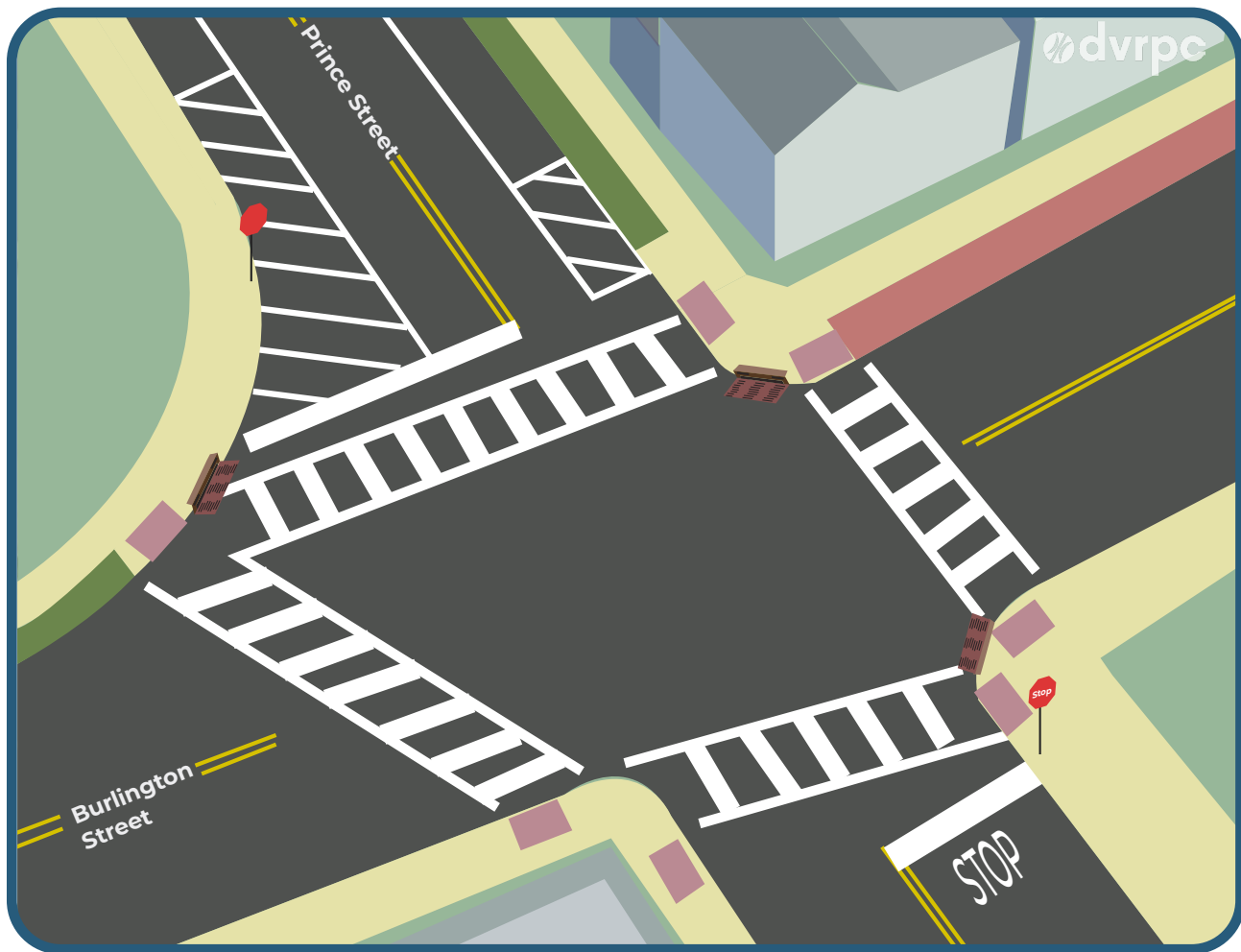
the northern crosswalk reduces visibility and requires pedestrians to travel a longer distance than if it were perpendicular to the roadway.

Striped shoulders prohibit parking near corners on Farnsworth Avenue only. However, because the shoulders lack a vertical element, it is still possible to illegally park on top of them and thereby block the sight triangles. Without additional shoulder areas and proper enforcement of parking regulations, the safety of the intersection is compromised.

Two curb ramps are present at each corner, although only those on the northeast and southeast corners have detectable warning surfaces to provide accessibility to the visually impaired.

Tree cover and overgrown shrubbery obstruct visibility at some approaches to the intersection.

DRHT signage points trail traffic to on-road segments to the south and west on Burlington Street and to the north on Farnsworth Avenue.

**Figure 15 Intersection of Prince Street & Burlington Street: Existing Conditions**

### Prince Street & Burlington Street: Existing Conditions

\*Not to scale

The intersection is controlled with a two-way stop, with vehicles on Burlington Street having the right of way and vehicles approaching from Prince Street having to stop. Pavement markings on Prince Street include a painted “STOP” warning before the stop bar, but both are faded and difficult to see. Stakeholder feedback and field observations suggest that the inconsistent directionality of two-way stops creates confusion throughout downtown. Uncontrolled turns and through-traffic on Burlington Street create an unsafe and unpredictable condition for pedestrians trying to cross any leg of the intersection because it can be unclear if a vehicle must or will stop.

"Ladder"-striped crosswalks (perpendicular and parallel stripes) span all four legs of the intersection. Because of the wide curb radius at the northwest corner, the adjacent crossings are long diagonals, which can be challenging for pedestrians. Crosswalks of a shorter length would make pedestrians more visible to motorists approaching from any direction, and reduce the amount of time pedestrians need

to spend away from safer refuge on the sidewalk. Moreover, decreasing the width and angle of the intersection can reduce vehicle turning speeds, which further increases safety for pedestrians.

Striped shoulders prohibit parking on Prince Street near the northwest and northeast corners only. These designated clear areas are intended to improve the visibility of approaching vehicles and pedestrians at the intersection. However, because the shoulders lack a vertical element (e.g., curbing, landscaping, delineator posts), it is still possible to illegally park on top of them and block the sight triangles. Without additional shoulder areas and enforcement of parking regulations, the safety of the intersection is compromised.

Two curb ramps are present at each of the northeast, southeast, and southwest corners, while the northwest corner has a single curb ramp with additional clear space to access crosswalks in either direction. All curb ramps feature detectable warning surfaces to improve navigability for the visually impaired. There is only one light post at this intersection.

## Prince Street: Existing Conditions



Source: Google Streetview (2020)

Prince Street (CR 662) runs parallel to Farnsworth Avenue, and has primarily residential uses. Accordingly, traffic volumes are much lower on Prince Street than on Farnsworth Avenue, and thus it may be a more suitable route for bicycle traffic through Bordentown. Currently, on-street segments of the DRHT are signed near the trailhead at the northern end of Farnsworth Avenue and at the intersection of Farnsworth Avenue and Burlington Street.

Vehicular traffic on Prince Street does not have to stop between Burlington and Park streets, due to lower traffic volumes on other intersecting streets. Stop signs control traffic entering or crossing Prince Street from Railroad Avenue (also known as Veterans' Way), Church Street, Walnut Street, and Federal Street. Prince Street traffic must yield to pedestrians in the crosswalks that lack stop controls at Federal, Walnut, and Church streets.

## Park Street: Existing Conditions



Source: Google Streetview (2020)

Park Street (CR 662) is an east-west corridor linking the riverfront at Bordentown Beach and the NJ Transit River LINE station to the city's eastern boundary near U.S. Route 206. It carries traffic north of downtown Bordentown and past multifamily residences, a seminary, industrial properties, and the future mixed-use Cranberry Park development. The new residences and businesses at Cranberry Park will generate increases in vehicular, bicycle, and pedestrian traffic on Park Street.

In the downtown area, Park Street has nine-foot travel lanes, slower speeds, and nine-foot-wide parallel parking lanes. Beyond downtown Bordentown, the corridor features eleven-foot travel lanes, higher speed limits, and nine-foot shoulders. Sidewalks are available between the River

LINE Station and 3rd Street, with only minor interruptions near commercial driveways. Park Street lacks any formal pedestrian or bicycle facilities between 3rd Street and Route 206. No crosswalks are marked east of 2nd Street. Because sidewalks are not continuous, pedestrians walk in the shoulders east of 2nd Street.

NJ Transit's 409 bus route carries passengers on Park Street between Farnsworth Avenue and the city limit, toward its northbound terminus in Trenton and southbound terminus in Philadelphia. Bus shelters are available to riders near the Park Apartments.

## Stakeholder Feedback

Stakeholders were engaged for feedback several times throughout the project. Many expressed concerns regarding the preservation of space for large turning vehicles, particularly along Farnsworth Avenue, where NJ Transit buses serving Route 409 regularly operate. Additionally, the fire station is accessed via Crosswicks Street, and stakeholders expressed a desire to preserve turning movements for fire vehicles. Similar concern was expressed at the intersection of Park Street and Prince Street, where large recreational vehicles carrying boats access Bordentown Beach. The beach and the station are both next to the intersection of Park and Prince, generating pedestrian and cyclist activity.

A lack of lighting throughout much of the city was noted as a concern. Bicycle infrastructure throughout the city was identified as a missing link, notably infrastructure that could connect unlinked segments of the DRHT. Many of the intersections were described as problematic and "auto-oriented" due to inconsistent yielding patterns throughout the city and large space reserved for vehicles (particularly at Farnsworth and Crosswicks).

## Intersection & Corridor Recommendations

Based on the existing conditions and issues identified by the stakeholder committee, a series of recommendations were developed and are detailed in Figures 16 through 28 in the section that follows. The pedestrian access recommendations focus on enhancing existing sidewalks and crosswalks and adding new sidewalks, crosswalks, bumpouts, and raised pedestrian crossings. New bicycle-oriented interventions for the area, including pavement markings, signage, and bicycle parking, are recommended to create clear and convenient trips for bicyclists. Tools to achieve these goals are listed in the Precedents section on the next two pages.

This chapter includes illustrations and descriptions of the five intersections and two corridors selected for safety and access improvements. For each intersection and corridor, four items are provided:

1. a lower-cost and/or temporary set of "quick build" improvements, to demonstrate treatments and features that can be evaluated and adjusted on a short-term basis;
2. a full buildout, with permanent safety elements that can be implemented through capital expenditures;
3. a strategy table highlighting improvement strategies and corresponding elements of the recommended design; and
4. a cost table, which estimates the cost and amounts for all treatments recommended in the "quick build" and full buildout renderings.

For all seven of the project's focus areas, the city and its partners can opt to pursue any combination of the recommended treatments. The design concepts are intended to provide a menu or spectrum of options that can be customized based on budget, feasibility, performance, and desirability. The "quick build" interventions are a particularly useful way for the city to test and experiment with new or enhanced safety treatments, realize benefits in the short term, and gather feedback from residents and roadway users to apply toward fully built-out designs. In some cases, a full buildout would preclude "quick build" treatments or require that they be removed and replaced.

### COVID-19 Pandemic Response through "Quick Build" Treatments

The outbreak of the Coronavirus Disease 2019 (COVID-19) in early 2020 has disrupted many of the traditional aspects of how we live, work, travel, and recreate. Although the long-term effects on transportation remain to be seen, the importance of walking and biking as a form of transportation and a way to maintain a healthy and active lifestyle has only been made more certain. Transportation officials have looked to new, innovative, and flexible street design and management tools to help keep essential workers and goods moving, provide safe access to essential businesses, and ensure that people have adequate spaces to spend time outdoors.

The recommendations provided in the following section include several concepts that improve the pedestrian and bicycle experience in Bordentown and offer the city many options to expand and enhance its public spaces. For example, modifications to the intersection of Crosswicks Street and Farnsworth Avenue would allow restaurants to continue serving customers outside, while providing additional space for pedestrians to walk, so that both groups can do so safely and in a socially distanced way.

"Quick build" treatments can be useful ways to respond promptly to the various mobility, health, social, and economic challenges that COVID-19 has presented to local residents, employees, businesses, and visitors. Improving nonmotorized travel options, enhancing access to recreational facilities, supporting outdoor dining, and modifying parking and loading arrangements should be key priorities for the city and its partners to support the community for both the duration of the pandemic and similar health crises that may strike in the future.

## PRECEDENTS

Recommended strategies are shown here for reference with a brief description of their benefits. They include low-cost interventions that can improve pedestrian and bicycle access to Bordentown Station.

### Protected Bicycle Lane: Russelville, Arkansas



Source: Alta Planning, Creative Commons by Share Alike

Protected bicycle lanes offer protection for cyclists of all abilities by creating a physical barrier between vehicle and bicycle lanes. This increases comfort while reducing conflicts.

### Green-Backed Sharrow: Philadelphia, Pennsylvania



Source: Philadelphia's Office of Transportation, Infrastructure, and Sustainability

Sharrows direct cyclists to position themselves in the center of a lane to avoid conflict with parked cars. They alert drivers that cyclists are permitted to use the full lane, and help discourage wrong-way bicycling.

### Bicyclist Wayfinding Signage: Portland, Oregon



Source: Brad Crawford, PBIC (Retrieved 2020)

Bicyclist-oriented signage directs cyclists to connecting trails, commercial centers, and other points of interest like transit centers.

### Neighborhood Greenway: Portland, Oregon



Source: Russ Roca, PBIC (Retrieved 2020)

Neighborhood greenways are streets that connect cyclists to a variety of destinations with measures to maintain low speeds and traffic volume.

### Mini-Chicane: Toronto, Ontario, Canada



Source: Dan Burden, PBIC (Retrieved 2020)

Small chicanes can be built with bicycle channels to allow for vehicular traffic calming without forcing cyclists into vehicular lanes.

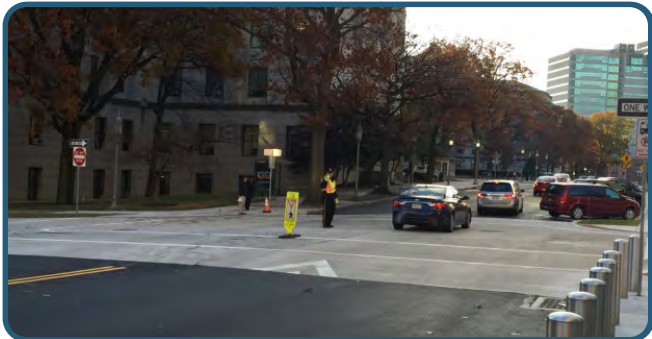
### Bicycle Parking



Source: Dan Burden, PBIC (Retrieved 2020)

Bicycle parking allows individuals to store their bicycles in convenient locations close to commercial or residential centers.

### Raised Intersection: Harrisburg, Pennsylvania



Source: Pennsylvania Department of Transportation, PBIC (Retrieved 2020)

Raised intersections create visibility while slowing traffic, increasing safety for pedestrians.

### Concrete Bumpout with GSI- Portland, Oregon



Source: Laura Sandt, PBIC (Retrieved 2020)

Concrete bumpouts slow turns and shorten crossing distances, resulting in fewer pedestrian injuries. Green stormwater infrastructure (GSI) can be added to reduce concrete and manage stormwater.

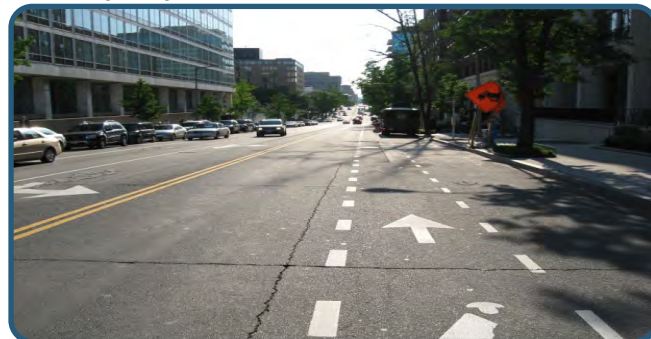
### Temporary Painted Plaza: New York, New York



Source: NS, PBIC (Retrieved 2020)

Planters and paint can be used to create temporary public plazas in excess road space.

### Advisory Bicycle Lane



Source: James Wagner, PBIC (Retrieved 2020)

Unlike conventional bike lanes, advisory bike lanes overlap with vehicular lanes in the cartway. Right of way is yielded to cyclists.

### Corner Bumpout with Planters: Washington DC



Source: DVRPC (2020)

Bumpouts extend the sidewalk into the parking lane, preventing cars from parking close to the intersection, allowing pedestrians to better see oncoming traffic.

### Continental Crosswalk



Source: Getty Images (2020)

Continental crosswalks are a high-visibility intervention that clarify right of way and prioritize pedestrians.

**Figure 16** Intersection of Park Street & Prince Street: Quick Build Treatments

\*Not to scale

### Park Street & Prince Street: Quick Build Treatments

Curb extensions wrap around all corners on both Park Street and Prince Street, using paint or epoxy material. These “bumpouts” or “bulbouts” shorten the crossing distance for pedestrians at every crosswalk and increase their visibility to approaching vehicles. The addition of color paint instead of striped shoulders increases visibility and visually sets it apart from other elements of the roadway. The dimensions of the painted bumpouts match the extent of the existing striped shoulders, representing one to three car lengths (25 to 52 feet) and the nine-foot width of the adjacent parking lane.

Planters or delineators are not included at this intersection because they are not allowed on county routes.

The recent conversion of the intersection from a two-way stop to a four-way stop should help to make crossing safer for pedestrians by reducing speeds on Prince Street and giving foot

traffic the clear right of way. The Federal Highway Administration's Manual on Uniform Traffic Control Devices (MUTCD) requires supplemental signage indicating that the intersection is an "ALL WAY" stop to be mounted below the octagonal STOP signs. Burlington County installed "ALL WAY" signage under stop signs at this intersection in September, 2020. Other temporary signage and public information can be utilized to advise users about the new four-way stop control.

An advisory bicycle lane is added on the southern approach to the intersection for cyclists riding uphill. The stripe pattern allows vehicles to use the space for passing oncoming vehicles while creating visibility and continuity for cycling routes. Green-backed sharrows guide bicycle traffic to the DRHT, which is rerouted from Farnsworth Avenue to Prince Street, and alert drivers that cyclists may use the full lane.



**Figure 17 Intersection of Park Street & Prince Street: Full Buildout**

\*Not to scale

### Park Street & Prince Street: Full Buildout

Concrete bumpouts with GSI are installed to permanently extend the curb, shorten crossing distances, and control drainage. GSI can help reduce flooding and replenish the water table without building new underground pipes. GSI can help redirect water from existing storm drains.

The existing sidewalk leading to the station on Park Street is widened to eight feet from its current width of around four to five feet. Five-foot widths are generally considered the minimum, but a wider sidewalk is more accessible and can better accommodate pedestrians walking in pairs or groups.

Street lighting is added to the western leg of Park Street and the northern leg of Prince Street to better illuminate the intersection and increase the visibility of pedestrians. Lamps with the same historic design found on Farnsworth Avenue help extend pedestrian-scale lighting from downtown to the River LINE station.

New wayfinding signage guides bicycle traffic toward the DRHT, including the newly rerouted on-street segment on Prince Street. Prince Street is the preferred route for trail and bicycle through-traffic because it has lower vehicle volumes than Farnsworth Avenue. For local bike traffic, other directional signage can be used to help cyclists navigate to downtown destinations, such as City Hall, the library, or post office, as well as bicycle parking areas.

## Park Street & Prince Street: Improvement Strategies

| IMPROVEMENT STRATEGY               | DESCRIPTION   | COST |
|------------------------------------|---|------|
| Install new bicycle infrastructure | Install advisory bicycle lane striping from beach to intersection   | LOW  |
|                                    | Add green-backed sharrows along Prince Street/DRHT  | LOW  |
|                                    | Install "Bicycles May Use Full Lane" signage  | LOW  |
| Improve pedestrian crossings       | Add lighting to increase safety of intersection   | HIGH |
|                                    | Build bumpouts, temporary (painted) and permanent (concrete), to shorten crossings and prevent cars from parking in sight triangles | HIGH |
|                                    | Construct ADA-compliant curb ramps at all crosswalks  | HIGH |
| Improve the sidewalk network       | Widen existing sidewalk between beach and intersection  | HIGH |
|                                    | Repair sidewalk along Park Street between Prince Street and Farnsworth Avenue   | LOW  |
| Add wayfinding signage             | Install directional wayfinding signage for cyclists, including signage for the DRHT   | LOW  |
|                                    | Add bicyclist-oriented wayfinding signage for cyclists  | LOW  |

### Project Phase

|  |               |
|--|---------------|
|  | Quick Build   |
|  | Full Buildout |

## Park Street & Prince Streets: Cost Estimate Table

| DESCRIPTION: QUICK BUILD PHASE* | UNIT | QTY | UNIT PRICE | APPROX. COST |
|---------------------------------|------|-----|------------|--------------|
| Painted bumpouts                | sf   | 870 | \$0.50     | \$435        |
| Advisory bicycle lane striping  | lf   | 600 | \$2        | \$1,200      |
| Painted green-backed sharrows   | ea   | 2   | \$500      | \$1,000      |

\*Stop signs, stop bars, and crosswalks were studied and added to this intersection in July, 2020 by Burlington County as improvements related to the development of Cranberry Park.

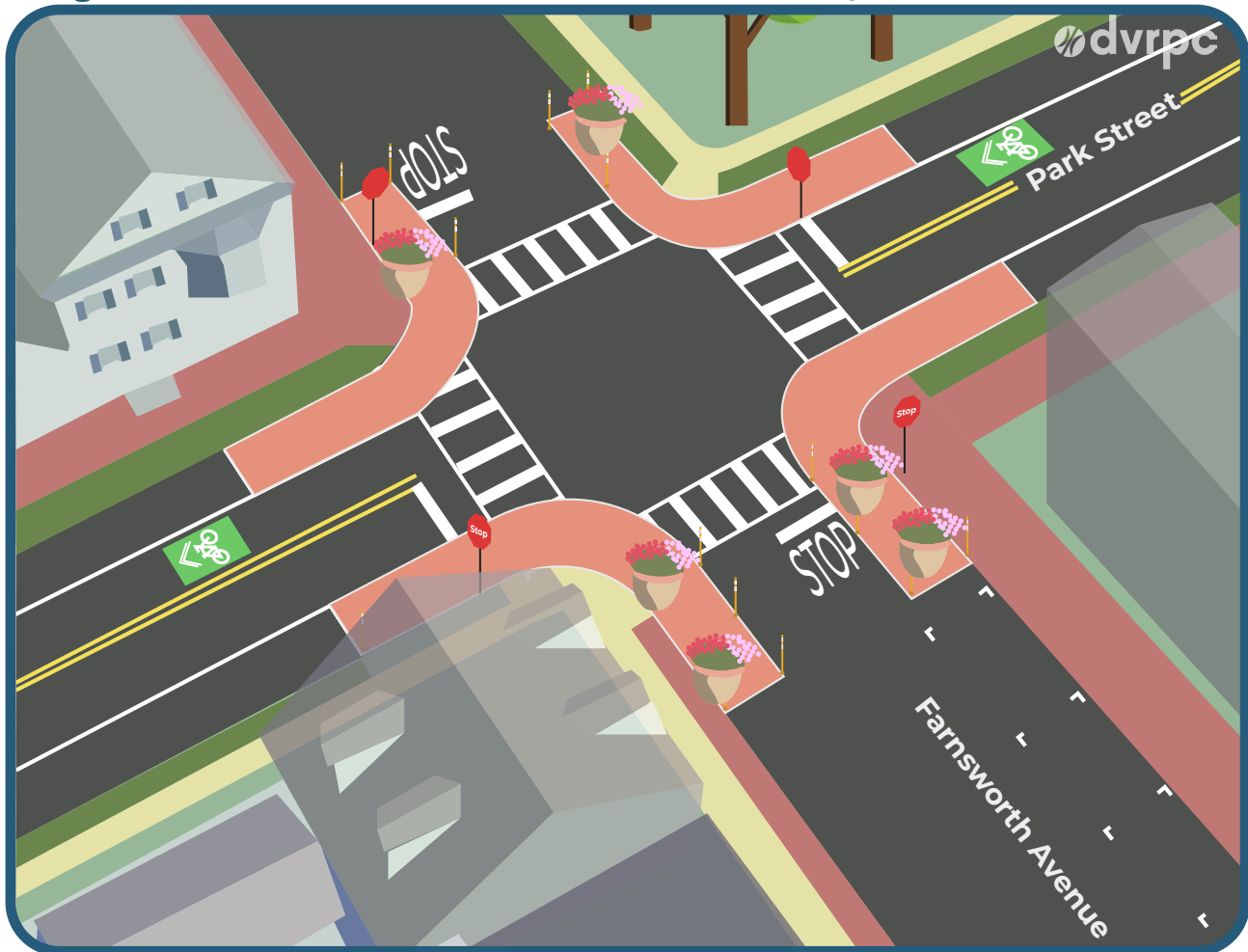
| DESCRIPTION: CAPITAL PHASE                               | UNIT     | QTY | UNIT PRICE | APPROX. COST |
|--|----------|-----|------------|--------------|
| Street lights  | ea       | 7   | \$8,000    | \$56,000     |
| Widen sidewalk by five feet on southwest leg             | sy       | 100 | \$160      | \$16,000     |
| Trail wayfinding signage + post                          | ea       | 1   | \$250      | \$250        |
| ADA ramps  | ea       | 8   | \$8,000    | \$64,000     |
| Concrete bumpouts  | sy       | 140 | \$160      | \$22,400     |
| Landscaping (GSI included but may require further study) | lump sum | 1   | \$5,000    | \$5,000      |
| Curbing  | lf       | 250 | \$100      | \$25,000     |

\*\*MPT, Mobilization, and Excavation were not included in this estimate, but typically amounts to 3–5 percent of total project cost.

### Project Sponsor, by component

|  |                    |
|--|--------------------|
|  | Burlington County  |
|  | City of Bordentown |

|                                |           |
|--------------------------------|-----------|
| ESTIMATED QUICK BUILD COST     |           |
|                                | \$2,650   |
| ESTIMATED FULL BUILDOUT COST** |           |
|                                | \$178,650 |
| ESTIMATED TOTAL COST           |           |
|                                | \$181,300 |

**Figure 18 Intersection of Park Street & Farnsworth Avenue: Quick Build Treatments**

\*Not to scale

### Park Street & Farnsworth Avenue: Quick Build Treatments

Curb extensions wrap around all corners on both Park Street and Farnsworth Avenue, using paint or epoxy material. These “bumpouts” or “bulbouts” shorten the crossing distance for pedestrians at every crosswalk and increase their visibility to approaching vehicles. The addition of color paint instead of striped shoulders increases visibility and visually sets it apart from other elements of the roadway. The dimensions of the painted bumpouts match the extent of the existing striped shoulders, representing one to two car lengths (25 feet) and the nine-foot width of the adjacent parking lane. To ensure that NJ Transit buses can still make the necessary turns, they can field test the extent of the painted curb extensions prior to the city laying the paint or epoxy.

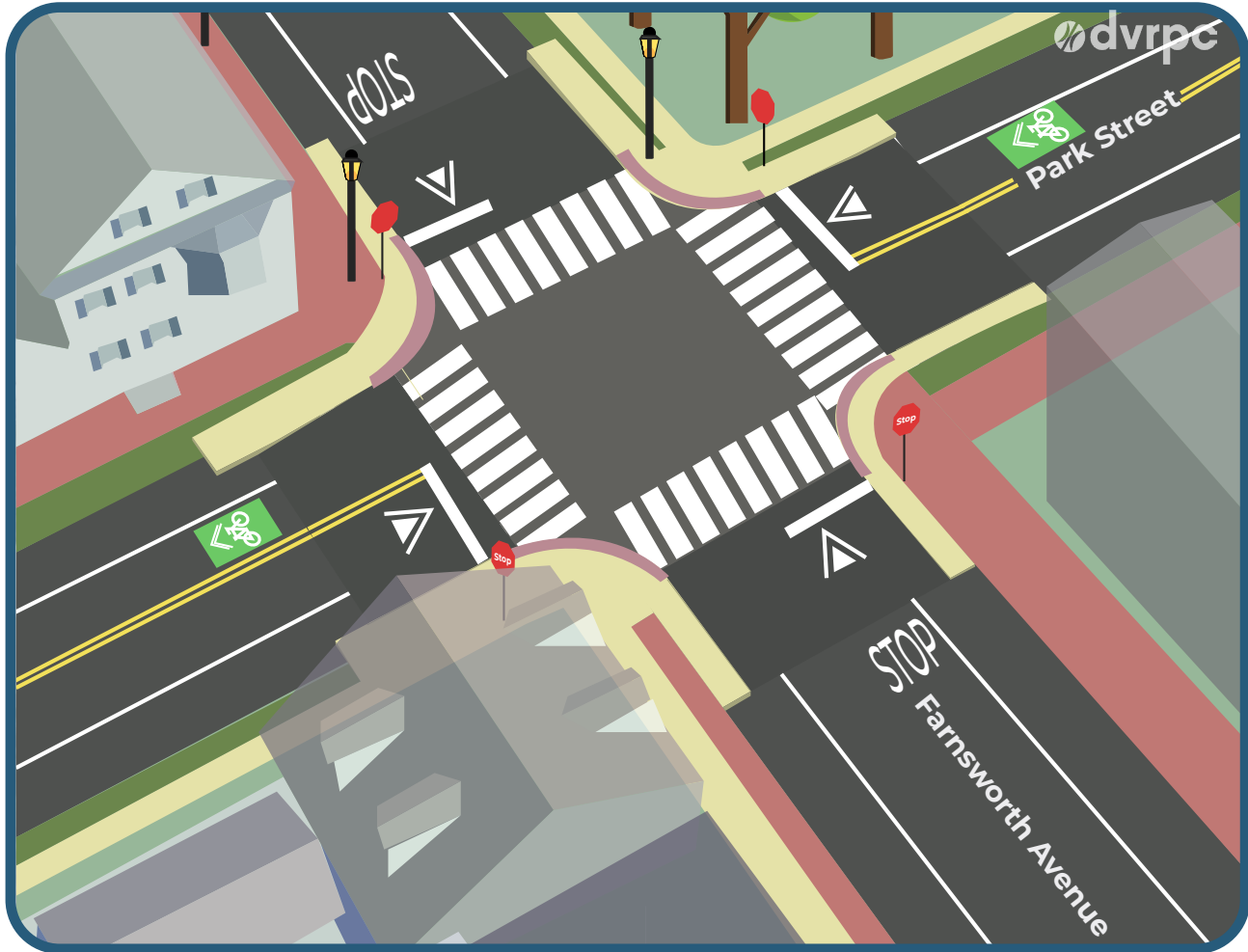
Green-backed sharrows guide bicycle traffic to the DRHT, which is rerouted to Prince Street, and alert drivers that cyclists may use the full lane.

Planters and delineators can be placed on Farnsworth Avenue to protect bumpouts from parking vehicles and other intrusions. These vertical elements can

simultaneously help maintain the clear space and contribute to sense of place. A Shared Services Agreement (SSA) may be required because the county has jurisdiction over the entire intersection, yet maintenance is the responsibility of the city.

The recent conversion of the intersection from a two-way stop to a four-way stop should help to make crossing safer for pedestrians by reducing speeds on Park Street and giving foot traffic the clear right of way. The Federal Highway Administration's MUTCD requires supplemental signage indicating that the intersection is an "ALL WAY" stop to be mounted below the octagonal STOP signs. Burlington County installed "ALL WAY" signage under stop signs at this intersection in September, 2020.

Other temporary signage and public information can be utilized to advise users about the new four-way stop control. “STOP” warnings and stop bars should be repainted on Farnsworth Avenue to more adequately alert motorists to the approaching intersection.

**Figure 19 Intersection of Park Street & Farnsworth Avenue: Full Buildout**

\*Not to scale

### Park Street & Farnsworth Avenue: Full Buildout

A raised intersection slows vehicle speeds and encourages all motorists to come to a full stop and yield to pedestrians in the crosswalks. The new intersection is at the same level as the sidewalk and includes permanent curb extensions and detector strips that wrap around the corners. The raised intersection is fully ADA-compliant and requires no curb ramps for pedestrians to access the crosswalks. Accessible curb ramps with proper slopes can be difficult to build in areas where buildings are close to the street.

Continental crosswalks with highly visible perpendicular stripes link all four corners. Pedestrians benefit from improved visibility and consistent elevation as they cross the intersection, while vehicles must slow down to climb into and cross the intersection. This design still allows for necessary turning radii by buses or recreational vehicles. The extent and exact radii of bumpouts are to be finalized during the engineering phase.

Pedestrian-scale street lighting is extended on Farnsworth Avenue north of Park Street to better illuminate the intersection and increase the visibility of crossing foot traffic.

Parallel parking lanes are repainted with a continuous stripe to maintain separation of parked cars from through-traffic and encourage motorists to park their vehicles close to the curb. Among the most common crash types in the City of Bordentown is “Hit Parked Vehicle.”

DRHT signage is updated to direct bike traffic to Prince Street, which has lower traffic volumes and would provide a more comfortable cycling experience for through-traffic. Other signs are installed to indicate bus stops for NJ Transit Route 409 on the southeast corner of Farnsworth Avenue (northbound to Trenton) and the northeast corner of Park Street (southbound to Philadelphia).

## Park Street & Farnsworth Avenue: Improvement Strategies

| IMPROVEMENT STRATEGY                      | DESCRIPTION   | COST |
|---|---|------|
| <b>Install new bicycle infrastructure</b> | Add green-backed sharrows along Prince Street/DRHT  | LOW  |
| <b>Improve pedestrian crossings</b>       | Paint four new continental crosswalks over raised intersection  | LOW  |
|   | Add lighting to increase safety of intersection   | HIGH |
|   | Build bumpouts, temporary (painted) and permanent (concrete), to shorten crossings and prevent cars from parking in sight triangles | HIGH |
|   | Build raised intersection to slow turning movements and increase visibility   | HIGH |
|   | Add two stop signs to create an all-way stop  | LOW  |
|   | Build ADA-compliant detectable warning strips at intersection   | HIGH |
| <b>Improve directional signage</b>        | Relocate DRHT signage from Farnsworth Avenue to Prince Street   | LOW  |

### Project type

|  |               |
|--|---------------|
|  | Quick Build   |
|  | Full Buildout |

## Park Street & Farnsworth Avenue: Cost Estimate Table

| DESCRIPTION: QUICK BUILD PHASE                                 | UNIT | QTY | UNIT PRICE | APPROX. COST |
|--|------|-----|------------|--------------|
| Painted green-backed sharrows                                  | ea   | 2   | \$500      | \$1,000      |
| Stop signs (implemented by Burlington County, July 2020)       | ea   | 2   | \$250      | \$500        |
| Painted stop bar (implemented by Burlington County, July 2020) | ea   | 3   | \$100      | \$300        |
| Large Planters (includes planters only)                        | ea   | 6   | \$50       | \$300        |
| Delineators  | ea   | 14  | \$200      | \$2,800      |
| Painted bumpouts   | sf   | 685 | \$1        | \$350        |

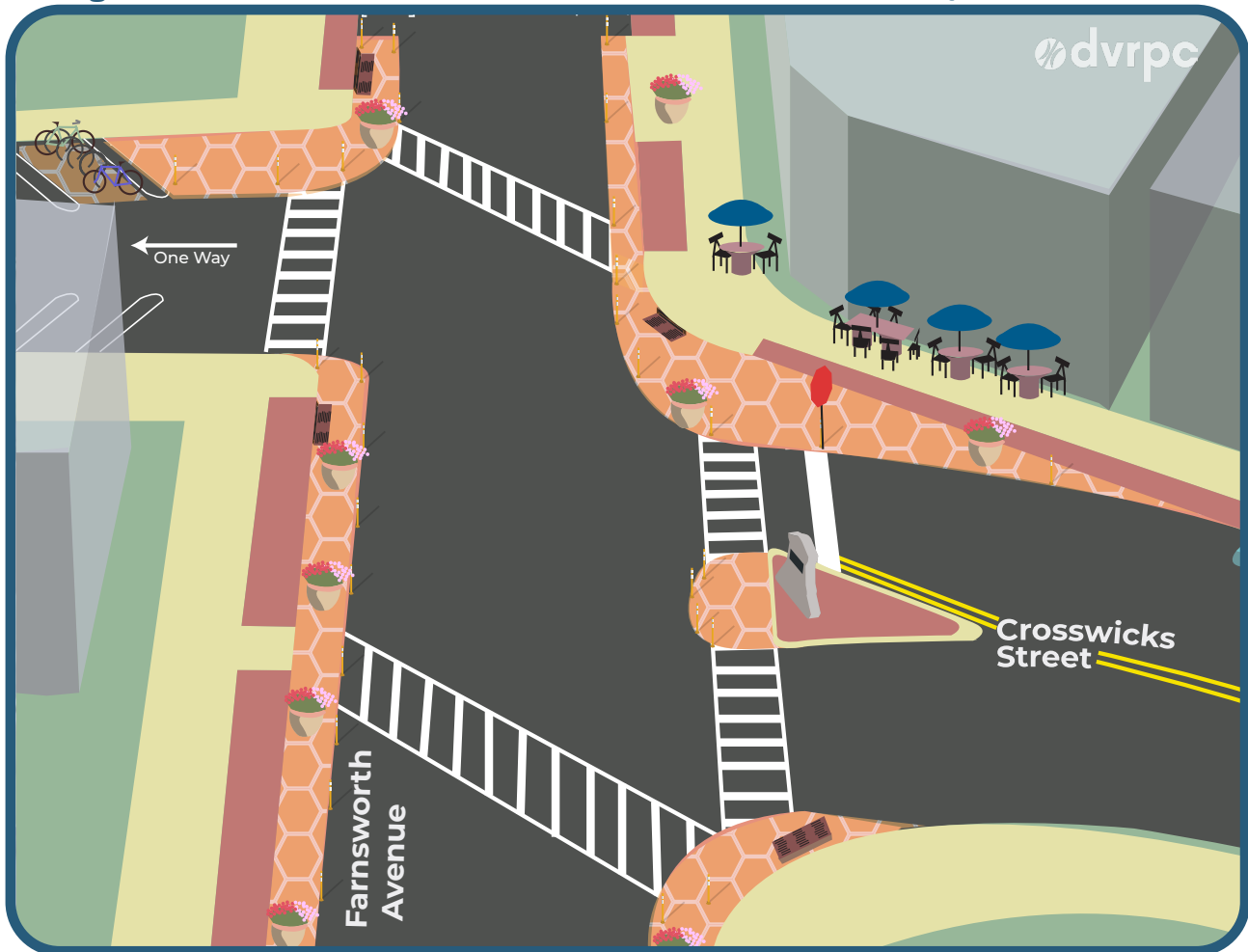
| DESCRIPTION: CAPITAL PHASE                                   | UNIT     | QTY | UNIT PRICE | APPROX. COST |
|--|----------|-----|------------|--------------|
| Street lights  | ea       | 8   | \$8,000    | \$64,000     |
| Landscaping (includes filling planters with soil and plants) | lump sum | 1   | \$5,000    | \$5,000      |
| Continental crosswalks                                       | lf       | 148 | \$15       | \$2,220      |
| Indicator paint  | ea       | 4   | \$300      | \$1,200      |
| Detectable warning surface (DWS)                             | sf       | 248 | \$50       | \$12,400     |
| Sidewalk five feet   | sy       | 76  | \$160      | \$12,160     |
| Raised intersection  | ea       | 1   | \$50,000   | \$50,000     |
| Curbing  | lf       | 280 | \$100      | \$28,000     |
| Trail wayfinding signage + post                              | ea       | 1   | \$250      | \$250        |

\*MPT, Mobilization, and Excavation were not included in this estimate, but typically amounts to 3-5 percent of total project cost.

### Project Sponsor, by component

|  |                    |
|--|--------------------|
|  | Burlington County  |
|  | City of Bordentown |

|                               |           |
|-------------------------------|-----------|
| ESTIMATED QUICK BUILD COST    |           |
|                               | \$5,250   |
| ESTIMATED FULL BUILDOUT COST* |           |
|                               | \$175,230 |
| ESTIMATED TOTAL COST          |           |
|                               | \$180,500 |

**Figure 20 Intersection of Farnsworth Avenue & Crosswicks Street: Quick Build Treatments**

\*Not to scale

### Farnsworth Avenue & Crosswicks Street: Quick Build Treatments

Painted or epoxy curb extensions are applied to all corners and the traffic island on Crosswicks Street. These “bumpouts” or “bulbouts” shorten crossing distance at every crosswalk and increase pedestrians' visibility to approaching vehicles. They also calm traffic entering the intersection and help to rationalize the open expanse of pavement in this location. Artistic designs and other placemaking features may add visual appeal. Bumpout widths mostly match that of the adjacent eight-foot parking lanes, although the northeast corner is expanded significantly, giving adequate space for both outdoor dining and passing pedestrians. Here, the existing 25-foot space between the curb and the northern edge of the monument pedestal is narrowed to 15 feet, adding 10 feet of expanded pedestrian space while leaving adequate space for turning vehicles.

Planters and delineators can be installed and maintained by the city. These help to maintain the clear space and contribute to sense of place. An SSA may be required with the county because

Crosswicks Street is a county route.

A pilot project could test the feasibility of converting Walnut Street to one-way, westbound. This change would eliminate turns and through movements from eastbound traffic at the intersection, which can be difficult to see under existing conditions. One-way routing thus reduces conflicts between vehicles, and between vehicles and pedestrians. Removing the eastbound lane may allow for the conversion of parallel parking spaces to angled parking spaces on the south side of Walnut Street, which would increase parking capacity downtown. Piloting this new layout would also allow the public to provide feedback.

Two parking spaces are reallocated on Crosswicks Street nearest to the northeast corner, although new angled spaces on Walnut Street could generate a net gain in parking capacity. An existing or new angled space can be converted to a bicycle parking corral, fitting as many as 10 parked bikes.

**Figure 21** Intersection of Farnsworth Avenue & Crosswicks Street: Full Buildout Option 1

\*Not to scale

### Farnsworth Avenue & Crosswicks Street: Full Buildout Option 1

Concrete curb extensions with landscaping and ADA-compliant ramps and detector strips are added at all corners. Pedestrians benefit from improved visibility and shorter crossing distances as they navigate the intersection. Perpendicular curb ramps replace the existing diagonal ramps. This arrangement keeps pedestrians with disabilities out of active traffic lanes and provides better continuity for people with vision impairments who use curb slopes as a cue to crossings.

A permanent pedestrian plaza is constructed to further extend the northeast corner. The monument is relocated and can be more visible and prominent in this enlarged public space without blocking the sidewalk, which is widened to better accommodate outdoor dining and passing foot traffic. The narrowing of Crosswicks Street at the intersection maintains adequate space for turning emergency vehicles from the nearby Consolidated Fire Association station while encouraging slower turns by all vehicles. Slower speeds make the road safer for all users, and

expanded pedestrian space allows adequate room for pedestrians, individuals using mobility devices or strollers, and outdoor seating for businesses.

Crosswalks are repainted with a continental design (perpendicular stripes) and at perpendicular angles, which combined with curb extensions allow for much shorter crossing distances.

Parallel parking lanes are repainted with a continuous stripe to maintain separation of parked cars from through-traffic and encourage motorists to park their vehicles close to the curb. Among the most common crash types in the City of Bordentown is “Hit Parked Vehicle.”

Wayfinding signage near this intersection can guide bicycles to the trail, the new bike parking corral, the River LINE station, and other destinations in Bordentown.

## Farnsworth Avenue & Crosswicks Street: Improvement Strategies

| IMPROVEMENT STRATEGY                    | DESCRIPTION   | COST |
|---|---|------|
| <b>Provide bicycle parking downtown</b> | Install bicycle parking   | LOW  |
| <b>Improve pedestrian crossings</b>     | Paint four new continental crosswalks   | LOW  |
|   | Build bumpouts, temporary (painted) and permanent (concrete), to shorten crossings and prevent cars from parking in sight triangles | HIGH |
|   | Build ADA-compliant curb ramps at all crosswalks  | HIGH |
| <b>Improve the sidewalk network</b>     | Widen sidewalk around outdoor dining areas  | HIGH |
| <b>Expand and improve public space</b>  | Relocate monument*  | *    |
|   | Paint pedestrian plaza, finalize plaza with concrete  | HIGH |

\*Further study will need to be conducted to determine cost of relocation.

### Project type

|  |               |
|--|---------------|
|  | Quick Build   |
|  | Full Buildout |

## Farnsworth Avenue & Crosswicks Street Option 1: Cost Estimate Table

| DESCRIPTION: QUICK BUILD PHASE    | UNIT | QTY  | UNIT PRICE | APPROX. COST |
|-----------------------------------|------|------|------------|--------------|
| Planters (includes planters only) | ea   | 8    | \$50       | \$400        |
| Delineators                       | ea   | 29   | \$200      | \$5,800      |
| Painted bumpouts                  | sf   | 1300 | \$0.50     | \$650        |
| Bicycle parking (ring style)      | ea   | 10   | \$200      | \$2000       |
| "One-way" sign                    | ea   | 1    | \$250      | \$250        |
| "One-way" paint                   | ea   | 1    | \$500      | \$500        |

| DESCRIPTION: CAPITAL PHASE                                   | UNIT     | QTY | UNIT PRICE | APPROX. COST |
|--|----------|-----|------------|--------------|
| Remove one stop sign   | ea       | 1   | \$40       | \$40         |
| Sidewalk and bumpouts (including plaza space)                | sy       | 210 | \$160      | \$33,600     |
| ADA ramps  | ea       | 8   | \$8,000    | \$64,000     |
| Continental crosswalks                                       | lf       | 125 | \$15       | \$1,875      |
| Center line striping   | lf       | 40  | \$2        | \$80         |
| Landscaping (includes filling planters with soil and plants) | lump sum | 1   | \$5,000    | \$5,000      |
| Curbing  | lf       | 310 | \$100      | \$31,000     |

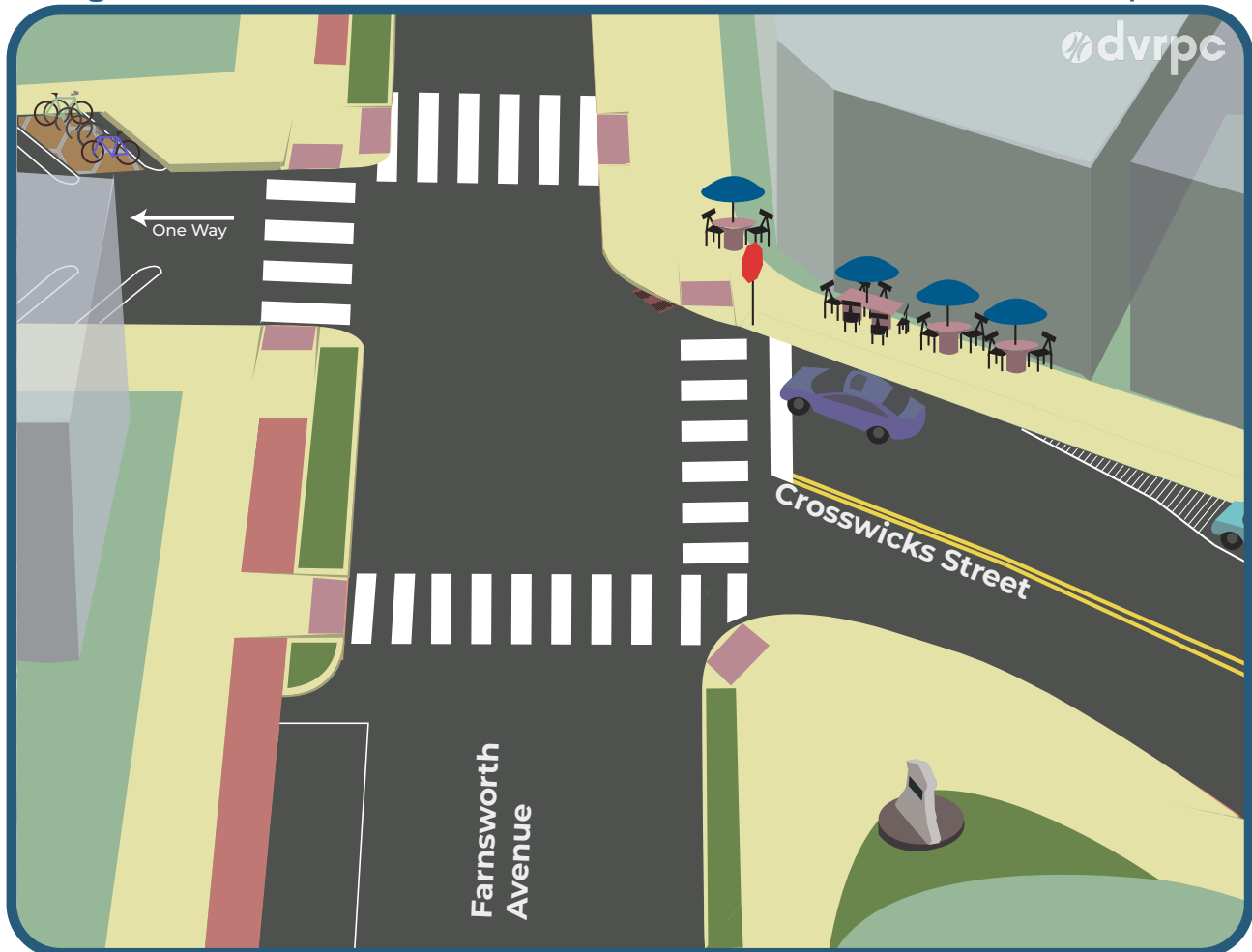
\*MPT, Mobilization, and Excavation were not included in this estimate, but typically amounts to 3-5 percent of total project cost.

### Project Sponsor, by component

|  |                    |
|--|--------------------|
|  | City of Bordentown |
|--|--------------------|

|                               |           |
|-------------------------------|-----------|
| ESTIMATED QUICK BUILD COST    |           |
|                               | \$9,600   |
| ESTIMATED FULL BUILDOUT COST* |           |
|                               | \$136,000 |
| ESTIMATED TOTAL COST          |           |
|                               | \$145,200 |



**Figure 22 Intersection of Farnsworth Avenue & Crosswicks Street: Full Buildout Option 2**

\*Not to scale

### Farnsworth Avenue & Crosswicks Street: Full Buildout Option 2

Concrete curb extensions with landscaping and ADA-compliant ramps and detector strips are added at all corners. Pedestrians benefit from improved visibility and shorter crossing distances as they navigate the intersection. Perpendicular curb ramps replace the existing diagonal ramps at all but the southeast corner. This arrangement keeps pedestrians with disabilities out of active traffic lanes and provides better continuity for people with vision impairments who use curb slopes as a cue to crossings.

A permanent pedestrian plaza is constructed to extend the southeast corner. The monument is relocated and can be more visible and prominent in this enlarged public space. The city could explore the possibility of acquiring the privately owned, but mostly undeveloped, land at this corner to further expand the public green space in the center of downtown. The narrowing of Crosswicks Street at the intersection still allows adequate space for turning emergency vehicles from the nearby Consolidated Fire Association station while encouraging slower turns by all vehicles. Slower

speeds make the road safer for all users, and expanded pedestrian space allows adequate room for pedestrians, individuals using mobility devices or strollers, and outdoor seating for businesses.

Crosswalks are repainted with a continental design (perpendicular stripes) and at perpendicular angles, which combined with curb extensions allow for much shorter crossing distances.

Parallel parking lanes are repainted with a continuous stripe to maintain separation of parked cars from through-traffic and encourage motorists to park their vehicles close to the curb. Among the most common crash types in the City of Bordentown is "Hit Parked Vehicle."

Wayfinding signage near this intersection can guide bicycles to the trail, the new bike parking corral, the River LINE station, and other destinations in Bordentown.

## Farnsworth Avenue & Crosswicks Street: Improvement Strategies

| IMPROVEMENT STRATEGY               | DESCRIPTION   | COST |
|------------------------------------|---|------|
| Install new bicycle infrastructure | Install bicycle parking   | LOW  |
|                                    | Paint four new continental crosswalks   | LOW  |
| Improve pedestrian crossings       | Build bumpouts, temporary (painted) and permanent (concrete), to shorten crossings and prevent cars from parking in sight triangles | HIGH |
|                                    | Build ADA-compliant curb ramps at all crosswalks  | HIGH |
|                                    | Widen sidewalk around south of intersection   | HIGH |
| Improve the sidewalk network       | Relocate monument*  | *    |
|                                    | Create pedestrian plaza   | LOW  |

\*Further study will need to be conducted to determine cost of relocation.

### Project type

|  |               |
|--|---------------|
|  | Quick Build   |
|  | Full Buildout |

## Farnsworth Avenue & Crosswicks Street Option 2: Cost Estimate Table

| DESCRIPTION: QUICK BUILD PHASE    | UNIT | QTY  | UNIT PRICE | APPROX. COST |
|-----------------------------------|------|------|------------|--------------|
| Planters (includes planters only) | ea   | 8    | \$50       | \$400        |
| Delineators                       | ea   | 29   | \$200      | \$5,800      |
| Painted bumpouts                  | sf   | 1300 | \$0.50     | \$650        |
| Bicycle Parking (ring style)      | ea   | 10   | \$200      | \$2000       |
| "One-way" sign                    | ea   | 1    | \$250      | \$250        |
| "One-way" paint                   | ea   | 1    | \$500      | \$500        |

| DESCRIPTION: CAPITAL PHASE                                   | UNIT     | QTY | UNIT PRICE | APPROX. COST |
|--|----------|-----|------------|--------------|
| Remove one stop sign   | ea       | 1   | \$40       | \$40         |
| Continental crosswalks                                       | lf       | 170 | \$15       | \$2,550      |
| ADA ramps  | ea       | 7   | \$8,000    | \$56,000     |
| Center line striping   | lf       | 45  | \$2        | \$90         |
| Sidewalk and bumpouts (including plaza space)                | sy       | 190 | \$160      | \$30,400     |
| Landscaping (includes filling planters with soil and plants) | lump sum | 1   | \$5,000    | \$5,000      |
| Curbing  | lf       | 90  | \$100      | \$9,000      |

\*MPT, Mobilization, and Excavation were not included in this estimate, but typically amounts to 3-5 percent of total project cost.

### Project Sponsor, by component

|  |                    |
|--|--------------------|
|  | City of Bordentown |
|--|--------------------|

|                               |           |
|-------------------------------|-----------|
| ESTIMATED QUICK BUILD COST    | \$9,300   |
| ESTIMATED FULL BUILDOUT COST* | \$103,100 |
| ESTIMATED TOTAL COST          | \$112,400 |

**Figure 23 Intersection of Farnsworth Avenue & Burlington Street: Quick Build Treatments**

\*Not to scale

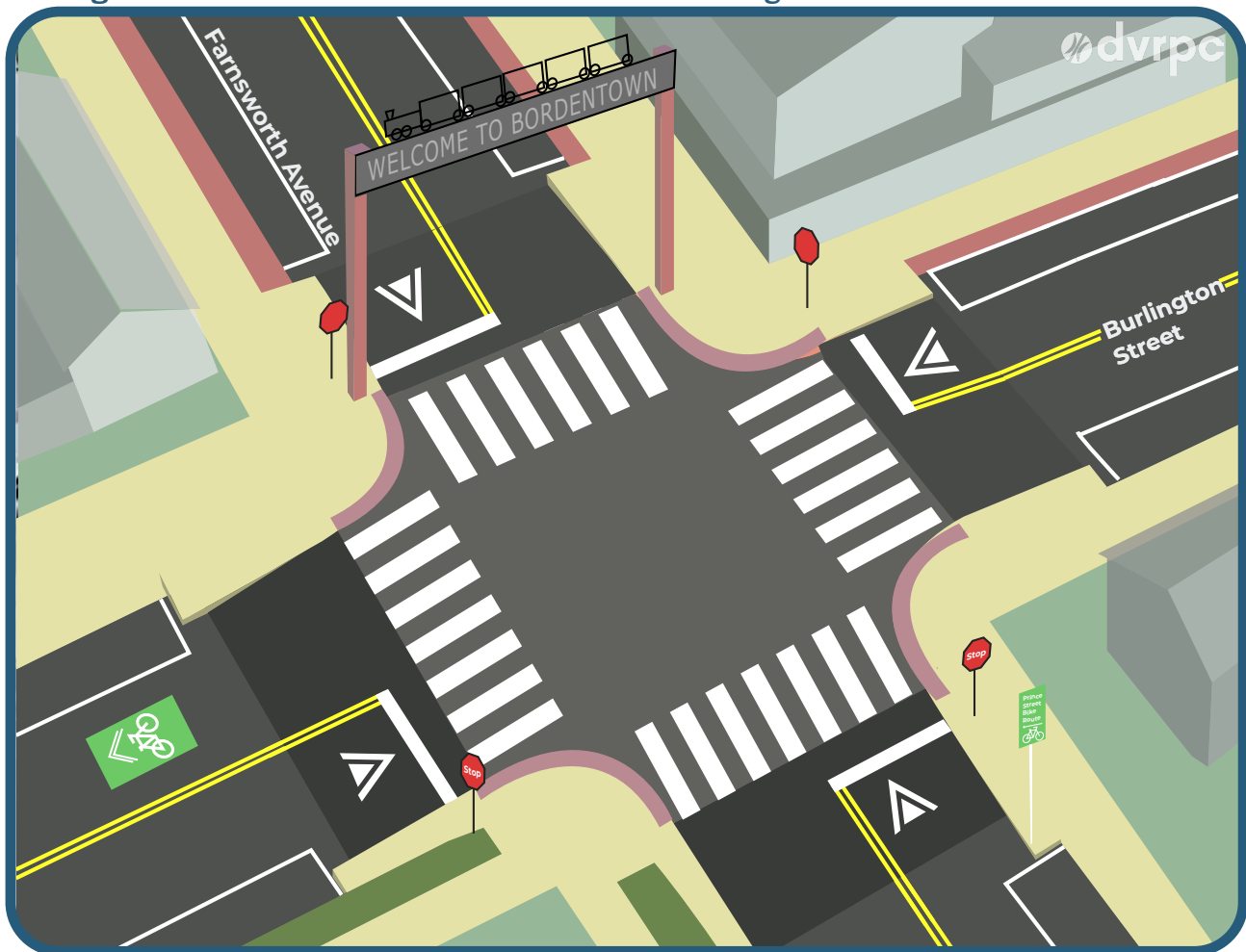
### Farnsworth Avenue & Burlington Street: Quick Build Treatments

Curb extensions wrap around all corners on both Burlington Street and Farnsworth Avenue, using paint or epoxy material. These “bumpouts” or “bulbouts” shorten the crossing distance for pedestrians at every crosswalk and increase their visibility to approaching vehicles. The addition of color paint instead of striped shoulders increases visibility and visually sets it apart from other elements of the roadway. The dimensions of the painted bumpouts match the extent of the existing striped shoulders, representing one to two car lengths (13 to 23 feet) and the width of the adjacent parking lane (eight feet).

Planters and delineators can be installed and maintained by the city. These vertical treatments can simultaneously help to maintain the clear space and contribute to sense of place.

Green-backed sharrows guide bicycle traffic to the DRHT and alert drivers that cyclists may use the full lane.

Trimming of tree cover and shrubbery, with regular maintenance of vegetation in the vicinity of the intersection, would also help improve visibility for all users.

**Figure 24 Intersection of Farnsworth Avenue & Burlington Street: Full Buildout**

\*Not to scale

### Farnsworth Avenue & Burlington Street: Full Buildout

The intersection stop control is converted from two-way to four-way. An all-way stop at this highly trafficked intersection allows pedestrians to cross more comfortably and can reduce crashes by providing more predictable movements and reducing speeds. Public information should be distributed about the change in traffic control.

A raised intersection creates a safe, slow-speed crossing and encourages motorists to yield to pedestrians at all crosswalks. The new intersection is flush with the sidewalk and includes permanent concrete curb extensions and detector strips that wrap around the corners. The raised intersection is fully ADA compliant and requires no curb ramps for pedestrians to access the crosswalks. Accessible curb ramps with comfortable slopes can be difficult to build when buildings are close to the street.

Continental crosswalks with highly visible perpendicular stripes link all four corners. Pedestrians benefit from improved visibility and consistent elevation as they cross the intersection,

while vehicles must slow down to climb into and cross the intersection. This design still allows for wide turning movements by buses.

An overhead gateway treatment enhances the sense of place by welcoming northbound traffic to Bordentown. By signifying the entrance to the downtown area, motorists are encouraged to slow down as they approach segments with heightened pedestrian and bicycle activity.

Parallel parking lanes are repainted with a continuous stripe to maintain separation from through-traffic and encourage motorists to park their vehicles close to the curb. Among the most common crash types in the City of Bordentown is "Hit Parked Vehicle."

DRHT signage is removed from Farnsworth Avenue and relocated to Prince Street. Along with sharrows, updated directional signage guides bicycles to on-road trail segments to the west on Burlington and Prince streets.

## Farnsworth Avenue & Burlington Street: Improvement Strategies

| IMPROVEMENT STRATEGY               | DESCRIPTION   | COST |
|------------------------------------|---|------|
| Install new bicycle infrastructure | Add green-backed sharrows directing cyclists to trail   | LOW  |
|                                    | Paint four new continental crosswalks over raised intersection  | LOW  |
| Improve pedestrian crossings       | Build bumpouts, temporary (painted) and permanent (concrete), to shorten crossings and prevent cars from parking in sight triangles | HIGH |
|                                    | Add two stop signs to create an all-way stop  | LOW  |
|                                    | Build raised intersection to slow vehicles and raise pedestrian visibility  | HIGH |
|                                    | Build ADA-compliant detectable warning surface leading into raised intersection   | HIGH |
| Improve the sidewalk network       | Repair sidewalk where uneven  | LOW  |
| Add wayfinding signage             | Install "gateway treatment"   | HIGH |
|                                    | Install directional wayfinding signage to the trail for cyclists  | LOW  |

Project type

|  |               |
|--|---------------|
|  | Quick Build   |
|  | Full Buildout |

## Farnsworth Avenue & Burlington Street: Cost Estimate Table

| DESCRIPTION: QUICK BUILD PHASE    | UNIT | QTY | UNIT PRICE | APPROX. COST |
|-----------------------------------|------|-----|------------|--------------|
| Planters (includes planters only) | ea   | 10  | \$50       | \$500        |
| Delineators                       | ea   | 32  | \$200      | \$6,400      |
| Painted bumpouts                  | sf   | 610 | \$0.50     | \$305        |
| Painted green-backed sharrows     | ea   | 1   | \$500      | \$500        |

| DESCRIPTION: CAPITAL PHASE                                   | UNIT  | QTY | UNIT PRICE | APPROX. COST |
|--|---|-----|------------|--------------|
| Landscaping (includes filling planters with soil and plants) | lump sum  | 1   | \$5,000    | \$5,000      |
| Stop signs   | ea  | 2   | \$250      | \$500        |
| Stop Bars  | ea  | 4   | \$100      | \$400        |
| Continental crosswalks                                       | lf  | 100 | \$15       | \$1,500      |
| Indicator paint (arrows)                                     | ea  | 4   | \$300      | \$1,200      |
| Detectable warning surface (DWS)                             | sf  | 250 | \$50       | \$12,500     |
| Sidewalk 5 ft  | sy  | 70  | \$160      | \$11,200     |
| Raised intersection  | ea  | 1   | \$50,000   | \$50,000     |
| Bicycle wayfinding sign                                      | ea  | 1   | \$250      | \$250        |
| Gateway sign above northern leg of intersection              | depends on materials, placement, etc.; further study needed |     |            |              |
| Curbing  | lf  | 240 | \$100      | \$24,000     |

\*MPT, Mobilization, and Excavation were not included in this estimate, but typically amounts to 3–5 percent of total project cost.

Project Sponsor, by component

|  |                    |
|--|--------------------|
|  | City of Bordentown |
|--|--------------------|

|                               |           |
|-------------------------------|-----------|
| ESTIMATED QUICK BUILD COST    |           |
|                               | \$7,750   |
| ESTIMATED FULL BUILDOUT COST* |           |
|                               | \$10,550  |
| ESTIMATED TOTAL COST          |           |
|                               | \$114,300 |

**Figure 25 Intersection of Prince Street & Burlington Street: Quick Build Treatments**

\*Not to scale

### Prince Street & Burlington Street: Quick Build Treatments

Curb extensions wrap around all corners on both Burlington and Prince streets, with the option to use paint or epoxy material. These “bumpouts” or “bulbouts” shorten the crossing distance for pedestrians at every crosswalk and increase their visibility to approaching vehicles. The addition of color paint instead of striped shoulders increases visibility and visually sets it apart from other elements of the roadway. The dimensions of the painted bumpouts generally match the extent of the existing striped shoulders, representing one to two car lengths (25 feet) and the eight-foot width of the adjacent parking lane. The northwest corner is extended significantly to reduce the curb radius and slow turning movements. Roughly 1,100 square feet of pavement would be covered by the bumpout on that corner.

Neither planters nor delineators are used here since they are not allowed on county roads.

“STOP” warnings are repainted on Prince Street to more adequately alert motorists to the approaching intersection.

New signage should be installed on the approaches from Prince Street to indicate “Cross Traffic Does Not Stop.” This can clear up confusion about how to safely navigate the intersection from the northern and southern legs, and encourage motorists to properly yield to traffic on Burlington Street.

Green-backed sharrows encourage sharing the roadway and direct bicycle traffic to the west on Burlington Street, where on-road segments of the DRHT continue through neighboring communities; and to the north on Prince Street, from which off-road trail segments can be accessed via the trailhead at the northern end of Farnsworth Avenue.

Figure 26 Intersection of Prince Street &amp; Burlington Street: Full Buildout



\*Not to scale

### Prince Street & Burlington Street: Full Buildout

The intersection stop control is converted from two-way to four-way. An all-way stop can reduce crashes by providing more predictable movements and reducing speeds. Pedestrians can cross more comfortably knowing that vehicles must stop at all approaches. Public information should be distributed about the forthcoming change in traffic control.

Concrete bumpouts with green stormwater infrastructure are installed to permanently extend the curb, shorten crossing distances, and slow and filter drainage. Managing stormwater in an environmentally friendly way is especially important at this intersection because of its proximity to Black Creek. Two ADA-compliant curb ramps are installed on each corner. The existing diagonal crosswalk on the west leg of the intersection needs to be ground out of the pavement and repainted to be perpendicular with the roadway.

Parking lanes are painted to the east of the intersection on Burlington Street and to the south of the intersection on Prince Street, with a continuous stripe to maintain separation of parked cars from through-traffic and encourage motorists to park their vehicles close to the curb. Among the most common crash types in the City of Bordentown is “Hit Parked Vehicle.”

DRHT signage is relocated to Prince Street from Farnsworth Avenue. Updated wayfinding signage near this intersection can guide bicycles to the on-road trail segments, the River LINE station, and other destinations in Bordentown.

Pedestrian-scale street lighting is added to all four corners of the intersection to better illuminate the intersection and increase the visibility of crossing foot traffic.

## Prince Street & Burlington Street: Improvement Strategies

| IMPROVEMENT STRATEGY               | DESCRIPTION   | COST |
|------------------------------------|---|------|
| Install new bicycle infrastructure | Add green-backed sharrows along DRHT  | LOW  |
|                                    | Paint four new continental crosswalks   | LOW  |
| Improve pedestrian crossings       | Build bumpouts, temporary (painted) and permanent (concrete), to shorten crossings and prevent cars from parking in sight triangles | HIGH |
|                                    | Add two stop signs to create an all-way stop  | LOW  |
|                                    | Build ADA-compliant curb ramps at all crosswalks  | HIGH |
|                                    | Install directional wayfinding signage for cyclists, including signage for the DRHT   | LOW  |

### Project type

|  |               |
|--|---------------|
|  | Quick Build   |
|  | Full Buildout |

## Prince Street & Burlington Street: Cost Estimate Table

| DESCRIPTION: QUICK BUILD PHASE | UNIT | QTY   | UNIT PRICE | APPROX. COST |
|--------------------------------|------|-------|------------|--------------|
| Painted green-backed sharrows  | ea   | 2     | \$500      | \$1,000      |
| Painted bumpouts               | sf   | 1,750 | \$0.50     | \$875        |

| DESCRIPTION: CAPITAL PHASE                               | UNIT     | QTY | UNIT PRICE | APPROX. COST |
|--|----------|-----|------------|--------------|
| Stop signs   | ea       | 2   | \$250      | \$500        |
| Stop bars  | ea       | 2   | \$100      | \$200        |
| Continental crosswalks                                   | lf       | 120 | \$15       | \$1,800      |
| Landscaping (GSI included but may require further study) | lump sum | 1   | \$5,000    | \$5,000      |
| Trail wayfinding signage + post                          | ea       | 1   | \$250      | \$250        |
| ADA ramps  | ea       | 8   | \$8,000    | \$64,000     |
| Sidewalk and bumpouts                                    | sy       | 200 | \$160      | \$32,000     |
| Curbing  | lf       | 320 | \$100      | \$32,000     |
| Street lights  | ea       | 4   | \$8,000    | \$32,000     |

\*MPT, Mobilization, and Excavation were not included in this estimate, but typically amounts to 3-5 percent of total project cost.

### Project Sponsor, by component

|  |                    |
|--|--------------------|
|  | Burlington County  |
|  | City of Bordentown |

|                               |           |
|-------------------------------|-----------|
| ESTIMATED QUICK BUILD COST    |           |
|                               | \$1,900   |
| ESTIMATED FULL BUILDOUT COST* |           |
|                               | \$167,750 |
| ESTIMATED TOTAL COST          |           |
|                               | \$169,650 |



Figure 27 Prince Street: Recommended Treatments



## Prince Street: Recommended Treatments

DRHT signage should be relocated from Farnsworth Avenue to Prince Street to serve cycling through-traffic and separate bikes from the more active vehicular downtown corridor one block to the east.

Green-backed sharrows should be added to clearly designate Prince Street as the city's primary north-south bicycle corridor. Green-backed sharrows are more visible than a standard sharrow and further encourage bikers to position themselves in the center of the lane, outside of the door zone. Because it experiences a lower volume of traffic than neighboring Farnsworth Avenue, cyclists can travel between trail segments more safely on Prince Street. Local bicycle traffic would still be permitted

to use other streets, including Farnsworth Avenue. In addition to providing directions to adjacent trail segments, wayfinding signage on Prince Street can inform cyclists where to access bike parking, downtown businesses, the River LINE station, and other destinations.

Signage should be installed to indicate "Bicycles May Use Full Lane" at each end of the Prince Street trail corridor, near Park Street for southbound bike traffic and near Burlington Street for northbound bike traffic.

Note that strategies for this corridor are all "short term," as only signage and street paint are recommended.

## Prince Street: Improvement Strategies

| IMPROVEMENT STRATEGY                      | DESCRIPTION   | COST |
|---|---|------|
| <b>Install new bicycle infrastructure</b> | Add green-backed sharrows along DRHT  | LOW  |
|   | Add "Bicycles May Use Full Lane" signage  | LOW  |
| <b>Add wayfinding signage</b>             | Install directional wayfinding signage for cyclists, including signage for the DRHT | LOW  |

Project type

|  |             |
|--|-------------|
|  | Quick Build |
|--|-------------|

## Prince Street: Cost Estimate Table

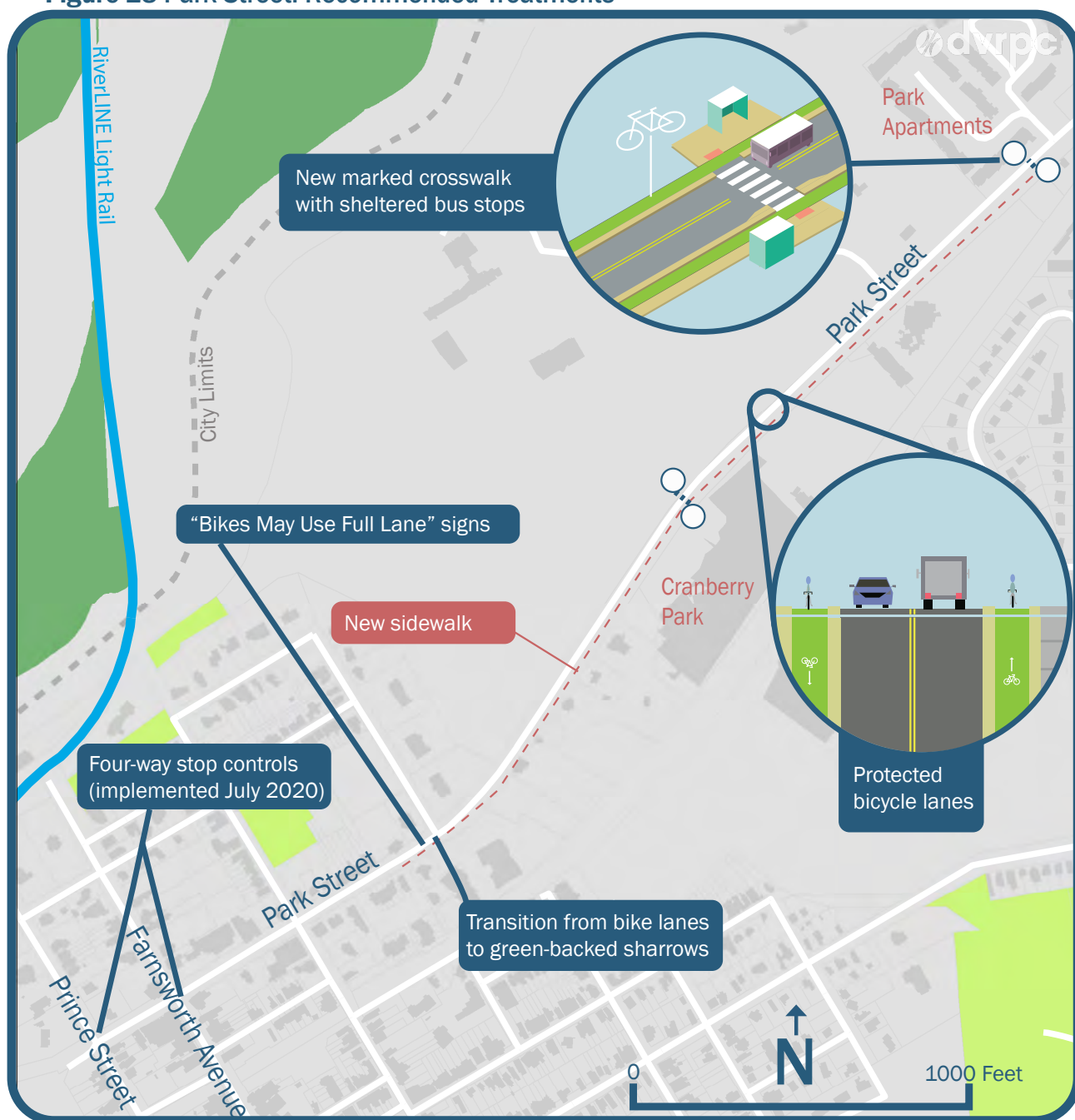
| DESCRIPTION: QUICK BUILD PHASE | UNIT | QTY | UNIT PRICE | APPROX. COST |
|--------------------------------|------|-----|------------|--------------|
| Painted green-backed sharrows  | ea   | 9   | \$500      | \$4,500      |
| Bicycle wayfinding sign        | ea   | 2   | \$250      | \$500        |
| "Bikes May Use Full Lane" sign | ea   | 1   | \$250      | \$250        |

Project Sponsor, by component

|  |                   |
|--|-------------------|
|  | Burlington County |
|--|-------------------|

|                            |         |
|----------------------------|---------|
| ESTIMATED QUICK BUILD COST |         |
|                            | \$5,250 |
| ESTIMATED TOTAL COST       |         |
|                            | \$5,250 |

**Figure 28 Park Street: Recommended Treatments**



**Park Street: Recommended Treatments**

Five-foot sidewalks are extended on the south side of Park Street between 3rd Street and the city boundary. This allows pedestrians to safely travel between the River LINE station, downtown, and destinations on Park Street.

Six-foot-wide, green-painted bicycle lanes are added to both sides of Park Street between 3rd Street and the city boundary, where striped shoulders already exist. Green-backed sharrows and signage indicating that “Bicycles May Use Full Lane” are added between 3rd Street and Prince Street, where on-street parking precludes dedicated bicycle lanes. This creates a

marked bicycle route between the River LINE station and residences near the city line. Wayfinding signage can guide bike traffic to downtown destinations and the DRHT. A later phase of construction includes a curb to make the bike lanes physically protected.

New bus stops with shelters are added at Cranberry Park, with a new marked continental crosswalk connecting the property to the southbound bus stop. A new continental crosswalk and a two-foot neckdown are built into the eastbound protected bicycle lane at the Park Apartments, slightly narrowing the roadway to shorten the crossing for pedestrians and slow vehicles.

## Park Street: Improvement Strategies

| IMPROVEMENT STRATEGY                      | DESCRIPTION   | COST |
|---|---|------|
| <b>Install new bicycle infrastructure</b> | Add painted protected bicycle lanes on less urban section of Park Street            | HIGH |
|   | Install "Bicycles May Use Full Lane" signage where bike lanes end                   | LOW  |
|   | Add green-backed sharrows   | LOW  |
| <b>Improve crossings</b>                  | Add stop signs to create four-way stops at intersections                            | LOW  |
|   | Paint new continental crosswalks  | LOW  |
| <b>Complete the sidewalk network</b>      | Build sidewalk connecting multifamily apartments to city core                       | HIGH |
| <b>Add wayfinding signage</b>             | Install directional wayfinding signage for cyclists, including signage for the DRHT | LOW  |

Project type

|  |               |
|--|---------------|
|  | Quick Build   |
|  | Full Buildout |

## Park Street: Cost Estimate Table

| DESCRIPTION: QUICK BUILD PHASE    | UNIT | QTY | UNIT PRICE | APPROX. COST |
|-----------------------------------|------|-----|------------|--------------|
| Continental crosswalks            | lf   | 80  | \$15       | \$1,200      |
| Painted green-backed sharrows     | ea   | 2   | \$500      | \$1,000      |
| "Bicycles May Use Full Lane" sign | ea   | 1   | \$250      | \$250        |

| DESCRIPTION: CAPITAL PHASE              | UNIT | QTY  | UNIT PRICE | APPROX. COST |
|---|------|------|------------|--------------|
| Painted bicycle lanes (six feet wide)   | lf   | 7392 | \$2        | \$14,784     |
| Mini-chicane                            | ea   | 2    | \$5,000    | \$10,000     |
| Concrete bike lane protection (curbing) | lf   | 7392 | \$100      | \$739,200    |
| New five-foot sidewalk**                | sy   | 730  | \$160      | \$116,800    |
| Bus shelters                            | ea   | 2    | \$5,000    | \$10,000     |

\*MPT, Mobilization, and Excavation were not included in this estimate, but typically amounts to 3–5 percent of total project cost

\*\*Sidewalk extensions northeast of Cranberry Park will likely be funded by the City of Bordentown, with sections between Cranberry Park and 3rd Street funded by the Cranberry Park developer.

### Project Sponsor, by component

|  |                    |
|--|--------------------|
|  | Burlington County  |
|  | City of Bordentown |
|  | Private Developer  |

|                               |           |
|-------------------------------|-----------|
| ESTIMATED QUICK BUILD COST    |           |
|                               | \$2,450   |
| ESTIMATED FULL BUILDOUT COST* |           |
|                               | \$890,800 |
| ESTIMATED TOTAL COST          |           |
|                               | \$893,250 |

## Construction Estimates

Estimates were prepared by DVRPC project implementation staff using item price history from the Pennsylvania Department of Transportation Engineering and Construction Management System, insights from project experience, and measurement estimates via geographic information system software. The construction estimates are intended to be an approximation of the cost for implementing the design recommendations. The actual costs of materials and construction may differ from the estimates.

| INTERSECTION/CORRIDOR                    | RESPONSIBLE PARTY           | EST. COST |
|--|-----------------------------|-----------|
| Park Street & Prince Street              | County                      | \$181,300 |
| Park Street & Farnsworth Avenue          | County and City             | \$180,500 |
| Farnsworth Avenue & Crosswicks Street**  | City                        | \$145,200 |
| Farnsworth Avenue & Burlington Street    | City                        | \$114,300 |
| Prince Street & Burlington Street        | County                      | \$169,650 |
| Park Street                              | City, County, and Developer | \$893,250 |
| Prince Street                            | City                        | \$5,250   |
| Parking Striping along Park & Farnsworth | County and City             | \$7,000   |

\*Total estimate does not include 3–5 percent estimated MPT, mobilization, or excavation.

\*\*Option 1 was used in this estimate.

|                     |
|---------------------|
| TOTAL EST.<br>COST* |
| \$1,696,450         |

## Sharing of Costs

Selected costs may be absorbed by the developer of Cranberry Park. The ongoing approval process between Burlington County, City of Bordentown, and the developer will determine the exact segments to be funded by the developer.

Improvements on city-controlled intersections are the responsibility of the City of Bordentown. Where city and county jurisdictions overlap, such as at the intersection of Park and Farnsworth, the city and county must work together to approach implementation of projects. Where there are planters or delineators on a shared intersection or approach, the city must create an SSA with the county to absolve the county of liability for objects in the cartway.

The county is responsible for all green-backed sharrows and adding and relocating signage on county roads throughout the study area. The city is also responsible for procuring planters and delineators, as well as any installed light features, even those on county roads.

See study area cost tables for detailed itemization of responsibilities.

## Implementation

### Funding Resources

The recommendation and cost estimate tables are designed to assist the City of Bordentown in applying for various types of grants and/or dedicating their local dollars for design and construction. The City of Bordentown does annually budget for regular sidewalk improvements; however, further capital support in the city's budget may be appropriate.

The [Transportation Alternatives Set-Aside Program \(TA\)](#) provides funding for bicycle and pedestrian facilities, as well as streetscaping, stormwater management, and corridor landscaping. NJDOT also added a [Design Assistance Program](#) to TA in 2018, which can fund the design services necessary to implement an awarded TA grant since design is not normally covered under TA. The deadline for the next round of TA is November 24, 2020, and the

program opens about every one to two years.

Another relevant funding source for bicycle projects is the [Congestion Mitigation and Air Quality Improvement Program](#) (CMAQ). CMAQ would only cover bicycle facilities. The CMAQ program opens every two to three years.

Nonprofit and advocacy groups often seed small walkability projects with microgrants, including [America Walks](#) and [AARP](#). The [Pedestrian and Bicycle Information Center](#) (PBIC) also provides lists of non-government funding sources.

Cross County Connection has a [South Jersey Bicycle & Funding Guide](#) that offers guidance in applying for federal, state, and local funding as well as private funding.

DVRPC's [Municipal Funding Resource](#) is an online database intended to assist local governments, community groups, and nonprofit organizations in identifying federal, state, regional, county, and private sources of funding for locally initiated planning and development projects.

## Next Steps

A first step that can be taken by the City of Bordentown is to plan the implementation of temporary treatments described in this report for one or more intersections. The city could convene a range of stakeholders and artists to produce painted bumpouts to test and refine the improvements. Because of the crash history and need for additional public space for social distancing, prioritizing the Farnsworth intersections may be warranted.

The city has been awarded funding from the [Transportation and Community Development Initiative](#) Program. Part of that project could include engaging the public on the concepts detailed in this report in order to get feedback before moving forward with design and construction of the full build recommendations.

Burlington County should proceed with the painting of green-backed sharrows on Prince Street and could coordinate with the city in the process of relocation of DRHT signage from Farnsworth Avenue to Prince Street.

If funding is not available for all the recommendations at the same time, the city could prioritize some intersections or type of improvement. Again, because of the crash history and number of users, the Farnsworth intersections could be prioritized. In addition, the City of Bordentown should continue to coordinate with NJDOT and Burlington County to update in-street striping and any other changes that could be incorporated into the repaving program described in the Existing Conditions section of this memo. NJ Transit and Burlington County should also continue to be involved in any further meetings on access recommendations for the station to ensure that any plans or projects are not conflicting.

It is recommended that the City of Bordentown incorporate these concepts into their ongoing master planning process to ensure public feedback and to foster uniformity between plans. After completing these steps, the city will be well on the way to addressing the goals set by the steering committee and reported in this memo.

## Future Study

Stakeholders suggested additional intersections for study that were outside of the scope of this project. Future planning studies should explore:

1. improving crossings at the intersections of Park Street and 2nd Street, and Park Street and 3rd Street;
2. adding conventional or protected bicycle lanes to Burlington Street west of the study area, congruent with the future alignment of on road portions of the DRHT; and
3. studying the potential for a "rail-to-trail" project on the Camden-Amboy spur.

# Safe Routes to Transit: Bordentown Station

## Publication Number

20023

## Date Published

November 2020

## Geographic Area Covered

City of Bordentown, New Jersey

## Abstract

The Bordentown Safe Routes to Transit plan was created by the Delaware Valley Regional Planning Commission in collaboration with a variety of partners, most notably the City of Bordentown. The study proposes a series of design treatments with implementation steps to assist the municipality in funding and building a series of safety improvements.

*Note that all photos in the report were either taken by DVRPC staff or were obtained from sources that permit reuse under a creative commons license.*

## Key Words

Access to Transit, Bicycle, Pedestrian, Safety

## Staff Contact

Cassidy Boulan, AICP

Senior Transportation Planner

(215) 238-2832

cboulan@dvrpc.org

## Staff Project Team

Cassidy Boulan, Senior Transportation Planner

Derek Lombardi, Planner

Mark Morley, Associate Planner

Delaware Valley Regional Planning Commission

190 N. Independence Mall West, 8th Floor

Philadelphia, PA 19106

Phone: (215) 592-1800

Fax: (215) 592-9125

Internet: [www.dvrpc.org](http://www.dvrpc.org)



190 N. Independence Mall West  
8th Floor | Philadelphia, PA  
215.592.1800 | [www.dvrpc.org](http://www.dvrpc.org)

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