



# BRIDGE TO RIVER

CONCEPTUAL BICYCLE  
NETWORK ANALYSIS

October 2017





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# Chapter 1: Introduction

The *Bridge to River Conceptual Bicycle Network Analysis* is part of an umbrella project of conceptual design work for Philadelphia bicycle and pedestrian facilities. This project is done as part of the Delaware Valley Regional Planning Commission's (DVRPC) Bicycle and Pedestrian Planning Program. Developing designs to improve conditions for those walking and biking in selected locations is the primary intention of work done under the conceptual design project.

The City of Philadelphia and DVRPC selected this project, which seeks to identify options

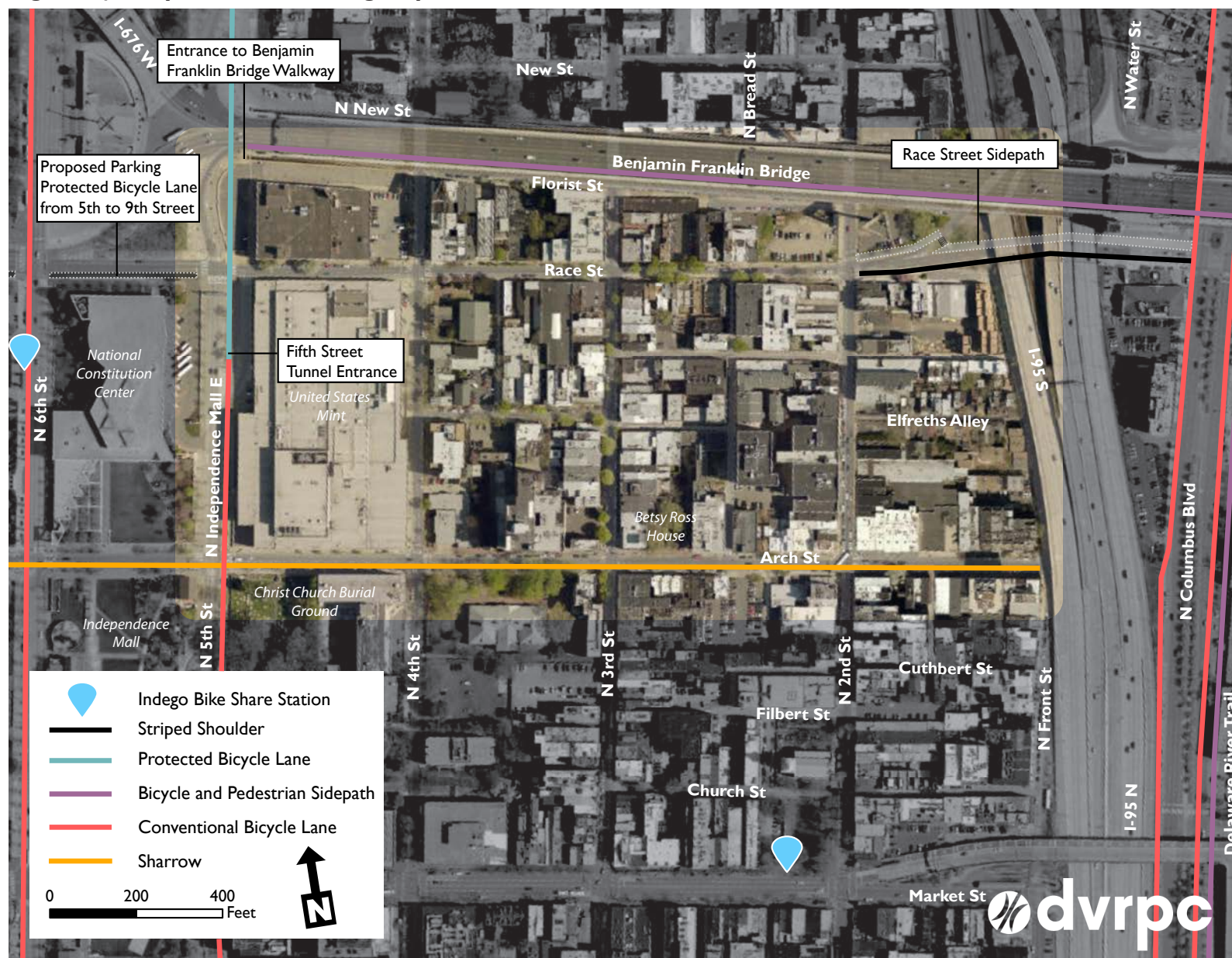
for a two-way bicycle connection between the Benjamin Franklin Bridge and the Delaware River, because of the important connection it would provide between Camden, Center City, and attractions along the waterfront. Additionally, design interventions in the study area have the potential to strengthen the existing on-road bicycle network, creating safer, more comfortable facilities for bicyclists visiting and passing through Old City. Furthermore, this part of Old City is growing, with numerous large residential and mixed-use developments under construction, driving increased demand for improved walking and biking conditions.

## Study Area

The goal of this plan is to develop options for conceptual designs for bicycle facilities that connect the Benjamin Franklin Bridge to the Delaware River. More broadly, staff considered the need to provide safe routes for bicyclists to reach Old City and the river from points south, west, and north (see Figure 1). Therefore, the study area for this plan incorporates the dense mixed-use area bounded by the Benjamin Franklin Bridge to the north, Fifth Street and Independence Mall to the west, and Arch Street to the south. Bicyclists must traverse this area to reach the river or to cross the river via the sidepath on the bridge.

The study area encompasses most of the Old City neighborhood. This area has many local destinations and is also important as an access point to other regional transportation facilities, like the Delaware River Trail and I-95. Residential uses exist throughout. Shopping, restaurants, and other commercial uses are concentrated along Second, Third, and Market streets. There are also many historic and religious sites that are frequented by tourists and residents mixed throughout the area.

**Figure I | Study Area with Existing Bicycle Facilities**



Sources: City of Philadelphia, 2015; DVRPC, 2016

# Existing Plans and Upcoming Projects

A number of existing plans have recommended that improved bicycle and pedestrian facilities be constructed in and around the study area. Overall, these plans advocate for more facilities that help to create a safe and comfortable bicycle network within the study area and better connect it to other parts of the city.

## ***Philadelphia Pedestrian and Bicycle Plan, Philadelphia City Planning Commission (PCPC), 2012***

This plan called for the construction of bicycle lanes on Second and Arch streets, as well as marked shared lanes on Race, Florist, and Fourth streets. The 2015 plan update identified Race Street between Second Street and Columbus Boulevard as a “top-tier priority,” and Race Street between Second and Fifth streets as a “second-tier priority.”

## ***Philadelphia Trail Master Plan, PCPC, 2013***

This plan proposes a connector between the Benjamin Franklin Bridge and the Delaware River Waterfront using Florist Street, between Second Street and Fifth Street, and Race Street, between Second Street and Columbus Boulevard, to create a connection. The construction of the project was considered a “high priority.”

## ***Race Street Sidepath Construction Plans, Delaware River Waterfront Corporation (DRWC), 2016***

The DRWC designed and received funding to construct the Race Street sidepath, a two-way sidepath along the north side of Race Street from Second Street to Columbus Boulevard (see Figure 2). The sidepath was designed to be the primary path for cyclists to connect to the existing bicycle lanes on Columbus Boulevard.

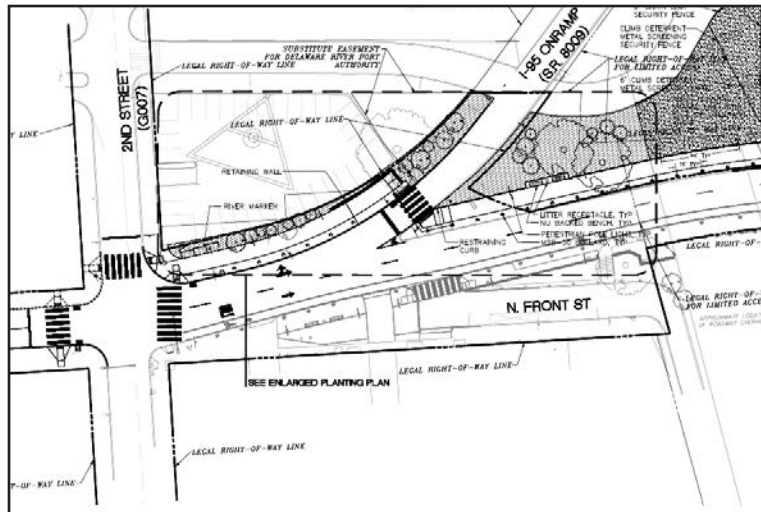
## ***Renewing Race Street: A Mobility Analysis, DVRPC, 2015***

DVRPC’s *Renewing Race Street* plan recommends a parking-protected bicycle lane along the south side of Race Street between Eighth and Seventh streets, a planter-protected bicycle lane between Seventh and Sixth streets, and sharrow markings from Sixth Street to the existing bicycle lane at Second and Race (see Figure 3). The plan also recommends a north-bound bicycle lane on the Fifth Street frontage road that would connect to a smooth, shared-use path in place of the existing cobblestone sidewalk adjacent to the Benjamin Franklin Bridge on-ramp.

## ***Old City Vision 2026 Framework, Old City District, 2016***

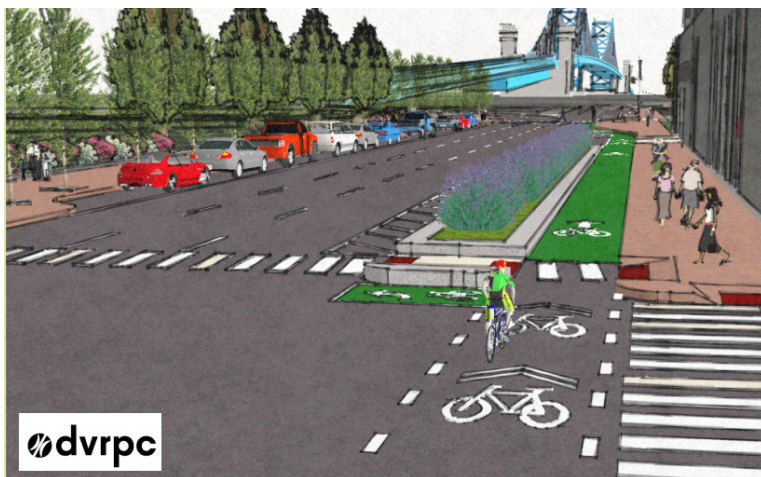
Old City District is a special services district that encompasses much of the study area. One of the central focuses of the district’s *Old City Vision 2026 Framework* is to make the area a safer and easier place to ride a bicycle. To achieve this, the plan proposes that physically separated bicycle lanes be constructed on Third, Fourth, Second, and Market streets. The plan calls for a conventional bicycle lane along the south side of Race Street and bicycle-friendly treatments (such as sharrow markings or signage) on Florist Street to create an east-west connection to the Race Street sidepath. To enable bicycle use of cobblestone streets (such as the driveway that connects the Benjamin Franklin Bridge Walkway to Fourth Street), the plan recommends the use of flat stone inlays to provide a smooth riding surface (see Figure 4).

**Figure 2 | Race Street Sidepath Blueprints**



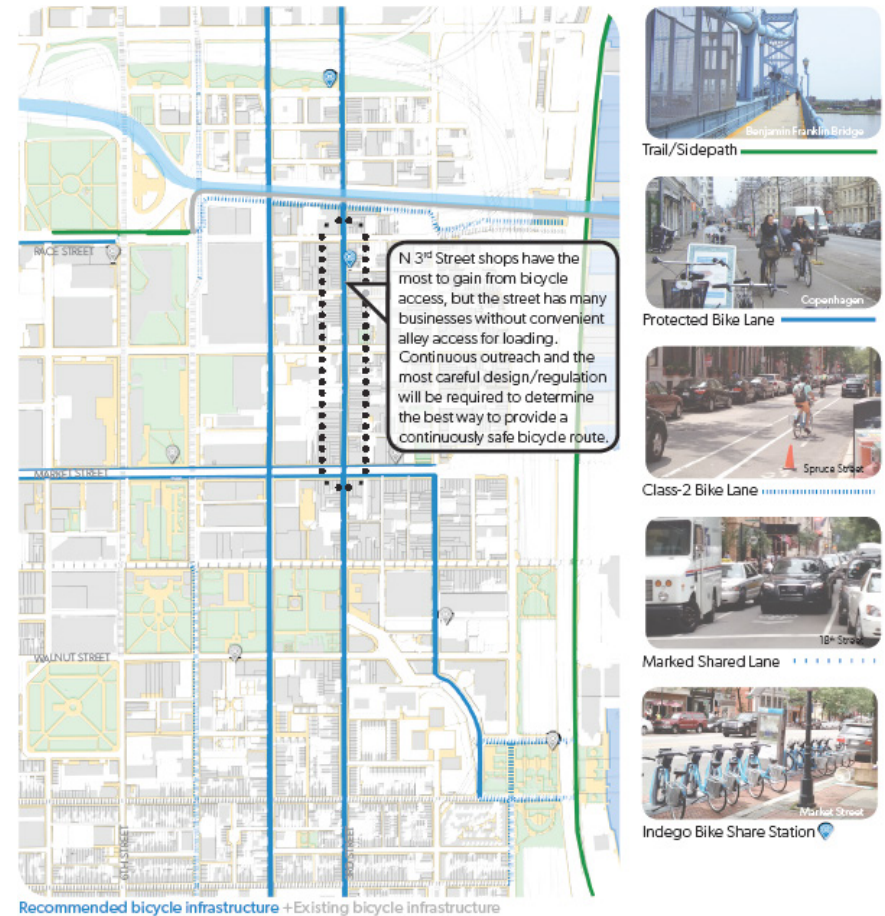
Source: DRWC

**Figure 3 | Proposed Planter-Protected Bicycle Lane on Race Street between Seventh and Sixth Street**



Source: DVRPC

**Figure 4 | Old City Vision 2026 Recommended Bicycle Infrastructure**



Source: Old City District and RBA Group



## Chapter 2: Existing Conditions

Old City is a changing landscape. There are several ongoing projects and many current proposals that can and will change some of the patterns of use and travel in the area.

Conversations between the city, the Philadelphia Parking Authority (PPA), and the Delaware River Port Authority (DRPA) about how the space under the Benjamin Franklin Bridge is being used have been ongoing for many years. In the past year, plans have been produced to develop the space into parking, contributing to the district's goal of increasing long-term parking in the area. These discussions are ongoing but may impact some of the recommendations in this plan.

There are two major developments under construction on previously under-used land. The first, at 401 Race Street, will add 216 residential units, some first-floor commercial space, and 184 parking spaces, both underground and on surface lots adjacent to the building. An unused industrial building was previously on the property. Some of the circulation and parking plans affect how bicyclists and pedestrians will be able to access the bridge. The current vehicle entrance and

exit points on Race and Fourth streets will be maintained but will have a significant increase in use. The increase in residential units, not all of which have a dedicated parking space, will likely increase traffic to the area by all modes.

The second new development is at 205 Race Street, which was previously an undeveloped lot. The new building will be 17 stories with 148 dwelling units, and first-floor commercial space. The underground parking garage will have 28 parking spaces for vehicles and 51 bicycle parking spaces. Pedestrian access to the building will be through an entrance on Race Street, near Second Street. Ingress and egress to the parking garage will be from Florist Street. Once completed, this building will significantly increase vehicle traffic on Florist Street and also increase bicycle and pedestrian trips to and from this site.

Other existing conditions that were considered during the development of the conceptual design proposals are shown and discussed on the following pages.

# Traffic Volumes

The Annual Average Daily Traffic (AADT) counts in the study area are shown in Figure 5. These counts were taken between 2008 and 2017. The highest volumes in the study area are on Columbus Boulevard. Additional counts in the study area, like on Second Street, and updating counts that are close to 10 years old and functionally out of date, would likely be necessary to evaluate the capacity on some segments.

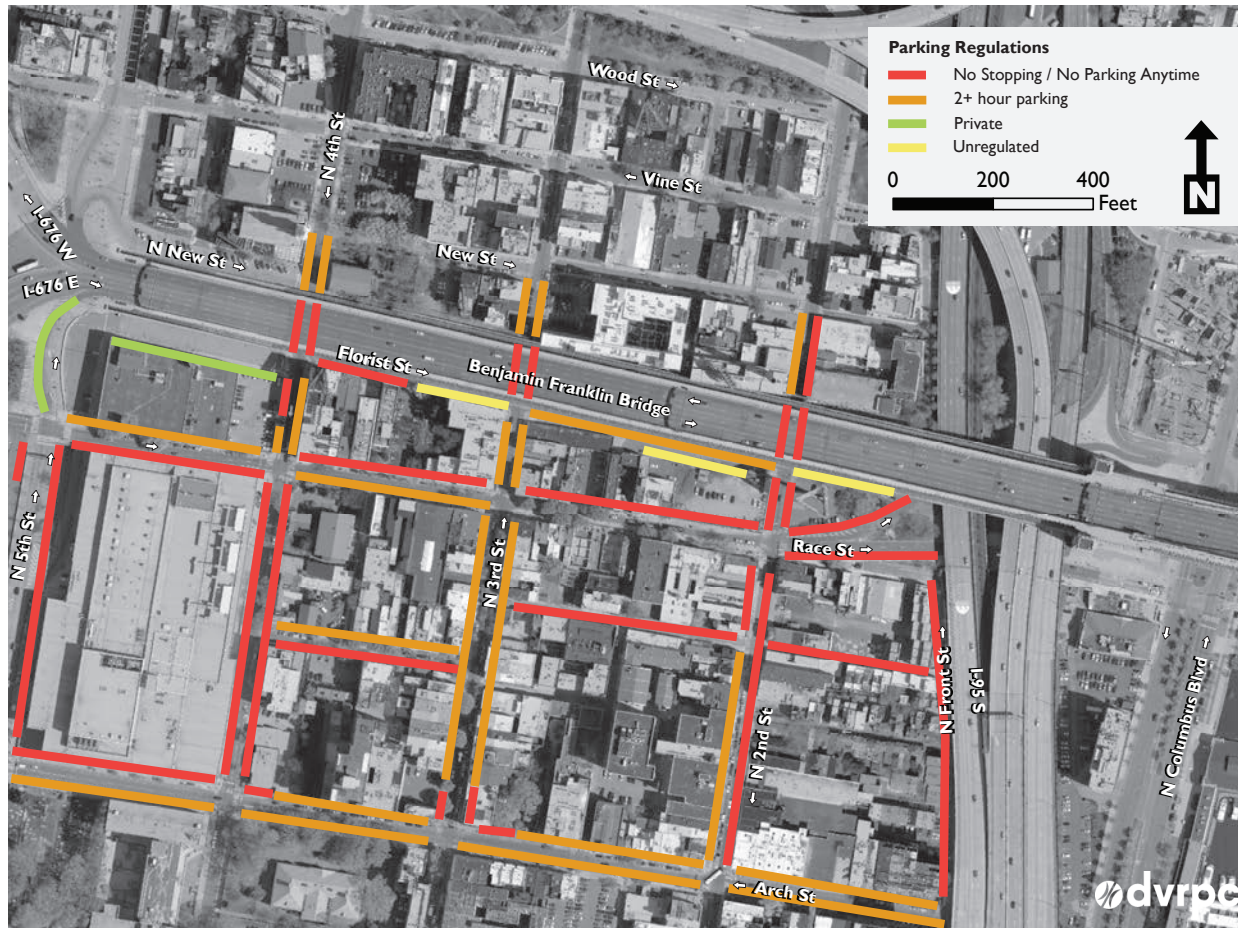
Figure 5 | Traffic Volumes



Sources: City of Philadelphia, 2015; DVRPC, 2016

# On-Street Parking Regulations

Figure 6 | On-Street Parking Regulations



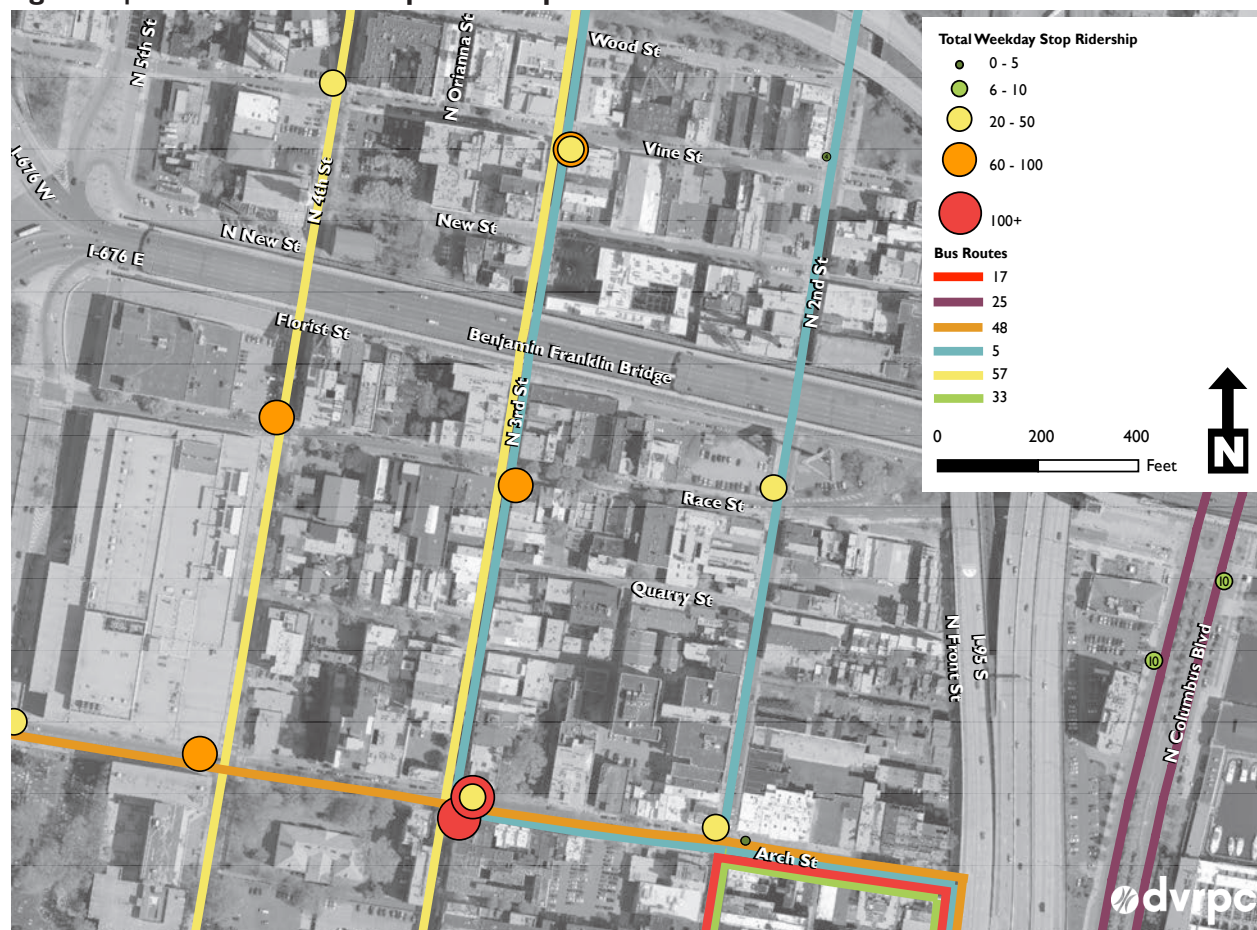
Sources: City of Philadelphia, 2015; DVRPC, 2016

Within the study area, there is a mix of blocks with and without on-street parking (see Figure 6). Of areas where parking is allowed, the vast majority are metered, with time limits of two or more hours. Only small stretches of Florist Street have unregulated on-street parking. The existing private parking at Fifth and Race streets and Florist and Fourth streets will remain private and restricted after redevelopment of the property. The two developments under construction, and the proposal for PPA-managed parking to be added under the Benjamin Franklin Bridge, will add to the existing inventory of on-street and private off-street parking in the neighborhood.

# Bus Routes and Stop Ridership

A number of Southeastern Pennsylvania Transportation Authority (SEPTA) bus routes provide service to the study area (see Figure 7). The main routes in the study area are the 48, along Arch Street, the 5, down Second and up Third Street, and the 57, running north on Third and south on Fourth Street. Generally, stop ridership increases as one moves south through the study area. The stop with the highest ridership is at the corner of Third and Arch streets. Because stop ridership in the study area is relatively high, proposed facilities on streets with bus routes are located on the left side of the street to reduce conflicts between buses, bus riders, and bicyclists.

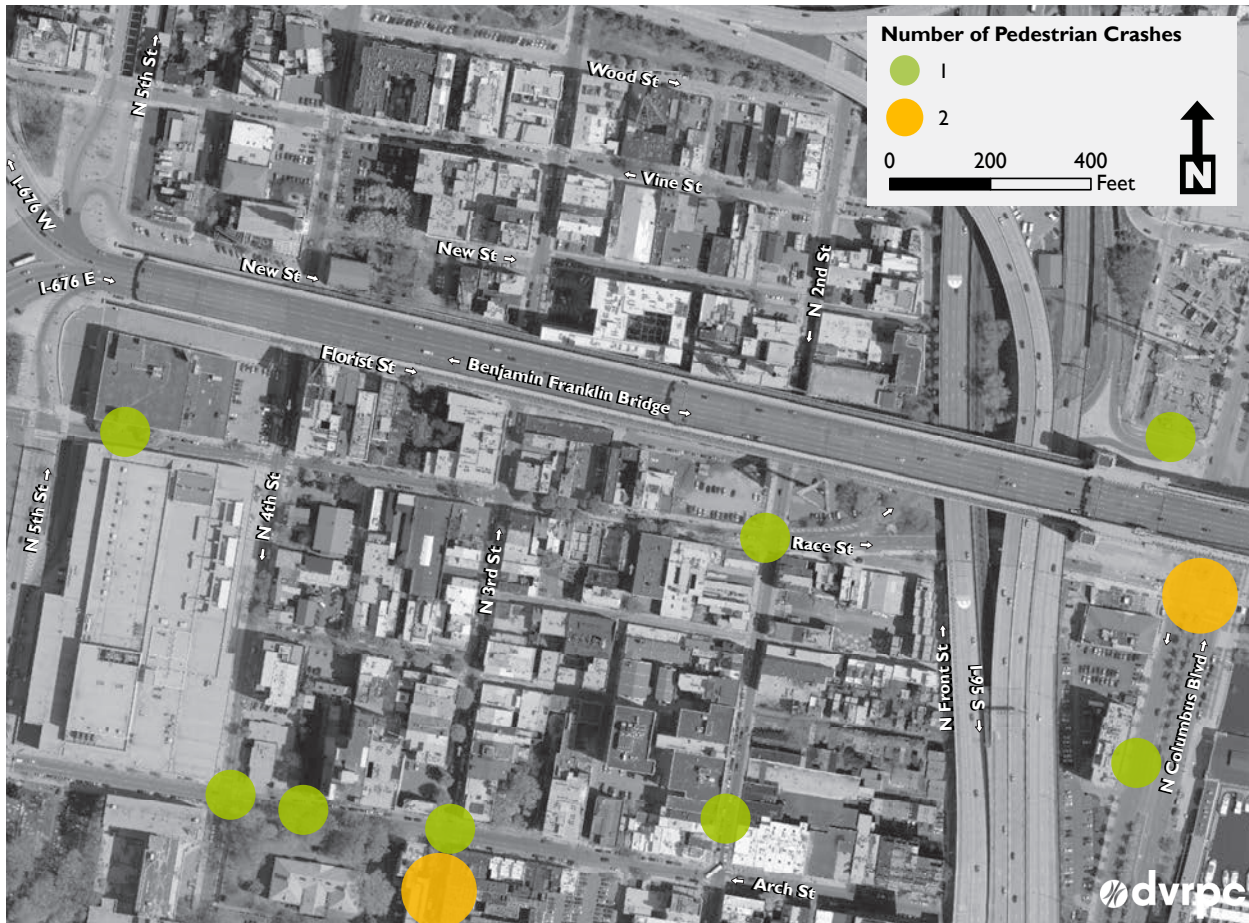
Figure 7 | Bus Routes and Stop Ridership



Sources: City of Philadelphia, 2015; SEPTA, 2015; DVRPC, 2016

# Pedestrian Crashes

Figure 8 | Reported Pedestrian Crashes, 2010–2015



Sources: City of Philadelphia, 2015; Pennsylvania Department of Transportation, 2015; DVRPC, 2016

The reported crashes involving a pedestrian from 2010 to 2015 are shown in Figure 8. Pedestrian crashes primarily occurred at or near intersections. Without knowing the levels of walking along each of the segments, the rate of crashes is indeterminate throughout the study area. However, the highest number of crashes occurred at the intersection of Race Street and Columbus Boulevard and just south of the intersection of Arch and Third streets.

# Bicycle Crashes

Figure 9 shows the reported crashes involving a bicyclist from 2010 to 2015. Crashes are concentrated on Race Street and its intersections, which suggests that there may be safety issues on this street. Adding bicycle facilities to the street or making improvements to the intersections might help to address safety issues. The other crashes during this period are scattered throughout the rest of the study area, especially on streets with no dedicated bicycle facility.

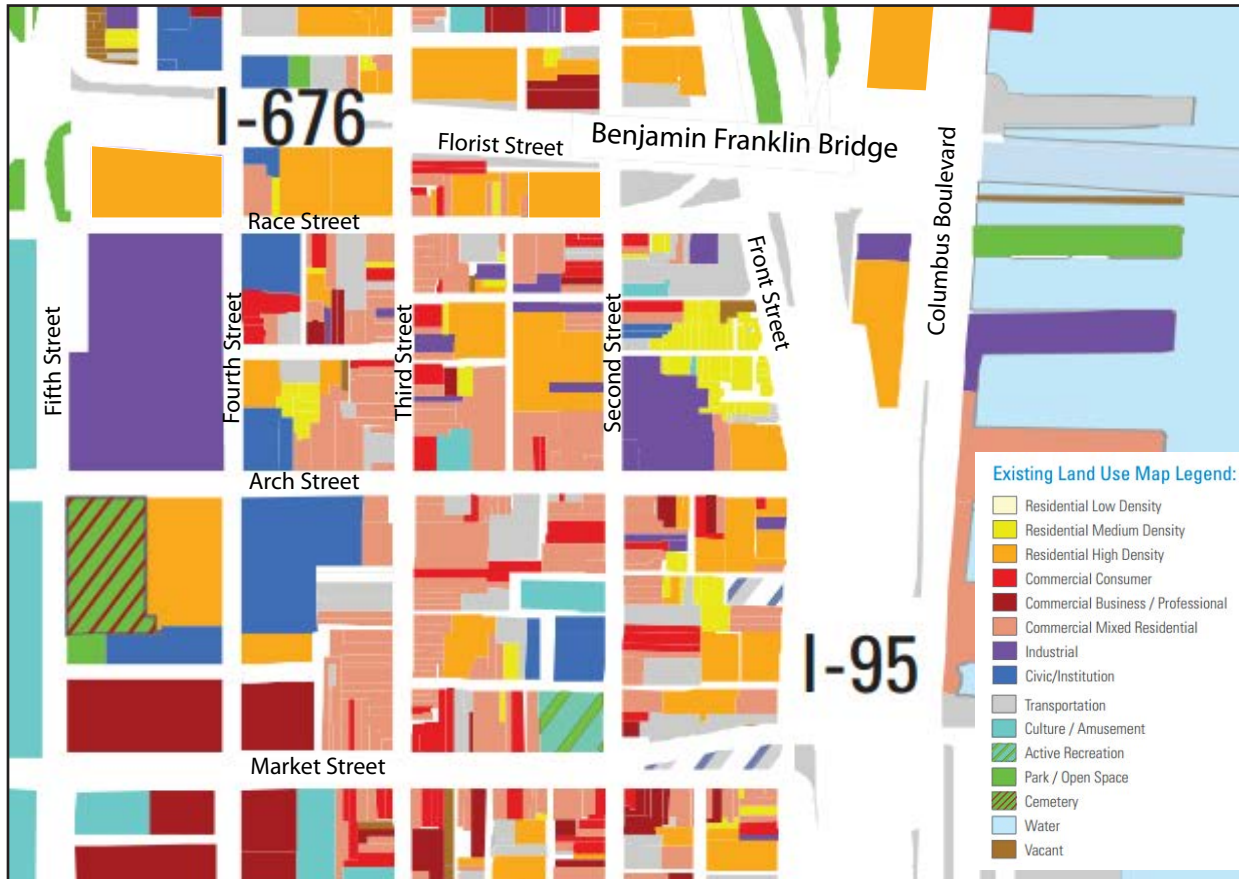
**Figure 9 | Reported Bicycle Crashes, 2010–2015**



Sources: City of Philadelphia, 2015; PennDOT, 2015; DVRPC, 2016

# Land Use

Figure 10 | Land Use



Source: PCPC, 2013

The land use in the study area is very dense and mixed, and many buildings are both commercial and residential (see Figure 10). There are many origins and destinations throughout the study area. People live and/or work in the study area and many others visit for shopping, dining, or entertainment purposes. There are also many people moving through the study area to access other transportation facilities and services, such as I-95, I-676, and Columbus Boulevard, and transit services, such as the Market-Frankford Line and the multiple bus lines that operate in the study area.



## **Chapter 3: Conceptual Designs**

DVRPC staff synthesized the existing conditions findings to identify potential bridge to river opportunities. Each of the possible paths has a set of trade-offs between opportunities and challenges. Therefore, this study pinpoints opportunities to develop high-quality bicycle facilities, as well as identifies challenges that might require greater planning or funding for construction, and safety issues and ways to address them. When determining possible paths and cross sections, the standard practice of assuming a five-foot operating space for cyclists was used. This was especially important because several mixed-traffic and bidirectional facilities were proposed and considered.

Because the fundamental goal is to provide safe, comfortable opportunities to bicycle from the bridge to the river and vice versa, each design must accommodate trips both eastbound and westbound.

Figure 11 shows the possible conceptual options that accomplish that requirement. Each colored line on the map represents one proposal and is not used in combination. Arrows on the lines indicate whether each section is a single- or bi-directional treatment.

In the following pages, the conceptual design for each of these options is illustrated, and the opportunities and constraints are described.

**Figure 11 | Proposed Conceptual Design Options and Existing or Forthcoming Bicycle Facilities**



Sources: City of Philadelphia, 2015; DVRPC, 2016

# Opportunities and Challenges

## Under Bridge: Two-Way Bicycle Lane beneath the North Side of the Benjamin Franklin Bridge Approach Span

This facility provides a largely off-street connection between the Benjamin Franklin Bridge Walkway and the Race Street sidepath using a two-way bicycle lane below the north side of the Benjamin Franklin Bridge approach span and a shared two-way connection between the Benjamin Franklin Bridge Walkway and Fourth Street (see Figure 12).



New York City Department of Transportation installed a narrow granite bike lane along a cobblestone section of Varick Street to improve comfort and reduce sidewalk riding. Photo: Brendan Klayko

### Opportunities:

1. The connection would provide the linkage between Second and Fifth streets that is identified in the City of Philadelphia's *Trail Master Plan* (2013) as a high-priority.

2. A facility beneath the bridge would offer a mostly off-street connection that is protected, and potentially more comfortable, for cyclists. However, the crossings and short on-road segment would temper these benefits.

3. A bi-directional bicycle lane beneath the bridge would make for a unique riding experience due to the bridge's interesting architectural features.

### Challenges:

1. A facility beneath the bridge would cost significantly more than other proposed on-street facilities.

2. The bridge connection would have three unsignalized crossings at Fourth, Third, and Second streets that would require additional safety features, signage, and lighting.

3. The bridge design does not provide the most direct connection to the Race Street sidepath, which may keep it from being well used.

4. The connection between Fifth and Fourth streets would require that historic slate block be replaced with a rideable surface, such as a flat stone inlay. This change would require design approval from the Philadelphia Architectural Committee and Historical Commission.

5. The creation of a two-way bicycle lane hinges on an agreement between the city, DRPA, and potentially the PPA, if plans for parking are implemented, requiring a greater deal of coordination than other connections.

6. The connection would not provide broader connectivity improvements to the neighborhood.

**Figure 12 | Two-Way Bicycle Path beneath the Benjamin Franklin Bridge**



Sources: City of Philadelphia, 2015; DVRPC, 2016

## Florist Street: Two-Way Bicycle Lane

This option would remove parking from the southside of Florist Street between Fourth and Second streets to create a two-way protected bicycle lane that would connect the Race Street sidepath with the Benjamin Franklin Bridge Walkway (see Figures 13 and 14).

### Opportunities:

1. The plan would create the high-priority linkage between Second Street and Fifth Street outlined in the City of Philadelphia's *Trail Master Plan* (2013).

2. This facility would offer a fairly direct connection to the sidepath at the corner of Race and Second streets.

3. The design would be easy and low cost to pilot.

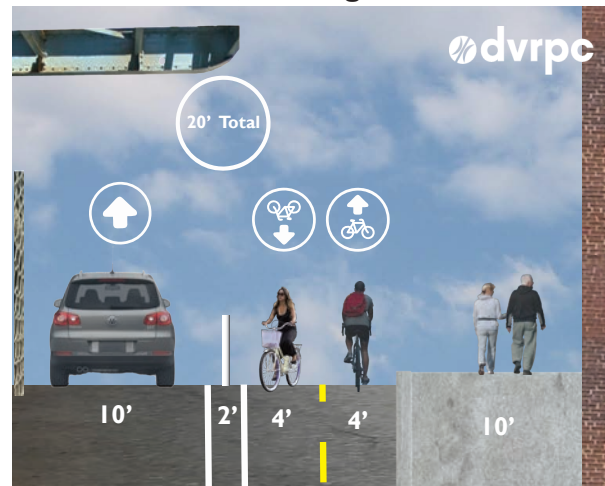
### Challenges:

1. At 20 feet, Florist Street is too narrow to accommodate two-way bicycle traffic without the removal of curbside parking and loading.

2. The connection between the Benjamin Franklin Bridge Walkway and Fourth Street would require existing (potentially historic) slate block be replaced with a rideable surface.

3. A stand-alone, two-way facility on Florist Street does not provide a substantial linkage to

**Figure 13 | Two-Way Protected Bicycle Lane on Florist Street, Looking East**



Source: DVRPC, 2016

other existing on-road bicycle facilities in the study area, limiting its usefulness.

4. Florist is not a highly trafficked or visible street, which could limit its use by cyclists.

5. Two new developments, one between Fourth and Fifth streets and the other at the corner of Second Street, as well as proposed parking beneath the Benjamin Franklin Bridge, could increase the number of vehicles using the street to access or exit on-site parking, making for less comfortable cycling conditions.

6. This option requires a facility on Second Street to connect to the Race Street sidepath. Figure 14 shows a potential extension of the Race Street sidepath along the east side of Second Street between Race and Florist.



Fourth Street beneath the Benjamin Franklin Bridge near the intersection with Florist Street. Photo: Google

### Safety Considerations

A bicycle facility on Florist Street or under the Benjamin Franklin Bridge would require significant safety upgrades at crossings to be a safe and low-stress connection. The intersections of Fourth, Third, and Second streets are not signalized at Florist Street, and shadows cast by the Benjamin Franklin Bridge span diminish the visibility of bicyclists and pedestrians during the day, and even more so at night. To improve these conditions, it is recommended that high-visibility crossings be implemented that use crossbike markings, signage, and flashing traffic controls to indicate the location of crossings and the two-way directionality of the facility. Improved lighting beneath the bridge span and vertical deflection in advance of facilities should also be considered.

**Figure 14 | Two-Way Protected Bicycle Lane on Florist Street**



Sources: City of Philadelphia, 2015; DVRPC, 2016

## Arch Street Two-Way Parking-Protected Bicycle Lane

This design would remove an existing westbound travel lane and pull parking away from the curb to provide space for a two-way, parking-protected bicycle lane. The design connects users to the Benjamin Franklin Bridge using a two-way protected bicycle lane on Fifth Street (see page 27) and to the Race Street sidepath using a protected bicycle lane on Second Street and a two-way shared street for bicycles on Front Street (see Figures 15 and 16). Green paint is suggested in bike lanes at conflict points, such as entrances to parking lots and slip lanes, complex intersection crossings, and contraflow bicycle lanes. A bicycle lane on this section of Arch Street is recommended in the *Philadelphia Pedestrian and Bicycle Plan* (2012).

### Opportunities:

1. Arch Street's centrality and connection to other streets with bicycle facilities would likely attract a wide range of cyclists and accommodate a wide range of trips.
2. It would provide a bi-directional, physically separated facility in place of the existing westbound sharrows lane.
3. It would create linkages and connections mentioned in the Old City District's *Vision2026 Framework*.

Figure 15 | Two-Way Parking-Protected Bicycle on Arch Street, Looking West



Source: DVRPC, 2016

4. It would shorten pedestrian crossing distances.
5. This facility would narrow the street, slowing speeds and calming traffic. This would make the street safer for all users.

### Challenges:

1. A travel lane or parking lane would need to be taken to create the room for the bicycle facility on Arch Street. However, with an AADT (5,484 in 2013) that is lower than Spruce and Pine streets, this conversion has precedence and is known to work in the city.
2. Arch Street currently has several SEPTA bus routes and is a popular stop for tour buses. Placing the facility on the left-side of the street helps mitigate the conflicts between buses, passengers, and bicyclists.

**Figure 16 | Two-Way Parking-Protected Bicycle Lane on Arch Street with Connections at Fifth, Second, and Front Streets**



Sources: City of Philadelphia, 2015; DVRPC, 2016

## Arch Street and Race Street Protected Bicycle Lanes

This design proposes one-way protected bicycle lanes on the south sides of Race and Arch streets. The design connects users to the Benjamin Franklin Bridge using a two-way protected bicycle lane on Fifth Street and to the Race Street sidepath using a protected bicycle lane on Second Street. On both streets a reallocation of street space and removal of either a travel lane or a parking lane is necessary. Green paint is suggested in bike lanes at conflict points, such as entrances to parking lots and slip lanes, complex intersection crossings, and contraflow bicycle lanes (see Figures 17, 18, and 19).

### Opportunities:

1. Provides the most direct connection between the Benjamin Franklin Bridge and the Race Street sidepath.
2. Would continue the proposed parking-protected bicycle lane on Race Street east of Fifth Street.
3. Race and Arch streets connect to existing bicycle infrastructure and would likely garner a wider range of cyclists, accommodate more trips, and provide network benefits.
4. A flexible parking/travel lane that restricts parking during peak periods only could also be used should congestion be an issue.

### Challenges:

1. A travel lane or parking lane would need to be converted to be used by bicyclists. However, Arch Street has an AADT (5,484 in 2013) that is lower than Spruce and Pine streets, so this conversion has precedence and is known to work in the city.
2. Converting traffic lanes to bicycle lanes on two streets is likely to be more costly than creating a two-way facility on one street.

**Figure 17 | One-Way Protected Bicycle Lane on Arch Street Between Second and Fifth Streets, Looking West**



Source: DVRPC, 2016

**Figure 18 | One-Way Protected Bicycle Lane on Race Street between Second and Fifth Streets, Looking West**



Source: DVRPC, 2016

**Figure 19 | One-Way Protected Bicycle Lanes on Race and Arch Streets with Connections on Fifth, Second, and Front Streets**



Sources: City of Philadelphia, 2015; DVRPC, 2016

## Front Street Two-Way Shared Street for Bicycles

A connection on Front Street would use signage and sharrow markings to indicate that two-way bicycling is allowed on the street between Race Street and Arch Street (see Figure 20). This facility would be implemented with facilities on Second and Arch streets.

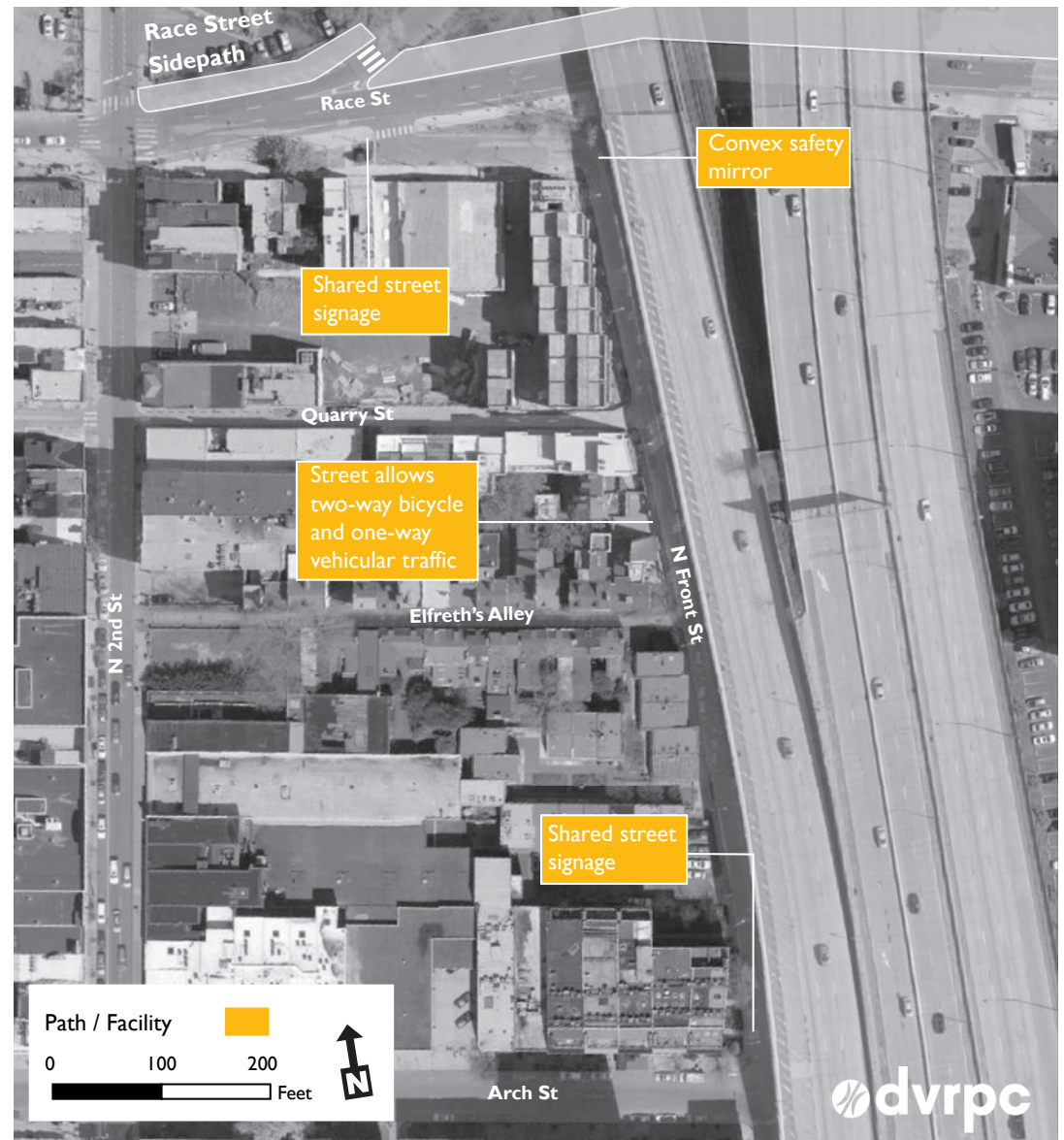
### Opportunities:

1. The segment has low vehicular volumes and speeds, making for a lower stress condition for cyclists and pedestrians.
2. A connection would not require a change in vehicle capacity or removal of on-street parking.

### Challenges:

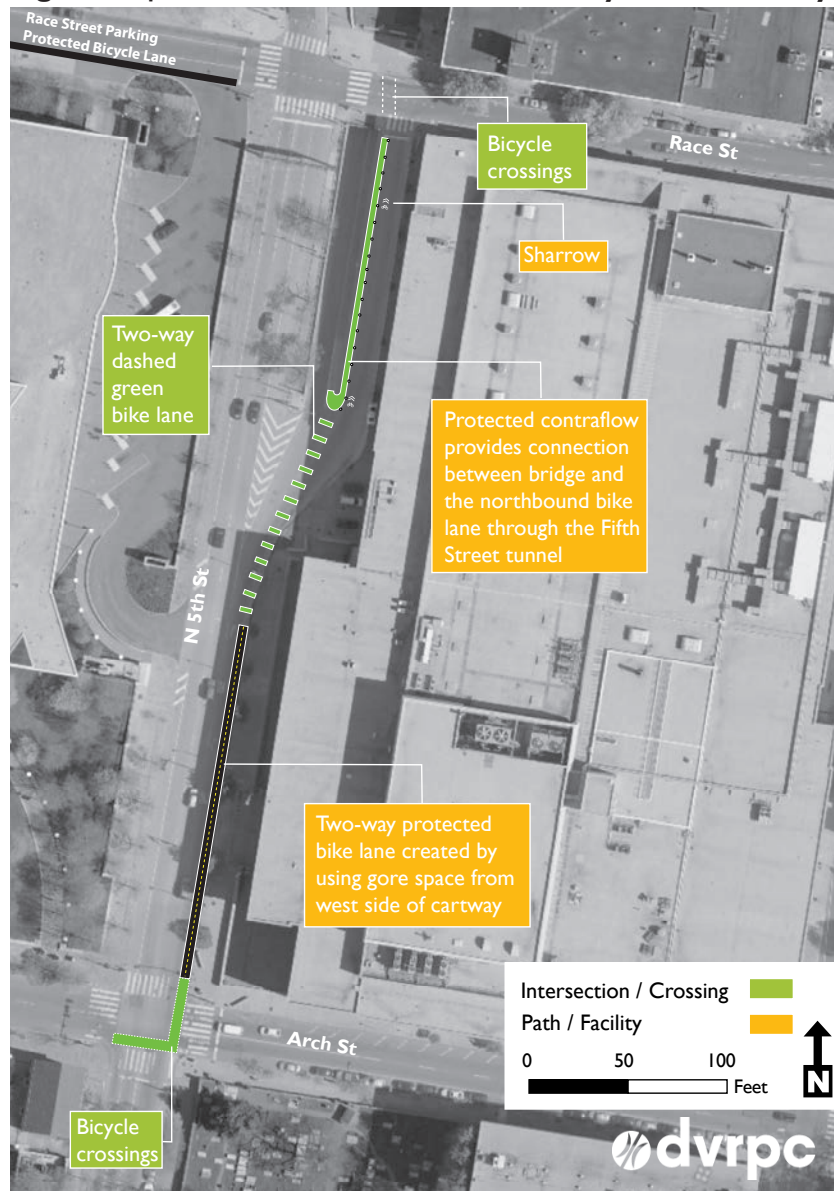
1. The existing street width is narrow (13 feet) and raises safety concerns about vehicle use with bidirectional cycling because cyclists typically require five feet of operating space. Cartway modification, either the removal of the jersey barrier or a curbless street, could help alleviate this.
2. Design might require moving grates and utility poles.
3. Connecting to the sidepath at Second and Race streets would be awkward and circuitous. Westbound connections from Front Street at Race would require a sidepath, contraflow, or mid-block crossing.
4. The street has a blind curve that could be potentially dangerous for cyclists riding contraflow (southbound).

Figure 20 | Front Street Two-Way Shared Street for Bicycles



Sources: City of Philadelphia, 2015; DVRPC, 2016

**Figure 21 | Fifth Street Contraflow/Two-Way Protected Bicycle Lanes**



Sources: City of Philadelphia, 2015; DVRPC, 2016

## Fifth Street Contraflow / Two-Way Protected Bicycle Lanes

This design is a two-way connection between the Benjamin Franklin Bridge and Arch Street using a combination of treatments. From Arch Street to the Fifth Street tunnel there is a two-way protected bicycle lane against the east side curb. The space for this treatment is created by removing the existing gored shoulder on the west side of the street and shifting travel lanes to the west. At the tunnel, northbound bicyclists on the surface street would use a shared lane marked with sharrows. Southbound bicyclists from Race Street use a contraflow lane along the east side of the tunnel that allows access to the northbound bicycle lane in the Fifth Street tunnel (see Figure 21).

### Opportunities:

1. A connection from the Benjamin Franklin Bridge to the Fifth Street tunnel would provide vital access to northbound cyclists and leverage recent and planned investments.
2. Fifth Street has an eight-foot no-parking area that could be used to create a protected facility without removing travel or parking lanes.
3. If used as a two-way facility, the connection to Arch Street would create a safer southbound connection for cyclists coming from the bridge.

### Challenges:

None. This connection should be considered even if a bridge to river connection is not constructed.

## Second Street Protected Bicycle Lane

The design on Second Street would connect the Race Street sidepath with a proposed facility on Arch Street (see page 22 and 24) using a protected bicycle lane along the east side of the street. Space for the facility could be made by taking a parking or travel lane (see Figures 22 and 23).

### Opportunities:

1. A bicycle lane on Second Street is part of the 2012 PCPC *Pedestrian and Bicycle Plan*, and is shown as a suggested connection in the PCPC's 2016 City Bicycle Map.
2. Would provide a direct connection from the Race Street sidepath to a potential facility on Arch Street and other destinations south of Race Street.
3. Would tie into a greater number of connections as part of a bicycle network.
4. A facility would support Old City District's goal of making the area more bicycle friendly.
5. A flexible parking/travel lane that restricts parking during peak periods could be used if congestion is a concern or becomes an issue.

### Challenges:

1. The creation of a protected facility would require the removal of a travel or parking lane. There are concerns that a facility could upset traffic flows due to high southbound volumes. Measuring the current AADT on this segment would be a suggested first step in pursuing this option.
2. Second Street has bus service (Route 5) with a stop on the northwest corner of Second and Arch streets. A left-side facility would eliminate most interactions between buses, passengers, and people bicycling.

**Figure 22 | One-Way Protected Bicycle Lane on Second Street, Looking South**



Source: DVRPC, 2016

**Figure 23 | One-Way Protected Bicycle Lane on Second Street**



Sources: City of Philadelphia, 2015; DVRPC, 2016

## Conclusions and Next Steps

As demonstrated in the previous pages, pursuing any of these options will present challenges and require outreach and additional dialogue. However, some of the facilities would be much more impactful for a larger number of people who bike than others and would have a better cost/benefit ratio. Connecting the Benjamin Franklin Bridge to the Delaware Riverfront is important, and so is greater bicycle mobility and safety in Old City, Philadelphia.

The next step to increasing the comfort and safety for those choosing to bicycle from the bridge to the river, and in and through Old City, is to weigh and evaluate the trade-offs of each design pairing. As part of that, additional operational or capacity analysis or data gathering may be necessary, which will allow city staff to determine preferred alternatives. Afterwards or concurrently, soliciting feedback from city and community stakeholders will be important to gain insight on their opinions of the relative merits of each design, with the understanding that one or more options will be pursued.

Finally, the city will need to apply for funding, if necessary, and move forward with final design and construction.





## **Appendix A: Cross Sections**

This section describes the existing right-of-way configurations of relevant streets within the study area.

# Cross Sections

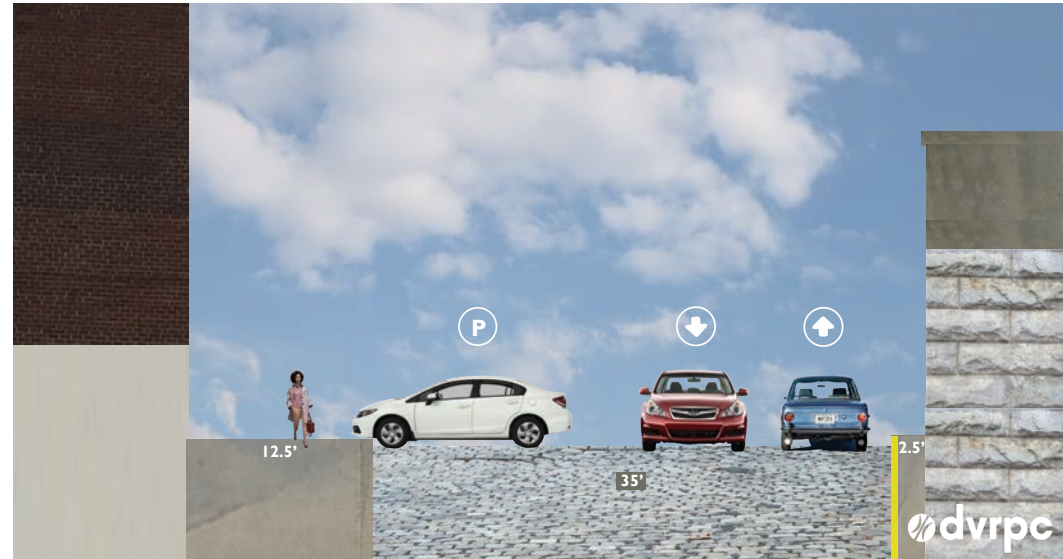
## Florist Street

Florist Street has two main cross sections: from the Benjamin Franklin Bridge Walkway to Fourth Street, and from Fourth Street to Second Street.

### Benjamin Franklin Bridge Sidepath to Fourth Street:

This section is approximately 35 feet wide and adjacent to a lot currently being developed into a five-story apartment complex. Site plans for this section of Florist Street keep the existing granite block street and create 26 perpendicular parking spaces, a new sidewalk, a loading zone, and an entry to a parking garage beneath the building on the south side of the driveway (see Figures A-1 and A-2). The driveway, as designed, does not designate space for cyclists and does not change the existing sidewalk along the northern side of the street, which is narrow and not Americans with Disabilities Act compliant. The driveway's surface is too rough for most cyclists to ride on comfortably, and resurfacing should be considered should this portion of Florist Street be used as an access point.

**Figure A-1 | Florist Street Between the Benjamin Franklin Bridge Walkway and Fourth Street**



Source: DVRPC, 2016

**Figure A-2 | Site Plans for 401 Race Street**



Source: Priderock Capital Partners, 2016

**Figure A-3 | Florist Street Between Fourth and Second Streets**



Source: DVRPC, 2016

***Fourth Street to Second Street:***

This section of Florist Street is approximately 20 feet wide; it has one-way traffic heading east, a parking lane along the southern curb, and a fence along the north side (see Figure A-3). There is a frontage street between Second and Third streets that provides access to the parking garage of a new 17-story, 364-unit mixed-use development. This portion of Florist Street is also adjacent to the proposed parking lots below the Benjamin Franklin Bridge between Fourth and Second streets. As the primary access to two large residential developments that are under construction and a large proposed parking lot, Florist Street is likely to see increased traffic volumes in the future.

## North Side of Area Beneath the Benjamin Franklin Bridge Approach Span

A connection beneath the north side of the Benjamin Franklin Bridge overpass would be linked to the Benjamin Franklin Bridge sidepath using Florist Street to get to Fourth Street and then one of the two no-parking areas on either side of Fourth Street to connect to the north side of the overpass.

The area along the north side of the Benjamin Franklin Bridge varies in width and materiality between Fourth Street and Second Street. The section is widest between Fourth and Third streets, where it ranges from roughly 25 to 28 feet between adjacent buildings to the north and the bridge piers to the south. This section has areas covered in dirt or overgrowth, and would require excavation and resurfacing to be usable for cycling (see Figures A-4 and A-5).

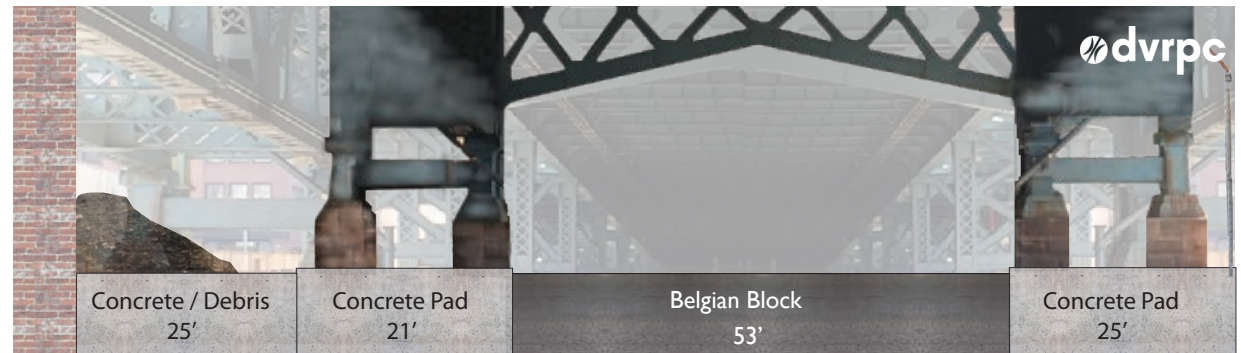
The section between Third and Second streets is narrower (roughly 17 feet) and splits into a bi-level section mid-block (see Figures A-6 and A-7). The difference in grades would likely need to be resolved, meaning that existing concrete would require excavation. This narrower section may also require additional research or outreach to assess the usage of building doors that open onto the area.



The Benjamin Franklin Bridge Overpass near the intersection of Fourth and Florist streets.

Photo Credit: DVRPC, 2016

**Figure A-4 | Beneath the Benjamin Franklin Bridge, Looking East from Fourth Street**



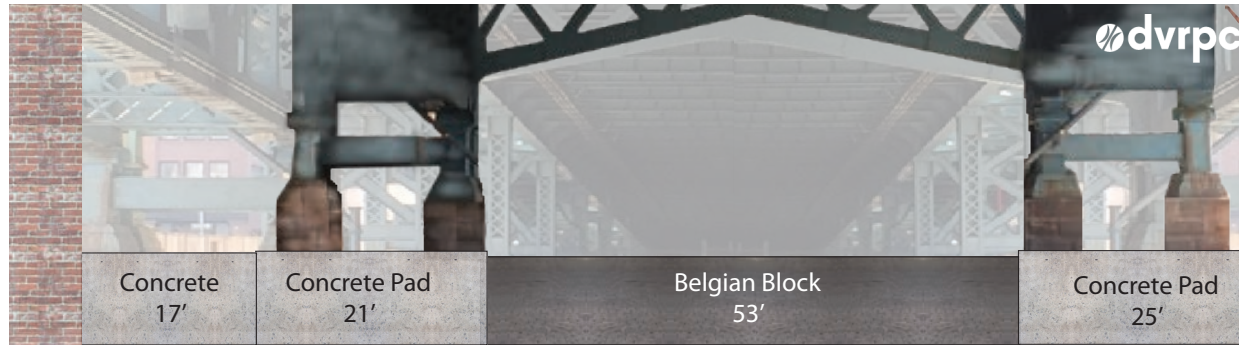
Source: DVRPC, 2016

**Figure A-5 | Beneath the Benjamin Franklin Bridge, Looking West from Third Street**



Source: DVRPC, 2016

**Figure A-6 | Beneath the Benjamin Franklin Bridge, Looking East from Third Street**



Source: DVRPC, 2016

**Figure A-7 | Beneath the Benjamin Franklin Bridge, Looking West from Second Street**

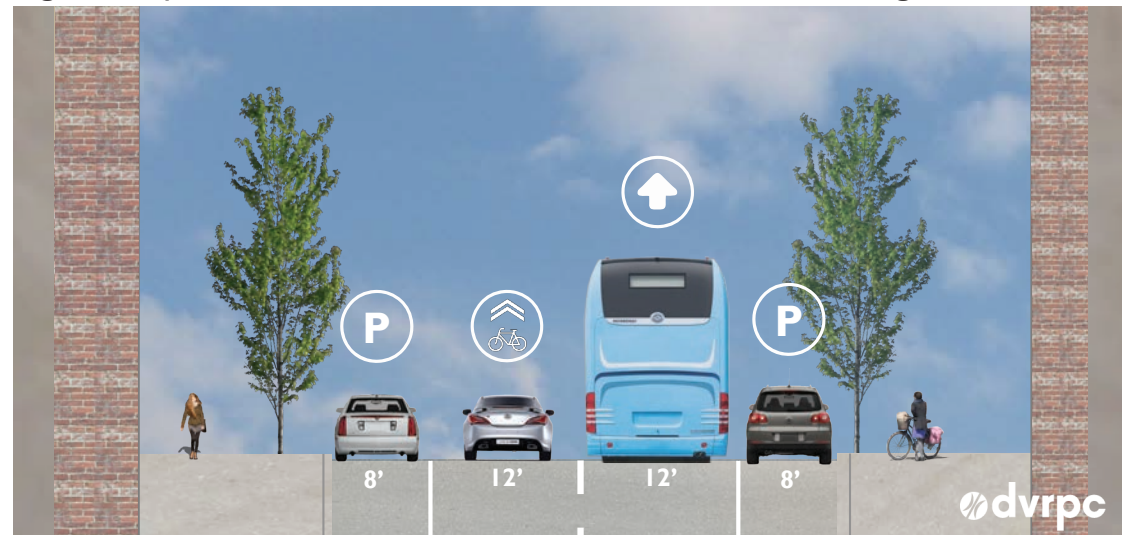


Source: DVRPC, 2016

## Arch Street

Arch Street is approximately 40 feet wide between Front and Sixth streets and has four lanes: two parking lanes and two westbound travel lanes with a sharrow in the south lane (see Figure A-8). Along the north side of the street, there are stops for the Route 48 bus at the corner of every intersection between Second and Sixth streets. There is a no-parking zone on the north curb side lane between Fourth and Fifth streets and on both curb side lanes between Fifth and Sixth streets.

**Figure A-8 | Arch Street Between Front and Fifth Streets, Looking West**



Source: DVRPC, 2016

## Second Street

Second Street between Race and Arch streets is approximately 26 feet wide and features two southbound travel lanes (see Figure A-9). The parking lane on the west side has a bus stop at the corner of Second and Race streets. The street has a striped, mid-block crossing for pedestrians to access Elfreth's Alley.

**Figure A-9 | Second Street Between Race and Arch Streets, Looking South**



Source: DVRPC, 2016

**Figure A-10 | Front Street Between Race and Arch Streets, Looking North**



Source: DVRPC, 2016

## Front Street

Front Street between Race and Arch streets has two distinct sections that form an L-shaped segment. The section of the street that connects to (and runs parallel to) Race Street is approximately 20 feet wide and has a travel lane and curb area where vehicles park. The street turns nearly 90 degrees, where the street then narrows to approximately 13 feet and becomes a single, southbound travel lane (see Figure A-10). The portion of the street that runs perpendicular to Race Street has a narrow sidewalk on the west side of the street that is obstructed by light poles and has numerous curb cuts for garage entries. On the west side of the street there is a jersey barrier separating the street from a planted area that is approximately four feet wide that abuts a tall retaining wall.



The wider section of Front Street near Race Street

Photo: DVRPC, 2016

## Race Street

Race Street is approximately 26 feet wide for the majority of the span between Fourth and Second streets (see Figure A-1 I). The street has a parking lane on the south side of the street and two eastbound travel lanes. A parking lane is also located along the north side of the street between Fourth and Fifth streets.

Figure A-1 I | Race Street Between Second and Fourth Streets, Looking West



Source: DVRPC, 2016

**Figure A-12 | Fifth Street Between Race and Arch Streets, Looking South**



## **Fifth Street**

The cartway of Fifth Street at Race Street is approximately 44 feet wide and features a wide parking lane on the east side of the street, two northbound travel lanes, and a painted, no-parking area adjacent to the curb on the west side of the street (see Figure A-12). The entrance to the Fifth Street tunnel occurs midblock between Race and Arch streets and has a 10-foot travel lane and a protected six-foot bicycle lane. Adjacent to the tunnel, on the east side of Fifth Street and at street level, there is a 20-foot frontage road with a single travel lane that vehicles use to turn right (east) on to Race Street.



# Bridge to River Conceptual Bicycle Network Analysis

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**Abstract:** The *Bridge to River Conceptual Bicycle Network Analysis* was created by Delaware Valley Regional Planning Commission staff in collaboration with the City of Philadelphia. The plan includes a comprehensive analysis of existing conditions between the Benjamin Franklin Bridge and the Delaware River in Philadelphia and offers conceptual designs that identify opportunities to improve bicycle connections and safety in the area.

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