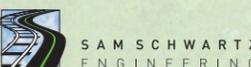


# Jersey Avenue Extension: Jersey City, NJ

## Conceptual Design + Streets Improvement Plan

Prepared for the Jersey City Redevelopment Agency

July 2011





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## Executive Summary

The Jersey Avenue Extension is the proposed construction of a segment of roadway that would eliminate a “missing link” in the city’s street network where the roadway currently terminates at Mill Creek. The completion of this segment of Jersey Avenue would greatly improve local circulation by allowing direct vehicular access between Jersey City’s downtown neighborhoods and commercial business district to the north and Liberty State Park and other land uses and transportation facilities to the south. Currently, residents and commuters must take a circuitous route through the Bergen-Lafayette neighborhood to travel between these two areas. Approximately 5,000 vehicles make this trip each day. The extension will virtually eliminate this cut-through traffic.

The city is also mindful that this new direct connection could be perceived as a short cut for out-of-town commuters by using the 1.2-mile corridor between New Jersey Turnpike Exit 14B and Grand Street to access Jersey City’s central business district or the Holland Tunnel. This corridor traverses Liberty State Park and residential development areas. To achieve the overall goal of improved connectivity and access without increasing traffic speeds and/or inducing additional traffic through the environmentally sensitive park areas or future residential neighborhoods, a series of modern roundabouts are proposed in the park segments and a more pedestrian friendly “complete street” is proposed in the northern segment of dense urban development. The proposed roundabouts, placed between the southern and northern gateways to Liberty State Park, will interrupt the “through” road experience and act as obstacles to rush hour drivers as well as provide efficient access to adjacent existing and proposed land uses. The northernmost segments of the corridor will share right-of-way with the Hudson Bergen Light Rail (HBLR) and provide a more appropriate complete-street experience for the dense levels of residential and institutional development. Uninterrupted bicycle and pedestrian access are provided along the entire length of the corridor linking the park with neighborhoods to the north and south.

Four alternative concept designs utilizing the roundabouts and complete street principles were developed for the corridor. All four concepts share a similar treatment at the southern end of the corridor through the park and industrial segments that include strategically located roundabouts, sidewalks, 10’ lanes through the park, and a greenway with dedicated pedestrian and bicycle space. To the north of the park is where distinct alternatives are defined depending on the alignment of HBLR, amount of green space, and amount of space allocated to pedestrians, bicyclists, and parking. Based on requirements set forth by the Jersey City Engineering Department, these segments north of Audrey Zapp Drive must also have the ability to provide four moving lanes of traffic in case of an emergency evacuation or disaster similar to the World Trade Center attacks on 9/11 when Liberty State Park was used as people evacuated lower Manhattan.

The concepts are presented with plan views and representative section drawings. These drawings and sections convey the design intent necessary to allow the future development of more detailed plans leading to construction drawings. Budget-level construction cost estimates for each of the four alternative alignment concepts described are also provided. A traffic assessment shows that the construction of the extension would result in the reduction of cut-through traffic in the Bergen-Lafayette neighborhood of approximately 5,000 vehicle trips per day and over 1 million per year.

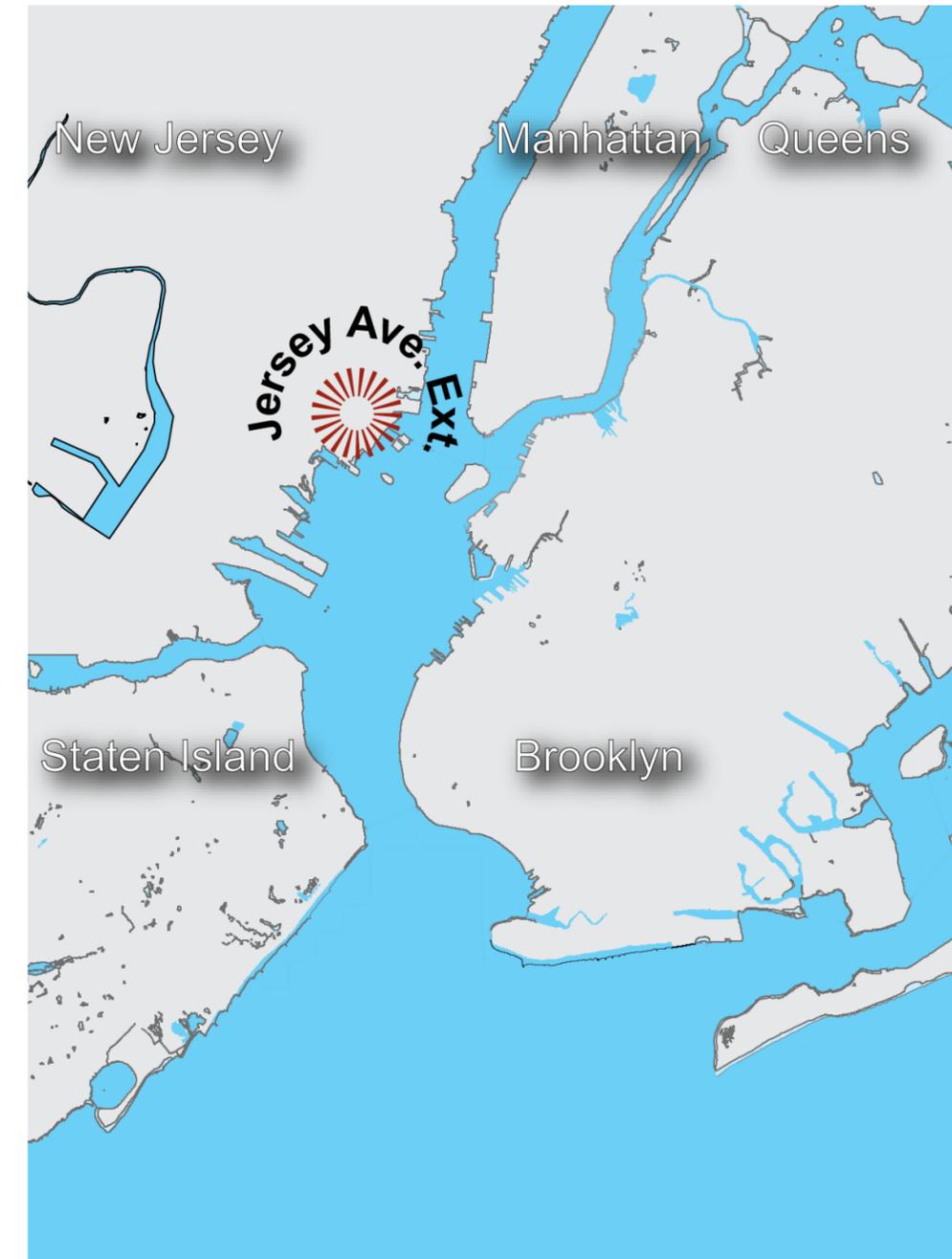


Exhibit 1.0: Regional Context Map

## Project Background

The Jersey Avenue Extension is the proposed construction of a segment of roadway that would eliminate a “missing link” in the city’s local street network where Jersey Avenue currently terminates at Mill Creek (see exhibits 1.1 and 1.4). A 10-foot wide pedestrian and bicycle bridge that provides access to and from Liberty State Park now crosses the creek. The completion of this segment of Jersey Avenue would greatly improve local circulation by allowing for direct vehicular access between Jersey City’s downtown neighborhoods and commercial business district to the north and Liberty State Park and other land uses and transportation facilities to the south. Currently, residents and commuters must take a circuitous route through the Bergen-Lafayette neighborhood to travel between these two areas (see exhibit 1.2). The extension would eliminate this cut-through traffic and provide critical access to medical facilities in case of emergencies.

The city is also mindful that this new direct connection could be perceived as a short cut for out-of-town commuters using the NJ Turnpike or Route 440 to access Jersey City’s central business district or the Holland Tunnel. The city states in their 2010 TIGER Grant application for this project that:

*“Careful consideration must be given to the design, capacity, and alignment of the extension in order to preserve the character of the historic neighborhoods located just north of Liberty State Park and to promote pedestrian and bicycle access to the park. Any extension will give priority to local circulation over regional access so that traffic volumes and design speed do not approach those of state highways.”*

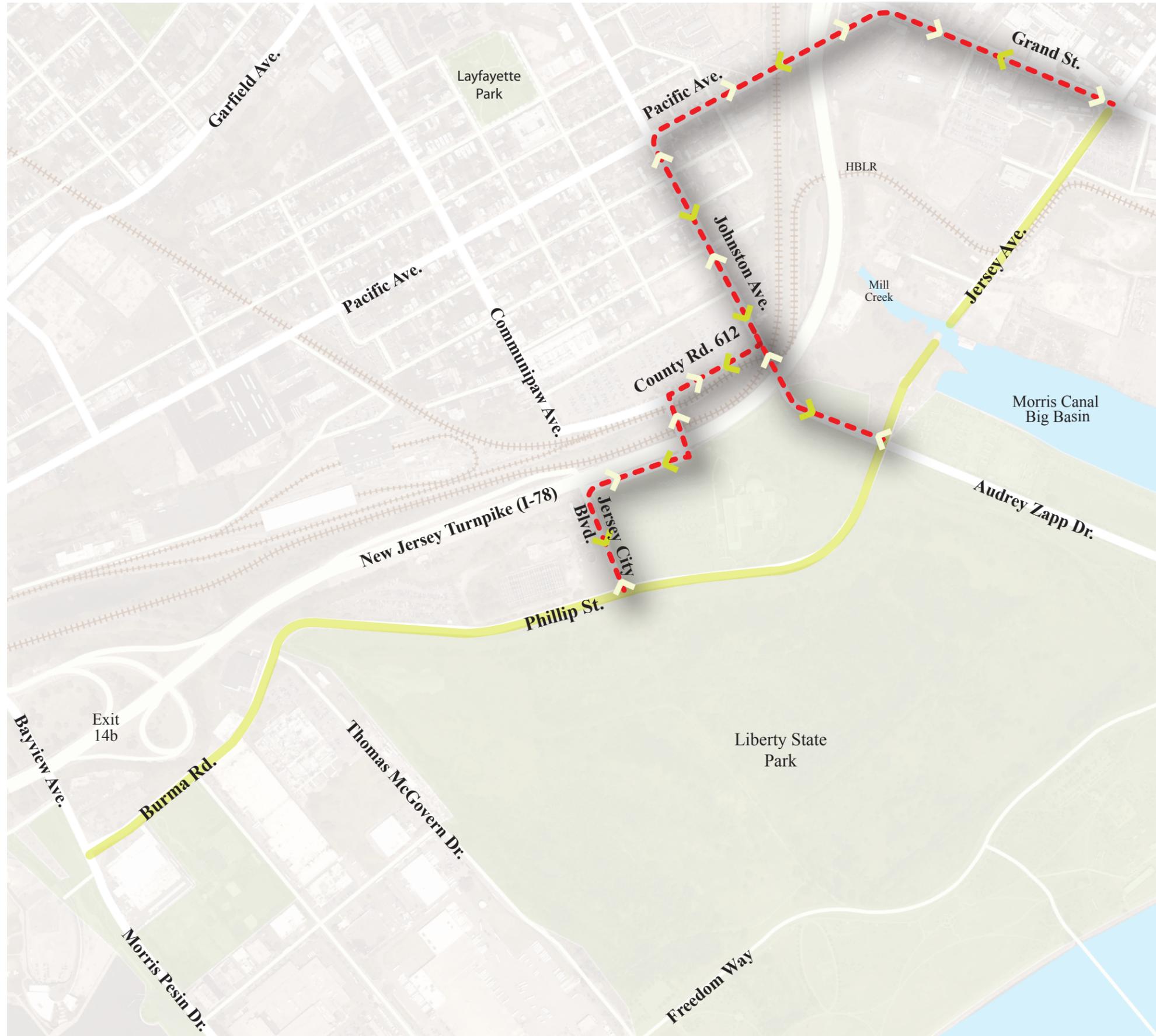
-  Jersey Avenue Extension
-  Project Boundary

**Exhibit 1.1: The Corridor**  
Project Boundary



### Alternate Routes

Because of Jersey Avenue's missing link at Mill Creek, traffic is forced to make a circuitous trip through the Bergen-Lafayette neighborhood. Nearly 600 vehicles cut through the neighborhood during the AM peak period and approximately 500 vehicles cut through during the PM peak period. This represents approximately 5,000 vehicle trips per day and over 1 million vehicles per year.



- Jersey Avenue Extension
- Alternate Route to Grand Street

**Exhibit 1.2: Circuitous Route**  
Current Cut-through Travel Route

## Corridor Segment Descriptions

In order to develop design solutions for an extension that fully addresses the city's considerations, and to prevent the unintended effect of creating a through route or short cut for out-of-town commuters, the study area was defined as the 1.2 mile corridor between NJ Turnpike Exit 14B to the south and Grand Street to the north. This corridor contains a number of different settings and functional requirements within which the roadway is situated. The roadway is one lane in each direction south of Johnston Avenue; north of Mill Creek, the roadway widens and adds an additional northbound (NB) lane. Maximum peak hour traffic volumes south of Johnston Avenue are approximately 800 vehicles per hour (vph) in the NB direction and 500 vph in the southbound (SB) direction. Peak hour volumes on the built segment of Jersey Avenue are approximately 350 vph in both the NB and SB directions.

As a first step in analyzing this corridor and prior to initiating the design process, the roadway was divided into contextual segments according to their environmental setting and function. These segments are described below and identified in exhibit 1.3.

### Segment A

Segment A is the Burma Road segment of the corridor which connects to NJ Turnpike Exit 14B via Bayview Avenue and to points south via Caven Point Road. It provides access for Liberty State Park users, peak hour commuters, and the businesses in Liberty Industrial Park. It is the southern gateway to Liberty State Park. The existing traffic circle at the intersection of Morris Pesin Drive and Bayview Avenue provides a critical sorting function for these varied roadway users.

### Segment B

Segment B is the Phillip Street portion of the corridor. Phillip Street is the main roadway along and through the southern portion of Liberty State Park. At the south end of this segment, there are future development sites to the west of the roadway. Phillip Street continues as an uninterrupted stretch of roadway serving the Liberty Science Center, a major park facility. It also intersects with the only signalized intersection in the park at Jersey City Boulevard, which provides access to Liberty Science Center's 760-space parking lot as well as the 1,000-space Hudson-Bergen Light Rail (HBLR) commuter park-and-ride lot at the Liberty Park station. It also provides access to the NJ Turnpike Exit 14C slip ramps, which were created primarily for the park-and-ride lot.

### Segment C

Segment C begins at the intersection of Phillip Street and Johnston Avenue/Audrey Zapp Drive, which serves as the current northern gateway entrance to the park and its historic Central Railroad of New Jersey Terminal to the east with ferries to the Statue of Liberty and Ellis Island. Johnston Avenue also provides access to the Bergen-Lafayette neighborhood and is part of the current circuitous access route to downtown Jersey City as Phillip Street terminates at this intersection. This segment is also a transition zone between the park expanse to the south and development areas to the north. It contains a small section of parkland to the east that provides pedestrian and bicycle access to the waterfront. There are also development sites to the west.

### Segment D

Segment D is the "missing link" over Mill Creek. A 10-foot wide timber and asphalt bridge over the creek currently provides a tenuous pedestrian and bike connection between the park and downtown. The fully constructed Jersey Avenue begins approximately 350 feet north of the bridge.

### Segment E

Segment E contains the completed Jersey Avenue roadway that is the main access arterial for development areas to the west and east of the street including the Grand Jersey Redevelopment Area and the Liberty Harbor Redevelopment Area, which is already under construction. These two projects will add approximately 9,000 residential housing units to this area. It also provides critical access to the Jersey City Medical Center. Jersey Avenue must service the needs of a dense urban residential and pedestrian environment in this segment. HBLR crosses Jersey Avenue and runs along its east side for approximately 650 feet before turning east towards the Jersey Avenue HBLR station and Liberty Harbor development.

### Segment F

Segment F is the 450-foot section of Jersey Avenue just north of the HBLR turn to the east into the Jersey Avenue station. It provides access to the new Jersey City Medical Center and intersects with Grand Street. It then continues north as a key spine in the grid system of the densely developed historic downtown.

The above roadway segments and transitions were analyzed for their function and environmental setting. The designs are sensitive to the context of each segment and at the same time informed by the overarching need to address the city's core considerations.

**Segment Overview**

**SEGMENT A:** Industrial park and southern gateway to Liberty State Park

**SEGMENT B:** Parkland and proposed residential development site south of Jersey City Blvd

**SEGMENT C:** Park/Waterfront and development site to the west

**SEGMENT D:** Mill Creek crossing

**SEGMENT E:** Proposed high density development east and west and HBLR Right-of-Way

**SEGMENT F:** Existing and proposed high density development and Jersey City Medical Center

-  Jersey Avenue Extension
-  Liberty State Park Gateway
-  Development
-  Park
-  Waterfront
-  Industrial

**Exhibit 1.3: The Context Surrounding Land Uses**



## Concept Design Approach

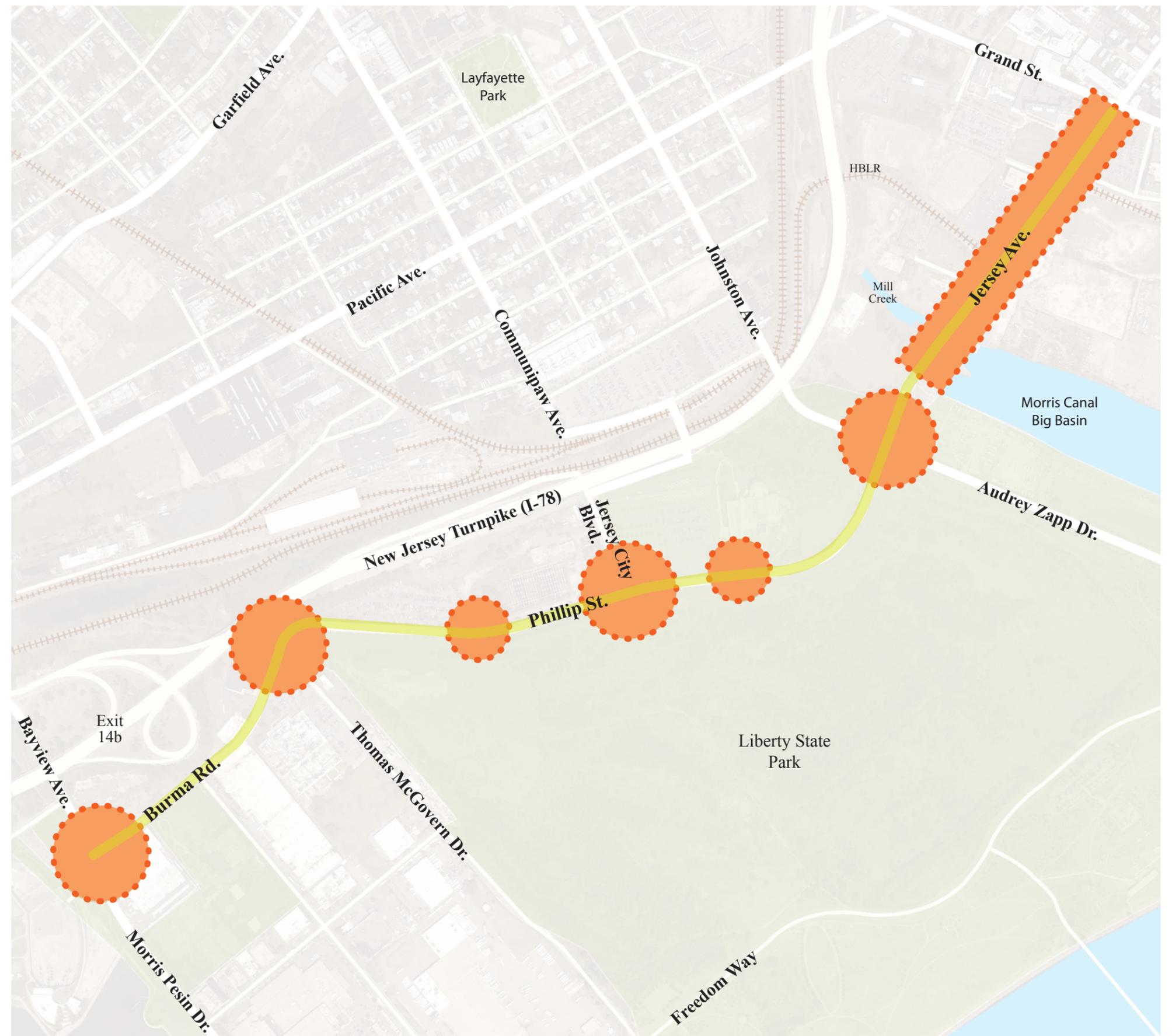
### Context Sensitive Design

The overall project approach was to develop a **context sensitive design solution** for each segment of the corridor. A context-sensitive design for the Jersey Avenue Extension project begins with the premise that the new connection between Liberty State Park and downtown Jersey City, which also links Jersey City neighborhoods to each other, does not become a desirable through route for out-of-town commuters seeking a shorter trip downtown or as a preferred alternative to the NJ Turnpike Extension's access to the Holland Tunnel. To this effect, the new extension must be designed to discourage through traffic by reducing speeds along this corridor while also, creating a safe, environmentally sensitive, and efficient roadway accessible to all users. Uninterrupted bicycle and pedestrian access are provided along the entire length of the corridor, linking the park with neighborhoods to the north and south.

### Design Goals

A summary of the design goals established at the outset of the project are listed below:

- Maintain pedestrian and bicycle-friendly design for the length of the corridor
- Discourage additional commuter traffic from using the NJ Turnpike Extension
- Calm traffic through the park and residential areas to create a safe environment
- Preserve and enhance the character of the areas through which it traverses
- Allow for a four-lane evacuation and hospital access route in case of emergency
- Not impact the Bergen-Lafayette neighborhood



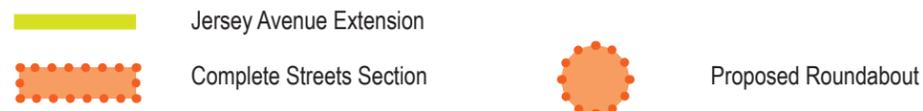
## Roundabouts and Complete Streets

To achieve these goals, a series of modern roundabouts are proposed in the park segments (inspired to a certain extent by the pre-existing traffic circle at Morris Pesin Drive/Bayview Avenue), and a more pedestrian friendly “complete street” in the northern segment of dense urban development (refer to Exhibit 1.4). The proposed roundabouts, placed between the southern and northern gateways to Liberty State Park, will interrupt the “through” road experience and act as obstacles to rush hour drivers as well as provide efficient access to adjacent existing and proposed land uses. The northernmost segments of the corridor will share right-of-way (ROW) with the HBLR and provide a more appropriate complete street experience for the dense levels of residential and institutional development. These roadway segments could be converted to a four-lane evacuation and hospital access route in case of emergency.

## The Modern Roundabout (Segments A-C)

Modern roundabouts have been demonstrated to provide the following benefits and opportunities, which are consistent with the project objectives and appropriate for the park setting:

- **Traffic Calming** by reducing vehicle speeds through use of geometric design as opposed to stop and go traffic controls.
- **Traffic Safety** by eliminating dangerous crossing conflicts inherent in conventional intersections.
- **Pedestrian Safety** by reducing vehicle speeds.
- **Environmental Benefits** of minimizing air and noise pollution by reducing stop and go traffic.
- **Aesthetic Opportunities** of the central islands for the park setting (landscaping) and the particular context within which they are situated: For example, the historic Belgian block roadbed of Johnston Avenue would be repeated on the approaches to the roundabouts; these sections of Belgian block pavers would also calm traffic.
- **Operations and Maintenance Costs** are typically lower than a signal-controlled intersection. The concept designs would replace the signalized intersection at Phillip and Jersey City Boulevard with a modern roundabout.



**Exhibit 1.4: Roundabouts + Complete Streets**  
Conceptual Design Approach

## The Roundabout Plan

The proposed plan for the corridor introduces six modern roundabouts between Morris Pesin Drive and Johnston Avenue/Audrey Zapp Drive. All of the roundabouts were conceptually engineered for appropriate size, capacity, and geometry of their respective traffic, bicycle, and pedestrian functions. All roundabouts would include appropriate off-street bicycle and pedestrian facilities to allow convenient travel from Phillip Street to intersecting streets.

- A modern roundabout designed to handle the volumes and types of vehicles appropriate for the industrial park. The Liberty State Park southern gateway entrance would replace the existing traffic circle at Morris Pesin Drive and Bayview Avenue.
- The intersection of Thomas McGovern Drive and Phillip Street is replaced by a modern roundabout, which also provides a direct bike path connection to the Liberty State Park interior path system.
- A roundabout is added midway between Thomas McGovern Drive and Jersey City Boulevard at an appropriate location to break up a long stretch of uninterrupted roadway and provide access to future development sites to the north and west of Phillip Street.
- A roundabout will replace the only existing signalized intersection in the park on Phillip Street at Jersey City Boulevard.
- A mini roundabout will be provided at the entrance to Liberty Science Center.
- The current stop-controlled intersection of Phillip Street and Johnston Avenue/Audrey Zapp Drive would be replaced by a roundabout and become the northern gateway to Liberty State Park.



University of Maryland, MD

Source: <http://www.geolocation.ws/v/W/4cad1484421aa917b8000a40/file2008-03-12---umd---roundabout-viewed/en>



### The Complete Street

A “complete street” refers to a street in which the needs of all users are accommodated by the street’s design. A complete street also includes elements such as bioswales or rain gardens to reduce the negative stormwater impacts of impervious surfaces. However, a street is only “complete” relative to its context and adjacent land uses: For example, a street could include generous pedestrian, bicycle, and transit infrastructure, but if adjacent land uses are such that the likelihood of walking and/or cycling on the street is low, then the street would be simply overbuilt, rather than complete. “Completing” streets is a laudable objective from a policy standpoint, but must be contextually appropriate when using scarce public resources.

For Jersey Avenue, the context-sensitive, complete-streets approach includes designs that accommodate all modes of transportation and activities consistent with the land uses in those segments. Where multiple modes and activities are present, motorists understand that the roadway serves numerous functions and users. This diverse range of multi-modal activity tends to calm traffic. Motorists become more observant of pedestrians, bicyclists, and transit users. The effect is a calmer environment of increased motorist awareness and caution, achieved without an inordinate amount of regulatory signage, striping and markings, flashing lights, etc.

By employing roundabouts, a complete-streets approach, and other context-sensitive treatments, the concept designs discourage peak hour through traffic, improve the park environment, and provide efficient access and connections for all users.



**Charlotte, N.C.**  
Source: <http://www.completestreets.org/>



**Grand St., Manhattan**  
Source: NYC Street Design Manual, 2009



**Columbia St., Brooklyn**  
Source: NYC Street Design Manual, 2009

## Description of Alternatives

Four alternative concept designs were developed for the corridor. These concepts are presented with plan views and representative section drawings for each of the labeled segments. These drawings and sections convey the design intent necessary to allow the future development of more detailed plans leading to construction drawings. Budget-level construction cost estimates for each of the four alternative alignment concepts described are provided by segment.

### General

All four concepts share a similar treatment south of Audrey Zapp Drive through the industrial and park segments, which include strategically located roundabouts, sidewalks, and a greenway with dedicated pedestrian and bicycle space. Lane widths for all segments, except the segment adjacent to the industrial park in the south (Segment A), are 10 feet in order to reduce the likelihood of speeding. In Segment A, 11-foot travel lanes are provided to accommodate higher truck volumes, along with a new sidewalk on the eastern side of Burma Road and a shared use path/bikeway on the western side. The segments along Phillip Street and through the park consist of two 10-foot travel lanes separated by an 8-foot green buffer. Green shoulders that can provide emergency access are provided on both sides of the road. To the east of the road are a bioswale and green buffer (21 feet wide) and a 15-foot wide greenway that contains an 8-foot dedicated bike lane and a 7-foot pedestrian walkway. The long stretch of Phillip Street between Thomas McGovern Drive and Jersey City Boulevard is broken by a roundabout located at the driveway access point of a proposed development site. (An alternative to this roundabout is a chicane, shown in Concept Design 2, which serves the same function of reducing vehicle speeds as a roundabout, but without the access drive to the development site.)

To the north of Audrey Zapp Drive on Jersey Avenue is where three distinct alternatives are defined depending on the alignment of HBLR. It was determined that the Jersey Avenue ROW would be set at 80 feet and the HBLR ROW at 36 feet for a combined width of 116 feet. All options include two 10-foot travel lanes; Concept

Designs 1, 3, and 4 include two 8-foot parking lanes. A sidewalk varying in width from 12 to 15 feet is provided on the eastern edge of the street. Based on requirements set forth by the Jersey City Engineering Department, these segments north of Audrey Zapp Drive must also have the ability to provide four moving lanes of traffic in case of an emergency evacuation or disaster similar to the World Trade Center attacks on 9/11 when people headed to Liberty State Park to evacuate lower Manhattan.

The concepts are more fully described below.

### Concept Design Details

The most notable difference between three of the four concept designs is the alignment of the HBLR. Currently, south of Grand Street, the HBLR ROW is located on the east side of Jersey Avenue, turns west north of Aetna Street, and then makes a sharp turn to the south. This sharp turn slows trains and unnecessarily lengthens to the train's route. NJ Transit has expressed interest in realigning the HBLR to eliminate the sharp curve. Differences in the HBLR alignment by concept design are as follows:

- Concept Design 1 retains the HBLR ROW on the east side of Jersey Avenue and removes the existing sharp curve northwest of the intersection of Jersey Avenue and Aetna Street. The HBLR ROW extends farther south on Jersey Avenue and turns west between Mill Creek and Johnston Avenue. This concept design also includes a potential new HBLR station immediately south of Mill Creek to serve future development. The HBLR ROW in this concept design, including its placement on the east side of Jersey Avenue, is consistent with NJ Transit's long-term plans.
- In Concept Designs 2 and 4, the HBLR follows the same route as in Concept Design 1, but the ROW is located in the center of Jersey Avenue rather than on the east side of the street. Concept Design 2 employs a "maximum green" approach that maximizes landscaping and stormwater retention areas. Concept Design 4 incorporates more space for pedestrians and cyclists by reducing the amount of green space.

- Concept Design 3 maintains the existing HBLR alignment.

### Right-of-Way Assumptions

The following assumptions were made regarding ROW widths based on ROW GIS data provided by the Division of City Planning (see Exhibit 1.6). Actual ROW would be determined by a future project phase, and additional ROW acquisition may be required to realize the preferred concept design.

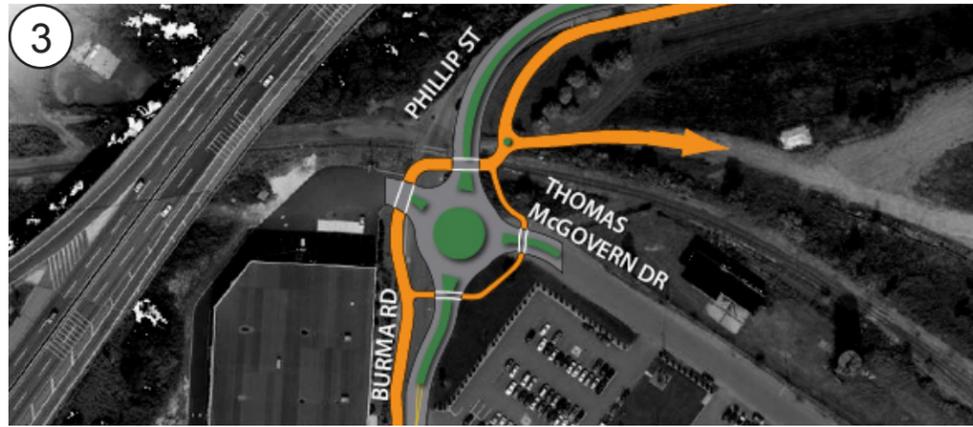
- Section A: 41 feet
- Section B: 80 feet
- Sections C, D, E, and F: 80 feet without the HBLR, 116 feet with the HBLR

For Section B, the actual ROW appears to be 56 feet or less, and it was assumed that the eastern portion of the section (primarily the green buffer between the emergency access lane and the bicycle path, the bicycle path, and walkway) would be located within Liberty State Park.



Exhibit 1.5: Conceptual Roundabout Designs (right)

Exhibit 1.6: Proposed Right-of-Way Dimensions (far right)



# Concept Design 1

Section A corresponds to the more industrialized area south of Liberty State Park between Morris Pesin Drive and Thomas McGovern Drive, where the available ROW in this area is typically 41 feet. Section A includes two 11-foot travel lanes, a sidewalk on the east side of the street, and a shared-use path for pedestrians and bicyclists on the west side of the street.

Section B corresponds to the area within and adjacent to Liberty State Park, between Thomas McGovern Drive to the south and Johnston Avenue/Audrey Zapp Drive to the north. This section includes more landscaping than other sections, and given the less intensively developed adjacent land uses and the presence of the park, landscaped areas are increased and pedestrian facilities reduced relative to sections to the north. This section contains a hardened grassy shoulder that allows for emergency vehicle access, and a bioswale and heavily landscaped buffer on the east side of the street for stormwater retention and filtration. Section B also includes a landscaped median, an 8-foot bicycle path, and a 7-foot pedestrian walkway.

The plan also includes a pedestrian bridge spanning Phillip Street, connecting the Liberty Science Center to the northwest with Liberty State Park to the southeast. The pedestrian bridge is part of Liberty State Park's existing, long-term plans. Immediately south of the pedestrian bridge, the main Phillip Street bicycle path/walkway makes a wide detour around the planned stormwater bio-remediation wetland. A smaller bicycle/pedestrian path provides access to Liberty Science Center via the roundabout at this location.

Immediately south of Johnston Avenue/Audrey Zapp Drive, the north-south bicycle path/walkway intersects the existing east-west bicycle path/walkway that serves Liberty State Park and Liberty Science Center.

Section C is north of Johnston Avenue/Audrey Zapp Drive and represents the transition from the less intensively developed areas to the south to the areas to the north that are projected for future high

density development. The need for on-street parking in this area and to the south is minimal-to-none, and the section does not include the parking lanes found in Sections D, E, and F to the north. This section is similar to Section B, but does not include a median, adds a sidewalk on the west side of the street (given the potential for future development to the west), and expands the pedestrian walkway from 7 feet to 15 feet.

Section D spans Mill Creek and includes a shared-use path on the eastern edge. This path allows pedestrians and cyclists traveling to/from the path on the north side of Mill Creek to travel to/from the path on the south side of Mill Creek to do so without crossing the HBLR. To accommodate this path, the sidewalks were narrowed slightly from 15 feet to 14 feet and the planting strip/street furniture zone on the east side of the street was eliminated. This section includes parking lanes on both sides of the street. In this Section, Section E and Section F, the on-street parking serves adjacent land uses (in most areas still to be developed), particularly ground-floor retail, and has an added traffic calming benefit.

Section E is south of Regent Street and includes two travel lanes, two lanes of parking, and the 36-foot HBLR ROW. A sidewalk is located on the west side of the street adjacent to the parking lane. The east side of the street, between the parking lane and the east edge of the ROW, includes a two-way bicycle path and a sidewalk.

Section F maintains the same features as Section E, with the exception of the 36-foot HBLR ROW, which turns to the east just before Regent Street.

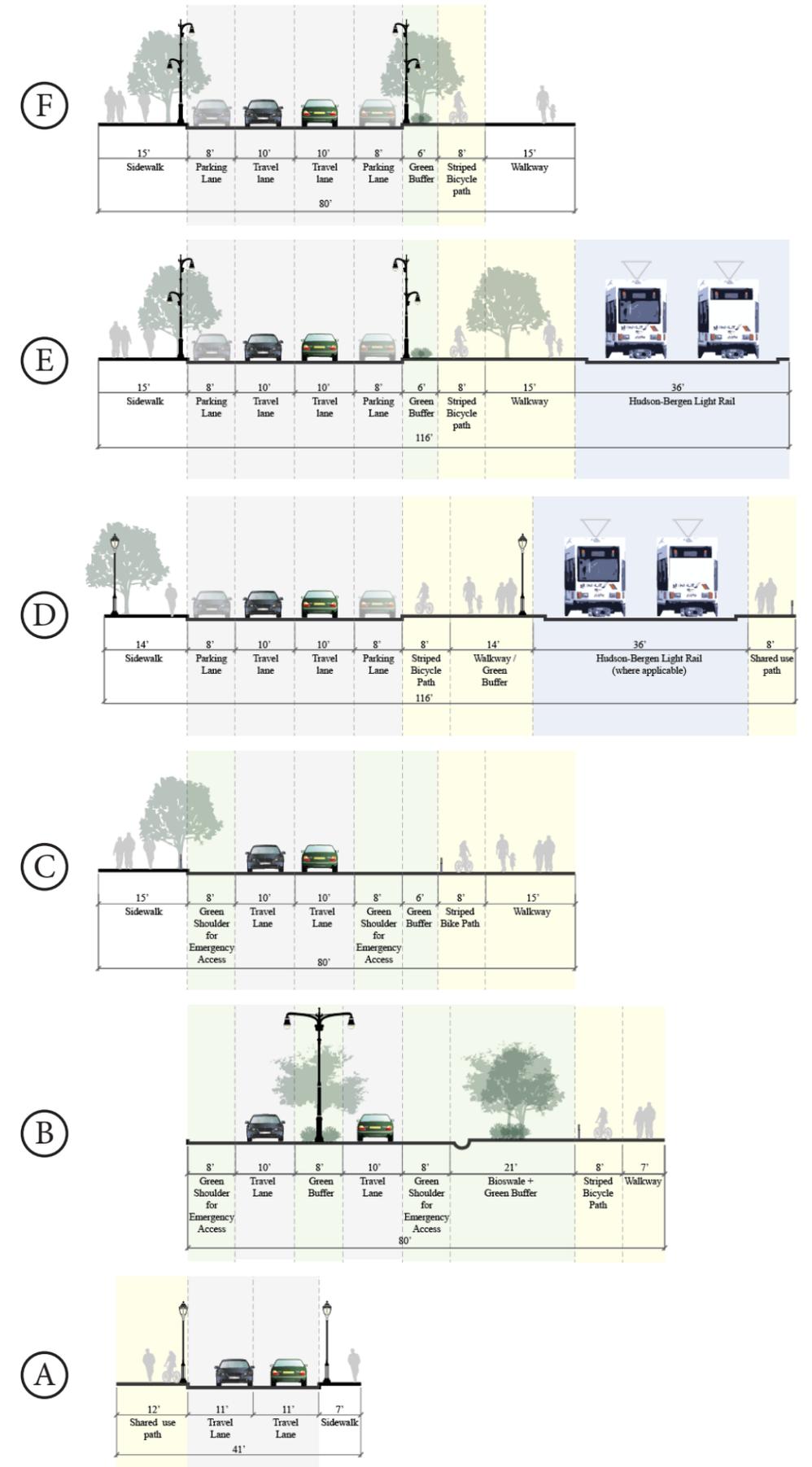


Exhibit 1.7: Concept 1, Sections A-F



Exhibit 1.8: Concept 1, Plan  
Design Concept 1 - Plan View



## Concept Design 2

Concept Design 2 is considered the “maximum green” concept and includes more landscaping, less parking, and less hardscape than the other concept designs.

Sections A and B are identical to those of Concept Design 1.

Concept Design 2 includes a chicane (a traffic calming device employing horizontal deflection to slow vehicles) adjacent to the city’s existing tow pound north of Thomas McGovern Drive; all other concept designs include a roundabout and access road at this location to accommodate future potential redevelopment of the tow pound.

Section C of Concept Design 2 is similar to Section C of Concept Design 1, but the landscaped areas are increased, the sidewalks are narrower. It includes a landscaped median, and the green buffer between the emergency shoulder and bicycle path is larger and it accommodates a greater volume of stormwater.

Sections D and E are the same and include the HBLR ROW; in this concept design, the HBLR is located roughly in the center of Jersey Avenue between two vehicular travel lanes. This placement of the HBLR is also included in Concept Design 4. Considering long-term development plans, the need for on-street parking is expected to be greater on the west side of the street; south of Regent Street, Concept Design 2 includes on-street parking only on the west side of the street. A generous, heavily landscaped buffer is located between the NB travel lane and the bicycle path; the western edge of the green buffer would be hardened and allow for emergency vehicle access.

Section F of Concept Design 2 is similar to Section F of Concept Design 1, except the sidewalks are narrowed slightly, and the landscaped green buffer between the parking lane and the bicycle path widened from 6 feet to 12 feet.

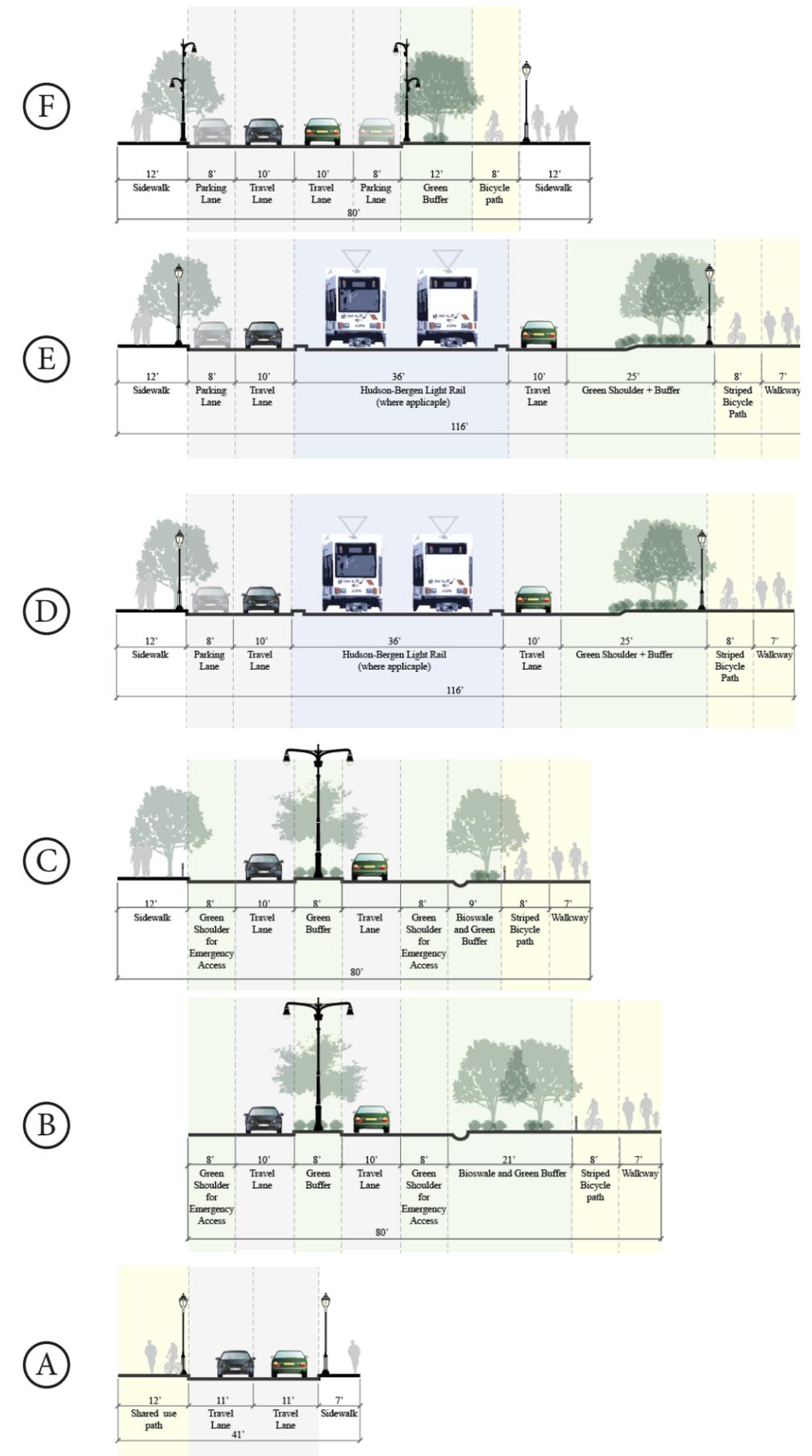


Exhibit 1.9: Concept 2, Sections A-F



Exhibit 1.10: Concept 2, Plan  
Design Concept 2 - Plan View

### Concept Design 3

If funds are unavailable to pursue the reconfiguration of the HBLR and elimination of its sharp turn as described under Concept Design 1, Concept Design 3 could be constructed as an interim alternative. Concept Design 3 maintains the existing HBLR ROW and, with the exception of Section D, is identical to Concept Design 1. Section D includes a wide area on the east side of the street to accommodate the future reconfiguration of the HBLR. Prior to accommodating the HBLR, this area on the east side of the street would be landscaped and include a greenway for pedestrians and bicyclists.

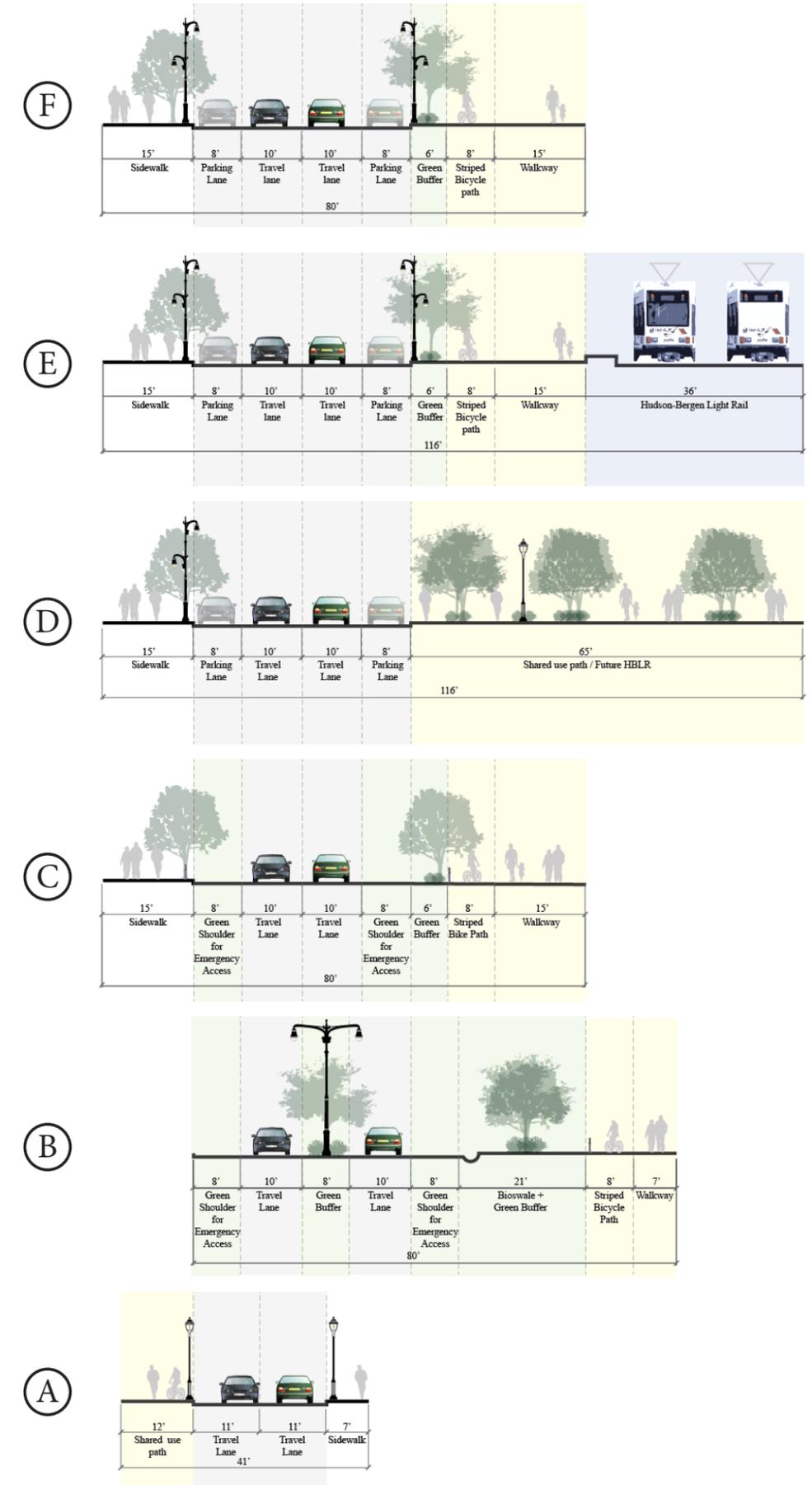


Exhibit 1.11: Concept 3, Sections A-F

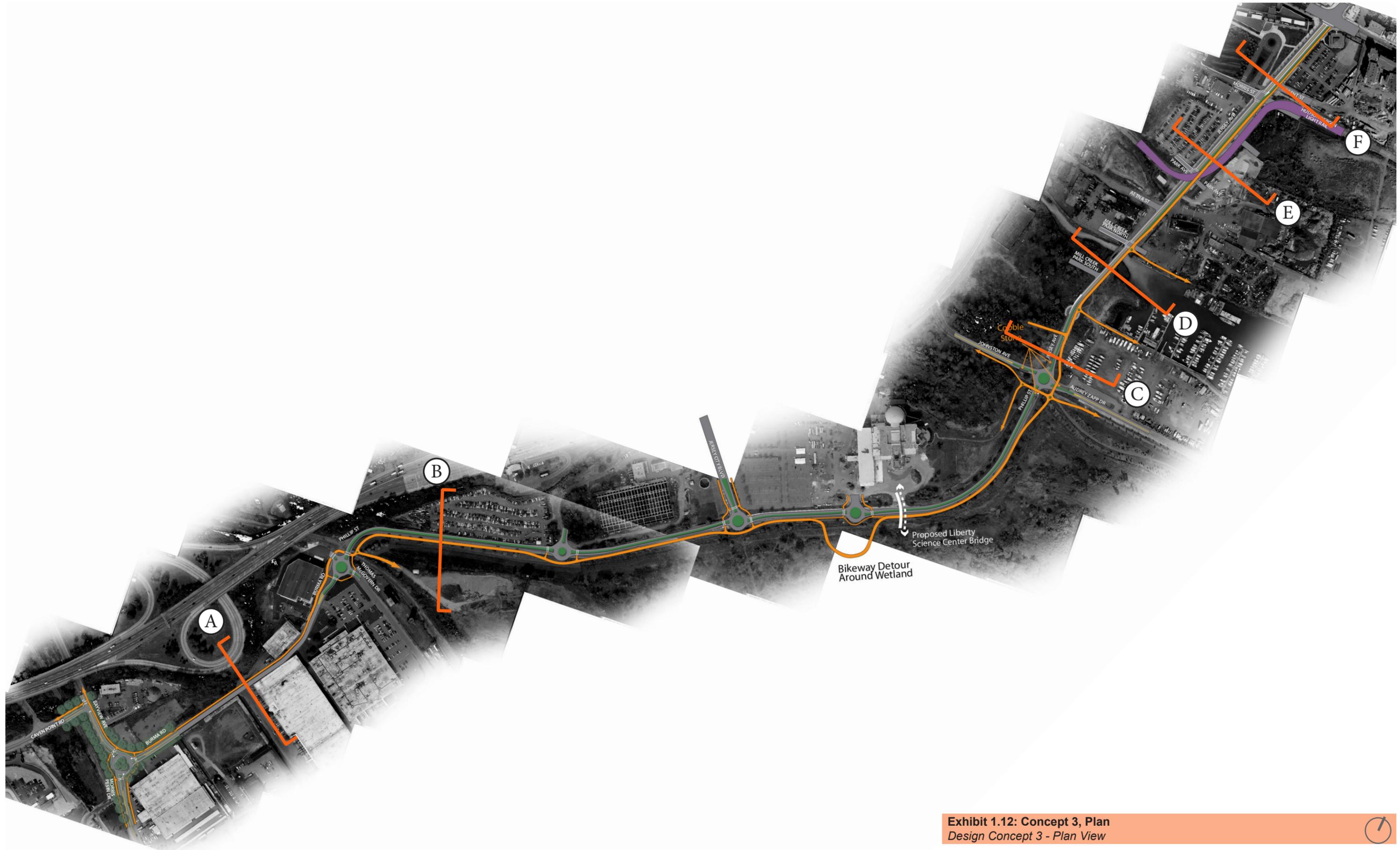


Exhibit 1.12: Concept 3, Plan  
Design Concept 3 - Plan View



# Concept Design 4

Concept Design 4 incorporates comments received from the Division of City Planning; it is largely a modified version of Concept Design 1.

Section A is identical to Section A in the other concept designs.

Section B is similar to the other concept designs, but also includes a sidewalk on the west side of the street, in addition to the sidewalk/walkway on the east side of the street, to serve future development on the west side of the street (such as that proposed for the site of the City's existing tow pound north of Thomas McGovern Drive).

Section C of Concept Design 4 is similar to Section C of Concept Design 1, but the off-street bicycle path is wider, and the green buffer adjacent to it is correspondingly reduced. In addition, the green shoulders for emergency access in Concept Design 1 are replaced by paved bike lanes in Concept Design 4, which are wide enough at 8 feet to also serve as emergency access lanes. With the bike lanes and the off-street bicycle path, cyclists have a choice of riding adjacent to vehicle lanes in the street (more appropriate for high-speed and/or more experienced cyclists) or use of the off-street bicycle path, adjacent to pedestrians (more appropriate for slower and/or less experienced cyclists). At the roundabouts, the on-street bicycle lanes end and convert to sharrow markings; cyclists and motorists share the same single lane within the roundabout. This design is consistent with the best practices for roundabout design and safer than bike lanes within a roundabout.

Section D and E are identical and add the HBLR ROW between the two travel lanes.

Section F is the same as section F of Concept Design 1, except the bicycle path is wider. As a result, the green buffer of Concept Design 1 is largely reduced to a narrow planting/street furniture strip.

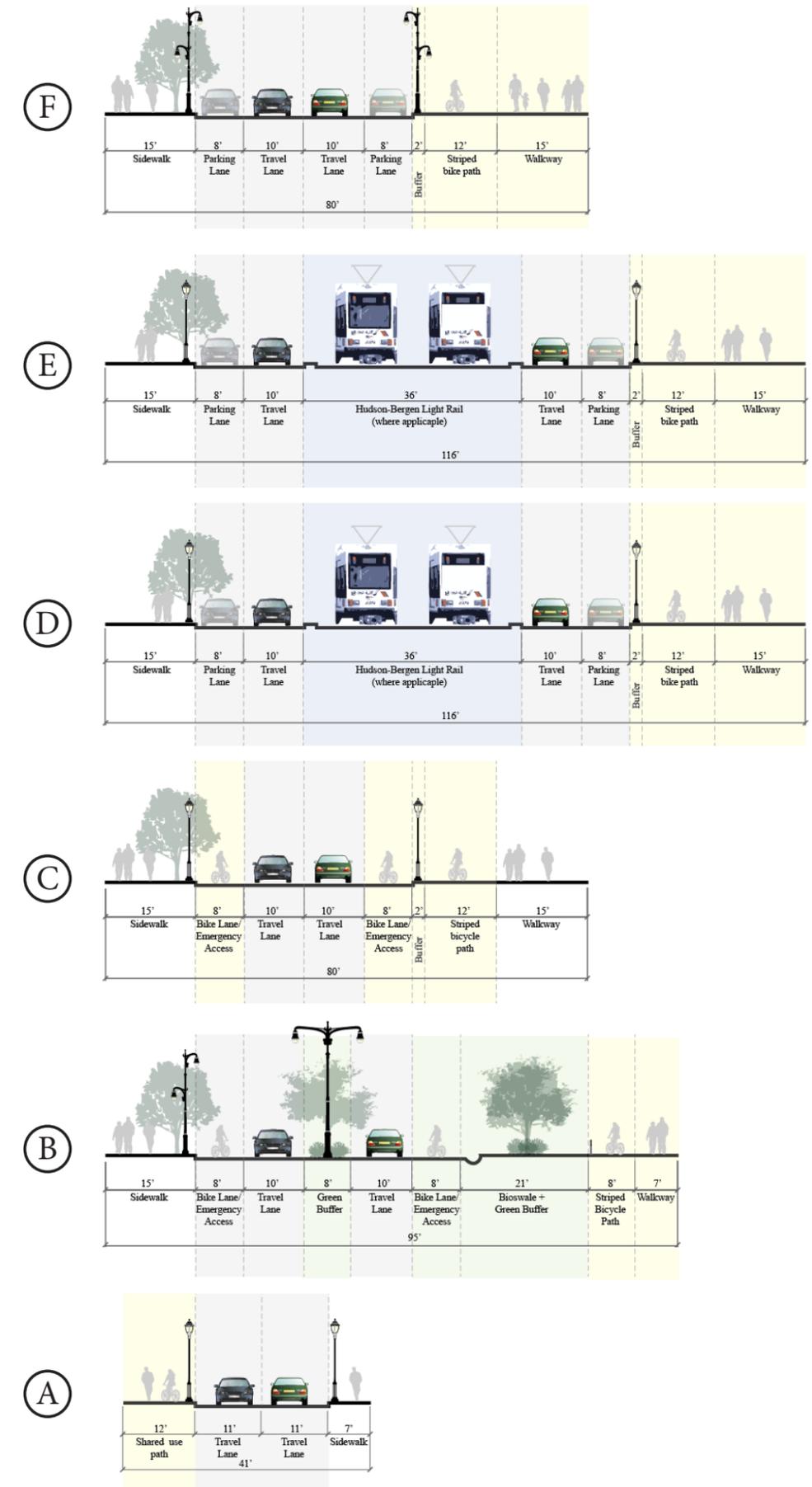


Exhibit 1.13: Concept 4, Sections A-F

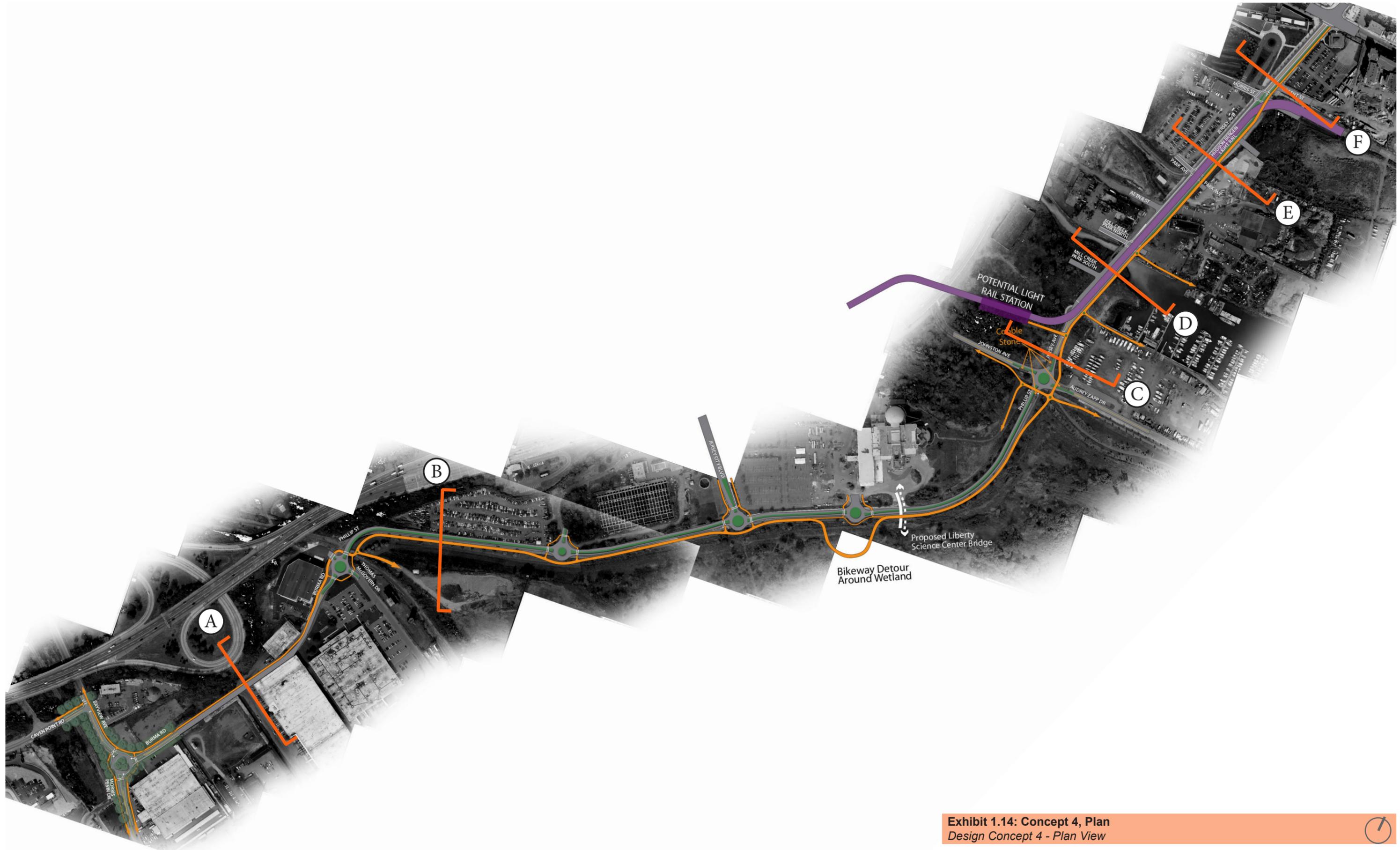


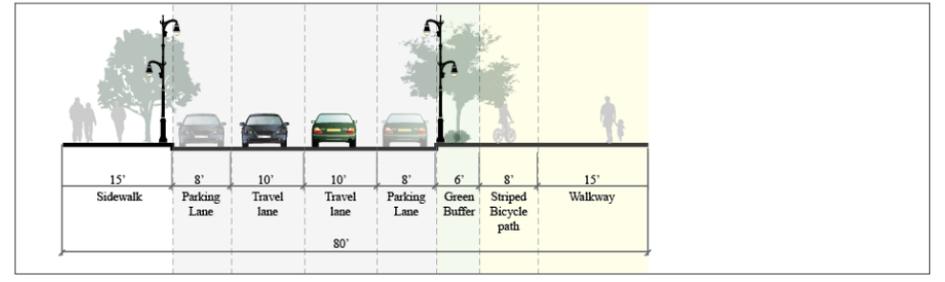
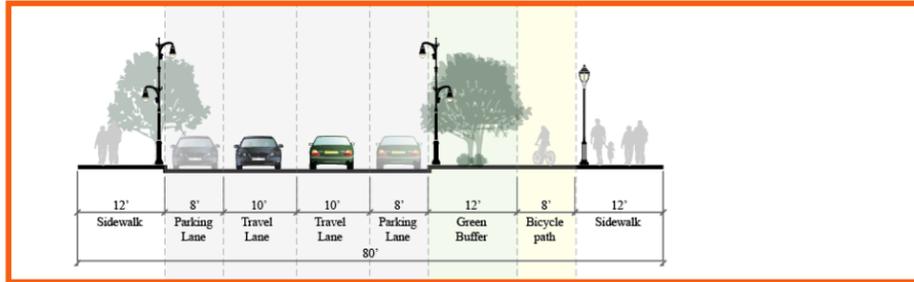
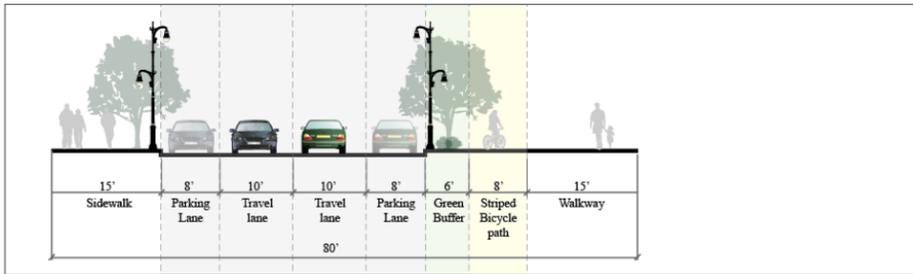
Exhibit 1.14: Concept 4, Plan  
Design Concept 4 - Plan View

# Concept 1

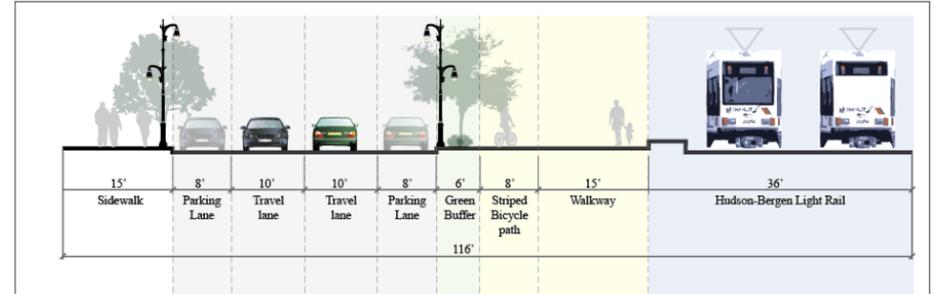
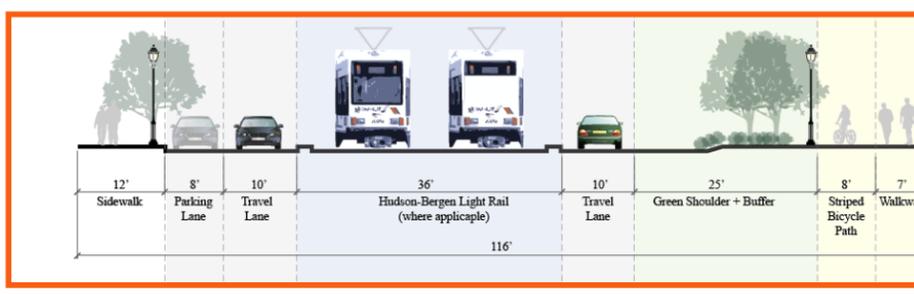
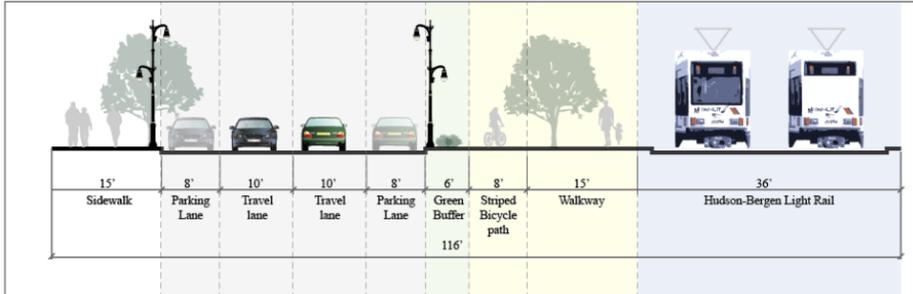
# Concept 2

# Concept 3

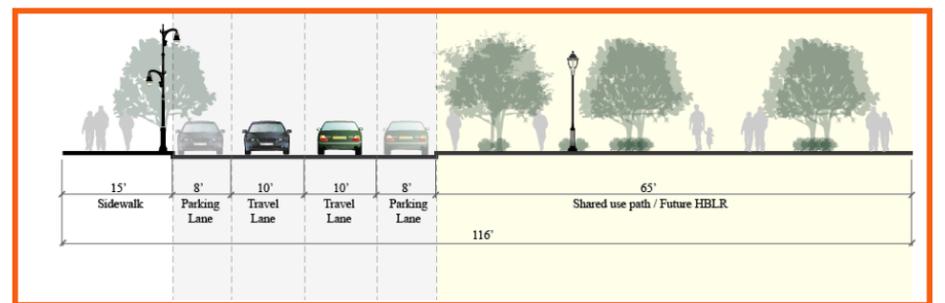
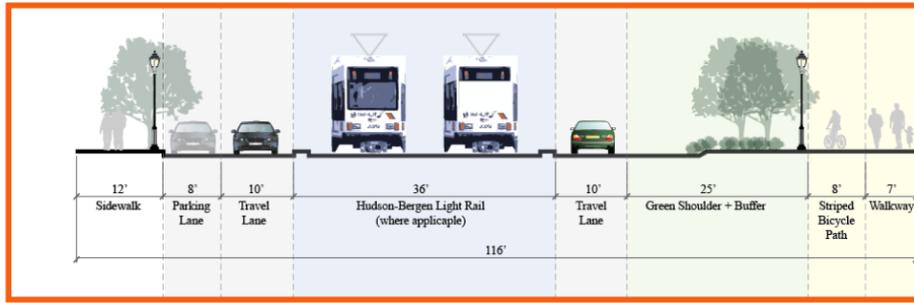
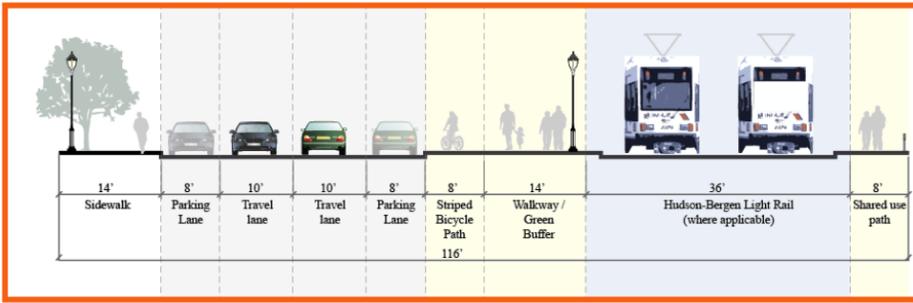
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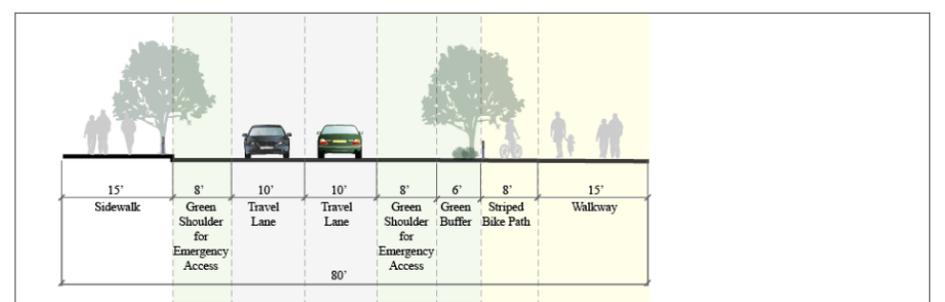
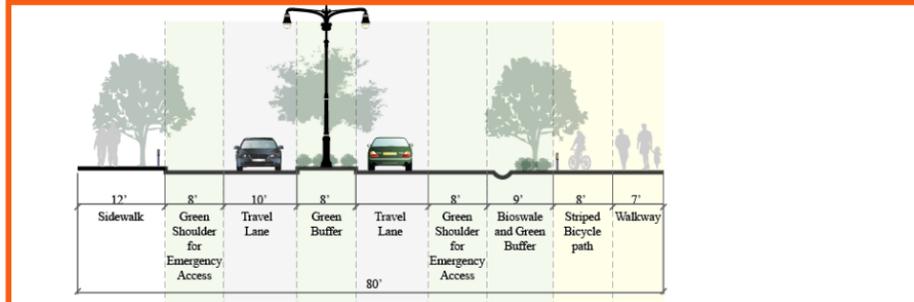
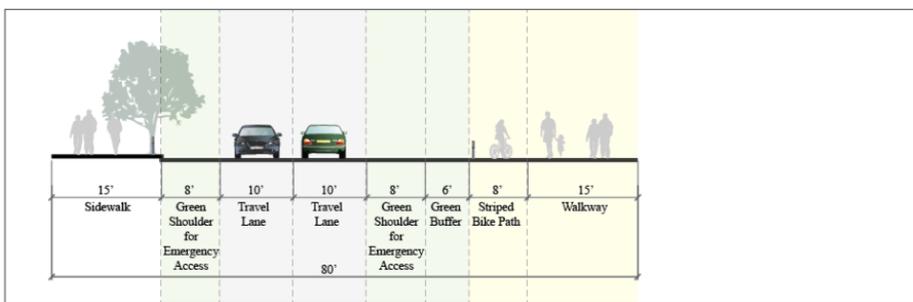
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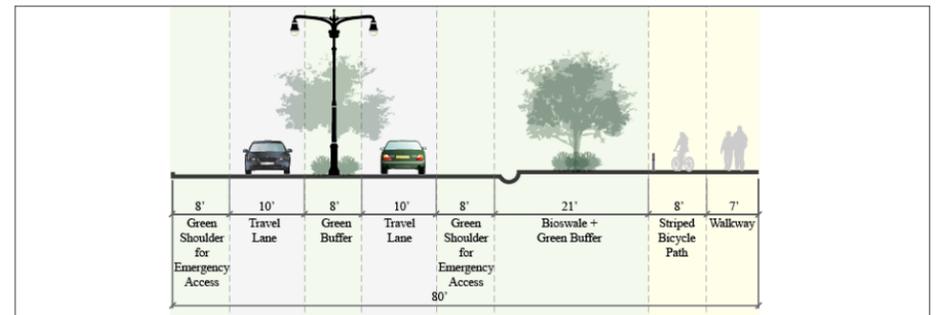
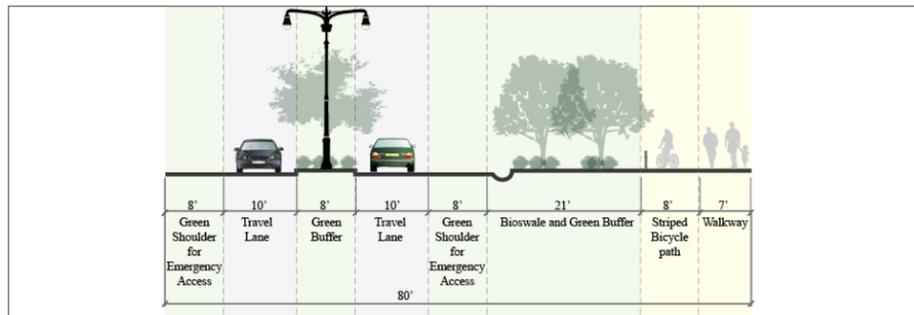
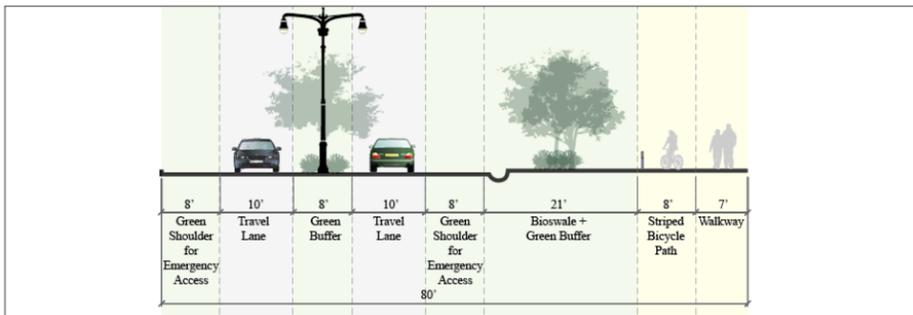
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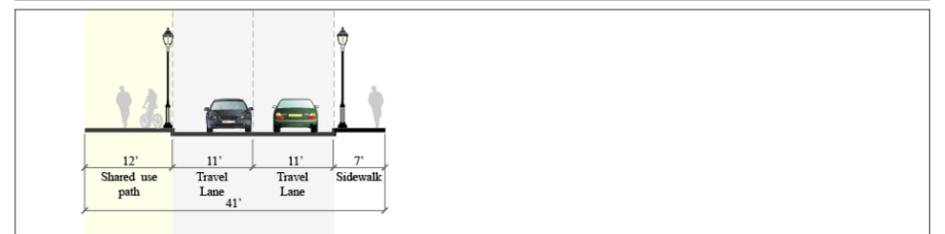
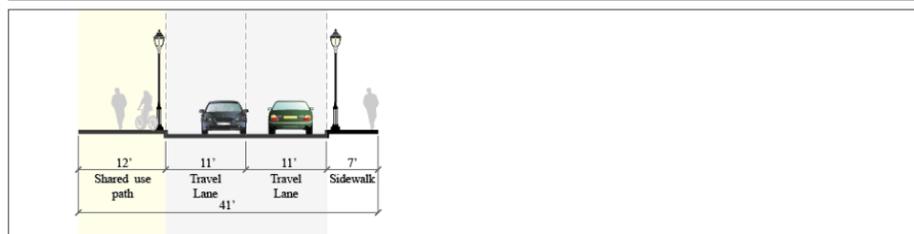
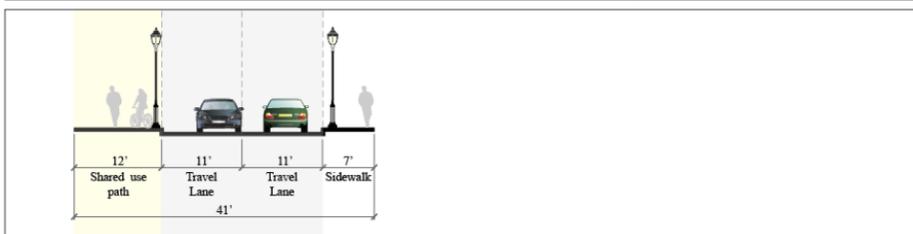
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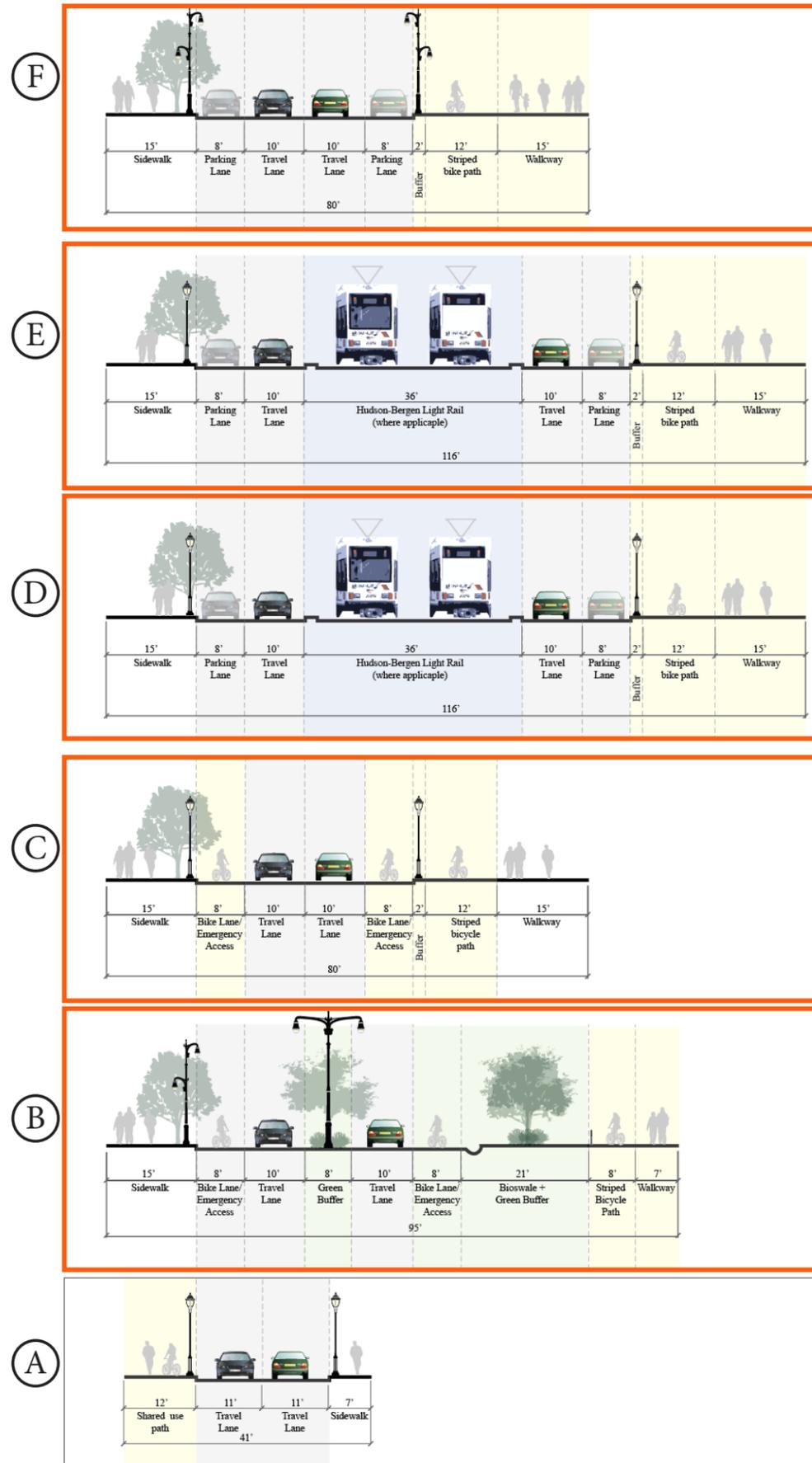
B



A



# Concept 4



Indicates section elements and width are identical within other concepts  
 Indicates unique section

**Exhibit 1.15: Proposed Concepts Matrix**  
 Concept Sections 1-4 Matrix

## Cost Estimate

Planning level budget estimates were prepared for each of the concepts based on their current level of design. It was assumed that existing built sections of the roadway on Burma Road, Phillips Street, and Jersey Avenue could be rehabilitated and reconfigured to accommodate the desired design and that entire reconstruction was not always necessary. The estimate includes a bridge structure over Mill Creek for all concepts and HBLR realignment and a new station for Concepts 1, 2, and 4. A high contingency allowance of 25% was used to reflect the planning level of design and potential for complex soil and environmental conditions. No costs for right-of-way acquisition were included. Design and permitting were assumed to be 15% of construction costs and construction management at 8%.

SEGMENT	CONCEPT 1	CONCEPT 2	CONCEPT 3	CONCEPT 4
<b>A<sup>1</sup></b>	\$ 1,557,560	\$ 1,557,560	\$ 1,557,560	\$ 1,557,560
<b>B<sup>2</sup></b>	\$ 5,246,500	\$ 4,121,500	\$ 4,121,500	\$ 4,504,000
<b>C-1<sup>3</sup></b>	\$ 256,650	\$ 305,370	\$ 256,650	\$ 300,585
<b>C-2</b>	\$ 655,640	\$ 716,840	\$ 365,140	\$ 783,820
<b>D<sup>4</sup></b>	\$ 10,201,360	\$ 10,176,880	\$ 10,190,800	\$10,206,760
<b>E</b>	\$ 1,281,200	\$ 1,248,800	\$ 1,281,200	\$ 1,310,720
<b>F</b>	\$ 435,360	\$ 431,040	\$ 435,360	\$ 417,120
<b>SUB TOTAL</b>	<b>\$ 19,634,270</b>	<b>\$ 18,557,990</b>	<b>\$ 18,208,210</b>	<b>\$ 19,080,565</b>
<b>Light Rail Track Relocation</b>	\$ 20,000,000	\$ 26,000,000	\$ 0	\$ 26,000,000
<b>Light-Rail Station</b>	\$ 5,000,000	\$ 5,000,000	\$ 0	\$ 5,000,000
<b>Construction Total</b>	<b>\$ 44,634,270</b>	<b>\$ 49,557,990</b>	<b>\$ 18,208,210</b>	<b>\$ 50,080,565</b>
<b>Contingency (25%)</b>	\$11,158,568	\$ 12,389,498	\$ 4,552,053	\$ 12,520,141
<b>Design &amp; Permitting (15%)</b>	\$6,695,141	\$7,433,699	\$ 2,731,232	\$ 7,512,085
<b>Construction Management (8%)</b>	\$ 3,570,742	\$ 3,964,639	\$ 1,456,657	\$ 4,006,445
<b>Total</b>	<b>\$66,058,720</b>	<b>\$ 73,345,825</b>	<b>\$ 26,948,151</b>	<b>\$ 74,119,236</b>

### Notes:

1. Segment A contains one new roundabout.
2. Segment B contains five (5) new roundabouts.
3. Segment C was divided into two segments to reflect the built portion of the roadway and unbuilt remainder.
4. Segment D contains a pile supported bridge structure over Mill Creek as described in Jersey City's September 2009 TIGER. Grant application for the Jersey Avenue Extension.

## Bergen-Lafayette Traffic Assessment

An assessment was made of the positive impacts the Jersey Avenue Extension would have on the traffic conditions in the Bergen-Lafayette neighborhood. By reducing cut-through traffic, the extension is seen as providing relief to congestion on Pacific Avenue and Grand Street. A data collection program was conducted to establish existing traffic volumes and turning movements within the corridor study area. The data collection also included an origin/destination license plate survey to estimate the volume of traffic that currently uses Liberty State Park and the Bergen-Lafayette neighborhood as a cut-through to access downtown Jersey City.

Automated Traffic Recorders (ATRs) were installed to obtain 24-hour traffic data for a continuous nine-day period. The ATR counts collected NB and SB volumes on Burma Road/Phillip Street between Thomas McGovern Drive and Jersey City Boulevard and on Phillip Street between Jersey City Boulevard and Johnston Avenue/Audrey Zapp Drive. Manual turning movement counts were also performed during the weekday morning (7:00 AM to 8:30 AM) and evening (4:45 PM to 6:15 PM) peak periods at the following intersections:

- Burma Road/Bayview Drive/Morris Pesin Drive
- Phillip Street/Jersey City Boulevard
- Phillip Street/Johnston Avenue

To determine origin/destination patterns, license plate data was collected at the following locations:

- Location 1. The NB left turn from Phillip Street onto Jersey City Boulevard westbound (WB)
- Location 2. The NB left turn from Phillip Street onto Johnston Avenue WB
- Location 3. The NB right turn from Pacific Avenue onto Grand Street eastbound

License plate matches between Location 1 and Location 2 with Location 3 would identify a potential user of the Jersey Avenue Extension.

## Results

The license plates numbers of the vehicles that made NB left turns from Phillip Street onto Jersey City Boulevard and Johnston Avenue were compared with the license plates for vehicles that turned right from Pacific Street onto Grand Street.

The results of the origin/destination survey showed the following:

### Jersey City Boulevard

During the AM peak hour, approximately 42% of the traffic turning left from Phillip Street onto Jersey City Boulevard later turned right from Pacific Avenue onto Grand Street. This traffic can be assumed to use the proposed Jersey Avenue Extension in the NB direction.

### Johnston Avenue

During the AM peak hour, approximately 69% of the traffic turning left from Phillip Street onto Johnston Avenue later turned right from Pacific Avenue onto Grand Street. This traffic can also be assumed to use the proposed Jersey Avenue Extension in the NB direction.

Since origin/destination surveys were only performed in the inbound Jersey City direction during the weekday AM peak period, assumptions were made to estimate the origin/destination patterns in the SB direction and during the PM peak period. It is expected that much of the morning cut-throughs towards Jersey City are avoiding congestion along the New Jersey Turnpike Extension and the Holland Tunnel approach; therefore, it was assumed that there would be less cut-through traffic in the reverse direction. For estimation purposes, it was assumed that cut-through percentages

Peak Hour	Johnston Ave.	Jersey City Blvd.	Total
AM Peak Hour	503	63	566
PM Peak Hour	445	38	483
<b>Total</b>	<b>948</b>	<b>101</b>	<b>1,049</b>

Exhibit 1.17: Jersey Avenue Extension Projected Volumes (2010)

in the outbound direction would be 75% of the inbound direction. Other assumptions were made to account for traffic from other potential origins and destinations, such as Audrey Zapp Drive, that would use the new Jersey Avenue Extension.

Based on the percentages identified within the origin/destination survey and considering the various roadway approaches, turning movements and assumptions, it is estimated that during the weekday morning peak hour 566 vehicles would be redistributed from the combination of Johnston Avenue and Jersey City Boulevard to the new Jersey Avenue Extension. Likewise it is estimated that during the weekday evening peak hour 483 vehicles would be redistributed from the combination of Johnston Avenue and Jersey City Boulevard to the new Jersey Avenue Extension

When considered over the entire day, the redistribution of traffic from Johnston Avenue and Jersey City Boulevard to the new Jersey Avenue Extension would result in the reduction of traffic through the Bergen-Lafayette neighborhood of approximately 5,000 vehicles per day. Over an entire year this reduction could be in the range of more than 1 million vehicles.

## Conclusion and Next Steps

All four alternative concept designs, by using variations on the theme of roundabouts and complete streets, achieve the project goals of providing a corridor that discourages additional commuter traffic, is safe for pedestrians and cyclists, and is sensitive to the context of the industrial park and residential areas it traverses. The designs also allow for a four-lane vehicle access route in the need of an emergency evacuation.

The next step would be for the city to make a decision on the endorsement of the overall design concept of the alternatives with input from the public and key stakeholders and then proceed with preliminary and final design of the corridor as a whole or by segment. The first task of the design would be to conduct a detailed evaluation of the alternatives and select the preferred option based upon criteria such as cost, potential impacts to the environment and local communities, and constructability.