



# MD 704

## Martin Luther King Jr. Highway

### Streetscape Enhancement

### 30% Design and Engineering Report

October 2019



THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION  
Prince George's County Planning Department

# ABSTRACT

**DATE:** October 2019

**TITLE:** MD 704 (Martin Luther King Jr. Hwy) Streetscape Enhancement 30% Design and Engineering Report

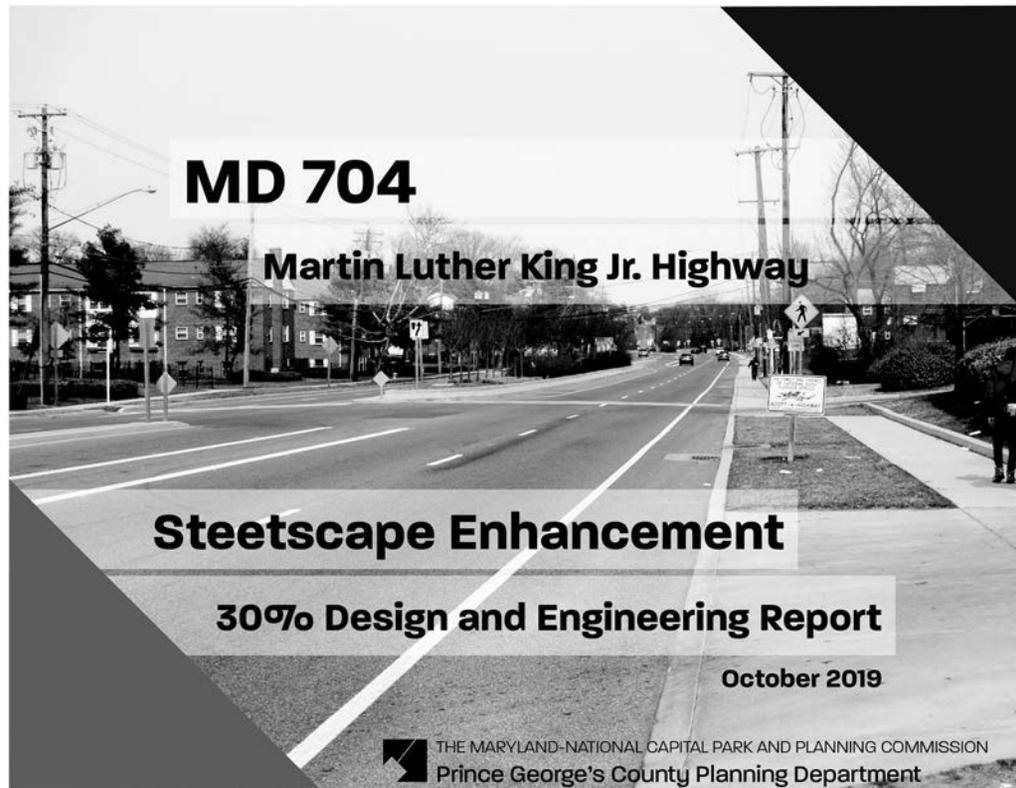
**AUTHOR:** The Maryland-National Capital Park and Planning Commission, Prince George's County Planning Department

**SUBJECT:** Develop 30% Design and Engineering Plans to Better Accommodate All Modes of Transportation

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The Maryland-National Capital Park and Planning Commission, Prince George's County Planning Department, Community Planning Division has initiated a project through the Planning Assistance to Municipalities and Communities (PAMC) program to identify and design streetscape improvements along MD 704 (Martin Luther King Jr. Highway) within the limits of the City of Seat Pleasant. In 2012, the Maryland State Highway Administration (MDOT-SHA) awarded a project to construct a road diet along MD 704 (Martin Luther King Jr. Highway) from Eastern Avenue/ Washington, D.C. Line to Hill Road under contract number PG6995176. The MDOT-SHA project reduced the number of through lanes from three to two in each direction from Addison Road (South) to west of Hill Road. Through the limits of the lane reduction, a seven-foot-median shoulder was established with pavement markings in each direction. The PAMC project seeks to repurpose the additional marked median space and utilize available right-of-way to better accommodate all modes of transportation. This report describes the goals, history, and recommendations for the MD 704 (Martin Luther King Jr. Highway) Streetscape Enhancement project. This project was funded through the PAMC program administered by the Prince George's County Planning Department.



**MD 704**  
(Martin Luther King Jr. Hwy)  
Streetscape Enhancement  
30% Design and Engineering Report

October 2019

Consultant: STV Incorporated

The Maryland-National Capital Park and Planning Commission  
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The Commission has three major functions:

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- The acquisition, development, operation, and maintenance of a public park system.
- In Prince George's County only, the operation of the entire county public recreation program.

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Our mission is to help preserve, protect and manage the County's resources by providing the highest quality planning services and growth management guidance and by facilitating effective intergovernmental and citizen involvement through education and technical assistance.

Our vision is to be a model planning department of responsive and respected staff who provide superior planning and technical services and work cooperatively with decision makers, citizens, and other agencies to continuously improve development quality and the environment and act as a catalyst for positive change

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# 1. INTRODUCTION

The Maryland-National Capital Park and Planning Commission, Prince George's County Planning Department, Community Planning Division has initiated a project through the PAMC program to identify and design streetscape improvements along MD 704 (Martin Luther King Jr. Highway) within the limits of the City of Seat Pleasant. In 2012 the Maryland State Highway Administration (MDOT-SHA) awarded a project to construct a road diet along MD 704 (Martin Luther King Jr. Highway) from Eastern Avenue/Washington, D.C. Line to Hill Road under contract number PG6995176. The MDOT-SHA project reduced the number of through lanes from three to two in each direction from Addison Road (South) to west of Hill Road. Through the limits of the lane reduction, a 7' median shoulder was established with pavement markings in each direction. The PAMC project seeks to repurpose the additional marked median space and utilize available right-of-way to better accommodate all modes of transportation. This report describes the goals, history and recommendations for the MD 704 (Martin Luther King Jr. Highway) Streetscape Enhancement project. This project was funded through the PAMC program administered by the Prince George's County Planning Department.

## 2. PROJECT DESCRIPTION

### 2.1. Project Goals

The goals of the MD 704 (Martin Luther King Jr. Highway) Streetscape Enhancement project are to:

1. Enhance the streetscape to better accommodate and improve safety and mobility for pedestrians and bicyclists within the available right-of-way.
2. Develop 30% preliminary design and engineering plans and estimate.

The 30% Preliminary Design and Engineering Plans and Estimate would be used to make the project eligible for TAP or TIGER funding for final design and construction.

### 2.2. Project Team and Stakeholders

All necessary project team members and stakeholders were identified at the initiation of the project and include:

- Elected officials, City of Seat Pleasant
- City of Seat Pleasant Staff
- City of Seat Pleasant Community
- M-NCPPC, Prince George's County Planning Department
- Maryland State Highway Administration
- STV Incorporated
- The Department of Public Works & Transportation

### 2.3. Scope and Work Plan

STV Incorporated worked with the M-NCPPC Community Planning Division to develop and refine the scope, work plan, and schedule to complete the 30% Preliminary Design and Engineering Plans and Estimate. The work plan and schedule were revised as project tasks

were completed. The current version of the Work plan and schedule is included in Appendix A. The project scope included a stakeholder meeting, held on November 27, 2018, and a community meeting, held on March 28, 2019. The meeting minutes for the stakeholder meeting and community meeting are included in Appendix B. Four alternatives were developed for discussion at the community meeting and refined to a recommended alternative which was presented at the community meeting.

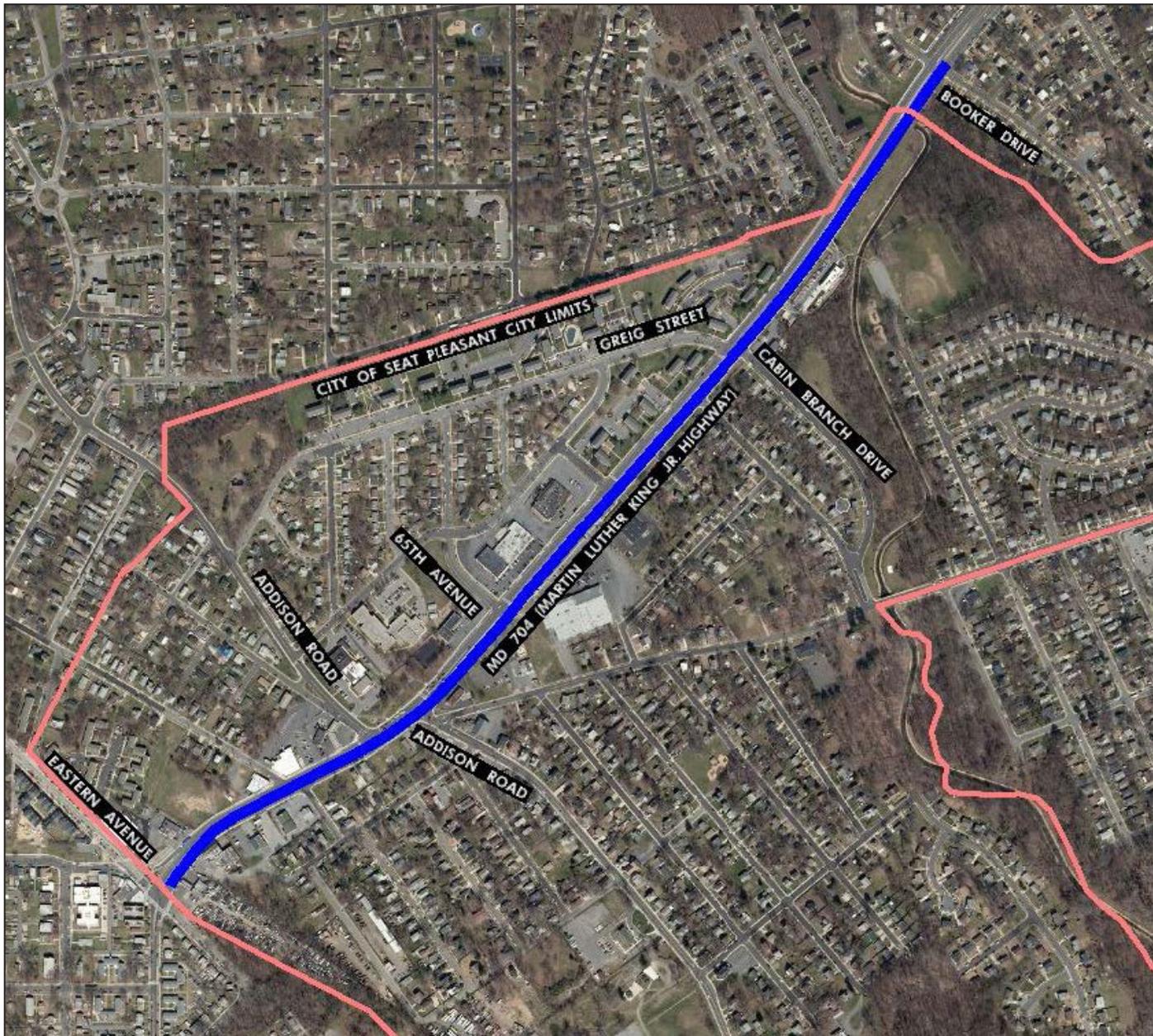
### 2.4. Project Limits

The project limits are within MDOT-SHA right-of-way along MD 704 (Martin Luther King Jr. Highway) within the limits of the City of Seat Pleasant. MD 704 within the limits of Seat Pleasant are from Eastern Avenue/Washington, D.C. Line to approximately 325 feet west of Booker Drive, approximately 0.95 miles. For the purposes of this project, the eastern limits were extended to Booker Drive to ensure a proper roadway section transition at an intersection. The project limits are shown in Figure 1.

### 2.5. Roadway Classification

MD 704 (Martin Luther King Jr. Highway) is an MDOT-SHA roadway classified as an Urban Minor Arterial. The design speed along MD 704 is 40 MPH and the posted speed limit is 30 MPH. According to the MDOT-SHA Internet Traffic Monitoring System (I-TMS) MD 704 had an Average Annual Daily Traffic of 19,905 in 2017. The master plan of transportation recommended roadway classification for MD 704 is Arterial, 120-150 ROW, with 4-6 lanes.

**Figure 1: Project Limits**



### 3. PROJECT CONSIDERATIONS

In order to develop alternatives to meet the project goals within the project limits, several considerations were defined to provide guidance and identify constraints. The following project considerations were investigated prior to developing alternatives.

#### 3.1. Constraints

##### 3.1.1. Right-of-Way

The project scope defined the limits of the project to be within available right-of-way. Available right-of-way is defined as MDOT-SHA-owned property for the MD 704 through highway. This right-of-way width varies throughout the project limits and constrains the consistency of the available improvements.

##### 3.1.2. Utilities

Overhead and underground utilities throughout the project, owned by third parties, were considered constraints. Overhead and underground utilities owned by third parties include but are not limited to electric, communications, water, sewer, and gas. The cost, coordination, and lead time necessary to relocate these utilities was considered a project limitation to be avoided in alternative development. Overhead utility poles on the north side of MD 704 (Martin Luther King Jr. Highway) between Eastern Avenue and 68th Street can be seen in Figure 2.

**Figure 2: Overhead Utilities**



### 3.1.3. Major Structures

Several existing major structures were identified within the project limits as constraints that would require significant cost and have potential right-of-way impacts. Impacts to these structures were avoided in alternatives development. Major structures include retaining walls and culverts. The existing retaining wall on the north side of MD 704 (Martin Luther King Jr. Highway) between Cabin Branch Drive and Glen Willow Drive can be seen in Figure 3.

**Figure 3: Existing Retaining Wall**



## 3.2. WB&A Trail Extension Feasibility Study

The findings from the June 2018 WB&A Trail Extension Feasibility Study prepared by the Prince George's County Planning Department were considered in the development of alternatives. The purpose of the study was to evaluate the feasibility of extending the WB&A trail to the Washington, D.C. line, which includes a segment through the MD 704 (Martin Luther King Jr. Highway) Streetscape Enhancements project limits. The recommendations of the study include installing a 10-foot-wide shared-use path with a 5-foot-wide buffer along the north side of MD 704 (Martin Luther King Jr. Highway) through Seat Pleasant.

## 3.3. 2010 Approved Subregion 4 Master Plan and Sectional Map Amendment and a Master Plan for the City of Seat Pleasant

Recommendations from the 2010 Subregion 4 Master Plan, approved by the Prince George's County Council, and a master plan prepared by the City of Seat Pleasant in 2018 were considered and incorporated into the alternative development. Recommendation in these plans are consistent with the project goals of increasing safety and enhancing the experience for pedestrians and bicyclists. Key strategies listed in the 2018 Master Plan for the City of Seat Pleasant include improving the streetscaping along MD 704 (Martin Luther King Jr. Highway) and considering traffic calming features and on-street parking.

### 3.4. MDOT-SHA Safety and Resurfacing Project (PG6995176)

The 2012 MDOT-SHA MD 704 (Martin Luther King Jr. Highway) from Eastern Avenue/Washington, D.C. Line to Hill Road Roadway Safety and Resurfacing project, under contract PG6995176, provided additional space for streetscape enhancements as a starting point for this project. Contract PG6995176 reduced the number of through lanes from three to two in each direction from Addison Road (south) to west of Hill Road (outside of the Seat Pleasant City Limits) and left a seven-foot-wide shoulder in each direction, which can be repurposed in the future. The design CADD files from PG6995176 were obtained from MDOT-SHA. The design files included topographic survey, roadway geometrics, proposed drainage, right-of-way, ADA sidewalk and ramps, and pavement markings. The proposed CADD files were converted to existing conditions in lieu of performing a new topographic survey. Upon advancing this project to final design a new topographic survey must be conducted to confirm existing conditions.

## 4. ALTERNATIVES DEVELOPMENT

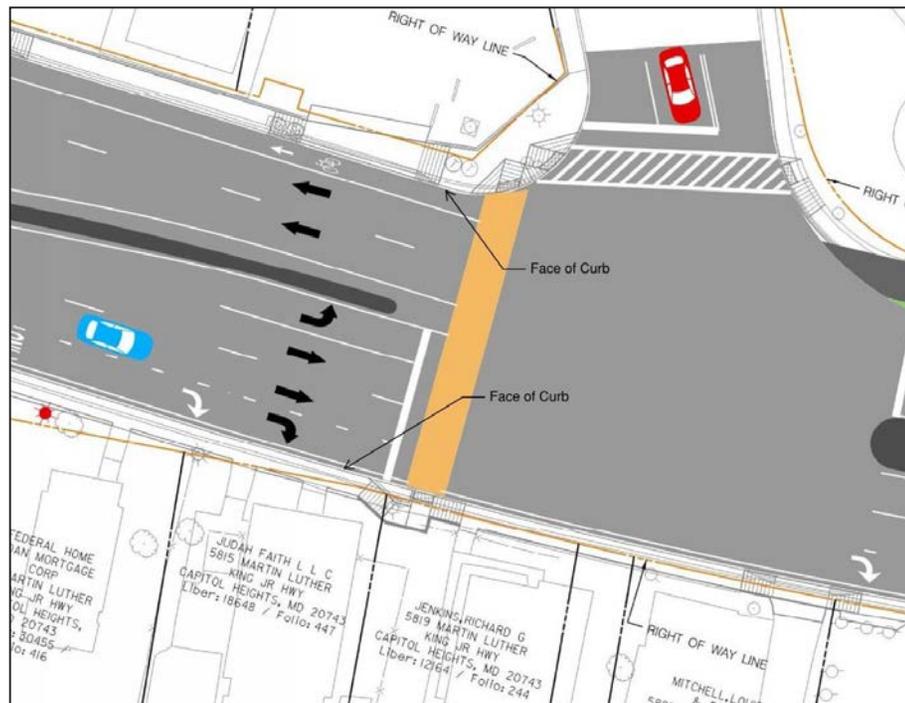
Several alternatives were developed to meet the project goals and incorporate the project considerations. These alternatives were grouped into two categories, Curb-to-Curb and Right-of-Way to Right-of-Way. Descriptions of the three alternatives by category are listed below.

The curb-to-curb alternatives limited the improvements to be within the existing curb lines on the north and south side of MD 704 (Martin Luther King Jr. Highway). These alternatives would be low cost, quicker to implement, and limited to resurfacing with new pavement markings and channelization devices. Available space for roadside streetscape amenities for the curb-to-curb alternatives would be

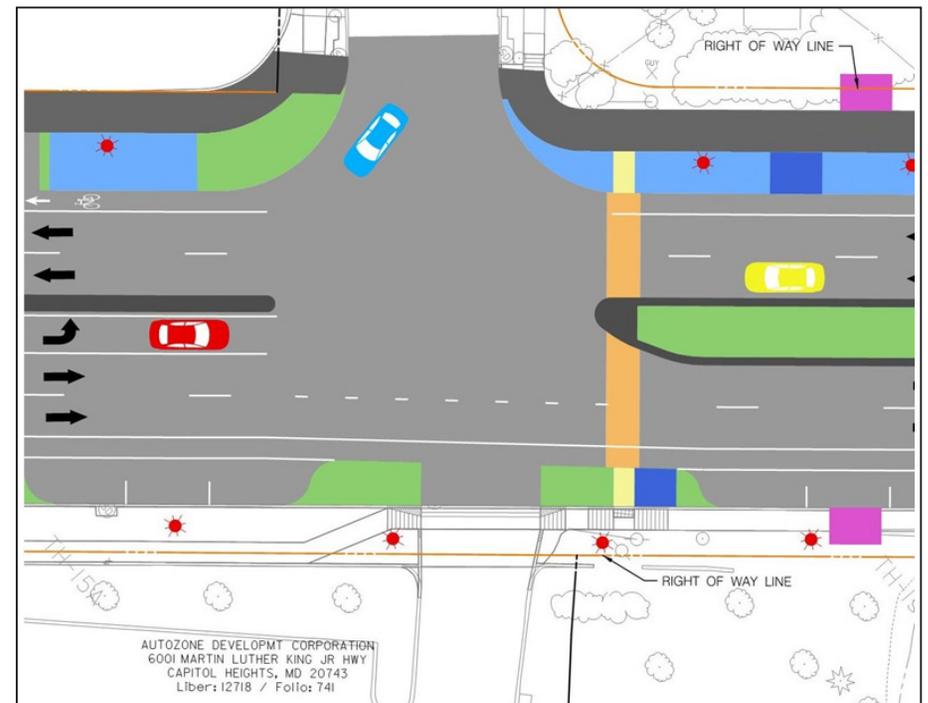
limited to the existing sidewalk and right-of-way behind the curb. An example of a curb-to-curb alternative can be seen in Figure 4.

The right-of-way to right-of-way alternative would extend the roadside limits of improvements beyond the curb lines to the right-of-way lines on the north and south sides of MD 704 (Martin Luther King Jr. Highway). This alternative would have a higher cost and longer construction duration, but would include more enhancements to meet project goals. Additional space for roadside streetscape amenities would be created in the right-of-way to right-of-way alternative. An example of a right-of-way to right-of-way alternative can be seen in Figure 5.

**Figure 4: Curb-to-Curb Alternative**



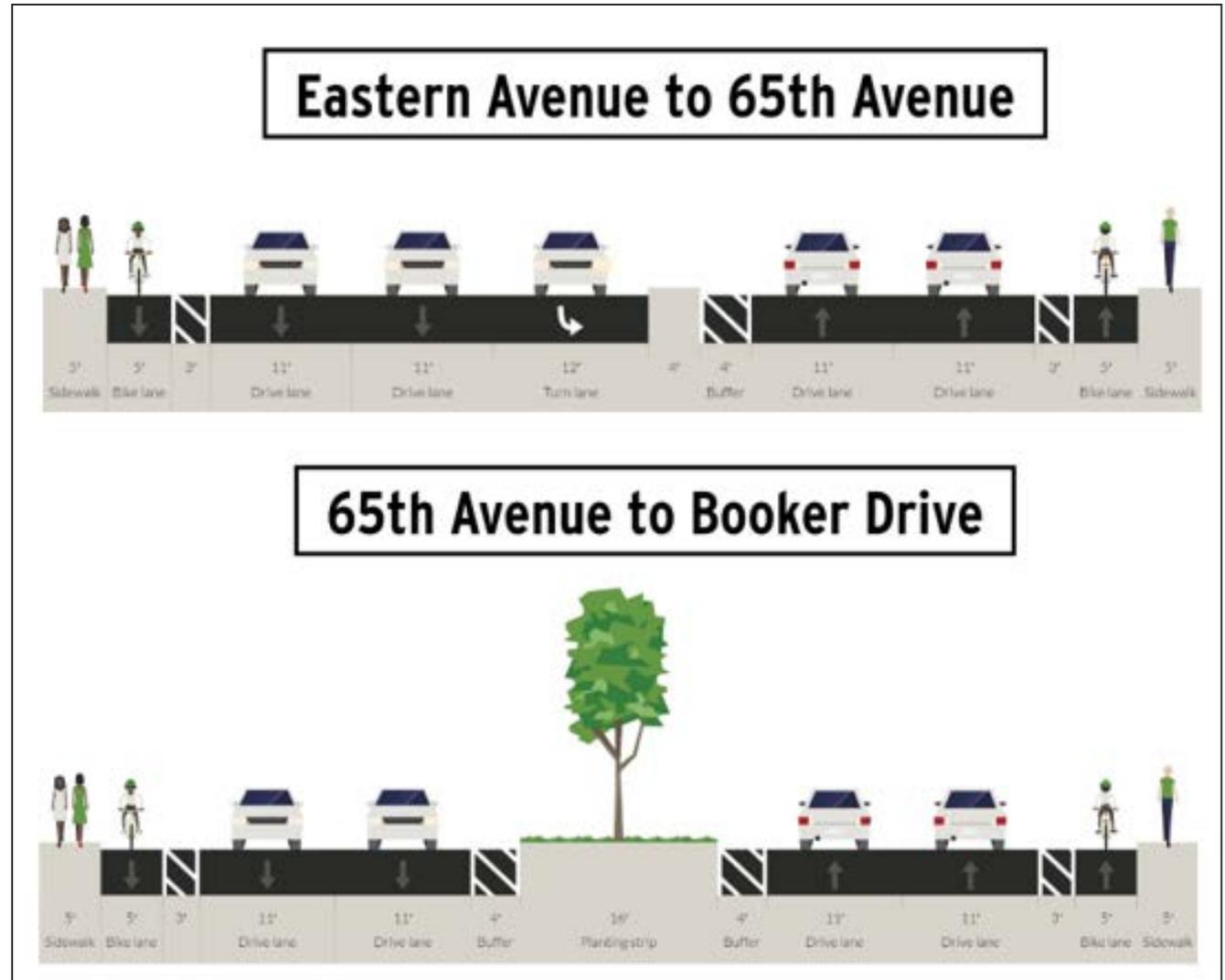
**Figure 5: Right-of-Way to Right-of-Way Alternative**



## 4.1. Buffered Bike Lanes

This alternative proposes resurfacing MD 704 and restriping the pavement to eliminate the seven-foot-median shoulders and provide a variable (three-foot minimum) buffer between the existing bike lanes and travel lanes. The buffered bike lane alternative typical section can be seen in Figure 6.

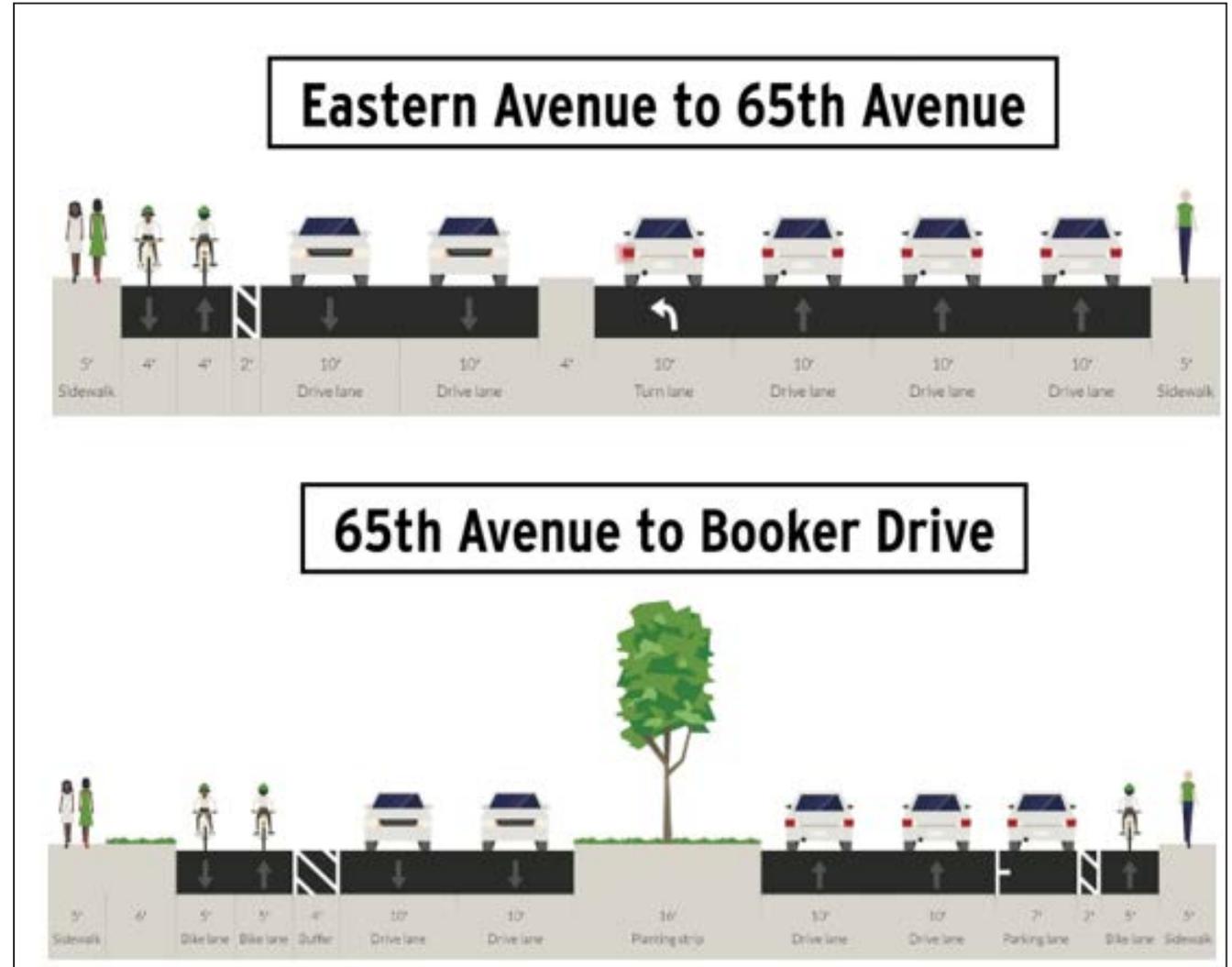
**Figure 6: Curb-to-Curb Buffered Bike Lane Alternative**



## 4.2. North Side Cycle Track

The north side cycle track alternative would consider the WB&A Trail Extension Feasibility Study by proposing a two-way cycle track on the north side of MD 704. The extension of the trail would be provided by the cycle track, for bicycles, and the existing sidewalk for pedestrians. This alternative proposes resurfacing MD 704 and restriping the pavement to eliminate the seven-foot-median shoulders and provide a two-way cycle track with a variable buffer between the cycle track and the travel lanes. Parking, and a buffered bike lane, could also be provided through certain segments on the south side of MD 704. The north side cycle track alternative typical section can be seen in Figure 7.

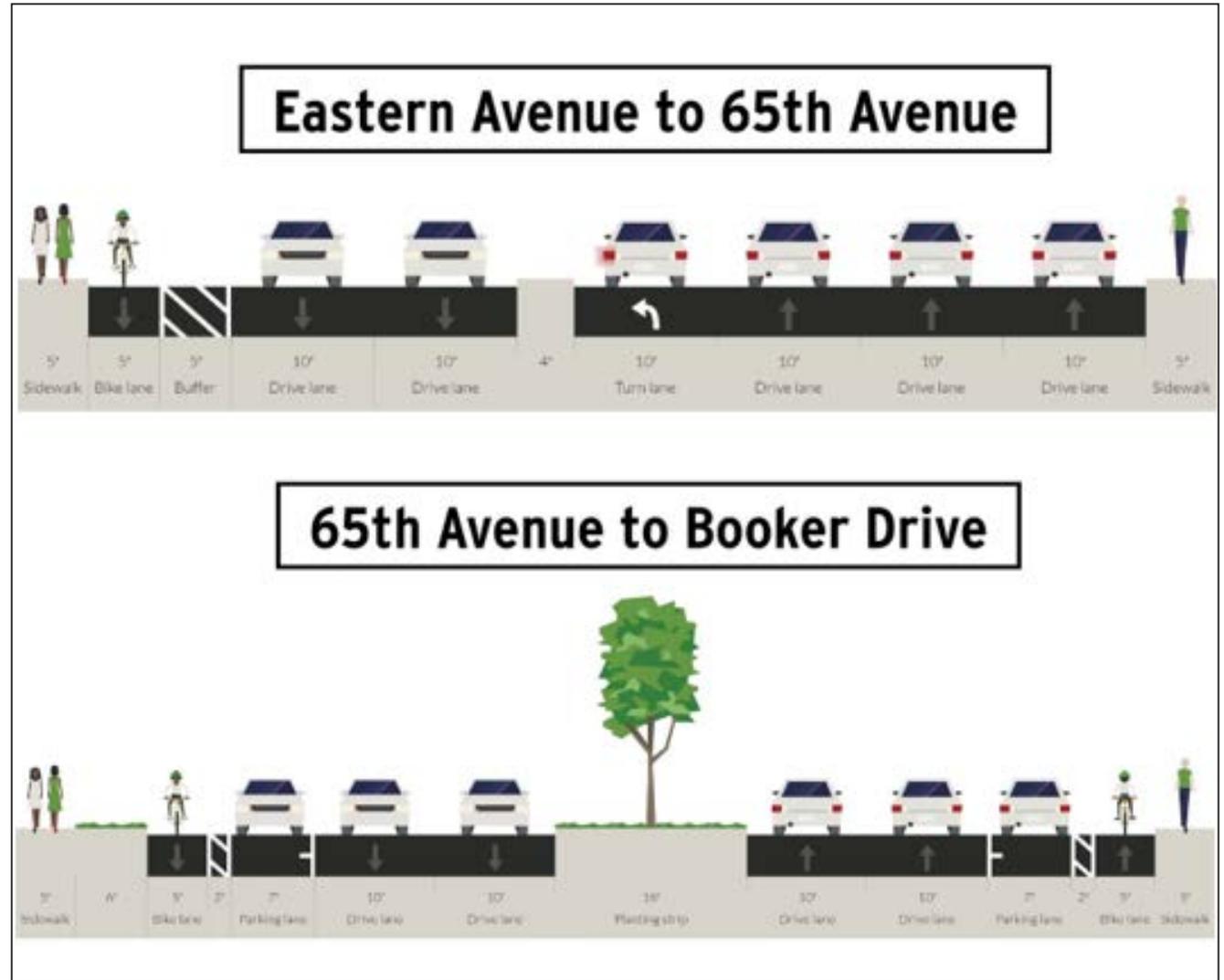
**Figure 7: Curb-to-Curb North Side Cycle Track Alternative**



### 4.3. Buffered Bike Lanes with Parking

This alternative would combine elements of the other two curb-to-curb alternatives to provide buffered bike lanes and parking throughout the project limits. The location of the parking and the size of the buffers for the bike lanes would vary by different segments of the roadway within the project limits. The parking could be proposed as “floating” between the travel lanes and the bike lanes to further protect bicyclists from vehicles and include buffers to minimize conflicts between bicyclists and doors. Parking could also be provided along the curb with a buffer between the cycle track and the travel lanes. The buffered bike lanes with parking alternative typical section can be seen in Figure 8.

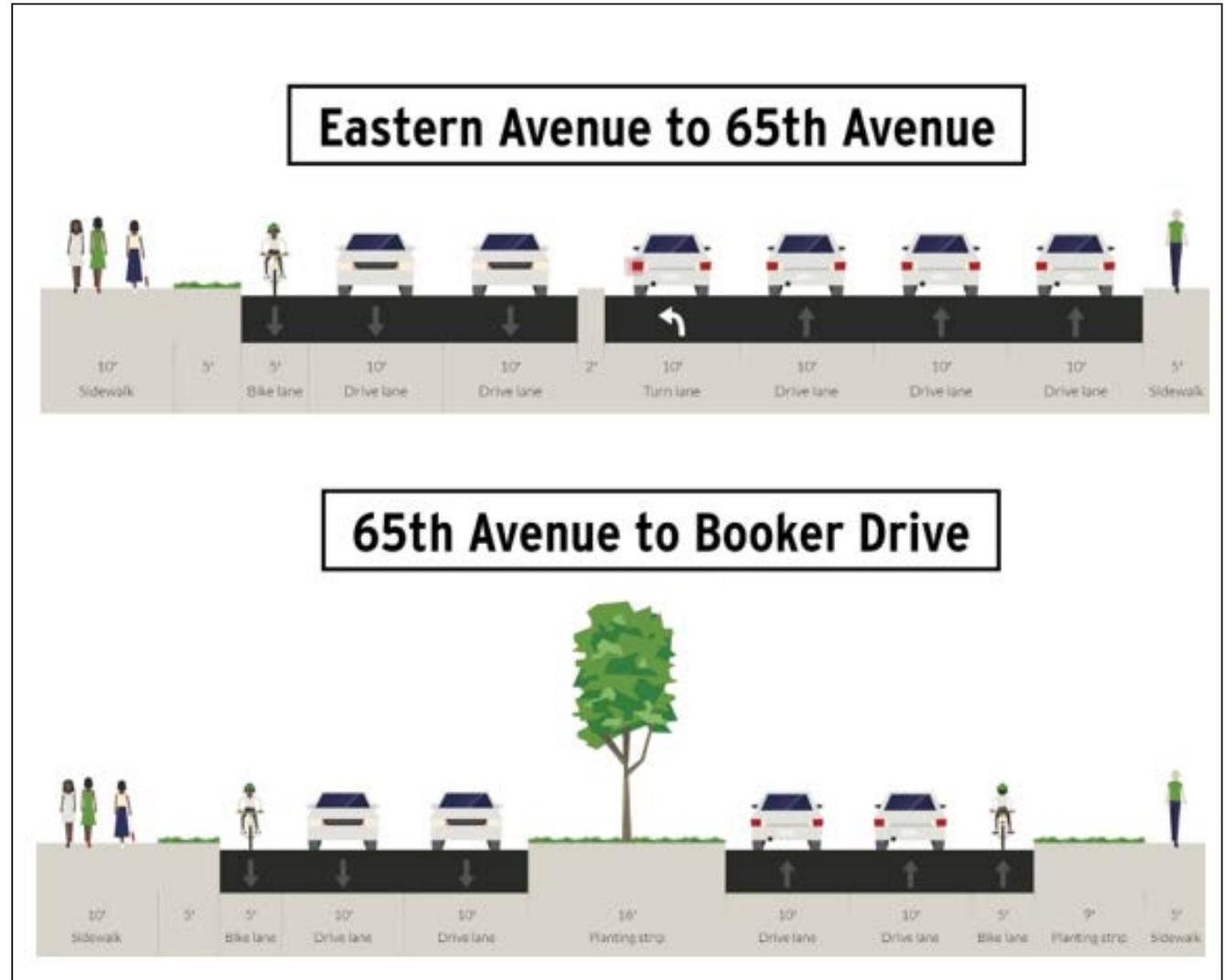
**Figure 8: Curb-to-Curb Buffered Bike Lanes with Parking Alternative**



## 4.4. Right-of-Way to Right-of-Way

Improvements for a right-of-way to right-of-way option were combined into one alternative. The North Side Shared Use Path with South Side Curb Extensions and Parking alternative would include resurfacing and relocation of the existing curb lines to provide streetscape enhancements. The roadway would be resurfaced to eliminate the seven-foot-median shoulders and shift travel lanes adjacent to the medians. The north and south curb lines would be relocated into the existing roadway to provide space for enhancements. The extension of the curb line on the north side would provide space for a 10-foot-wide shared use path and buffer consistent with the WB&A Trail Extension Feasibility Study recommendation. The extension of the curb on the south side would provide space for parking and streetscape amenities. The curb extensions would also shorten the length of the existing pedestrian crossings throughout the corridor. The North Side Shared Use Path with South Side Curb Extensions and Parking alternative typical section can be seen in Figure 9.

**Figure 9: North Side Shared Use Path with South Side Curb Extensions and Parking Recommended Alternative**



## 5. RECOMMENDED ALTERNATIVE

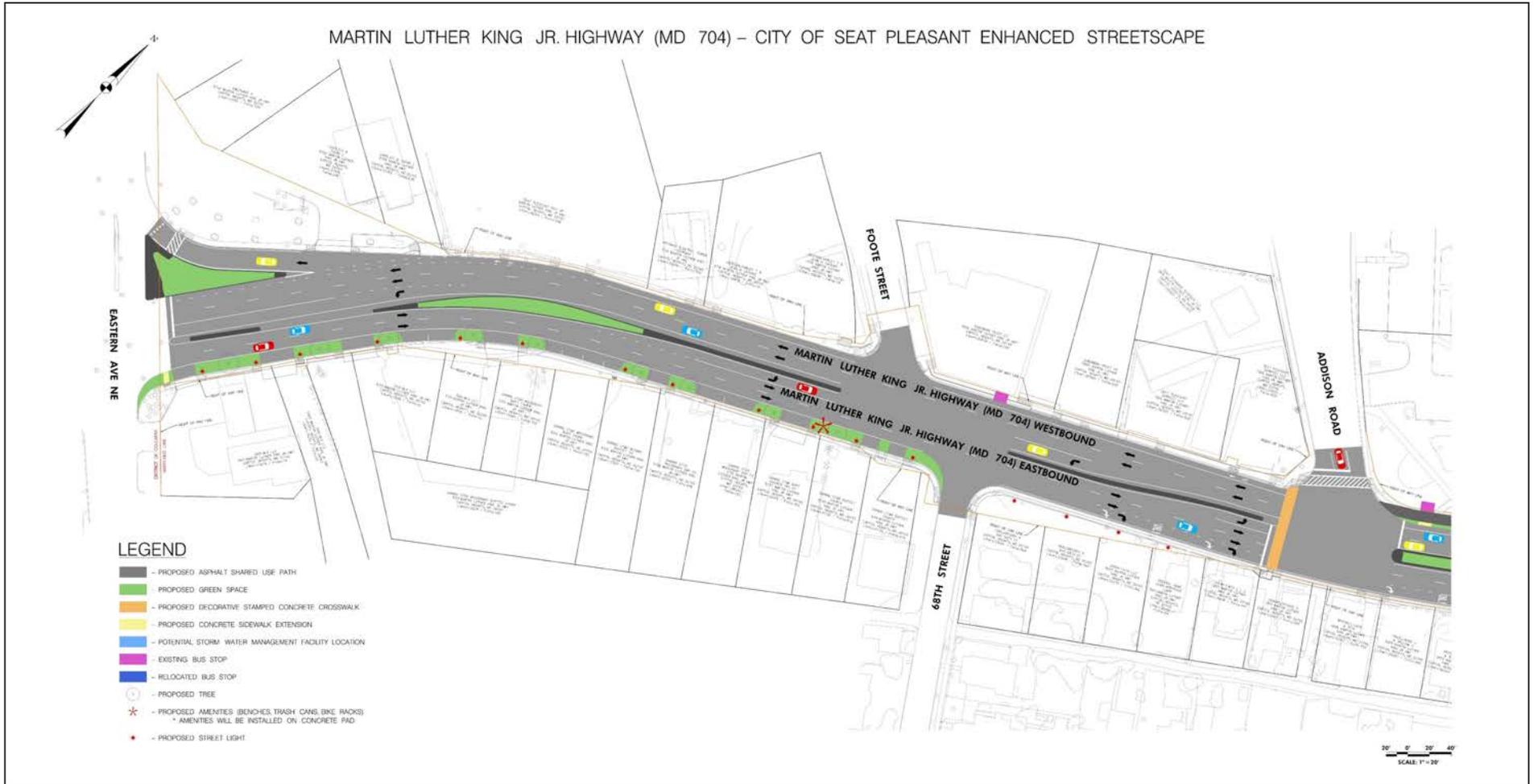
The alternatives were presented at the stakeholders meeting on November 27, 2018 and the feedback was used to select a recommended alternative. The North Side Shared Use Path with South Side Curb Extensions and Parking alternative was selected and refined to present to the community. The recommended alternative was divided into the following four segments along the corridor with different characteristics:

### 5.1. Eastern Avenue to Addison Road (North)

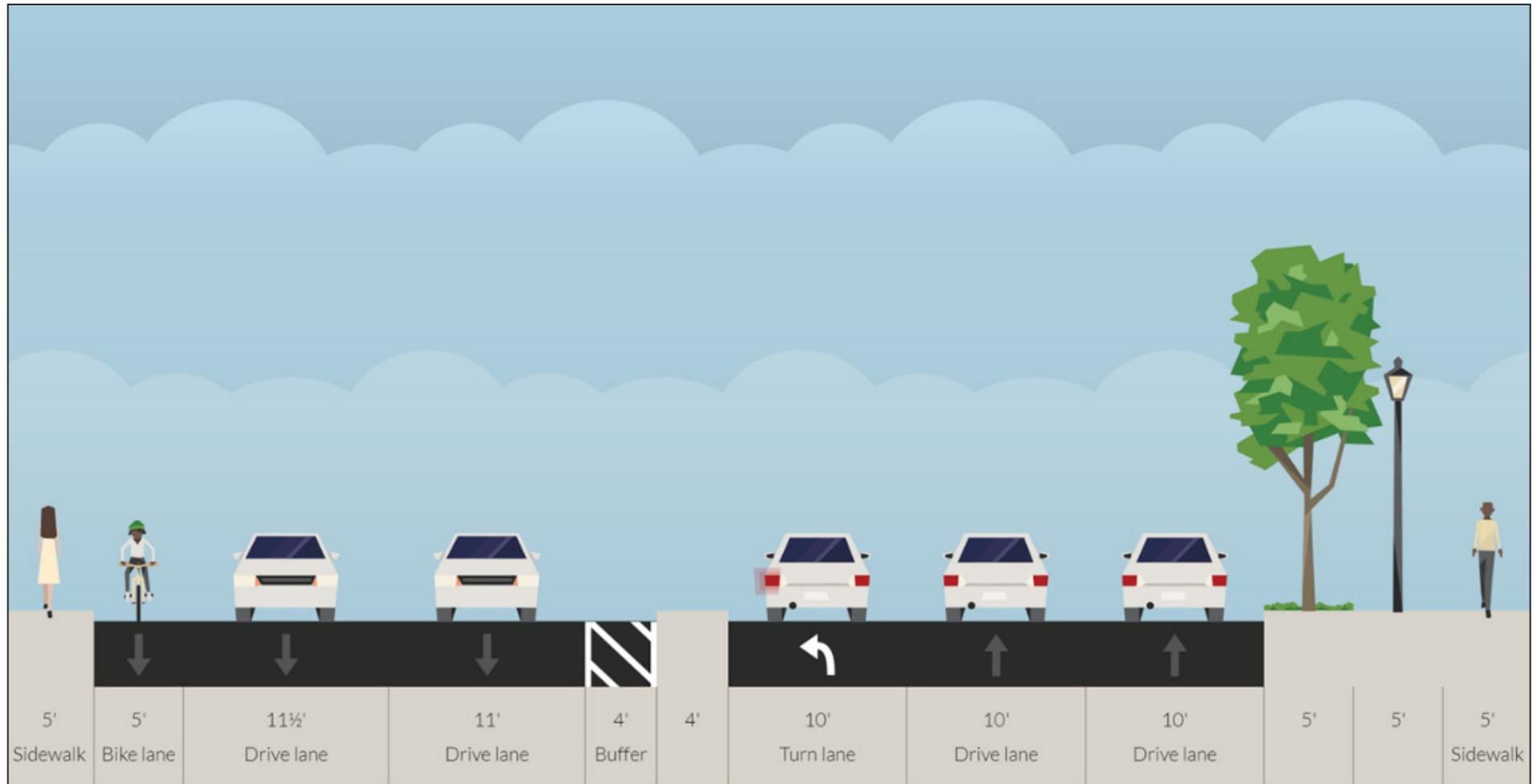
The westernmost segment of the corridor from Eastern Avenue/ Washington, D.C. line to Addison Road (north) includes the least amount of available right-of-way behind the curbs—three lanes in the eastbound direction and a limited median shoulder. The eastbound right lane extends from Eastern Avenue to Addison Road (south) where the lane must turn right. STV Incorporated performed a high-level traffic analysis to determine if the eastbound right lane could be shortened to provide space for enhancements. A comparison of historical data indicates that traffic in this area has been increasing approximately 1 percent per year for the past seven years. It was assumed that the number of eastbound right turns at Addison Road (south) is approximately 383 during the PM peak hour (increasing from the 353 vehicles in 2011). Using the MDOT-SHA queuing formula, to estimate the required length of lane, results in a maximum queue length of approximately 479 feet. This would require that the length of the right turn lane extend from Addison Road (south) to 68th Street.

Using this analysis, the eastbound right lane was removed from Eastern Avenue to 68th Street and replaced with curb extensions and parking. The recommended alternative from Eastern Avenue to Addison Road (north) can be seen in Figure 10. The proposed typical section from Eastern Avenue to 68th Street is in Figure 11 and the proposed typical section from 68th Street to Addison Road (north) can be found in Figure 12. The continuation of the plan view to Addison Road (south) can be seen in Figure 13.

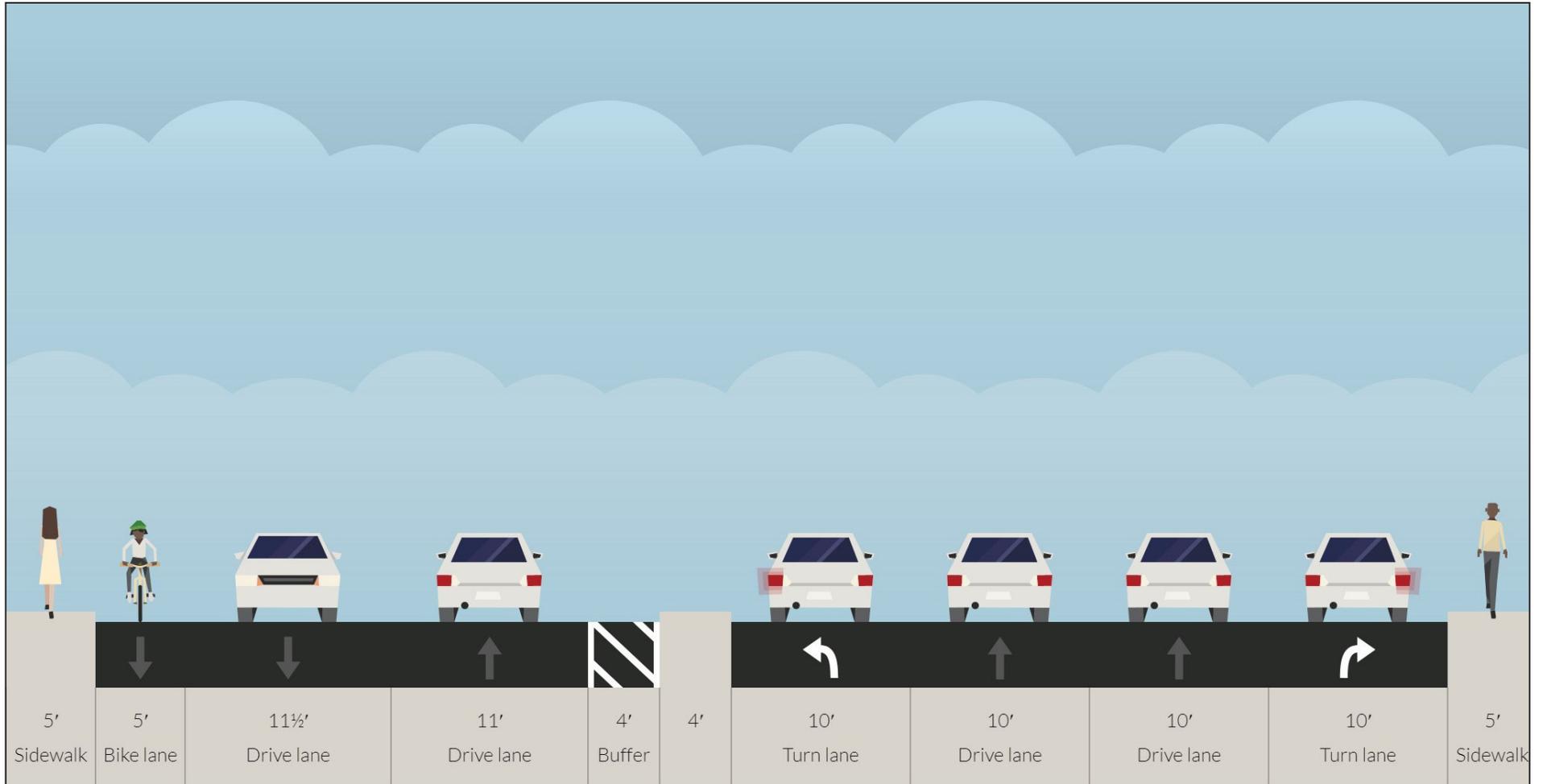
**Figure 10: Eastern Avenue to Addison Road (North) Plan View**



**Figure 11: Recommended Eastern Avenue to 68th Street Typical Section**



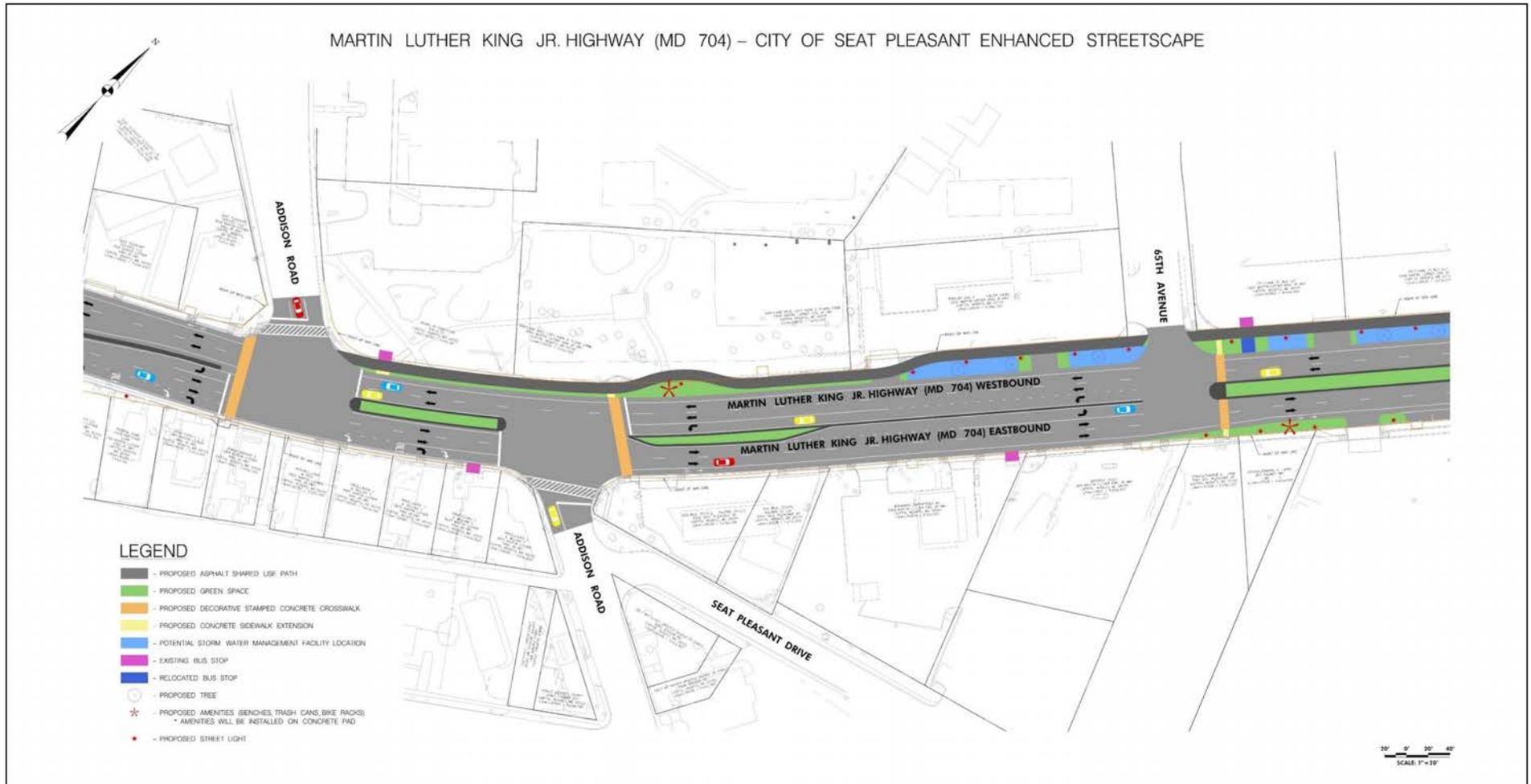
**Figure 12: Recommended 68th Street to Addison Road (North) Typical Section**



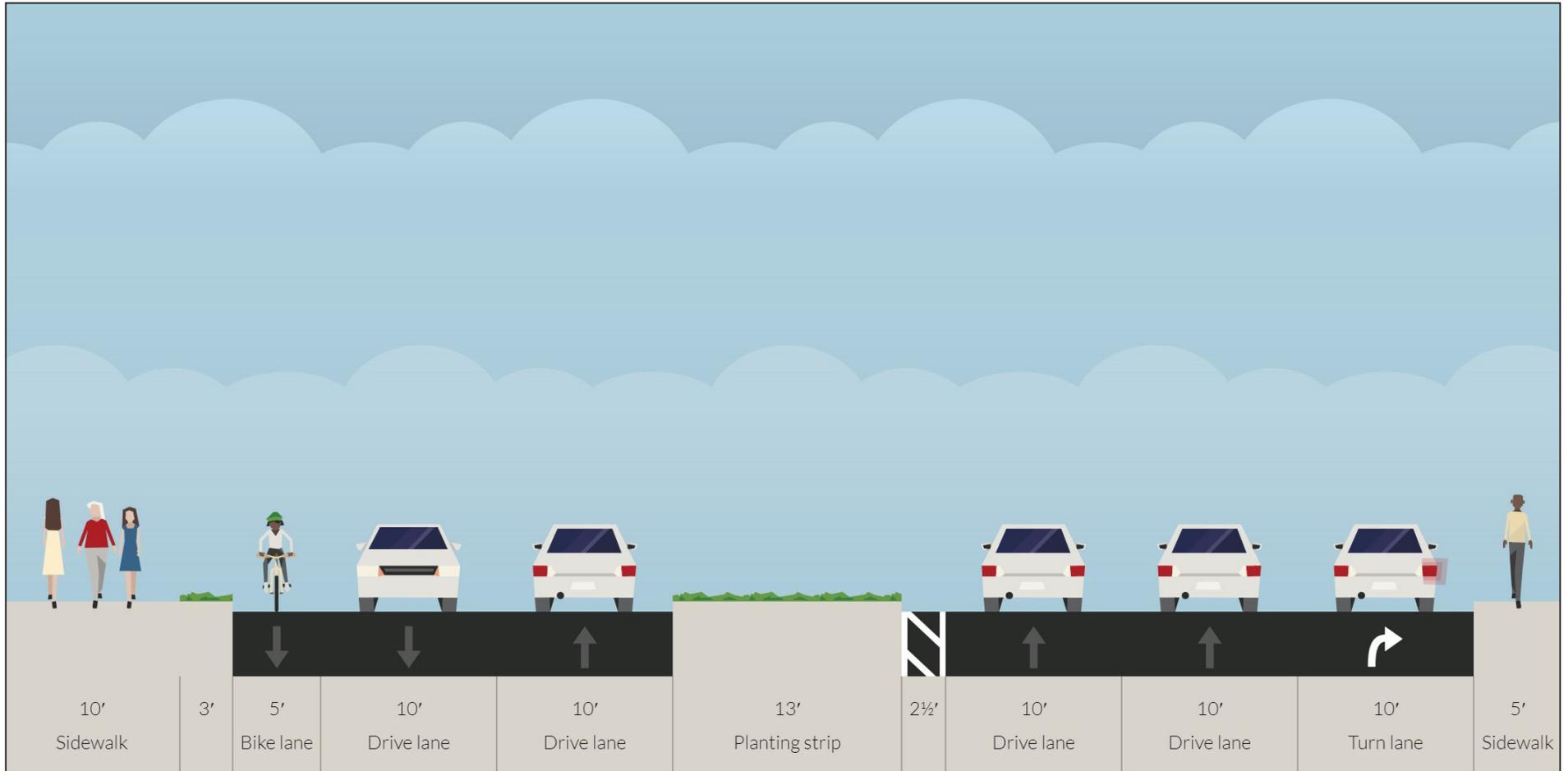
## 5.2. Addison Road (North) to 65th Avenue

The Addison Road (north) to 65th Avenue segment transitions from the limited section to the west to the more consistent typical section east of 65th Avenue. A 10-foot-wide shared-use path with a variable buffer is proposed on the north side of MD 704. The available right-of-way and required right turn lane that drops at Addison Road (south) limit the enhancements on the south side of MD 704. The recommended alternative from Addison Road (north) to 65th Avenue can be seen in Figure 13. The proposed typical section from Addison Road (north) to Addison Road (south) is in Figure 14. The proposed typical section from Addison Road (south) to 65th Avenue is in Figure 15.

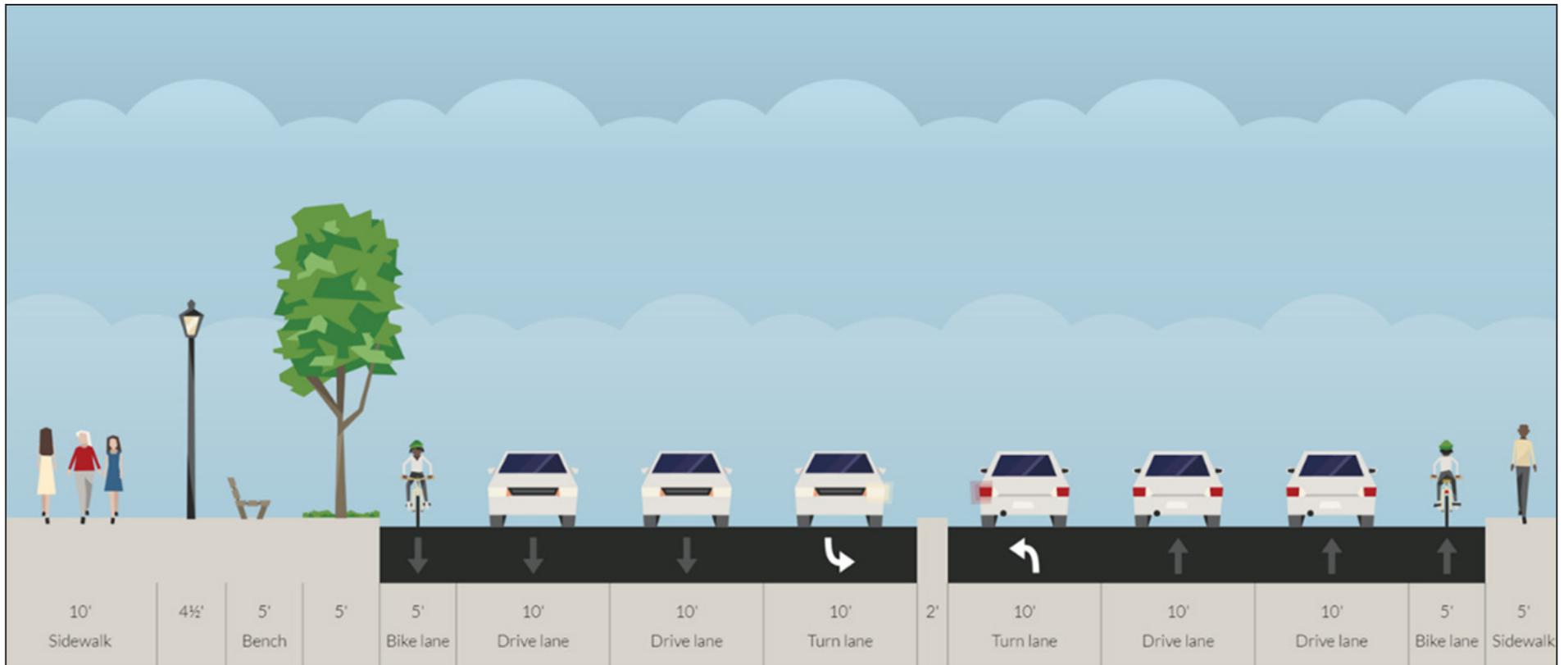
**Figure 13: Addison Road (North) to 65th Avenue Plan View**



**Figure 14: Recommended Addison Road (North) to Addison Road (South) Typical Section**



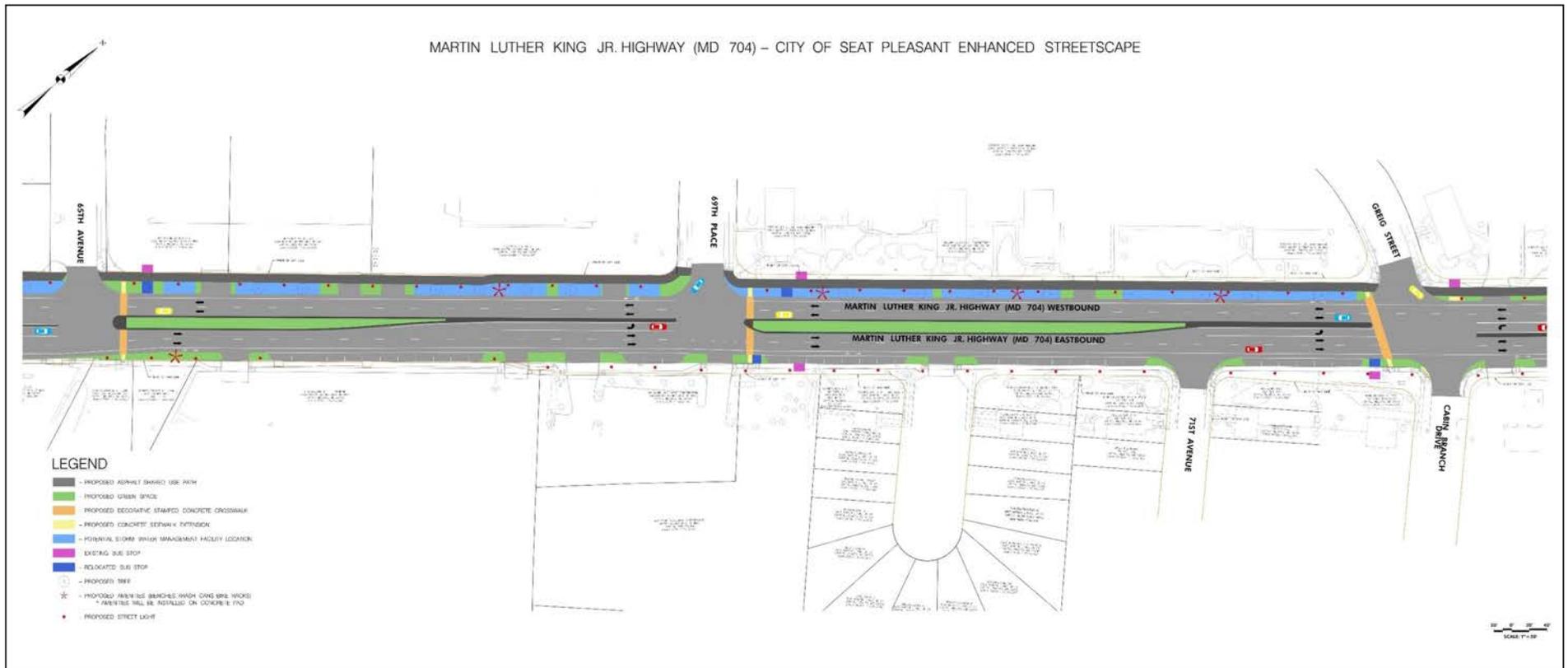
**Figure 15: Recommended Addison Road (South) to 65th Avenue Typical Section**



### 5.3. 65th Avenue to Greig Street/Cabin Branch Drive

The 65th Avenue to Greig Street/Cabin Branch Drive segment provides a consistent section with enhancements on both sides of MD 704. A 10-foot-wide shared use path with variable buffer is proposed on the north side of MD 704. The available width of the buffer will provide additional space for streetscape amenities and stormwater management. The curb on the south side can be extended to provide protected parking, shortened pedestrian crossings, and space for streetscape amenities. The recommended alternative from 65th Avenue to Greig Street/Cabin Branch Drive can be seen in in Figure 16, and the proposed typical section can be found in Figure 17.

**Figure 16: Proposed 65th Avenue to Greig Street/Cabin Branch Drive Plan View**



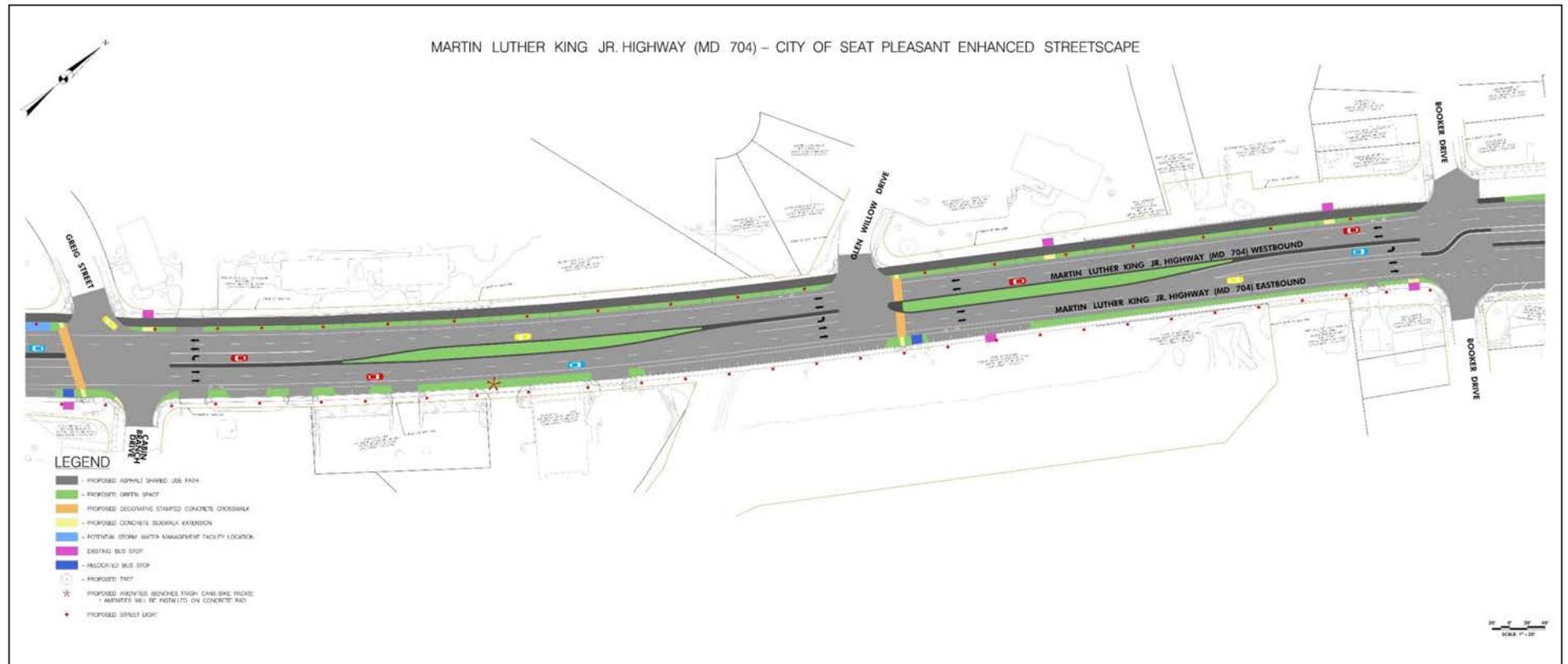
**Figure 17: Recommended 65th Avenue to Greig Street/Cabin Branch Drive Typical Section**



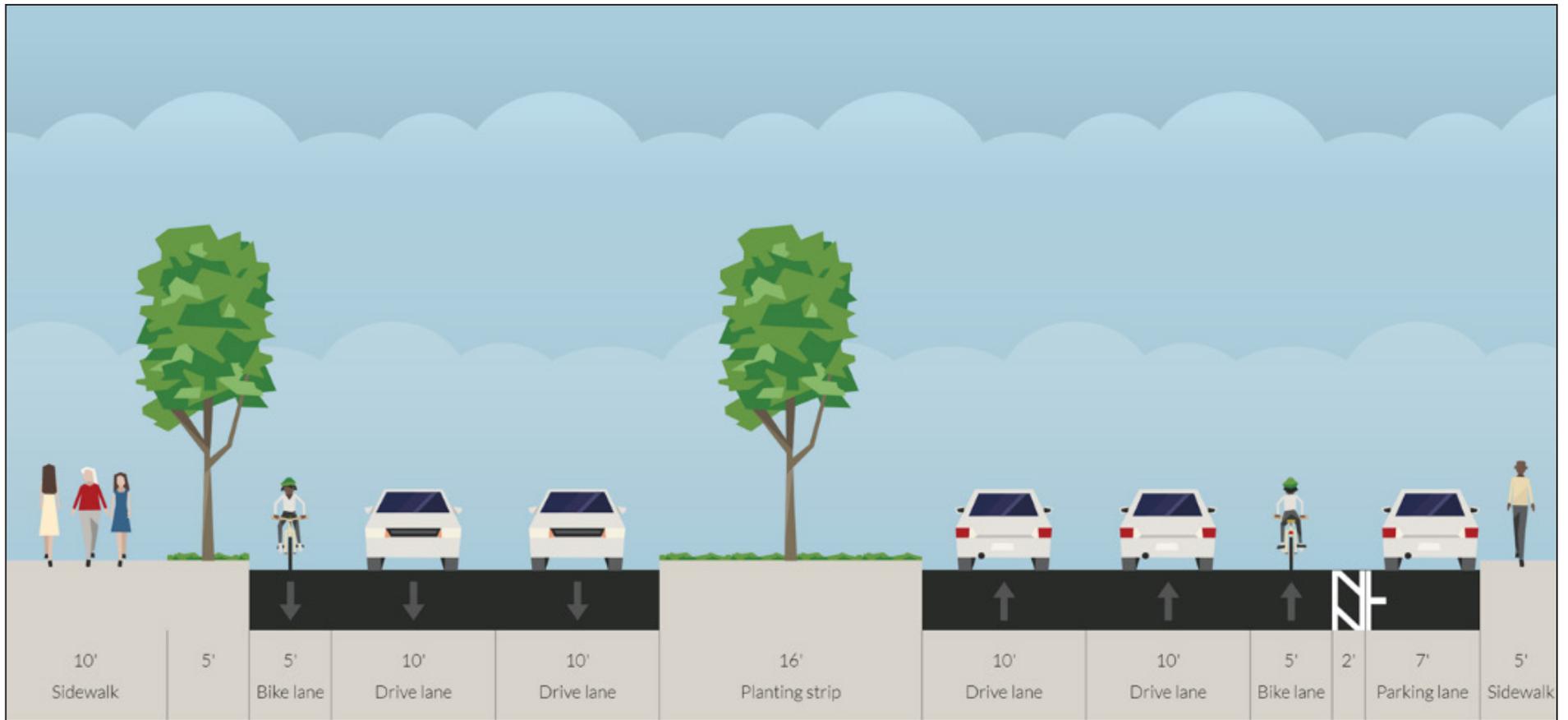
## 5.4. Greig Street/Cabin Branch Drive to Booker Drive

The Greig Street/Cabin Branch Drive to Booker Drive segment continues the consistent typical section with enhancements on both sides of MD 704. A 10-foot-wide shared-use path with variable buffer is proposed on the north side of MD 704. The buffer width on the north side will be reduced and will limit the amount of space for streetscape amenities. The curb on the south side can be extended to provide protected parking, shortened pedestrian crossings, and space for streetscape amenities. The recommended alternative from Greig Street/Cabin Branch Drive to Booker Drive can be seen in Figure 18 and the proposed typical section can be found in Figure 19.

**Figure 18: Proposed Greig Street/Cabin Branch Drive to Booker Drive Plan View**



**Figure 19: Recommended Greig Street/Cabin Branch Drive to Booker Drive Typical Section**



## 6. STREETSCAPE AMENITIES

Best practice streetscape amenities were researched with recommendations being presented at the community meeting on March 28, 2019. Amenities were selected that stayed consistent with the Seat Pleasant Smart City Initiative and 2018 Master Plan for the City of Seat Pleasant. The following streetscape amenities are proposed in the 30% design:

### 6.1. Stamped Concrete Crosswalks

The existing crosswalks throughout the project limits would be replaced with durable stamped concrete crosswalks. These enhanced crosswalks will have the appearance of brick with less maintenance requirements. The use of the stamped concrete crosswalks along MD 704 must be approved by MDOT-SHA. A stamped concrete crosswalk can be seen in Figure 20.

**Figure 20: Stamped Concrete Crosswalk**



### 6.2. Microbioretention

Urban development, in general, negatively impacts surrounding waterways by increasing runoff and pollution. Stormwater management facilities are designed to mitigate the effects of urbanization by treating polluted runoff and reducing peak discharge rates to surrounding waterways. Microbioretention planter boxes are a suitable practice along roadways to receive and treat polluted stormwater runoff. These facilities are designed to capture runoff as temporary pond water and filter pollutants—such as suspended solids, heavy metals, sediments, and debris—through an engineered soil mixture that integrate physical, biological, and chemical treatment processes before runoff is released into adjacent storm drain systems that ultimately outfall to waterways. Microbioretention areas are typically planted with native plants and can be designed to blend in with the site as streetscape features. The proposed enhancements for the project may result in a reduction of impervious area, which may not require these additional stormwater management facilities. The project limits are within the Anacostia River Watershed. If microbioretention is installed, the excess treatment may go into the water bank for this watershed and may potentially be used for treatment of future developments. A microbioretention facility in Baltimore City can be seen in Figure 21.

**Figure 21: Microbioretention Facility**



## 6.3. Street Trees

Street Trees are proposed in the buffers and curb extension areas throughout the project limits. Trees will enhance the experience for all users throughout the corridor and provide visual separation between the roadway and the pedestrian/bicycle facilities. Proposed street trees and plantings must be selected so that their root system works with the available buffer space and may be incorporated into the bioretention facilities. A memorandum of understanding (MOU) was executed on January 28, 2014 between MDOT-SHA and the City of Seat Pleasant in which MDOT-SHA accepted the city's offer to maintain the landscaped medians installed under MDOT-SHA project PG6995176. This MOU can be modified to include the street trees and microbioretention facilities proposed in this report. A street tree example can be seen in Figure 22.

**Figure 22: Street Trees**



## 6.4. Smart Lighting

Smart lighting is proposed throughout the project limits where available right-of-way permits. The smart lighting will be consistent with the Seat Pleasant Smart City Initiative. Smart lighting poles can include LED luminaires, wireless networks, smart controls, and other various sensors. This lighting can provide pedestrian-level lighting to supplement the existing PEPCO-maintained leased lighting arms mounted to utility poles on the north side of MD 704 (Martin Luther King Jr. Highway). The design and installation of pedestrian lighting along MD 704 (Martin Luther King Jr. Highway) is directed by the 2008 MDOT-SHA Pedestrian Lighting Policy. This policy establishes the funding, design, construction and maintenance standards for pedestrian level lighting by a local municipality along a MDOT-SHA roadway. If the proposed pedestrian lighting system meets defined criteria, MDOT-SHA will fund the design—100 percent of the construction of conduit and handholes and 50 percent of the construction of poles, foundations, wiring, luminaires, and controls. The local municipality will be responsible for the remaining construction funding, as well as maintenance and energy costs. If the local municipality elects to have the local utility company design and install the lighting system, the local municipality is responsible for the costs. The local municipality can execute an agreement with the local utility company to maintain the lighting as well.

## 6.5. Charging Stations

Charging stations can be installed in areas near bus stops to provide pedestrians an opportunity to recharge smart devices. Charging station options can be seen in Figure 23.

**Figure 23: Charging Stations**



## 6.6. Smart Benches

Smart benches are street furniture for seating that may also include wireless networks, information displays, and charging facilities. These smart benches can be located adjacent to the sidewalks and shared use paths and near bus stops. A smart bench option can be seen in Figure 24.

**Figure 24: Smart Bench**



## 6.7. Smart Waste Receptacles

The City of Seat Pleasant has installed several smart waste receptacles at city facilities and parks. The same smart waste receptacle options that the city deploys can be proposed through the project limits. These receptacles include smart technology that compacts the waste and notifies city employees when receptacles are full. The smart waste receptacle option that the city uses can be seen in Figure 25.

**Figure 25: Smart Waste Receptacle**



## 6.8. Smart Bus Shelters

There are 12 existing WMATA Metrobus bus stops along Md 704 (Martin Luther King Jr. Highway) within the project limits. Several of these bus stops will be impacted by the proposed improvements and will require reconstruction. The reconstructed bus shelters can be upgraded with smart options including USB recharging stations, touchscreen monitors, and real-time bus arrival information. The reconstruction of the bus shelters will typically be performed by the local transit agency; therefore, the upgrade must be coordinated with WMATA.

## 7. 30% DESIGN AND ENGINEERING PLANS

Input from the community meeting was reviewed with the Community Planning Division and 30% Design and Engineering Plans were developed for the recommended alternative. The 30% Design and Engineering Plans were developed consistent with MDOT-SHA CADD and construction document standards. The design and engineering plans reflect the proposed paving, sidewalk, shared use path, pavement marking, drainage, landscape, and streetscape amenity improvements. The 30% Design and Engineering Plans assume no right-of-way acquisition or major underground or overhead utility relocation. The 30% Design and Engineering Plans are included in Appendix C.

## 8. PRELIMINARY CONSTRUCTION COST ESTIMATE

A preliminary construction cost estimate was developed based on the recommended alternative and 30% Design and Engineering Plans. The estimate was prepared consistent with MDOT-SHA category codes and guidelines. The estimated preliminary construction cost for the recommended alternative is \$4,625,000. The detailed preliminary construction cost estimate is included in Appendix D.

# ACKNOWLEDGMENTS

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