



*City of Alexandria,
Virginia*

Pedestrian and ADA Improvements to Transit Stops Study FINAL REPORT





Executive Summary

The City of Alexandria is a mix of businesses, institutions and residences that rely heavily on the public transit system for mobility. The residents, employees, and visitors of the City regularly use services such as DASH, the King Street Trolley, and Metrobus to reach their destinations. However, due to the existing parking regulations, there are many bus stops for these services within the City that are not accessible to all users. Buses are not able to stop adjacent to the curb at locations where parking is allowed, which makes the bus stop inaccessible for a disabled passenger that needs a wheelchair lift to board the bus. The parking also makes the bus stops inaccessible for many passengers that do not require the use of the wheelchair lift. In addition, the situation presents a safety concern as passengers must maneuver between parked cars to board and alight the bus. Improvements at these inaccessible bus stops would allow more passengers to safely and effectively use the public bus services that operate within the City of Alexandria.

The purpose of this study was to inventory 184 existing bus stops within Old Town Alexandria and along Mount Vernon Avenue to determine if they were accessible or inaccessible, recommend improvements to the inaccessible bus stops, assess the number of parking spaces that would be lost or gained as a result of the improvements, develop cost estimates for the improvements, and prioritize the improvements for implementation. The boundaries of the Old Town Alexandria study area were Bashford Lane to the north, Jefferson Street to the south, Fairfax Street to the east, and West Street/Daingerfield Road to the west. The Mount Vernon Avenue study area extended along Mount Vernon Avenue from Braddock Road in the south to the City line at Four Mile Run in the north.

Field work was conducted at each bus stop within the study areas to inventory the existing accessibility, ADA-compatibility, and amenities. The field work also included the assessment of potential improvements that could improve accessibility, such as constructing a bus bulb and restricting or adding parking spaces.

A transit service analysis was also completed that evaluated the existing bus routes, ridership, and boardings at each stop to identify bus stops that could potentially be consolidated or eliminated.

Preliminary cost estimates were developed for the recommended accessibility improvements at each bus stop. The cost estimates were used in conjunction with the existing number of daily boardings and alightings at each bus stop to develop an implementation schedule that could be used by the City for prioritizing the improvements. The implementation schedule separated the bus stops with a recommended improvement into four groups: low cost/high activity, low cost/low activity, high cost/high activity, or high cost/low activity. The implementation schedule will allow the City to select bus stops to be improved depending on the amount of funding that is available.



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1. Introduction

The City of Alexandria is a mix of businesses, institutions, and residences that rely heavily on the public transit system for mobility. The residents, employees, and visitors of the City regularly use services such as DASH, the King Street Trolley, and Metrobus to reach their destinations. However, due to the existing parking regulations, there are many bus stops for these services within the City that are not accessible to all users. Buses are not able to stop adjacent to the curb at locations where parking is allowed, which makes the bus stop inaccessible for a disabled passenger that needs a wheelchair lift to board the bus. The bus stops are also inaccessible for many passengers that do not require the use of the wheelchair lift. In addition, the situation presents a safety concern as passengers must maneuver between parked cars to access the bus. Improvements at the inaccessible bus stops would allow more passengers to safely and effectively use the public bus services that operate within the City of Alexandria.

The purpose of the study was to inventory 184 existing bus stops within Old Town Alexandria and along Mount Vernon Avenue to determine if they were accessible or inaccessible, recommend improvements to the inaccessible bus stops, assess the number of parking spaces that would be lost or gained as a result of the improvements, develop cost estimates for the improvements, and prioritize the improvements for implementation. For the purposes of this study, an inaccessible bus stop was defined as a bus stop where vehicles park along the curb so that the bus cannot pull to the curb when passengers are boarding or alighting. Accessibility should not be used interchangeably with ADA compliance, which relates to the minimum passenger loading zone dimensions and maximum slopes at the bus stop. There are bus stops that are accessible but not ADA-compliant and there are bus stops that are ADA-compliant but inaccessible. While the data to determine ADA-compliance was collected during the field work for this study, the main focus for the study was to recommend improvements to the inaccessible bus stops.



2. Data Collection

There were two study areas that accounted for the 184 total bus stops in the study: the Old Town Alexandria study area and the Mount Vernon Avenue study area. Data on the 184 bus stops was collected by obtaining GIS information from the City and by conducting a field investigation.

A. Study Limits

The Old Town Alexandria study area included 149 bus stops and was bounded by Bashford Lane in the north, Jefferson Street in the south, Fairfax Street in the east, and West Street/Daingerfield Road in the west. The Mount Vernon Avenue study area extended along Mount Vernon Avenue from Braddock Road in the south to the City line at Four Mile Run in the north and included 35 bus stops. The Old Town and Mount Vernon Avenue study areas are shown in **Figure 1**.

The City provided the results of the King Street Consolidation Study which recommended several bus stops along King Street to be consolidated. The bus stops that are proposed to be consolidated were not evaluated as part of the Pedestrian and ADA Improvements to Transit Stops Study.

The City also noted that the bus stops along Washington Street are accessible because parking is not allowed along Washington Street. Therefore, bus stops within the study area along Washington Street were not evaluated unless they were near a cross street with bus stops.

B. Field Investigation

The City provided Geographic Information Systems (GIS) data containing the locations of existing bus stops, catch basins, fire hydrants, and bus routes. The City also provided GIS data containing the type and location of existing parking for a portion of the Old Town study area. Field work was conducted to obtain the type and location of existing parking for the remainder of the Old Town study area and for the Mount Vernon study area.

The GIS data was combined into an online GIS map so that the data could be accessed and edited in the field by using an iPad and a GIS application called Collector for ArcGIS. The online map was used during the field assessment to take photographs, to verify the accuracy of the existing GIS data, and to collect additional existing conditions data at each bus stop. The field investigation process was as follows:

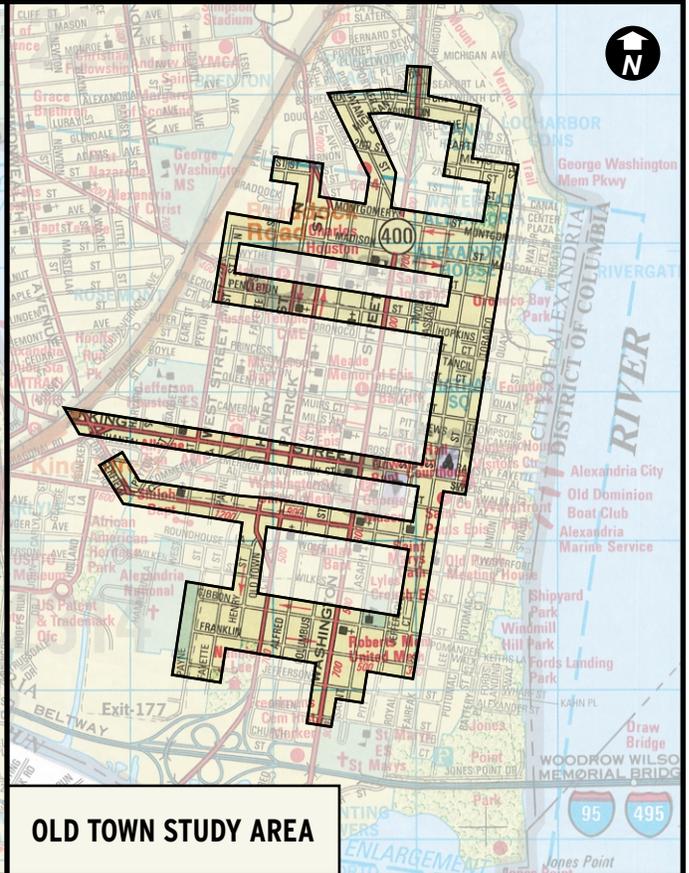
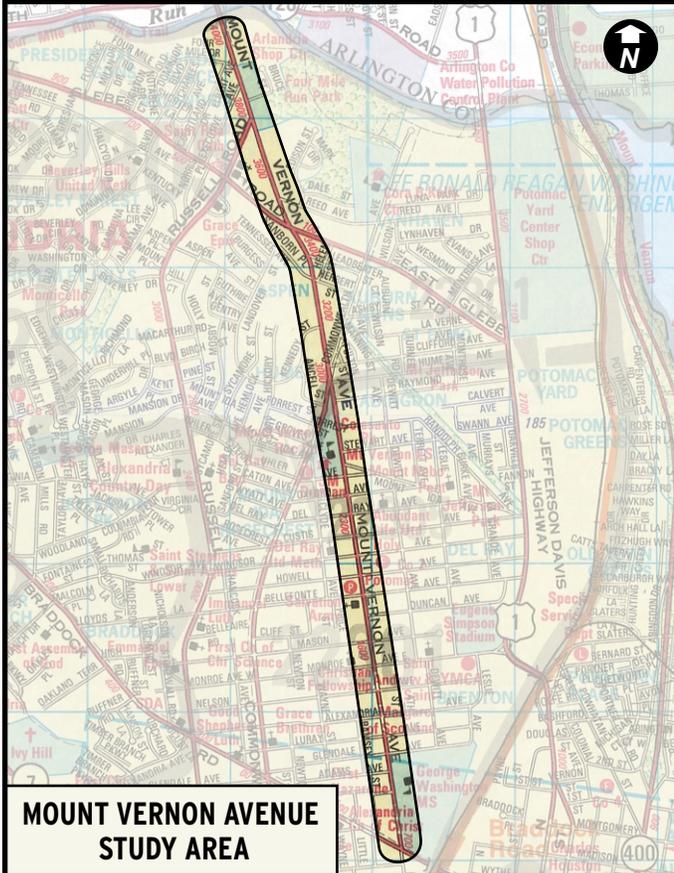
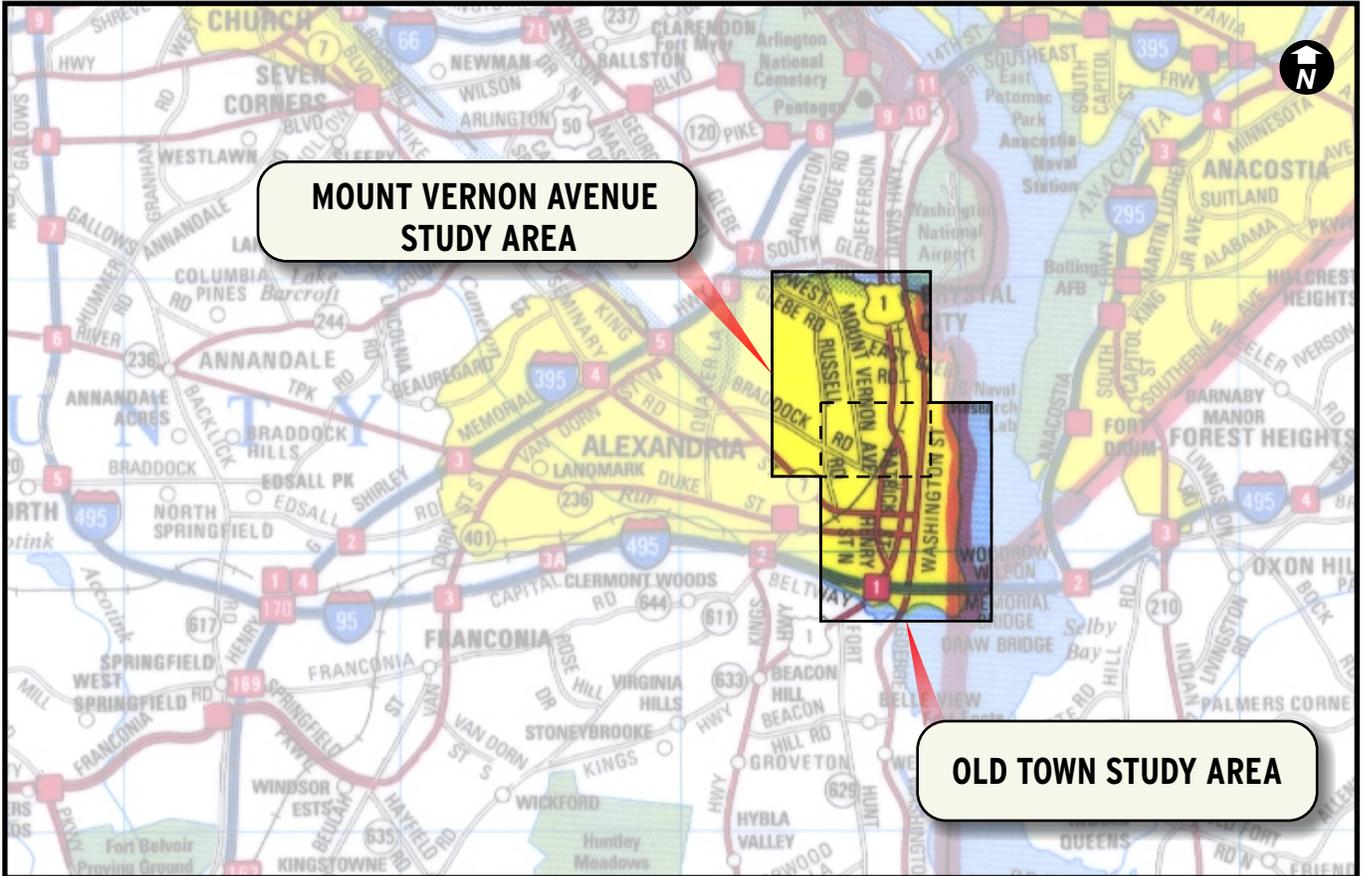
- Determine if the bus stop is accessible, i.e. able to be accessed by both disabled and able-bodied persons. An accessible bus stop does not necessarily mean the bus stop is ADA compliant. An example of an inaccessible bus stop would be one that includes parking at the curb line adjacent to the stop.
- Determine if the bus stop is located on an existing bus bulb.
- Determine if the bus stop is ADA compliant. ADA compliance was determined by taking spot measurements along the length and width of the passenger loading zone to verify that a 5-foot wide by 8-foot deep loading zone is available. In addition, the cross slope of the loading zone, measured perpendicular to the sidewalk, was measured to verify that it is less than or equal to two percent.



- Identify existing features located at the bus stop including a shelter, bench, trash receptacle, bike rack, lighting, and sidewalk to/from the bus stop.
- Identify existing drainage features located adjacent to the bus stop.
- Verify or identify adjacent parking, and, if present, identify the type (free, metered, permit, no parking). Permit parking areas include any locations where a permit must be purchased from the City in order to park and are generally in the residential areas. Free parking areas include locations that do not require payment or a permit to park.
- Identify adjacent utilities and utility conflicts

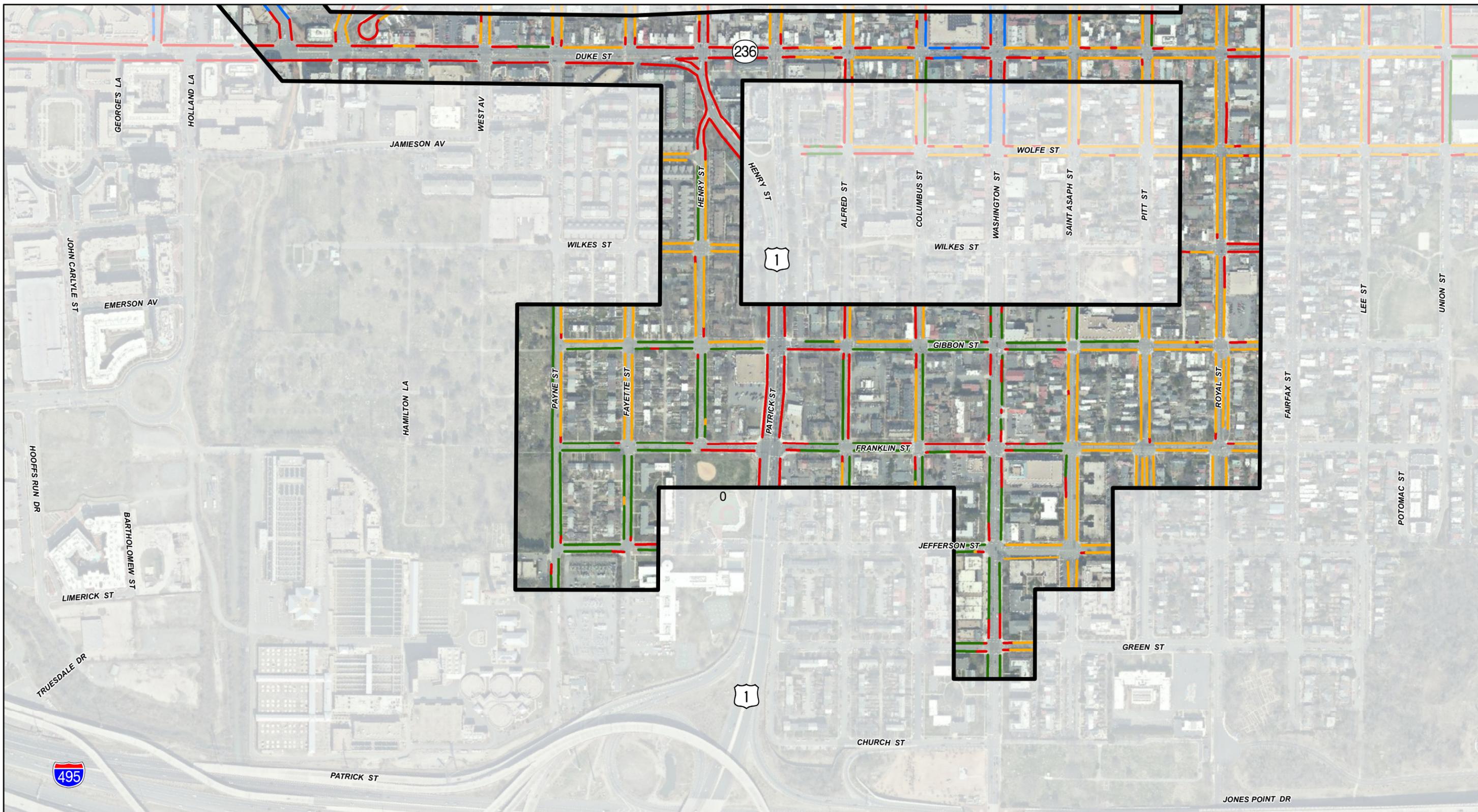
The results of the existing conditions data collection are presented in the tables in **Appendix A**. The bus stops with an ADA compliant passenger loading zone are highlighted in green in **Appendix A**. While there were 184 bus stops included in the study areas, 24 were removed from further study because either the bus stop is proposed to be consolidated along King Street or because the bus stop no longer exists. Data was collected and recommendations were evaluated for the remaining 160 bus stops.

The existing GIS data and the results of the field evaluation were combined to create maps for each study area. **Figures 2 through 6** display the locations and types of parking, locations of fire hydrants, catch basins, bus stops, and bus stops with bike parking.



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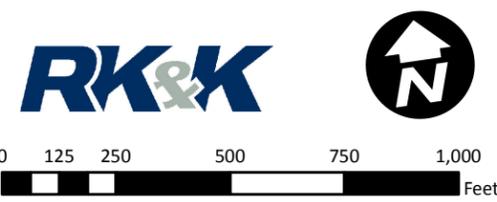




LEGEND

- Study Limits
- Bus Stops without Bike Parking
- Bus Stops with Bike Parking
- Catch Basins
- Fire Hydrants

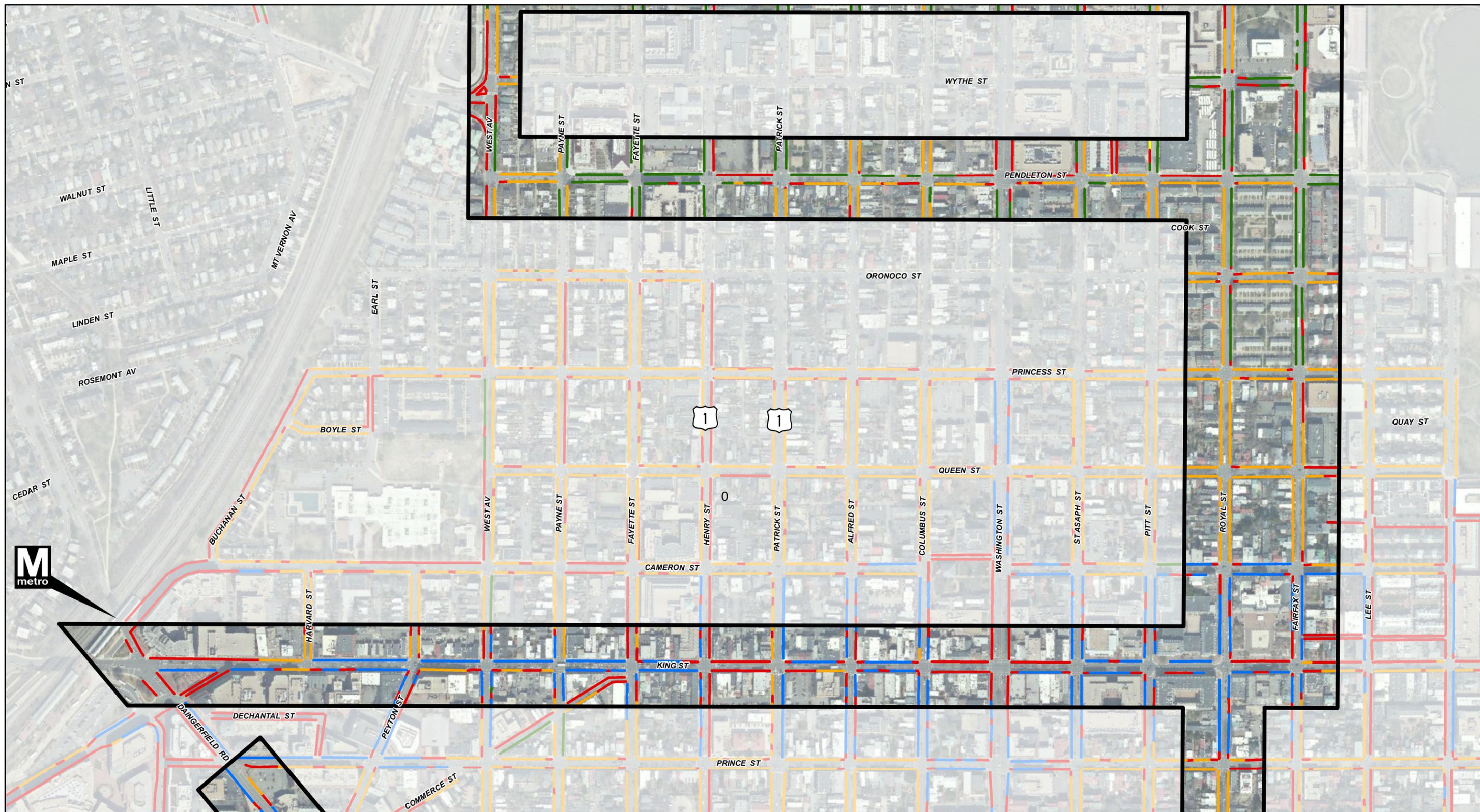
- Parking Type**
- Free parking
 - Metered
 - No Parking
 - Permitted Parking



**Pedestrian Access and ADA Improvements
to Transit Stops Study
Old Town Study Area
Existing Parking Inventory Map
Figure 2**



June 2015



LEGEND

Study Limits

Bus Stops without Bike Parking

Bus Stops with Bike Parking

Catch Basins

Fire Hydrants

Parking Type

Free parking

Metered

No Parking

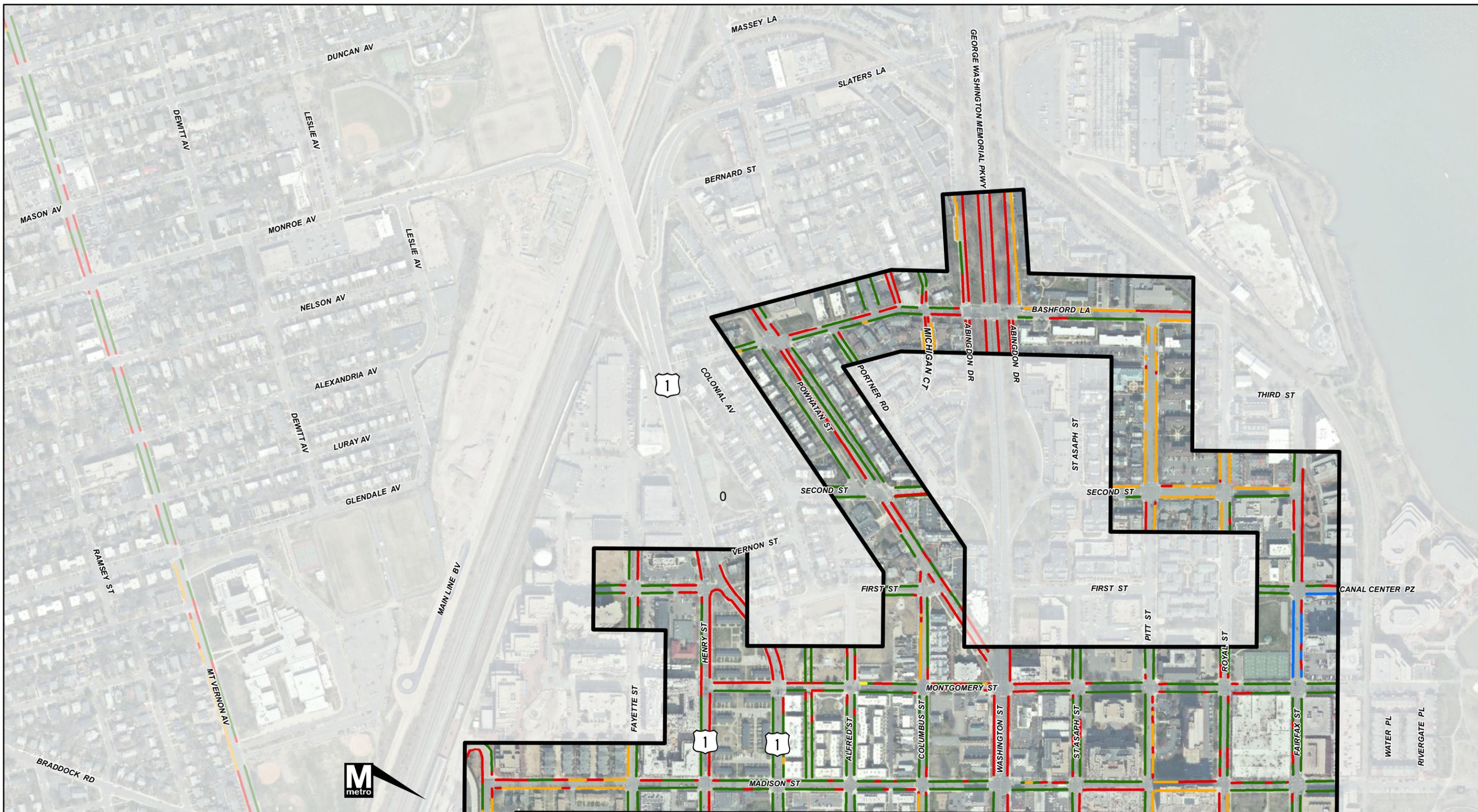
Permitted Parking



Pedestrian Access and ADA Improvements to Transit Stops Study
Old Town Study Area
Existing Parking Inventory Map



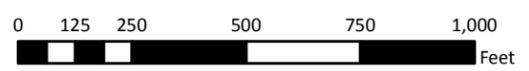
Figure 3



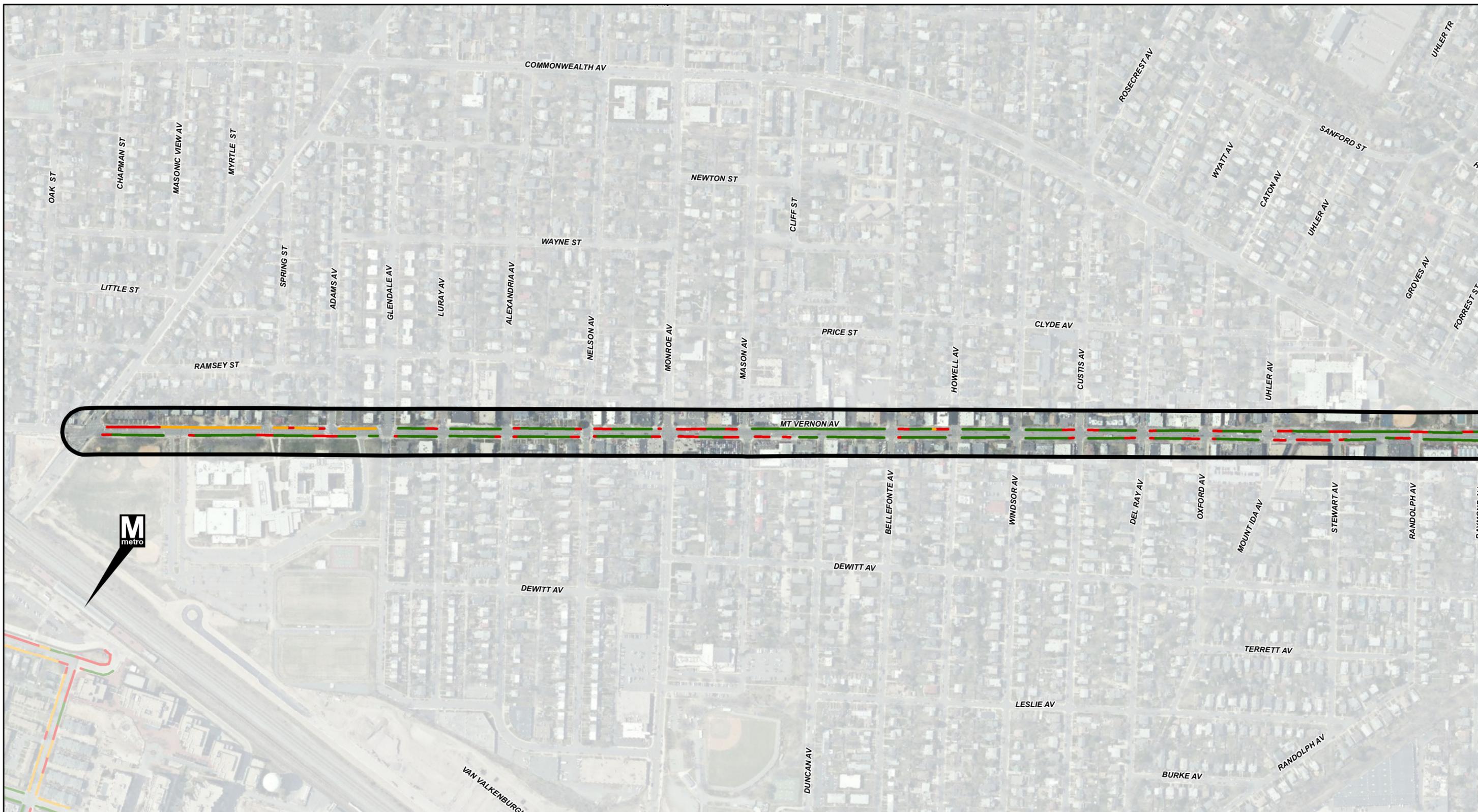
LEGEND

- Study Limits
- Bus Stops without Bike Parking
- Bus Stops with Bike Parking
- Catch Basins
- Fire Hydrants

- Parking Type**
- Free parking
 - Metered
 - No Parking
 - Permitted Parking



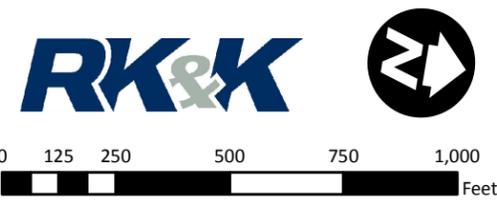
Pedestrian Access and ADA Improvements to Transit Stops Study
Old Town Study Area
Existing Parking Inventory Map
Figure 4



LEGEND

-  Study Limits
-  Bus Stops without Bike Parking
-  Bus Stops with Bike Parking
-  Catch Basins
-  Fire Hydrants

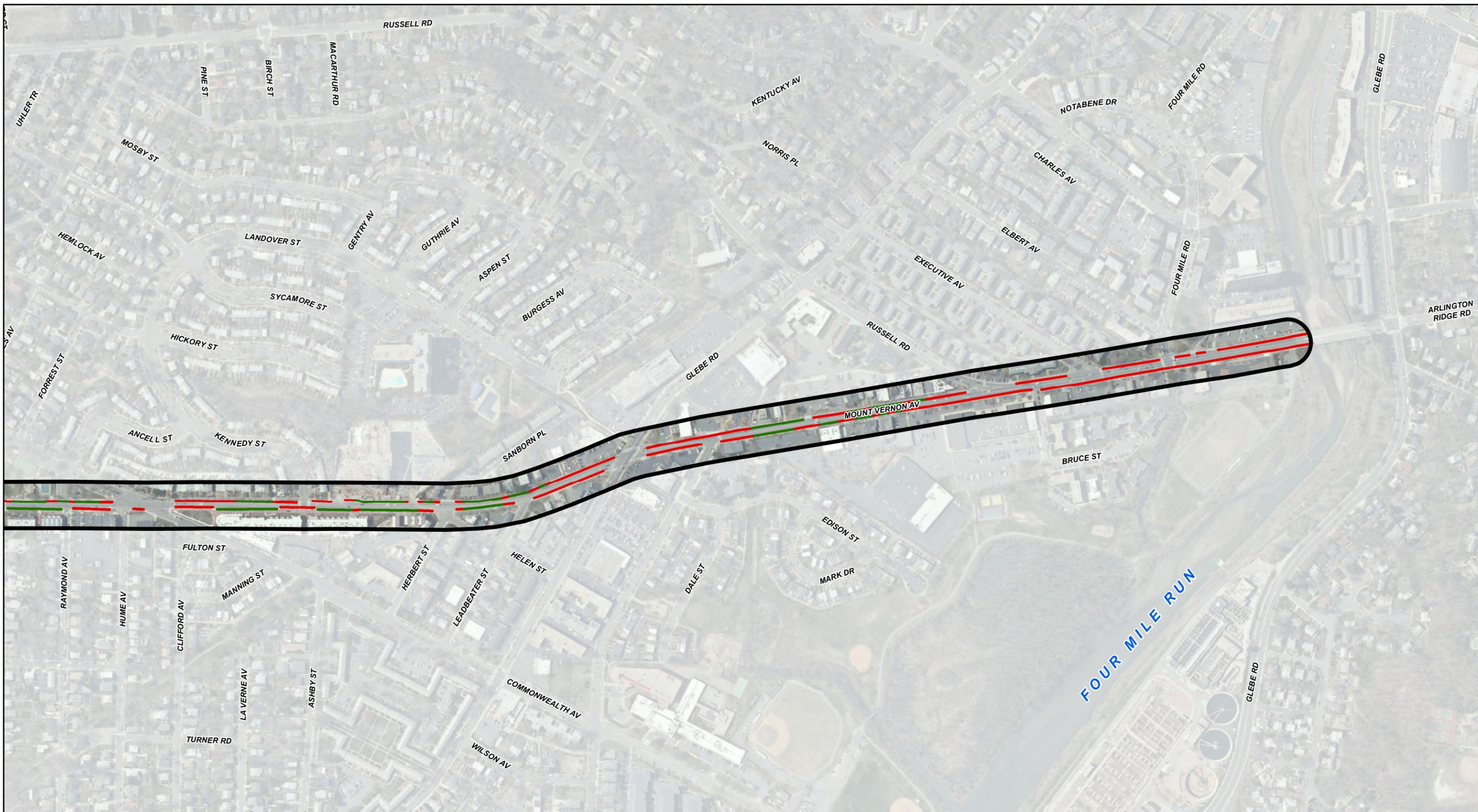
- Parking Type**
-  Free parking
 -  Metered
 -  No Parking
 -  Permitted Parking



**Pedestrian Access and ADA Improvements
to Transit Stops Study
Mt. Vernon Study Area
Existing Parking Inventory Map
Figure 5**



June 2015



LEGEND

Study Limits

Bus Stops without Bike Parking

Bus Stops with Bike Parking

Catch Basins

Fire Hydrants

Parking Type

Free parking

Metered

No Parking

Permitted Parking



**Pedestrian Access and ADA Improvements to Transit Stops Study
Mt. Vernon Study Area
Existing Parking Inventory Map**

Figure 6



3. Proposed Improvements

The data collected at the 160 bus stops in the field investigation was used to develop options for improving access to each bus stop. This section describes a typical bus bulb design, a typical ADA-compliant bus stop, the possible improvements that could improve accessibility to the bus stops, and how the cost estimates were developed for the proposed improvements.

A. Typical Bus Bulb Design

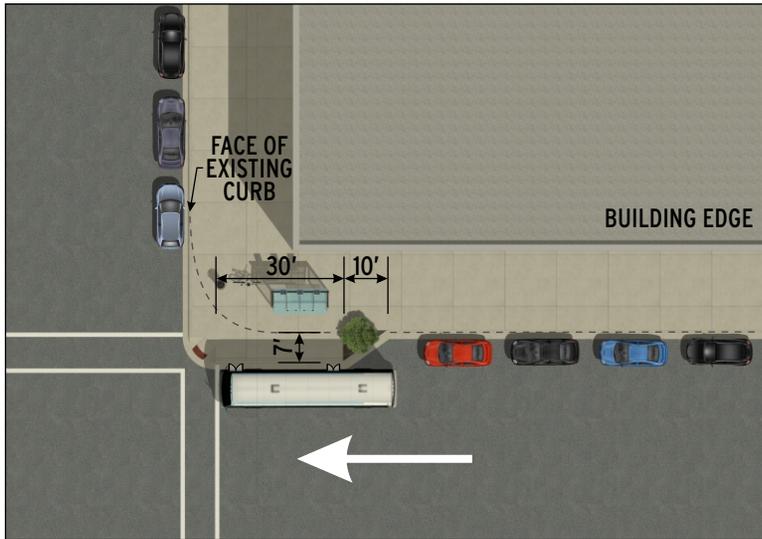
Several typical “full” bus bulb designs were developed based on the American Association of State Highway and Transportation Officials (AASHTO) *Guide for Geometric Design of Transit Facilities on Highways and Streets*, 2014, and are shown in **Figures 7 and 8**. The full bus bulbs would accommodate riders exiting the bus from both doors onto the curb. In addition, two “half” bus bulb designs were developed which would have a smaller footprint than the full bus bulbs and would only accommodate riders exiting the front door onto the curb. The “half” bulb could be installed at bus stops with lower ridership, where accessibility would only be provided to the front bus door location. The typical bus bulb designs were developed to illustrate what could be constructed at a bus stop to improve accessibility by moving the curb line closer to the travel lane. While the typical bus bulbs show features such as bus shelters and tree planters, those features are not required to be installed with a bus bulb and would be included on a case-by-case basis at each stop. As part of the bus bulb designs, the following specifications were developed:

Bus Bulb Type Definition:

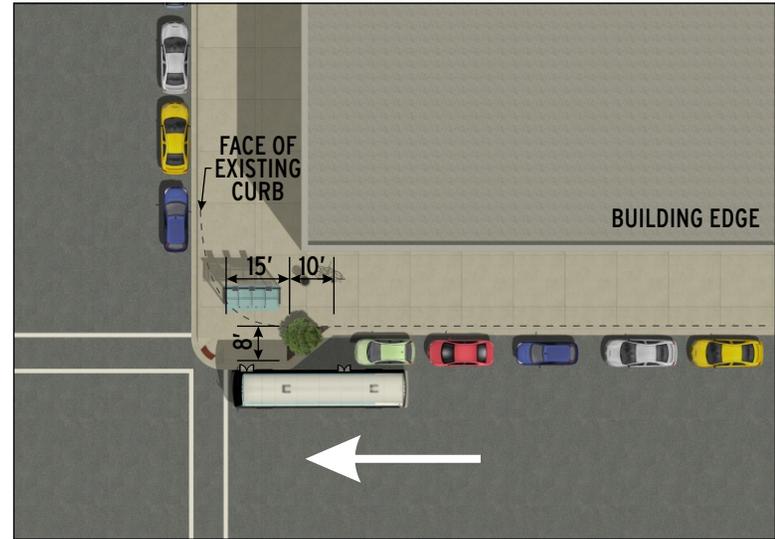
- Near Side – Bus bulb located on the approach side of the intersection.
- Far Side – Bus bulb located on the departure side of the intersection.
- Mid-Block – Bus bulb located between intersections.
- Full – Bus bulb meets the AASHTO recommended dimensions and is intended to provide curb access to the front and rear bus doors.
- Half – Bus bulb is intended to provide curb access to the front bus door only.

Bus Bulb Considerations:

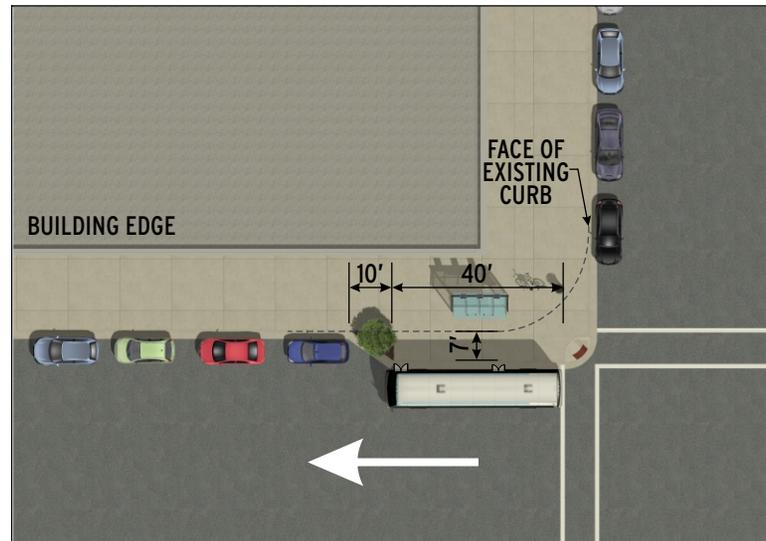
- Bus Dimensions
 - Longest bus on route in the City is 43 feet long for WMATA and 40 feet for DASH.
 - Distance between the front door and the rear door varies between 19’8” and 23’4”.
 - Front door opening varies between 2’6” and 3’.
 - Rear door opening varies between 2’5” and 2’8”.
 - Maximum bus width including mirrors is 12’6”.



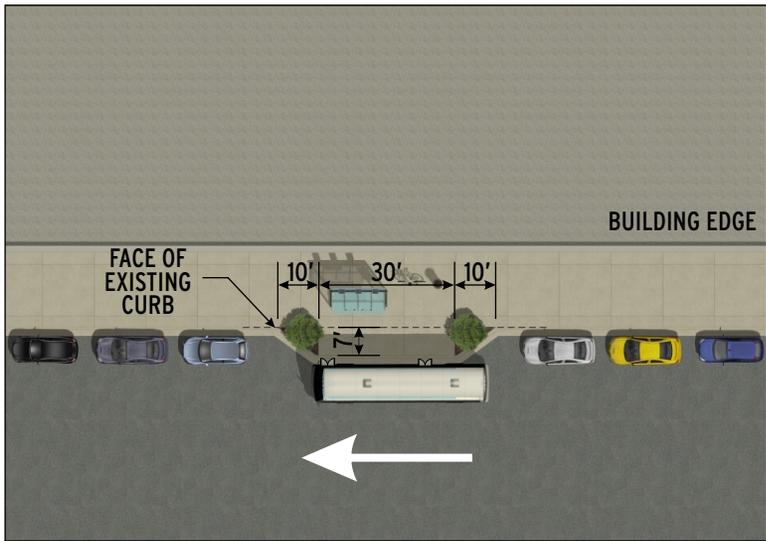
TYPICAL NEAR SIDE FULL BUS BULB



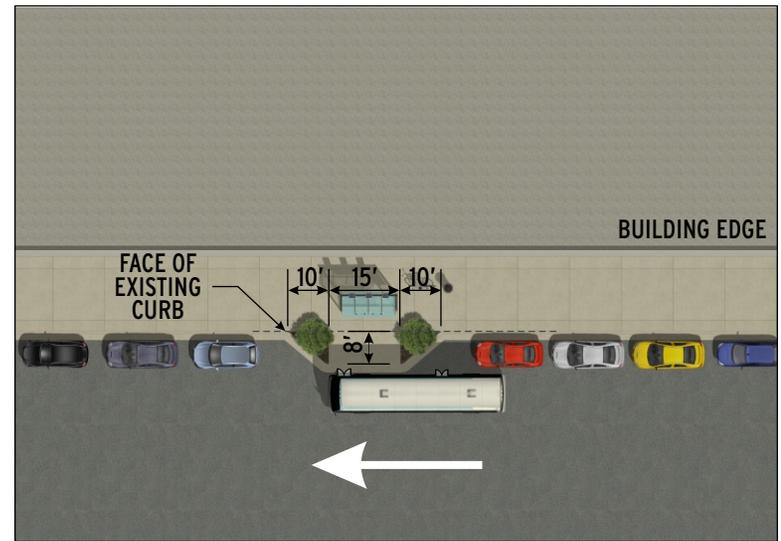
TYPICAL NEAR SIDE HALF BUS BULB



TYPICAL FAR SIDE FULL BUS BULB



TYPICAL MID-BLOCK FULL BUS BULB



TYPICAL MID-BLOCK HALF BUS BULB



- Length
 - Measured parallel to the roadway.
 - AASHTO recommends a minimum length of 30 feet to accommodate both the front and rear doors of the bus. A length of 40 feet is recommended for the far side full bus bulb so the bus does not block the pedestrian crosswalk. If space is constrained and ridership is low, then a front door only bus bulb is feasible; however, the rear door would not be accessible. The recommended length of a half bus bulb is 15 feet.
 - Intersections where there are far side and near side stops would need to include pedestrian curb ramps for intersection crossing. Buses would need to stop beyond (far side) or in advance of (near side) the marked crosswalk.
- Width
 - Measured perpendicular to the roadway.
 - Varies depending on existing lane width, presence of parking/bike lane, etc.
 - Need at least an 8-foot deep loading area to accommodate bus hydraulic ramp. The loading area could extend back into the sidewalk if there is clear space.
 - AASHTO recommends a minimum width of six feet. However, based on the City's experience, buses have difficulty aligning with the curb at bus bulbs that are only six feet wide because the bus must angle into the bus stop to avoid hitting a vehicle that is parked in advance of the bulb. Consequently, a width of seven feet is recommended at the full bus bulbs and eight feet is recommended at the half bulbs.
- Corner Radii
 - Varies depending on existing intersection configuration and skew of intersection.
 - Turning radii should be verified at each location using simulation turning software with buses, trucks, and emergency vehicles.
- Approach Transition
 - AASHTO recommends a transition taper length of 10 feet.
- Drainage Considerations
 - Bus bulbs can impede existing flow line hydraulics, so bus bulb design could include drainage and stormwater management accommodations.
- Parking Considerations
 - If on-street parking is provided, parking spaces may need to be eliminated to implement a bus bulb.
 - Based on a standard parallel parking space length of 22 feet, the following number of spaces would be eliminated for each type of bus bulb:
 - Near Side Full: 2 spaces



- Near Side Half: 1 space
- Far Side Full: 3 spaces
- Mid-Block Full: 3 spaces
- Mid-Block Half: 2 spaces

Bus Bulb Selection:

For the purposes of this study, if a near side or mid-block bus bulb was recommended at a bus stop, an evaluation of the existing ridership at that stop was conducted to determine if the bulb should be a full or half bulb. Based on the AASHTO calculation for bus stop capacity, the half bulb designs could accommodate 10 to 14 people waiting at the stop at one time at level of service (LOS) C. The full bus bulb designs could accommodate 16 to 24 people at LOS C. The number of daily alightings was also considered as a high number of alightings could warrant an accessible departure from the rear door of the bus. Since most of the bus stops in the study areas have fewer than 14 total daily boardings, the half bulb was recommended at the majority of the stops. The full bulb was only recommended at stops with significantly higher ridership or at transfer locations, primarily along King Street and Mount Vernon Avenue.

B. Typical ADA Bus Stop Rendering

A rendering of a typical ADA bus stop was developed based on current City of Alexandria design standards to show the layout of an ideal ADA bus stop and is shown in **Figure 9**. To be ADA compliant, the bus stop boarding and alighting areas must provide a minimum clear length of 96 inches, measured perpendicular to the curb, and a clear width of 60 inches measured parallel to the vehicle roadway, and be connected to sidewalks and pedestrian paths by an accessible route. Bus shelters must have a compliant 30 inch by 48 inch wheelchair space that is connected to the boarding and alighting area through an accessible path.

The typical bus stop would also include a shelter, bench, trash receptacle, bicycle rack, signage, map, real-time passenger information, landscaping, green infrastructure, and stormwater management. However, the bus stops along Washington Street and within the National Park Service (NPS) buffer zone must meet the guidelines set by the Board of Architectural Review (BAR). The BAR guidelines for bus stops do not allow solar panels or real-time information signs on shelters and they also require the shelter pad and passenger loading zone be constructed of the same material as the surrounding surface.





C. Bus Stop Improvements

In addition to the existing conditions information collected during the field visit, a preliminary engineering assessment was performed at each stop to identify potential improvement options that could be implemented to upgrade the stop to be accessible. At most bus stops, multiple options for improvements were recorded in the “Comments” field of the GIS database in the event that it was later determined the preferred improvement was not feasible. Upon completion of the field inventory, the data was imported into ArcGIS and reviewed for accuracy. Notes were added to the “Comments” field if any of the proposed improvements proposed during the field work were modified. The list of potential improvements available to the field reviewer included the following:

- **Retrofit existing stop and install a bus bulb.** If this option was determined to be viable, the existing drainage patterns were examined to determine if drainage system modifications would be required. A drainage study was not performed at each location; however, the existing drainage patterns were approximated by measuring the existing roadway slopes adjacent to the stop location. This information was noted in the field data. Adjacent intersection corner radii were not measured at any of the bus stops where a bus bulb was recommended and the vehicular turning radii should be verified with a program such as AutoTURN before any of the recommended bus bulbs are advanced into design.
- **Retrofit existing stop to install a pedestrian curb ramp and restrict parking.** This option would allow pedestrians to access the roadway elevation to walk to the bus between parked vehicles. This option was recommended if it was determined that buses would not be able to maneuver to the curb side for loading and unloading or if it was determined that a bus bulb was not the ideal improvement.
- **Relocate existing stop to a nearby location which would be better suited for the stop.** This option would be selected, for example, if there were existing utilities impeding the path of travel from the bus stop to the bus. Another example for selection of this option would be if parking was restricted near the stop and relocating the bus stop to the restricted parking location would eliminate the need to remove existing permitted parking.
- **Eliminate parking adjacent to the existing bus stop.** This option was evaluated at each location that had permitted parking along the curb at the bus stop. An estimate of the number of parking spaces lost was made at each stop.
- **Identify bus stop amenities which could be installed at each location.** These amenities included signs, benches, trash receptacles, benches, shelter, bike rack, and/or lighting.

Upon completion of the field work, the City determined that the curb ramp option would not be an acceptable improvement because it could create a safety issue for passengers as they must pass between parked cars to access the bus and it would be difficult to see passengers waiting at the bus stops, especially at night. The bus stops where a curb ramp was originally recommended were reevaluated and a bus bulb became the recommended improvement at many of those stops.



Improvements were recommended at 106 of the 160 bus stops that were evaluated in the Study. The 54 bus stops with no recommended improvement were already accessible and offered no opportunity to increase the number of parking spaces. Bus stops with a recommended improvement were either inaccessible or accessible, but with an opportunity to improve the parking situation. The final recommendations as well as the associated parking impact for each of the 106 bus stops are listed in the tables in **Appendix B**. The 54 bus stops without a recommended improvement are also listed in **Appendix B** with the comment, “No improvement needed.” The City will be provided electronic access to the field-collected data and the final recommendations through the Collector for ArcGIS application.

D. Cost Estimates

General cost estimates were developed for the proposed improvements at the 160 bus stops in the study areas and are included in the tables in **Appendix B**. Consequently, it can be assumed that any bus stop with a cost estimate of \$0 is already accessible or that there are no improvements that could increase the number of parking spaces at that stop. However, a cost estimate of \$0 does not imply that the bus stop is fully ADA-compliant, just “accessible” as defined in the Introduction. The construction unit costs that were developed for the potential improvements include the following:

- \$6,200 to construct a near side half bus bulb
- \$7,700 to construct a near side full bus bulb
- \$9,100 to construct a far side full bus bulb
- \$4,300 to construct a mid-block half bus bulb
- \$5,900 to construct a mid-block full bus bulb
- \$12,500 for a drainage modification
- \$300 to relocate a bus stop sign
- \$600 to relocate a bus stop sign and bench

The construction unit costs for the improvements represent the estimated cost for the materials and labor, and were derived from historical construction costs for those items. The bus bulb unit costs include demolishing existing pavement and curb, and installing new sidewalk and curb and gutter. The drainage modification unit cost includes a new inlet, 25 feet of new pipe, and pavement patching. A 40 percent contingency is included in the unit costs to account for the preliminary level of detail in this study; however, contingencies were not included for design or construction inspection.

According to the City, bus bulbs are currently being designed at three bus stops in the Old Town study area: Northbound Fairfax Street at Princess Street, Southbound Fairfax Street at Princess Street, and Westbound Montgomery Street at Pitt Street. It was assumed that the bus bulbs would be constructed in the near future so the cost estimates for these locations were \$0.



4. Bus Service Analysis

In conjunction with recommending design improvements to make the bus stops accessible, an analysis of the existing transit service was conducted to determine if any of the bus stops located within the study areas could be considered for consolidation or elimination. To complete the bus service analysis, the following approach was used:

- Research existing bus routes to determine service in the study area.
- Collect most recent ridership data at each bus stop.
- Develop a set of criteria to be used to identify bus stops that could be consolidated or eliminated.
- Use the criteria to identify bus stops that could be consolidated or eliminated.

A. Data Collection

The study areas are located in the east and southeast areas of Alexandria, Virginia, and these include a historic district with a concentration of heavy commercial and retail activity along the Potomac River waterfront. In addition to the local bus services, the area is also accessed by the King Street Old Town Metrorail Station.

The Old Town and Mount Vernon Avenue study areas are served by two bus services:

- Washington Metropolitan Area Transit Authority Metrobus (WMATA)
- Alexandria Transit Company's DASH System

Recent operating data was collected from WMATA and the Alexandria Transit Company. Currently, 19 bus routes operate along a portion or throughout the entire study areas. Nine of the 19 routes are Metrobus routes and the remaining 10 routes are DASH routes. The King Street Trolley, which is also operated by the Alexandria Transit Company, operates solely on King Street and transports riders between the King Street Metrorail Station and the Potomac River Waterfront. All other DASH and Metrobus routes do not necessarily travel throughout the study area. For example, buses traveling in the eastbound direction enter the Old Town study area at King Street, Daingerfield Road, and East Braddock Road, while buses traveling in the southbound direction enter the study area at Jefferson Davis Highway, Powhatan Street, or Washington Street. Most buses in the Old Town study area operate along King Street and Washington Street with some crossing the study area at various streets eastbound and westbound.

Bus stops are generally located at every block throughout the study areas. The placement of the bus stops varies as there are near-side, mid-block, and far-side bus stops. The operating transit services, Metrobus and DASH, typically share the same bus stops which results in a convenient flow of buses throughout the City and makes it simple for transit customers that are unfamiliar with the area or the transit system. However, there are also bus stops that are either exclusive Metrobus or DASH stops.



The following paragraphs describe the existing bus services within the study areas for each of the operating agencies.

1. WMATA Metrobus

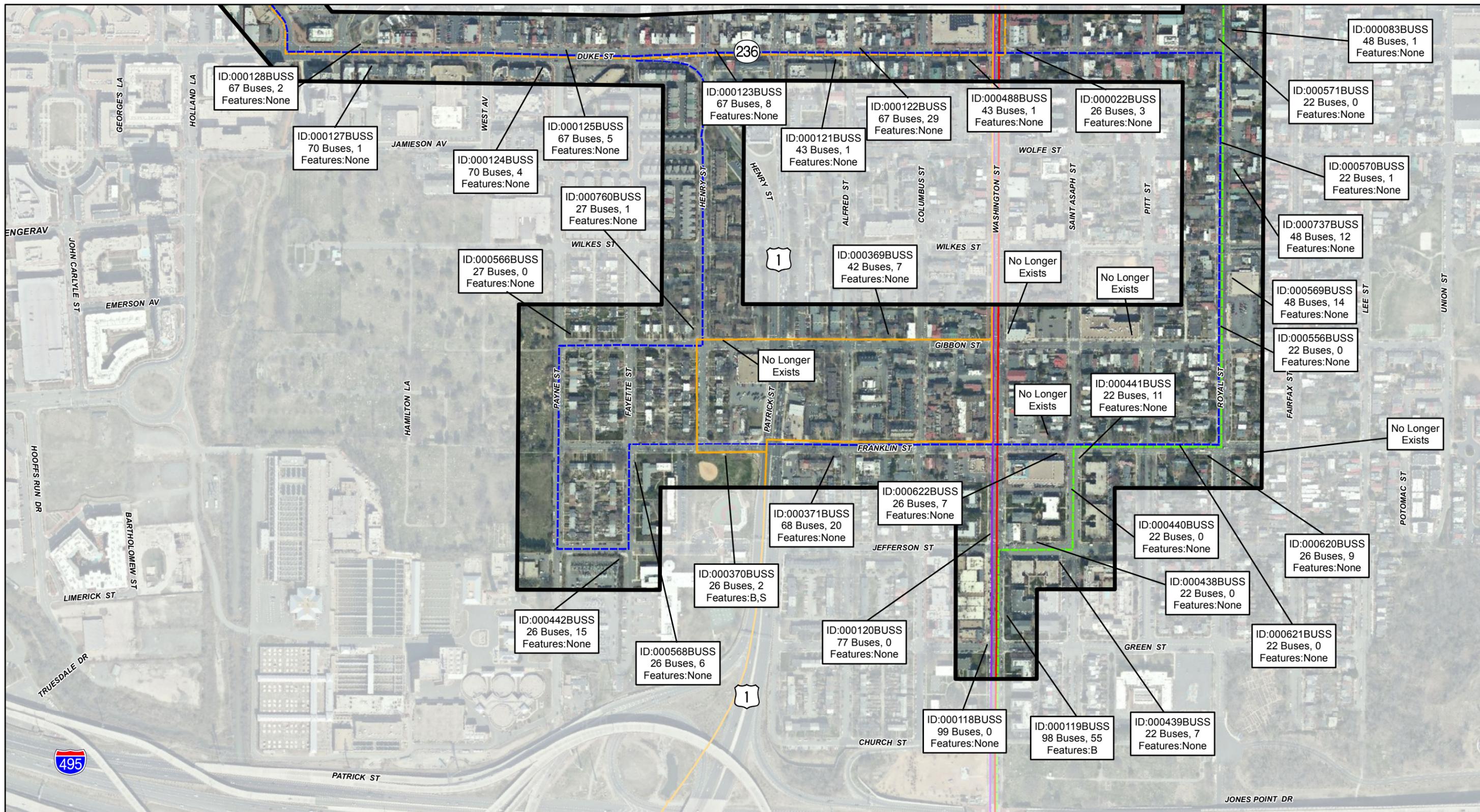
Nine bus lines operate within the study area: 10A, 10B, 10E, 10R, 10S, 11Y, 9A, 29K, and 29N. Service operates during the peak period as well as during the day and night, with the latest route operating along King Street until 1:45 AM. The frequency of service ranges from approximately seven-minute to 35-minute headways during the AM and PM peak periods. WMATA service is operated both on weekdays and weekends. WMATA operates 40-foot buses within the project area. Bus stops for the WMATA routes are located in the northbound, southbound, eastbound, and westbound directions in the study areas.

2. Alexandria Transit Company's DASH System

Bus transit service within the City of Alexandria, known as DASH, is operated by the Alexandria Transit Company, a non-profit organization that is owned by the City of Alexandria. DASH provides the most frequent service within the study areas. Ten bus lines operate within the study areas: AT2, AT3, AT3/4, AT4, AT5, AT6, AT7, AT8, AT9, and AT10. Service operates during the peak period as well as during the day and night, with the latest route operating from the Van Dorn Metrorail station at 12:40 AM. The frequency of service ranges from approximately 10-minute to 30-minute headways during the AM and PM peak periods. DASH service is operated both on weekdays and weekends. DASH operates 35-foot and 40-foot Gillig Low Floor diesel-electric hybrid buses as well as 30-foot Gillig Low Floor diesel-electric hybrid trolley replica vehicles.

In addition to the bus service throughout the study areas, transit customers can also use the WMATA Metrorail Yellow Line and Blue Line at the King Street Old Town and Braddock Road Metrorail Stations. Virginia Railway Express (VRE) provides commuter rail service to the Old Town area with the Fredericksburg and Manassas Lines that serve the Amtrak Station adjacent to the King Street Old Town Metrorail station. This location is a major transfer point for customers connecting to and from the Metrorail. Consequently, the bus stops near the King Street Old Town Metrorail Station have some of the highest ridership within the study areas.

The existing GIS data and the results of the transit data collection were combined to create maps for each study area. **Figures 10 through 14** display the locations of bus stops, the existing bus routes, and the number of daily buses and boardings for each bus stop.



LEGEND

- Study Limits
- Bus Stops

ID: Bus Stop ID
 # of Daily Buses, # of Daily Boardings
 Features: Bench (B), Shelter (S)

**Alexandria Transit Company
 -Existing Dash Bus Routes:**

- AT10
- AT2
- AT3
- AT3/4
- AT4
- AT5
- AT6
- AT7
- AT8
- AT9

**WMATA - Existing
 Metrobus Routes:**

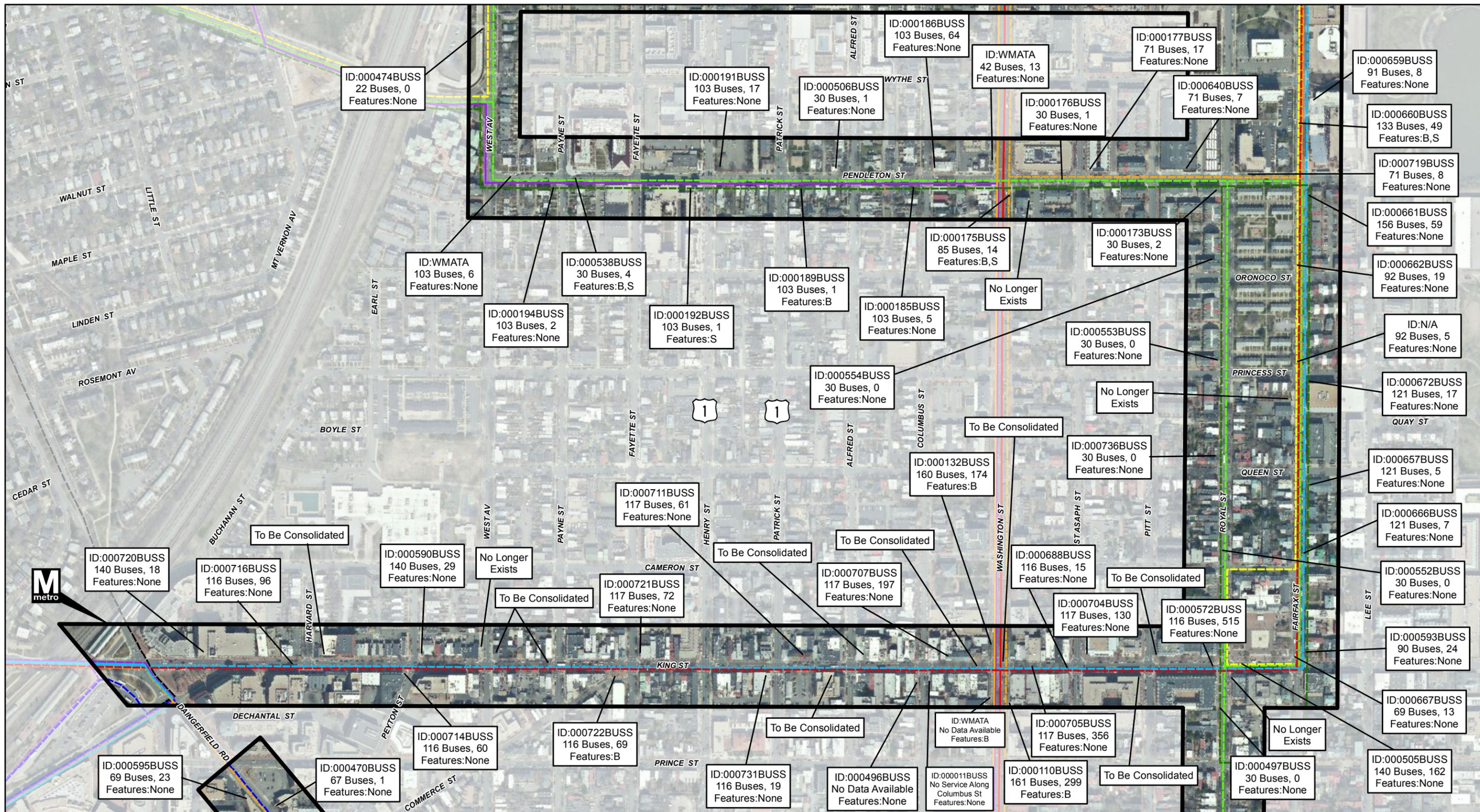
- 10A,B,E,R,S
- 11Y
- 9A
- 29KN



**Pedestrian Access and ADA Improvements
 to Transit Stops Study
 Old Town Study Area
 Existing Transit Service Map**



Figure 10



LEGEND

- Study Limits
- Bus Stops

ID: Bus Stop ID
 # of Daily Buses, # of Daily Boardings
 Features: Bench (B), Shelter (S)

**Alexandria Transit Company
 -Existing Dash Bus Routes:**

- AT10
- AT2
- AT3
- AT3/4
- AT4
- AT5
- AT6
- AT7
- AT8
- AT9

**WMATA - Existing
 Metrobus Routes:**

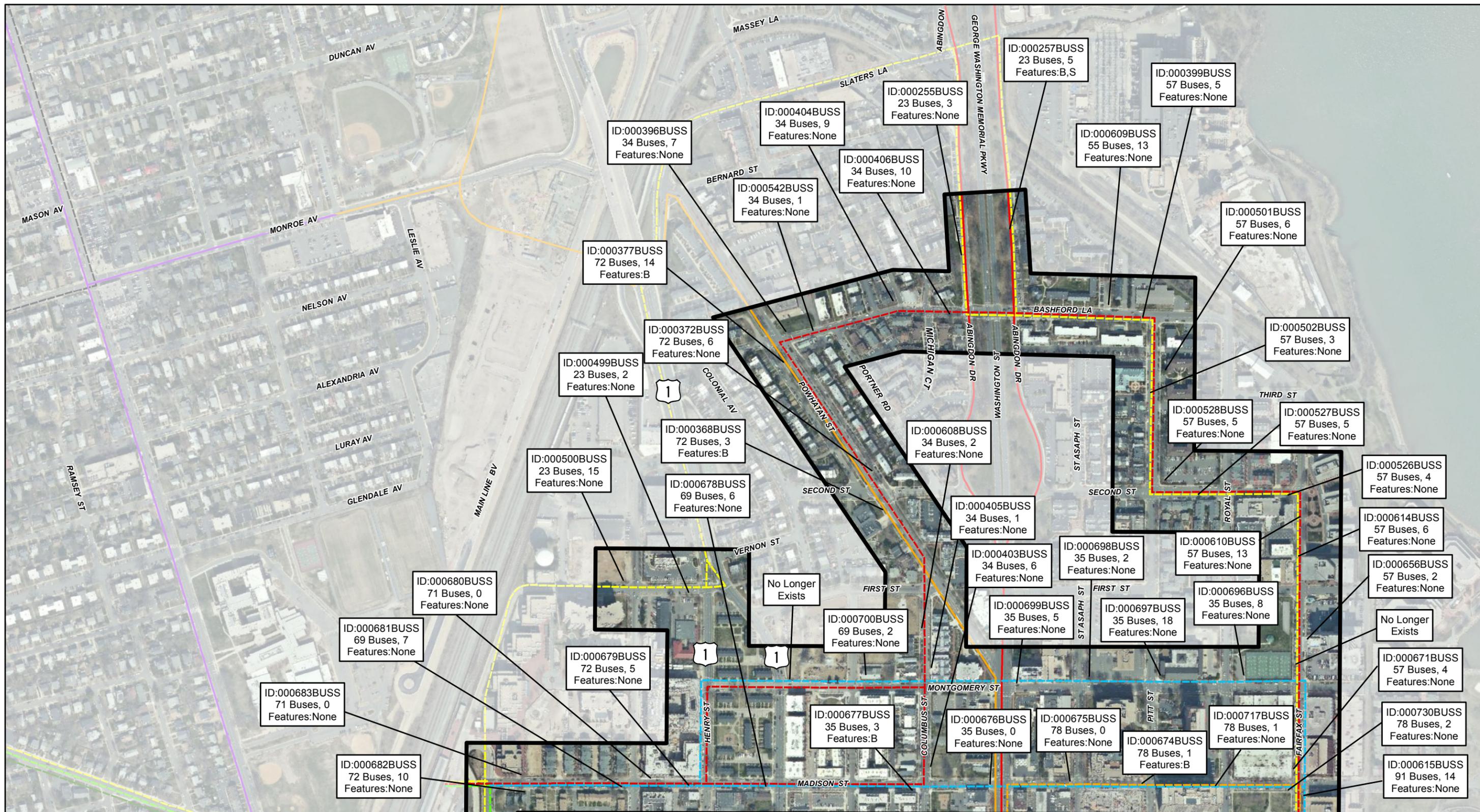
- 10A,B,E,R,S
- 11Y
- 9A
- 29KN



**Pedestrian Access and ADA Improvements
 to Transit Stops Study
 Old Town Study Area
 Existing Transit Service Map**



Figure 11



LEGEND

- Study Limits
- Bus Stops

ID: Bus Stop ID
 # of Daily Buses, # of Daily Boardings
 Features: Bench (B), Shelter (S)

**Alexandria Transit Company
 -Existing Dash Bus Routes:**

- AT10
- AT2
- AT3
- AT3/4
- AT4
- AT5
- AT6
- AT7
- AT8
- AT9

**WMATA - Existing
 Metrobus Routes:**

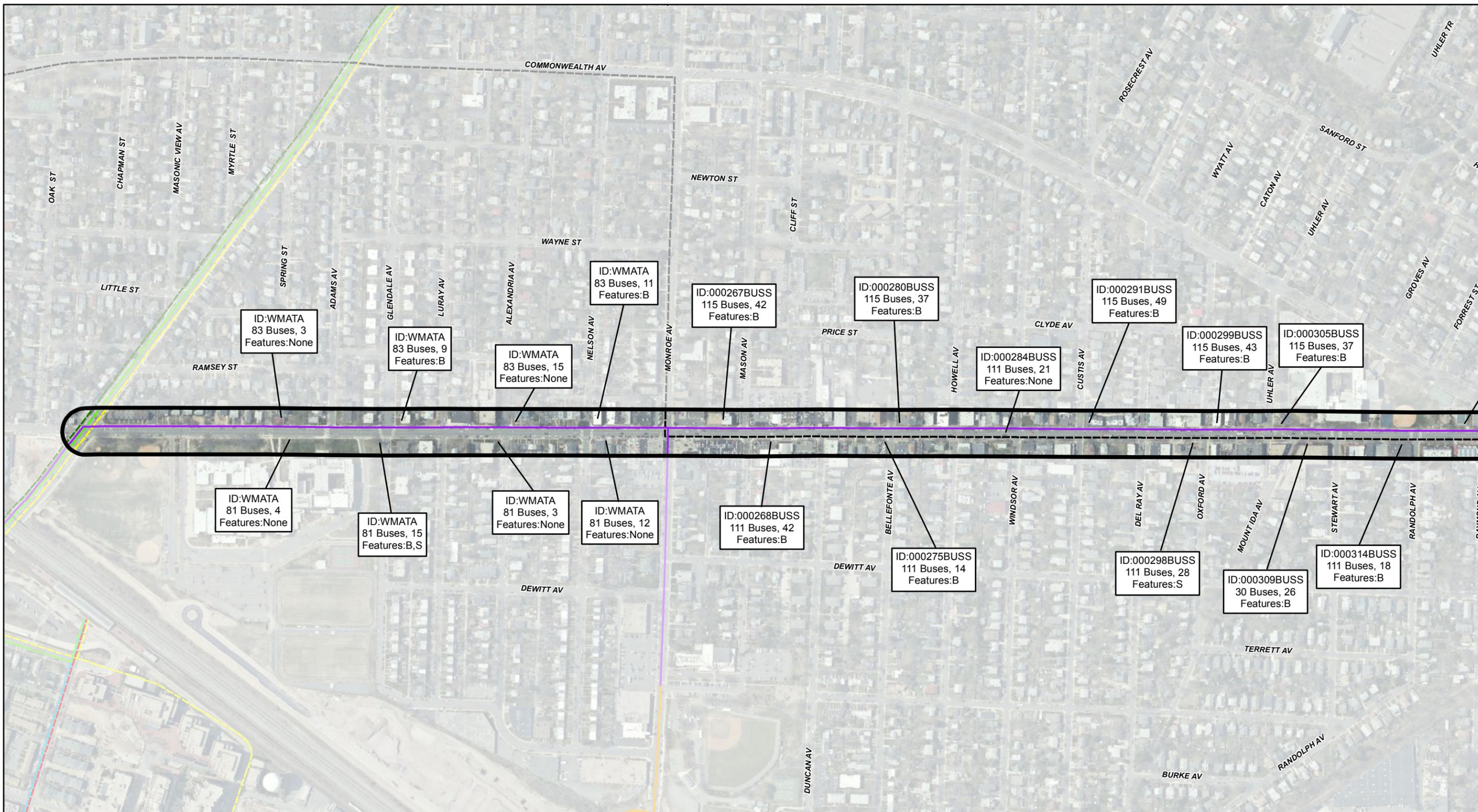
- 10A,B,E,R,S
- 11Y
- 9A
- 29KN



**Pedestrian Access and ADA Improvements
 to Transit Stops Study
 Old Town Study Area
 Existing Transit Service Map**



Figure 12



LEGEND

-  Study Limits
-  Bus Stops

ID: Bus Stop ID
 # of Daily Buses, # of Daily Boardings
 Features: Bench (B), Shelter (S)

**Alexandria Transit Company
 - Existing Dash Bus Routes:**

- AT10
- AT2
- AT3
- AT3/4
- AT4
- AT5
- AT6
- AT7
- AT8
- AT9

**WMATA - Existing
 Metrobus Routes:**

- 10A,B,E,R,S
- 11Y
- 9A
- 29KN

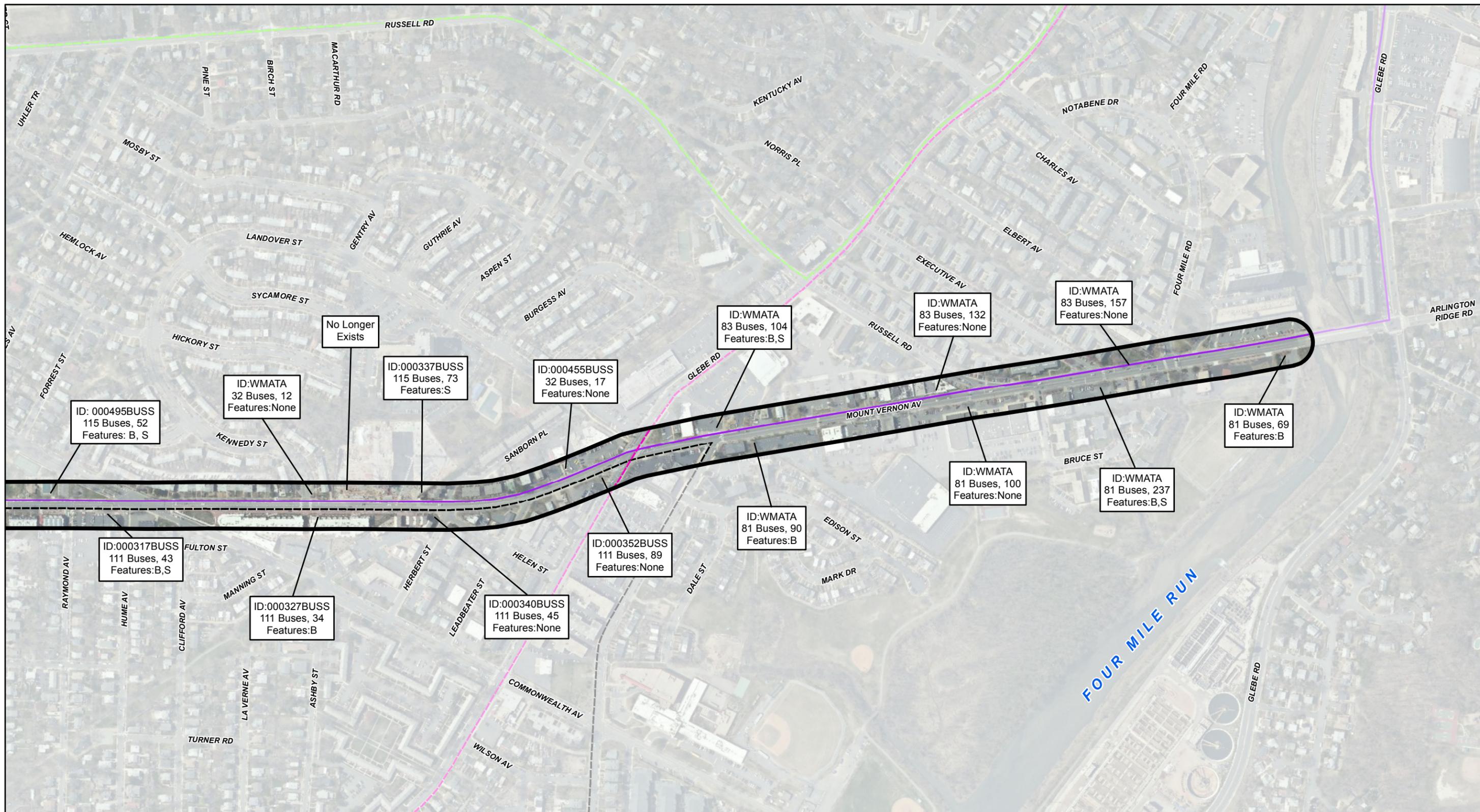


**Pedestrian Access and ADA Improvements
 to Transit Stops Study
 Mt. Vernon Study Area
 Existing Transit Service Map**



Existing Transit Service Map

Figure 13



LEGEND

Study Limits

Bus Stops

ID: Bus Stop ID
of Daily Buses, # of Daily Boardings
Features: Bench (B), Shelter (S)

**Alexandria Transit Company
- Existing Dash Bus Routes:**

- AT10
- AT2
- AT3
- AT3/4
- AT4
- AT5
- AT6
- AT7
- AT8
- AT9

**WMATA - Existing
Metrobus Routes:**

- 10A,B,E,R,S
- 11Y
- 9A
- 29KN



**Pedestrian Access and ADA Improvements
to Transit Stops Study**



**Mt. Vernon Study Area
Existing Transit Service Map**

Figure 14



B. Analysis Criteria

Six criteria were developed to determine if a bus stop is a candidate for consolidation or elimination:

1. Ridership activity – are there a low number of boardings and alightings?
2. Bus volume – is there a low bus volume at the stop?
3. Bus stop spacing and characteristics – is the stop in close proximity to another stop? Is the stop a transfer point or special service stop which could be combined with an adjacent stop?
4. Operational review – what is the bus service within the immediate area?
5. Trip Generator/Attractor – is the stop located next to an activity center, medical facility, social services, education facility, apartment complex, retail center, employment centers, etc.
6. Accessibility – is the stop accessible or what are the estimated costs to make the stop accessible?

The criteria are based on recommendations in the *Transportation Research Board Transit Capacity and Quality of Service Manual*, the results of the operating data collection, and the results of the bus stop field evaluation. Each of the six criteria is described in more detail below.

1. Ridership Activity

The study areas contain a historical district with a concentration of commercial and retail activity as well as a large residential area. Due to the mix of land uses, the study areas experience high ridership at the bus stops along commercial and retail streets and lower ridership at bus stops within the residential areas. To determine if any bus stops could be potential candidates for consolidation or elimination, ridership data was collected from both transit agencies operating within the study areas. Boardings and alightings (on/off) are key indicators of the value of a bus stop, as they show how often a bus stop is used. Unlike rail service where a train stops at each designated station location, bus service only stops at a bus stop if a passenger requests a stop or if a passenger is waiting to board. Consequently, if a bus frequently passes a bus stop, it would have minimal impact to passengers or the service if the stop was to be consolidated or eliminated due to the low activity at that location. A new ride check count was not conducted for this study. The ridership data collected from WMATA and the Alexandria Transit Company reflects the most recent data available and varied by collection year.

Tables 1 and 2 display the five bus stops with the highest and lowest total daily bus stop activity within the study areas. See **Appendix C** for a series of tables with the total daily bus stop activity at each of the bus stops in the study areas. Overall, the highest average daily ridership totals were reported at bus stops along King Street and Mount Vernon Avenue. The total daily boardings and alightings at all of the King Street bus stops including the King Street Trolley are 729 and 692, respectively. The total daily boardings and alightings at all of the Mount Vernon Avenue bus stops are 1,614 and 1,580, respectively. The bus stop with the highest ridership was located northbound South Washington Street at King Street with 413 boardings and alightings combined at this location. The high bus stop activity near King Street can be attributed to the commercial activity that takes place on this main street of Old Town, Alexandria.



Table 1: Bus Stops with the Highest Total Daily Activity

Stop Id #	Direction	On Street	At Street	Served By Routes	Total Daily Bus Stop Activity
110	Northbound	S Washington St	King St	10A, 10B, 10R, 11Y, AT8	413 ¹
WMATA	Southbound	Mt. Vernon Ave	Executive Ave	10A, 10B, 10E, 10R	387
WMATA	Northbound	Mt. Vernon Ave	Executive Ave	10A, 10B, 10E, 10R	391
132	Southbound	N Washington St	King St	10A, 10B, 10R, AT8	345
WMATA	Northbound	Mt. Vernon Ave	Reed Ave	10A, 10B, 10E, 10R	247

Notes:

¹ WMATA Route 11Y not included in daily bus stop activity total. 11Y ridership data was unavailable

Table 2: Bus Stops with the Lowest Total Daily Activity

Stop Id #	Direction	On Street	At Street	Served By Routes	Total Daily Bus Stop Activity
370	Eastbound	Franklin St	S Patrick St	AT7	2
506	Westbound	Pendleton St	Alfred St	AT3, AT3/4	1
676	Eastbound	Madison St	N Washington St	AT5	1
760	Westbound	Gibbon St	S Payne St	AT7	1
83	Northbound	S Royal St	Duke St	AT3	1

2. Bus Volume

As demand for transit service increases, particularly during the peak periods, transit agencies will add service to relieve crowding conditions and meet demand. To determine the volume of buses at each bus stop, a review of the most current published timetables for WMATA and the Alexandria Transit Company was completed. Upon reviewing the existing bus volumes within the study areas, no bus stops were recommended for consolidation or elimination solely based on this data.

3. Bus Stop Spacing and Characteristics

Bus stop spacing is important for the efficiency of a transit system. The City's bus stop spacing guidelines for stops located in a high density urban setting recommend stops be placed no less than 600 feet and no greater than 1,320 feet apart. If bus stops are located too close to each other, the travel time would increase due to the higher frequency of stops. Meanwhile, if the bus stops are located too far apart, passengers would be inconvenienced as the average walking distances to and from the stop would be higher.

Bus stops are generally located at each block in the eastbound and westbound directions and every other block in the northbound and southbound directions within the study areas. Although the exact location of each bus stop varies by block and placement (near-side, far-side, or mid-block), the average



spacing between each eastbound and westbound stop is approximately 300 to 500 feet. The most common bus stop placement is on the near side of the intersection. The spacing remains relatively constant throughout the study areas with bus stops located at every block along high volume corridors such as King Street and Mount Vernon Avenue. However, a recent proposal for bus stop improvements along the King Street corridor has recommended consolidating the bus stops to be approximately every other block. For other streets such as Royal Street and Fairfax Street, the bus stop spacing varies based on proximity to various trip generators and attractors.

Along a transit corridor, all bus stops serve a specific purpose which is to provide a comfortable, accessible waiting area for passengers. When conducting a transit or bus stop assessment, it is important to look beyond the operational considerations and to investigate the unique characteristics or purpose that the bus stop may serve. In some instances, a bus stop may need to serve a specific purpose, such as the stops located near Diagonal Road that are used as a major transfer location with the King Street Metrorail. In other cases, a stop may be located in close proximity to another stop, but it might be a stand-alone stop that identifies this location as a special service or brand such as the King Street Trolley.

4. Operational Review

The study areas are unique in that there are two transit agencies that need to serve customers in the most efficient way possible. Bus operations are further complicated along King Street as the King Street Trolley also shares the DASH bus stops. In 2014, a Comprehensive Operational Analysis (COA) of the DASH Transit System was completed for the City of Alexandria. The analysis included a detailed evaluation of the DASH system's operating performance, strengths, weaknesses, and opportunities of the system. The COA also included policy, planning, and service recommendations. The COA recommendations were reviewed, but the focus of this study was on bus stop activity as it correlates to bus stop infrastructure improvements.

5. Trip Generator/Attractor

Ridership alone cannot be the single determining factor when considering the viability of a bus stop location. Bus stops located near high density residences, educational or institutional facilities, as well as bus stops located at or near transfer connections to other transit modes may serve a specific need. Bus stops with low passenger activity will be reviewed to determine if the stop may meet a specific need or purpose for DASH customers.

6. Accessibility

The results of the accessibility field work that was completed in this study were also used as criteria for selecting bus stops to be consolidated or removed. The costs of the recommended improvements at each bus stop reflect the costs to make each bus stop accessible. Bus stops with higher improvement costs could be candidates for consolidation or removal if there are nearby bus stops that are already accessible or that have lower improvement costs. In addition, if parking spaces need to be removed to make a stop accessible, the stop could be consolidated with another stop, especially if the other stop has a smaller parking impact.



C. Analysis Results

The analysis criteria described in the previous section was used to identify bus stops that could potentially be consolidated or eliminated. All bus stops that are identified for consolidation or elimination should be studied further to determine the effects and feasibility of consolidating or eliminating them. Ten bus stops were identified as potential candidates for consolidation:

- C1. Madison Street and N. Royal Street (eastbound) and Madison Street and N. Fairfax Street (eastbound)
- C2. Madison Street and N. Henry Street (eastbound) and Madison Street and N. Patrick Street (eastbound)
- C3. Madison Street and N. St. Asaph Street (eastbound) and Madison Street and N. Pitt Street (eastbound)
- C4. N. Fairfax Street and Queen Street (northbound) and N. Fairfax Street and Princess Street (Northbound)
- C5. Mount Vernon Avenue and Glendale Avenue (southbound) and Mount Vernon Avenue and Spring Street (southbound)
- C6. Mount Vernon and Alexandria Avenue (southbound) and Mount Vernon and Nelson Avenue (southbound)
- C7. Mount Vernon Avenue and Alexandria Avenue (northbound) and Mount Vernon Avenue and Nelson Avenue (northbound)
- C8. Montgomery Street and N. St. Asaph Street (westbound) and Montgomery Street and N. Washington Street (westbound)
- C9. W. Abingdon Street and Bashford Lane (southbound) and WMATA stop W. Abingdon Street and Bashford Lane (southbound)
- C10. S. Royal Street and Wolfe Street (northbound) and S. Royal Street and Duke Street (northbound)

Seven bus stops were identified as potential candidates for elimination:

- E1. N. Royal Street and Princess Street (southbound)
- E2. Gibbon Street and S. Payne Street (westbound)
- E3. E. Madison and N. Washington Street (eastbound)
- E4. W. Franklin Street and S. Pitt Street (westbound)
- E5. W. Jefferson Street and S. Saint Asaph Street (westbound)
- E6. Mt. Vernon Avenue and Randolph Avenue (northbound)
- E7. W. Pendleton Street and N. Alfred Street (westbound)

1. Potential Bus Stops for Consolidation

The following bus stops were identified for further analysis as potential candidates for consolidation.



C1. Madison Street and N. Royal Street (eastbound) and Madison Street and N. Fairfax Street (eastbound)

Rational for consolidation:

- Very low ridership for both bus stops compared to other stops in the Old Town study area (one average daily boarding at N. Royal Street and two average daily boardings at N. Fairfax Street).
- The N. Fairfax Street bus stop has slightly more overall activity (23 alightings in comparison to 14 alightings N. Royal Street).
- Approximately 400 feet between Madison at N. Royal Street and N. Fairfax Street bus stops.
- A bus bulb was recommended at N. Royal Street because according to the City, Madison Street will be reconstructed between St. Asaph Street and Royal Street within the next two years. Drainage modifications would be required at the stop at N. Royal Street which makes the total cost of improvements \$18,700. The N. Fairfax Street bus stop requires \$6,200 to make it accessible.
- If bus stops are consolidated at Fairfax Street, there will be approximately 675 feet to the Pitt Street bus stop to the west, which is consistent with the City's bus stop spacing guidelines.
- The recommended improvements at the N. Royal Street stop would result in a gain of one parking space while the improvements at the N. Fairfax Street stop would result in the loss of one parking space.

Recommendation: Consider combining the stops and locating them at the at N. Fairfax Street stop. One bus stop could accommodate current ridership for both stops and consolidation would eliminate the \$18,700 cost to make N. Royal Street stop accessible.

C2. Madison Street and N. Henry Street (eastbound) and Madison Street and N. Patrick Street (eastbound)

Rational for consolidation:

- Very low ridership for both bus stops compared to other stops in the Old Town study area (five average daily boardings at the N. Henry Street stop and six average daily boardings at N. Patrick Street).
- Approximately 600 feet between the N. Henry Street and N. Patrick Street bus stops.
- A half-size bus bulb was recommended at both locations to make them accessible.
- If bus stops are consolidated on N. Patrick Street, there will be approximately 600 feet to the N. Fayette Street stop to the west and 600 feet to the N. Columbus Street stop to the east.
- The recommended improvements to both bus stop locations would result in a loss of one parking space.

Recommendation: Consider combining the stops and locating them at the N. Patrick Street stop. One bus stop could accommodate the current ridership for both stops and consolidation would eliminate the \$6,200 cost to make the N. Henry Street stop accessible.



C3. Madison Street and N. St. Asaph Street (eastbound) and Madison Street and N. Pitt Street (eastbound)

Rational for consolidation:

- Very low ridership for both bus stops compared to other stops in the Old Town study area (zero average daily boardings at N. St. Asaph Street and one average daily boarding at N. Pitt Street).
- Approximately 600 feet between the N. St. Asaph Street and the N. Pitt Street bus stops.
- A half-size bus bulb was recommended at the N. St. Asaph Street stop location. No improvements are required at the N. Pitt Street stop.
- If bus stops are consolidated at N. Pitt Street there will be approximately 600 feet to the N. Washington Street stop to the west and 670 feet to the N. Fairfax Street stop to the east.
- The recommended improvements at N. St. Asaph Street result in a loss of one parking space while there would be no parking change at the N. Pitt Street stop.

Recommendation: Consider combining the stops and locating them at the N. Pitt Street stop. One bus stop could accommodate current ridership for both stops and consolidation would eliminate the \$18,700 cost for improvements at the N. St. Asaph Street stop.

C4. N. Fairfax Street and Queen Street (northbound) and N. Fairfax Street and Princess Street (Northbound)

Rational for consolidation:

- Low bus stop activity at Queen Street stop (five average daily boardings)
- The Princess Street stop is currently in design under another project and will not require additional improvements. A half bulb is recommended at the Queen Street stop and the estimated cost of the improvements is \$18,700.
- Improvements to the Queen Street stop would result in the loss of one parking space and there would be no loss of parking spaces at the Princess Street stop.
- If bus stops are consolidated at Princess Street, there would be approximately 800 feet to the Pendleton Street stop to the north and 830 feet to the Cameron Street stop to the south.

Recommendation: Consider combining the stops and locating them at Princess Street. One bus stop could accommodate current ridership for both stops and consolidation would eliminate the \$18,700 improvement costs at the Queen Street Stop. The Princess Street stop is under design and will not require additional improvement costs after it is upgraded.



C5. Mount Vernon Avenue and Glendale Avenue (southbound) and Mount Vernon Avenue and Spring Street (southbound)

Rationale for consolidation:

- Low ridership at both bus stops in comparison to other stops in project area (nine average daily boardings at the Glendale Avenue stop and three average daily boardings at the Spring Street stop).
- Both bus stops are in close proximity, approximately 400 feet apart.
- Improvements to the Spring Street stop would result in the loss of one parking space and there would be no loss of parking spaces at the Glendale Avenue stop.
- The estimated cost to make the Glendale Avenue stop accessible is \$600, while the cost at the Spring Street stop is \$18,700.
- If bus stops are consolidated at the Glendale Avenue bus stop, there will be approximately 900 feet from the Glendale Avenue bus stop to the Nelson Avenue bus stop to the north.

Recommendation: Consider combining the stops and locating them at Glendale Avenue. One bus stop could accommodate current ridership for both stops. Combination of stops eliminates the \$18,700 cost to make the Spring Street stop accessible.

C6. Mount Vernon and Alexandria Avenue (southbound) and Mount Vernon and Nelson Avenue (southbound)

Rationale for consolidation:

- Low ridership at the Alexandria Avenue bus stop (3 average daily boardings).
- Alexandria Avenue and Nelson Avenue bus stops are in close proximity, approximately 370 feet apart.
- Nelson Avenue stop is located in a retail area.
- Cost to make the stop at Alexandria Avenue accessible is \$6,200 while no improvements are needed at the Nelson Avenue stop.
- If the bus stops are consolidated at Nelson Avenue there would be approximately 850 feet to the Glendale Avenue bus stop to the south, and approximately 650 feet to the Mason Avenue bus stop to the north.
- The recommended improvements at Alexandria Avenue would result in a loss of one parking space while no parking spaces would be lost at Nelson Avenue.

Recommendation: Consider combining the stops and locating them at Nelson Avenue. One bus stop could accommodate current ridership for both stops. Combination of stops eliminates \$6,200 cost to make Alexandria Avenue stop accessible and does not take away any parking spaces.



C7. Mount Vernon Avenue and Alexandria Avenue (northbound) and Mount Vernon Avenue and Nelson Avenue (northbound)

Rationale for consolidation:

- Low ridership at the Alexandria Avenue bus stop (3 average daily boardings).
- Alexandria Avenue and Nelson Avenue bus stops are in close proximity, approximately 400 feet apart.
- Nelson Avenue bus stop includes existing amenities for bike parking.
- Nelson Avenue stop is located in a retail area.
- The cost to make both the Alexandria Avenue and Nelson Avenue bus stops accessible is \$6,200.
- If the bus stops are consolidated at Nelson Avenue, there would be approximately 870 feet to the Glendale Avenue bus stop to the south, and approximately 700 feet to the Mason Avenue bus stop to the north.
- The recommended improvements would result in a loss of one parking space at both bus stops.

Recommendation: Consider combining the stops and locating them at Nelson Avenue. One bus stop could accommodate current ridership for both stops. Combination of stops eliminates \$6,200 cost to make the Alexandria Avenue stop accessible.

C8. Montgomery Street and N. St. Asaph Street (westbound) and Montgomery Street and N. Washington Street (westbound)

Rationale for consolidation:

- Low ridership at both stops (two average daily boardings at the N. St. Asaph Street bus stop and five average daily boardings at the N. Washington Street bus stop).
- The N. St. Asaph Street and N. Washington Street bus stops are in close proximity, approximately 325 feet apart.
- The cost to make the St. Asaph Street bus stop accessible is \$19,000 while there are no improvements required at the N. Washington Street bus stop.
- If the bus stops are consolidated at N. Washington Street, there will be approximately 650 feet to the Pitt Street bus stop to the east, and approximately 630 feet to the Alfred Street bus stop to the west.
- The recommended improvements would result in a loss of one parking space at the N St. Asaph Street bus stop while no parking spaces would be lost at the N. Washington Street bus stop.

Recommendation: Consider combining the stops and locating them at N. Washington St. One bus stop could accommodate current ridership for both stops. Combination of stops eliminates the \$19,000 cost to make at N. St. Asaph St stop accessible.



C9. W. Abingdon Street and Bashford Lane (southbound) and WMATA stop W. Abingdon Street and Bashford Lane (southbound)

Rationale for consolidation:

- Low ridership at the DASH bus stop (3 average daily boardings).
- Bus stops are in close proximity, approximately 255 feet apart.
- No loss of parking at either bus stop locations.
- Minimal improvements required at WMATA stop at W. Abingdon Street and Bashford Lane (southbound).

Recommendation: Consider combining the stops and locating them at the WMATA stop at W. Abingdon Street and Bashford Lane (southbound). One bus stop could accommodate current ridership for both stops for minimal cost of \$300 to make stop accessible.

C10. S. Royal Street and Wolfe Street (northbound) and S. Royal Street and Duke Street (northbound)

Rationale for consolidation:

- Low ridership at Duke Street stop (1 average daily boarding, 0 average daily alightings), compared to the Wolfe Street stop (12 average daily boardings, 0 average daily alightings).
- If bus stops are consolidated at the Duke Street bus stop, there would be approximately 960 feet to the Wilkes Street stop to the south and 2,900 feet to the Pendleton Street bus stop to the north. (Currently approximately 3,000 feet between Duke Street and Pendleton Street bus stops).
- Estimated improvement cost to make the Duke Street stop accessible is \$6,200 and the cost to make the Wolfe Street stop accessible is \$19,000.
- The Duke Street stop provides easier access to the routes serving Duke Street.
- There would be a loss of one parking space at both bus stop locations if the improvements were implemented.

Recommendation: Consider combining the stops and locating them at Duke Street. One bus stop could accommodate the current ridership for both stops and eliminates the \$19,000 cost to make the Wolfe Street stop accessible.

2. Potential Bus Stops for Elimination

Bus stop elimination is a lower priority because a bus will only stop at a bus stop if a passenger needs to board or alight at that stop. If a bus stop has low ridership, the bus can bypass the bus stop along its route and stop as needed. The following bus stops were identified for further analysis as potential candidates for elimination.



E1. N. Royal Street and Princess Street (southbound)

Rationale for elimination:

- Low bus stop activity (0 average daily boardings, 7 average daily alightings).
- Considerable cost of \$19,000 to make stop accessible.
- Passengers needing to alight the Princess Street stop could use the nearby Oronoco Street stop which is approximately 400 feet to the north or the Queen Street stop which is approximately 400 feet to the south.

E2. Gibbon Street and S. Payne Street (westbound)

Rationale for elimination:

- Very low bus stop activity (0 average daily boardings, 1 average daily alighting).
- Considerable cost of \$18,700 to make stop accessible.
- Passengers needing to alight at S. Payne Street could use nearby stop on Henry Street, approximately 550 feet to the east.
- Improvements to S. Payne Street stop would result in the loss of one parking space.

E3. E. Madison and N. Washington Street (eastbound)

Rationale for elimination:

- Low bus stop activity (0 average daily boardings, 1 average daily alighting).
- Considerable cost of \$18,700 to make stop accessible.
- Passengers needing to alight could use either the N. Columbus Street stop which is approximately 340 feet to the west, or N. Pitt St. stop which is approximately 600 feet to the east.
- The improvements would result in the loss of one parking space.

E4. W. Franklin Street and S. Pitt Street (westbound)

Rationale for elimination:

- Low bus stop activity (0 average daily boardings, 4 average daily alightings).
- Moderate cost of \$6,500 to make stop accessible.
- Passengers needing to alight at the S. Pitt Street stop could use the nearby stop on S. Royal Street at Gibbon Street which is approximately 550 feet to the northeast, or the S. Royal Street at Gibbon Street stop, which is approximately 330 feet to the southeast.
- The improvements would result in the loss of one parking space.



E5. W. Jefferson Street and S. Saint Asaph Street (westbound)

Rationale for elimination:

- Low bus stop activity (0 average daily boardings, 5 average daily alightings).
- Moderate cost of \$6,200 to make the stop accessible.
- Passengers needing to alight on Jefferson St at St. Asaph Street could use the nearby stop on S. St. Asaph Street at Franklin Street, which is approximately 450 feet to the north.
- The improvements would result in the loss of one parking space.

E6. Mt. Vernon Avenue and Randolph Avenue (northbound)

Rationale for elimination:

- Stop is within close proximity to the Stewart Avenue stop to the west (420 feet) and the Raymond Avenue stop to the north (350 feet)
- Considerable cost of \$18,700 to make the stop accessible.

E7. W. Pendleton Street and N. Alfred Street (westbound)

Rationale for elimination:

- Stop is within close proximity to the N. Columbus Street stop to the west (320 feet)
- Considerable cost of \$19,000 to make the stop accessible.
- No existing stop located along eastbound at Alfred Street
- The improvements would result in the loss of one parking space.

3. Summary

In summary, 10 bus stops within the study areas are recommended for consolidation. The consolidated bus stop locations are in close proximity to another stop that could accommodate the ridership of the consolidated bus stop. In addition, consolidation would decrease number of parking spaces that need to be removed and reduce the cost of improvements that would need to be otherwise made without consolidation. **Table 3** lists the 10 locations that are recommended for consolidation.

Seven bus stops are recommended for elimination. These stops have very low ridership activity and would require considerable improvements with high costs in order to be made accessible. They are also in close proximity to other stops where the ridership could be accommodated if the stop was eliminated. **Table 4** lists the seven locations that are recommended for elimination.



Table 3: Bus Stops Recommended for Consolidation

Direction	On Street	Stop Locations Under Consideration for Consolidation		Proposed Consolidated Stop Location
Eastbound	Madison Street	N. Henry Street	N. Patrick Street	N. Patrick Street
Eastbound	Madison Street	N. St. Asaph Street	N. Pitt Street	N. Pitt Street
Eastbound	Madison Street	N. Royal Street	N. Fairfax Street	N. Fairfax Street
Northbound	Fairfax Street	Queen Street	Princess Street	Princess Street
Southbound	Mt. Vernon Avenue	Glendale Avenue	Spring Street	Glendale Avenue
Northbound	Mt. Vernon Avenue	Alexandria Avenue	Nelson Avenue	Nelson Avenue
Southbound	Mt. Vernon Avenue	Alexandria Avenue	Nelson Avenue	Nelson Avenue
Westbound	Montgomery Street	N. St. Asaph Street	N. Washington Street	N. Washington Street
Southbound	W. Abingdon Street	Bashford Lane (DASH)	Bashford Lane (WMATA)	Bashford Lane (WMATA)
Southbound	Royal Street	Wolfe Street	Duke Street	Duke Street

Table 4: Bus Stops Recommended for Elimination

Direction	On Street	At Street
Southbound	N. Royal Street	Princess Street
Westbound	Gibbon Street	Payne Street
Eastbound	Madison Street	N. Washington Street
Westbound	Franklin Street	S. Pitt Street
Westbound	Jefferson Street	S. St. Asaph Street
Northbound	Mt. Vernon Avenue	Randolph Avenue
Westbound	Pendleton Street	N. Alfred Street



5. Implementation Schedule

The purpose of the implementation schedule was to provide the City with a list of bus stops that are grouped and sorted based on the cost of the recommended improvements and the average daily boardings and alightings. It is intended that the City could use this implementation schedule to select bus stops for improvements depending on the amount of funding that is available.

The 106 bus stops with a recommended improvement were placed into one of four groups:

- low cost/high activity
- low cost/low activity
- high cost/high activity
- high cost/low activity.

The first step in grouping the bus stops was to separate them by the estimated cost of improvements for each stop. Bus stops with an estimated cost between \$0 and \$10,000 were placed in the low cost category while bus stops with an estimated cost greater than \$10,000 were placed in the high cost category. There were 42 bus stops in the low cost category and 64 bus stops in the high cost category.

The low cost category was then split into two categories based on the existing number of daily boardings and alightings: high activity and low activity. Any bus stop with 20 or more daily boardings and alightings was grouped in the high activity category and any bus stop with less than 20 daily boardings and alightings was grouped in the low activity category. As shown in **Tables 5 and 6**, there are 21 bus stops in the low cost/high activity category and 21 bus stops in the low cost/low activity category.

The high cost category was split into high and low activity categories in the same manner as the low cost bus stops, by using 20 daily boardings and alightings as the break point. As shown in **Tables 7 and 8**, there are 18 bus stops in the high cost/high activity category and 46 bus stops in the high cost/low activity category.

The order in which the improvements are implemented will largely depend on how much funding is available and whether the City chooses to improve a larger number of low cost bus stops or a fewer number of high cost bus stops. The bus stops in the low cost/high activity category could provide the most benefit for the cost, as the costs are low and the improvements would be noticed by a larger number of riders. Likewise, the bus stops in the high cost/low activity category could provide the least benefit for the cost, as the high costs would only be noticed by a small number of riders.

The bus stops that are highlighted in **Tables 5 through 8** are recommended to be consolidated or eliminated as described in the Bus Service Analysis section of the report.



Table 5: Low Cost/High Activity Bus Stops

Direction	On_Street	At_Street	Daily Buses	Daily Boardings	Daily Alightings	Daily Activity	Final Recommendation	Parking Space +/-	Total Cost
SB	Mt Vernon Ave	Russell Rd	83	132	97	229	Full bulb at existing stop	2	\$6,200
EB	King St	S Saint Asaph St	116	15	173	188	Move east to fire hydrant and add full bulb	-1	\$9,400
EB	King St	S Fayette St	116	69	98	167	Full bulb at existing stop	-2	\$7,700
NB	Mt Vernon Ave	Reed Ave	81	90	64	154	Move south to corner and add full bulb	4	\$9,700
WB	King St	N Saint Asaph St	117	130	12	142	Full bulb at existing stop	-2	\$7,700
WB	King St	N Fayette St	117	72	45	117	Half bulb at existing stop	-1	\$6,200
EB	King St	S Peyton St	116	60	36	96	Half bulb at existing stop	-1	\$6,200
NB	Mt Vernon Ave	E Mason Ave	111	42	38	80	Half bulb at existing stop	1	\$6,200
SB	Mt Vernon Ave	E Custis Ave	115	49	29	78	Half bulb at existing stop	1	\$6,200
SB	Mt Vernon Ave	E Oxford Ave	115	43	21	64	Half bulb at existing stop	1	\$6,200
NB	N Fairfax St	King St	90	24	40	64	Move north to alley and add half bulb	-1	\$6,500
NB	N Washington St	Pendleton St	85	14	47	61	Lengthen 'No-Parking' zone by 40'	-2	\$300
SB	Mt Vernon Ave	E Bellefont Ave	115	37	15	52	Half bulb at existing stop	1	\$6,200
NB	Mt Vernon Ave	Nelson Ave	81	12	30	42	Half bulb at existing stop	-1	\$6,200
EB	Franklin St	S Alfred St	68	20	20	40	Move east to corner and add half bulb	-1	\$6,500
NB	N Fairfax St	Madison St	91	14	25	39	Half bulb at existing stop	-1	\$6,200
NB	Mt Vernon Ave	E Bellefont Ave	111	14	24	38	Half bulb at existing stop	-1	\$6,200
WB	Duke St	S Alfred St	67	29	2	31	Half bulb at existing stop	1	\$6,200
SB	S Washington St	Jefferson St	77	0	30	30	Lengthen 'No-Parking' zone by 50'	-3	\$300
SB	S Royal St	King St	30	0	27	27	Move north to corner and add full bulb	-2	\$9,400
EB	Madison St	N Fairfax St	78	2	23	25	Half bulb at existing stop	-1	\$6,200
TOTAL									\$131,900

RECOMMENDED FOR CONSOLIDATION
RECOMMENDED FOR ELIMINATION

Table 6: Low Cost/Low Activity Bus Stops

Direction	On_Street	At_Street	Daily Buses	Daily Boardings	Daily Alightings	Daily Activity	Final Recommendation	Parking Space +/-	Total Cost
EB	Duke St	S Alfred St	43	1	18	19	Half bulb at existing stop	-1	\$6,200
SB	Mt Vernon Ave	Alexandria Ave	83	15	4	19	Half bulb at existing stop	-1	\$6,200
SB	Mt Vernon Ave	Glendale Ave	83	9	9	18	Move north to intersection	0	\$600
SB	N Pitt St	Bellvue Pl	57	3	14	17	Half bulb at existing stop	-1	\$6,200
WB	Montgomery St	N Royal St	35	8	8	16	Move west to fire hydrant	0	\$300
SB	S Washington St	Green St	99	0	16	16	Lengthen 'No-Parking' zone by 40'	-2	\$300
WB	First St	Fayette St	23	15	1	16	Under construction - move to nearside and add half bulb	-2	\$6,500
WB	Bashford Ln	Seaport Ln	34	9	6	15	Add 'No-Parking' zone at existing stop	-2	\$300
NB	S Royal St	Wilkes St	48	14	0	14	Move north to corner and add half bulb	2	\$6,500
EB	Pendleton St	N Royal St	30	2	11	13	Move west to fire hydrant and add half bulb	-1	\$6,500
NB	Mt Vernon Ave	Alexandria Ave	81	3	5	8	Half bulb at existing stop	-1	\$6,200
WB	Pendleton St	N Royal St	71	8	0	8	Half bulb at existing stop	-1	\$6,200
EB	Madison St	N Fayette St	69	7	0	7	Half bulb at existing stop	-1	\$6,200
EB	First St	Henry St	23	2	4	6	Half bulb at existing stop	1	\$6,200
WB	Jefferson St	St Asaph St	22	0	5	5	Half bulb at existing stop	-1	\$6,200
EB	Madison St	N Henry St	72	5	0	5	Half bulb at existing stop	-1	\$6,200
SB	W Abingdon Dr	Bashford Ln	23	3	1	4	Move south and combine with WMATA stop	0	\$300
WB	Franklin St	S Pitt St	22	0	4	4	Move west to intersection and add half bulb	-1	\$6,500
SB	N Royal St	Oronoco St	30	0	4	4	Move south to fire hydrant and add half bulb	0	\$6,500
SB	N Royal St	Queen St	30	0	4	4	Move south to corner and add half bulb	-1	\$6,500
NB	S Royal St	Duke St	48	1	0	1	Half bulb at existing stop	-1	\$6,200
TOTAL									\$102,800

RECOMMENDED FOR CONSOLIDATION
RECOMMENDED FOR ELIMINATION



Table 7: High Cost/High Activity Bus Stops

Direction	On Street	At Street	Daily Buses	Daily Boardings	Daily Alightings	Daily Activity	Final Recommendation	Parking Space +/-	Total Cost
EB	King St	Harvard St	116	96	19	115	Move west to fire hydrant and add full bulb	-2	\$18,700
SB	N Fairfax St	Pendleton St	133	49	58	107	Half bulb at existing stop	3	\$16,800
NB	N Fairfax St	Pendleton St	156	59	32	91	Move north to corner and add half bulb	-1	\$19,000
WB	King St	N Patrick St	117	61	26	87	Half bulb at existing stop	0	\$18,700
SB	Mt Vernon Ave	Raymond Ave	115	52	34	86	Half bulb at existing stop	1	\$16,800
WB	King St	N Peyton St	140	29	57	86	Half bulb at existing stop	-1	\$18,700
NB	Mt Vernon Ave	Herbert St	111	45	39	84	Half bulb at existing stop	1	\$18,700
SB	Mt Vernon Ave	E Mason Ave	115	42	41	83	Move north to corner and add full bulb	0	\$22,200
NB	Mt Vernon Ave	E Windsor Ave	111	21	58	79	Half bulb at existing stop	-1	\$18,700
NB	Mt Vernon Ave	E Oxford Ave	111	28	48	76	Half bulb at existing stop	1	\$18,700
NB	Mt Vernon Ave	Stewart Ave	30	26	28	54	Half bulb at existing stop	4	\$16,800
SB	Mt Vernon Ave	E Uhler Ave	115	37	17	54	Half bulb at existing stop	2	\$18,700
NB	Mt Vernon Ave	E Randolph Ave	111	18	25	43	Half bulb at existing stop	1	\$18,700
SB	Daingerfield Rd	Prince St	69	23	2	25	Move south of driveway and add half bulb	0	\$19,000
SB	N Fairfax St	Oronoco St	92	19	4	23	Half bulb at existing stop	-1	\$18,700
EB	Bashford Ln	N Pitt St	57	5	15	20	Half bulb at existing stop	0	\$18,700
SB	N Fairfax St	Madison St	57	4	16	20	Half bulb at existing stop	-1	\$18,700
WB	Bashford Ln	N Pitt St	55	13	7	20	Move west of driveway and add half bulb	-1	\$19,000
								TOTAL	\$335,300

RECOMMENDED FOR CONSOLIDATION
RECOMMENDED FOR ELIMINATION



Table 8: High Cost/Low Activity Bus Stops

Direction	On_Street	At_Street	Daily Buses	Daily Boardings	Daily Alightings	Daily Activity	Final Recommendation	Parking Space +/-	Total Cost
NB	N Fairfax St	Wythe St	91	8	11	19	Half bulb at existing stop	-1	\$16,800
EB	Duke St	Washington St	43	1	18	19	Half bulb at existing stop	-1	\$18,700
WB	Gibbon St	Alfred St	42	7	11	18	Half bulb at existing stop	-2	\$16,800
EB	Bashford Ln	W Abingdon Dr	34	10	8	18	Move east to corner and add half bulb	4	\$19,000
EB	Pendleton St	N Henry St	103	1	17	18	Move west to fire hydrant and add half bulb	-1	\$19,000
EB	Second St	N Fairfax St	57	4	13	17	Half bulb at existing stop	-1	\$18,700
EB	Jefferson St	Fayette St	26	15	0	15	Half bulb at existing stop	2	\$18,700
EB	Madison St	N Royal St	78	1	14	15	Half bulb at existing stop	1	\$18,700
SB	N Fairfax St	Second St	57	6	9	15	Move south to intersection and add half bulb	-1	\$19,000
EB	Madison St	N Saint Asaph St	78	0	13	13	Half bulb at existing stop	-1	\$18,700
WB	Montgomery St	N Alfred St	69	2	11	13	Half bulb at existing stop	0	\$18,700
SB	Mt Vernon Ave	Spring St	83	3	10	13	Half bulb at existing stop	-1	\$18,700
EB	Pendleton St	N Patrick St	103	1	12	13	Move west to fire hydrant and add half bulb	0	\$19,300
NB	N Fairfax St	Montgomery St	57	2	10	12	Half bulb at existing stop	-2	\$16,800
NB	S Royal St	Wolfe St	48	12	0	12	Move north to corner and add half bulb	-1	\$19,000
EB	Second St	N Pitt St	57	5	6	11	Half bulb at existing stop	-2	\$16,800
EB	Bashford Ln	Powhatan St	34	1	10	11	Half bulb at existing stop	-1	\$18,700
EB	Madison St	N West St	72	10	1	11	Half bulb at existing stop	-1	\$18,700
WB	Madison St	N Fayette St	71	0	11	11	Half bulb at existing stop	0	\$18,700
WB	Montgomery St	N Saint Asaph St	35	2	9	11	Move west to corner and add half bulb	-1	\$19,000
NB	S Saint Asaph St	Franklin St	22	11	0	11	Move north to corner and add half bulb	-1	\$19,000
EB	Franklin St	S Royal St	26	9	1	10	Half bulb at existing stop	-1	\$18,700
NB	N Fairfax St	Queen St	121	5	5	10	Half bulb at existing stop	-1	\$18,700
NB	Columbus St	Madison St	34	6	3	9	Half bulb at existing stop	0	\$16,800
NB	Powhatan St	Second St	72	6	3	9	Half bulb at existing stop	-2	\$16,800
EB	Franklin St	S Saint Asaph St	26	7	1	8	Move east to intersection and add half bulb	-1	\$19,000
WB	Madison St	N West St	71	0	8	8	Move west to corner and add half bulb	2	\$19,000
SB	S Henry St	Gibbon St	27	1	7	8	Move south to corner and add half bulb	-1	\$19,000
NB	N Pitt St	Bellvue Pl	57	6	1	7	Half bulb at existing stop	-1	\$18,700
SB	S Saint Asaph St	Franklin St	22	0	7	7	Half bulb at existing stop	0	\$18,700
SB	N Royal St	Princess St	30	0	7	7	Move south to fire hydrant and add half bulb	0	\$19,000
NB	Mt Vernon Ave	Spring St	81	4	2	6	Half bulb at existing stop	-2	\$16,800
WB	Duke St	S Payne St	67	5	1	6	Half bulb at existing stop	-1	\$18,700
EB	Madison St	N Patrick St	69	6	0	6	Half bulb at existing stop	-1	\$18,700
NB	S Fayette St	Franklin St	26	6	0	6	Half bulb at existing stop	-1	\$18,700
SB	S Royal St	Duke St	22	0	6	6	Move south to corner and add half bulb	-1	\$19,000
WB	Second St	N Pitt St	57	5	0	5	Half bulb at existing stop	1	\$18,700
SB	N Royal St	Cameron St	30	0	5	5	Move south to corner and add half bulb	-1	\$19,000
SB	Columbus St	First St	34	2	2	4	Move north to fire hydrant and add half bulb	3	\$17,100
WB	Duke St	S Washington St	26	3	0	3	Half bulb at existing stop	-1	\$18,700
SB	S Royal St	Wolfe St	22	1	1	2	Half bulb at existing stop	0	\$18,700
SB	S Royal St	Gibbon St	22	0	2	2	Move south to corner and add half bulb	0	\$19,000
WB	Gibbon St	S Payne St	27	0	1	1	Half bulb at existing stop	-1	\$18,700
EB	Madison St	N Washington St	35	0	1	1	Half bulb at existing stop	-1	\$18,700
WB	Pendleton St	N Alfred St	30	1	0	1	Move to nearside of intersection and add half bulb	-1	\$19,000
SB	N West St	Madison St	22	0	0	0	Half bulb at existing stop	0	\$16,800
								TOTAL	\$848,200

RECOMMENDED FOR CONSOLIDATION

RECOMMENDED FOR ELIMINATION



APPENDIX A:

Existing Conditions Data Collection

FACILITYID	STOP_NUM	Direction	On_Street	At_Street	Existing Bumpout	PLZ_Width (ft)	PLZ_Depth (ft)	PLZ_Width Slope (%)	PLZ_Depth Slope (%)	Shelter	Bench	Bike Rack	Sidewalk	Lighting	Trash Receptacle	Park_Type	Utilities
000022BUSS	4009990	WB	Duke St	S Washington St	No	17.0	9.0	2.6	3.0	No	No	No	Yes	Yes	No	Permit Parking	Inlet
000083BUSS	90696	NB	S Royal St	Duke St	No	17.5	12.0	1.9	10.6	No	No	No	Yes	Yes	No	Permit Parking	UP
000110BUSS	4000025	NB	N Washington St	King St	No	20.0	13.0	2.0	2.0	No	No	No	Yes	Yes	Yes	No Parking	Other
000118BUSS	4000004	SB	S Washington St	Green St	No	11.0	21.5	1.9	4.6	No	No	No	Yes	Yes	Yes	No Parking - Bus Parking	Other
000119BUSS	4000005	NB	S Washington St	Green St	No	14.0	21.0	2.6	0.8	No	Yes	No	Yes	Yes	Yes	No Parking - Bus Parking	Other
000120BUSS	4000006	SB	S Washington St	Jefferson St	No	19.5	10.8	0.2	2.0	No	No	No	Yes		No	No Parking - Bus Parking	Inlet
000121BUSS	4000014	EB	Duke St	S Alfred St	No	12.0	8.0	1.0	2.5	No	No	No	Yes	Yes	Yes	No Parking - Bus Parking	Hydrant
000122BUSS	4000015	WB	Duke St	S Alfred St	No	11.0	12.0	1.0	4.2	No	No	No	Yes	Yes	No	No Parking - Bus Parking	Other
000123BUSS	4000016	WB	Duke St	S Henry St	No	10.0	10.0	3.0	3.0	No	No	No	Yes	Yes	No	No Parking	Other
000124BUSS	4000017	EB	Duke St	S Payne St	No	6.0	12.0	1.0	3.0	No	Yes	No	Yes	Yes	No	No Parking	UP
000125BUSS	4000018	WB	Duke St	S Payne St	No	32.0	12.0	0.5	3.0	No	No	No	Yes	Yes	Yes	Permit Parking	UP
000127BUSS	4000021	EB	Duke St	S Peyton St	No	20.0	8.0	2.0	2.0	No	No	No	Yes	Yes	Yes	No Parking	UP
000128BUSS	4000022	WB	Duke St	S Peyton St	No	14.0	8.0	2.0	5.0	No	No	No	Yes	Yes	Yes	No Parking	Other
000132BUSS	90027	SB	N Washington St	King St	No	14.0	11.0	2.0	6.0	No	Yes	No	Yes	Yes	Yes	No Parking	Inlet
000173BUSS	4000082	EB	Pendleton St	N Royal St	No	8.5	10.0	0.5	0.5	No	No	No	Yes	Yes	No	Permit Parking	Inlet
000175BUSS	4000084	NB	N Washington St	Pendleton St	No	13.0	12.0	1.0	2.0	Yes	Yes	No	Yes	Yes	Yes	No Parking - Bus Parking	Other
000176BUSS	4000086	EB	Pendleton St	N Saint Asaph St	No	20.0	7.0	3.0	4.0	No	No	No	Yes	Yes	No	Free Parking	Inlet
000177BUSS	4000087	WB	Pendleton St	N Saint Asaph St		10.0	8.0	5.0	2.0	No	No	No	Yes	Yes	Yes	Free Parking	UP
000185BUSS	4000095	EB	Pendleton St	N Columbus St	No	6.0	7.0	2.0	5.0	No	No	No	Yes	Yes	No	No Parking - Bus Parking	UP
000186BUSS	4000096	WB	Pendleton St	N Columbus St	No	15.0	12.0	1.0	2.0	No	No	No	Yes	Yes	Yes	Free Parking	Inlet
000189BUSS	4000101	EB	Pendleton St	N Patrick St	No	8.0	7.0	2.0	7.0	No	Yes	No	Yes	Yes	No	No Parking	Other
000191BUSS	4000104	WB	Pendleton St	N Henry St	No	10.0	7.0	1.0	3.0	No	No	No	Yes	No	Yes	No Parking	Other
000192BUSS	4000105	EB	Pendleton St	N Henry St	No	8.0	14.0	1.0	3.0	Yes	No	No	Yes	Yes	No	Free Parking	UP
000194BUSS	4000109	EB	Pendleton St	N Payne St	No	8.0	6.0	2.0	4.0	No	No	No	Yes	Yes	Yes	Permit Parking	UP
000255BUSS	4000227	SB	W Abingdon Dr	Bashford Ln	No	20.0	5.0	0.5	4.5	No	No	No	Yes	Yes	No	Permit Parking	UP
000257BUSS	4000230	NB	1309 E Abingdon Dr	1309 E Abingdon Dr	No	13.0	13.0	2.0	3.4	Yes	Yes	No	Yes	No	No	No Parking	Other
000267BUSS	4000249	SB	Mt Vernon Ave	E Mason Ave	No	18.0	9.0	1.0	1.0	No	Yes	Yes	Yes	Yes	Yes	No Parking - Bus Parking	Other
000268BUSS	4000252	NB	Mt Vernon Ave	E Mason Ave	No	6.0	10.0	2.0	3.0	No	Yes	No	Yes	Yes	No	No Parking - Bus Parking	Other
000275BUSS	4000266	NB	Mt Vernon Ave	E Bellefonte Ave	No	12.0	10.0	2.0	4.0	No	Yes	No	Yes	Yes	Yes	Free Parking	Other
000280BUSS	4000272	SB	Mt Vernon Ave	E Bellefont Ave	No	20.0	10.0	1.0	1.0	No	Yes	Yes	Yes	Yes	Yes	No Parking - Bus Parking	Other
000284BUSS	4000279	NB	Mt Vernon Ave	E Windsor Ave	No	13.0	7.0	1.0	2.0	No	No	No	Yes	Yes	No	Free Parking	Inlet
000291BUSS	4000296	SB	Mt Vernon Ave	E Custis Ave	No	6.0	8.0	1.0	2.0	No	Yes	Yes	Yes	Yes	Yes	No Parking - Bus Parking	Other
000298BUSS	4000309	NB	Mt Vernon Ave	E Oxford Ave	No	12.0	14.0	1.0	3.0	Yes	No	No	Yes	No	Yes	No Parking - Bus Parking	Other
000299BUSS	4000311	SB	Mt Vernon Ave	E Oxford Ave	No	21.0	10.0	1.0	9.0	No	Yes	No	Yes	Yes	Yes	No Parking - Bus Parking	Other
000305BUSS	4000318	SB	Mt Vernon Ave	E Uhler Ave	No	20.0	12.0	1.0	2.0	No	Yes	No	Yes	Yes	Yes	No Parking - Bus Parking	Other
000309BUSS	4000322	NB	Mt Vernon Ave	Stewart Ave	No	8.0	20.0	1.0	1.0	No	Yes	No	Yes	No	Yes	No Parking - Loading Zone	Other
000314BUSS	4000329	NB	Mt Vernon Ave	E Randolph Ave	No	20.0	10.0	2.0	3.0	No	Yes	No	Yes	Yes	Yes	No Parking	Inlet
000317BUSS	90333	NB	Mt Vernon Ave	Hume Ave	No	10.0	19.0	1.0	2.0	No	No	No	Yes	Yes	Yes	No Parking - Bus Parking	Other
000327BUSS	4000354	NB	Mt Vernon Ave	Kennedy St	Yes	12.0	12.0	3.0	1.0	Yes	Yes	No	Yes	Yes	Yes	No Parking	Other
000337BUSS	4000365	SB	Mt Vernon Ave	Sanborn Pl	No	15.0	8.0	2.0	2.0	Yes	No	No	Yes	Yes	Yes	Free Parking	Other
000340BUSS	4000368	NB	Mt Vernon Ave	Herbert St	No	8.0	12.0	1.0	2.0	No	No	No	Yes	Yes	Yes	No Parking - Bus Parking	Other
000352BUSS	4000383	NB	Mt Vernon Ave	W. Glebe Rd	No	14.0	12.0	2.0	2.0	No	No	No	Yes	Yes	Yes	No Parking	Other
000368BUSS	4000445	SB	Powhatan St	Second St	No	15.0	8.0	0.2	1.0	No	Yes	No	Yes	No	Yes	No Parking	Other
000369BUSS	4000447	WB	Gibbon St	Alfred St	No	12.0	11.5	3.6	3.1	No	No	No	Yes	No	Yes	Permit Parking	Other
000370BUSS	4000448	EB	Franklin St	South Patrick St	No	16.0	9.0	1.2	3.4	Yes	Yes	No	Yes	No	Yes	No Parking - Other	Other
000371BUSS	4000449	EB	Franklin St	S Alfred St	No	12.0	10.0	0.6	4.6	No	No	No	Yes		Yes	Free Parking	Other
000372BUSS	4000450	NB	Powhatan St	Second St	No	11.0	8.0	1.0	11.0	No	No	No	Yes	No	No	Free Parking	Other
000377BUSS	4000471	SB	Powhatan St	Bashford Ln	No	10.0	10.0	0.5	1.0	No	Yes	No	Yes	No	Yes	No Parking	Other
000396BUSS	4000497	WB	Bashford Ln	Powhatan St	No	9.0	7.5	1.0	3.0	No	No	No	Yes	No	No	No Parking	Other
000399BUSS	4000500	EB	Bashford Ln	N Pitt St	No	20.0	6.0	3.3	3.8	No	No	No	Yes	Yes	No	Free Parking	Hydrant
000403BUSS	4000504	NB	Columbus St	Madison St	No	0.0	0.0	0.0	0.0	No	No	No	Yes	Yes	No	No Parking	Other
000404BUSS	4000505	WB	Bashford Ln	Seaport Ln	No	20.0	14.0	4.5	3.0	No	No	No	Yes	Yes	No	Permit Parking	Other
000405BUSS	4000506	NB	Columbus St	Montgomery St	No	25.0	11.5	0.5	2.0	No	No	No	Yes	Yes	Yes	No Parking	UP
000406BUSS	4000507	EB	Bashford Ln	W Abingdon Dr	No	7.0	7.0	3.0	5.0	No	No	No	No	Yes	No	No Parking	Other

PLZ Width = Passenger Loading Zone, measured parallel to the roadway
PLZ Depth = Passenger Loading Zone, measured perpendicular to the roadway
UP = Utility Pole

ADA Compliant passenger loading zone

FACILITYID	STOP_NUM	Direction	On_Street	At_Street	Existing Bumpout	PLZ_Width (ft)	PLZ_Depth (ft)	PLZ_Width Slope (%)	PLZ_Depth Slope (%)	Shelter	Bench	Bike Rack	Sidewalk	Lighting	Trash Receptacle	Park_Type	Utilities
000438BUSS	4000547	WB	Jefferson St	St Asaph St	No	0.0	0.0	0.0	0.0	No	No	No	Yes	No	No	Permit Parking	Other
000439BUSS	4000548	EB	Jefferson St	St Asaph St	Yes	0.0	0.0	0.0	0.0	No	No	No	Yes	Yes	No	No Parking - Other	Inlet
000440BUSS	4000549	SB	S Saint Asaph St	Franklin St	No	12.0	6.0	0.7	0.6	No	No	No	Yes	Yes	No	No Parking - Bus Parking	Other
000441BUSS	4000550	NB	S Saint Asaph St	Franklin St	No	0.0	0.0	0.0	0.0	No	No	No	Yes	No	No	Permit Parking	Other
000442BUSS	90551	EB	Jefferson St	Fayette St	No	12.0	10.5	0.0	4.0	No	No	No	Yes	No	No	No Parking - Bus Parking	Inlet
000455BUSS	4000566	SB	Mt Vernon Ave	W. Glebe Rd	No	20.0	8.0	2.0	5.0	No	No	No	Yes	Yes	No	No Parking	Other
000470BUSS	4000590	NB	Daingerfield Rd	Prince St	Yes					No	No	No	Yes	Yes	No	Metered Parking	UP
000474BUSS	4000595	SB	N West St	Madison St	No	18.0	9.0	1.0	4.0	No	No	No	Yes	No	No	No Parking - Other	Other
000488BUSS	4000620	EB	Duke St	Washington St	No	21.0	9.0	2.1	4.8	No	No	No	Yes	Yes	No	Metered Parking	UP
000495BUSS	90627	SB	Mt Vernon Ave	Raymond Ave	No	20.0	8.0	2.0	1.0	Yes	Yes	No	Yes	Yes	Yes	No Parking - Bus Parking	Other
000497BUSS	90630	SB	S Royal St	King St	No	12.0	12.0	1.0	2.0	No	No	No	Yes	Yes	No	Metered Parking	Other
000499BUSS	4000632	EB	First St	Henry St	No	20.0	10.0	2.0	0.0	No	No	No	Yes	Yes	Yes	No Parking	Other
000500BUSS	4000633	WB	First St	Fayette St	No	0.0	0.0	0.0	0.0	No	No	No	No	No	No	No Parking - Other	Hydrant
000501BUSS	4000634	NB	N Pitt St	Bellvue Pl	No	20.0	5.0	2.0	2.0	No	No	No	Yes	Yes	No	Permit Parking	Hydrant
000502BUSS	4000635	SB	N Pitt St	Bellvue Pl	No	20.0	5.0	0.5	3.8	No	No	No	Yes	No	No	Permit Parking	Other
000505BUSS	4000638	WB	King St	N Royal St	No	16.0	15.0	1.5	5.0	No	No	Yes	Yes	Yes	Yes	No Parking - Loading Zone	Hydrant
000506BUSS	4000639	WB	Pendleton St	N Alfred St	No	10.0	7.0	1.0	4.0	No	No	No	Yes	Yes	Yes	Free Parking	Other
000526BUSS	4000660	EB	Second St	N Fairfax St	No	11.0	8.0	6.0	3.0	No	No	No	Yes	Yes	No	Free Parking	Inlet
000527BUSS	4000661	EB	Second St	N Pitt St	No	20.0	6.0	1.2	0.0	No	No	No	Yes	Yes	No	Permit Parking	Other
000528BUSS	4000662	WB	Second St	N Pitt St	No	20.0	5.0	0.5	3.5	No	No	No	Yes	Yes	No	No Parking	Inlet
000538BUSS	4000675	WB	Pendleton St	N Payne St	Yes	12.0	22.0	1.0	2.0	Yes	Yes	No	Yes	Yes	Yes	No Parking	UP
000542BUSS	4000679	EB	Bashford Ln	Powhatan St	No	20.0	5.0	0.5	5.5	No	No	No	Yes	No	No	Permit Parking	Other
000552BUSS	4000692	SB	N Royal St	Cameron St	No	15.0	10.5	2.0	4.5	No	No	No	Yes	Yes	No	Permit Parking	Other
000553BUSS	4000694	SB	N Royal St	Princess St	No	9.0	10.5	1.0	2.5	No	No	No	Yes	Yes	Yes	Permit Parking	Inlet
000554BUSS	4000695	SB	N Royal St	Oronoco St	No	8.0	11.0	2.0	1.0	No	No	No	Yes	Yes	Yes	Permit Parking	UP
000556BUSS	4000698	SB	S Royal St	Gibbon St	No	0.0	0.0	0.0	0.0	No	No	No	Yes	No	No	Free Parking	UP
000566BUSS	4000708	WB	Gibbon St	S Payne St	No	0.0	0.0	0.0	0.0	No	No	No	Yes	No	Yes	Permit Parking	Inlet
000568BUSS	4000710	NB	S Fayette St	Franklin St	No	0.0	0.0	0.0	0.0	No	No	No	Yes	Yes	No	Permit Parking	Inlet
000569BUSS	4000711	NB	S Royal St	Wilkes St	No	17.0	12.8	0.1	5.9	No	No	No	Yes	Yes	No	No Parking - Bus Parking	Other
000570BUSS	4000712	SB	S Royal St	Wolfe St	No	0.0	0.0	0.0	0.0	No	No	No	Yes	Yes	Yes	Permit Parking	Other
000571BUSS	4000713	SB	S Royal St	Duke St	No	21.0	11.5	0.7	3.6	No	No	No	Yes	Yes	No	No Parking	Other
000572BUSS	4000714	EB	King St	S Royal St	Yes	20.0	9.0	1.0	-3.0	No	Yes	Yes	Yes	Yes	Yes	No Parking	Hydrant
000590BUSS	4000738	WB	King St	N Peyton St	No	16.0	15.0	3.0	5.0	No	No	No	Yes	Yes	Yes	Metered Parking	Inlet
000593BUSS	4000743	NB	N Fairfax St	King St	No	18.0	12.5	5.0	5.0	No	No	No	Yes	Yes	Yes	Metered Parking	UP
000595BUSS	4000745	SB	Daingerfield Rd	Prince St	No	20.0	6.0	1.0	3.5	No	No	No	Yes	Yes	No	Metered Parking	UP
000608BUSS	4000760	SB	Columbus St	First St	No	12.0	10.0	0.5	1.0	No	No	No	Yes	Yes	No	Permit Parking	UP
000609BUSS	4000761	WB	Bashford Ln	N Pitt St	No	1.5	8.0	1.5	4.5	No	No	No	Yes	No	No	Permit Parking	Other
000610BUSS	4000762	NB	N Fairfax St	Second St	No	30.0	11.0	1.0	4.0	No	No	No	Yes	Yes	Yes	No Parking - Loading Zone	Inlet
000614BUSS	4000766	SB	N Fairfax St	Second St	No	9.0	8.5	1.0	1.5	No	No	No	Yes	No	No	Free Parking	Inlet
000615BUSS	4000767	NB	N Fairfax St	Madison St	No	10.0	9.0	3.0	1.0	No	No	No	Yes	No	No	Permit Parking	Other
000620BUSS	4000772	EB	Franklin St	S Royal St	No	0.0	0.0	0.0	0.0	No	No	No	Yes	Yes	No	Permit Parking	Other
000621BUSS	4000773	WB	Franklin St	S Pitt St	No	0.0	0.0	0.0	0.0	No	No	No	No	No	No	Permit Parking	Other
000622BUSS	4000774	EB	Franklin St	S Saint Asaph St	No	17.0	8.3	3.1	1.9	No	No	No	Yes	Yes	No	Free Parking	Inlet
000640BUSS	4000793	WB	Pendleton St	N Pitt St	No	10.5	11.0	2.0	2.9	No	No	No	Yes	No	No	No Parking	Other
000656BUSS	4000809	NB	N Fairfax St	Montgomery St	No	25.0	9.5	1.0	1.5	No	No	No	Yes	No	No	Metered Parking	Hydrant
000657BUSS	4000810	NB	N Fairfax St	Queen St	No	11.0	9.0	1.0	3.0	No	No	No	Yes	Yes	No	Permit Parking	UP
000659BUSS	4000812	NB	N Fairfax St	Wythe St	No	12.0	12.0	1.5	3.5	No	No	No	Yes	Yes	No	Free Parking	Other
000660BUSS	4000813	SB	N Fairfax St	Pendleton St	No	25.0	11.5	0.6	3.5	Yes	Yes	No	Yes	No	Yes	No Parking - Bus Parking	Other
000661BUSS	4000814	NB	N Fairfax St	Pendleton St	No	20.0	12.0	1.0	3.0	No	No	No	Yes	Yes	Yes	Permit Parking	Inlet
000662BUSS	4000815	SB	N Fairfax St	Oronoco St	No	10.0	8.0	0.6	1.5	No	No	No	Yes	Yes	No	Permit Parking	UP
000664BUSS	0	SB	N Fairfax St	Princess St	No	14.0	9.0	2.5	1.5	No	No	No	Yes	No	No	Permit Parking	Other
000666BUSS	4000819	NB	N Fairfax St	Cameron St	No	28.0	7.5	1.0	4.0	No	No	No	Yes	No	No	Permit Parking	Other
000667BUSS	4000820	SB	N Fairfax St	King St	No	13.5	13.0	2.0	5.0	No	No	No	Yes	Yes	Yes	No Parking - Bus Parking	Other

PLZ Width = Passenger Loading Zone, measured parallel to the roadway
PLZ Depth = Passenger Loading Zone, measured perpendicular to the roadway
UP = Utility Pole

ADA Compliant passenger loading zone

FACILITYID	STOP_NUM	Direction	On_Street	At_Street	Existing Bumpout	PLZ_Width (ft)	PLZ_Depth (ft)	PLZ_Width Slope (%)	PLZ_Depth Slope (%)	Shelter	Bench	Bike Rack	Sidewalk	Lighting	Trash Receptacle	Park_Type	Utilities
000671BUSS	4000824	SB	N Fairfax St	Madison St	No	21.0	8.0	2.5	0.7	No	No	No	Yes	Yes	No	Permit Parking	UP
000672BUSS	4000825	NB	N Fairfax St	Princess St	No	13.0	11.0	1.5	4.0	No	No	No	Yes	Yes	No	Permit Parking	Other
000674BUSS	4000827	EB	Madison St	N Pitt St	Yes	17.0	22.0	1.0	1.0	No	Yes	No	Yes	Yes	No	No Parking	UP
000675BUSS	4000828	EB	Madison St	N Saint Asaph St	No	18.0	8.0	4.0	3.0	No	No	No	No	Yes	No	Free Parking	UP
000676BUSS	4000829	EB	Madison St	N Washington St	No	5.0	14.0	1.0	3.0	No	No	No	Yes	No	No	Free Parking	Inlet
000677BUSS	4000830	EB	Madison St	N Columbus St	Yes	10.0	7.0	1.0	2.0	No	Yes	No	Yes	Yes	Yes	No Parking	Hydrant
000678BUSS	4000831	EB	Madison St	N Patrick St	No	20.0	4.0	1.0	2.0	No	No	No	Yes	Yes	Yes	Free Parking	Inlet
000679BUSS	4000832	EB	Madison St	N Henry St	No	20.0	8.0	1.0	3.0	No	No	No	Yes	No	No	Free Parking	Other
000680BUSS	4000833	WB	Madison St	N Fayette St	No	9.0	11.0	2.0	2.0	No	No	Yes	Yes	Yes	Yes	No Parking - Bus Parking	Hydrant
000681BUSS	4000834	EB	Madison St	N Fayette St	No	10.0	6.0	1.0	2.0	No	No	No	No	No	Yes	Permit Parking	Other
000682BUSS	4000835	EB	Madison St	N West St	No	6.0	6.0	2.0	6.0	No	No	No	Yes	Yes	Yes	Permit Parking	Other
000683BUSS	4000836	WB	Madison St	N West St	No	0.0	0.0	0.0	0.0	No	No	No	Yes	Yes	Yes	No Parking	Hydrant
000688BUSS	4000841	EB	King St	S Saint Asaph St	No	15.0	9.0	4.0	7.0	No	No	Yes	Yes	Yes	Yes	No Parking	Inlet
000696BUSS	4000849	WB	Montgomery St	N Royal St	No	16.0	8.0	0.5	2.0	No	No	No	Yes	No	Yes	Permit Parking	UP
000697BUSS	4000850	WB	Montgomery St	N Pitt St	No	8.0	12.0	1.0	1.0	No	No	No	Yes	No	No	No Parking	Other
000698BUSS	4000851	WB	Montgomery St	N Saint Asaph St	No	13.0	8.0	0.5	3.8	No	No	No	Yes	No	No	No Parking	Other
000699BUSS	4000852	WB	Montgomery St	N Washington St	No	9.0	15.0	4.0	5.0	No	No	No	Yes	No	No	No Parking	Other
000700BUSS	4000853	WB	Montgomery St	N Alfred St	No	19.0	6.5	1.0	3.0	No	No	No	Yes	No	No	No Parking	Inlet
000704BUSS	4000857	WB	King St	N Saint Asaph St	No	15.0	20.0	1.0	4.0	No	No	No	Yes	Yes	Yes	Metered Parking	UP
000705BUSS	90858	WB	King St	N Washington St	No	16.0	12.0	1.0	6.0	No	No	No	Yes	Yes	Yes	No Parking	UP
000707BUSS	4000860	WB	King St	N Columbus St	No	9.0	10.0	2.0	1.0	No	No	No	Yes	Yes	Yes	No Parking - Loading Zone	UP
000711BUSS	4000864	WB	King St	N Patrick St	No	12.0	14.0	1.0	3.0	No	No	No	Yes	Yes	No	Metered Parking	Hydrant
000714BUSS	4000867	EB	King St	S Peyton St	No	10.0	12.0	1.0	4.0	No	No	No	Yes	Yes	Yes	Metered Parking	UP
000716BUSS	4000869	EB	King St	Harvard St	No	15.0	17.0	2.0	5.0	Yes	No	No	Yes	Yes	No	Free Parking	UP
000717BUSS	4000870	EB	Madison St	N Royal St	No	10.0	9.0	3.5	5.5	No	No	No	Yes	Yes	No	No Parking	Inlet
000719BUSS	4000872	WB	Pendleton St	N Royal St	No	10.0	8.5	1.0	5.5	No	No	No	Yes	No	Yes	Permit Parking	Other
000720BUSS	4000873	WB	King St	Diagonal Rd	No	20.0	10.0	1.0	6.0	No	No	Yes	Yes	Yes	Yes	No Parking	Other
000721BUSS	4000874	WB	King St	N Fayette St	No	12.0	12.0	2.0	3.0	No	No	No	Yes	Yes	No	Metered Parking	Hydrant
000722BUSS	4000875	EB	King St	S Fayette St	No	11.0	16.0	2.0	2.5	No	Yes	No	Yes	Yes	Yes	Metered Parking	UP
000730BUSS	4000885	EB	Madison St	N Fairfax St	No	6.0	12.0	1.8	2.5	No	No	Yes	Yes	Yes	No	Free Parking	UP
000731BUSS	4000886	EB	King St	Patrick St	No	13.0	14.0	3.0	5.0	No	No	No	Yes	Yes	Yes	No Parking	UP
000736BUSS	4000963	SB	N Royal St	Queen St	No	11.5	10.5	3.0	4.0	No	No	No	Yes	Yes	No	Permit Parking	UP
000737BUSS	4000971	NB	S Royal St	Wolfe St	No	11.5	8.5	0.9	2.1	No	No	No	Yes	No	No	Permit Parking	Other
000760BUSS	4009991	SB	S Henry St	Gibbon St	No	0.0	0.0	0.0	0.0	No	No	No	No	Yes	No	Permit Parking	UP
	0	NB	Mt Vernon Ave	Executive Ave	No	14.0	12.0	1.0	2.0	Yes	Yes	No	Yes	Yes	Yes	No Parking	UP
	0	SB	Mt Vernon Ave	Executive Ave	No	20.0	8.0	1.0	3.0	No	No	No	Yes	Yes	Yes	No Parking - Other	Other
	0	SB	Mt Vernon Ave	Reed Ave	Yes	20.0	11.0	2.0	2.0	Yes	Yes	No	Yes	Yes	Yes	No Parking	Hydrant
	0	NB	Mt Vernon Ave	Russell Rd	No	20.0	6.0	2.0	3.0	No	No	No	Yes	Yes	Yes	No Parking	Other
	0	NB	Mt Vernon Ave	Four Mile Run	No	20.0	8.0	1.0	3.0	No	Yes	No	Yes	Yes	Yes	No Parking	Other
	0	NB	Mt Vernon Ave	Glendale Ave	No	11.0	8.0	2.0	2.0	Yes	Yes	No	Yes	No	No	Free Parking	Other
	0	SB	Mt Vernon Ave	Kennedy St	Yes					Yes	No	No	Yes	Yes	Yes	No Parking	Other
	0	SB	Mt Vernon Ave	Nelson Ave	No	7.0	7.0	1.0	2.0	No	Yes	Yes	Yes	Yes	No	No Parking - Bus Parking	UP
	0	SB	N Washington St	Pendleton St	No	11.0	12.0	1.0	5.0	No	No	No	Yes	Yes	Yes	No Parking - Bus Parking	UP
	0	SB	S Washington St	King St	No	15.0	13.0	1.0	3.0	No	Yes	No	Yes	Yes	Yes	No Parking - Bus Parking	Other
	0	SB	Mt Vernon Ave	Glendale Ave	No	6.0	7.0	1.0	4.0	No	Yes	No	Yes	No	No	Free Parking	UP
	0	SB	Mt Vernon Ave	Russell Rd	No	20.0	14.0	2.0	3.0	No	No	No	Yes	Yes	Yes	No Parking	Hydrant
	0	SB	Mt Vernon Ave	Alexandria Ave	No	0.0	0.0	0.0	0.0	No	No	No	Yes	No	No	No Parking - Bus Parking	Other
	0	NB	Mt Vernon Ave	Nelson Ave	No	10.0	7.0	2.0	3.0	No	No	No	Yes	Yes	Yes	Free Parking	Other
	0	NB	Mt Vernon Ave	Alexandria Ave	No	6.0	7.0	1.0	1.0	No	No	No	Yes	Yes	Yes	Free Parking	UP
	0	NB	Mt Vernon Ave	Reed Ave	No	20.0	8.0	1.0	2.0	No	Yes	No	Yes	Yes	Yes	No Parking	Inlet
	0	NB	Mt Vernon Ave	Spring St	No	0.0	0.0	0.0	0.0	No	No	No	Yes	No	Yes	Free Parking	Other
	0	SB	Mt Vernon Ave	Spring St	No	7.0	12.0	3.0	6.0	No	No	No	Yes	No	Yes	Permit Parking	UP
	0	WB	Pendleton St	N West St	No	10.0	7.0	3.0	3.0	No	No	No	Yes	Yes	Yes	Permit Parking	Other

PLZ Width = Passenger Loading Zone, measured parallel to the roadway
PLZ Depth = Passenger Loading Zone, measured perpendicular to the roadway
UP = Utility Pole

ADA Compliant passenger loading zone



APPENDIX B:

Recommended Improvements

Direction	On_Street	At_Street	Daily Buses	Daily Boardings	Daily Alightings	Final Recommendation	Parking Space +/-	Total Cost
NB	1309 E Abingdon Dr	1309 E Abingdon Dr	23	5	0	No improvement needed	0	\$0
WB	Bashford Ln	Powhatan St	34	7	2	No improvement needed	0	\$0
WB	Bashford Ln	Seaport Ln	34	9	6	Add "No-Parking" zone at existing stop	-2	\$300
EB	Bashford Ln	N Pitt St	57	5	15	Half bulb at existing stop	0	\$18,700
EB	Bashford Ln	Powhatan St	34	1	10	Half bulb at existing stop	-1	\$18,700
WB	Bashford Ln	N Pitt St	55	13	7	Move west of driveway and add half bulb	-1	\$19,000
EB	Bashford Ln	W Abingdon Dr	34	10	8	Move east to corner and add half bulb	4	\$19,000
NB	Columbus St	Montgomery St	34	1	4	No improvement needed	0	\$0
NB	Columbus St	Madison St	34	6	3	Half bulb at existing stop	0	\$16,800
SB	Columbus St	First St	34	2	2	Move north to fire hydrant and add half bulb	3	\$17,100
NB	Daingerfield Rd	Prince St	67	1	18	No improvement needed	-1	\$0
SB	Daingerfield Rd	Prince St	69	23	2	Move south of driveway and add half bulb	0	\$19,000
WB	Duke St	S Henry St	67	8	0	No improvement needed	0	\$0
EB	Duke St	S Payne St	70	4	12	No improvement needed	0	\$0
WB	Duke St	S Peyton St	67	2	4	No improvement needed	0	\$0
EB	Duke St	S Peyton St	70	1	9	No improvement needed	0	\$0
WB	Duke St	S Alfred St	67	29	2	Half bulb at existing stop	1	\$6,200
EB	Duke St	S Alfred St	43	1	18	Half bulb at existing stop	-1	\$6,200
WB	Duke St	S Payne St	67	5	1	Half bulb at existing stop	-1	\$18,700
WB	Duke St	S Washington St	26	3	0	Half bulb at existing stop	-1	\$18,700
EB	Duke St	Washington St	43	1	18	Half bulb at existing stop	-1	\$18,700
EB	First St	Henry St	23	2	4	Half bulb at existing stop	1	\$6,200
WB	First St	Fayette St	23	15	1	Under construction - move to nearside and add half bulb	-2	\$6,500
EB	Franklin St	South Patrick St	26	2	0	No improvement needed	0	\$0
EB	Franklin St	S Alfred St	68	20	20	Move east to corner and add half bulb	-1	\$6,500
WB	Franklin St	S Pitt St	22	0	4	Move west to intersection and add half bulb	-1	\$6,500
EB	Franklin St	S Royal St	26	9	1	Half bulb at existing stop	-1	\$18,700
EB	Franklin St	S Saint Asaph St	26	7	1	Move east to intersection and add half bulb	-1	\$19,000
WB	Gibbon St	Alfred St	42	7	11	Half bulb at existing stop	-2	\$16,800
WB	Gibbon St	S Payne St	27	0	1	Half bulb at existing stop	-1	\$18,700
EB	Jefferson St	St Asaph St	22	7	0	No improvement needed	0	\$0
WB	Jefferson St	St Asaph St	22	0	5	Half bulb at existing stop	-1	\$6,200
EB	Jefferson St	Fayette St	26	15	0	Half bulb at existing stop	2	\$18,700
EB	King St	S Royal St	116	515	129	No improvement needed	0	\$0
WB	King St	N Washington St	117	356	18	No improvement needed	0	\$0
WB	King St	N Columbus St	117	197	114	No improvement needed	0	\$0
WB	King St	N Royal St	140	162	8	No improvement needed	0	\$0
EB	King St	Patrick St	116	19	42	No improvement needed	0	\$0
WB	King St	Diagonal Rd	140	18	505	No improvement needed	0	\$0
WB	King St	N Fayette St	117	72	45	Half bulb at existing stop	-1	\$6,200
EB	King St	S Peyton St	116	60	36	Half bulb at existing stop	-1	\$6,200
WB	King St	N Saint Asaph St	117	130	12	Full bulb at existing stop	-2	\$7,700
EB	King St	S Fayette St	116	69	98	Full bulb at existing stop	-2	\$7,700
EB	King St	S Saint Asaph St	116	15	173	Move east to fire hydrant and add full bulb	-1	\$9,400
EB	King St	Harvard St	116	96	19	Move west to fire hydrant and add full bulb	-2	\$18,700
WB	King St	N Patrick St	117	61	26	Half bulb at existing stop	0	\$18,700
WB	King St	N Peyton St	140	29	57	Half bulb at existing stop	-1	\$18,700
EB	Madison St	N Columbus St	35	3	0	No improvement needed	0	\$0
EB	Madison St	N Pitt St	78	1	4	No improvement needed	0	\$0
EB	Madison St	N Fayette St	69	7	0	Half bulb at existing stop	-1	\$6,200
EB	Madison St	N Henry St	72	5	0	Half bulb at existing stop	-1	\$6,200
EB	Madison St	N Fairfax St	78	2	23	Half bulb at existing stop	-1	\$6,200
EB	Madison St	N West St	72	10	1	Half bulb at existing stop	-1	\$18,700
EB	Madison St	N Patrick St	69	6	0	Half bulb at existing stop	-1	\$18,700
EB	Madison St	N Royal St	78	1	14	Half bulb at existing stop	1	\$18,700
EB	Madison St	N Saint Asaph St	78	0	13	Half bulb at existing stop	-1	\$18,700
EB	Madison St	N Washington St	35	0	1	Half bulb at existing stop	-1	\$18,700
WB	Madison St	N Fayette St	71	0	11	Half bulb at existing stop	0	\$18,700
WB	Madison St	N West St	71	0	8	Move west to corner and add half bulb	2	\$19,000
WB	Montgomery St	N Pitt St	35	18	4	Under design - no improvement needed	0	\$0
WB	Montgomery St	N Washington St	35	5	3	No improvement needed	0	\$0
WB	Montgomery St	N Royal St	35	8	8	Move west to fire hydrant	0	\$300
WB	Montgomery St	N Alfred St	69	2	11	Half bulb at existing stop	0	\$18,700
WB	Montgomery St	N Saint Asaph St	35	2	9	Move west to corner and add half bulb	-1	\$19,000
NB	Mt Vernon Ave	Executive Ave	81	237	150	No improvement needed	0	\$0
SB	Mt Vernon Ave	Executive Ave	83	157	234	No improvement needed	0	\$0
SB	Mt Vernon Ave	Reed Ave	83	104	143	No improvement needed	0	\$0
NB	Mt Vernon Ave	Russell Rd	81	100	128	No improvement needed	0	\$0
NB	Mt Vernon Ave	W. Glebe Rd	111	89	143	No improvement needed	0	\$0
SB	Mt Vernon Ave	Sanborn Pl	115	73	51	Bus stop has been removed	0	\$0
NB	Mt Vernon Ave	Four Mile Run	81	69	24	No improvement needed	0	\$0
NB	Mt Vernon Ave	Hume Ave	111	43	45	No improvement needed	0	\$0
NB	Mt Vernon Ave	Kennedy St	111	34	30	No improvement needed	0	\$0
SB	Mt Vernon Ave	W. Glebe Rd	32	17	2	No improvement needed	0	\$0
NB	Mt Vernon Ave	Glendale Ave	81	15	9	No improvement needed	0	\$0
SB	Mt Vernon Ave	Kennedy St	32	12	1	No improvement needed	0	\$0
SB	Mt Vernon Ave	Nelson Ave	83	11	6	No improvement needed	0	\$0
SB	Mt Vernon Ave	Glendale Ave	83	9	9	Move north to intersection	0	\$600
SB	Mt Vernon Ave	Russell Rd	83	132	97	Full bulb at existing stop	2	\$6,200
SB	Mt Vernon Ave	E Custis Ave	115	49	29	Half bulb at existing stop	1	\$6,200

Direction	On_Street	At_Street	Daily Buses	Daily Boardings	Daily Alightings	Final Recommendation	Parking Space +/-	Total Cost
SB	Mt Vernon Ave	E Oxford Ave	115	43	21	Half bulb at existing stop	1	\$6,200
NB	Mt Vernon Ave	E Mason Ave	111	42	38	Half bulb at existing stop	1	\$6,200
SB	Mt Vernon Ave	E Bellefont Ave	115	37	15	Half bulb at existing stop	1	\$6,200
SB	Mt Vernon Ave	Alexandria Ave	83	15	4	Half bulb at existing stop	-1	\$6,200
NB	Mt Vernon Ave	E Bellefonte Ave	111	14	24	Half bulb at existing stop	-1	\$6,200
NB	Mt Vernon Ave	Nelson Ave	81	12	30	Half bulb at existing stop	-1	\$6,200
NB	Mt Vernon Ave	Alexandria Ave	81	3	5	Half bulb at existing stop	-1	\$6,200
NB	Mt Vernon Ave	Reed Ave	81	90	64	Move south to corner and add full bulb	4	\$9,700
SB	Mt Vernon Ave	Raymond Ave	115	52	34	Half bulb at existing stop	1	\$16,800
NB	Mt Vernon Ave	Stewart Ave	30	26	28	Half bulb at existing stop	4	\$16,800
NB	Mt Vernon Ave	Spring St	81	4	2	Half bulb at existing stop	-2	\$16,800
NB	Mt Vernon Ave	Herbert St	111	45	39	Half bulb at existing stop	1	\$18,700
SB	Mt Vernon Ave	E Uhler Ave	115	37	17	Half bulb at existing stop	2	\$18,700
NB	Mt Vernon Ave	E Oxford Ave	111	28	48	Half bulb at existing stop	1	\$18,700
NB	Mt Vernon Ave	E Windsor Ave	111	21	58	Half bulb at existing stop	-1	\$18,700
NB	Mt Vernon Ave	E Randolph Ave	111	18	25	Half bulb at existing stop	1	\$18,700
SB	Mt Vernon Ave	Spring St	83	3	10	Half bulb at existing stop	-1	\$18,700
SB	Mt Vernon Ave	E Mason Ave	115	42	41	Move north to corner and add full bulb	0	\$22,200
NB	N Fairfax St	Princess St	121	17	10	Under design - no improvement needed	0	\$0
NB	N Fairfax St	Second St	57	13	9	No improvement needed	0	\$0
SB	N Fairfax St	King St	69	13	12	No improvement needed	0	\$0
NB	N Fairfax St	Cameron St	121	7	10	No improvement needed	0	\$0
SB	N Fairfax St	Princess St	92	5	9	Under design - no improvement needed	0	\$0
NB	N Fairfax St	Madison St	91	14	25	Half bulb at existing stop	-1	\$6,200
NB	N Fairfax St	King St	90	24	40	Move north to alley and add half bulb	-1	\$6,500
SB	N Fairfax St	Pendleton St	133	49	58	Half bulb at existing stop	3	\$16,800
NB	N Fairfax St	Wythe St	91	8	11	Half bulb at existing stop	-1	\$16,800
NB	N Fairfax St	Montgomery St	57	2	10	Half bulb at existing stop	-2	\$16,800
SB	N Fairfax St	Oronoco St	92	19	4	Half bulb at existing stop	-1	\$18,700
NB	N Fairfax St	Queen St	121	5	5	Half bulb at existing stop	-1	\$18,700
SB	N Fairfax St	Madison St	57	4	16	Half bulb at existing stop	-1	\$18,700
NB	N Fairfax St	Pendleton St	156	59	32	Move north to corner and add half bulb	-1	\$19,000
SB	N Fairfax St	Second St	57	6	9	Move south to intersection and add half bulb	-1	\$19,000
SB	N Pitt St	Bellvue Pl	57	3	14	Half bulb at existing stop	-1	\$6,200
NB	N Pitt St	Bellvue Pl	57	6	1	Half bulb at existing stop	-1	\$18,700
SB	N Royal St	Oronoco St	30	0	4	Move south to fire hydrant and add half bulb	0	\$6,500
SB	N Royal St	Queen St	30	0	4	Move south to corner and add half bulb	-1	\$6,500
SB	N Royal St	Cameron St	30	0	5	Move south to corner and add half bulb	-1	\$19,000
SB	N Royal St	Princess St	30	0	7	Move south to fire hydrant and add half bulb	0	\$19,000
NB	N Washington St	King St	161	299	308	No improvement needed	0	\$0
SB	N Washington St	King St	160	174	311	No improvement needed	0	\$0
SB	N Washington St	Pendleton St	42	13	14	No improvement needed	0	\$0
NB	N Washington St	Pendleton St	85	14	47	Lengthen 'No-Parking' zone by 40'	-2	\$300
SB	N West St	Madison St	22	0		Half bulb at existing stop	0	\$16,800
WB	Pendleton St	N Henry St	103	17	4	No improvement needed	0	\$0
WB	Pendleton St	N Pitt St	71	7	0	No improvement needed	0	\$0
WB	Pendleton St	N Payne St	30	4	2	No improvement needed	0	\$0
WB	Pendleton St	N Royal St	71	8	0	Half bulb at existing stop	-1	\$6,200
EB	Pendleton St	N Columbus St	103	5	58	Under design - no improvement needed	0	\$0
EB	Pendleton St	N Payne St	103	2	14	Under design - no improvement needed	0	\$0
EB	Pendleton St	N Royal St	30	2	11	Move west to fire hydrant and add half bulb	-1	\$6,500
EB	Pendleton St	N Saint Asaph St	30	1	12	Under design - no improvement needed	0	\$0
WB	Pendleton St	N Saint Asaph St	71	17	0	Under design - no improvement needed	0	\$0
WB	Pendleton St	N West St	103	6	2	Under design - no improvement needed	0	\$0
EB	Pendleton St	N Henry St	103	1	17	Move west to fire hydrant and add half bulb	-1	\$19,000
WB	Pendleton St	N Alfred St	30	1	0	Move to nearside of intersection and add half bulb	-1	\$19,000
EB	Pendleton St	N Patrick St	103	1	12	Move west to fire hydrant and add half bulb	0	\$19,300
WB	Pendleton St	N Columbus St	103	64	11	Under design - no improvement needed	0	\$0
SB	Powhatan St	Bashford Ln	72	14	18	No improvement needed	0	\$0
SB	Powhatan St	Second St	72	3	5	No improvement needed	0	\$0
NB	Powhatan St	Second St	72	6	3	Half bulb at existing stop	-2	\$16,800
NB	S Fayette St	Franklin St	26	6	0	Half bulb at existing stop	-1	\$18,700
SB	S Henry St	Gibbon St	27	1	7	Move south to corner and add half bulb	-1	\$19,000
NB	S Royal St	Duke St	48	1	0	Half bulb at existing stop	-1	\$6,200
NB	S Royal St	Wilkes St	48	14	0	Move north to corner and add half bulb	2	\$6,500
SB	S Royal St	King St	30	0	27	Move north to corner and add full bulb	-2	\$9,400
SB	S Royal St	Wolfe St	22	1	1	Half bulb at existing stop	0	\$18,700
NB	S Royal St	Wolfe St	48	12	0	Move north to corner and add half bulb	-1	\$19,000
SB	S Royal St	Gibbon St	22	0	2	Move south to corner and add half bulb	0	\$19,000
SB	S Royal St	Duke St	22	0	6	Move south to corner and add half bulb	-1	\$19,000
SB	S Saint Asaph St	Franklin St	22	0	7	Half bulb at existing stop	0	\$18,700
NB	S Saint Asaph St	Franklin St	22	11	0	Move north to corner and add half bulb	-1	\$19,000
SB	S Washington St	King St	No data	No data	No data	No improvement needed	0	\$0
NB	S Washington St	Green St	98	55	6	No improvement needed	0	\$0
SB	S Washington St	Green St	99	0	16	Lengthen 'No-Parking' zone by 40'	-2	\$300
SB	S Washington St	Jefferson St	77	0	30	Lengthen 'No-Parking' zone by 50'	-3	\$300
EB	Second St	N Pitt St	57	5	6	Half bulb at existing stop	-2	\$16,800
WB	Second St	N Pitt St	57	5	0	Half bulb at existing stop	1	\$18,700
EB	Second St	N Fairfax St	57	4	13	Half bulb at existing stop	-1	\$18,700
SB	W Abingdon Dr	Bashford Ln	23	3	1	Move south and combine with WMATA stop	0	\$300



APPENDIX C:

Average Daily Ridership by Bus Stop



JEFFERSON STREET								
			DASH RIDERSHIP				TOTAL	
			AT3		AT7			
Eastbound Bus Stops			On	Off	On	Off	On	Off
STOP ID #	On Street	At Street						
442	Jefferson St	Fayette St	-	-	15	0	15	0
439	Jefferson St	Asaph St	7	0	-	-	7	0
Westbound Bus Stops								
On Street			At Street					
438	Jefferson St	Asaph St	0	5	-	-	0	5
	Jefferson St	Fayette St	-	-	0	38	0	38

GIBBON STREET							
			DASH RIDERSHIP			TOTAL	
			AT7				
Westbound Bus Stops			On	Off		On	Off
STOP ID #	On Street	At Street					
369	Gibbon St	S Columbus St	-	-		7	11
566	Gibbon St	S Henry St	1	7		1	7
760	Gibbon St	S Payne St	0	1		0	1

MONTGOMERY STREET								
			DASH				TOTAL	
			AT2		AT5			
Westbound Bus Stops			On	Off	On	Off	On	Off
STOP ID #	On Street	At Street						
588	Montgomery St	N Royal St	-	-	8	8	8	8
700	Montgomery St	N Pitt St	-	-	18	4	18	4
699	Montgomery St	N Saint Asaph St	-	-	2	9	2	9
698	Montgomery St	N Washington St	-	-	5	3	5	3
697	Montgomery St	N Alfred St	2	2	0	9	2	11
696	Montgomery St	N Patrick St	0	8	0	14	0	22



FRANKLIN STREET										
		WMATA			DASH				TOTAL	
		9A			AT3		AT7			
Eastbound Bus Stops			On	Off	On	Off	On	Off	On	Off
STOP ID #	On Street	At Street								
370	Franklin St	South Patrick St	-	-	-	-	2	0	2	0
371	Franklin St	S Alfred St	11	18	-	-	9	2	20	20
622	Franklin St	S Saint Asaph St	-	-	-	-	7	1	7	1
620	Franklin St	S Royal St	-	-	-	-	9	1	9	1
Westbound Bus Stops										
		On Street	At Street							
621	Franklin St	S Pitt St	-	-	0	4	-	-	0	4

DUKE STREET										
		WMATA			DASH				TOTAL	
					AT7		AT8			
Eastbound Bus Stops					On	Off	On	Off	On	Off
STOP ID #	On Street	At Street								
127	Duke St	S Peyton St			0	0	0	5	1	9
124	Duke St	S Payne St			1	3	2	7	4	12
121	Duke St	S Alfred St			-	-	0	13	1	18
488	Duke St	Washington St	-	-	-	-	1	18	1	18
Westbound Bus Stops										
		On Street	At Street							
22	Duke St	S Washington St			3	0	-	-	3	0
122	Duke St	S Alfred St			9	0	20	2	29	2
123	Duke St	S Henry St			3	0	5	0	8	0
125	Duke St	S Payne St			2	1	3	0	5	1
128	Duke St	S Peyton St			1	0	1	4	2	4



FAYETTE STREET							
			DASH		TOTAL		
			AT7				
Northbound Bus Stops			On	Off	On	Off	
STOP ID #	On Street	At Street					
568	S Fayette St	Franklin St	6	0	6	0	

SECOND STREET								
			DASH				TOTAL	
Eastbound Bus Stops			AT2		AT4			
STOP ID #	On Street	At Street	On	Off	On	Off	On	Off
527	Second St	N Pitt St	5	5	0	1	5	6
526	Second St	N Fairfax St	4	5	0	8	4	13
Westbound Bus Stops								
	On Street	At Street						
528	Second St	N Pitt St	1	0	4	0	5	0

POWHATAN STREET								
			WMATA		DASH		TOTAL	
			9A		AT2			
Northbound Bus Stops			On	Off	On	Off	On	Off
STOP ID#	On Street	At Street						
372	Powhatan St	Second St	6	3	0	3	6	3
	Powhatan St	Bashford St	14	14	0	0	14	14
Southbound Bus Stops								
	On Street	At Street						
377	Powhatan St	Bashford St	10	16	4	2	14	18
368	Powhatan St	Second St	2	4	1	1	3	5



KING STREET – EASTBOUND												
			DASH								TOTAL	
			Trolley		AT2		AT4		AT5			
Eastbound Bus Stops			On	Off	On	Off	On	Off	On	Off	On	Off
STOP ID #	On Street	At Street										
716	King St	Harvard St	90	8	3	5	0	0	3	6	96	19
714	King St	S Peyton St	53	23	2	6	0	0	5	7	60	36
712	King St	S Payne St	8	8	1	6	-	-	5	11	14	25
722	King St	S Fayette St	60	83	5	8	-	-	4	7	69	98
731	King St	Patrick St	15	23	2	10	-	-	2	9	19	42
507	King St	S Alfred St	-	-	0	19	-	-	1	26	1	45
	King St	N. Columbus St	15	113	-	-	-	-	-	-	15	113
718	King St	S Washington St	-	-	4	57	-	-	3	55	7	112
688	King St	S Saint Asaph St	8	90	3	42	-	-	4	41	15	173
508	King St	Pitt St	-	-	9	32	-	-	6	24	15	56
572	King St	Royal St	0	90	7	24	-	-	4	15	11	129

KING STREET – WESTBOUND												
			DASH								TOTAL	
Westbound Bus Stops			Trolley		AT2		AT4		AT5			
STOP ID #	On Street	At Street	On	Off	On	Off	On	Off	On	Off	On	Off
505	King St	N Royal St	113	0	32	3	3	1	14	4	162	8
658	King St	N Pitt St	--		14	1	-	-	19	8	33	9
704	King St	N Saint Asaph St	128	8	24	3	-	-	16	1	168	12
705	King St	N Washington St	-	-	21	13	-	-	42	5	63	18
707	King St	N Columbus St	128	98	44	5	-	-	25	11	197	114
709	King St	N Alfred St	-	-	16	2	-	-	12	2	28	4
711	King St	N Patrick St	53	23	4	3	-	-	4	-	61	23
721	King St	N Fayette St	8	38	12	5	-	-	15	2	72	45
443	King St	N West St	8	15	1	2	-	-	15	8	24	25
590	King St	N Peyton St	8	53	7	3	2	0	12	1	29	57
723	King St	Harvard St	0	0	3	1	9	0	2	1	14	25
720	King St	Diagonal Rd	0	23	1	4	11	0	6	4	18	8



PENDLETON STREET																
			WMATA						DASH						TOTAL	
			10A		10B		10R		AT3		AT3/4		AT8			
Eastbound Bus Stops			On	Off	On	Off	On	Off	On	Off	On	Off	On	Off	On	Off
STOP ID #	On Street	At Street														
194	Pendleton St	N Payne St	0	4	1	8	0	1	1	1	0	0	-	-	2	14
192	Pendleton St	N Henry St	0	4	1	5	0	1	0	6	0	1	-	-	1	17
189	Pendleton St	N Patrick St	0	2	0	5	0	1	1	4	0	0	-	-	1	12
185	Pendleton St	N Columbus St	1	17	2	29	0	4	2	6	0	2	-	-	5	58
176	Pendleton St	N Saint Asaph St	-	-	-	-	-	-	1	5	0	0	-	-	1	12
173	Pendleton St	N Royal St	-	-	-	-	-	-	2	6	0	1	-	-	2	11
Westbound Bus Stops																
	On Street	At Street														
719	Pendleton St	N Royal St	-	-	-	-	-	-	2	0	1	0	7	0	8	0
640	Pendleton St	N Pitt St	-	-	-	-	-	-	7	0	0	0	7	0	7	0
177	Pendleton St	N Saint Asaph St	-	-	-	-	-	-	4	0	5	0	12	0	17	0
186	Pendleton St	N Columbus St	23	5	35	5	2	0	4	0	0	1	-	-	64	11
506	Pendleton St	N Alfred St	-	-	-	-	-	-	1	0	0	0	-	-	1	0
191	Pendleton St	N Henry St	8	2	8	2	1	0	0	0	0	0	-	-	17	4
538	Pendleton St	N Payne St	-	-	-	-	-	-	4	1	0	1	-	-	4	2
WMATA	Pendleton St	West St	3	1	3	1	0	0	-	-	-	-	-	-	6	2



MADISON STREET												
			WMATA		DASH						TOTAL	
			10S		AT2		AT5		AT8			
Eastbound Bus Stops			On	Off	On	Off	On	Off	On	Off	On	Off
STOP ID #	On Street	At Street										
682	Madison St	N West St	2	0	8	0	0	1	-	-	10	1
681	Madison St	N Fayette St	-	-	5	0	2	0	-	-	7	0
679	Madison St	N Henry St	0	0	4	0	1	0	-	-	5	0
678	Madison St	N Patrick St	-	-	3	0	3	0	-	-	6	0
677	Madison St	N Columbus St	-	-	-	-	3	0	-	-	3	0
676	Madison St	N Washington St	-	-	-	-	0	1	-	-	0	1
675	Madison St	N Saint Asaph St	-	-	-	-	0	1	0	12	0	13
674	Madison St	N Pitt St	-	-	-	-	1	0	0	4	1	4
717	Madison St	N Royal St	-	-	-	-	1	2	0	12	1	14
730	Madison St	N Fairfax St	-	-	-	-	0	2	2	21	2	23
Westbound Bus Stops												
			On	Off	On	Off	On	Off	On	Off	On	Off
STOP ID #	On Street	At Street										
680	Madison St	N Fayette St	0	0	0	5	0	6	-	-	0	11
683	Madison St	N West St	0	0	0	4	0	4	-	-	0	8
382	Braddock Rd Metro Station Bay A	Braddock Rd Metro Station Bay A	0	10	0	92	0	95	-	-	0	197

ABINGDON DRIVE							
			DASH				TOTAL
			AT4				
Northbound Bus Stops			On	Off	On	Off	
STOP ID #	On Street	At Street					
257	1309 E Abingdon Dr	1309 E Abingdon Dr	5	0	5	0	
Southbound Bus Stops							
			On	Off	On	Off	
STOP ID #	On Street	At Street					
255	W Abingdon Dr	Bashford Ln	3	1	3	1	



BASHFORD LANE								
			DASH				TOTAL	
			AT2		AT4			
Eastbound Bus Stops			On	Off	On	Off	On	Off
STOP ID #	On Street	At Street						
542	Bashford Ln	Powhatan St	1	10	-	-	1	10
406	Bashford Ln	W Abingdon Dr	10	8	-	-	10	8
399	Bashford Ln	N Pitt St	5	9	0	6	5	15
Westbound Bus Stops								
	On Street	At Street						
609	Bashford Ln	N Pitt St	4	6	9	1	13	7
404	Bashford Ln	Seaport Ln	9	6	-	-	9	6
396	Bashford Ln	Powhatan St	7	2	-	-	7	2

SAINT ASAPH STREET								
			DASH				TOTAL	
			AT3					
Northbound Bus Stops			On	Off	On	Off	On	Off
STOP ID #	On Street	At Street						
441	S Saint Asaph St	Franklin St	11	0			11	0
Southbound Bus Stops								
	On Street	At Street						
440	S Saint Asaph St	Franklin St	0	7			0	7

PITT STREET								
			DASH				TOTAL	
			AT2		AT4			
Northbound Bus Stops			On	Off	On	Off	On	Off
STOP ID #	On Street	At Street						
501	N Pitt St	Bellvue Pl	1	1	5	0	6	1
Southbound Bus Stops								
	On Street	At Street						
502	N Pitt St	Bellvue Pl	3	9	0	5	3	14



Washington Street																
			WMATA								DASH				TOTAL	
			10A		10B		10R		9A		AT3		AT8			
Northbound Bus Stops			On	Off	On	Off	On	Off	On	Off	On	Off	On	Off	On	Off
STOP ID #	On Street	At Street														
119	S Washington St	Green St	14	2	25	4	10	0	-	-	6	0	-	-	55	6
	S Washington St	Franklin St	12	2	18	2	4	0	-	-	-	-	-	-	34	4
	S Washington St	Wilkes St	17	3	32	4	5	0	13	15	-	-	-	-	67	22
	S Washington St	Duke St	10	2	12	3	0	0	7	8	-	-	-	-	29	13
110	S Washington St	King St	113	17	127	21	2	1	-	-	-	-	1	131	243	170
144	N Washington St	King St	20	3	26	3	2	0	69	110	-	-	0	24	64	41
168	N Washington St	Oronoco St	3	2	5	2	1	1	3	6	-	-	3	7	15	18
175	N Washington St	Pendleton St	-	-	-	-	-	-	14	19	-	-	0	14	14	33
	N Washington St	Wythe St	-	-	-	-	-	-	6	14	-	-	-	-	6	14
Southbound Bus Stops																
	On Street	At Street														
	N Washington St	Montgomery St	-	-	-	-	-	-	10	8	-	-	-	-	10	8
WMATA	N Washington St	Pendleton St	-	-	-	-	-	-	13	14	-	-	-	-	13	14
161	N Washington St	Princess St	1	7	0	2	0	2	4	4	-	-	7	1	12	16
147	N Washington St	King St	0	7	1	10	0	1	92	61	-	-	16	6	109	85
132	S Washington St	King St	8	100	12	145	2	9	-	1	-	-	65	4	174	311
	S Washington St	Prince St	0	2	0	2	0	0	3	2	-	-	8	1	11	7
	S Washington St	Duke St	2	6	1	10	1	1	2	3	-	-	-	-	6	20
	S Washington St	Wilkes St	1	12	2	17	0	3	14	13	-	-	-	-	17	45
	S Washington St	Gibbon St	0	4	0	7	0	1	-	-	-	-	-	-	0	12
120	S Washington St	Jefferson St	0	8	0	15	0	7	-	-	-	-	-	-	0	30
118	S Washington St	Green St	0	3	0	7	0	1	-	-	0	5	-	-	0	16



ROYAL STREET													
			WMATA		DASH						TOTAL		
					AT3		AT3/4		AT7				
Northbound Bus Stops						On	Off	On	Off	On	Off	On	Off
STOP ID #	On Street	At Street											
569	S Royal St	Wilkes St	-	-	4	0	-	-	10	0	14	0	
737	S Royal St	Wolfe St	-	-	4	0	-	-	8	0	12	0	
83	S Royal St	Duke St	-	-	1	0	-	-	-	-	1	0	
88	S Royal St	King St	-	-	-	-	-	-	-	-	-	-	
Southbound Bus Stops													
	On Street	At Street											
554	N Royal St	Oronoco St			0	3	0	1	-	-	0	4	
553	N Royal St	Princess St			0	5	0	2	-	-	0	7	
736	N Royal St	Queen St			0	4	0	0	-	-	0	4	
552	N Royal St	Cameron St			0	5	0	0	-	-	0	5	
497	S Royal St	King St			0	24	0	3	-	-	0	27	
571	S Royal St	Duke St			0	6	-	-	-	-	0	6	
570	S Royal St	Wolfe St			1	1	-	-	-	-	1	1	
556	S Royal St	Gibbon St			0	2	-	-	-	-	0	2	

FIRST STREET								
			DASH				TOTAL	
			AT4					
Eastbound Bus Stops				On	Off	On	Off	
STOP ID #	On Street	At Street						
257	First St	Henry St			2	4	2	4
Westbound Bus Stops								
	On Street	At Street						
500	First St	Fayette St			15	1	15	1



FAIRFAX STREET																
			DASH												TOTAL	
			AT2		AT3		AT3/4		AT4		AT5		AT8			
Northbound Bus Stops			On	Off	On	Off	On	Off	On	Off	On	Off	On	Off	On	Off
STOP ID #	On Street	At Street														
593	N Fairfax St	King St	2	21	18	5	-	-	-	-	4	14	-	-	24	40
666	N Fairfax St	Cameron St	1	4	4	1	1	0	1	0	0	5	-	-	7	10
657	N Fairfax St	Queen St	1	4	2	1	0	0	1	0	1	0	-	-	5	5
672	N Fairfax St	Princess St	4	2	6	0	1	0	3	0	3	8	-	-	17	10
661	N Fairfax St	Pendleton St	3	11	2	3	-	-	1	0	5	18	48	0	59	32
659	N Fairfax St	Wythe St	1	8	-	-	-	-	0	0	7	3	-	-	8	11
615	N Fairfax St	Madison St	1	14	-	-	-	-	7	0	6	11	-	-	14	25
656	N Fairfax St	Montgomery St	1	10	-	-	-	-	1	0	-	-	-	-	2	10
610	N Fairfax St	Second St	3	9	-	-	-	-	10	0	-	-	-	-	13	9
Southbound Bus Stops																
ID #	On Street	At Street														
614	N Fairfax St	Second St	6	6	-	-	-	-	0	3	-	-	-	-	6	9
616	N Fairfax St	Montgomery St	4	1	-	-	-	-	1	5	-	-	-	-	5	6
671	N Fairfax St	Madison St	4	10	-	-	-	-	0	6	-	-	-	-	4	16
660	N Fairfax St	Pendleton St	27	4	-	-	-	-	0	4	22	12	0	38	49	58
662	N Fairfax St	Oronoco St	11	2	-	-	-	-	0	0	8	2	-	-	19	4
664	N Fairfax St	Princess St	1	4	-	-	-	-	0	0	4	5	-	-	5	9
667	N Fairfax St	King St	6	7	-	-	-	-	-	-	7	5	-	-	13	12



MT. VERNON AVENUE - WESTBOUND														
			WMATA								DASH		TOTAL	
			10A		10B		10E		10R		AT10			
			On	Off	On	Off	On	Off	On	Off	On	Off	On	Off
	Northbound Bus Stops													
STOP ID #	On Street	At Street												
WMATA	Mt Vernon Ave	Spring St	2	1	2	1	0	0	0	0	-	-	4	2
WMATA	Mt Vernon Ave	Glendale Ave	4	5	8	4	2	0	1	0	-	-	15	9
WMATA	Mt Vernon Ave	Alexandria Ave	1	2	2	3	0	0	0	0	-	-	3	5
WMATA	Mt Vernon Ave	Nelson Ave	5	12	5	16	2	1	0	1	-	-	12	30
268	Mt Vernon Ave	E Mason Ave	13	11	16	14	4	1	6	0	3	12	42	38
275	Mt Vernon Ave	E Bellefonte Ave	3	8	4	9	2	0	1	0	4	7	14	24
284	Mt Vernon Ave	E Windsor Ave	5	20	9	22	3	2	2	1	2	13	21	58
298	Mt Vernon Ave	E Oxford Ave	9	17	13	16	5	1	1	1	0	13	28	48
WMATA	Mt Vernon Ave	Mt Ida Ave	6	8	7	9	3	1	1	1	-	-	17	19
309	Mt Vernon Ave	Stewart Ave	-	-	-	-	-	-			9	18	9	9
314	Mt Vernon Ave	E Randolph Ave	4	7	6	8	5	1	1	0	2	9	18	25
317	Mt Vernon Ave	Hume Ave	8	16	9	18	15	1	3	0	8	10	43	45
327	Mt Vernon Ave	Kennedy St	9	9	10	13	12	1	3	0	0	7	34	30
340	Mt Vernon Ave	Herbert St	11	15	5	16	20	1	6	1	3	6	45	39
352	Mt Vernon Ave	W. Glebe Rd	28	37	24	48	23	10	6	2	8	46	89	143
WMATA	Mt Vernon Ave	Reed Ave	31	29	40	33	11	1	8	1	-	-	90	64
WMATA	Mt Vernon Ave	Russell Rd	36	63	38	64	14	1	12	0	-	-	100	128
WMATA	Mt Vernon Ave	Executive Ave	99	74	81	69	39	6	18	1	-	-	237	150
WMATA	Mt Vernon Ave	Between S. Glebe Rd and Elbert Ave											69	24



MT. VERNON AVENUE - EASTBOUND														
			WMATA								DASH		TOTAL	
			10A		10B		10E		10R		AT10			
Southbound Bus Stops			On	Off	On	Off	On	Off	On	Off	On	Off	On	Off
STOP ID #	On Street	At Street												
WMATA	S. Arlington	S. Glebe Rd	10	17	-	-	1	11	1	2	-	-	12	30
WMATA	Mt Vernon Ave	Executive Ave	77	104	70	79	5	44	5	7	-	-	157	234
WMATA	Mt Vernon Ave	Russell Rd	64	38	58	43	5	13	5	3	-	-	132	97
WMATA	Mt Vernon Ave	Reed Ave	45	43	49	61	5	32	5	7	-	-	104	143
455	Mt Vernon Ave	W. Glebe Rd	-	-	-	-	-	-	-	-	17	2	17	2
337	Mt Vernon Ave	Sanborn Pl	22	17	21	15	4	15	3	3	23	1	73	51
WMATA	Mt Vernon Ave	Kennedy St	-	-	-	-	-	-	-	-	12	1	12	1
495	Mt Vernon Ave	Raymond Ave	17	10	19	13	1	10	1	1	14	0	52	34
305	Mt Vernon Ave	E Uhler Ave	6	3	7	6	0	1	0	1	24	6	37	17
299	Mt Vernon Ave	E Oxford Ave	10	6	11	8	2	3	1	1	19	3	43	21
291	Mt Vernon Ave	E Custis Ave	15	8	19	14	4	5	2	1	9	1	49	29
280	Mt Vernon Ave	E Bellefonte Ave	14	6	13	6	1	1	1	1	8	1	37	15
267	Mt Vernon Ave	E Mason Ave	15	14	16	16	1	3	1	3	9	5	42	41
WMATA	Mt Vernon Ave	Nelson Ave	6	2	5	2	0	1	0	1	-	-	11	6
WMATA	Mt Vernon Ave	Alexandria Ave	6	1	8	3	0	0	1	0	-	-	15	4
WMATA	Mt Vernon Ave	Glendale Ave	4	3	5	5	0	1	0	0	-	-	9	9
WMATA	Mt Vernon Ave	Spring St	1	4	2	3	0	3	0	0	-	-	3	10



COLUMBUS STREET						
			DASH		TOTAL	
			AT2			
Northbound Bus Stops			On	Off	On	Off
STOP ID#	On Street	At Street				
403	N. Columbus	Madison	6	3	6	3
405	N. Columbus	Montgomery	1	4	1	4
Southbound Bus Stops						
	On Street	At Street				
608	N. Columbus	First Street	2	2	2	2

DAINGERFIELD ROAD										
			DASH						TOTAL	
			AT7		AT8		AT10			
Eastbound Bus Stops			On	Off	On	Off	On	Off	On	Off
STOP ID#	On Street	At Street								
470	Daingerfield	Prince St	0	9	1	9			1	18
Westbound Stops										
	On Street	At Street								
595	Daingerfield	Prince St	1	1	22	1			23	2