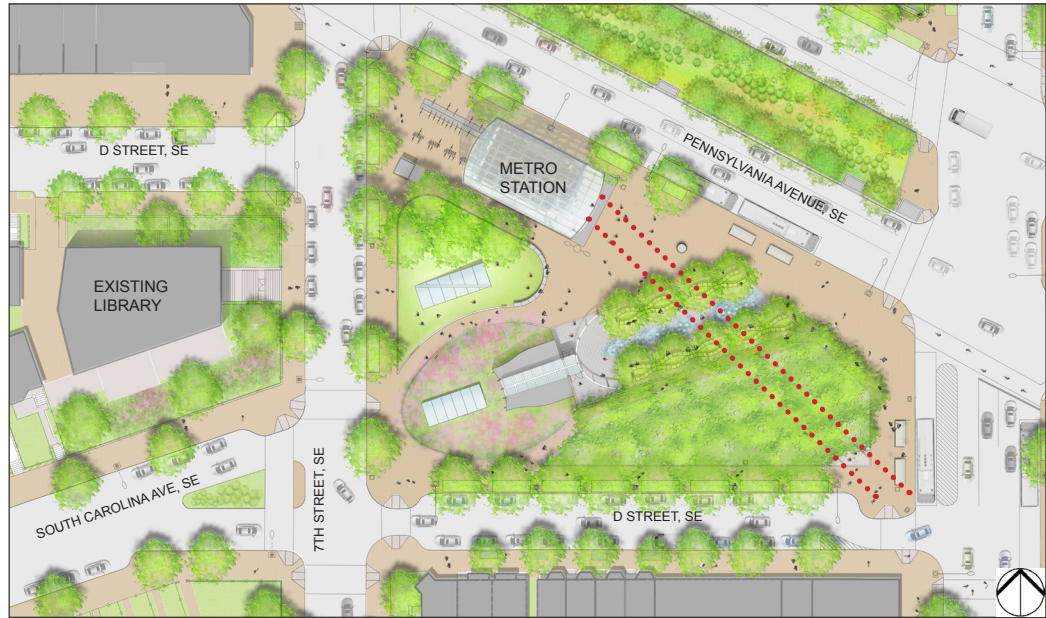


Parcel 4

At the entrance to the Metro Station, a paved area with a digital information hub for orientation is created. Bus stops & bicycle facilities are relocated and rearranged to improve connectivity to the Station entrance as detailed below. An expansion opportunity is proposed for the existing undersized Southeast Branch DC Library - an historic Carnegie library across 7th Street from Parcel 4. A proposed below grade addition under 7th Street includes a new library entrance pavilion on the plaza. Both the pavilion and the forecourt are placed directly on the South Carolina Avenue axis. The fountain jets are surrounded on both sides by shaded double-sided benches, creating a central gathering space for all who pass through the site.

Bosque

To the south of the fountain forecourt, a bosque of London Plane trees provides shaded seating as a tranquil gathering space with moveable furniture and a transition connecting the Metro Station with the 8th Street commercial corridor. The grid of bosque trees is arranged to allow the natural pedestrian desire path to flow to the Metro Station Entrance.

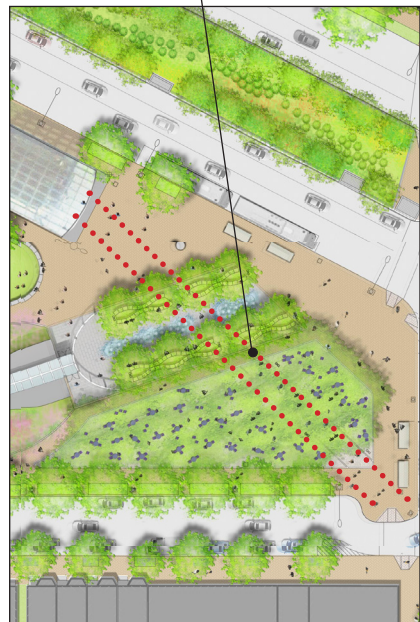


Parcel 4 Rendered Site Plan



Perspective showing Bosque with moveable furniture

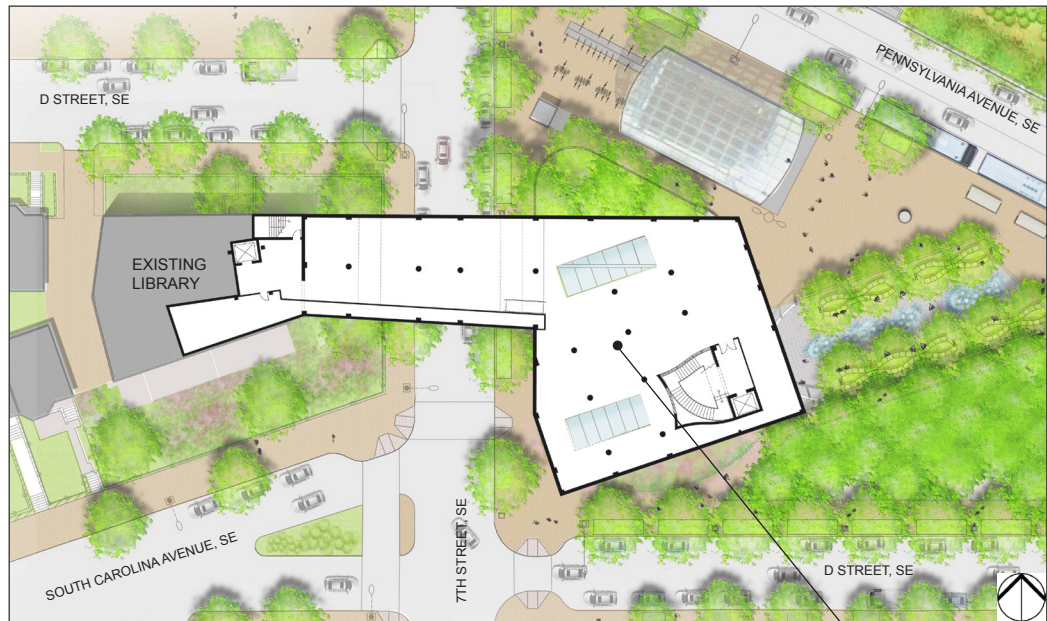
PEDESTRIAN NATURAL DESIRE LINE FROM 8TH STREET COMMERCIAL CORRIDOR TO METRO STATION ENTRANCE



Library Expansion

Built in 1922, the site's adjacent Southeast Branch DC Library is one of the city's busiest but also among the smallest of the library system's branches. Built on a small tight lot, DC Library has been stymied in finding a way to expand the building to accommodate the current standard library program.

Inspired by the community's suggestion to engage the library more with the plaza, the design team approached the DC Library staff with the idea of expanding below grade under 7th Street and creating a new entrance on the plaza. This idea was then further developed with the entrance pavilion providing a focal point along the South Carolina Avenue axis while augmenting the institution's civic presence. The new library pavilion is encircled by a planting bed with roses and perennial plants.



Below Grade Plan: Library Expansion

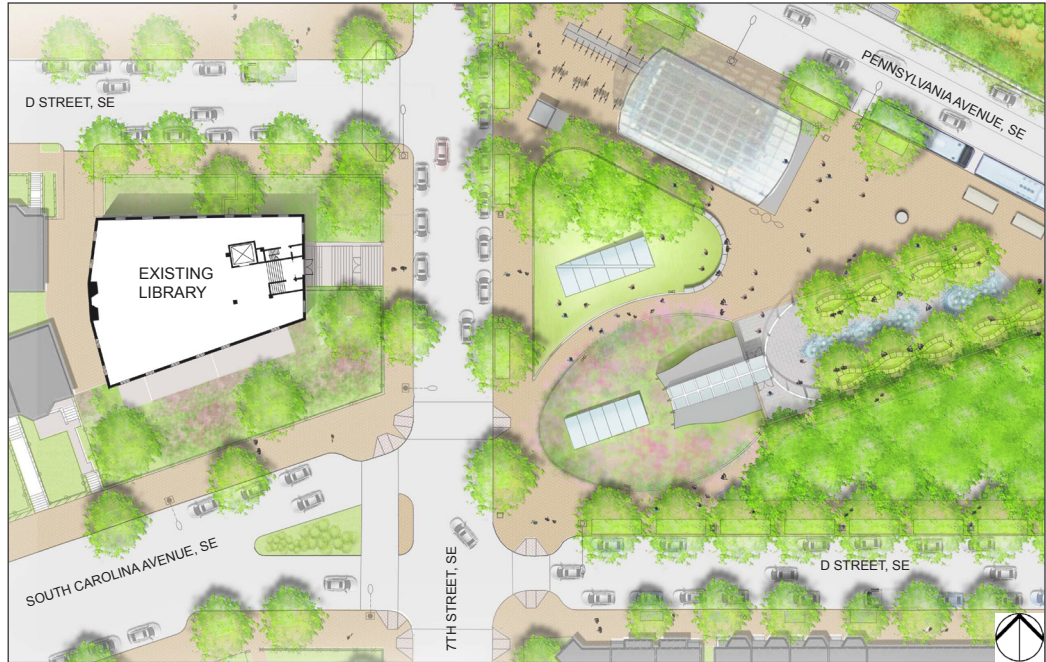
BELOW GRADE LIBRARY EXPANSION



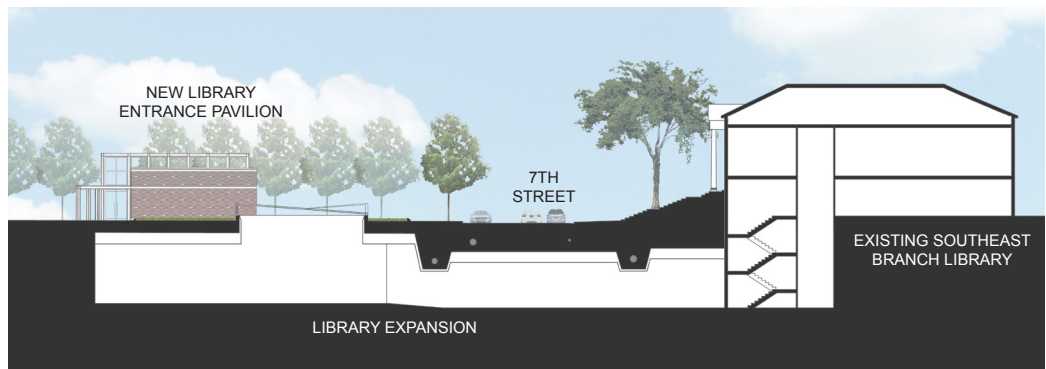
Ground Floor Plan - Library Expansion

SOUTH CAROLINA AVENUE AXIS

NEW LIBRARY ENTRANCE PAVILION



Second Floor Plan - Library Expansion



Section thru Library Expansion



Perspective of new Library Entry Pavilion and fountain forecourt

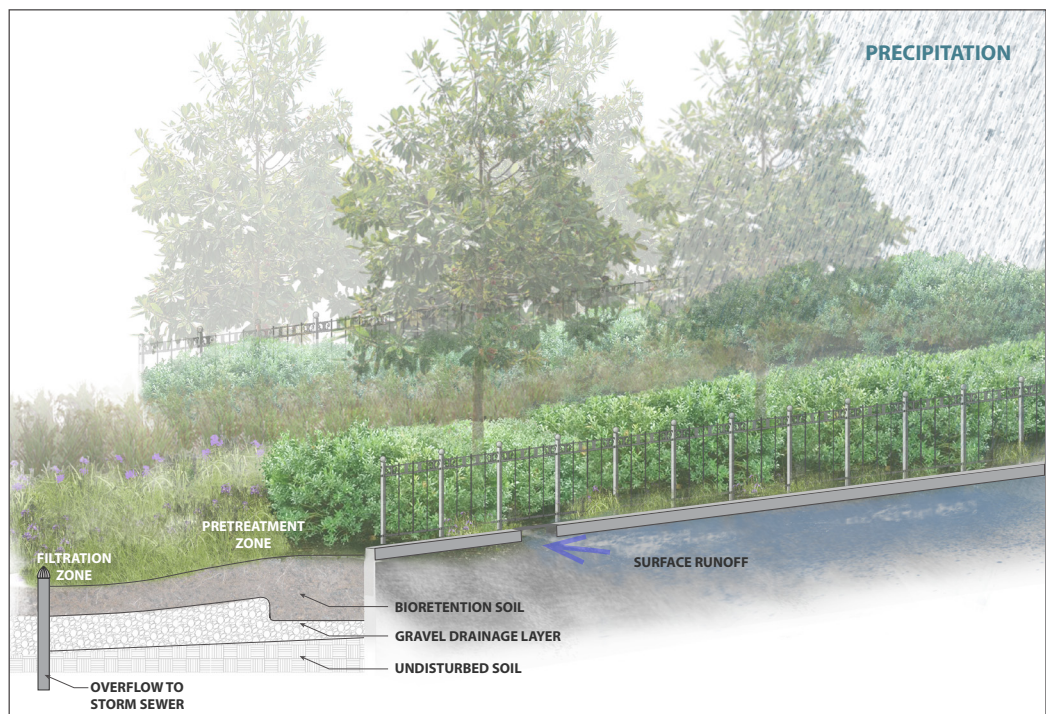
Parcels 2 & 5 (The Medians)

The Pennsylvania Avenue medians are developed as stormwater filtration gardens. A careful study of bioswale horticulture and a review of D.C. guidelines was conducted to select plant materials that are both appropriate to the monumental avenue and optimal for stormwater filtration. The design provides a potential prototype for the rest of the mile-long median stretching from the Anacostia River to the U.S. Capitol.



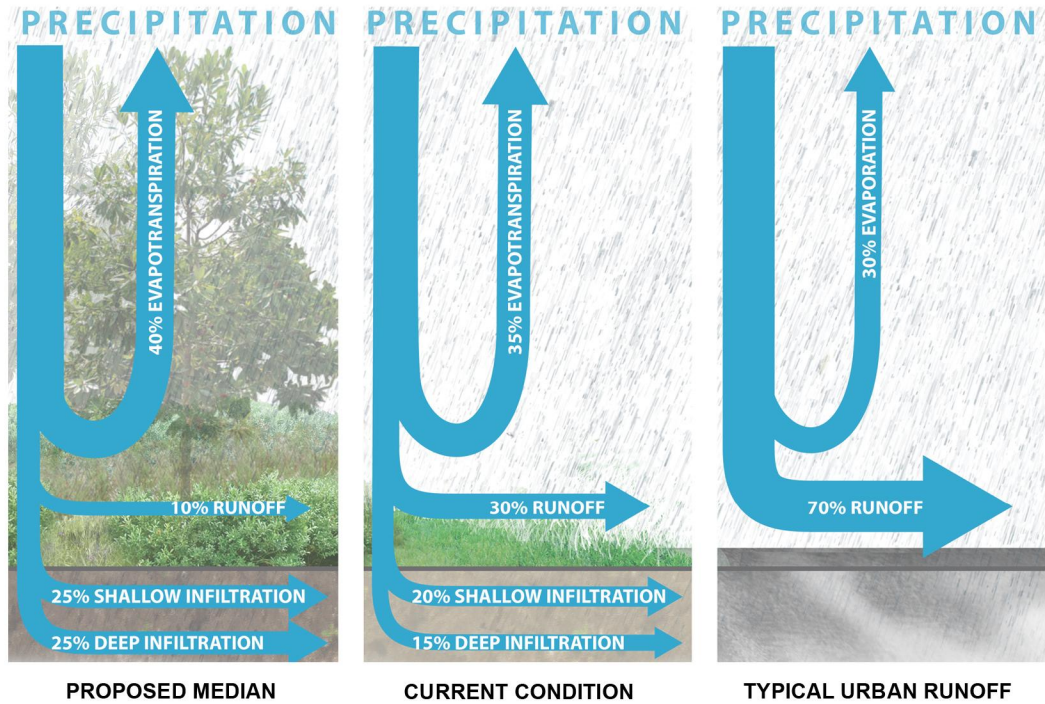
Rendered Site Plan - Medians

Portions of the Pennsylvania Avenue roadbed would be re-graded to direct stormwater into the medians, where it would be treated, filtrated, and retained before entering the aquifer. In the event of an extreme storm rainfall causing the swale to reach its holding capacity, any excess stormwater will flow thru overflow drains into the city's storm sewer system.



Filtration Swale Plantings and Operation

The choice of bioswale vegetation, carefully selected to perform in this environment while maintaining the character of the monumental avenue, includes two rows of Sweet Bay Magnolia trees and a continuous hedge of Inkberry Holly running parallel to Pennsylvania Avenue. Each median is surrounded by a granite curb and low iron picket fence appropriate to the Historic District.



Comparative Stormwater Treatments presented to the Community

Parcels 3 & 6

Parcel 3 captures stormwater from Pennsylvania Avenue and directs it into a planted bioswale with a bench surrounding it. With the removal of the D Street roadbed, there is opportunity for additional planting beds along the Haines building which will capture runoff from the paving and provide shade for the long benches. Parcel 6 will have a central rain garden surrounded by a continuous, outward-facing bench.



Parcel 3 - SE Corner of the Site



Parcel 6 - NW Corner of the Site

Final Master Plan Traffic and Transportation Summary

This section describes the proposed modifications to traffic and transportation facilities within the study area. Additional detailed information pertaining to analysis of the existing conditions is included in Appendix I.

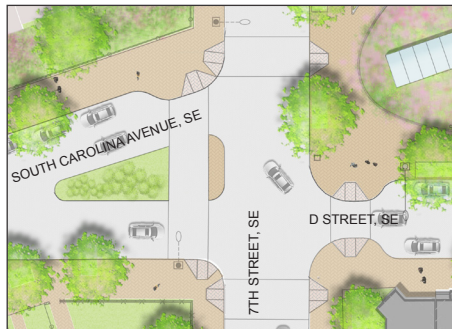
One of the major goals of this project was to improve the site's multimodal transportation hub and to improve pedestrian, bicycle, and vehicular safety in the area. Many proposed improvements were studied, and the ones identified as most feasible are described below. This study strongly recommends that the DC Department of Transportation undertake a study period that would include mocking up on-site these potential modifications (i.e. reversing traffic flows, curb extensions, etc.).

The Site Plan below summarizes the proposed modifications:



Improve the Pedestrian Experience

Through the construction of curb extensions and refuge islands at some study area intersections, along with ADA accessible ramps, the pedestrian experience within the study area will be noticeably improved without degrading the performance of other modes of travel.



South Carolina Avenue / D Street (south)



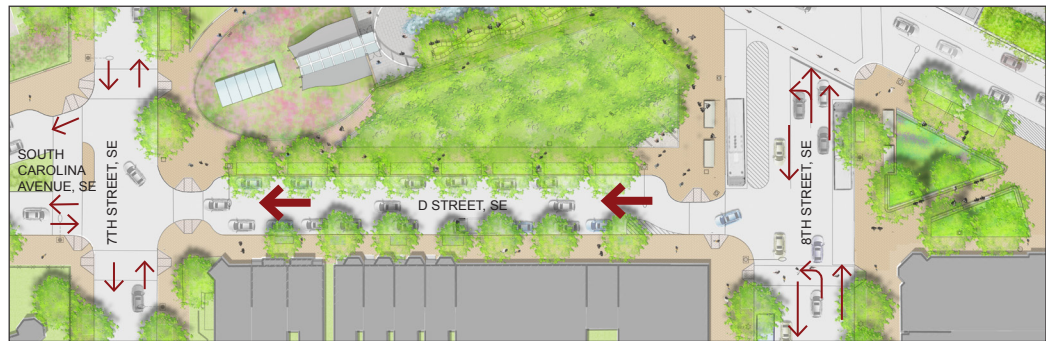
South Carolina Avenue / D Street (north)

Relieve Pressure on the 8th Street/D Street SE (south), and 8th Street/D Street SE (north) Intersections

To reduce the number of vehicles using the 8th Street/ D Street (north and south) intersections, two modifications are proposed. One modification changes the direction of D Street (south), between 7th and 8th streets from an eastbound street to a westbound street. This reversal of D Street (south) assists in the mitigation of sight issues associated with the relocation of the southbound WMATA bus stop and converts the 8th and D Street intersection from LOS F to LOS A..

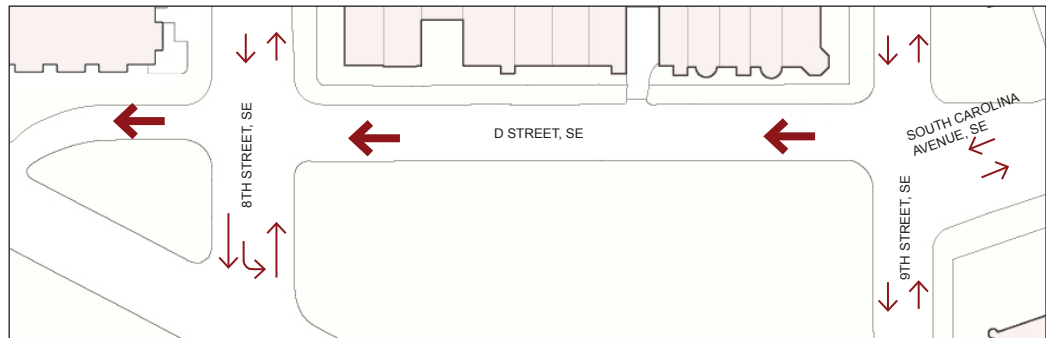


Existing Conditions - 8th Street and D Street (south).



Final Master Plan - Reverse Direction of D Street (south) and provide turning lane on 8th Street (northbound).

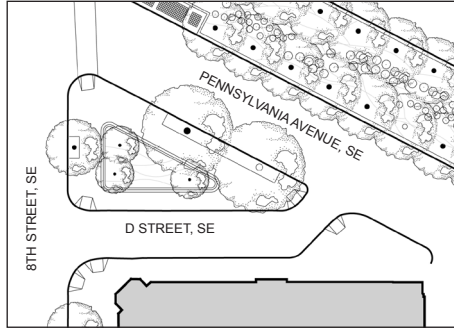
The other modification changes the direction of D Street (north) from a westbound street to an eastbound street. This converts the 8th and D Street (north) intersection from LOS C/D to LOS A.



Existing Conditions - 8th Street and D Street (north).



Final Master Plan - Reverse Direction of D Street (north).



Concept 1: Parcel 3 with D Street Extension Remaining



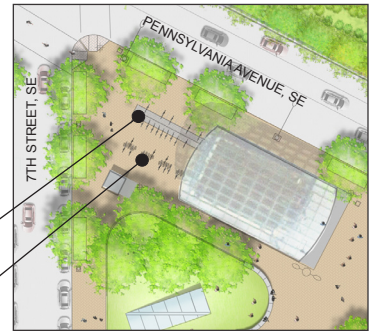
Final Master Plan - Removal of D Street Extension

Removal of D Street (south) Extension

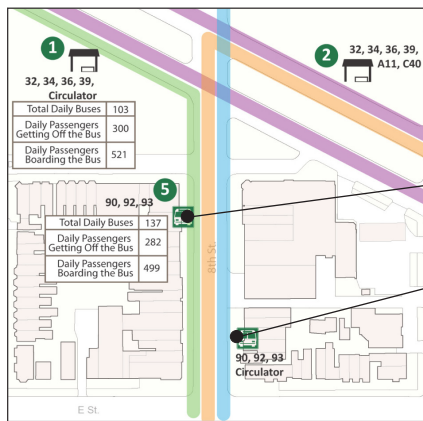
The D Street SE (south) extension separates the public space in the northeast quadrant of the 8th Street/D Street SE (south) intersection. Removing the D Street (south) extension allows the public space to be connected with the community south of the street, simplifies the 8th Street/D Street SE intersection, and allows the northbound 8th Street/E Street SE bus stop to be relocated to this corner.

Consolidation and Expansion of Bicycle Facilities

The consolidation and expansion of Parcel 4 bicycle amenities will provide a bicycle amenity area adjacent to the 7th Street and Pennsylvania Avenue intersection. The relocation will allow both the bike share station and the number of bicycle racks to be expanded.



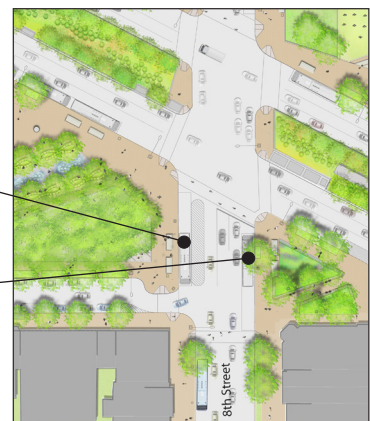
Final Master Plan - Bike Facilities



Existing Bus Stop Locations

WMATA buses to be relocated to Parcel 4 (Southbound).

Bus Stop to be relocated to Parcel 3 (Northbound)



Final Master Plan - Relocated Bus Stops

Relocation of Bus Stops

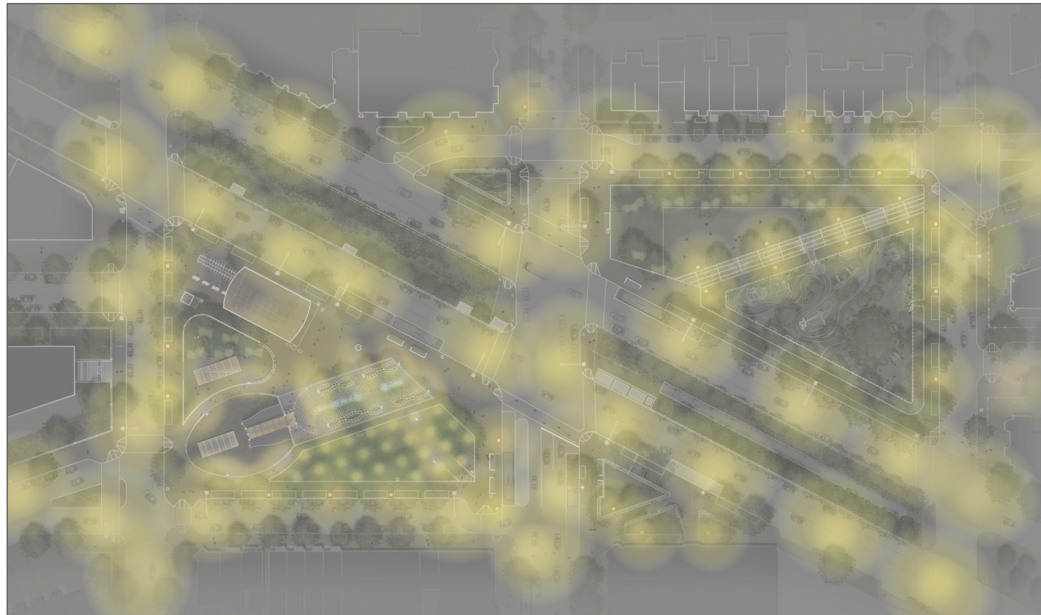
Bus stop improvements are proposed on Parcel 4 through the relocation of the farside southbound 8th Street/D Street SE (south) WMATA bus stop to the nearside of the intersection, and the relocation of the northbound 8th Street/E Street SE bus stop to the nearside of the 8th Street/Pennsylvania Avenue SE intersection.

G. Public Health & Safety

Public Safety

During the initial Community input phase of the project, the Community requested that the Master Plan address the issue of public safety. The result is the design of spaces that both encourage community presence from early morning to evening and are observable (both informally and formally) with clear sightlines. In addition, there are clearly legible pedestrian routes throughout the areas, and significant lighting improvements to enhance safety.

The Design Team has utilized a variety of light fixture types to achieve enhanced lighting of park and plaza spaces. A combination of Cobra fixtures and Washington Globe fixtures provide the street, sidewalk, and Parcel 1 path lighting. Elsewhere, modern pole lights are used in the area of the Library expansion, fountain forecourt and the pedestrian path through the Bosque. In-ground and staked uplights enhance the landscape materials throughout the site.



Site Plan indicating night lighting

Rodent Control

Due to the proximity of many restaurants in the 400 and 500 blocks of 8th Street SE, and the lack of a public alley in the 400 block for trash pickup from rear trash rooms or dumpsters, there is a persistent rodent control problem in the study area. Rodents are attracted to constant food sources, constant water sources, and certain types of vegetation. The Design Team has included the following strategic design features in the Master Plan, including the budget cost estimate, to discourage rodent presence in the study area:

- Food Source: Solar-powered trash compactors, in lieu of open trash receptacles, have been specified to limit access to food waste. It is envisioned that daily food and trash sweeps will be performed by a non-profit organization.
- Water Source: Both of the Master Plans water features are designed so that water never stands on the site. When the fountain jets in the Library forecourt are turned off, all water is held below grade in re-circulating tank. Similarly, in the play area, water only flows when a child pumps it into the "Anacostia River" from where it immediately flows back into a below grade re-circulating tank.
- Vegetation: Plants that do not promote rodent burrowing have been specified, and needled evergreens have been excluded from the plant pallet.
- Maintenance Endowment: Allows for a continuous integrated pest management regime with bait & trap, sterilization, and the maintenance of the solar trash compactors.

H. Long Term Maintenance

This project will require ongoing landscape maintenance by a staff hired by a non-governmental organization such as a “Friends of the Park” organization, Barracks Row Main Street, a Business Improvement District (BID), or another entity. This organization will be responsible for contracting with a private company to continuously provide full landscape maintenance services for the project.

It is envisioned that an endowment created prior to construction completion of the Parks and Plaza will fund the long-term maintenance. The Budget Estimate includes a landscape maintenance endowment of \$1,700,000 which is anticipated to provide \$80,000 annual income to fund the following work:

- Lawn Mowing & Weed Control
- Leaf Removal (as needed) & Mulch (twice per year)
- Turf Maintenance Tree and Shrub Maintenance (fertilization, pruning, etc.)
- Irrigation System Maintenance
- Integrated Pest Management Regime
- Water Feature Maintenance

Additionally, the endowment is anticipated to provide sufficient income for additional allotments of the following at five-year increments:

- Plant Replacement as needed
- Furniture Replacement as needed
- Lawn Replacement as needed

Further and not included in the Landscape Maintenance Endowment, it is envisioned that a non-profit organization would provide daily food sweep and trash pickup.

I. Conceptual Budget Cost

A conceptual budget cost for the Final Master Plan was developed by DMS Construction Consulting Services, the Design Team's cost consultant. The conceptual budget was derived from quantity survey of the Design Team's conceptual drawings and detailed discussions with the Design Team regarding levels of finish and quality. The budget was completed in June 2014.

The budget estimate was developed in seven sections: the six parcels plus the Library renovation and expansion work. The costs for the renovation of the existing library were determined as described below. All other portions of the project budget estimate were derived from quantity survey by trade.

The level of pricing in the budget cost estimate is representative of June 2014 costs of construction in the Washington DC area, and assumes that the project would be procured by a general contractor. The budget also assumes that all parcels and all Library work will be bid and constructed concurrently by a single general contractor and that the Library Expansion & Renovation project will achieve LEED Silver. It assumes a fair and reasonable rate of return for overhead and profit for the general contractor and subcontractors, and a design contingency of 10% to each of the parcels & new library for items that are not yet designed.

The budget estimate includes an escalation contingency for each of the parcels & new library for inflation of construction costs from now until the midpoint of construction (5 years @ 2.5% per year is 12.5%). The budget cost for the renovation of the existing SE Branch DC Library structure is based on information given to the Design Team by DC Public Library staff for a recently renovated library bid in 2012. This \$738 per SF was escalated to the midpoint of construction (2 years + 5 years @ 2.5% per year is 17.5%) and produced a rate of \$867 per SF for the renovation portion of the library project.

The budget estimate does not include "soft costs" such as design fees or other consultant fees, permit fees, swing space/FFE (Furniture, Fixtures, & Equipment) for the library, nor potential Hazmat handling.

Parks & Plaza Budget Estimate

A summary of the Conceptual Budget Cost for the Parks and Plaza portion of the Final Master Plan is below:

PARCEL 1	\$ 2,864,867	PLAYGROUND PARCEL
PARCEL 2	\$ 1,182,171	MEDIAN PARCEL
PARCEL 3	\$ 650,025	BOWTIE PARCEL
PARCEL 4	\$ 3,552,693	METRO PLAZA PARCEL
PARCEL 5	\$ 1,025,737	MEDIAN PARCEL
PARCEL 6	\$ 168,181	BOWTIE PARCEL
BY TRADE SUBTOTAL COSTS	\$ 9,443,674	
	\$ 944,367	10% DESIGN CONTINGENCY
SUBTOTAL	\$10,388,041	
	\$ 1,298,505	12.5% ESCALATION
SUBTOTAL	\$ 11,686,547	
	\$ 233,731	2% BONDS/INSURANCE
SUBTOTAL	\$11,920,278	
	\$ 953,622	8% CONTRACTOR'S O&P
SUBTOTAL	\$12,873,900	
	\$ 643,695	5% CONSTRUCTION CONTINGENCY
TOTAL HARD COSTS	\$13,517,595	
	\$ 2,703,519	20% DC AGENCY MANAGEMENT FEE
SUBTOTAL	\$16,221,114	
	\$ 486,633	3% MAINTENANCE OF TRAVEL BUDGET
SUBTOTAL	\$16,707,747	
	\$ 1,700,000*	LANDSCAPE MAINTENANCE ENDOWMENT
TOTAL PARKS/PLAZA BUDGET	\$18,407,747	

* Maintenance Budget increased from \$1,540,000 in June, 2014.

Library Expansion Budget Estimate

Below is a summary of the Conceptual Budget Cost for the Library renovation and expansion portion of the Final Master Plan:

BY TRADE SUBTOTAL COSTS	\$10,453,211	
	\$ 1,045,321	10% DESIGN CONTINGENCY
SUBTOTAL	\$11,498,532	
	\$ 1,437,317	12.5% ESCALATION
SUBTOTAL	\$12,935,849	
	\$ 258,717	2% BONDS & INSURANCE
SUBTOTAL	\$13,194,566	
	\$ 1,055,565	8% CONTRACTOR'S O & P
SUBTOTAL	\$14,250,131	
	\$ 712,507	5% CONSTRUCTION CONTINGENCY
NEW CONSTRUCTION	\$14,962,637	
	\$ 2,244,395	15% DC LIBRARY MANAGEMENT FEE
SUBTOTAL	\$17,207,032	
	\$ 7,803,000	EXISTING LIBRARY RENOVATION
TOTAL LIBRARY HARD COSTS	\$25,010,032	
	\$ 750,301	3% MAINTENANCE OF TRAVEL (MOT)
TOTAL LIBRARY EXPANSION & RENOVATION BUDGET	\$25,760,333	

Appendix I. Transportation Existing Conditions Analysis

Level-of-Service Concept¹

Level of service (LOS) is a concept developed to quantify the degree of comfort (including such elements as travel time, number of stops, total amount of stopped delay, and impediments caused by other vehicles) afforded to drivers as they travel through an intersection or roadway segment. Six grades are used to denote the various level of service from "A" to "F".

a. Signalized Intersections

The six level-of-service grades are described qualitatively for signalized intersections in Table I.1. Additionally, Table I.2 identifies the relationship between level of service and average control delay per vehicle. Control delay is defined to include initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay.

Table I.1 Level-of-Service Definitions (Signalized Intersections)

Level of Service	Average Delay per Vehicle
A	Very low average control delay, less than 10 seconds per vehicle. This occurs when progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
B	Average control delay is greater than 10 seconds per vehicle and less than or equal to 20 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for a level of service A, causing higher levels of average delay.
C	Average control delay is greater than 20 seconds per vehicle and less than or equal to 35 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.
D	Average control delay is greater than 35 seconds per vehicle and less than or equal to 55 seconds per vehicle. The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle length, or high volume/capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	Average control delay is greater than 55 seconds per vehicle and less than or equal to 80 seconds per vehicle. This is usually considered to be the limit of acceptable delay. These high delay values generally (but not always) indicate poor progression, long cycle lengths, and high volume/capacity ratios. Individual cycle failures are frequent occurrences.
F	Average control delay is in excess of 80 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with oversaturation. It may also occur at high volume/capacity ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also contribute to such high delay values.

Table I.2 Level-of-Service Criteria for Signalized Intersections

Level of Service	Average Control Delay per Vehicle (Seconds)
A	<10.0
B	>10 and ≤ 20
C	>20 and ≤ 35
D	>35 and ≤ 55
E	>55 and ≤ 80
F	>80

1 Adapted from: Transportation Research Board, Highway Capacity Manual, (2000)

b. Unsignalized Intersections

Unsignalized intersections include two-way stop-controlled (TWSC) and all-way stop-controlled (AWSC) intersections. The 2010 Highway Capacity Manual (HCM) provides models for estimating control delay at both TWSC and AWSC intersections. A qualitative description of the various service levels associated with an unsignalized intersection is presented in Table I.3. A quantitative definition of level of service for unsignalized intersections is presented in Table I.4.

Table I.3 Level-of-Service Criteria for Unsignalized Intersections

Level of Service	Average Delay per Vehicle to Minor Street
A	Nearly all drivers find freedom of operation. Very seldom is there more than one vehicle in queue.
B	Some drivers begin to consider the delay an inconvenience. Occasionally there is more than one vehicle in queue.
C	Many times there is more than one vehicle in queue. Most drivers feel restricted, but not objectionably so.
D	Often there is more than one vehicle in queue. Drivers feel quite restricted.
E	Represents a condition in which the demand is near or equal to the probable maximum number of vehicles that can be accommodated by the movement. There is almost always more than one vehicle in queue. Drivers find the delays approaching intolerable levels.
F	Forced flow. Represents an intersection failure condition that is caused by geometric and/or operational constraints external to the intersection.

Table I.4 Level-of-Service Criteria for Unsignalized Intersections

Level of Service	Average Control Delay per Vehicle (Seconds)
A	<10.0
B	>10.0 and ≤ 15.0
C	>15.0 and ≤ 25.0
D	>25.0 and ≤ 35.0
E	>35.0 and ≤ 50.0
F	>50.0

The level-of-service criteria for unsignalized intersections are somewhat different than the criteria used for signalized intersections. The primary reason for this difference is that drivers expect different levels of performance from different kinds of transportation facilities. The expectation is that a signalized intersection is designed to carry higher traffic volumes than an unsignalized intersection. Additionally, there are a number of driver behavior considerations that combine to make delays at signalized intersections less frustrating than at unsignalized intersections. For example, drivers on the minor street approaches to TWSC intersections must remain attentive to the task of identifying acceptable gaps and vehicle conflicts, while drivers at signalized intersections are able to wait for the green interval. For these reasons, the control delay threshold for any given level of service is less for an unsignalized intersection than for a signalized intersection.

While overall intersection level of service is calculated for AWSC intersections, level of service is only calculated for the minor approaches and the major street left turn movements at TWSC intersections. No delay is assumed to the major street through movements.

In the performance evaluation of TWSC intersections, it is important to consider other measures of effectiveness (MOEs) in addition to delay, such as v/c ratios for individual movements, average queue lengths, and 95th-percentile queue lengths. By focusing on a single MOE for the worst movement only, such as delay for the minor-street left turn, users may make inappropriate traffic control decisions. The potential for making such inappropriate decisions is likely to be particularly pronounced when the HCM level-of-service thresholds are adopted as legal standards, as is the case in many public agencies.

c. **Traffic Counts**

Traffic counts for the Eastern Market Metro Park were conducted by Quality Counts, LLC in July 2013 when congress was in session, in order to collect traffic data representative of a typical midweek day. Turning movement counts were collected at all study intersections, and included the number of vehicles, pedestrians and bicycles making each movement at intersections. The counts also included vehicle class data. The counts identified the morning peak as occurring between 7:30 and 8:30 a.m., and the evening peak occurring between 4:45 and 5:45 p.m. In addition, twenty-four hour tube counts were collected on Pennsylvania Avenue SE between 7th Street SE and 8th Street SE. The tube counts collected the number of vehicles, vehicle class, and vehicle speed.

d. **Study Area Roadways**

The roadways adjacent to the Eastern Market Metro Park include Pennsylvania Avenue SE, 7th Street SE, 8th Street SE, 9th Street SE, and D Street SE. Table I.5 summarizes the study area roadways.

Table I.5 Summary of Study Area Roadways

Roadway	Functional Classification ¹	ADT/AADT	Posted Speed Limit (mph)	Number of Lanes	Bicycle/Pedestrian Facilities	Transit
Pennsylvania Avenue, SE	Principal Arterial	24,190 ²	30	4 EB, 4 WB	Pedestrian	6 WMATA routes, and 2 Circulator routes
7th Street, SE	Local Street	16,400 ³	25	1 NB, 1 SB	Pedestrian	None
8th Street, SE	Minor Arterial: (south of Pennsylvania Ave), Collector: (north of Pennsylvania Ave)	10,500 ³ 10,300 ³	Not Posted	1 NB, 1 SB	Pedestrian	3 WMATA routes, and 2 Circulator routes
9th Street, SE	Local Street	N/A	25	1 NB, 1 SB	Pedestrian	None
D Street, SE (south)	Local Street	N/A	Not Posted	1 EB	Pedestrian	None
D Street, SE (north)	Local Street	N/A	Not Posted	1 WB	Pedestrian	None

AADT –Annual Average Daily Traffic

B – Northbound; SB – Southbound; EB – Eastbound; WB – Westbound.

¹ DDOT. Functional Classification Map 2011.

²Volume data collected in July 2013

³ DDOT. Traffic Volume Map 2010.

- **Pennsylvania Avenue SE**

Pennsylvania Avenue SE, is designated by the DC Functional Classification Map as a principal arterial, and connects Independence Avenue to the Eastern Market Metro Station before crossing the Anacostia River as it continues towards Maryland. In general, between the U.S. Capitol and the Anacostia River, Pennsylvania Avenue SE has four lanes each in the eastbound and westbound directions, with a wide median strip.

Traffic data collected in July 2013 counted approximately 24,190 daily vehicles in both directions on Pennsylvania Avenue SE, with the majority of traffic heading westbound, towards central Washington DC during the weekday a.m. peak hour, and the majority of traffic heading out of the city during the weekday p.m. peak hour.

Six Metrobus transit routes (32, 34, 36, and 39, A11, C40) and two Circulator routes (Union Station-Navy Yard Metro and Potomac Avenue Metro-Skyland via Barracks Row) run along Pennsylvania Avenue SE through the study area. Sidewalks are provided on both sides of Pennsylvania Avenue SE, and there is a significant amount of pedestrian use along the roadway, especially at the intersections with 7th and 8th Street SE, near the Metro Station, and at bus stops. In addition, a significant number of pedestrians were observed crossing Pennsylvania Ave SE between 7th and 8th Streets.

- **7th Street SE**

7th Street SE forms the western boundary of the study area, running north-south with one lane in each direction. 7th Street SE is mostly residential south of the intersection with Pennsylvania Avenue SE. Ground level retail fronts 7th Street SE north of the intersection, and Eastern Market, after which the Metro Station and Park is named, is located a few blocks north of the study area along 7th Street SE. As observed during the site visit, there is heavy pedestrian activity at 7th Street/Pennsylvania Avenue SE and 7th Street/D Street/South Carolina Avenue SE, with the Metro Station serving as the primary destination. Transit service is not provided along 7th Street SE.

- **8th Street SE**

8th Street SE is designated as a minor arterial south of Pennsylvania Avenue SE and a collector north of Pennsylvania Avenue SE. The road connects Washington Navy Yard to the south with Gallaudet University to the north, and operates with one lane in each direction. WMATA routes 90, 92, and 93 travel along 8th Street SE through the Eastern Market Metro Park. Additionally, two Circulator routes travel on 8th Street SE south of Pennsylvania Avenue SE. There is a nearside bus stop in the southbound direction at the intersection of 8th Street/Pennsylvania Avenue SE and a farside stop in the northbound direction. Commercial activity fronts 8th Street SE south of the Eastern Market Metro Park with restaurants, bars, retail outlets, a theater, and other small businesses along the street. As observed during the site visit, 8th Street SE has a very high level of pedestrian activity, especially at the intersections with Pennsylvania Avenue SE and D Street (south).

- **9th Street SE**

9th Street SE forms the eastern boundary of the study area. 9th Street SE is mostly residential and runs north-south with one lane in each direction. Pedestrian activity was observed to be lower on 9th Street SE than on 7th or 8th Streets. Transit service is not provided along 9th Street SE.

- **D Street SE (south)**

D Street SE (south) is a local, one-way, eastbound street between 7th and 8th Street SE. There is on-street parking on both sides of the street with the Park north of the street and commercial frontage south of the street. Site observations revealed southbound buses stopping at the 8th Street/D Street SE (south) bus stop blocking the intersection of D Street/8th Street SE. The 2010 Urban Design Study identified the pedestrian crossings on D Street SE (south) as "dangerous" because of poor crosswalk visibility and lack of signal control at the intersections.

- **D Street SE (north)**

D Street SE (north) is a local one-way westbound street between 8th and 9th Streets. There is on-street parking on both sides of the street with residences north of the street and a Park to the south. No buses travel along D Street SE (north); however, there are nearside bus stops on 8th Street SE on either side of the intersection with D Street SE (north). The largest pedestrian movement at D Street SE (north) is at the western crosswalk at the intersection with 8th Street SE. Other crosswalks along D Street SE (north) have considerably less pedestrian traffic.

e. Intersections

Intersections within the study area are controlled through a combination of traffic signals and stop signs. There are six stop controlled intersections and six signalized intersections. The stop controlled intersections include:

- 7th Street/D Street SE
- 7th Street/D Street/South Carolina Avenue SE
- 8th Street/D Street SE (north)
- 8th Street/D Street SE (south)
- 9th Street/D Street SE
- 9th Street/D Street/South Carolina Avenue SE

The traffic signals located within the Eastern Market Metro Park study area operate on a 100-second cycle during the weekday a.m. and p.m. peak hours. The signalized intersections include:

- 7th Street/Pennsylvania Avenue SE (eastbound)
- 7th Street/Pennsylvania Avenue SE (westbound)
- 8th Street/Pennsylvania Avenue SE (eastbound)
- 8th Street/Pennsylvania Avenue SE (westbound)
- 9th Street/Pennsylvania Avenue SE (eastbound)
- 9th Street/Pennsylvania Avenue SE (westbound)

For the analysis of study area intersections, adjustments were made to the intersection lane configurations to reflect the configuration as experienced by drivers in the study area. Along Pennsylvania Avenue SE, although the road has four lanes in each direction, because the outside lane is used primarily as a parking/bus stop lane, the analyzed lane configuration uses three lanes in each direction.

- **Operations Analysis**

The intersections operations analysis was performed using Synchro 7 in accordance with the procedures stated in the 2000 Highway Capacity Manual. To ensure that this analysis was based on a reasonable worst-case scenario, the peak 15 minute flow rate during each of the study periods was used in the evaluation of all intersection levels of service. For this reason, the analyses reflect conditions that are only likely to occur for 15 minutes out of each average peak hour. Traffic conditions during all other weekday time periods and throughout the weekend will likely operate under better conditions than described in this report.

f. Pedestrian and Bicycle Facilities

- **Bicycles**

No designated bicycle lanes exist within the study area, but the 2005 Bicycle Master Plan, and the MoveDC Long Range Transportation Plan have identified future bicycle facilities along Pennsylvania Avenue SE through the study area.

The bicycle counts identified the two Pennsylvania Avenue/8th Street SE intersections as having the most bicycle activity in the study area, which is consistent with the placement of the bicycle facilities, especially the bikeshare station. The counts identified 37 to 40 cyclists using the intersections during the a.m. peak hour and 16 to 41 cyclists using the intersection during the p.m. peak hour.

- **Pedestrians**

Pedestrian facilities within the study area include sidewalks along all roadways, pedestrian ramps, and pedestrian signal heads and signal phases.

As expected, the pedestrian counts and site visit identified the Metro Station as the primary pedestrian generator in the study area. Pedestrians frequently cross Pennsylvania Avenues SE midblock between 7th and 8th Streets, with 89 pedestrians crossing midblock during the a.m. peak hour, and 50 pedestrians crossing during the p.m. peak hour. The site visit showed that the crossings tend to occur in waves, consistent with the arrival of Metro trains at the Metro Station.

The two intersections with the highest pedestrian volumes are Pennsylvania Avenue/8th Street SE and Pennsylvania Avenue/7th Street SE, which is consistent with the location of the Metro Station between the two intersections, and several bus stops and transfers along Pennsylvania Avenue and 8th Street SE.

More specifically, a large number of pedestrians were observed using the southern crosswalk of 7th Street and Pennsylvania Avenue SE (eastbound) with many of these pedestrians observed going to or from the Metro Station. This is supported by the pedestrian counts which recorded 566 pedestrians in the p.m. peak hour, the highest pedestrian recording in the study area.

g. Transit

A total of nine WMATA bus routes and two DC Circulator routes pass through the Eastern Market Metro Park study area. Route information is displayed in Tables I.6 and I.7. The Eastern Market Metro Station on the Metro’s Blue, Orange and Silver lines is located on the south side of Pennsylvania Avenue between 7th and 8th Street SE. Metrorail service is summarized in Table I.8.

Table I.6 Summary of WMATA Bus Routes in Eastern Market

Route Number	Route	Service Time	Peak Hour Headway
32	<ul style="list-style-type: none"> Westbound: Southern Avenue Station to Friendship Heights Station via Wisconsin Avenue and Pennsylvania Avenue¹ Eastbound: Friendship Heights Station to Southern Avenue Station via Pennsylvania Avenue and Wisconsin Avenue Additional rush hour service provided to Tenleytown-AU Station and the State Department 	24-hours	7 to 15 minutes
34	<ul style="list-style-type: none"> Westbound: Archives Station to Naylor Road Station Eastbound: Naylor Road Station to Archives Station² 	4:30 AM – 1:30 AM Monday – Friday; 5:30 AM – 1 AM Saturday; 7 AM – 8:30 PM Sunday	15 minutes
36	<ul style="list-style-type: none"> Same as Route 32 but with Naylor Road as western terminus 	24-hours	13 to 20 minutes
39	<ul style="list-style-type: none"> Westbound: Naylor Road Station to State Department via Pennsylvania Ave Eastbound: State Department to Naylor Road Station via Pennsylvania Ave³ 	6 – 10 AM, 3:30 – 7:30 PM; Monday – Friday	16 to 17 minutes
90	<ul style="list-style-type: none"> Northbound: from Anacostia to Gallaudet University and westbound on Florida Avenue to the Reeves Municipal Center and Adams Morgan Southbound: eastbound Florida Avenue to southbound North Capitol Street, eastbound New York Avenue to eastbound O Street, returning to eastbound Florida Avenue⁴ 	5:30 a.m. - 12:30 a.m., Monday - Friday; limited on weekends	8 to 10 minutes
92	<ul style="list-style-type: none"> Same as Route 90 but with southern extension to Congress Heights Metro Station via Alabama Avenue 	24-hours	8 to 10 minutes
93	<ul style="list-style-type: none"> Same as Route 90 but with a southern extension to Congress Heights Metro Station via Stanton Road 	Early morning	30 minutes
A11	<ul style="list-style-type: none"> Only operates Saturdays to 11th & E Streets prior to Metrorail operation⁵ 	Saturday early morning	N/A
C40	<ul style="list-style-type: none"> Clockwise loop between Pennsylvania Ave, 3rd St, Massachusetts Ave, and 13th St⁶ 	8:20-8:40 AM, 3:15-3:35 PM Monday - Friday	N/A

¹ WMATA. Routes 32, 36 Timetables. Jun. 2013

² WMATA. Route 34 Timetables. Jun. 2013

³ WMATA. Route 39 Timetables. Dec. 2012

⁴ WMATA. Routes 90, 92, 93 Timetables. Mar. 2013

⁵ WMATA. Routes A11, A12 Timetables. Dec. 2011

⁶ WMATA. Route C40 Timetables. Dec. 2007

Table I.7 Summary of D.C. Circulator Bus Routes in Eastern Market

Route	Service Time	Peak Hour Headway
Union Station – Navy Yard Metro	<ul style="list-style-type: none"> Winter Hours (October 1-March 31): Weekdays 6am - 7pm Summer Hours (April 1-September 30): Weekdays 6am - 9pm; Saturdays 7am - 9pm *Extended service on Nationals game days 	10 minutes ¹
Potomac Avenue Metro – Skyland via Barracks Row	<ul style="list-style-type: none"> Winter Hours (October 1-March 31): Weekdays 6am - 7pm Summer Hours (April 1-September 30): Weekdays 6am - 9pm; Saturdays 7am - 9pm 	10 minutes

¹ D.C. Circulator Route Map. 2013

Bus routes 90 and 92, which run north-south on 8th Street SE, generate more passenger activity than the east-west routes on Pennsylvania Avenue SE in the study area. For the Pennsylvania Avenue SE routes, the heaviest passenger alighting movement is in the westbound direction, and the heaviest passenger boarding movement is in the eastbound direction. This is further highlighted in Figure I.1, which displays the daily number of passengers boarding and alighting by bus route in the study area. As seen, WMATA routes 90 and 92 have more passenger activity than the other routes for the entire day. Route 90 has 566 daily passengers board and 519 alight, while Route 92 has 735 daily passengers board and 477 alight at bus stops in the study area.

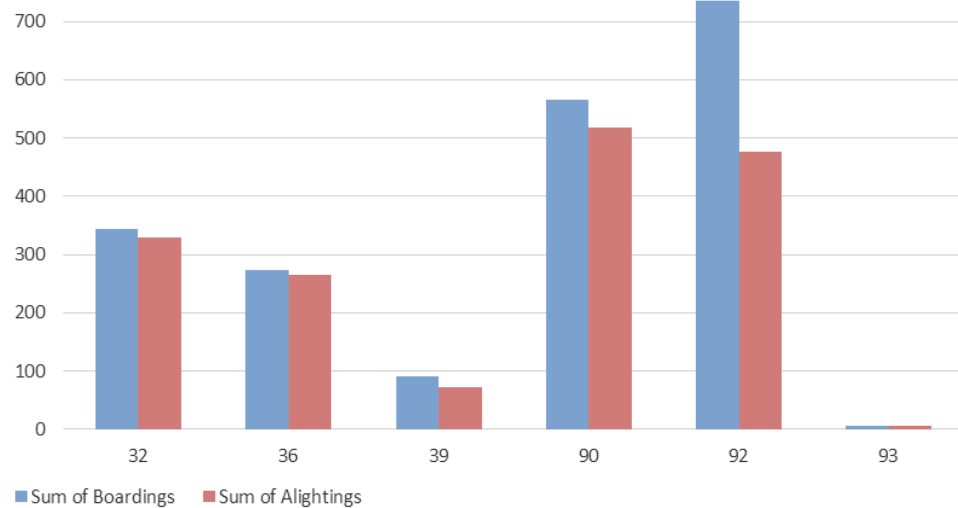


Figure I.1 - Daily Number of Passengers Boarding & Alighting by Bus Route in the Study Area

Based on public feedback, the bus stops at the intersections of 8th Street/D Street SE (north) and 8th Street/D Street SE (south) were given closer looks. As seen in Figure I.2, southbound passengers using either 8th Street/D Street SE stop tend to alight the bus at the stop north of Pennsylvania Avenue SE, and board the bus at the stop south of Pennsylvania Avenue SE.

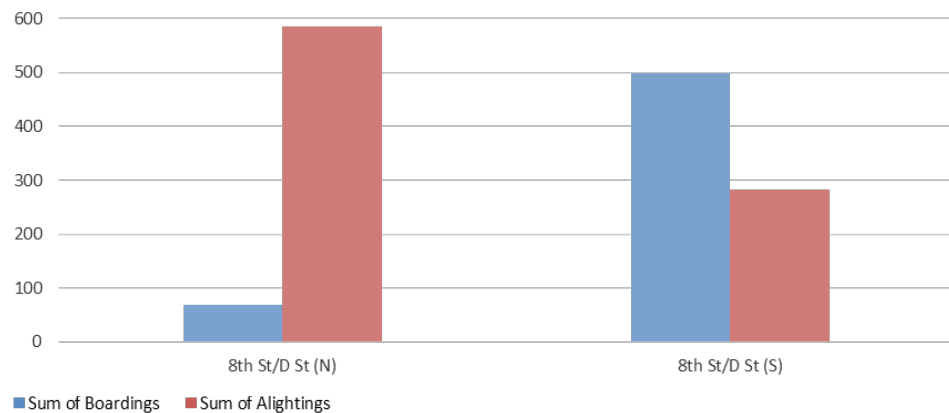


Figure I.2 - 8th Street/ D Street SE Bus Stops Daily Boardings and Alightings

The Eastern Market Metro Station is located between 7th and 8th Street SE south of Pennsylvania Avenue and serves the WMATA Metrorail Orange, Blue, and Silver Lines, connecting Eastern Market with downtown Washington, DC, northern Virginia, and Maryland.

Table I.8 Summary of Metrorail Routes in Eastern Market

Route	Service Time	Peak Hour Headway
Orange Line (Vienna to New Carrollton)	5 AM – 12 AM Monday – Thursday; 5 AM – 3 AM Friday; 7 AM – 3 AM Saturday; 7 AM – 12 AM Sunday	< 12 minutes (12 minutes off-peak) ¹
Blue Line (Franconia-Springfield to Largo Town Center)	5 AM – 12 AM Monday – Thursday; 5 AM – 3 AM Friday; 7 AM – 3 AM Saturday; 7 AM – 12 AM Sunday	< 12 minutes (12 minutes off-peak) ¹
Silver Line (Wiehle Avenue – Reston East to Largo Town Center)	5 AM – 12 AM Monday – Thursday; 5 AM – 3 AM Friday; 7 AM – 3 AM Saturday; 7 AM – 12 AM Sunday	< 12 minutes (12 minutes off-peak) ¹

¹ WMATA Metrorail Timetable Weekday Mid-Day, 2014

h. Safety Review

- **Crash Data**

DDOT provided the project team with five years of crash data, broken into two three year segments (2008 – 2010, and 2010 – 2012).

The crash data was reviewed with respect to location, crash severity, crash type and vehicle type. Because the crash data overlaps in year 2010 and the data is provided by DDOT in summary form, it was not possible to combine the two data sets when looking at crash type or crash severity.

The number of crashes at each intersection is displayed in Figure I.3. The intersections with the most crashes are the Pennsylvania Avenue/8th Street SE intersections, followed by the Pennsylvania Avenue/7th Street SE intersections. As previously identified, these intersections have the most auto and pedestrian activity as well, and therefore have the most opportunities for collisions.

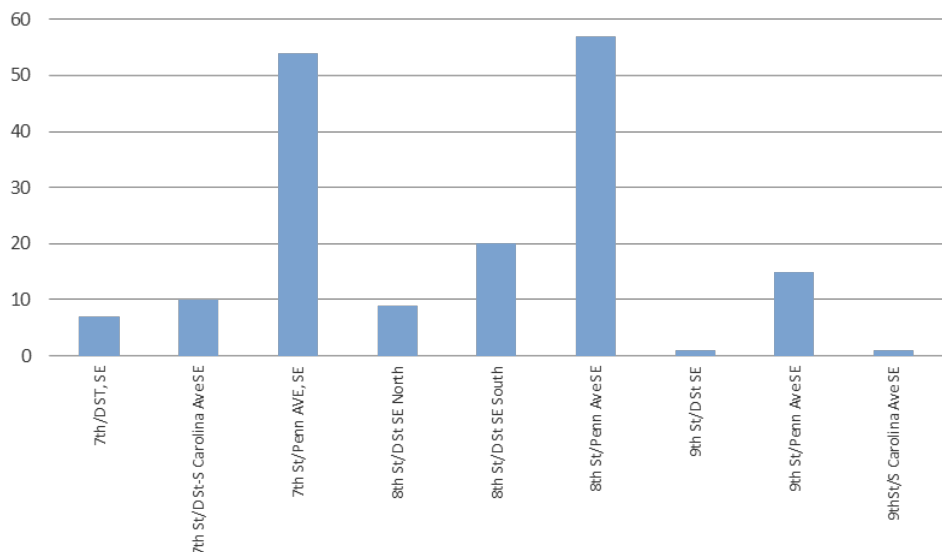


Figure I.3 - Crashes by Intersection (2008 to 2012)

The number of crashes by severity is displayed in Figure I.4. As seen, the majority of crashes resulted in property damage only (78 of 102 (76%) in 2008-2010 and 83 of 104 (80%) in 2010-2012) with no fatal crashes during the five-year time period. This is consistent with site visit observations, which identified cars generally operating at lower speeds in the study area, which assists in reducing the severity of crashes when they do occur.

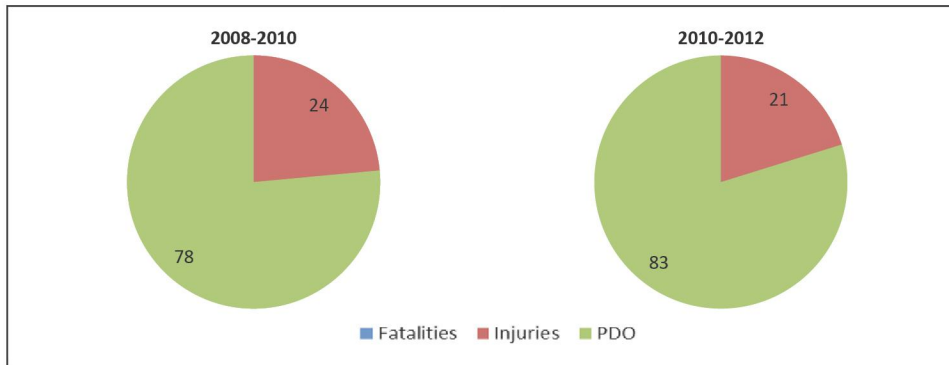


Figure I.4 - Study Area Crashes by Severity

The percentage of crashes by type is displayed in Figure I.5. The most frequent crash type was side swipe (33% in 2008-2010 36% in 2010-2012), and right angle and rear-end crashes were the second and third most frequent, respectively. The side swipe and right-angle crashes were concentrated on the signalized Pennsylvania Avenue SE intersections. The wide median on Pennsylvania Avenue SE which causes the intersections to operate as two separate intersections is a likely contributor to the number of side swipe and right-angle crashes.

A review of crashes by vehicle type show the number of pedestrian crashes to be relatively consistent between the two time periods, with seven crashes involving pedestrians between 2008 and 2010 and eight involving pedestrians between 2010 and 2012. The number of bicycle crashes increased from one crash between 2008 and 2010 to five crashes between 2010 and 2012. Although historic bicycle counts were not available for the study area, anecdotal evidence suggests that the amount of bicycle activity in the study area has increased over the past few years, especially after the bike share station was installed in 2010. The increase in the number of bicycles involved in crashes could be related to the increase in bicycle activity in the area.

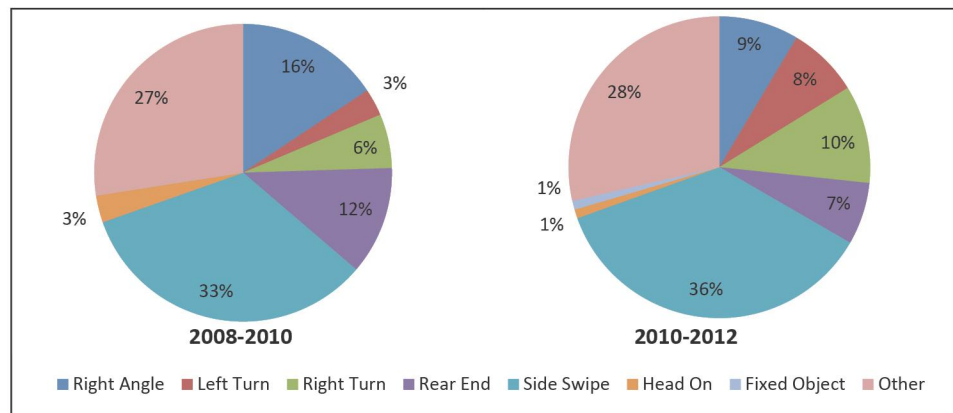


Figure I.5 - Crashes by Type

Appendix II. Chronology of Project Meetings

June 18, 2013

Immediately adjacent landholder meeting hosted by Tommy Wells, Ward 6 Councilman.

June 19, 2013

Community Task Force Meeting to plan community outreach.

June 25, 2013

Meeting with WMATA staff to discuss bus stop locations & midblock crossings.

July 8 & 13, 2013

Open Community Forums to request community input over the next month before design work begins.

August 8, 2013

Community Task Force Meeting to review Community's comments/suggestions and provide guidance to Design Team.

October 13 & 30, 2013

Meetings with staff of DC Historic Preservation Office to review design concepts.

November 01, 2013

Meeting with DC Library staff to discuss below-grade library expansion.

November 4, 2013

Meeting with DC Department of Transportation staff and WMATA staff to review traffic and transportation issues.

December 7 & 11, 2013

Open Community Forums to present alternative design concepts and request community feedback during the next month.

January 28, 2014

Community Task Force Meeting to review comments received from Community and provide further guidance to Design Team.

February 4, 2014

Meeting with DDOT staff and WMATA staff to discuss Community's traffic and transportation issues.

February 18, 2014

Meeting with DDOT staff and WMATA staff to discuss traffic and transportation issues and Community input obtained from project's related Online Survey.

February 26, 2014

Community Task Force Meeting to present updated status report of process and WMATA/DDOT input.

April 8, 2014

Meeting with DC Water staff to discuss construction adjacent to water mains.

April 25, 2014

Meeting with DC Department of General Service to review site jurisdiction issues and provide Community input summary.

April 25, 2014

Meeting with staff of DC Department of the Environment to review environmental review procedures and potential related programs.

May 2, 2014

Meeting with staff of U.S. Commission of Fine Arts and the National Capitol Planning Commission to review design concepts.

May 8, 2014

Meeting with staff of DGS, HPO, OP, and DDOT to discuss next steps at completion of project.

May 23, 2014

Meeting with staff of DDOT Policy, Planning and Sustainability Administration to review bicycle issues.

June 5, 2014

Barracks Row Main Street Meeting to review project status.

June 16, 2014

Task Force Meeting to review Final Master Plan Concepts.

June 21 & 23, 2014

Open Community Forums to present Final Master Plan Concepts.

Appendix III. Task Force Members

Sharon Ambrose

Former Ward 6 Councilmember

Sendra Benaissa

Resident, 800 Block D Street

Nicky Cymrot

Capitol Hill Community Foundation

Steve Cymrot

Capitol Hill Community Foundation

Don Denton

Barracks Row Main Street

Monte Edwards

Capitol Hill Restoration Society

Linda Elliot

Resident, 400 Block, 7th Street SE

Harrison Flakker

Resident, 400 Block, 7th Street SE

Ivan Frishberg

ANC 6B Commissioner

Jon Genderson

Capitol Hill Merchant

Neal Gregory

Friends of the Southeast Library (President)

Juliet Main

National Community Church

Margaret Missiaen

Capitol Hill Garden Club

Kirsten Oldenburg

ANC 6B Commissioner

Brian Pate

ANC 6B Commissioner

Philip Peisch

ANC 6B Commissioner

David Perry, Chair

Barracks Row Main Street

Susan Perry

Capitol Hill Business Improvement District

Barbara Reihle

Resident, 800 Block D Street

Donna Scheeder

Eastern Market Community Advisory
Committee