801 K Street Transportation Study

Comprehensive Transportation Review

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District Department of Transportation

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August 3, 2017

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Executive Summary

The Carnegie Library, located in Mt. Vernon Square (801 K Street NW) in Washington, DC served as the central public library for almost 70 years and currently houses the Historical Society of Washington, DC (HSW) and Events DC. Events DC, the official convention and sports authority for the District of Columbia, is proposing to rehabilitate and modernize the Carnegie Library building to accommodate retail and education uses. The building will be leased jointly by HSW, which will continue to operate its research library, exhibit galleries, and administrative offices in the library, and a new retail tenant, which will operate a 12,614 square-foot retail facility in the building capable of holding small to moderate-sized events and educational classes.

The project is comprised of the following components: a restoration of the building exterior, including repair and cleaning of the exterior stone, repair or replacement of the windows and skylights, and repair of the copper roof cladding; a rehabilitation of the building interior, including removal of nonoriginal infill construction throughout the building, restoration of a central atrium space, upgrade or replacement of the MEP systems, and restoration of certain original finishes and features; and a reconfiguration of the north entrance, stairs, and landing. Although the project is generally limited to the building itself, minor alterations will be made to site hardscape elements to comply with accessibility and other code requirements.

PURPOSE AND METHODOLOGY

This Comprehensive Transportation Review (CTR) has been developed for use in compiling a revised Draft and Final Environmental Assessment (EA) that will reflect the proposed modifications to the facility. Specifically, the CTR analyzes the potential transportation system impacts of the conversion of space to retail use, and identifies, assesses, and recommends strategies to reduce the impact of the site on the transportation system. This document analyzes the potential transportation system impacts of the conversion to retail in 2020, the future horizon analysis year of the EA. As such, the following items were assessed:

- *Review of Existing Plans and Studies:* The proposed project would not have a negative impact on any of the existing plans and studies.
- *Assessment of Existing Roadway Network Capacity and Operations:* The proposed project would result in minimal impacts to the already congested roadway network. Several modifications could be made to K Street NW to provide turn lanes, which would address existing and future anticipated deficiencies.
- *Bicycle and Pedestrian Facilities:* The site is well-connected to existing pedestrian and bicycle facilities in the area. On-site enhancements, such as bicycle parking and ADA accessible connections, should be made.
- *Transit Service:* The site lies within walking distance of several bus stops and two Metrorail stations. In addition, it lies along a potential future streetcar route. No additional transit enhancements are required.
- *Parking:* No on-site parking will be provided. Existing on-street and off-street (surface and garage) parking will be utilized. However, as the retail site peaks in activity weekday evenings and weekends, parking utilization of these facilities are also decreasing. Thus, it is

anticipated that ample parking will be available for the limited number of customers that choose to arrive by vehicle.

- *Transportation Demand Management:* The retail tenant should encourage employees to arrive by modes of transportation other than driving alone.
- *Performance Monitoring and Measuring:* While the site would not trigger the need for performance monitoring, it is recommended that a post-development customer survey be conducted to compare the anticipated mode split with the actual mode split. Conducting this analysis may help to determine if the mitigation measures recommended for K Street are warranted.

CONCLUSION

The results of the capacity analysis show a relatively limited impact on the study area's transportation network due to the anticipated non-auto mode split of 60%. The additional vehicle trips generated by the site would be added to an already-congested roadway network, resulting in an increase in delay on several intersection approaches that warrant mitigation, primarily during the PM peak hour. Recommended mitigation measures include:

Vehicular

- Signal timing and phasing revisions;
- Restriping sections of K Street NW between 9th Street NW and 7th Street NW to accommodate left-turn lanes;
- Providing a protected-permissive left-turn from westbound K Street NW to southbound 9th St NW;
- Providing a protected-permissive left-turn from eastbound K Street NW to northbound 7th Street NW.
- Restriping the northbound 7th Street NW approach to the intersection of Mt. Vernon Place/New York Avenue NW to provide two left-turn lanes, one through lane, and one shared through-right lane;
- Providing a designated rideshare (taxi/Uber/Lyft) pick-up/drop-off area on K Street NW between 9th Street NW and 7th Street NW; and,
- Advanced coordination with DDOT and MPD prior to large events or product releases.

Pedestrian/Bicycle

- Provision of an ADA-accessible route from all four corners of Mt. Vernon square
- Provision of bicycle parking
- Installation of a Captial BikeShare station

The above mitigation measures would address these increases in delay, and would improve most approaches to operate better than the No Build Condition. However, if the proposed DC Streetcar is routed along K Street NW, these recommendations may need to be reduced to signal timing improvements only. Furthermore, it is our recommendation that the vehicular mitigation measures be evaluated after the retail site opens to determine if they are warranted, as existing and projected No Build traffic volumes and congestion may discourage travel to and from the retail location during the PM peak period.

1.0 INTRODUCTION

The Carnegie Library, located in Mt. Vernon Square (801 K Street NW) in Washington, DC (shown in Exhibit 1 in Appendix A), served as the central public library for almost 70 years, and currently houses the Historical Society of Washington, DC (HSW), and Events DC. Events DC, the official convention and sports authority for the District of Columbia, is proposing to rehabilitate and modernize the Carnegie Library building to accommodate retail and educational uses. The building will be leased jointly by HSW, which will continue to operate its research library, exhibit galleries, and administrative offices in the library, and a new retail tenant, which will operate a 12,614 square-foot retail facility, capable of holding small to moderate-sized events and educational classes.

The project is comprised of the following components: a restoration of the building exterior, including repair and cleaning of the exterior stone, repair or replacement of the windows and skylights, and repair of the copper roof cladding; a rehabilitation of the building interior, including removal of nonoriginal infill construction throughout the building, restoration of a central atrium space, upgrade or replacement of the MEP systems, and restoration of certain original finishes and features, and a reconfiguration of the north entrance, stairs, and landing. Although the project is generally limited to the building itself, minor alterations will be made to site hardscape elements to comply with accessibility and other code requirements.

1.1 PURPOSE AND METHODOLOGY

This Comprehensive Transportation Review (CTR) has been developed for use in compiling a revised Draft and Environmental Assessment (EA) that will reflect proposed site adjustments renovations and adjustments to accommodate the retail tenant. The CTR analyzes the potential transportation system impacts of the proposed retail use, and identifies, assesses, and recommends strategies to reduce the impact of the site on the transportation system. This document analyzes the potential transportation system impacts of the proposed action in the 2020 horizon analysis year of the EA.

2.0 STRATEGIC PLANNING ELEMENTS

Stantec reviewed several city-wide planning documents as well as city regulations and guidelines to determine how the proposed redevelopment considers District growth goals and objectives within the study area. Brief summaries of the plans, as well as the impact of the proposed Carnegie development on the plans, are provided in the sections below.

2.1 PLANS/STUDIES REVIEWED

Eastern Downtown Protected Bike Lane Study (advancing to 30% design)

The Eastern Downtown Protected Bike Lane project is driven by a need to connect central DC neighborhoods to downtown, as well as existing east-west bicycle facilities. At the end of the project, the District Department of Transportation (DDOT) will identify one preferred route and design for a protected bicycle lane on a north-south route in the eastern area of downtown. The preferred alternative will seek to minimize impacts on other uses of the roadway, including surface transit, parking, sidewalks, and traffic, while providing a low-stress place for people to ride a bicycle in accordance with moveDC's goals for bicycle infrastructure.

Two alternatives are being advanced to 30% design at this time: Alternative 3 and Alternative 4. Alternative 3 proposes a two-way cycle track on 6th Street NW from Pennsylvania Avenue NW to Florida Avenue NW. Alternative 4 proposes a two-way cycle track on 9th Street NW from Pennsylvania Avenue NW to Florida Avenue NW. This alternative would prohibit left turns from southbound 9th Street NW to eastbound Mount Vernon Place NW. In addition, it would reduce the number of through lanes on 9th Street NW south of New York Avenue NW from three to two. Given the uncertainty of the alignment, the capacity analysis was not modified to include the 9th Street NW alignment. These changes would require signal retiming if the 9th Street NW alignment is selected.

DC Streetcar: Union Station to Georgetown Study (ongoing)

DDOT, in partnership with the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA), is in the process of completing an Environmental Assessment (EA) for the proposed construction of an approximately three-mile DC Streetcar line between Union Station and Georgetown. This new transit line is intended to provide better east-west connectivity and improve overall transit service in the corridor. An Alternatives Analysis study was completed in September 2013.

In this report, DDOT identified one recommended alternative that passes through the study area, directly adjacent to Mount Vernon Square on both K Street NW and Mt Vernon Place. However, based on the more recent EA public involvement meeting materials, the alternatives currently under consideration only pass to the south of Mount Vernon Square on K Street NW, with a station platform on both the north side of the street (for the westbound line) and in the median (for the

eastbound line). It is anticipated that the final NEPA decision for approval of a final alternative will be made Fall 2018.

Downtown West Transportation Planning Study (ongoing)

The Downtown West Transportation Planning Study is an ongoing study to develop alternatives for improved east-west travel for pedestrians and cyclists on Pennsylvania Avenue NW and for public transit riders along H Street NW and I Street NW. The recommended alternative will be selected between June and July 2017. Any of the alternatives would likely improve the multimodal travel experience to the study area.

Through an analysis of the existing conditions, completed August 2016, the study identifies high pedestrian volumes and key transit corridors throughout the study area. Furthermore, it identifies existing dedicated bicycle lanes within the study area along 7th and 9th Streets NW, as well as along New York Avenue NW. The study also identifies a proposed cycle track along Massachusetts Avenue NW.

accessDC Study (ongoing)

The accessDC Study is an ongoing study focusing on the mobility and access needs of the District's older and disabled residents. Ultimately, the study will identify ways in which older residents and people with disabilities can have access to multiple transportation services. The final report for this study will be completed Summer 2017.

Sustainable DC Plan (2012), Vision Report (2012), and Progress Reports (2016 and 2017)

The Sustainable DC Plan report, published in 2012, encourages environmentally, economically, and socially sustainable city investments by setting "ambitious goals" for the District. One proposed solution for the built environment is to retrofit existing commercial buildings, such as the Carnegie Library, to achieve net-zero energy standards. The proposed solutions to improve the sustainability of the District's transportation network include: increase use of public transit, increase biking and walking, reduce commuter trips, and eliminate "unhealthy" air quality index days.

Smart DC Study (2016)

This study was completed in February 2016 as a part of DDOT's application for the "Beyond Traffic: The Smart City Challenge", a transportation system innovation competition for mid-sized cities sponsored by the USDOT that encouraged cities to envision how smart technology can help them meet future transportation challenges. In addition to other corridors, the segment of New York Avenue NW within the study area was identified as a pilot project corridor to test urban automation, connected vehicles, and intelligent, sensor-based infrastructure technology.

Curbside Management Study (2014)

The Curbside Management Study, completed in August 2014, identifies policies and strategies that support a more holistic approach to curbside management across the District. The three overarching goals for these policies is to "preserve access to residential areas for use of residents," "promote and facilitate commerce by prioritizing customer and commercial vehicle access in commercial areas," and "ensure the safety of all transportation users including pedestrians, cyclists, transit users, and motorists." The four identified strategies to complete these goals are as follows: promotion of walkable neighborhoods and local businesses, provision of equitable access to unequally geographically distributed resources, prioritization of existing local resident access over new developments or outsiders, and nimble management of parking supply/availability. This report identifies managed, predictable, and reliable curbside access as the most important approach for higher intensity districts, like the study area.

moveDC Multimodal Long-Range Transportation Plan (2014)

Published in October 2014, moveDC was a collaborative effort led by DDOT to present a vision and improvement course for the District's transportation system over the next 25 years. moveDC focuses on more travel options, reliability of transportation systems, safety for all, and efficiency of investments. The plan proposes more than 200 new miles of bicycle facilities, a 22-mile streetcar system with the possibility of extension lines, and more than 40 miles of High Capacity Transit. It also contains progress updates to the 2005 Bicycle and 2009 Pedestrian Master Plans as of December 2013.

moveDC recognizes that it is essential to maintain a balance between pedestrian, bicycle, transit, and vehicular modal activity on the City's transportation network to turn its vision into a reality. The study proposes various improvements to create this balance within the study area, including:

- A multi-use trail along New York Avenue to the northeast of the study area,
- Cycle tracks on Massachusetts Avenue NW to improve bicycle connections,
- High-capacity and high-frequency transit network (including a 22-mile streetcar system that will have a line surrounding Mount Vernon Square) to improve transit connections, and
- Lane reductions and other priority modal improvements to discourage excessive vehicular traffic.

DC Office of Planning Comprehensive Plan (2011)

The District's Comprehensive Plan is a general policy document that provides overall guidance for future planning and development of the city and its ten geographic areas. The most recent plan was approved in 2006 and amended in 2011. The study area falls within the boundaries of the Central Washington Area plan and the Near Northwest Area plan. Both plans indicate that any continuing redevelopment should also coordinate with other documents and update master plans as necessary.

The Central Washington Area plan recommends the preservation of historical buildings, listing the restoration of the Carnegie Library Building as a main example. The plan also supports additional retail development to promote Central Washington as a regional retail destination, specifically

encouraging ground floor retail space to create street life that will complement the proposed high-density housing. The plan encourages development that promotes Mount Vernon Square as the heart of the urban neighborhood. It stresses that any improvements should consider the area's context, density, and urban character. The Near Northwest Area plan recommends the development of continuous ground floor retail uses along 7th and 9th Streets NW and encourages improved pedestrian infrastructure along these corridors.

Pedestrian Master Plan (2009)

The 2009 Pedestrian Master Plan serves as the foundation for DDOT's pedestrian programs and represents the first comprehensive city-wide effort to address pedestrian safety challenges and related issues. The goals of the plan are to reduce the number of pedestrian fatalities and injuries associated with motor vehicle crashes and to increase pedestrian activity by creating a comfortable and accessible environment for walking throughout all parts of the District. It should be noted that the moveDC plan supersedes this plan as of 2015.

Through an analysis of existing conditions, the plan identifies the study area to have medium pedestrian activity with medium, low, or not-evaluated pedestrian facility deficiencies. It also identifies New York Avenue NW as a priority corridor for curb ramp repair, curb extension, median construction/extension, crosswalk restriping/pavement repair, right turn on red restrictions, and bus stop improvements, among others.

Bicycle Master Plan (2005)

The 2005 Bicycle Master Plan is a guide to establishing high-quality bicycle facilities and programs from 2005 to 2015 through facility improvements, policy changes, and education, promotion, and enforcement. The plan shows that, while no existing facilities were present on the roadway network within the study area in 2005, Massachusetts Avenue NW, Mount Vernon Place NW, and K Street NW within the study area were signed bicycle routes. As such, the bicycle level of service in the study area was shown to be between C and E.

The plan shows New York Avenue NW to the east of the study area as a proposed multi-use trail connection to trails in the eastern part of the District. Furthermore, dedicated bicycle lanes were proposed within the study area on K Street NW. Since the study was completed, bike lanes were added on New York Avenue NW, west of the 9th Street NW intersection. It should be noted that the moveDC plan also supersedes this plan as of 2015.

2.2 GUIDELINES/REGULATIONS REVIEWED

DDOT Guidelines for Tour Bus Parking

The DDOT Motorcoach Operators Guide provides parking and operations guidelines for tour buses within the District. For example, motorcoaches can only park or drop-off/pick-up at designated curbside locations (subject to time limits) or at off-street parking facilities. It also specifically states

that motorcoaches are not allowed to park adjacent to any parks. The guide also provides a list of designated parking and drop-off/pick-up locations, none of which are located within the study area.

DDOT Bicycle Parking Regulations

Title 18, Chapter 21:2119 of the District of Columbia Municipal Regulations details the rules relating to the required provision of bicycle parking. The regulations state that bicycle parking shall be provided for retail spaces, except in C-3-C (Medium Density Office, Retail, Housing), C-4 (Central Business District), and C-5 (Pennsylvania Avenue). The regulations also list the required dimensions, amount, and placement of bicycle parking. The project site is located in Zone D-5 and is not exempt from these requirements.

DDOT Guidelines for On-Street Carsharing

The DDOT On-Street Carsharing Program requires that all carsharing companies operating within the District must obtain a public space permit from DDOT's Public Space Regulations Administration. Reserved on-street carsharing spaces are selected in consultation with Advisory Neighborhood Commissions, businesses, and community leaders. However, some carsharing companies obtain Zone 9 permits, which allow them to park in both residential and metered parking spaces free of charge and longer than the posted time limit. There are currently no designated carsharing spaces within the study area.

2.3 POTENTIAL IMPACT OF PROPOSED DEVELOPMENT ON PLANS

The redevelopment of the Carnegie Library property aligns with the recommendations and findings of many of these planning documents and studies. The proposed development considers the character and history of the site, supports the desired increase in ground-floor retail use, provides on-site bicycle parking, and will contribute to increasing activity and walkability within the area. The proposed plan would not preclude any of the infrastructure improvements recommended in the above studies (roadway, transit, and bicycle and pedestrian infrastructure).

3.0 ROADWAY NETWORK, CAPACITY, & OPERATIONS

3.1 VEHICLE STUDY AREA

While Mt. Vernon Square and the Carnegie Library are located within Ward 2, a portion of the project study area lies on the boundary with Ward 6. The transportation study area includes the following intersections:

- 9th Street NW and K Street NW/New York Avenue NW
- 7th Street NW and K Street NW/Massachusetts Avenue NW
- 7th Street NW and K Street NW
- 7th Street NW and Mt. Vernon Pl NW/New York Avenue NW
- 9th Street NW and Mt. Vernon Pl NW/Massachusetts Avenue NW
- 9th Street NW and K Street NW

In addition to the above-listed intersections, this CTR will also evaluate pedestrian and bicycle facilities within a ¼ and ½ mile, respectively, including connections to and from nearby bus stops and Metrorail stations.

Characteristics of the major corridors within the study area were obtained from maps on the DDOT and MWCOG websites denoting functional classification, 2015 AADT, number of lanes, speed limits, and truck routes/loading zones. This information is summarized in Table 1. It should be noted that there is a mix of on-street parking regulations throughout the study area.

Table 1: Study Area Major Corridor Characteristics

Roadway	Functional Class	2015 AADT (thousands)*	Number of Lanes, Median	Speed Limit (mph)	Primary Truck Route/Designated Loading Zones?
Massachusetts Ave NW, west of 9th St NW	Principal Arterial	35.7	5, None	25 mph	Yes/No
Massachusetts Ave NW, east of 7th St NW	Principal Arterial	23.6	4, None	25 mph	Yes/No
Mt Vernon Pl NW	Principal Arterial	25.4	4, None	25 mph	Yes/No
New York Ave NW, west of 9th St NW	Principal Arterial	18.9	4, landscaped	25 mph	Yes/Yes
New York Ave NW, east of 7th St NW	Principal Arterial	24.0	6, striped with flexible delineators	25 mph	Yes/Yes
K St NW between 7th and 9th Sts NW	Principal Arterial	19.9	4, None	25 mph	Yes/No
9th St NW between Mt Vernon Pl NW and K St NW	Principal Arterial	18.3	5, None	25 mph	Yes/No
7th St NW between Mt Vernon Pl NW and K St NW	Principal Arterial	11.4	3, None	25 mph	Yes/No

* Traffic data obtained from the Regional Transportation Data Clearinghouse (RTDC) Data Viewer, Traffic Counts – Annual Average GIS layer, provided by the National Capital region Transportation Planning Board (TPB) as part of the Metropolitan Council of Governments (MWCOG), located here: http://gis.mwcog.org/webmaps/rtdc/

3.2 DATA COLLECTION AND HOURS OF ANALYSIS

Stantec conducted a comprehensive data collection program to establish "average day" baseline conditions for vehicular, transit, pedestrian, and cyclist traffic within the study area. The program consisted of manual turning movement counts, queuing observations, and parking inventory. All data were collected on typical weekdays when District schools and Congress were in session.

3.2.1 Turning Movement Counts

Manual turning movement counts were collected during the PM peak period (4:00PM – 7:00PM) on Tuesday, May 23, 2017 and June 6, 2017, as well as on Saturday, May 20, 2017 between 11:00AM and 2:00PM at the following six intersections:

1. 9th Street NW & Massachusetts Avenue NW/Mt. Vernon Place NW
2. 9th Street NW & K Street NW
3. 9th Street NW & New York Avenue NW/K Street NW

4. 7th Street NW & K Street NW/Massachusetts NW
5. 7th Street NW & K Street NW
6. 7th Street NW & Mt. Vernon Place NW/New York Avenue NW

Appendix B contains the raw count data. An analysis of this data revealed that the individual intersection PM peak period hours varied throughout the study area, but the Saturday peak hour was 1:00PM – 2:00PM at five of the six intersections. Due to the proximity of each intersection to one another (less than 1500 feet), one overall peak hour for each peak period was determined:

- PM Peak Hour: 4:45PM – 5:45PM
- Saturday Peak Hour: 1:00PM – 2:00PM

3.2.2 Queuing

Queuing observations were conducted on Thursday, June 15, 2017 to determine if additional unmet demand would need to be considered in the traffic analysis. Field observations indicated no residual queueing during the Saturday peak hour that required field measurements.

According to *moveDC*, queuing is prevalent within the study area, especially during the PM peak period along New York Avenue NW. Table 2 summarizes where queuing issues were observed during the PM peak period and reflects the approaches for which additional unmet demand volume was added based on unresolved queue lengths for the last 15-minute period during the hour. The final 2017 Existing Condition AM and PM peak hour volume diagrams are contained in Exhibits 2 and 3 in Appendix A. Appendix B contains the queue observation data.

Table 2: Observed Queuing and Unmet – PM Peak Hour

Intersection	Approach	Additional Unmet Volume Added
9th Street NW & Massachusetts Avenue NW/Mt Vernon Place NW	Eastbound	320 vehicles
9th Street NW & K Street NW	None	0 vehicles
9th Street NW & New York Avenue NW/K Street NW	Eastbound	51 vehicles
7th Street NW & K Street NW/Massachusetts Avenue NW	Northbound	128 vehicles
7th Street NW & K Street NW	Northbound	128 vehicles
7th Avenue NW & Mt Vernon Place NW/New York Avenue NW	Eastbound Northbound left turn	320 vehicles 128 vehicles

3.3 ANALYSIS METHODOLOGY

Capacity analyses were performed for the signalized and unsignalized intersections in the study area utilizing Synchro 9 traffic analysis software. This software package provides average control delay, queues, and level of service (LOS) for each lane group and for the overall intersection. LOS

is an evaluation of the quality of operation of an intersection and is a measure of the average delay a driver experiences while traveling through the intersection. LOS is dependent upon a range of defined operating conditions such as traffic demand, lane geometry, and traffic signal timing and phasing.

Utilizing Synchro instead of the more basic Highway Capacity Software (HCS) is preferable for transportation networks with a series of closely-spaced signalized intersections, as well as for networks with complex signal phasing, such as those within the study area. Under these conditions, Synchro is able to more accurately model the effects that the traffic operations (such as poor LOS or extensive queuing) at one intersection have on operations at an adjacent intersection.

LOS can range from A to F and is based on the average control delay per vehicle. For a signalized intersection, LOS A indicates operations with an average control delay less than 10 seconds per vehicle, while LOS F describes operations with an average control delay in excess of 80 seconds per vehicle at signalized intersections and 50 seconds per vehicle at unsignalized intersections, or a v/c ratio greater than 1.0. Table 4 summarizes the 2010 HCM delay criteria for signalized and unsignalized intersections.

Table 3: LOS Criteria for Signalized Intersections

Level of Service	Average Control Delay (seconds/vehicle)	
	Signalized	**Unsignalized**
A	≤ 10.0	≤ 10.0
B	> 10.0 and ≤ 20.0	> 10.0 and ≤ 15.0
C	> 20.0 and ≤ 35.0	> 15.0 and ≤ 25.0
D	> 35.0 and ≤ 55.0	> 25.0 and ≤ 35.0
E	> 55.0 and ≤ 80.0	> 35.0 and ≤ 50.0
F	> 80.0 or v/c > 1.0	>50.0 or v/c>1.00
Source: ***2010 Highway Capacity Manual***		

While LOS D or better operations are generally deemed satisfactory from a traffic operations perspective, LOS E or F operations are often indicative of queuing and congestion. Improvements as recommended in this study seek to maintain or improve traffic operations to LOS D or better, with minimal queuing, as reported by Synchro.

Signal plans and timing directives were provided by DDOT and were field-verified to accurately model signal operation type, phasing, detection, and cycle length.

3.4 DEVELOPMENT SCENARIOS

3.4.1 2017 Existing Condition

2017 Existing Condition volumes for the PM and Saturday peak hours, shown in Exhibits 2 and 3 in Appendix A, were modeled in Synchro 9 to produce capacity analysis results, summarized in Exhibit 4 in Appendix A. All Synchro capacity analysis outputs are in Appendix C. Table 4 below indicates the intersections that operate at an overall LOS of E or F (failing condition) during the PM peak hour.

Table 4: 2017 Existing Condition Intersections Operating at Overall LOS E or F

Intersection	PM Peak Hour Level of Service
7th Street NW & Mt Vernon Pl NW/New York Avenue NW	E

3.4.1.1 V/C Evaluation

In addition to LOS, volume-to-capacity (v/c) ratios are used to evaluate mobility and quality of travel on a roadway or segment of roadway. They compare demand (volume) with supply (capacity) and are expressed as a decimal, usually less than 1.00. A v/c ratio at or above 1.00 indicates that the roadway is operating at or above capacity.

The table presented in Chapter 45, Section 45.4(3) of the DDOT Design and Engineering Manual (DEM) shows the threshold capacity for different arterial designations, from local residential roadway to major arterial. Stantec used this table, the 2015 traffic data obtained from the RTDC Data Viewer provided by MWCOG, and the official DDOT Functional Classification Map 2016 provided on the DDOT website to estimate the current volume/capacity ratio for all roadways within the study area. Table 5 lists these ratios and highlights those that are above 1.00.

Table 5: v/c Ratio for Study Area Roadways

Roadway	Functional Class	2015 AADT	Threshold Capacity	v/c Ratio
Massachusetts Avenue NW (west of 9th Street NW)	**Principal Arterial**	**35,700**	**30,000**	**1.19**
Massachusetts Avenue NW (east of 7th Street NW)	Principal Arterial	23,600	30,000	0.79
Mount Vernon Place NW	Principal Arterial	25,400	30,000	0.85
New York Avenue NW (west of 9th Street NW)	Principal Arterial	18,900	30,000	0.63
New York Avenue NW (east of 7th Street NW)	Principal Arterial	24,000	45,000	0.53
K Street NW (between 9th Street NW and 7th Street NW)	Principal Arterial	19,900	30,000	0.66
9th Street NW (between Mount Vernon Place NW and K Street NW)	Principal Arterial	18,300	30,000	0.61
7th Street NW (between Mount Vernon Place NW and K Street NW)	Principal Arterial	11,400	30,000	0.38

3.4.2 2020 No Build Condition

The selected analysis year of 2020 corresponds to the horizon year identified for the EA. Stantec obtained forecast data from the Metropolitan Washington Council of Governments (MWCOG) model to determine the background growth factor. This model uses future population and employment projections that reflect a regional perspective on growth and development. Based on information contained in the model, an annual growth rate of 1.5% was applied to the Existing Condition volumes to generate background growth volumes.

In addition to background growth, the impact of nearby site developments is also typically included in the No Build condition. A review of active cases for ANCs 2C, 2F, and 6E as shown in in the Interactive Zoning Information System (IZIS) and the interactive online zoning map, both maintained by the DC Office of Zoning, yielded three nearby developments that are currently being constructed and are anticipated to open before 2020:

- 1126 9th Street NW, a mixed-use building with 3,723 SF of office space and 33 condominiums/townhouses
- 655 New York Avenue NW, a 678,000 SF trophy office building with 79,000 SF of street-level and sub-surface retail with parking
- 950 New York Avenue NW, a 360-room luxury hotel with 30,000 SF of street-level retail with sub-surface parking

These three developments are expected to have an impact on traffic volumes in the study area. It should be noted that at the time of this study, only trip generation, trip distribution, and corresponding mode splits were available for 1126 9th Street NW from DDOT. Trip generation for

655 New York Avenue NW and 950 New York Avenue NW was calculated using the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 9th ed*. Mode splits for these two developments were calculated from 2006-2010 U.S. Census American Community Survey Journey-to-Work data (see Exhibit 5). Mode split for residential buildings was estimated utilizing commute data for "place of residence" for traffic analysis zones within the vicinity of the project sites. Census data revealed that approximately 55% or residents in the vicinity of the project sites utilize non-auto modes. Mode split for office buildings was estimated utilizing commute data for "place of work", which revealed that 44% of employees that work in the vicinity utilize non-auto commute modes. Exhibits 5 through 11 in Appendix A show how all anticipated development trips were distributed through the existing roadway network, based on existing travel patterns.

Projected background growth volumes and site-specific development volumes were summed to obtain 2020 No Build Condition volumes for the PM and Saturday peak hours (Exhibits 12 and 13 in Appendix A). These volumes were modeled in Synchro 9 to produce capacity analysis results, summarized in Exhibit 14 in Appendix A. The results show that three of five study area intersections would operate at an overall LOS E or F during the PM peak hour (Table 6). However, the study area intersections would operate at an overall LOS D or better during the Saturday peak hour.

Table 6: 2020 No Build Intersections Operating at Overall LOS E or F

Intersection	PM Peak Hour Level of Service	Saturday Peak Hour Level of Service
9th Street NW and New York Avenue NW/K Street NW	E	-
7th Street NW & Mt Vernon Pl NW/New York Avenue NW	E	-
7th Street NW & K Street NW	F	-

3.4.3 2020 Build Condition

3.4.3.1 Site Access

There will be no public vehicular access provided to the site. Any vehicles wishing to access the site will park either on-street or in nearby surface lots and garages. However, it was assumed that a designated rideshare pickup/drop off location would be located at the front of the library along westbound K Street NW. Deliveries will be made in box trucks via the existing loading driveway located on Mount Vernon Place (see Section 6.0).

3.4.3.2 Trip Generation, Distribution, and Assignment

3.4.3.2.1 Trip Generation

The project is expected to be completed by 2020. A memorandum previously submitted to DDOT entitled "801 K Street Trip Generation and Mode Split Estimates" (Appendix D) documents the trip generation and mode split analysis that was conducted for the proposed redevelopment. Based on a pre-scoping meeting with DDOT held on February 7, 2017, it was determined that the ITE *Trip*

Generation Manual, would not provide an adequate estimate of the number of trips generated. Therefore, site-specific trip generation and mode split data was collected at five existing retail brand stores that have locational and/or operational features that are similar to those of the proposed location. The results of the trip generation and mode split calculations are shown in Tables 7 and 8.

Table 7: Weekday PM Peak Hour Trips for 801 K Street NW

	Units	Total Trips	Entering (54%)	Exiting (46%)
New Person Trips	12,614 SF	512	277	235
Additional Pass-By Trips	15%	76	38	38
Event Trips		200	180	20
Total Trips		**788**	**495**	**293**
Drive Alone	16%	114	73	41
Carpool	4%	29	18	11
Carshare	0.5%	4	2	2
Total New Vehicle Trips to Parking*		**125**	**80**	**45**
Total Vehicle Person Trips Reflect as Pedestrians Entering Site		**147**	**93**	**54**
Taxi/Uber/Lyft**	17%	242	156	86
Delivery	0.5%	3	2	1
Total New Pass-Through Vehicle Trips		**245**	**158**	**87**
Bus	5%	36	23	13
Rail/Subway	29%	206	132	74
Walk***	24%	247	148	99
Bike	4%	28	18	10
Total Multi-Modal Trips		**517**	**321**	**196**

*Total New Vehicle Trips to Parking = Drive Alone + Carpool/3

**Taxi/Uber/Lyft trips are doubled to account for vehicle entering and exiting the study area.

**Walk = 22% Mode Split + Pass-By Trips

Table 8: Saturday Peak Hour Trips for 801 K Street

	Units	Total Trips	Entering (50%)	Exiting (50%)
New Person Trips	12,614 SF	669	335	335
Additional Pass-By Trips	10%	67	33	33
Event Trips		200	180	20
Total Trips		**936**	**548**	**388**
Drive Alone	14%	122	72	50
Carpool	11%	96	57	39
Carshare	0.5%	4	2	2
Total New Vehicle Trips to Parking*		**158**	**94**	**64**
Total Vehicle Person Trips Reflect as Pedestrians Entering Site		**222**	**131**	**91**
Taxi/Uber/Lyft**	16%	278	164	114
Delivery	0.5%	5	3	2
Total New Pass-Through Vehicle Trips		**283**	**167**	**116**
Bus	5%	44	26	18
Rail/Subway	23%	200	118	82
Walk***	25%	284	162	122
Bike	5%	44	26	18
Total Multi-Modal Trips		**572**	**332**	**240**

*Total New Vehicle Trips to Parking = Drive Alone + Carpool/3

**Taxi/Uber/Lyft trips are doubled to account for vehicle entering and exiting the study area.

***Walk = 26% Mode Split + Pass-By Trips

3.4.3.2.2 Trip Distribution

The distribution of vehicle, pedestrian, bicycle and transit trips was based on existing travel patterns, location of on-street and off-street parking, and transit stops/stations.

Vehicular Trip Distribution

There are two types of vehicle trips generated by the proposed facility: vehicles destined for on-street or off-street parking (drive alone, carpool, and carshare), and vehicles destined for the site frontage (taxi/Uber/Lyft and deliveries). All vehicle trips were distributed to the regional roadway network based on existing travel patterns as reflected in the overall AADT for each roadway (Exhibit 15 in Appendix A). A centralized drop-off location on westbound K Street NW, along Mt. Vernon Square, was assumed for all taxi, Uber, Lyft vehicles, and delivery activity was assigned to the existing loading area on Mt. Vernon Place. Therefore, all rideshare and delivery vehicle trips were distributed from the regional roadway network to the assumed drop-off area based on the most direct path.

Vehicles destined for on-street or off-street parking facilities were distributed on the study area roadway network based on the location and availability of parking spaces within one block of the site, relative to their point of origin in the regional roadway network. Field observations conducted during the PM peak period revealed high utilization of on-street parking (approximately 75% - 85%), while surface and structured parking was becoming increasingly available as area employees departed. Therefore, it was assumed that, in general, approximately 15% of vehicles destined for the site would park on-street, reflecting the limited amount of parking available, as well as the reluctance of retail-patrons to circulate looking for on-street parking. Utilizing the ratio of surface lot parking to garage parking (see Section 7), approximately 25% percent of vehicles were assumed to be destined for the two nearby surface parking facilities, and the remaining 60% of vehicles were assumed to be destined to the seven garage parking facilities within one block of the site. Slight adjustments were made to these percentages based on the operating hours of the structured and surface parking, as well as on-street parking restrictions (see Section 7).

Vehicles were then distributed from the regional roadway network to the parking based on the most direct route from the roadway entering the study area to or from the parking facility. Therefore, some vehicles traveling to or from a particular parking facility may not enter the study area intersections because the most direct path lies outside of the study area intersections. Exhibits 16 through 62 in Appendix A show the distributions to and from each facility as well as the total number of trips distributed on the network for this mode. It should be noted that the vehicle trips were then reflected as pedestrian trips from the parking area to the site.

Exhibits 63 through 71 show distributed taxi/Uber/Lyft and delivery trucks on the network.

Non-Vehicular Trip Distribution

Transit trips were distributed on the study area roadway network as pedestrian trips. Pedestrian-bus trips were assigned to the nearest bus stops on Massachusetts Avenue NW, New York Avenue NW, 9th Street NW, and 7th Street NW based on June 2016 bus ridership data obtained from WMATA. Pedestrian-Metrorail trips were distributed on the network based on the proximity of the Gallery Place/Chinatown and Mt. Vernon Square/Convention Center stations. According to data compiled by WMATA via the Plan It Metro website, the Gallery Place/Chinatown station experiences high ridership volume by link when compared to the Mt. Vernon/Convention Center station. The link volumes obtained from this website indicate that 95% of trips in the PM peak hour and 70% of trips in the Saturday peak hour) would travel to/from this station. Exhibits 72 through 80 in Appendix A show the calculated trip distributions as well as the distributions on the network for each mode.

Pedestrian and bicycle trips were distributed on the study area roadway network based on existing pedestrian and bicycle volumes collected as part of the TMCs. These volumes are shown in Exhibits 81 through 84 in Appendix A.

3.4.3.2.3 Trip Assignment

Stantec assigned the generated trips to the study area network based on the trip distribution discussed in Section 3.4.3.2.2. Exhibits 85 and 86 (in Appendix A) show the total site trip assignment for all modes.

3.4.3.3 Mitigation Scenarios

The total site trips were added to the 2020 No Build Condition traffic volumes to generate 2020 Build Condition traffic volumes (Exhibits 87 and 88 in Appendix A). Two mitigation scenarios were examined to determine the extent of improvements needed on the transportation network to accommodate the proposed traffic: 2020 Build Condition without and with Mitigation. It should be noted that at the time of this report, the details for the proposed DC Streetcar line that is expected to run through the study area was not available. Therefore, the 2020 Build Condition without and with Mitigation scenarios do not consist of proposed roadway network improvements as needed for the proposed DC Streetcar. Only the existing roadway network was modeled.

3.4.3.3.1 Without Mitigation

Stantec modeled this scenario in Synchro 9 to obtain capacity analysis results (Exhibit 89 in Appendix A). The Synchro capacity analysis outputs are located in Appendix C. The results show that four of the five study area intersections would operate at an overall LOS E or F during the PM peak hour. However, the study area intersections would operate at an overall LOS D or better during the Saturday peak (Table 9).

Table 9: 2020 Build Intersections Operating at Overall LOS E or F

Intersection	PM Peak Hour Level of Service	Saturday Peak Hour Level of Service
9th Street NW and New York Avenue NW/K Street NW	E	-
7th Street NW & Mt Vernon Pl NW/New York Avenue NW	E	-
7th Street NW & K Street NW	F	-
7th Street NW & K Street NW/Massachusetts Avenue NW	E	-

While the study area intersections would continue to operate at an overall LOS that is consistent with the No Build Condition, DDOT requires mitigation for any movement that experiences an increase in delay of greater than 5 seconds per vehicle. Table 10 shows the movements that experience an increase in delay of more than five seconds per vehicle in one or both peak hours. However, it is important to note that most of the study area roadways are at or over capacity. Therefore, even small additions to vehicular volume result in significant, exponential increases in delay. For example, the capacity analysis results show that the EB approach to the intersection of 7th Street NW & K Street NW/Massachusetts Avenue NW would experience an increase in vehicle delay of approximately 32 seconds per vehicle during the PM peak hour. However, the site is only adding 34 vehicles to that approach, or 2.5% of the total approach volume.

Due to the existing capacity deficiency only a small increase in overall vehicles results in a high increase in delay, based on capacity analysis formulas, that would likely not be realized in the field. However, the results, while likely not realistic indicate an overall need for additional capacity, and this mitigation measures should still be explored to the extent possible.

Table 10: 2020 Build Movements with Delay Increase of More than 5 Seconds

Intersection	PM Peak Hour	Saturday Peak Hour
9th Street NW and Massachusetts Avenue NW/ Mt Vernon Pl NW	-	SB-LTR (+15)
9th Street NW and New York Avenue NW/K Street NW	WB-LT (+78)	-
7th Street NW & Mt Vernon Pl NW/New York Avenue NW	EB-LTR (+9) WB-LT (+7) NB-L (+7)	WB-LT (+8)
7th Street NW & K Street NW	WB-LR (+N/A)* SB-LT (+6)	WB-LR(+39)
7th Street NW & K Street NW/Massachusetts Avenue NW	EB-LTR (+32) NB-LTR (+10) SB-LTR (+10)	-

*Synchro reports "err" indicating that delay is exceeding the level that can be estimated by Synchro.

3.4.3.3.2 With Mitigation

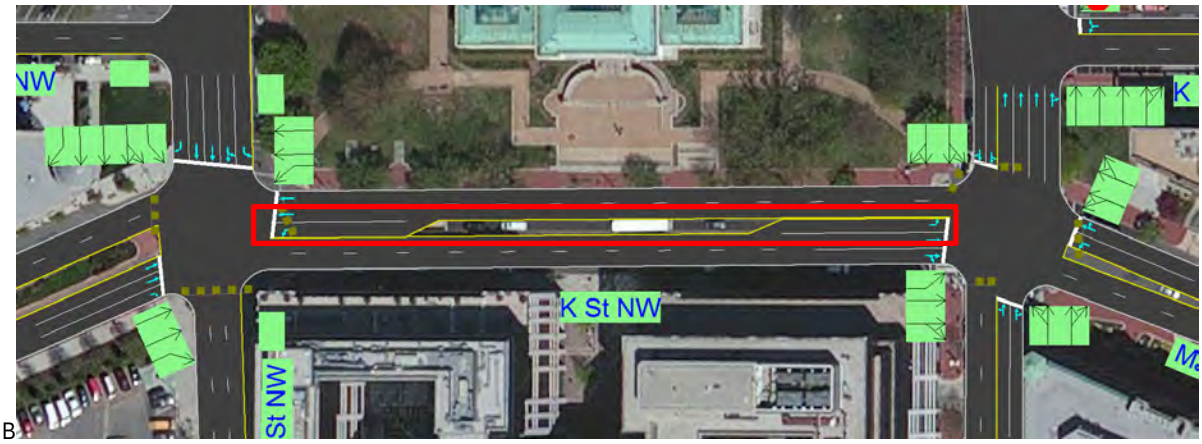
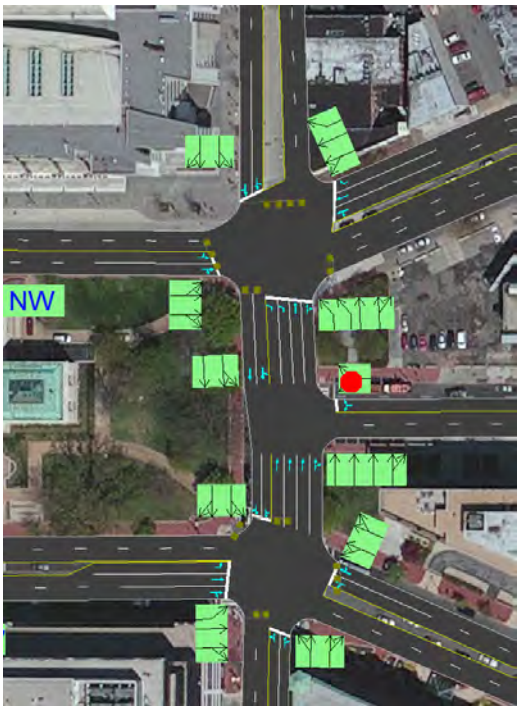
This section discusses vehicular mitigation. It should be noted that pedestrian/bicycle improvements are discussed in Section 4, and transit improvements are discussed in Section 5. Stantec evaluated two potential vehicle mitigation measures that would address the additional intersection delay while considering multi-modal transportation needs and potential ROW impacts, including the proposed expansion alignment of the DC Streetcar along K Street NW and 7th Street NW. Given the limited ROW available within the study area, providing additional capacity through new travel lanes is not possible. Therefore, mitigation measures must maximize available capacity though restriping and signal timing enhancements.

Mitigation Option A

Mitigation Option A includes optimizing signal phasing and offsets. Capacity analysis results for Option A are contained in Exhibit 90A in Appendix A and show delay, v/c ratio, LOS and queuing by lane group. Based on the analysis results all study area intersections would experience a moderate improvement in operation. All intersections would operate at an overall LOS D or better, except for the intersections shown in Table 11.

Mitigation Option B

Mitigation Option B includes signal timing and offset optimization with restriping a section of K Street NW between 7th Street NW and 9th Street NW. The mitigation options are described below:

Mitigation Measure
A. Optimize signal phasing and offsets.
 B
B. Remove approximately 7 on-street parking spaces on one side of K Street to provide an exclusive left turn lane on WB K Street at the intersection of 9th Street with New York Avenue NW. Revise the phasing to include a protected/permitted WB left turn. It may be possible provide a shift in the through lanes to avoid a complete removal of on-street parking.
C. Remove approximately 7 on-street parking spaces on one side of K Street to provide an exclusive left turn lane on EB K Street at the intersection of 7th Street with New York Avenue. It may be possible provide a shift in the through lanes to avoid a complete removal of on-street parking.

D. Restripe northbound 7th Street NW at the intersection with New York Avenue NW/Mt Vernon Place NW to provide two left-turn lanes, a through lane, and a shared through-right lane.

Capacity analysis results for Option B are contained in Exhibit 90B in Appendix A and show delay, v/c ratio, LOS and queuing by lane group. Based on the analysis results all study area intersections would experience a significant improvement in operation due to the signal timing adjustments and striping modifications. All intersections would operate at an overall LOS D or better, except for the intersections shown in Table 11.

However, it should be noted that Option B conflicts with the proposed DC Streetcar alignment. Therefore, it is our recommendation that this mitigation measure be evaluated only if the proposed Streetcar line is delayed and after the retail site opens to determine if it is warranted. The anticipated additional vehicle trips analyzed in this report were estimated utilizing data obtained at similar retail sites. However, given the existing and projected background congestion in the study area during the PM peak period, and the ample number of retail locations elsewhere in the DC metropolitan area, it is unlikely that PM peak hour trips would be generated from suburban communities outside of DC. Therefore, non-auto mode share may be higher than anticipated. A post-development survey may help to evaluate actual customer travel patterns, and determine if the more significant enhancements, such as the removal of on-street parking to accommodate left-turn bays, are needed.

Table 11: 2020 Build with Mitigation Intersections Operating at Overall LOS E or F

Intersection	Option A		Option B	
	PM	Saturday	PM	Saturday
7th Street NW & Mt Vernon Place NW/New York Avenue NW	E	-	-	-
7th Street NW & K Street NW	F	-	F	-

3.4.3.3.3 SimTraffic Queue Analysis

At the request of DDOT, Stantec conducted a queue analysis for the 2020 future conditions to compare average and 95th percentile queues at each intersection between the No Build, Build, and Mitigation A and B conditions. The results of the queue analysis are shown in Exhibit 90C in Appendix A. The results of the queue analysis show a negligible increase in average queue (less than 100 feet or 5 vehicles) on most approaches during the PM peak hour, with the exception of the following movements:

- The westbound shared through-left movement at the intersection of 9th Street NW and New York Avenue NW/K Street NW would experience an increase in the average queue of 214 feet (approximately 10 vehicles).
- The westbound shared through-left movement at the intersection of 7th Street NW and New York Avenue NW/Mt Vernon Place NW would experience an increase in the average queue of 172 feet (approximately 8 vehicles).
- The westbound shared through-left movement at the intersection of 7th Street NW and K Street NW/Massachusetts Avenue NW would experience an increase in the average queue of 238 feet (approximately 12 vehicles).

The results of the queue analysis show a negligible increase in average queue (less than 100 feet or 5 vehicles) on most approaches during the Saturday peak hour, with the exception of the following movements:

- The eastbound approach to the intersection of 9th Street NW and Massachusetts Avenue NW/Mt Vernon Place NW would experience an increase in the average queue of 281 feet (approximately 14 vehicles).
- The eastbound approach to the intersection of 9th Street NW and New York Avenue NW/K Street NW would experience an increase in the average queue of 155 feet (approximately 8 vehicles).
- The eastbound approach to the intersection of 7th Street NW and New York Avenue NW/Mt Vernon Place NW would experience an increase in the average queue of 147 feet (approximately 7 vehicles).
- The westbound shared through-left movement at the intersection of 7th Street NW and New York Avenue NW/Mt Vernon Place NW would experience an increase in the average queue of 211 feet (approximately 11 vehicles).
- The westbound shared left-right movement at the intersection of 7th Street NW and K Street NW would experience an increase in the average queue of 453 feet (approximately 22 vehicles).

The results of the queue analysis for Mitigation Option A show a negligible change in queueing with some queues slightly increasing and others slightly decreasing in response to the changes to the signal phase lengths. Mitigation Option B shows a more significant improvement when compared to the Build Condition, with many queues returning to levels consistent with, or better than, the No Build Condition.

However, caution should be utilized when interpreting these results. Due to the wide roadway cross-sections and the closely spaces intersections within the study area network, SimTraffic has difficulty representing vehicle lane assignments in the simulation, particularly during oversaturated conditions in the PM peak hour. Furthermore, the study area roadway network is located in a dense urban street network where factors like upstream traffic signals and off-network congestion can have a significant impact on vehicle platooning and arrivals to, and departures from the study area intersections modeled as part of this analysis. These issues likely lead to overestimation of queuing for some approaches, and underestimation for others. Therefore, it is our recommendation that the SimTraffic queue results should be interpreted from a high-level standpoint, focusing on the anticipated change in queue, rather than the specific numbers contained in Exhibit 90C in Appendix A.

4.0 BICYCLE AND PEDESTRIAN FACILITIES

The Carnegie Library site is in an area with existing pedestrian and bicycle facilities. This section will evaluate existing pedestrian and bicycle facilities within the area of the site, identify planned improvements, and recommend any additional improvements to enhance the connectivity.

4.1 EXISTING FACILITIES

4.1.1 Bicycle

According to the 2005 DC Bicycle Master Plan, no existing bicycle facilities were present on the roadway network within the study area in 2005. Massachusetts Avenue NW, Mount Vernon Place NW, and K Street NW within the study area were signed bicycle routes. As such, the bicycle level of service in the study area was shown to be between C and E. However, since the study was conducted bicycle lanes were added to New York Avenue NW, west of the study area. The Downtown West Transportation Planning Study Existing Conditions report also identifies a proposed cycle track along Massachusetts Avenue NW that has yet to be constructed. It should be noted that bicycles are permitted to ride on the sidewalk north of Massachusetts Avenue.

Exhibit 91 in Appendix A shows existing bicycle facilities including bike lanes, bike routes, bike racks, and Capital BikeShare locations. It also shows that there is one Capital BikeShare location with the ¼-mile walkshed and eight locations within the ½-mile bikeshed.

4.1.2 Pedestrians

The site is served by a robust network of sidewalks that are provided on both sides of each study area roadway. According to the Downtown West Transportation Planning Study Existing Conditions report, completed August 2016, high pedestrian volumes and key transit corridors/connections are prevalent throughout the study area. Sidewalks vary in width from six to eighteen feet, and were observed to be in good to fair condition. Furthermore, signalized crosswalks are provided on all legs of the surrounding signalized intersections. Unsignalized crossings are provided across K Street NW at 9th Street NW and at 7th Street NW. Based on field observations, many of the crossings adjacent to the site appear to have ADA compliant curb ramps. Exhibit 92 in Appendix A shows existing pedestrian facilities.

It should also be noted that a pedestrian-only mall, referred to as Techworld Plaza is provided on the south side of K Street NW, between 7th Street NW and 9th Street NW.

4.1.3 Barriers to Walking and Biking

There are no transportation system features within the study area that act as barriers to the use of the existing facilities.

4.2 PROPOSED PLANS

Stantec reviewed the following plans to assess existing and proposed pedestrian and bicycle facilities in the study area.

DDOT Bicycle Master Plan (2005)

The 2005 Bicycle Master Plan is a guide to establishing high-quality bicycle facilities and programs from 2005 to 2015 through facility improvements, policy changes, and education, promotion, and enforcement.

The DC Bicycle Master Plan includes recommendations such as:

- Expand the bicycle route network;
- Provide bicycle facilities on roadways;
- Complete ongoing trail development and improvement projects;
- Provide bicycle parking in public and private spaces;
- Eliminate gaps in the existing system;
- Improve areas with a high number of bicycle crashes;
- Provide bicycle access through barrier areas (including the Washington Hospital Center);
- Improve bicycle access to public transportation;
- Provide more bicycle-friendly policies; and,
- Educate motorists, bicyclists, and youth regarding safe operating behaviors, among others.

The plan shows that while no existing facilities were present on the roadway network within the study area in 2005, Massachusetts Avenue NW, Mount Vernon Place NW, and K Street NW within the study area were signed bicycle routes. As such, the bicycle level of service in the study area was shown to be between C and E.

The plan shows New York Avenue NW to the east of the study area as a proposed multi-use trail connection to trails in the eastern part of the District. Furthermore, a dedicated bicycle lane was proposed within the study area on K Street NW. It should be noted that the moveDC plan supersedes this plan as of 2015.

DDOT Pedestrian Master Plan (2009)

The 2009 DC Pedestrian Master Plan identifies deficiencies in the existing pedestrian network, recommends pedestrian treatments and identifies New York Avenue study area roadway as a priority corridors for curb ramp repair, curb extension, median construction/extension, crosswalk restriping/pavement repair, right turn on red restrictions, and bus stop improvements, among others. It should be noted that the moveDC plan supersedes this plan as of 2015.

moveDC Multimodal Long-Range Transportation Plan (2014)

moveDC is a long-range multimodal transportation plan that addresses ways to improve the transportation system so that it operates more safely and efficiently. The plan addresses a variety

of modes including pedestrians, bicyclists, transit, vehicle, and freight, as well as transportation demand management, parking, and sustainability/livability. The plan recommends a variety of policy and practices as it relates to the various modes. The plan also calls for several new facilities within the study area and establishes a priority system for implementation that ranges from Tier 1 (Highest Priority) to Tier 4 (Lowest Priority):

- A multi-use trail along New York Avenue to the northeast of the study area (Tier 1),
- Cycle track along Massachusetts Avenue (Tier 3)

Eastern Downtown Protected Bike Lane Study (advancing to 30% design)

The Eastern Downtown Protected Bike Lane project is driven by a need to connect central DC neighborhoods to downtown, as well as existing east-west bicycle facilities. At the end of the project, the District Department of Transportation (DDOT) will identify one preferred route and design for a protected bicycle lane on a north-south route in the eastern area of downtown. The preferred alternative will seek to minimize impacts on other uses of the roadway, including surface transit, parking, sidewalks, and traffic, while providing a low-stress place for people to ride a bicycle in accordance with moveDC's goals for bicycle infrastructure.

Two alternatives are being advanced to 30% design at this time: Alternative 3 and Alternative 4. Alternative 3 proposes a two-way cycle track on 6th Street NW from Pennsylvania Avenue NW to Florida Avenue NW. Alternative 4 proposes a two-way cycle track on 9th Street NW from Pennsylvania Avenue NW to Florida Avenue NW. This alternative would prohibit left turns from southbound 9th Street NW to eastbound Mount Vernon Place NW. In addition, it would reduce the number of through lanes on 9th Street NW south of New York Avenue NW from three to two. Given the uncertainty of the alignment, the capacity analysis was not modified to include the 9th Street NW alignment. These changes would require signal retiming if the 9th Street NW alignment is selected.

DDOT Guidelines for Bike Parking

The DDOT Bicycle Parking Regulations detail the rules relating to the required provision of bicycle parking. The regulations list that bicycle parking shall be provided for retail spaces, except in C-3-C (Medium Density Office, Retail, Housing), C-4 (Central Business District), and C-5 (Pennsylvania Avenue). The regulations also list the required dimensions, amount, and placement of bicycle parking.

4.3 IMPACT OF PROPOSED REDEVELOPMENT ON EXISTING AND PROPOSED PLANS/FACILITIES

The Carnegie Library site would not have a negative impact on existing or proposed pedestrian and bicycle facilities. In fact, many of the recommendations presented in the plans summarized in the previous section would ensure adequate connections between the Carnegie Library site,

nearby transit options, and surrounding community. These enhancements would be needed particularly for improving bicycle access to the site.

4.4 RECOMMENDATIONS

It is recommended that the following on-site pedestrian and bicycle enhancements be included in the redevelopment of the site:

- Provision of an ADA-accessible route from all four corners of Mt. Vernon square
- Provision of bicycle parking
- Installation of a Captial BikeShare station

5.0 TRANSIT SERVICE

The proposed retail redevelopment is located in an area with ample transit service that includes Metrobus and Metrorail. A transit analysis was conducted that includes all transit stops within a ¼-mile walkshed and ½-mile bikeshed of Carnegie Library, including existing Metrorail, Metrobus, DC Circulator, Loudoun Commuter Bus and proposed DC Streetcar routes and stops. Because the site is anticipated to generate fewer than 25 peak hour bus trips, an assessment of existing bus system capacity was not conducted.

5.1 EXISTING TRANSIT SERVICES

Table 12 below lists and Exhibit 93 in Appendix A shows the existing transit services that serve the study area within one half mile. The table includes the name of the type of transit, route, terminal stations/stops, operating hours, and headways during the PM and Saturday peak periods. It should be noted that although service changes came into effect June 25, 2017 that eliminated some Metrobus routes from the study area, these routes are included in this analysis to account for riders seeking and using alternative routes to travel to/from the study area.

Table 12: Existing and Proposed Transit Services within the Study Area

Transit	Terminals		Line	Service Headways		Operating Hours	
	From	To		PM Peak	Sat. Peak	Open	Close
Bus 42	Mt. Pleasant	Gallery Place	Mt. Pleasant	9 min	12-13 min	4:15 AM	3:15 AM
Bus 53	Takoma	McPherson Square	14th Street	20 min	24 min	4:00 AM	2:00 AM
Bus 63	Takoma	Federal Triangle	Takoma-Petworth	10 min	24 min	4:30 AM	2:00 AM
Bus 64	Fort Totten	Federal Triangle	Fort Totten-Petworth	15 min	22 min	5:00 AM	2:00 AM
Bus 70	Silver Spring	Archives	Georgia Ave – 7th Street	12 min	14 min	24 hours	
Bus 74	Mt. Vernon Square	SW Waterfront	Southwest Waterfront	15 min	24 min	4:45 AM	12:00 AM
Bus 79	Silver Spring	Archives	Georgia Ave – 7th St MetroExtra	10 min	15 min	6:00 AM	8:00 PM
Bus 80	Fort Totten	Kennedy Center	North Capitol Street	12 min	30 min	4:30 AM	2:00 AM
Bus D1	Glover Park	Franklin Square	Glover Park-Federal Triangle	30 min	-	5:30 AM	1:00 AM
Bus D4	Ivy City	Franklin Square	Ivy City-Franklin Square	18 min	30 min	4:00 AM	12:30 AM

Transit	Terminals		Line	Service Headways		Operating Hours	
	From	To		PM Peak	Sat. Peak	Open	Close
Bus D6	Stadium-Armory	Sibley Hospital	Sibley Hospital-Stadium Armory	18 min	30 min	4:00 AM	2:00 AM
Bus G8	Farragut West	Avondale	Rhode Island Avenue	12 min	30 min	4:30 AM	2:00 AM
Bus P17/P19	Fort Washington	Farragut West	Oxon Hill-Fort Washington	Eliminated			
Bus P6	Anacostia	Rhode Island Avenue	Anacostia-Eckington	15 min	35 min	24 hours	
Bus S2	Silver Spring	Federal Triangle	16th Street	24 min	30 min	24 hours	
Bus S9	Silver Spring	McPherson Square	16th Street MetroExtra	8 min	20 min	8:00 AM	8:00 PM
Bus W13	Fort Washington Forest via Friendly	Farragut West	Bock Road	Eliminated			
Bus X2	Minnesota Avenue	Lafayette Square	Benning Road – H Street	8 min	10 min	24 hours	
Bus X9	Capitol Heights	Metro Center	Benning Road – H St MetroExtra	16 min	-	6:00 AM	6:00 PM
DC Circulator	Union Station	Georgetown	Union Station - Georgetown	10 min	10 min	6:00 AM	12:00 AM
Rail	Glenmont	Shady Grove	Red Line	4-8 mins	12 min	Mon - Thu Fri Sat Sun	5:00 AM - 11:30 PM 5:00 AM - 1:00 AM 7:00 AM - 1:00 AM 8:00 AM - 11:00 PM
Rail	Branch Avenue	Greenbelt	Green Line	8 mins	12 min		
Rail	Huntington	Fort Totten	Yellow Line	8 mins	12 min		
Commuter Bus	Loudoun County, VA	Washington, DC	Loop	5-10 mins	-	5:00 AM	7:30 PM
DC Streetcar	Conceptual Stage Only					12 min	12 min

5.2 PROPOSED TRANSIT SERVICES

5.2.1 Union Station to Georgetown Streetcar

DDOT, in partnership with FHWA and FTA, is in the process of completing an Environmental Assessment (EA) for the proposed construction of an approximately three-mile DC Streetcar line

between Union Station and Georgetown. This new transit line is intended to provide better east-west connectivity and improve overall transit service in the corridor. An Alternatives Analysis study was completed in September 2013.

In this report, DDOT identified one recommended alternative that passes through the study area, directly adjacent to Mount Vernon Square on both K Street NW and Mt Vernon Place. However, based on the more recent EA public involvement meeting materials – the alternatives currently under consideration only pass to the south of Mount Vernon Square on K Street NW, with a station platform on both the north side of the street (for the westbound line) and in the median (for the eastbound line). It is anticipated that the final NEPA decision for approval of a final alternative will be made Fall 2018.

6.0 SITE ACCESS AND LOADING

The current Truck and Bus Through Routes and Restrictions map, published by DDOT in 2014, shows that all roads within the study area, with the exception of K Street NW east of 7th Street NW, are designated truck routes with no restrictions. Therefore, it is anticipated that freight/delivery vehicles will utilize the existing driveway and loading dock on Mt. Vernon Place NW for access and loading activities. This driveway, located in a historic district, conforms to DEM Section 31.2.3.2 DDOT Requirements: Commercial Driveway, with the exception of vehicle entry. Due to the relatively small size of the existing loading driveway, trucks will have to back into the driveway. The historic nature of the building and grounds cannot accommodate a larger driveway that is capable of supporting vehicle turn-arounds. Accommodations for pedestrians and bicyclists are provided at the access point.

According to the mode split discussed in Section 3.4.3.2.1 and shown in Tables 6 and 7, there are expected to be up to three delivery vehicle trips (two entering, one exiting) during the PM peak hour and up to five delivery vehicles trips (three entering, two exiting) during the Saturday peak hour. Although Mt Vernon Place NW is a two-way roadway, it was assumed that all such vehicles would perform back-in and right-out maneuvers. Furthermore, the retail tenant has stipulated that deliveries will occur outside of the AM (7:00 AM – 10:00 AM) and PM (3:00 PM – 7:00 PM) peak periods, thus reducing the impact of the back-in operation.

DDOT requires AutoTURN diagrams as verification that no turning maneuvers will interfere with roadway operations or on-street parking lanes. According to the retail tenant, all deliveries will be made by 30-foot, single-unit truck. Exhibit 94 in Appendix A shows that the right-out turning maneuvers for this type of truck do not interfere with roadway operations.

7.0 PARKING

No onsite parking will be provided. Patrons wishing to access the site via a vehicle will park on-street or at nearby surface and garage parking facilities.

7.1 ON-STREET PARKING

The area surrounding the Carnegie Library site restricts on-street parking by type and time of day. During a site visit on Thursday, June 15, 2017, it was observed that most on-street parking facilities were fully utilized from morning through evening, including peak hours where permitted. Therefore, it was assumed that approximately 15% of patrons arriving during the PM peak hour would be able to find on-street parking. The available on-street parking for cars during both PM and Saturday peak hours was identified within a two-block walking distance of the site and is shown in Exhibits 95 and 96 in Appendix A.

7.2 SURFACE AND GARAGE PARKING FACILITIES

7.2.1 Surface Parking

There are six (6) off-street surface parking lots within walking distance of the Carnegie Library. The operating hours of the lots are noted below in Table 13 and shown in Exhibits 95 and 96 in Appendix A. The two sites highlighted in the table are those that lie within one block of the site and were included in the vehicle distribution analysis.

Table 13: Study Area Surface Parking Lots

Lot	Operating Hours
900 New York Avenue NW, PMI Parking Lot	Seven days a week, 24 hours a day
1001 6th Street NW	Monday – Friday 6:00 AM – 7:00 PM Saturday – Sunday 8:00AM – 5:00 PM
1016 6th Street NW	Seven days a week, hours unknown
915 5th Street NW	Monday – Saturday, 5:30 AM – 8:00 PM
622 I Street NW	Monday through Saturday, hours unknown
615 H Street NW	Monday through Saturday, hours unknown

*Only the highlighted lots were considered in the traffic analysis.

7.2.2 Garage Parking

There are seventeen (17) off-street sub-surface parking garages within walking distance of the Carnegie Library. The operating hours of the lots are noted below in Table 14 and shown in Exhibits 95 and 96 in Appendix A. The sites highlighted in the table are those that lie within one block of the site and were included in the vehicle distribution analysis.

Table 14: Study Area Garage Parking

Lot	Operating Hours
Marriott Marquis	Seven days a week, 24 hours a day
901 K Street NW	Seven days a week, 7:00 AM – 7:00 PM
1100 L Street NW	Seven days a week, 7:00 AM – 7:00 PM
1101 New York Ave NW	Monday – Friday 6:00 AM – 7:00 PM Saturday 6:00 AM – 4:00 PM Sunday 8:00 AM – 4:00 PM
1050 K Street NW	Monday – Friday 7:00 AM – 7:00 PM
1099 New York Ave NW	Monday – Friday 7:00 AM – 11:00 PM Saturday 10:00 AM – 11:00 PM
Embassy Suites	Seven days a week, 24 hours a day
901 New York Avenue NW	Monday – Friday 7:00 AM – 7:00 PM
845 11th Street NW	Monday – Friday 6:00 AM – 12:00 AM Saturday 9:00 AM – 7:00 PM
870 9th Street NW (City Center DC)	Seven days a week, 24 hours a day
The Victor Building	Monday – Friday 6:00 AM – 7:00 PM
999 9th Street NW	Seven days a week, 24 hours a day
650 Massachusetts Avenue NW	Monday – Friday 6:30 AM – 6:30 PM
600 Massachusetts Avenue NW	Seven days a week, 6:00 AM – 1:00 AM
500 H Street NW	Seven days a week, 24 hours a day
Hampton Inn	Seven days a week, 24 hours a day
601 Massachusetts Avenue NW	Monday – Friday 7:00 AM – 8:00 PM

*Only the highlighted lots were considered in the traffic analysis.

7.3 PARKING UTILIZATION

Parking utilization spot counts were conducted for two garage and two surface parking facilities on Thursday, July 20, 2017 to determine if sufficient capacity for patrons exists during peak hours. Table 15 shows the facility and the total number of available spaces noted during the counts. Please note that bicycle racks are also available in the 600 Massachusetts Avenue NW garage.

Table 15: Available Off-Street Parking

Facility	Available Parking Spaces
900 New York Avenue (Surface)	63
1016 6th Street (Surface)	18
901 K Street NW (Garage)	45
600 Massachusetts Avenue NW (Garage)	220 car/12 bicycle

The surrounding land uses consist primarily of office space, thus the parking demand for the proposed retail facility (evening and weekends) would correspond with times of lower utilization at the nearby surface and structured parking facilities. In addition, the site generates a relatively low maximum parking demand of 125 vehicles in the PM peak hour and 158 vehicles on a Saturday peak hour. Furthermore, the nearby site-specific developments included in this CTR include sub-surface parking, thus reducing the potential demand on the existing nearby parking facilities. Therefore, it can be assumed that these vehicles would be easily accommodated with in the nearby off-street parking facilities, as well as on-street parking.

8.0 TRANSPORTATION DEMAND MANAGEMENT (TDM)

Transportation demand management (TDM) is the application of policies and strategies to reduce travel demand (typically single-occupancy private vehicles) or to redistribute that demand over other non-peak times. TDM strategies are typically more challenging to apply to retail facilities as the majority of trips are generated by customers, and the retail tenant has little control over how and when people arrive to the site. Furthermore, staffing is more limited than office development, and employees have a variety of shift schedules, thus making it more difficult to coordinate employee-wide programs. However, this section will discuss potential TDM strategies that could be employed by the retail tenant to encourage employees to commute via non-auto modes, as well as support customers' use of non-auto modes.

8.1 POTENTIAL TDM STRATEGIES

Potential TDM strategies that would be appropriate and effective for retail sites, such as the one being proposed, include:

- Designate an employee to serve as a TDM coordinator to organize and promote the TDM plan and the use of alternative transportation modes. This person will also act as the point of contact with DDOT.
- Provide a real-time transit station within the lobby of the facility that includes alternative mode information using electronic message boards.
- Encourage employees to join carpool and vanpool programs, as well as the guaranteed ride home service, provided by MWCOG's Commuter Connections.
- Provide SmartBenefits (transit subsidies) for employees.
- Schedule shift changes to occur outside traditional AM (7:00 AM – 9:00 AM) and PM (4:00 PM – 6:00 PM) peak periods.
- Provide sheltered bicycle parking and shower accommodations for employees that wish to commute via bicycle.
- Provide a Capital Bikeshare station on Mount Vernon Square.

9.0 PERFORMANCE MONITORING AND MEASUREMENT

The proposed retail development is not anticipated to generate over 200 drive alone vehicle trips during worst-case peak periods. As such, this CTR does not prescribe performance monitoring and measurement. However, as noted in the discussion of mitigation measures in Section 3.4, it is recommended that a post-development customer survey be conducted to compare the anticipated mode split with the actual mode split. Conducting this analysis may help to determine if the mitigation measures that require additional turn lanes and removal of on-street parking are warranted. The methodology described in "801 K Street Trip Generation and Mode Split Estimates" (Appendix D) should be used.

10.0 SAFETY

11.0 STREETSCAPE/PUBLIC REALM

The scope of the project consists of rehabilitation and exterior restoration of the Carnegie Library at 801 K Street NW. A full interior rehabilitation along with exterior restoration is planned. However, very limited site improvements are proposed for Mt. Vernon Square and include modest upgrades to the north and south plazas and planting areas immediately surrounding the building to bring aspects of the project into conformance with code and storm water management requirements.

There are minor improvements proposed for the public realm between the edge of the Mt. Vernon Square curb and sidewalk on the south side of the site along K Street NW. The project applicant has been coordinating with DDOT Public Realm and the Ward 2 Arborist through June and July 2017 in the design development phase to request replacement in-kind for the two underperforming street trees at the entrance to the south plaza as well as the relocation of the center-aligned street lamp and parking kiosk to an adjacent location off the center axis of the south entry. To unify the street lamps along the south edge of the site, the project applicant would replace the cobra head light fixtures with decorative teardrop lamps through a combination of new fixtures and replacement (see attached). A comprehensive tree survey was completed early in the design phase and adequate tree protection will be provided during construction to avoid damage to critical root zones.

There are no proposed doors opening into the public space, utility vaults, parking, vehicle ramps, or outdoor seating located with the public realm.

The project applicant will continue to coordinate with DDOT to ensure the proposed improvements are undertaken in accordance with DDOT standards and guidelines.

12.0 CONCLUSION

This Comprehensive Transportation Review (CTR) Report documents the results of an analysis of the potential impact of modifications to the Carnegie Library to include a retail tenant that would occupy approximately 12,614 square feet of the facility. The results of the capacity analysis show a relatively limited impact on the study areas transportation network due to the anticipated non-auto mode split of 60%. The additional vehicle trips generated by the site would be added to an already-congested roadway network, resulting in an increase in delay on several intersection approaches that warrant mitigation, primarily in the PM peak hour. Recommended mitigation measure include:

Vehicular

- Signal timing and phasing revisions;
- Restriping sections of K Street NW between 9th Street NW and 7th Street NW to accommodate left-turn lanes;
- Providing a protected-permissive left-turn from westbound K Street NW to southbound 9th St NW;
- Providing a protected-permissive left-turn from eastbound K Street NW to northbound 7th Street NW.
- Restriping the northbound 7th Street NW approach to the intersection of Mt. Vernon Place/New York Avenue NW to provide two left-turn lanes, one through lane, and one shared through-right lane;
- Providing a designated rideshare (taxi/Uber/Lyft) pick-up/drop-off area on K Street NW between 9th Street NW and 7th Street NW; and,
- Advanced coordination with DDOT and MPD prior to large events or product releases.

Pedestrian/Bicycle

- Provision of an ADA-accessible route from all four corners of Mt. Vernon square
- Provision of bicycle parking
- Installation of a Captial BikeShare station

The recommended vehicular mitigation measures would address these increases in delay, and would improve most approaches to operate better than the No Build Condition. However, it should be noted that if the proposed DC Streetcar is routed along K Street NW, these recommendations may need to be reduced to signal timing improvements only. Furthermore, it is our recommendation that the vehicular mitigation measures be evaluated after the retail site opens to determine if they are warranted. The anticipated additional vehicle trips analyzed in this report were estimated utilizing data obtained at similar retail sites. However, given the existing and projected background congestion in the study area during the PM peak period, and the ample number of retail locations elsewhere in the DC metropolitan area, it is unlikely that PM peak hour trips would be generated from suburban communities outside of DC. Therefore, non-auto mode share may be higher than anticipated. A post-development survey may help to evaluate actual

customer travel patterns, and determine if the more significant enhancements, such as the removal of on-street parking to accommodate left-turn bays are needed.

13.0 REFERENCES

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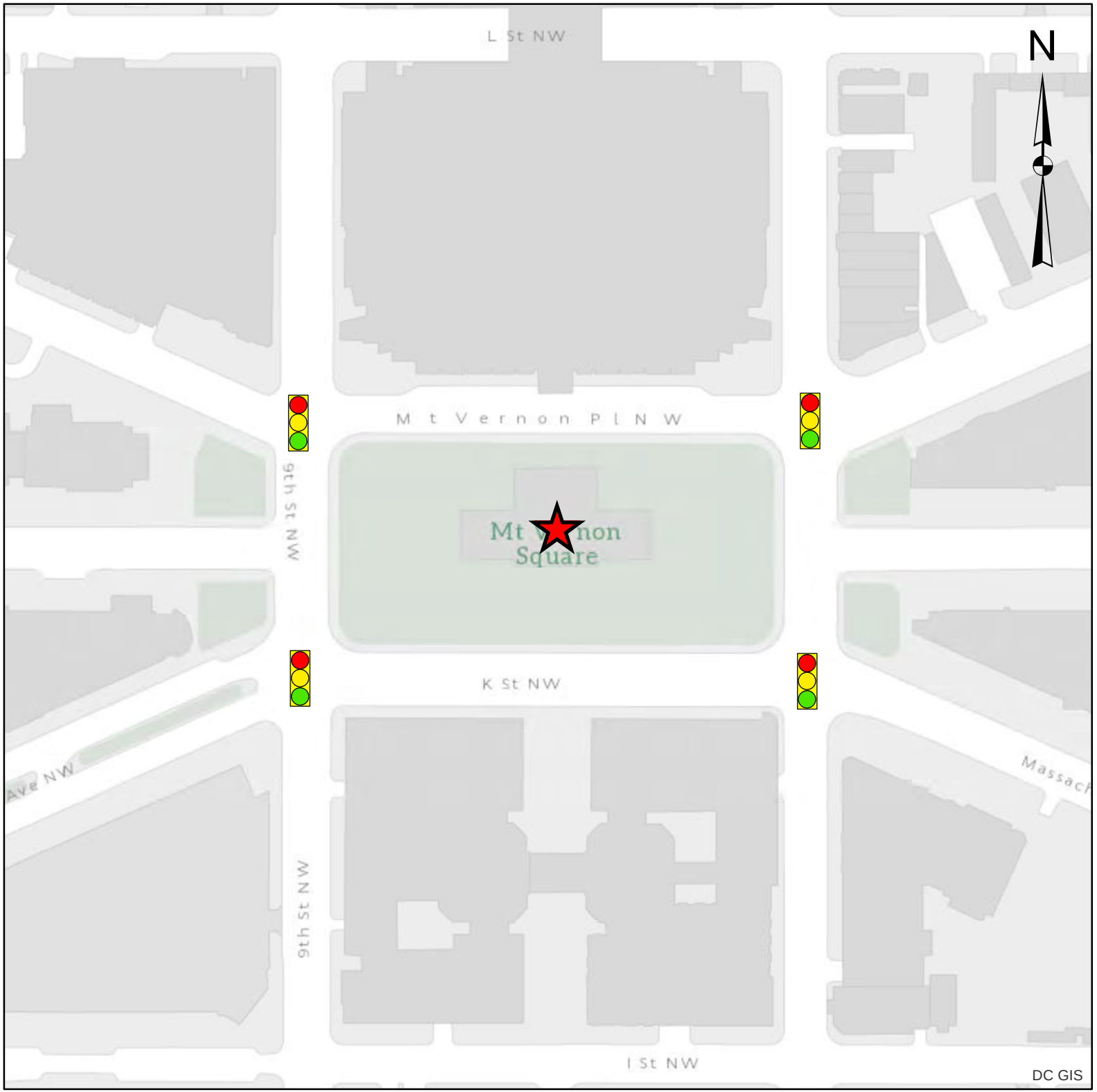
APPENDIX A
REPORT EXHIBITS

Stantec



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Legend

Project Site

Signalized Intersection

Notes

Client/Project

APPLE, INC

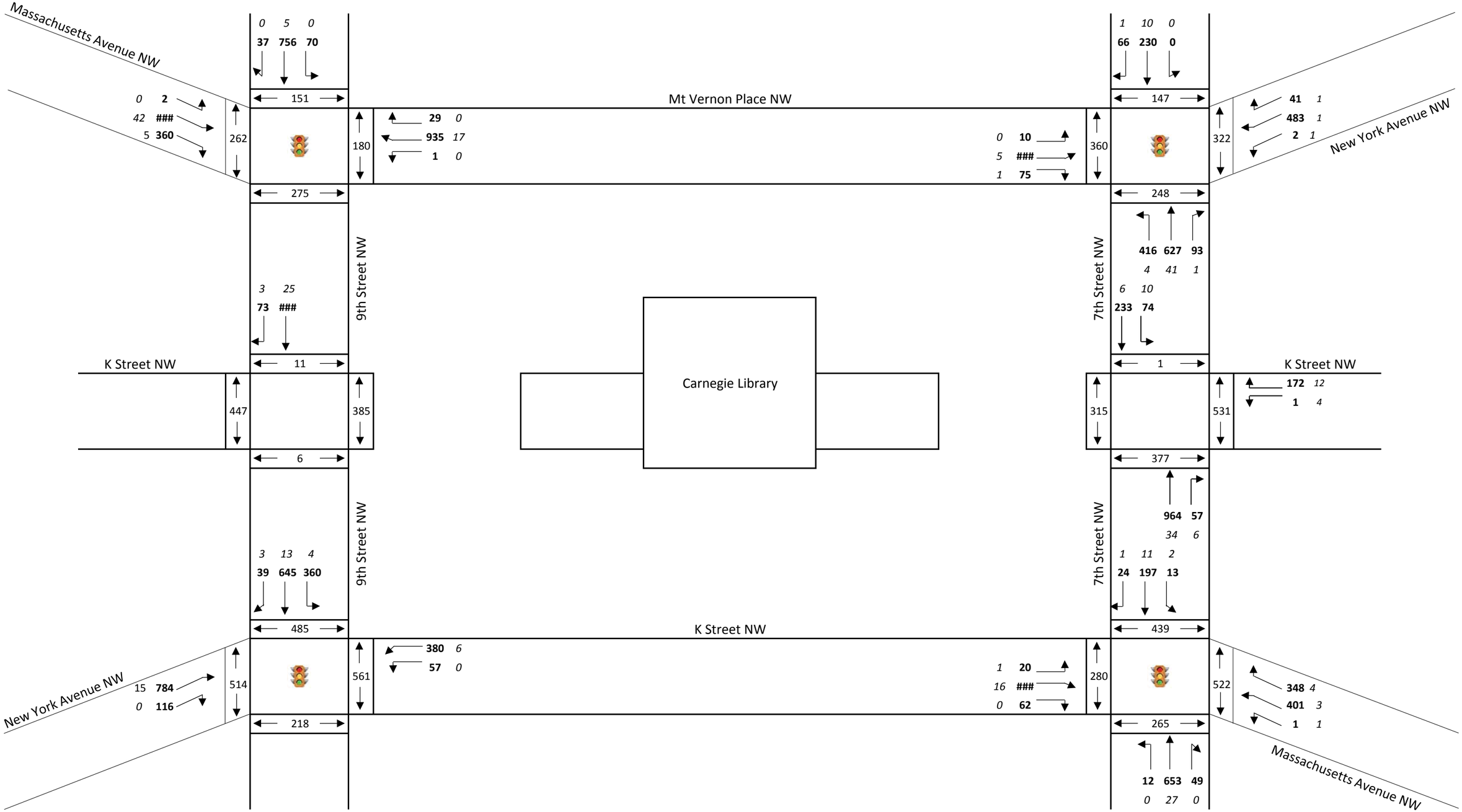
CARNEGIE LIBRARY REDEVELOPMENT
801 K STREET NW
Washington, DC

Title

Exhibit 1 - Study Area

Project No.
2028113119

Scale
1:200



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801 K STREET
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Exhibit 2
2017 Existing Traffic Volumes
PM Peak Hour (4:45 PM - 5:45 PM)

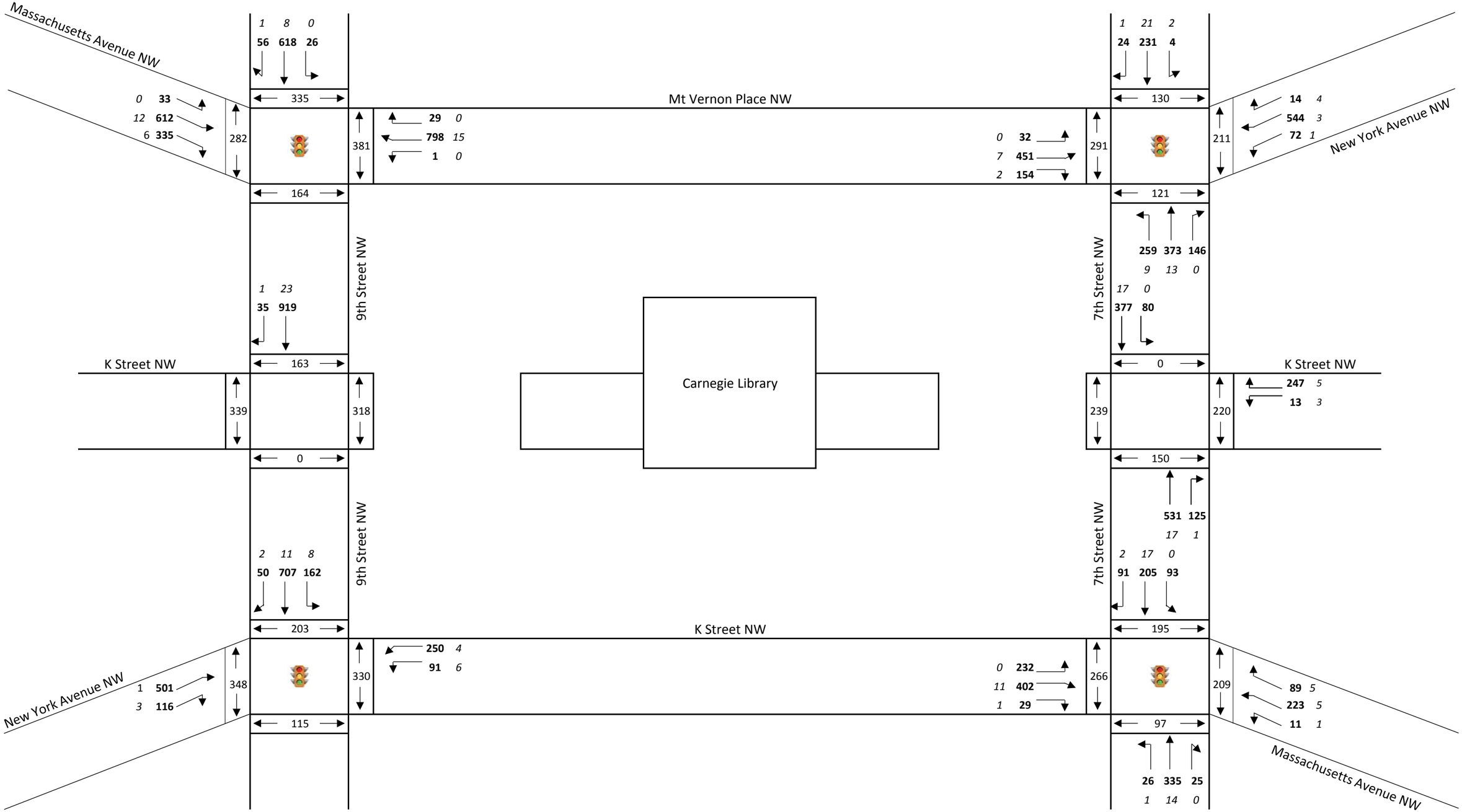
LEGEND

Traffic Signal

← XXX Vehicular Volume (vph)

XXX Bicycle Volume (bph)

← XXX → Crosswalk Pedestrian Volume (ped/hr)



Stantec 6110 Frost Place Laurel, MD 20707-2927 T: (301) 982-2800	**801 K STREET** **WASHINGTON, DC**	**Exhibit 3** **2017 Existing Traffic Volumes** **Saturday Peak Hour (1:00 PM - 2:00 PM)**	**LEGEND** Traffic Signal ← XXX Vehicular Volume (vph) *XXX* Bicycle Volume (bph) ← XXX → Crosswalk Pedestrian Volume (ped/hr)

Exhibit 4
801 K Street NW
Capacity Analysis Results
2017 Existing Condition

Intersection	Lane Group	PM Peak Hour (4:45 PM - 5:45 PM)					Lane Group	Sat Peak Hour (1:00 PM - 2:00 PM)				
		v/c Ratio	Delay (sec)	Level of Service	50th %tile Queue Length (ft)	95th %tile Queue Length (ft)		v/c Ratio	Delay (sec)	Level of Service	50th %tile Queue Length (ft)	95th %tile Queue Length (ft)
9th Street NW & Massachusetts Avenue NW/ Mt Vernon Place NW *Signalized*	**EB-LT**	0.79	58.1	E	382	480	**EB-LT**	0.43	13.8	B	125	168
	EB-R	0.61	14.5	F	58	159	**EB-R**	0.51	5.9	A	0	66
	WB-LTR	0.61	9.7	A	90	m114	**WB-LTR**	0.51	8.4	A	57	m115
	SB-LTR	0.75	34.9	C	283	361	**SB-LTR**	0.79	39.4	D	226	298
	Intersection	-	34.4	C	-	-	**Intersection**	-	18.1	B	-	-
9th Street NW & New York Avenue NW/ K Street NW *Signalized*	**EB-T**	0.90	53.6	D	295	#410	**EB-T**	0.43	24.6	C	128	175
	EB-R	0.37	13.5	B	15	66	**EB-R**	0.27	7.5	A	7	45
	WB-LT	0.91dl	69.9	E	184	m#253	**WB-LT**	0.43	25.7	C	85	134
	SB-L	0.51	19.7	B	73	m132	**SB-L**	0.61	57.0	E	91	m140
	SB-LT	0.36	6.1	A	42	51	**SB-LT**	0.45	31.4	C	130	170
	SB-R	0.07	0.4	A	0	m1	**SB-R**	0.10	13.6	B	7	m18
	Intersection	-	35.1	D	-	-	**Intersection**	-	28.6	C	-	-
7th Street NW & Mt Vernon Place NW/ New York Avenue NW *Signalized*	**EB-LTR**	0.99	76.8	E	566	#706	**EB-LTR**	0.57	11.5	B	157	215
	WB-LT	0.34	20.4	C	118	159	**WB-LT**	0.60	26.0	C	163	222
	WB-R	0.08	0.3	A	0	0	**WB-R**	0.03	0.1	A	0	0
	NB-L	1.28	177.6	F	~396	m#553	**NB-L**	0.85	62.2	E	129	#293
	NB-T	0.46	16.9	B	102	128	**NB-T**	0.27	17.6	B	72	112
	NB-R	0.20	6.8	A	7	m21	**NB-R**	0.26	5.0	A	9	41
	SB-LTR	0.53	39.6	D	93	140	**SB-LTR**	0.49	39.1	D	78	119
	Intersection	-	63.6	E	-	-	**Intersection**	-	24.7	C	-	-
7th Street NW & K Street NW *Unsignalized*	**WB-LR**	1.30	236.9	F	-	284	**WB-LR**	0.73	37.8	E	-	140
	NB-TR	0.17	0.0	A	-	0	**NB-TR**	0.12	0.0	A	-	0
	SB-LT	0.39	23.7	C	-	43	**SB-LT**	0.14	5.9	A	-	12
	Intersection	-	29.7	D	-	-	**Intersection**	-	8.0	A	-	-
7th Street NW & K Street NW/ Massachusetts Avenue NW *Signalized*	**EB-LTR**	0.70	24.7	C	429	m111	**EB-LTR**	0.60	32.1	F	193	239
	WB-LTR	0.54	16.2	B	171	225	**WB-LTR**	0.22	10.4	B	45	70
	NB-LTR	0.81	52.1	D	253	331	**NB-LTR**	0.41	26.5	C	100	143
	SB-LTR	0.30	10.8	B	27	m35	**SB-LTR**	0.60	39.4	D	128	179
	Intersection	-	28.2	C	-	-	**Intersection**	-	28.5	C	-	-

v/c ratio = volume/capacity ratio
Source: Synchro 9

Exhibit 5
801 K Street NW
Site-Specific Development Trip Generation and Mode Splits

Trip Generation

1126 9th Street NW			PM Peak Hour			Saturday Peak Hour		
LUC	Size	Units	In	Out	Total	In	Out	Total
230	33	DU	16	8	24	28	24	52
TDM Reduction (70%)			*11*	*6*	*17*	*20*	*17*	*36*
New Vehicle Trips			**5**	**2**	**7**	**8**	**7**	**16**
710	3,723	SF	1	5	6	1	1	2
TDM Reduction (75%)			*1*	*4*	*5*	*1*	*1*	*2*
New Vehicle Trips			**0**	**1**	**1**	**0**	**0**	**1**
Total Trips			17	13	30	29	25	54
Total TDM Reduction			*12*	*10*	*22*	*20*	*18*	*38*
Total New Trips			**5**	**3**	**8**	**9**	**7**	**16**

655 New York Avenue NW			PM Peak Hour			Saturday Peak Hour		
LUC	Size	Unit	In	Out	Total	In	Out	Total
710	678,000	SF	142	696	838	158	134	292
826	79,000	SF	93	118	211	93	118	211
Total New Vehicular Trips			**235**	**814**	**1049**	**251**	**252**	**503**

950 New York Avenue NW			PM Peak Hour			Saturday Peak Hour		
LUC	Size	Unit	In	Out	Total	In	Out	Total
310	360	Key	110	106	216	145	114	259
826	30,000	SF	41	52	93	41	52	93
Total New Vehicular Trips			**151**	**158**	**309**	**186**	**166**	**352**

Residential and Retail Mode Splits

	Mode Split %		PM Trips						Saturday Trips					
			1126 9th Street NW			950 New York Avenue NW			1126 9th Street NW			950 New York Avenue NW		
Mode	**In**	**Out**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
Drive Alone	38%	38%	6	5	11	57	60	117	11	9	20	70	63	133
Carpool	7%	7%	1	1	2	10	11	21	2	2	4	13	11	24
Car-share	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0
Taxi/ Uber/ Lyft	0%	0%	0	0	0	1	1	1	0	0	0	1	1	1
Delivery	0%	0%	0	0	0	0	0	0	0	0	0	0	0	0
Bus	18%	18%	3	2	5	26	28	54	5	4	9	33	29	62
Rail/ Subway	22%	22%	4	3	7	34	35	69	6	6	12	42	37	79
Walk	13%	13%	2	2	4	19	20	39	4	3	7	24	21	45
Bike	2%	2%	0	0	1	4	4	7	1	1	1	4	4	8
	Total		**17**	**13**	**30**	**151**	**158**	**309**	**29**	**25**	**54**	**186**	**166**	**352**

Office and Retail Mode Splits

	Mode Split %		PM Trips			Saturday Trips		
			655 New York Avenue NW			655 New York Avenue NW		
Mode	**In**	**Out**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
Drive Alone	45%	45%	105	364	469	112	113	225
Carpool	11%	11%	26	92	118	28	28	57
Car-share	0%	0%	0	0	0	0	0	0
Taxi/ Uber/ Lyft	0%	0%	1	2	2	1	1	1
Delivery	0%	0%	0	0	0	0	0	0
Bus	11%	11%	27	92	119	28	29	57
Rail/ Subway	27%	27%	63	217	279	67	67	134
Walk	5%	5%	11	39	50	12	12	24
Bike	1%	1%	3	9	12	3	3	6
	Total		**235**	**814**	**1049**	**251**	**252**	**503**

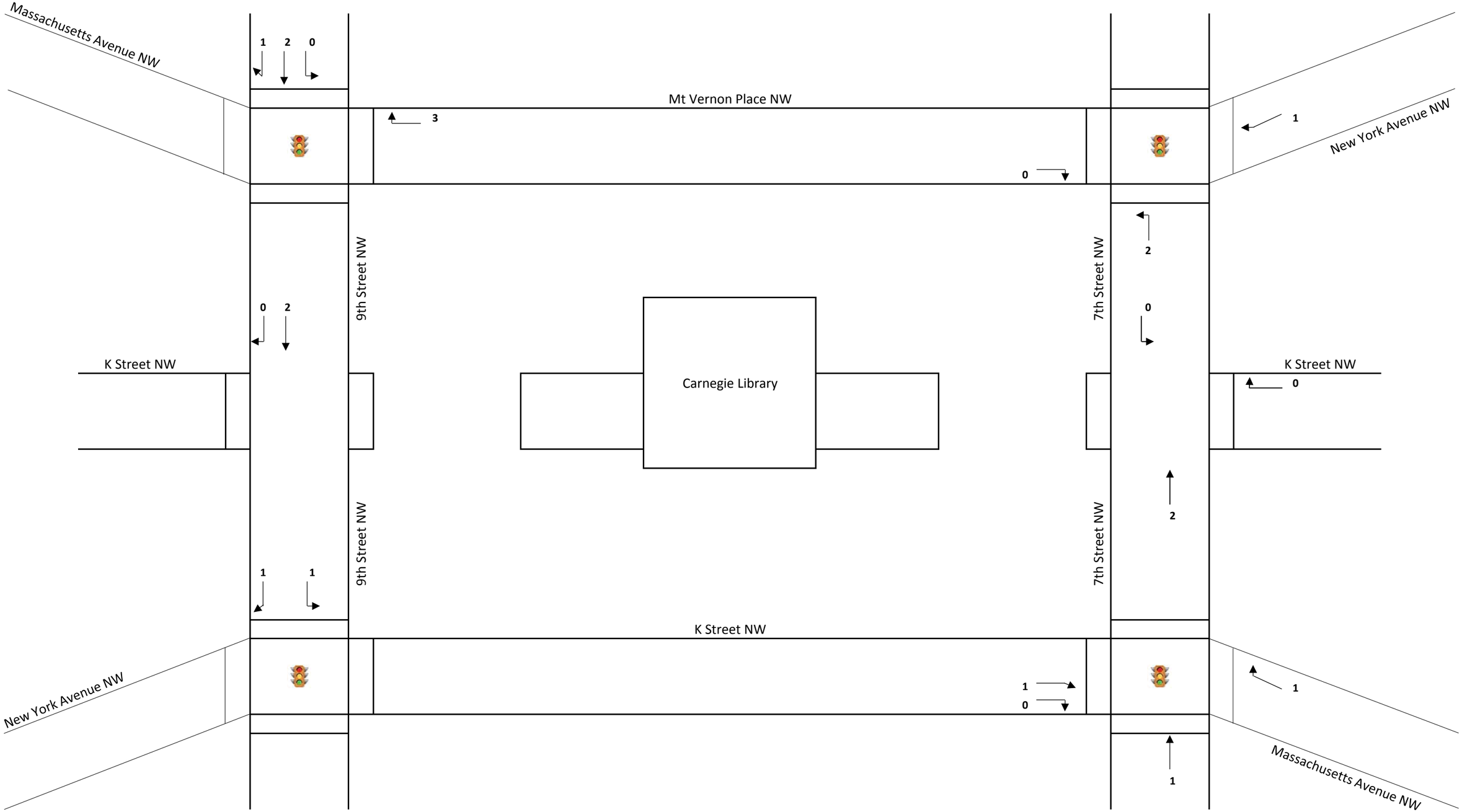


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Exhibit 6
Trip Generation - 1126 9th Street NW
PM Peak Hour (4:45 PM - 5:45 PM)

LEGEND

← XXX Vehicular Volume (vph)

Traffic Signal

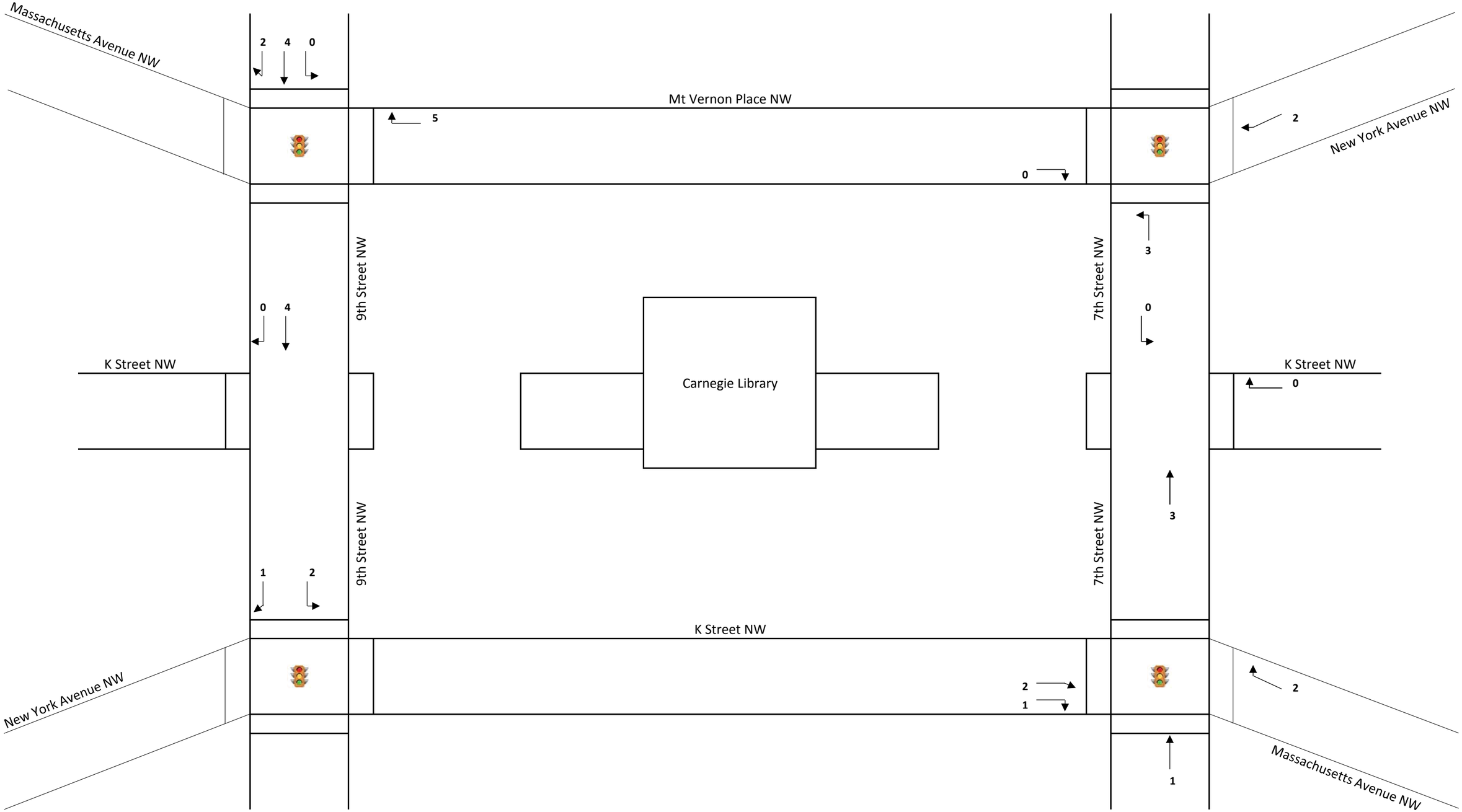

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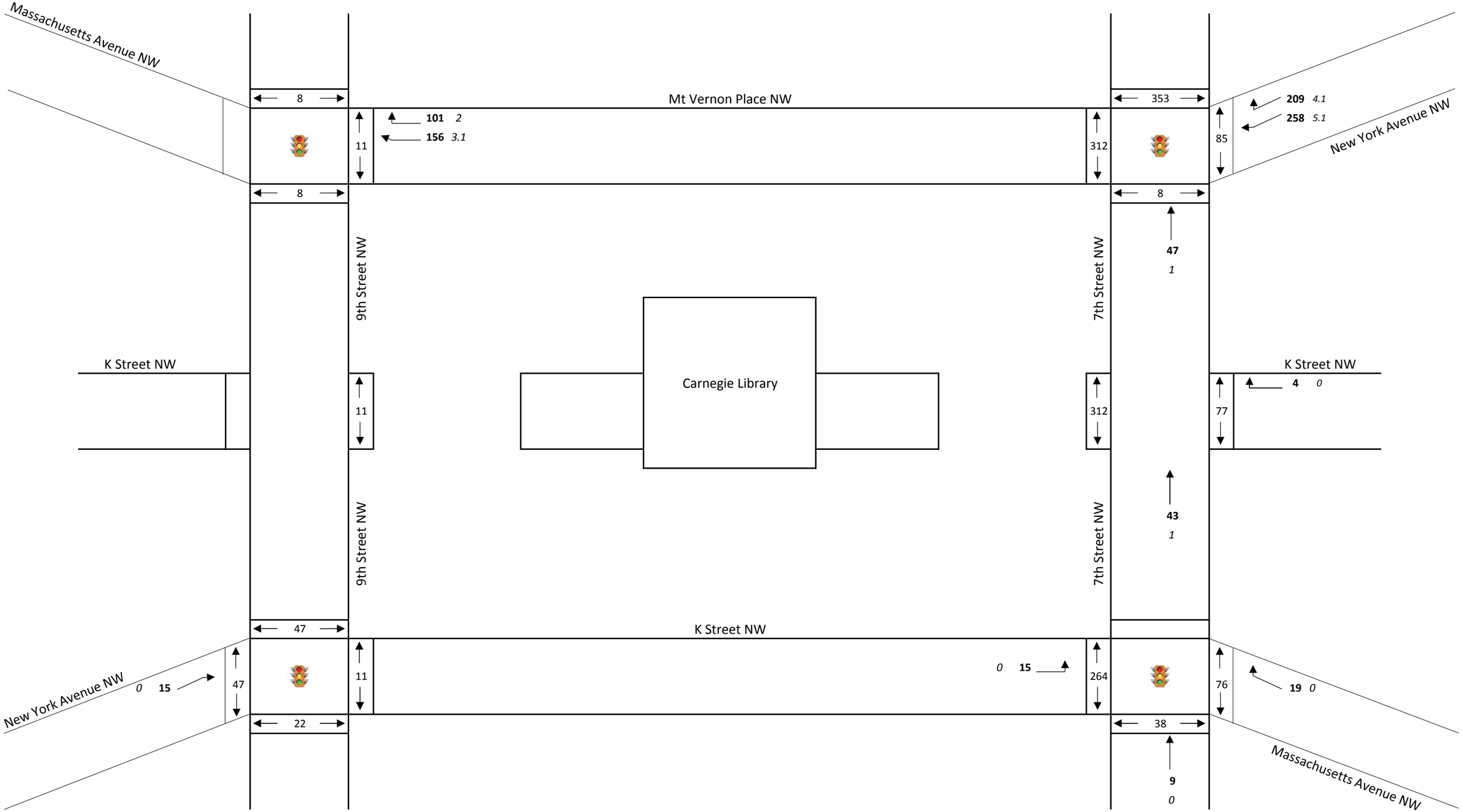
Exhibit 7
Trip Generation - 1126 9th Street NW
Saturday Peak Hour (1:00 PM - 2:00 PM)

LEGEND

← XXX Vehicular Volume (vph)

Traffic Signal



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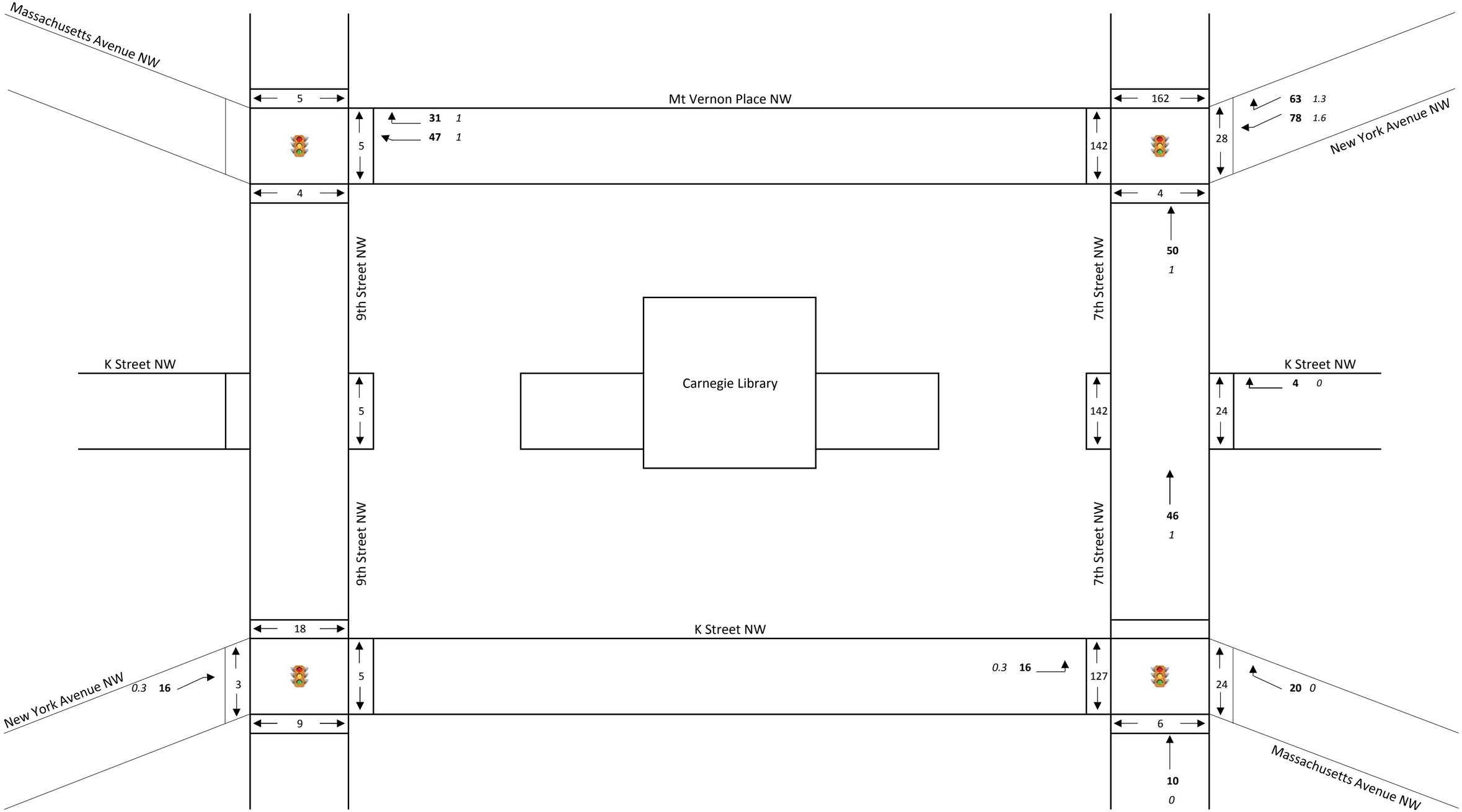

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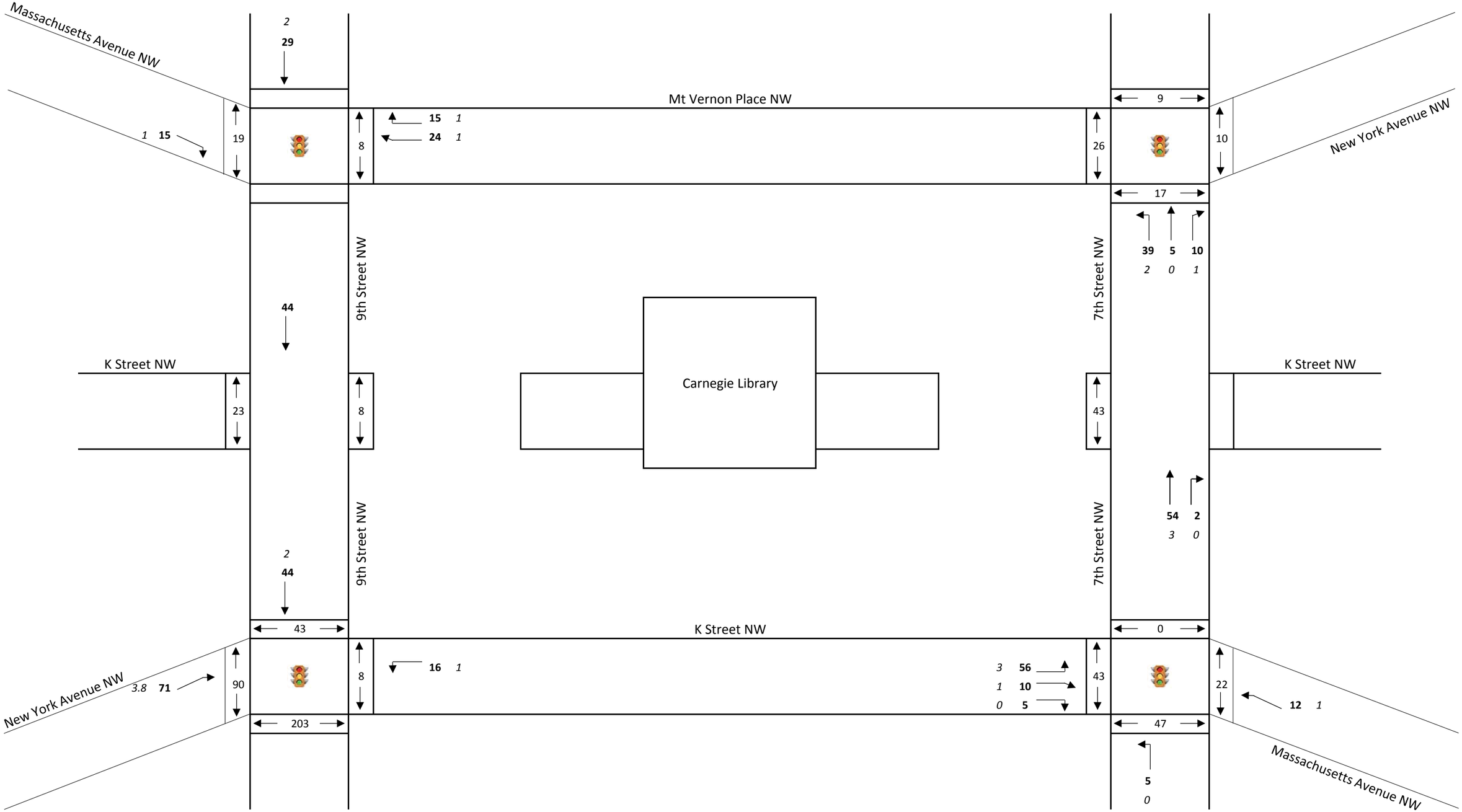
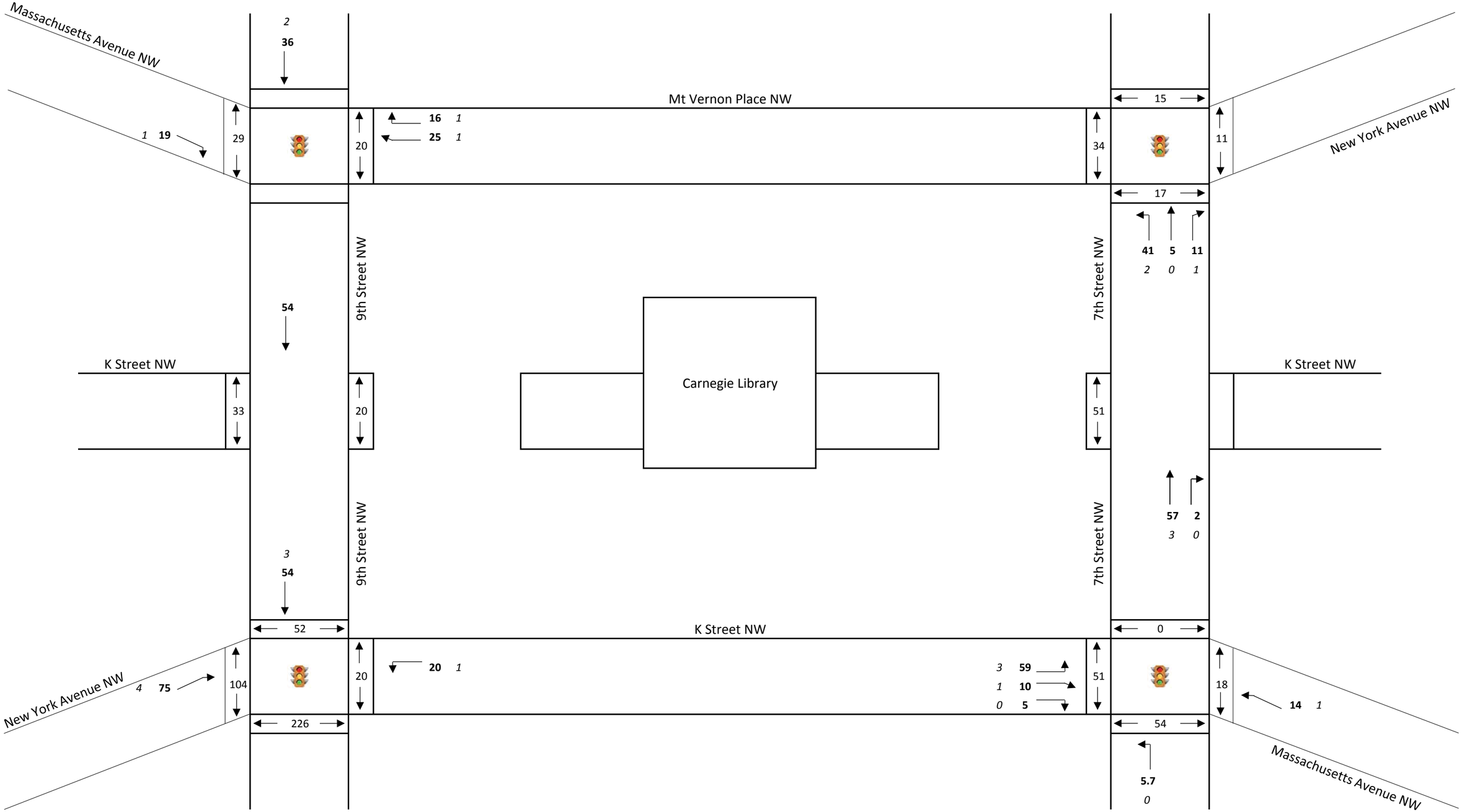


Stantec 6110 Frost Place Laurel, MD 20707-2927 T: (301) 982-2800	**801 K STREET** **WASHINGTON, DC**	**Exhibit 10** **Trip Generation - 950 New York Avenue NW** **PM Peak Hour (4:45 PM - 5:45 PM)**	**LEGEND** Traffic Signal ← **XXX** Vehicular Volume (vph) *XXX* Bicycle Volume (bph) ← XXX → Crosswalk Pedestrian Volume (ped/hr)



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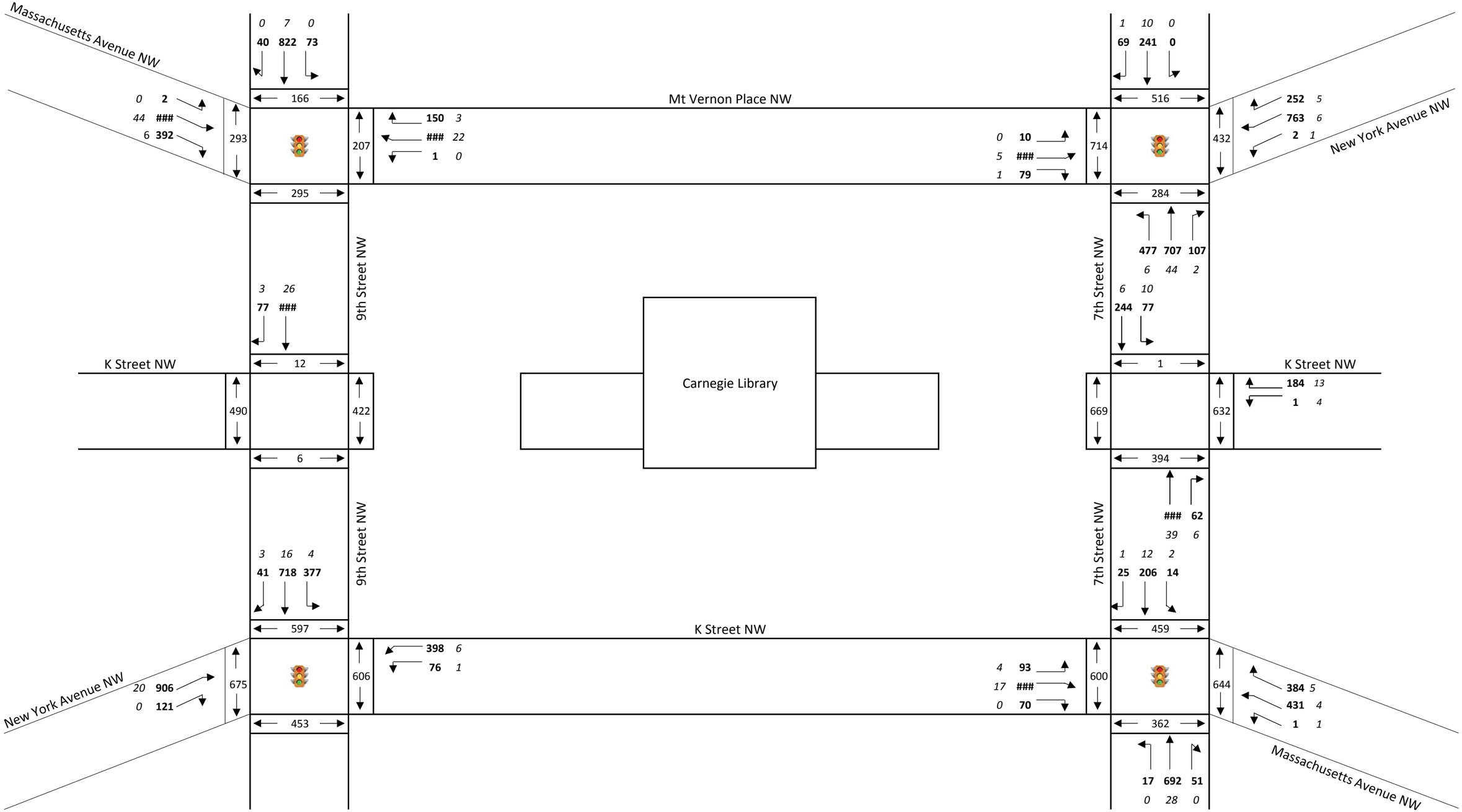

Stantec 6110 Frost Place Laurel, MD 20707-2927 T: (301) 982-2800	**801 K STREET** **WASHINGTON, DC**	**Exhibit 12** **2020 No Build Traffic Volumes** **PM Peak Hour (4:45 PM - 5:45 PM)**	**LEGEND** Traffic Signal ← XXX Vehicular Volume (vph) XXX Bicycle Volume (bph) ← XXX → Crosswalk Pedestrian Volume (ped/hr)

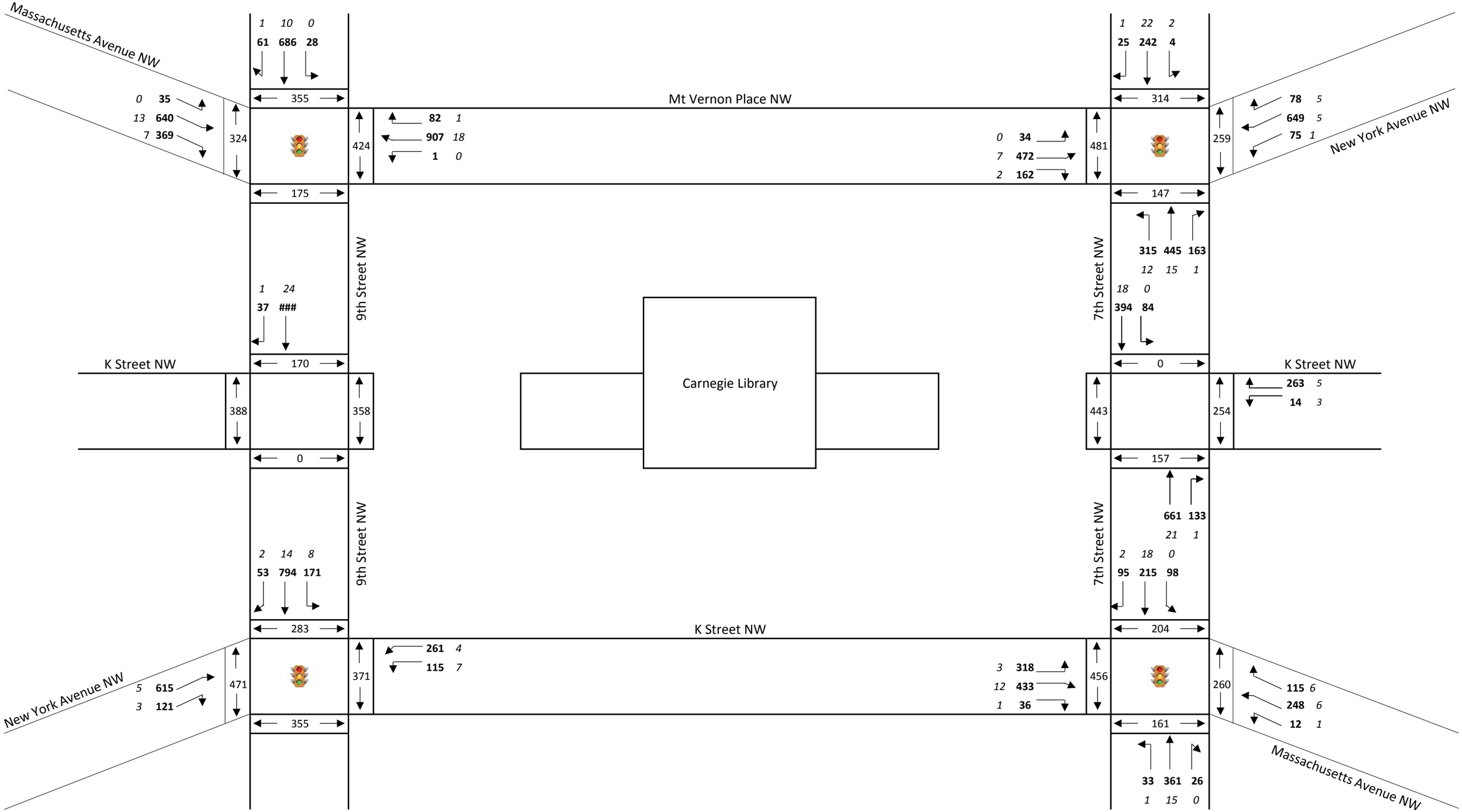

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Exhibit 13
2020 No Build Traffic Volumes
Saturday Peak Hour (1:00 PM - 2:00 PM)

LEGEND

- Traffic Signal
- ← XXX — Vehicular Volume (vph)
- XXX — Bicycle Volume (bph)
- ← XXX → — Crosswalk Pedestrian Volume (ped/hr)

Exhibit 14
801 K Street NW
Capacity Analysis Results
2020 No Build Condition

Intersection	Lane Group	PM Peak Hour (4:45 PM - 5:45 PM)					Lane Group	Sat Peak Hour (1:00 PM - 2:00 PM)				
		v/c Ratio	Delay (sec)	Level of Service	50th %tile Queue Length (ft)	95th %tile Queue Length (ft)		v/c Ratio	Delay (sec)	Level of Service	50th %tile Queue Length (ft)	95th %tile Queue Length (ft)
9th Street NW & Massachusetts Avenue NW/ Mt Vernon Place NW *Signalized*	**EB-LT**	0.83	74.6	E	414	520	**EB-LT**	0.46	14.3	B	134	180
	EB-R	0.56	16.3	B	73	186	**EB-R**	0.55	6.0	A	0	70
	WB-LTR	0.85	21.4	C	197	m210	**WB-LTR**	0.62	11.1	B	97	m148
	SB-LTR	0.81	37.7	D	317	402	**SB-LTR**	0.87	45.0	D	260	#366
	Intersection	-	42.8	D	-	-	**Intersection**	-	20.5	C	-	-
9th Street NW & New York Avenue NW/ K Street NW *Signalized*	**EB-T**	1.04	102.7	F	~385	#515	**EB-T**	0.52	26.2	C	164	219
	EB-R	0.45	16.1	B	18	76	**EB-R**	0.33	8.9	A	9	52
	WB-LT	1.21dl	96.3	F	~201	m#309	**WB-LT**	0.53	28.7	C	101	156
	SB-L	0.55	21.8	C	80	m158	**SB-L**	0.64	58.2	E	100	m139
	SB-LT	0.39	6.7	A	45	70	**SB-LT**	0.51	33.6	C	152	m184
	SB-R	0.07	0.9	A	0	m1	**SB-R**	0.11	14.4	B	12	m17
	Intersection	-	57.7	E	-	-	**Intersection**	-	30.5	C	-	-
7th Street NW & Mt Vernon Place NW/ New York Avenue NW *Signalized*	**EB-LTR**	1.04	75.2	F	~617	#761	**EB-LTR**	0.62	12.3	B	168	m231
	WB-LT	0.55	24.0	C	211	272	**WB-LT**	0.71	29.1	C	204	275
	WB-R	0.60	18.7	B	73	168	**WB-R**	0.20	1.9	A	0	8
	NB-L	1.47	255.7	F	~493	m#621	**NB-L**	1.03	112.3	F	~188	m#381
	NB-T	0.51	19.1	B	128	m154	**NB-T**	0.32	18.3	B	91	131
	NB-R	0.24	8.3	A	14	m27	**NB-R**	0.32	8.2	A	17	m55
	SB-LTR	0.58	41.2	D	100	148	**SB-LTR**	0.51	39.7	D	82	125
	Intersection	-	69.1	E	-	-	**Intersection**	-	31.9	C	-	-
7th Street NW & K Street NW *Unsignalized*	**WB-LR**	2.37	733.5	F	-	457	**WB-LR**	0.91	68.5	F	-	218
	NB-TR	0.20	0.0	A	-	0	**NB-TR**	0.14	0.0	A	-	0
	SB-LT	0.63	59.7	F	-	83	**SB-LT**	0.17	6.9	A	-	15
	Intersection	-	86.7	F	-	-	**Intersection**	-	13.2	B	-	-
7th Street NW & K Street NW/ Massachusetts Avenue NW *Signalized*	**EB-LTR**	1.00	48.7	F	488	m#507	**EB-LTR**	0.76	37.9	D	237	288
	WB-LTR	0.59	17.3	B	194	256	**WB-LTR**	0.26	11.8	B	60	88
	NB-LTR	0.87	87.5	F	276	#385	**NB-LTR**	0.46	27.4	C	111	158
	SB-LTR	0.33	10.9	B	28	m36	**SB-LTR**	0.66	41.1	D	136	187
	Intersection	-	47.0	D	-	-	**Intersection**	-	31.4	C	-	-

v/c ratio = volume/capacity ratio
Source: Synchro 9

Exhibit 15
801 K Street NW
2015 Existing Network AADT for Trip Distribution (Car and Truck)

Roadway	AADT	Car Distribution	Truck AADT	Truck Distribution
Massachusetts Avenue NW west of 9th Street NW	17850	21%	17850	22%
New York Avenuw NW west of 9th Street NW	9450	11%	9450	12%
K Street NW west of 9th Street NW (one direction)	900	1%	900	1%
9th Street NW (one direction)	18300	22%	18300	22%
7th Street NW	11400	14%	11400	14%
Massachusetts Avenue NW east of 7th Street NW	11800	14%	11800	14%
New York Avenue NW east of 7th Street NW	12000	14%	12000	15%
K Street NW east of 7th Street NW	2500	3%	-	-
Total Network AADT	**84200**	100%	**81700**	100%

Notes:
"Car" includes drive alone, carpool, carshare, and taxi/Uber/Lyft modes.
"Truck" includes delivery mode.
K Street NW east of 7th Street NW is not a truck through route, therefore, that AADT was excluded from the Truck Distribution calculation.

AADT Source: RTDC Data Viewer, maintained by MWCOG.

Exhibit 16
801 K Street NW
Parking Facility Distribution

Parking Facility Distribution	No. of Facilities Available		Total %	% Using Each	
Parking Type	PM	Sat	Using	PM	Sat
On-Street (ST)	6	12	15%	2.50%	1.25%
Off-Street Surface (SUR)	2	2	25%	12.50%	12.50%
Off-Street Structured Self-Park (STR)	6	2	45%	7.50%	22.50%
Off-Street Structured Valet Only (STR)	1	1	15%	15.00%	15.00%

Parking Facilities	Type	PM Trips					Saturday Trips				
		Facility Use	Car In	Car Out	Ped In	Ped Out	Facility Use	Car In	Car Out	Ped In	Ped Out
Marriott Marquis	Structured	15.00%	12	7	14	8	15.00%	14	10	20	14
901 K Street	Structured	7.50%	6	3	7	4	0%	0	0	0	0
901 New York Avenue	Structured	7.50%	6	3	7	4	0%	0	0	0	0
K Street west of 9th Street	Street	2.50%	2	1	2	1	1.25%	1	1	2	1
WB New York Avenue west of 9th Street	Street	2.50%	2	1	2	1	1.25%	1	1	2	1
EB New York Avenue west of 9th Street	Street	2.50%	2	1	2	1	1.25%	1	1	2	1
900 New York Avenue	Surface	12.50%	10	6	12	7	12.50%	12	8	16	11
999 9th Street	Structured	7.50%	6	3	7	4	22.50%	21	14	29	20
650 Massachusetts Avenue	Structured	7.50%	6	3	7	4	0%	0	0	0	0
600 Massachusetts Avenue	Structured	7.50%	6	3	7	4	22.50%	21	14	29	20
EB Massachusetts Avenue east of 7th Street	Street	0%	0	0	0	0	1.25%	1	1	2	1
WB Massachusetts Avenue east of 7th Street	Street	0%	0	0	0	0	1.25%	1	1	2	1
601 Massachusetts Avenue	Structured	7.50%	6	3	7	4	0%	0	0	0	0
SB 7th Street south of K Street	Street	0%	0	0	0	0	1.25%	1	1	2	1
EB K Street east of 7th Street	Street	2.50%	2	1	2	1	1.25%	1	1	2	1
WB K Street east of 7th Street	Street	2.50%	2	1	2	1	1.25%	1	1	2	1
EB New York Avenue east of 7th Street	Street	0%	0	0	0	0	1.25%	1	1	2	1
WB New York Avenue east of 7th Street	Street	0%	0	0	0	0	1.25%	1	1	2	1
1016 6th Street	Surface	12.50%	10	6	12	7	12.50%	12	8	16	11
NB 7th Street north of Mt Vernon Place	Street	2.50%	2	1	2	1	1.25%	1	1	2	1
SB 7th Street north of Mt Vernon Place	Street	0%	0	0	0	0	1.25%	1	1	2	1

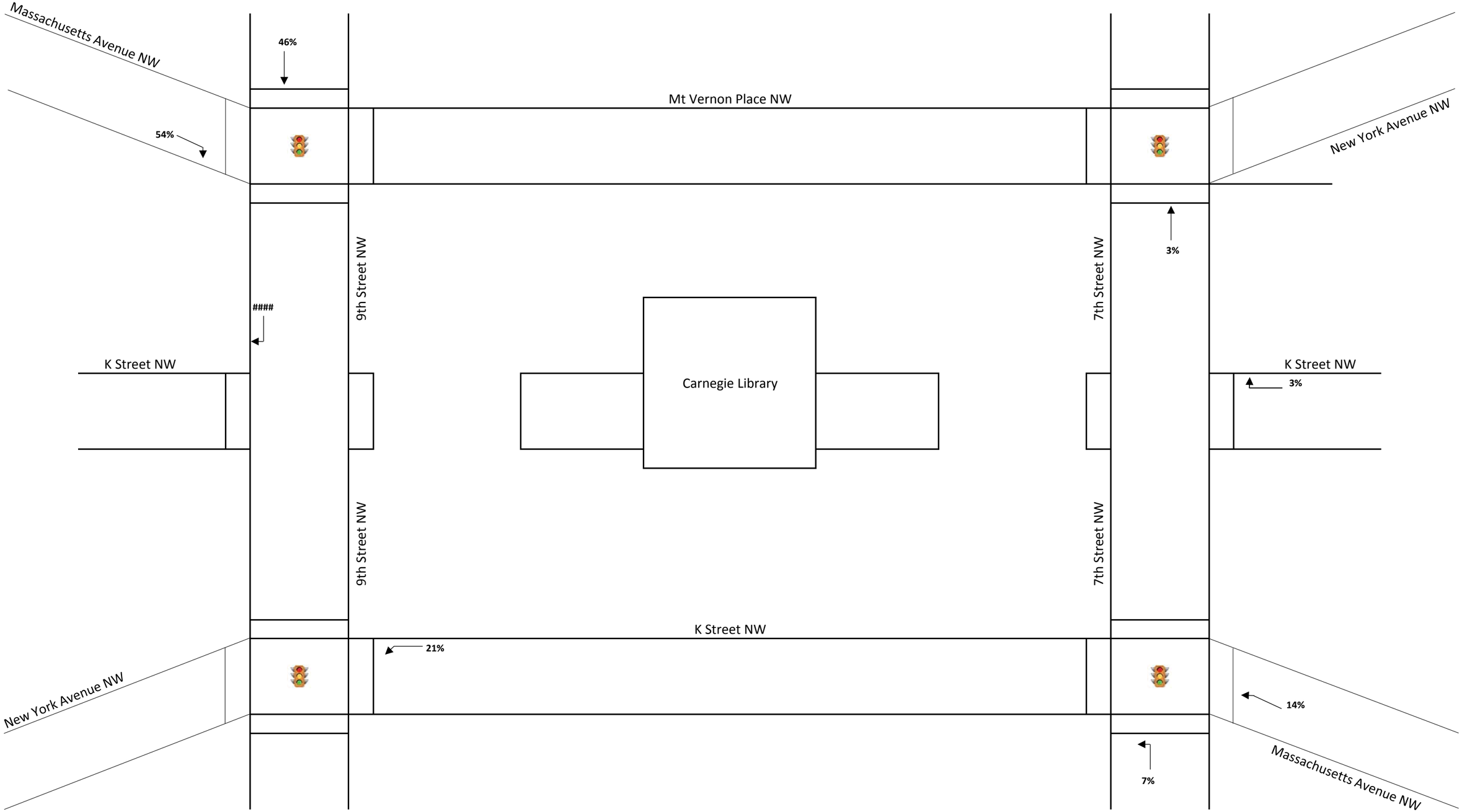

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Exhibit 17
Trip Distribution - K St west of 9th St NW In PM and Saturday Peak Hours

LEGEND

- Traffic Signal
- ← XXX — Vehicular Volume (vph)
- XXX — Bicycle Volume (bph)
- ← XXX → — Crosswalk Pedestrian Volume (ped/hr)

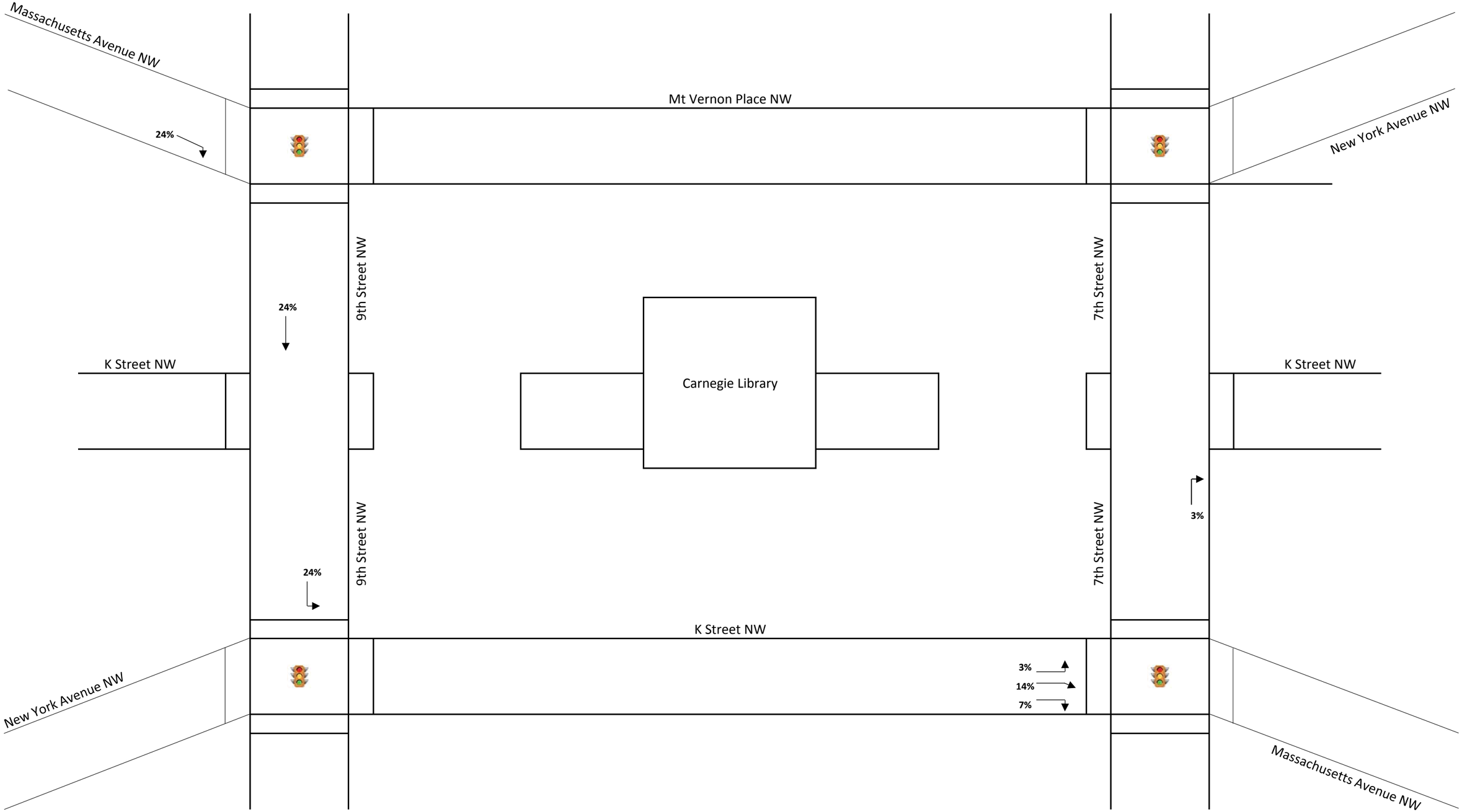

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Exhibit 18
Trip Distribution - K St west of 9th St NW Out
PM and Saturday Peak Hours

LEGEND

- Traffic Signal
- ← XXX — Vehicular Volume (vph)
- *XXX* — Bicycle Volume (bph)
- ← XXX → — Crosswalk Pedestrian Volume (ped/hr)

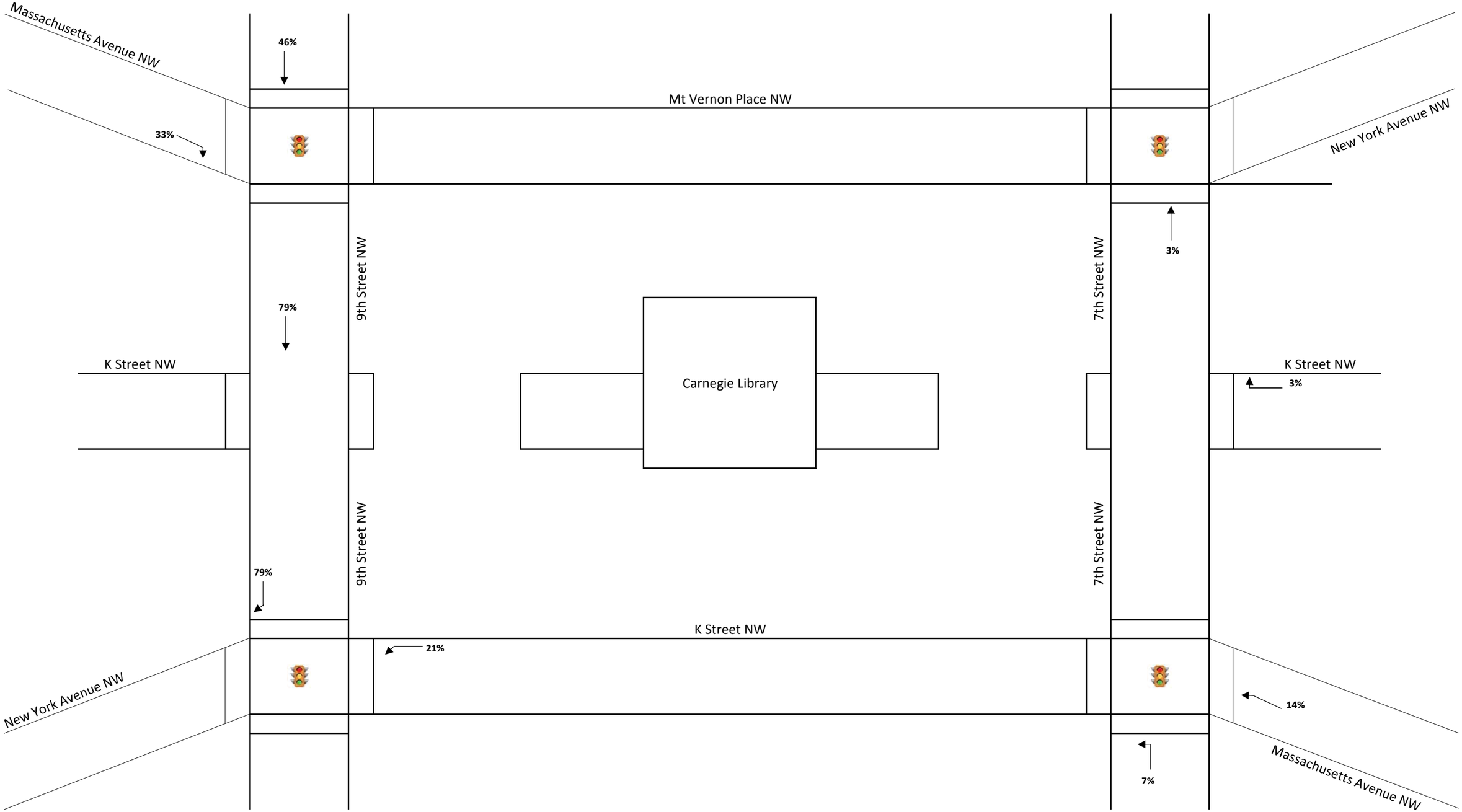

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Exhibit 19
Trip Distribution - WB NY Ave west of 9th St In PM and Saturday Peak Hours

LEGEND

- Traffic Signal
- ← XXX — Vehicular Volume (vph)
- XXX — Bicycle Volume (bph)
- ← XXX → — Crosswalk Pedestrian Volume (ped/hr)

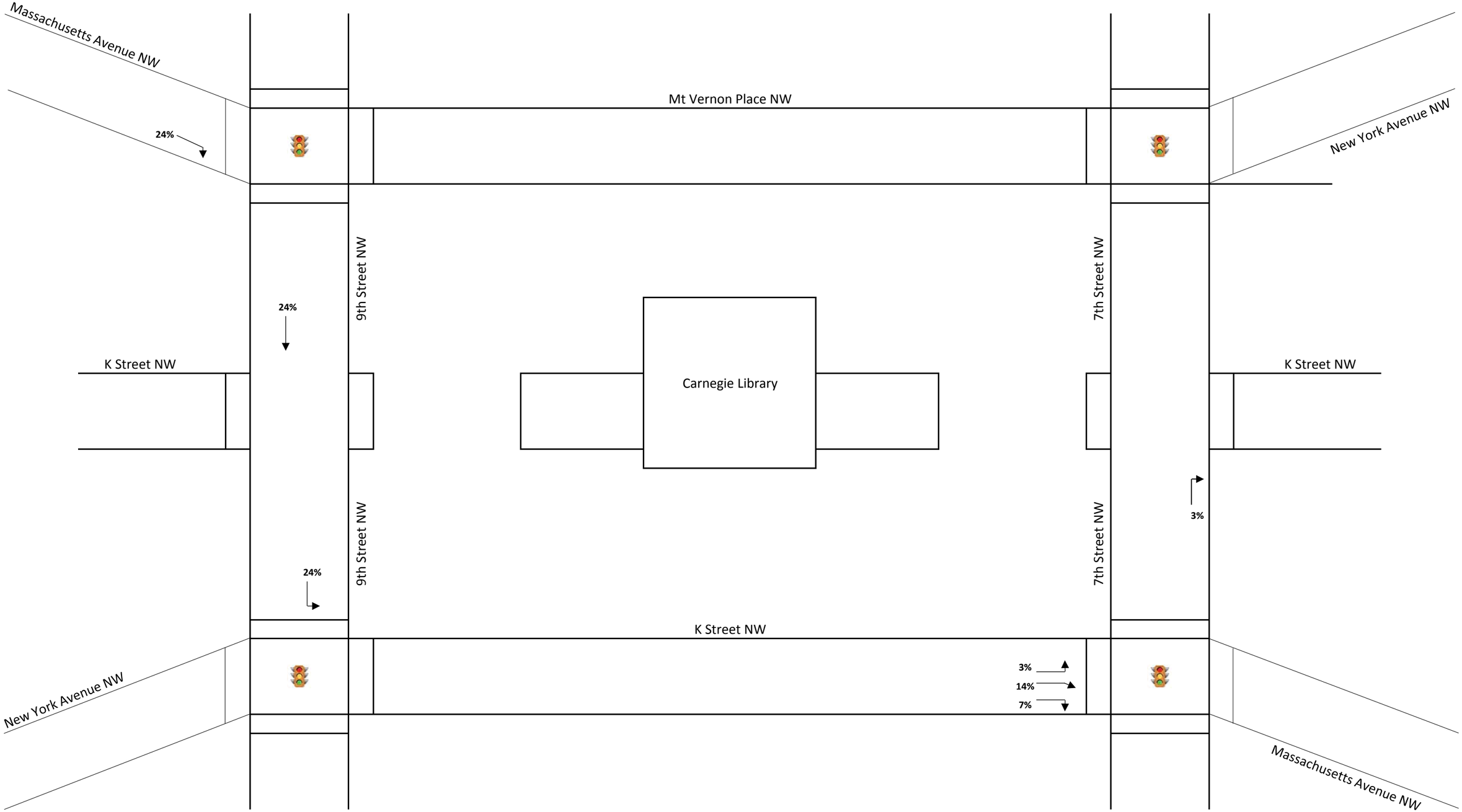

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Exhibit 20
Trip Distribution - WB NY Ave west of 9th St Out
PM and Saturday Peak Hours

LEGEND

Traffic Signal

← XXX — Vehicular Volume (vph)

XXX — Bicycle Volume (bph)

← XXX → — Crosswalk Pedestrian Volume (ped/hr)

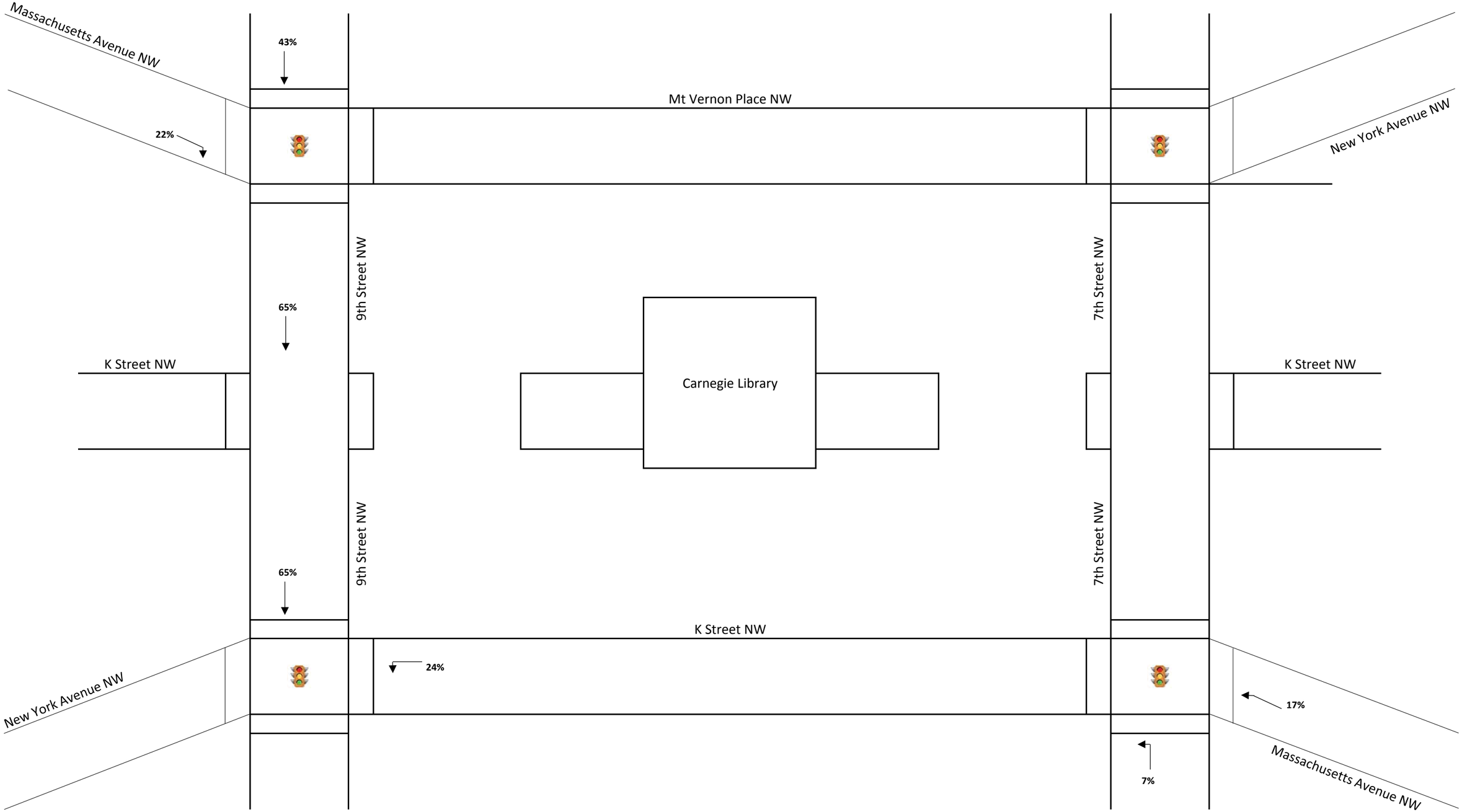

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Exhibit 21
Trip Distribution - EB NY Ave west of 9th St In
PM and Saturday Peak Hours

LEGEND

- Traffic Signal
- ← XXX — Vehicular Volume (vph)
- *XXX* — Bicycle Volume (bph)
- ← XXX → — Crosswalk Pedestrian Volume (ped/hr)

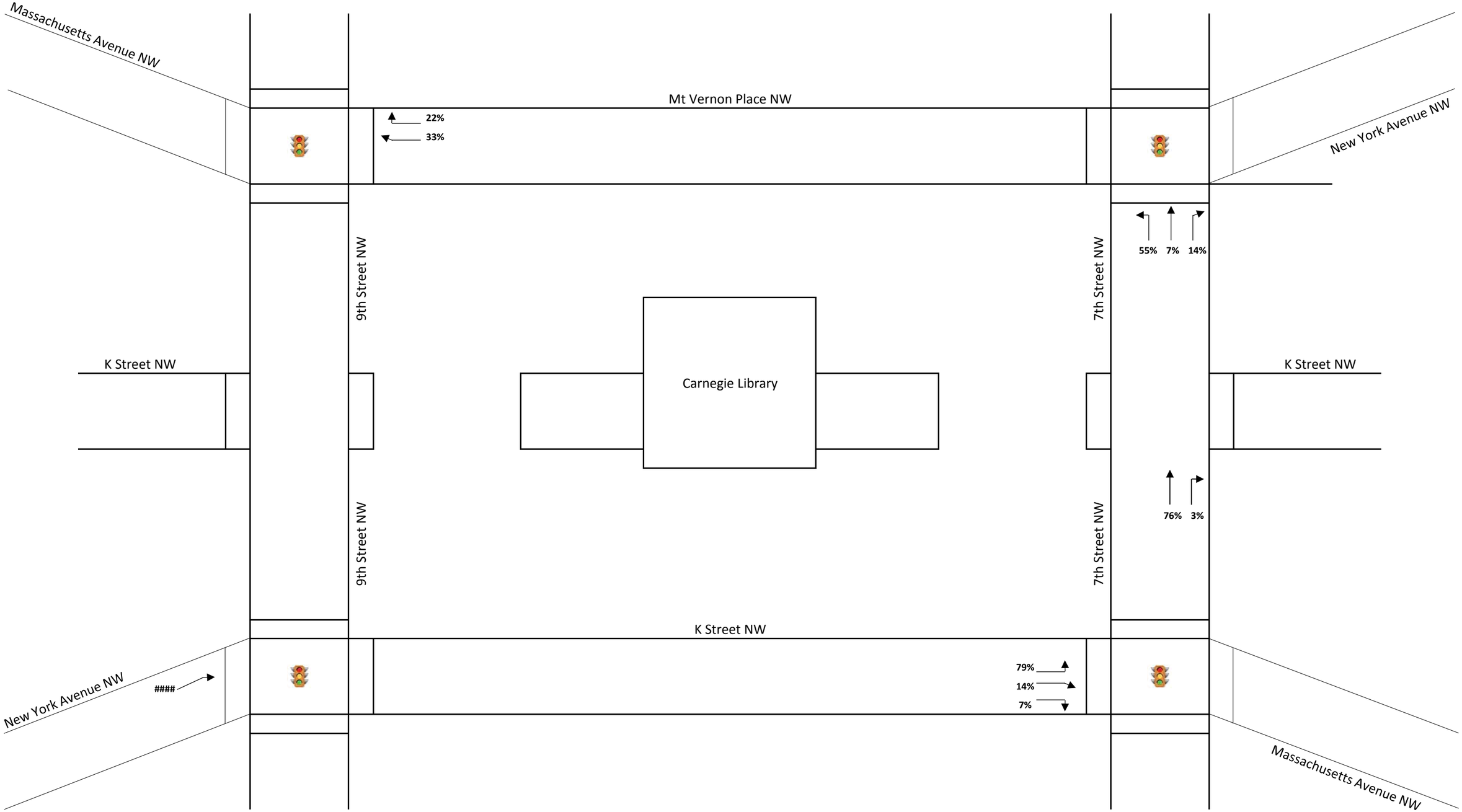

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Exhibit 22
Trip Distribution - EB NY Ave west of 9th St Out
PM and Saturday Peak Hours

LEGEND

Traffic Signal

← XXX Vehicular Volume (vph)

XXX Bicycle Volume (bph)

← XXX → Crosswalk Pedestrian Volume (ped/hr)

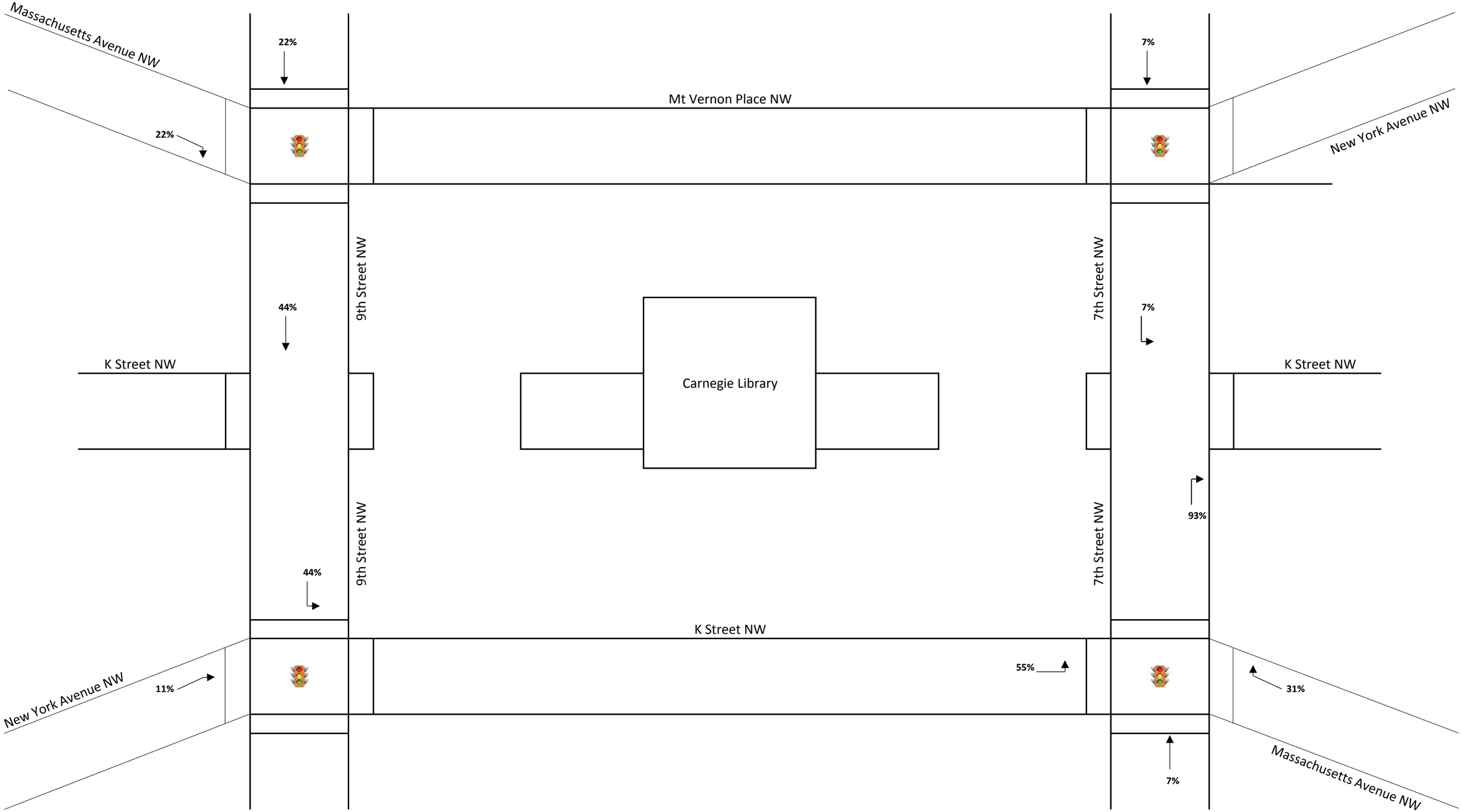

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Exhibit 23
Trip Distribution - EB K St east of 9th St In
PM and Saturday Peak Hours

LEGEND

- Traffic Signal
- ← XXX — Vehicular Volume (vph)
- *XXX* — Bicycle Volume (bph)
- ← XXX → — Crosswalk Pedestrian Volume (ped/hr)

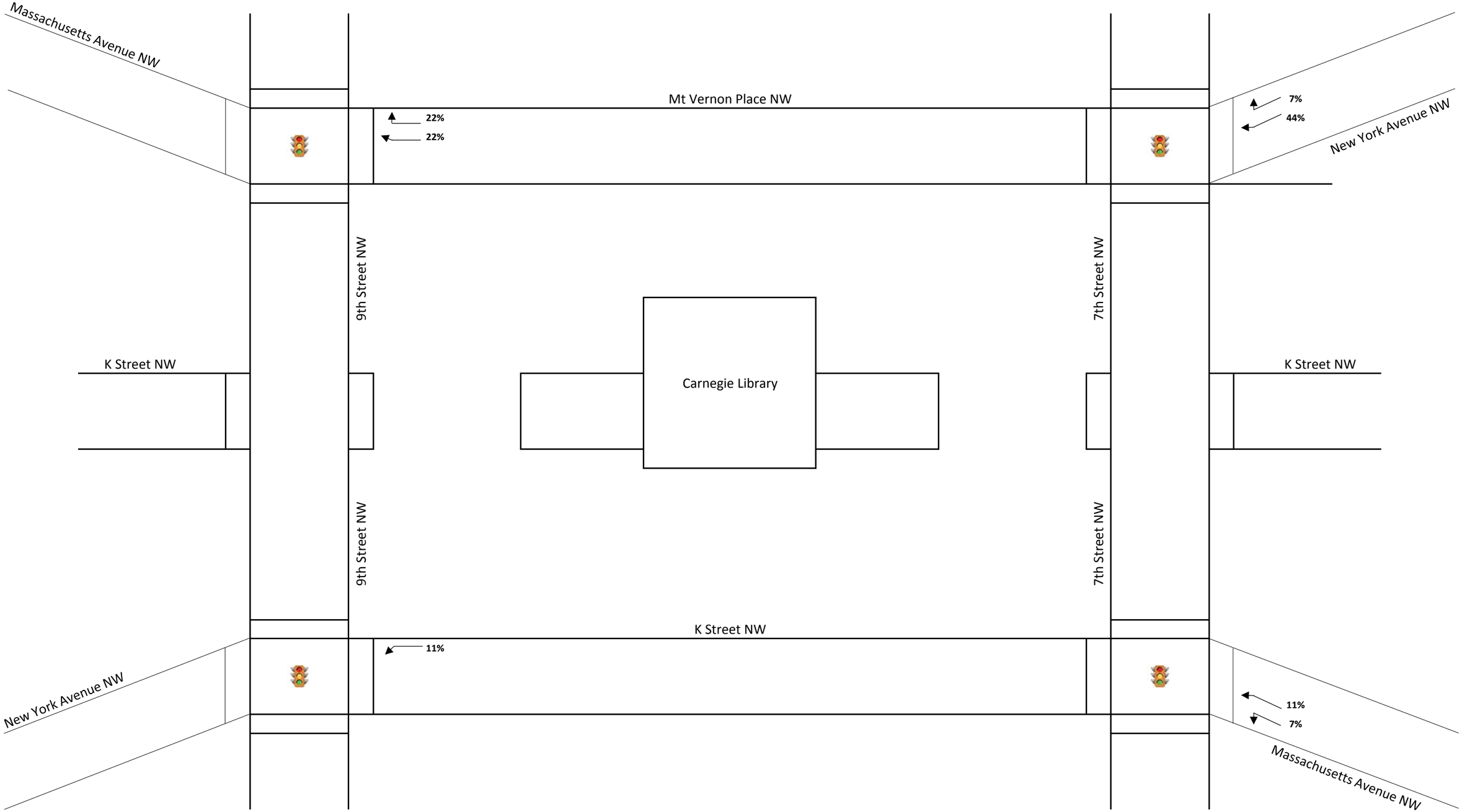

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Exhibit 24
Trip Distribution - EB K St east of 9th St Out
PM and Saturday Peak Hours

LEGEND

Traffic Signal

← XXX Vehicular Volume (vph)

XXX Bicycle Volume (bph)

← XXX → Crosswalk Pedestrian Volume (ped/hr)

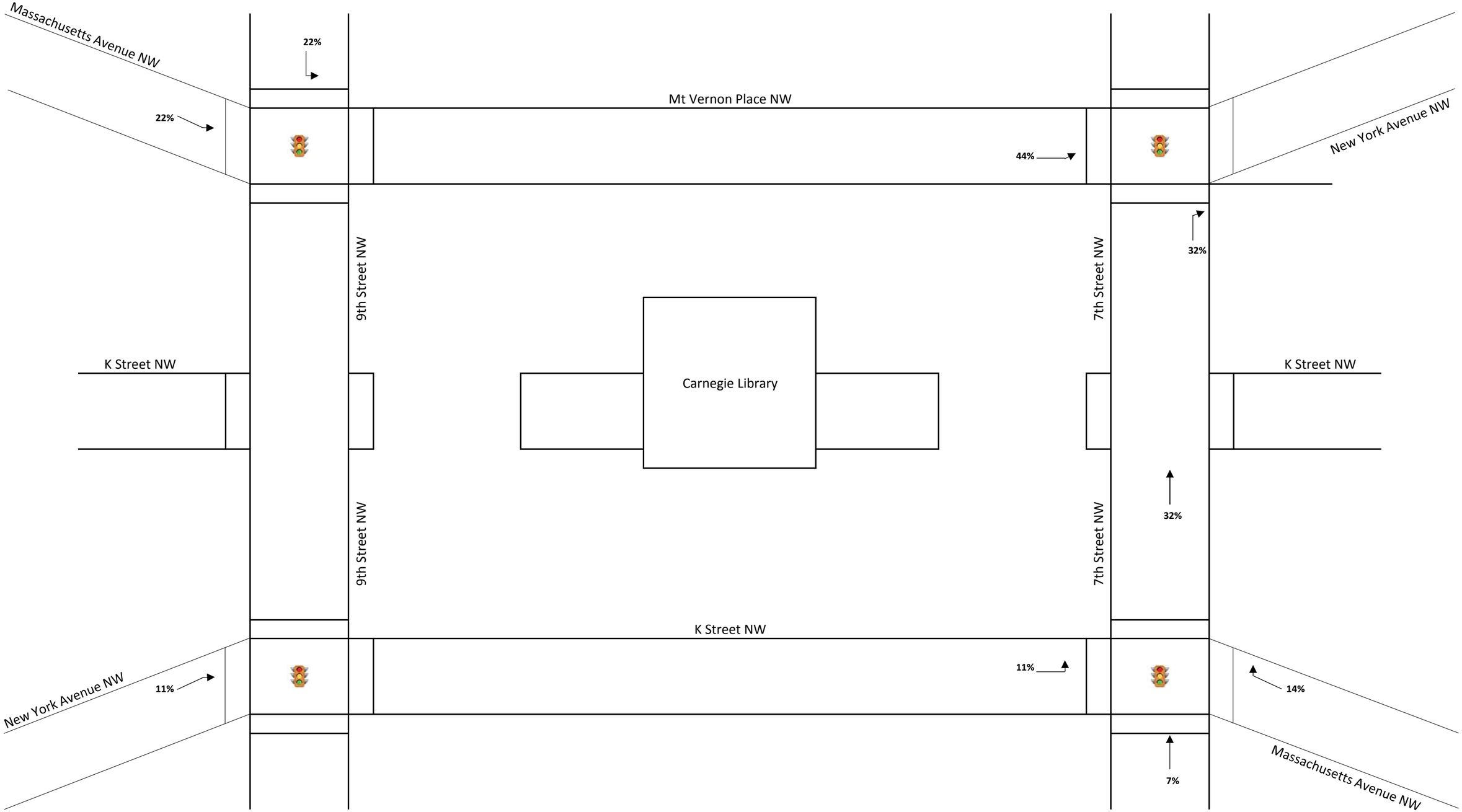

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Exhibit 25
Trip Distribution - WB K St east of 9th St In
PM and Saturday Peak Hours

LEGEND

Traffic Signal

← XXX Vehicular Volume (vph)

XXX Bicycle Volume (bph)

← XXX → Crosswalk Pedestrian Volume (ped/hr)

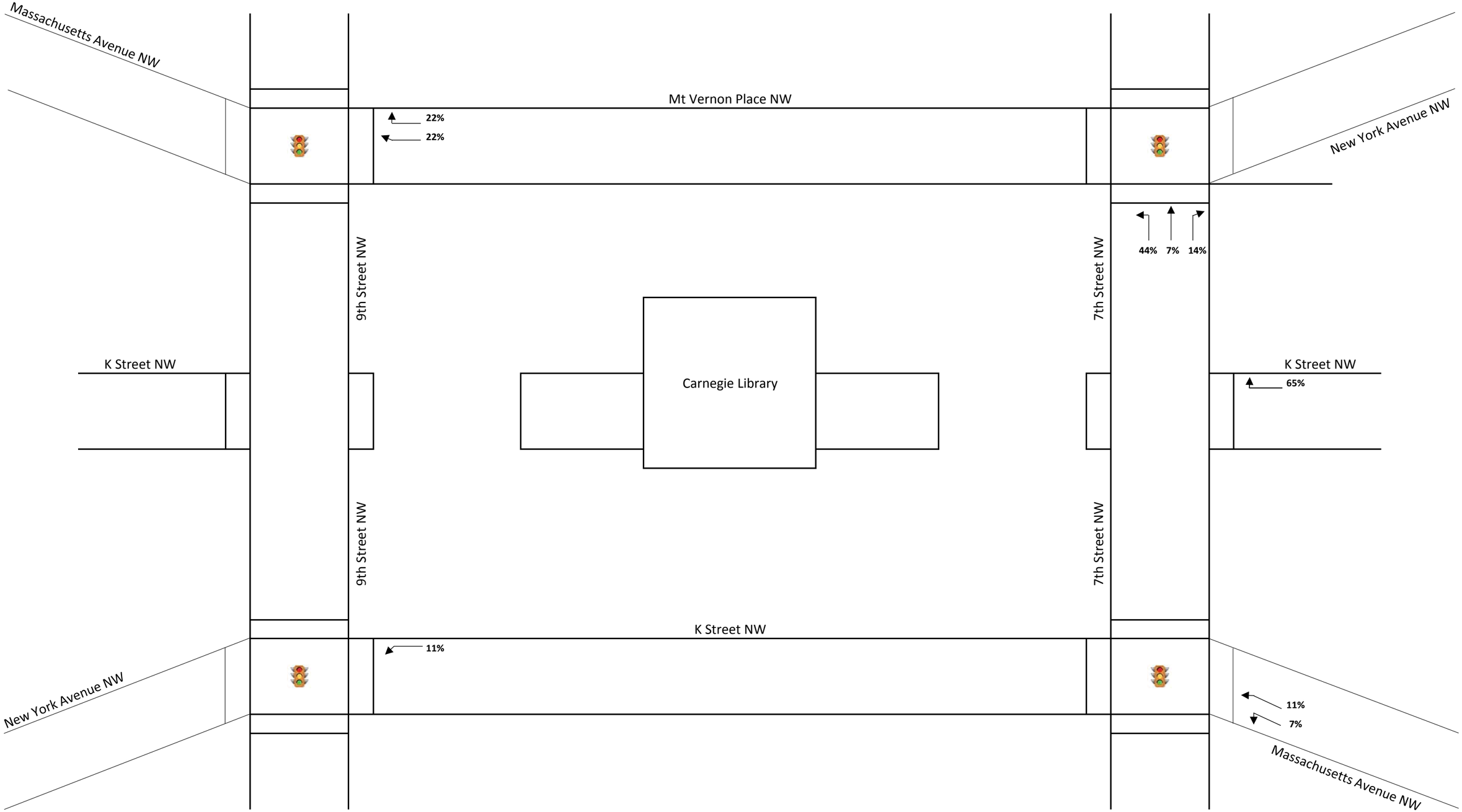

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Exhibit 26
Trip Distribution - WB K St east of 9th St Out
PM and Saturday Peak Hours

LEGEND

- Traffic Signal
- ← XXX — Vehicular Volume (vph)
- *XXX* — Bicycle Volume (bph)
- ← XXX → — Crosswalk Pedestrian Volume (ped/hr)

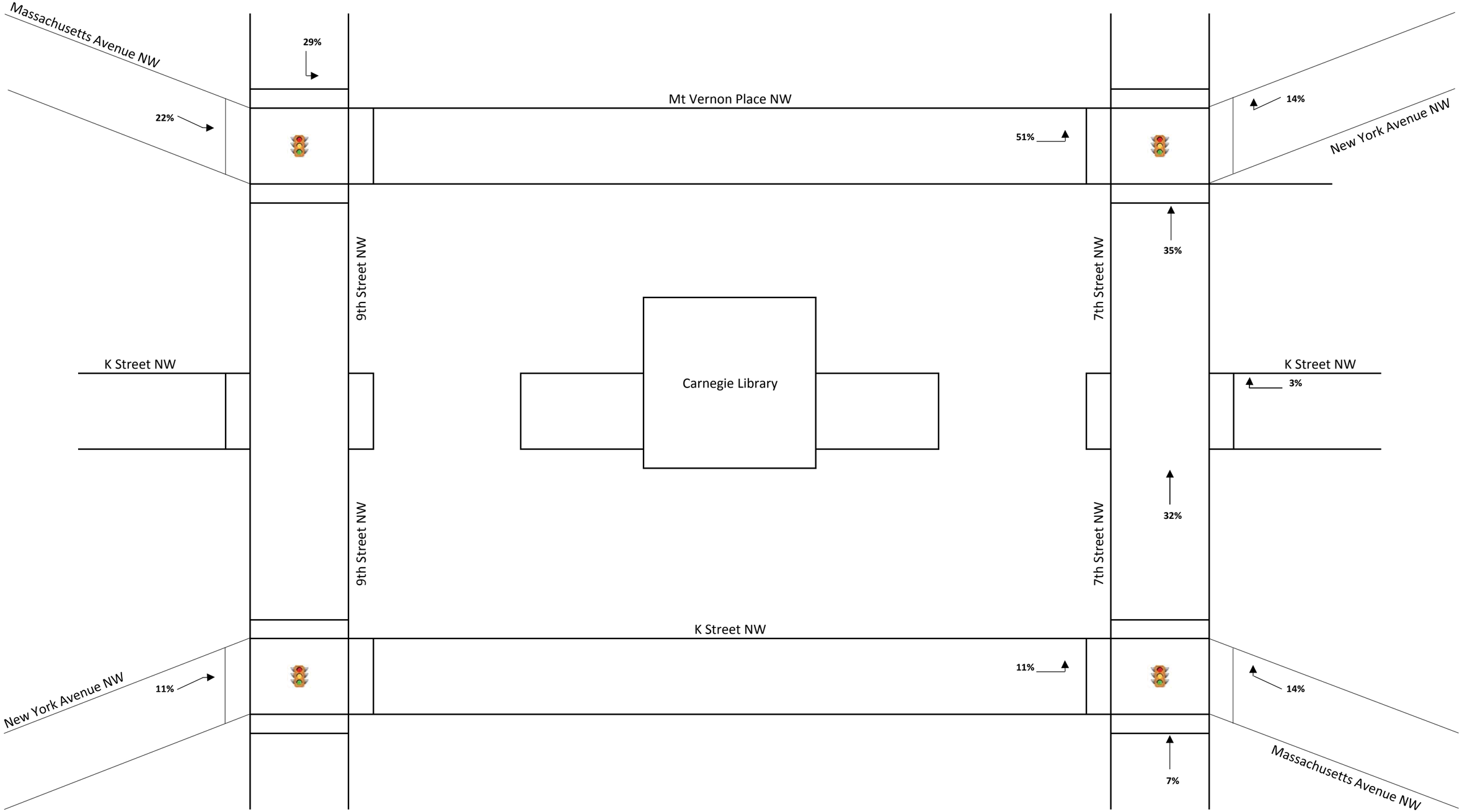

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Exhibit 27
Trip Distribution - NB 7th Street NW In
PM and Saturday Peak Hours

LEGEND

- Traffic Signal
- ← XXX — Vehicular Volume (vph)
- *XXX* — Bicycle Volume (bph)
- ← XXX → — Crosswalk Pedestrian Volume (ped/hr)

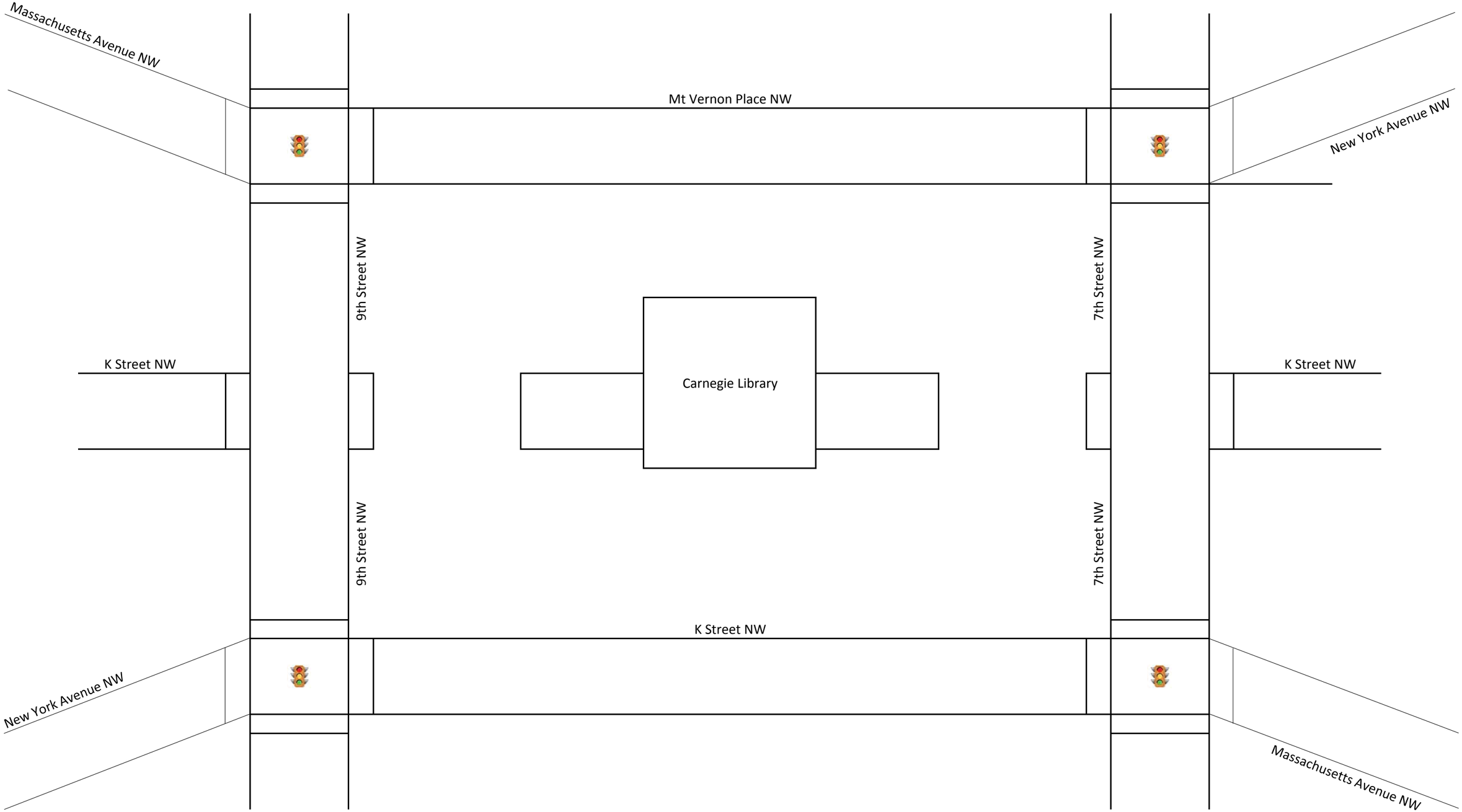

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Exhibit 28
Trip Distribution - NB 7th Street NW Out
PM and Saturday Peak Hours

LEGEND

Traffic Signal

← XXX Vehicular Volume (vph)

XXX Bicycle Volume (bph)

← XXX → Crosswalk Pedestrian Volume (ped/hr)

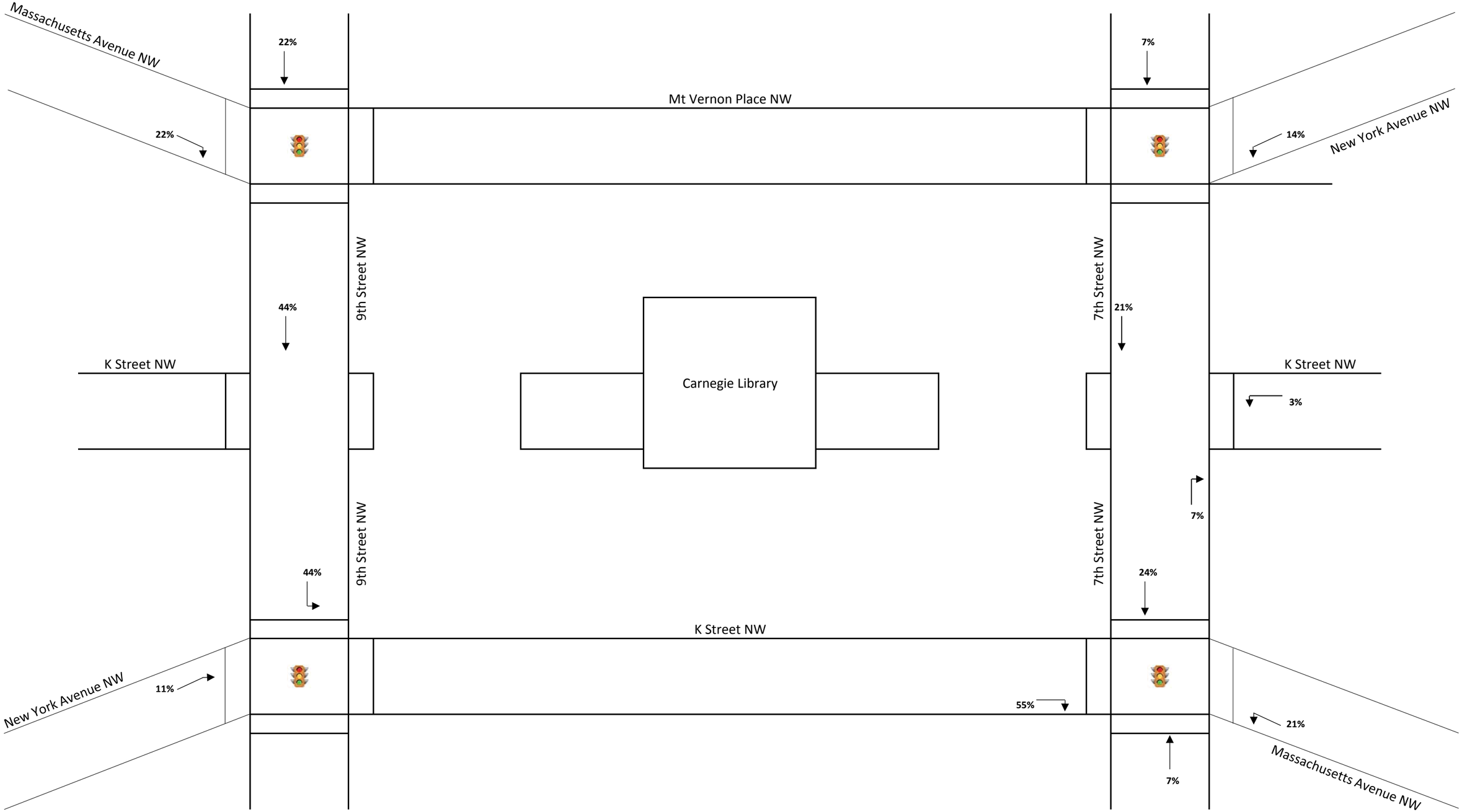

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Exhibit 29
Trip Distribution - SB 7th Street NW In
Saturday Peak Hour

LEGEND

Traffic Signal

XXX Vehicular Volume (vph)

XXX Bicycle Volume (bph)

XXX Crosswalk Pedestrian Volume (ped/hr)

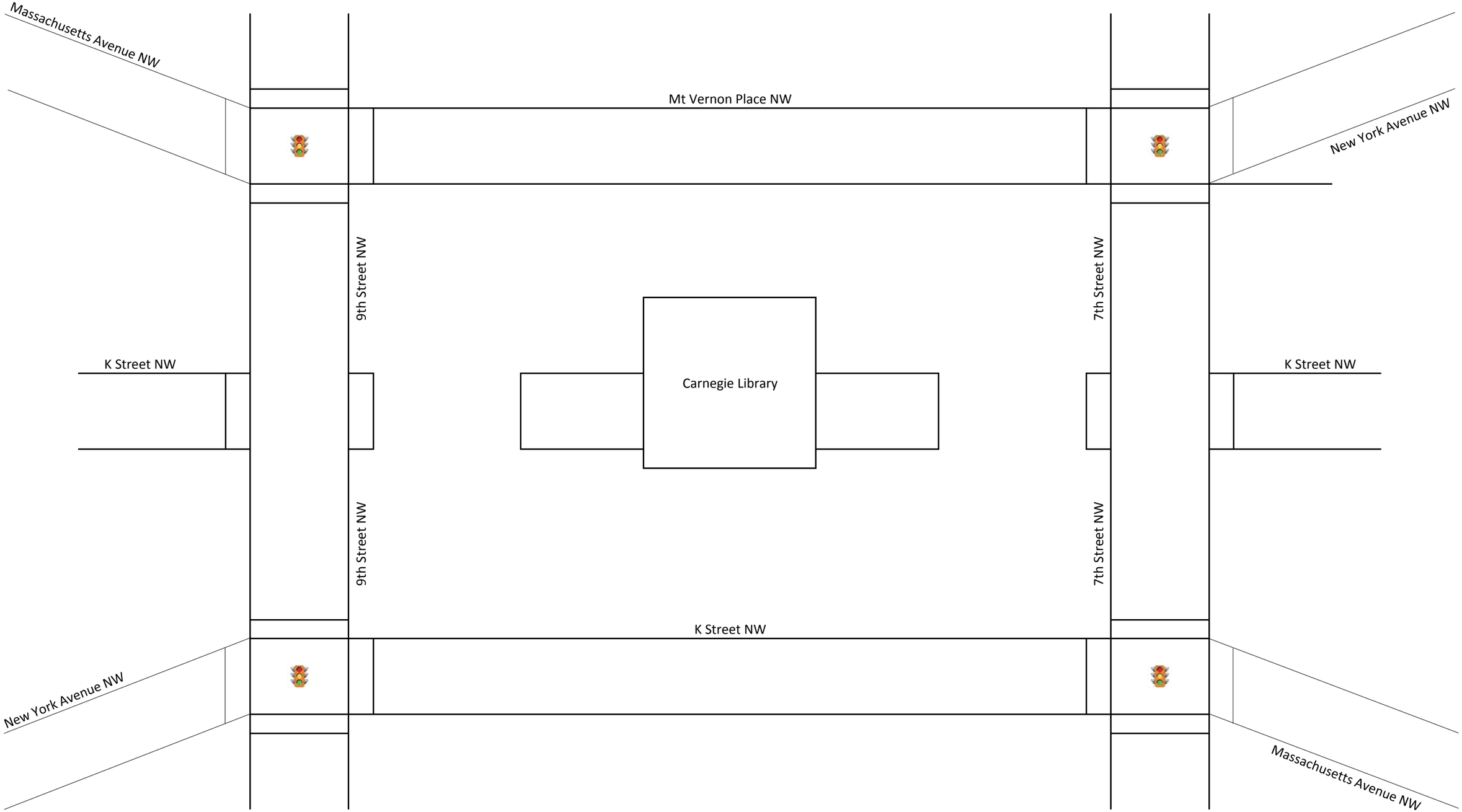

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Exhibit 30
Trip Distribution - SB 7th Street NW Out
Saturday Peak Hour

LEGEND

Traffic Signal

← XXX Vehicular Volume (vph)

XXX Bicycle Volume (bph)

← XXX → Crosswalk Pedestrian Volume (ped/hr)

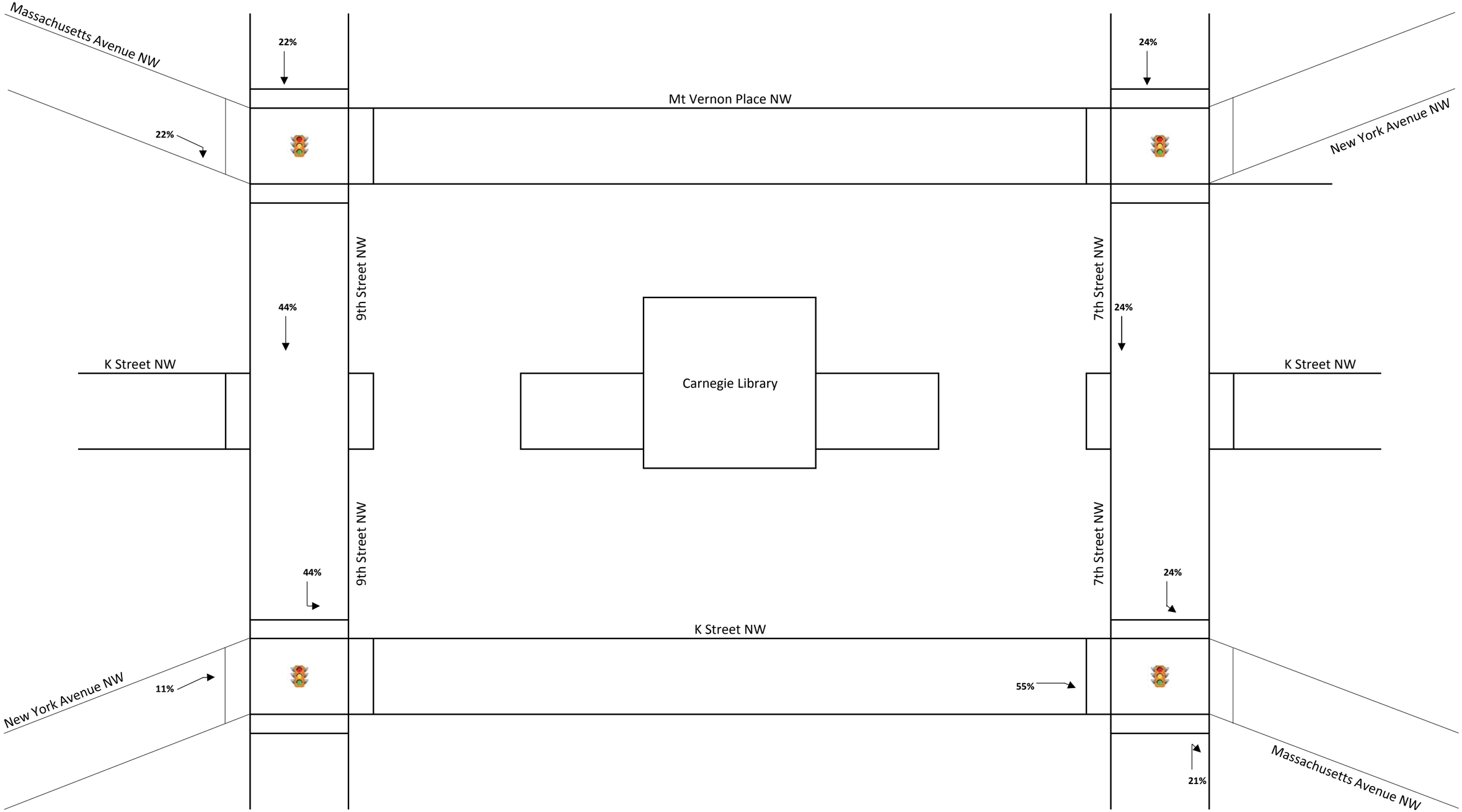

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Exhibit 31
Trip Distribution - EB Mass Ave east of 7th In
Saturday Peak Hour

LEGEND

- Traffic Signal
- ← XXX — Vehicular Volume (vph)
- *XXX* — Bicycle Volume (bph)
- ← XXX → — Crosswalk Pedestrian Volume (ped/hr)

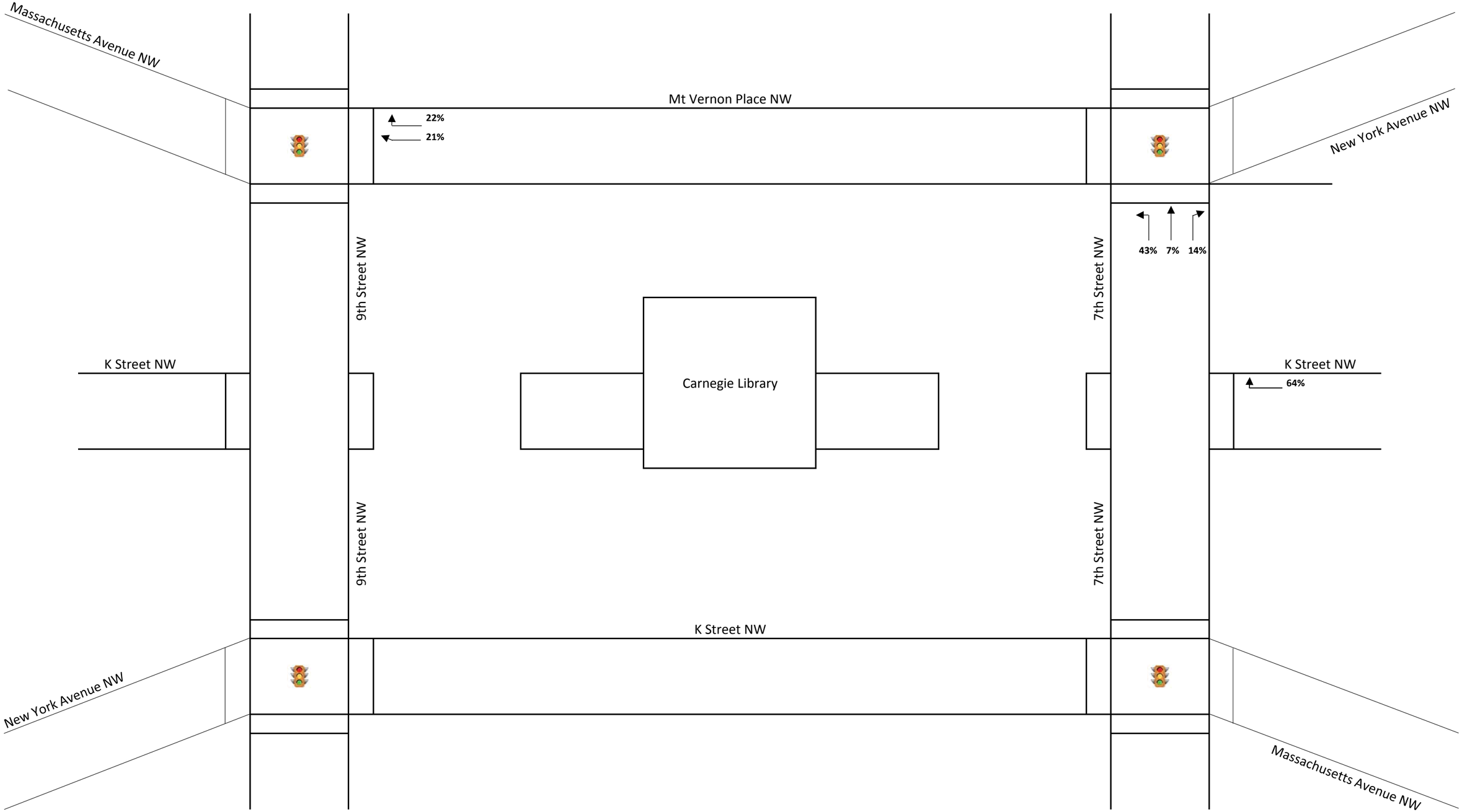

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Exhibit 32
Trip Distribution - EB Mass Ave east of 7th Out
Saturday Peak Hour

LEGEND

- Traffic Signal
- ← XXX — Vehicular Volume (vph)
- *XXX* — Bicycle Volume (bph)
- ← XXX → — Crosswalk Pedestrian Volume (ped/hr)

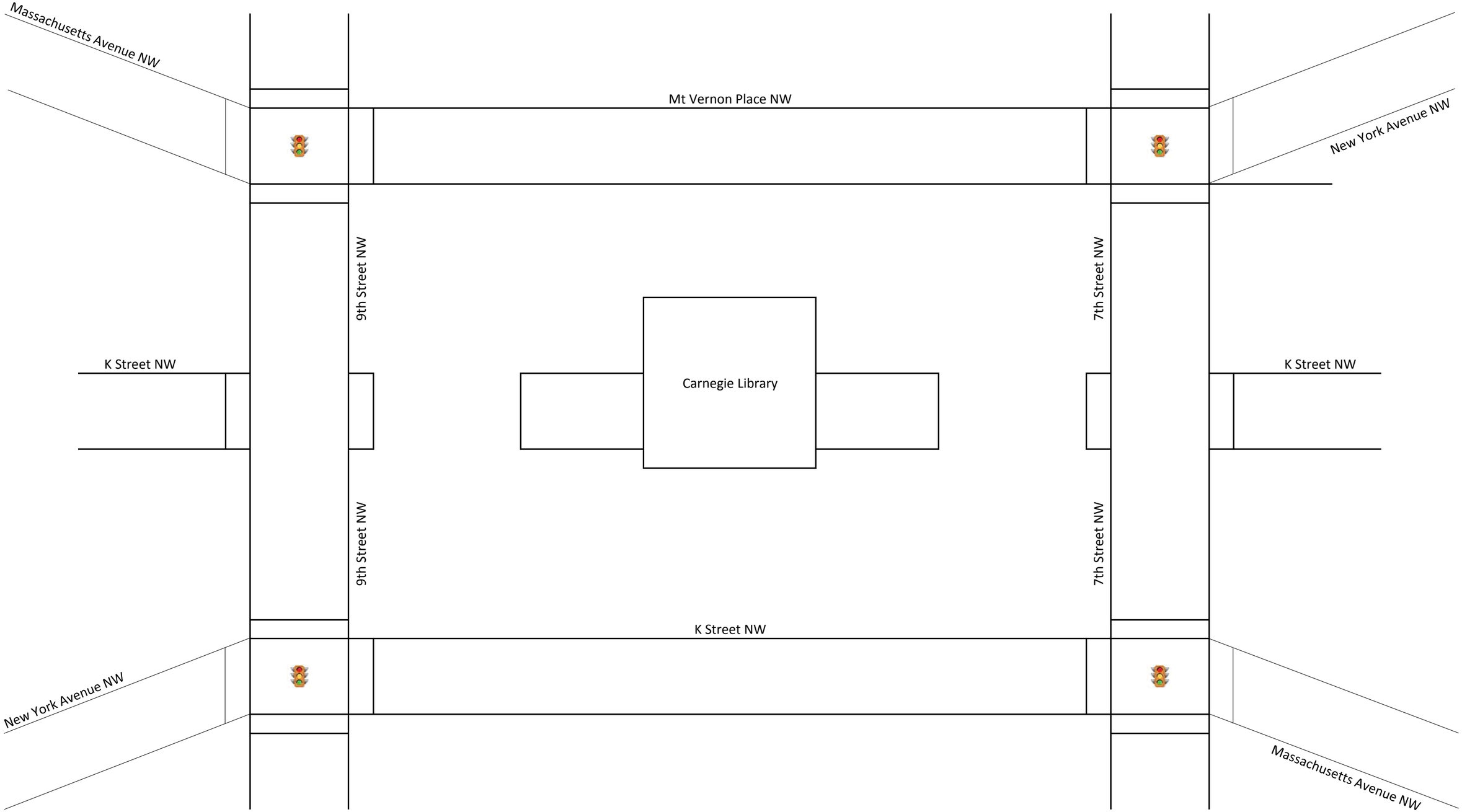

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Exhibit 33
Trip Distribution - WB Mass Ave east of 7th In
Saturday Peak Hour

LEGEND

- Traffic Signal
- ← XXX — Vehicular Volume (vph)
- *XXX* — Bicycle Volume (bph)
- ← XXX → — Crosswalk Pedestrian Volume (ped/hr)

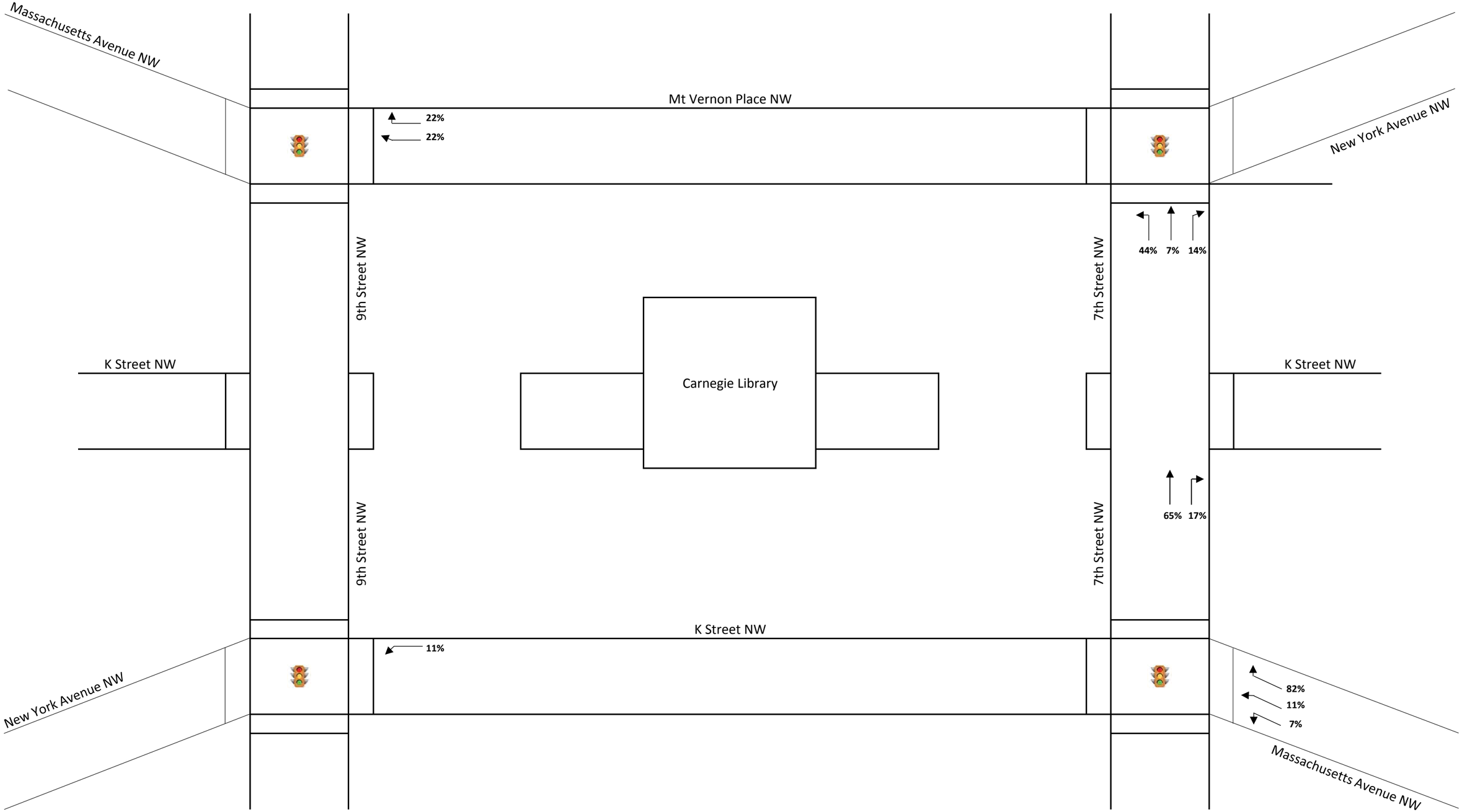

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Exhibit 34
Trip Distribution - WB Mass Ave east of 7th Out
Saturday Peak Hour

LEGEND

Traffic Signal

← XXX Vehicular Volume (vph)

XXX Bicycle Volume (bph)

← XXX → Crosswalk Pedestrian Volume (ped/hr)

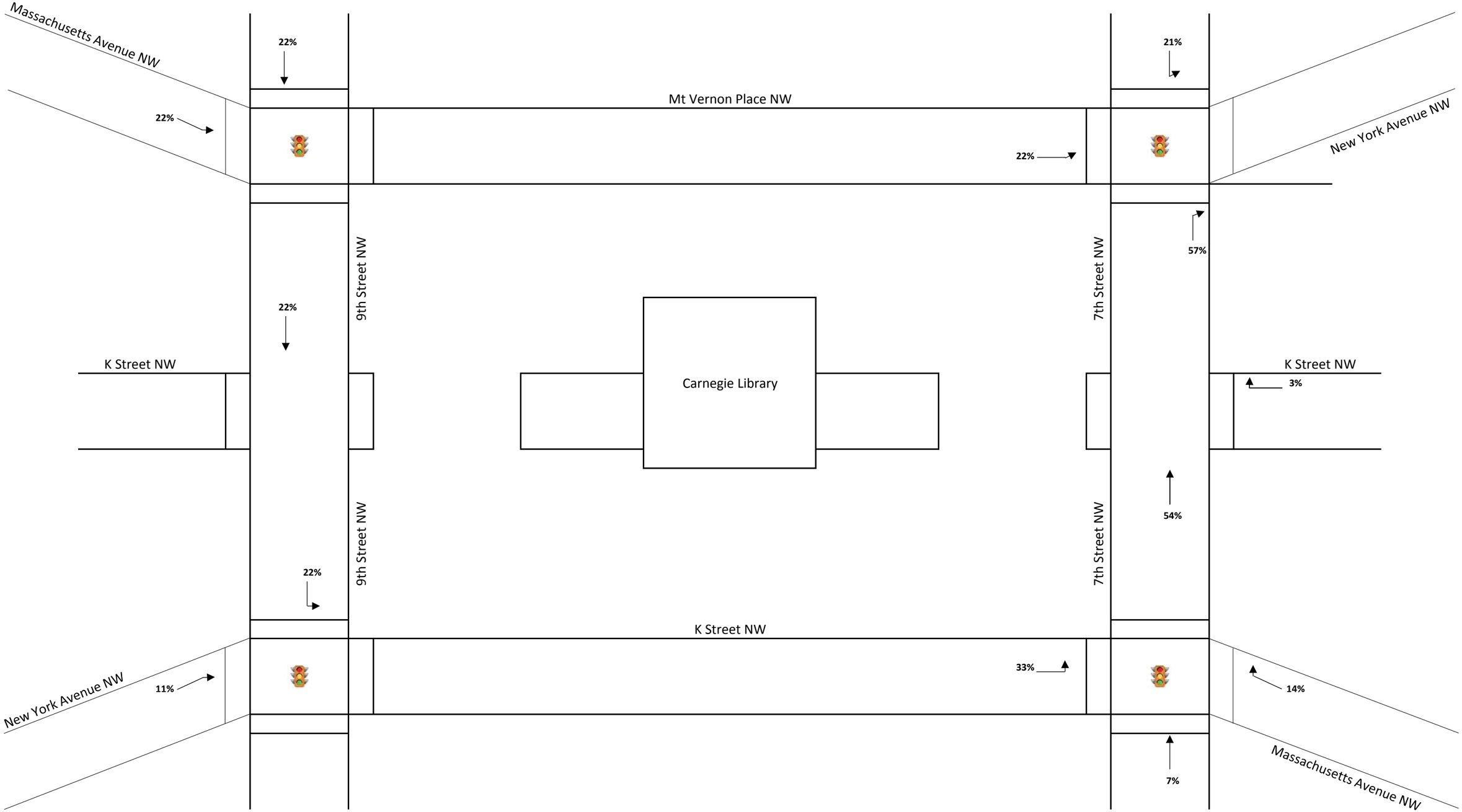

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Exhibit 35
Trip Distribution - EB NY Ave east of 7th In
Saturday Peak Hour

LEGEND

- Traffic Signal
- ← XXX — Vehicular Volume (vph)
- *XXX* — Bicycle Volume (bph)
- ← XXX → — Crosswalk Pedestrian Volume (ped/hr)

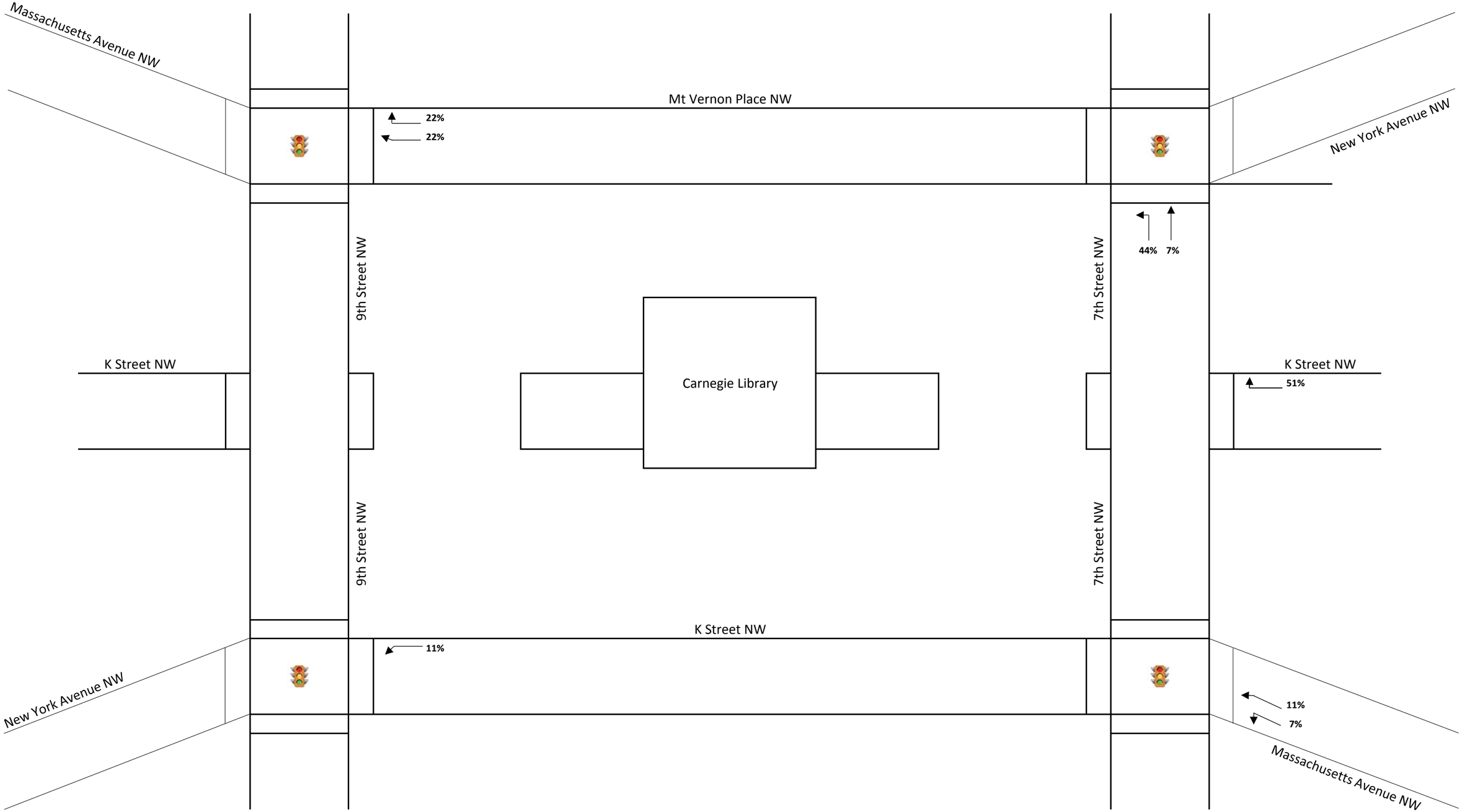

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Exhibit 36
Trip Distribution - EB NY Ave east of 7th Out
Saturday Peak Hour

LEGEND

- Traffic Signal
- ← XXX — Vehicular Volume (vph)
- XXX — Bicycle Volume (bph)
- ← XXX → — Crosswalk Pedestrian Volume (ped/hr)

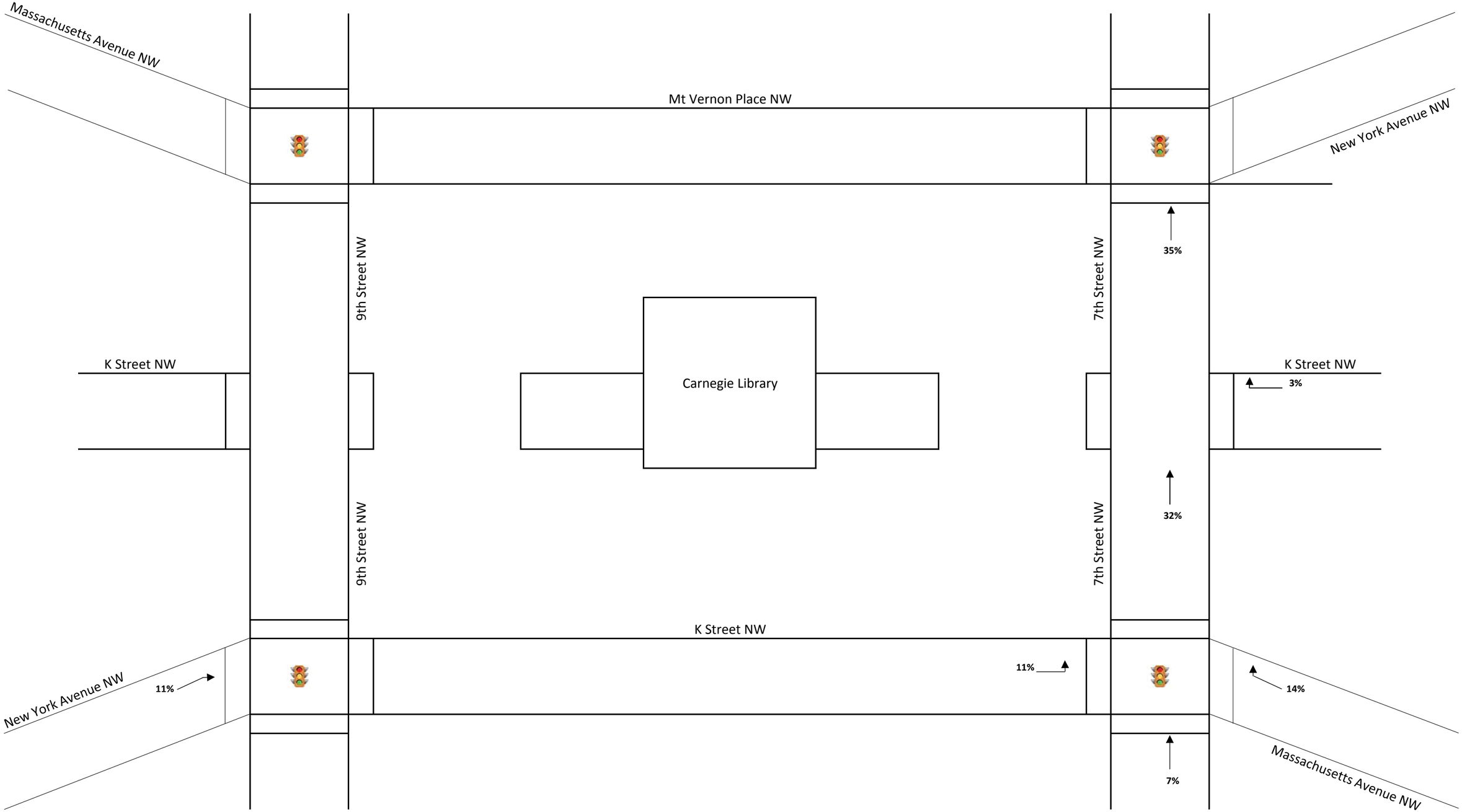

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Exhibit 37
Trip Distribution - WB NY Ave east of 7th In
Saturday Peak Hour

LEGEND

Traffic Signal

← XXX Vehicular Volume (vph)

XXX Bicycle Volume (bph)

← XXX → Crosswalk Pedestrian Volume (ped/hr)

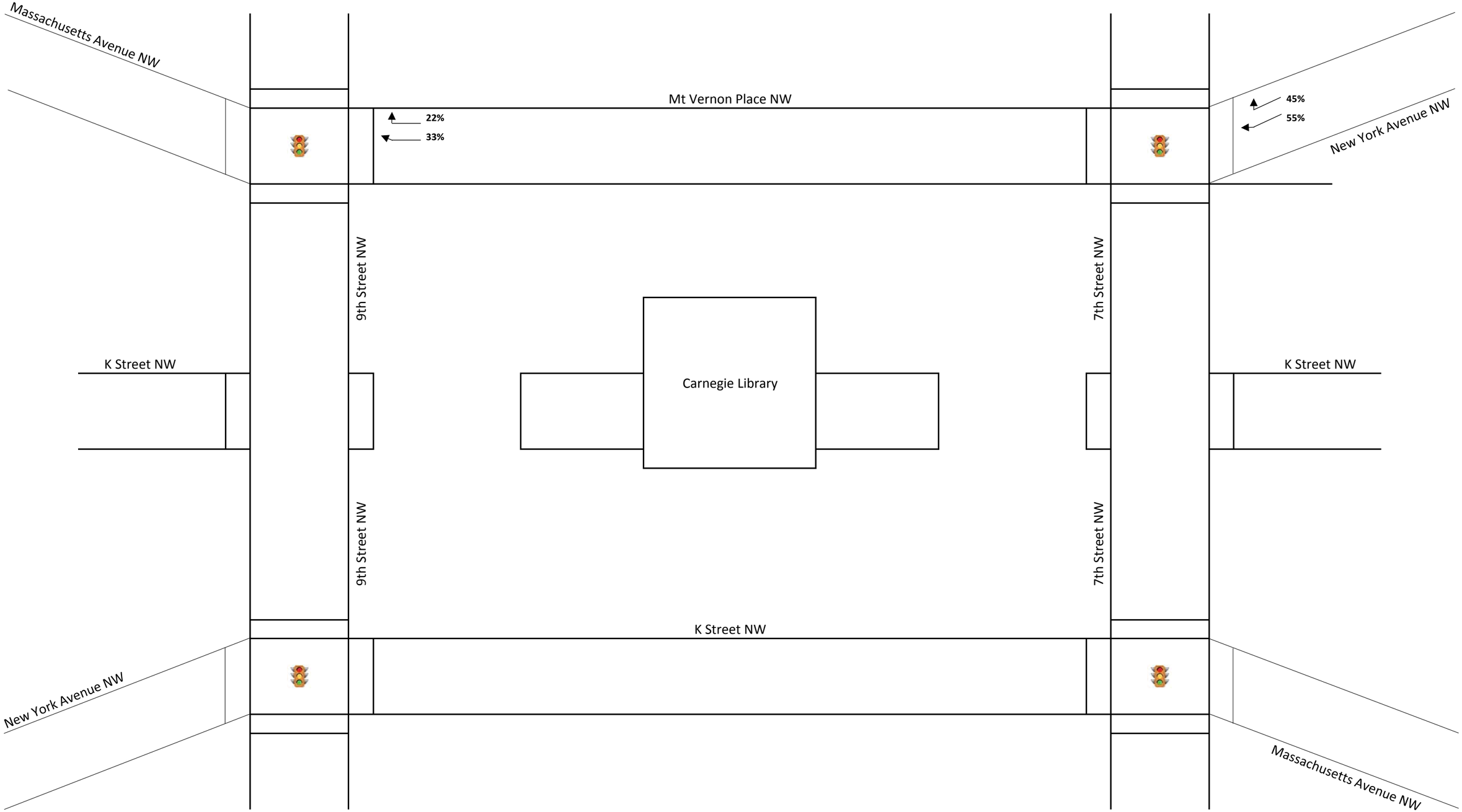

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Exhibit 38
Trip Distribution - WB NY Ave east of 7th Out
Saturday Peak Hour

LEGEND

Traffic Signal

← XXX Vehicular Volume (vph)

XXX Bicycle Volume (bph)

← XXX → Crosswalk Pedestrian Volume (ped/hr)

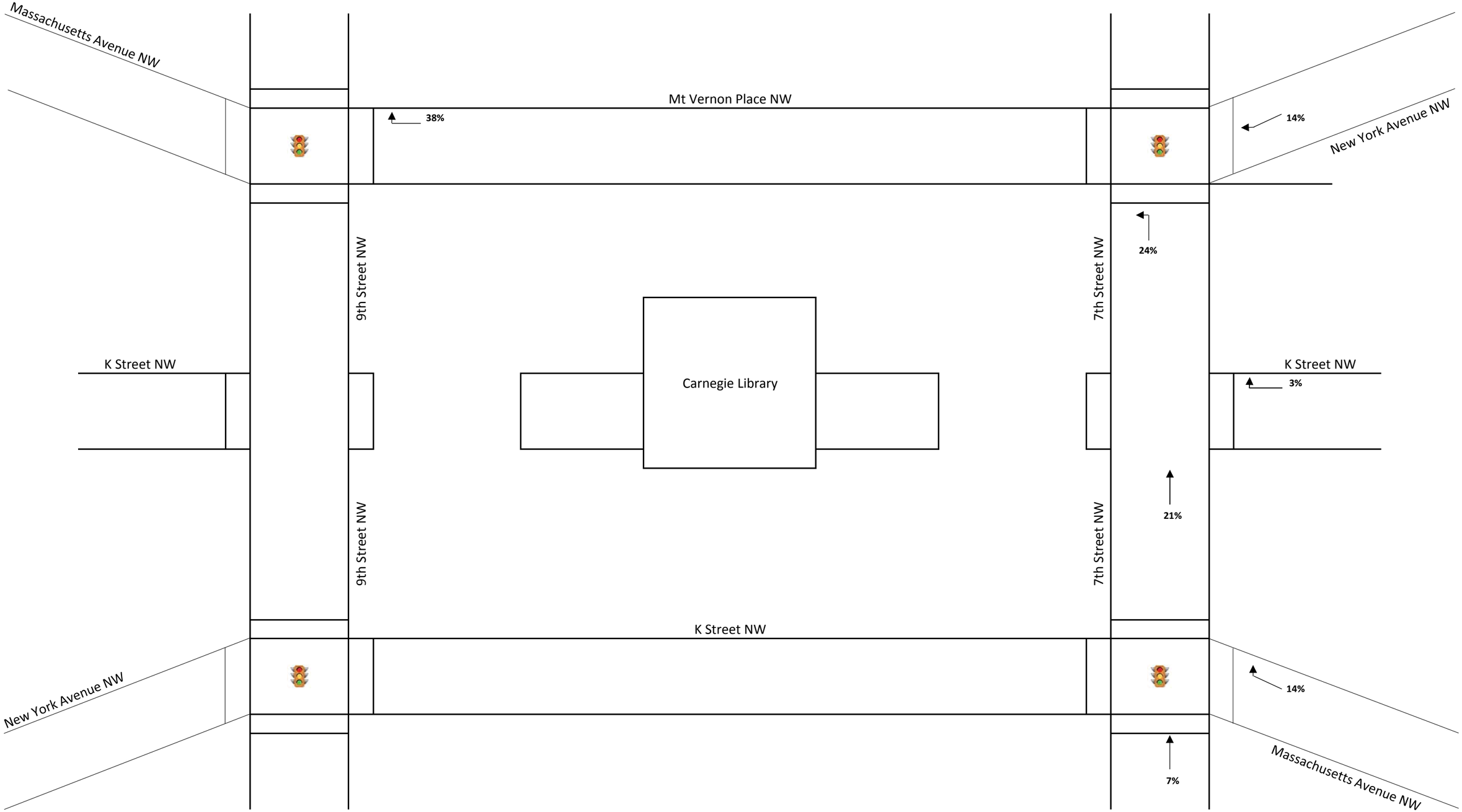

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Exhibit 39
Trip Distribution - SB 7th north of Vernon In
Saturday Peak Hour

LEGEND

- Traffic Signal
- ← XXX — Vehicular Volume (vph)
- *XXX* — Bicycle Volume (bph)
- ← XXX → — Crosswalk Pedestrian Volume (ped/hr)

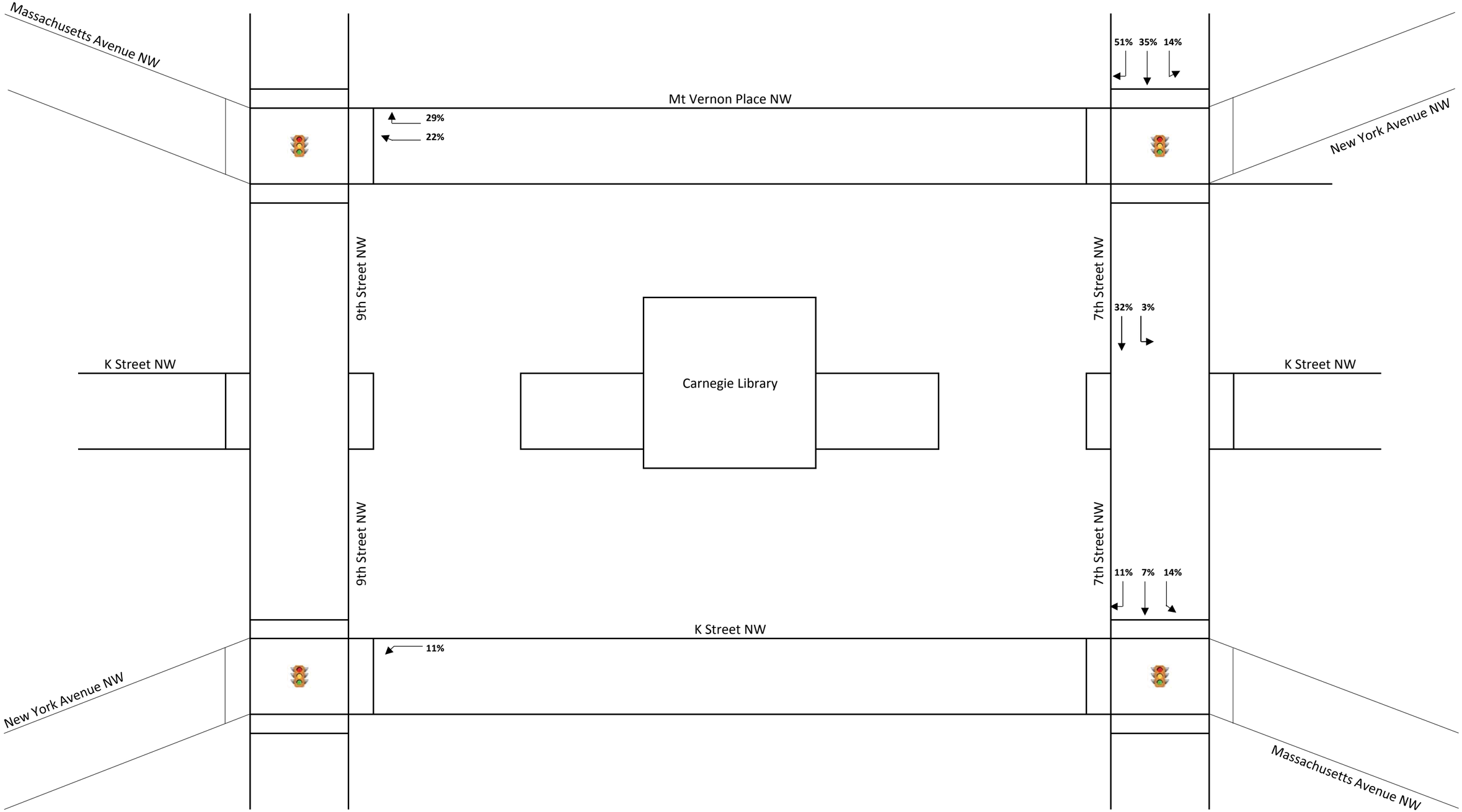

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Exhibit 40
Trip Distribution - SB 7th north of Vernon Out
Saturday Peak Hour

LEGEND

- Traffic Signal
- ← XXX — Vehicular Volume (vph)
- *XXX* — Bicycle Volume (bph)
- ← XXX → — Crosswalk Pedestrian Volume (ped/hr)

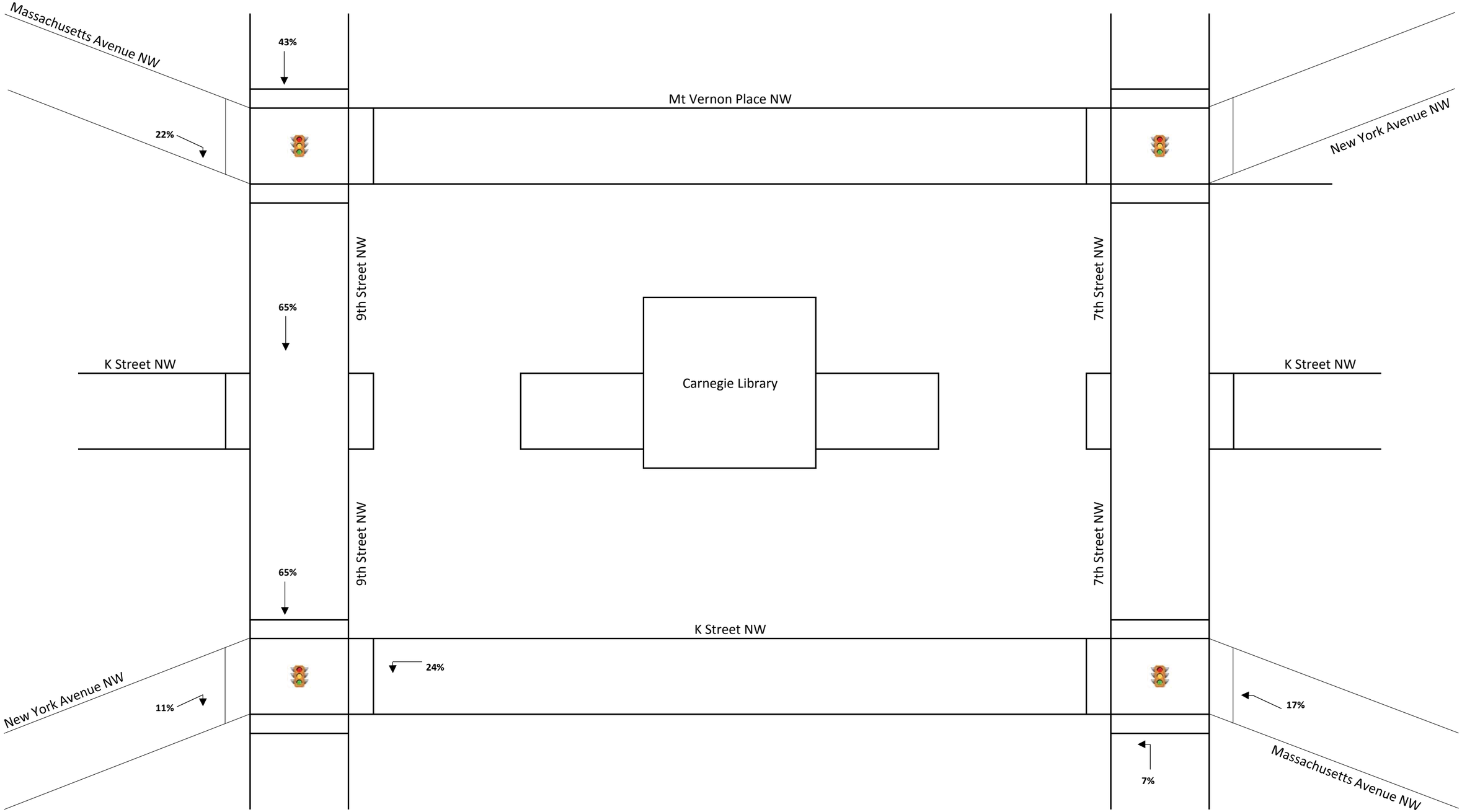

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Exhibit 41
Trip Distribution - 900 New York Ave NW In
PM and Saturday Peak Hours

LEGEND

- Traffic Signal
- ← XXX — Vehicular Volume (vph)
- XXX — Bicycle Volume (bph)
- ← XXX → — Crosswalk Pedestrian Volume (ped/hr)

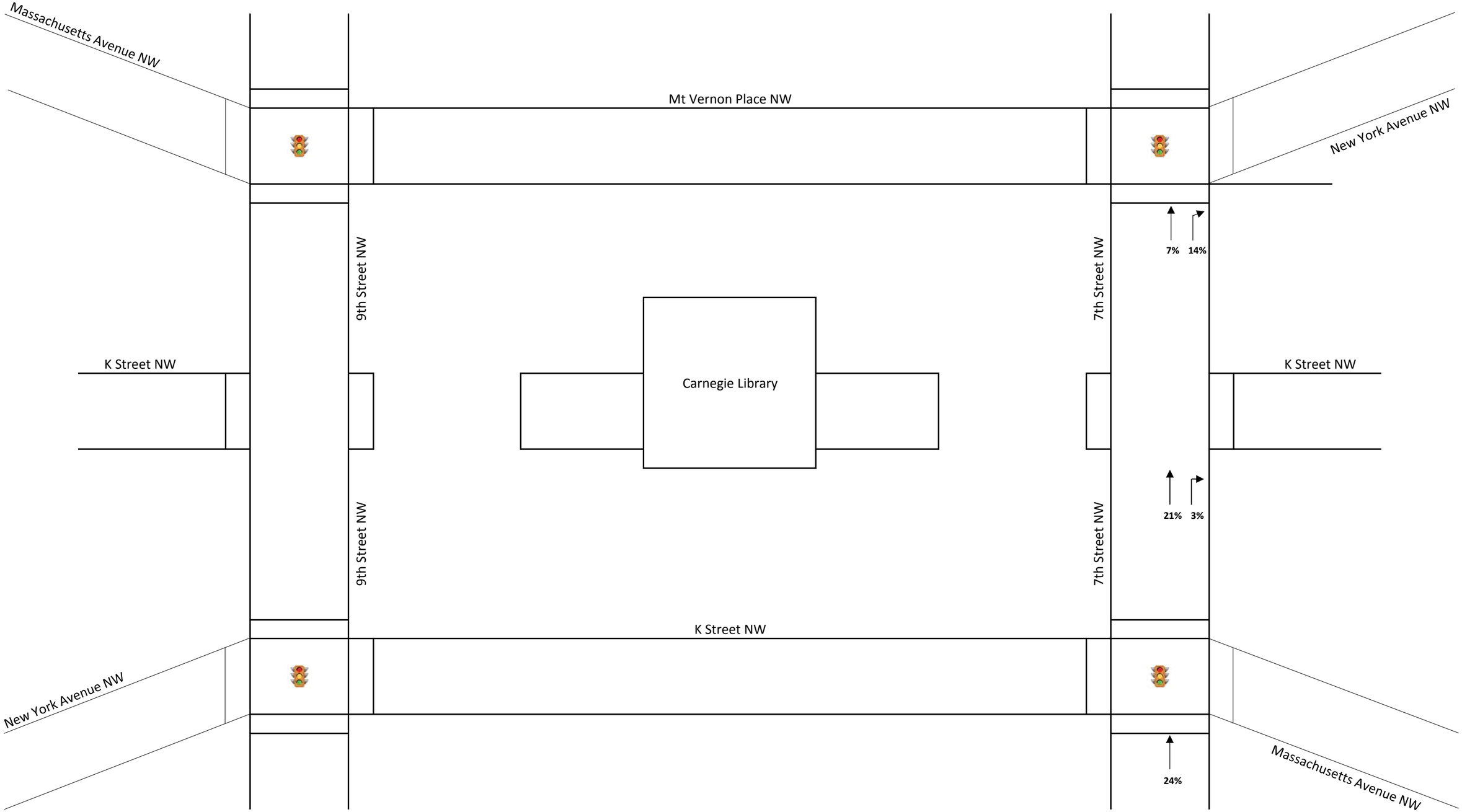

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Exhibit 42
Trip Distribution - 900 New York Ave NW Out
PM and Saturday Peak Hours

LEGEND

Traffic Signal

← XXX Vehicular Volume (vph)

XXX Bicycle Volume (bph)

← XXX → Crosswalk Pedestrian Volume (ped/hr)

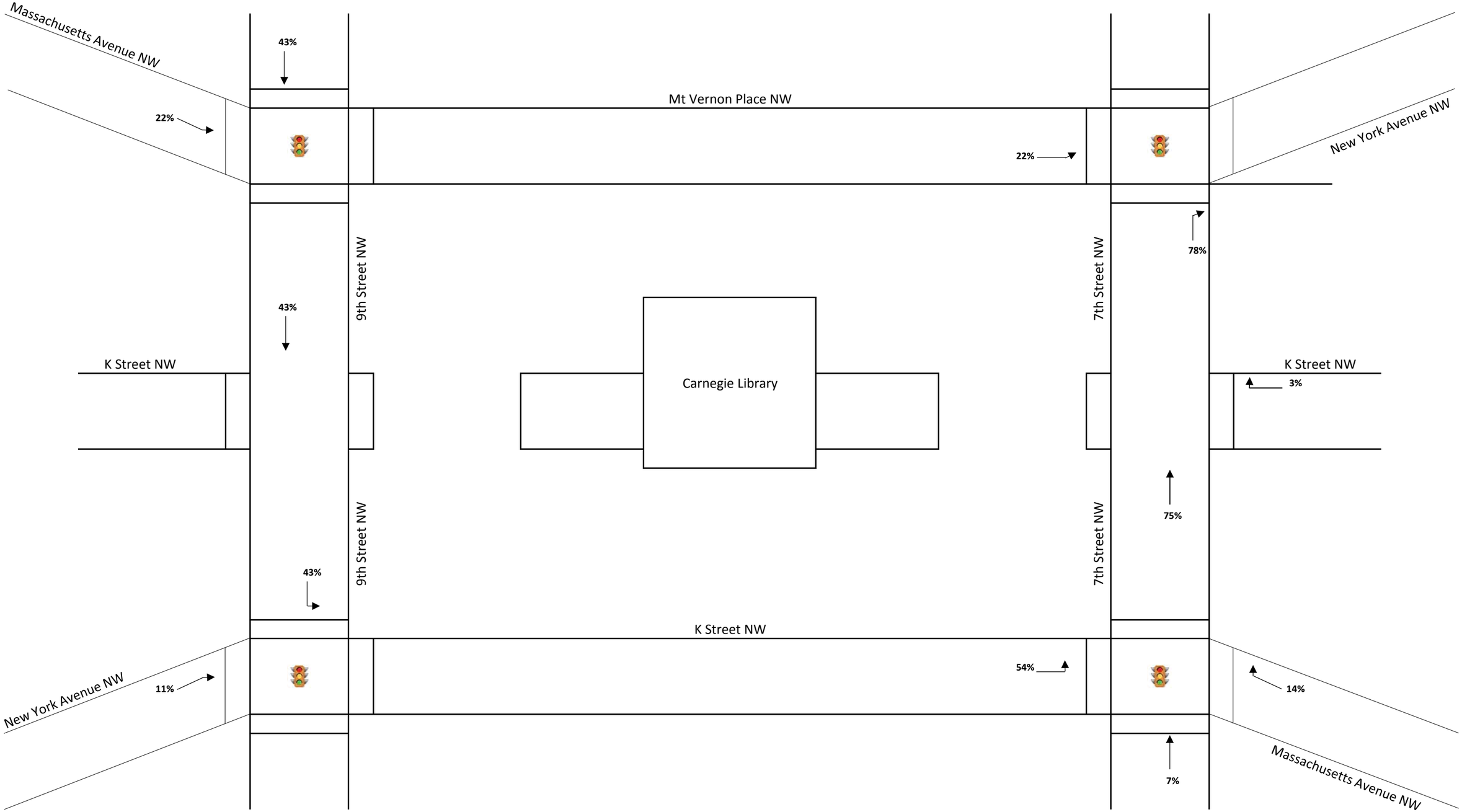

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Exhibit 43
Trip Distribution - 1016 6th Street NW In
PM and Saturday Peak Hours

LEGEND

Traffic Signal

← XXX — Vehicular Volume (vph)

XXX — Bicycle Volume (bph)

← XXX → — Crosswalk Pedestrian Volume (ped/hr)

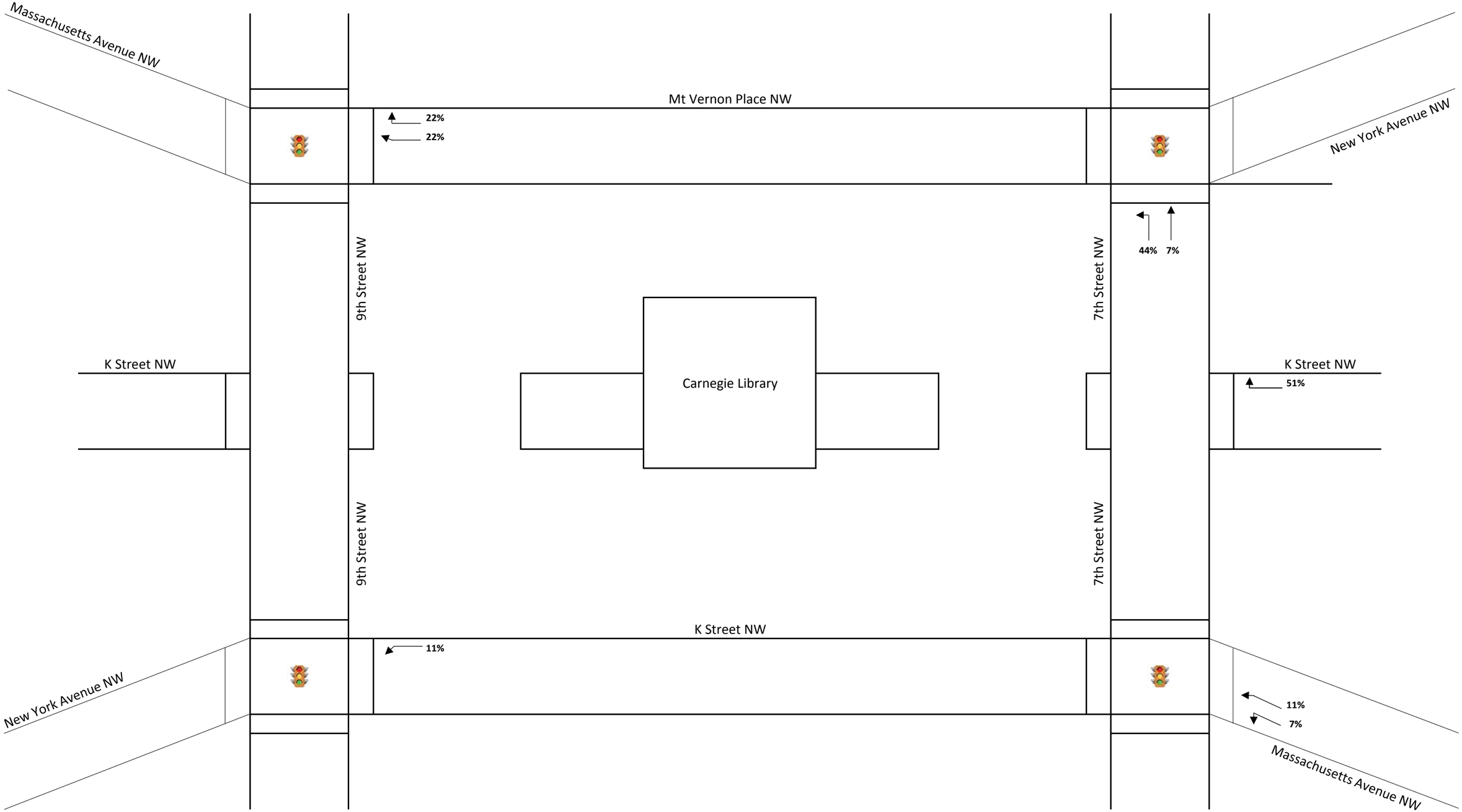

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Exhibit 44
Trip Distribution - 1016 6th Street NW Out
PM and Saturday Peak Hours

LEGEND

Traffic Signal

← XXX Vehicular Volume (vph)

XXX Bicycle Volume (bph)

← XXX → Crosswalk Pedestrian Volume (ped/hr)

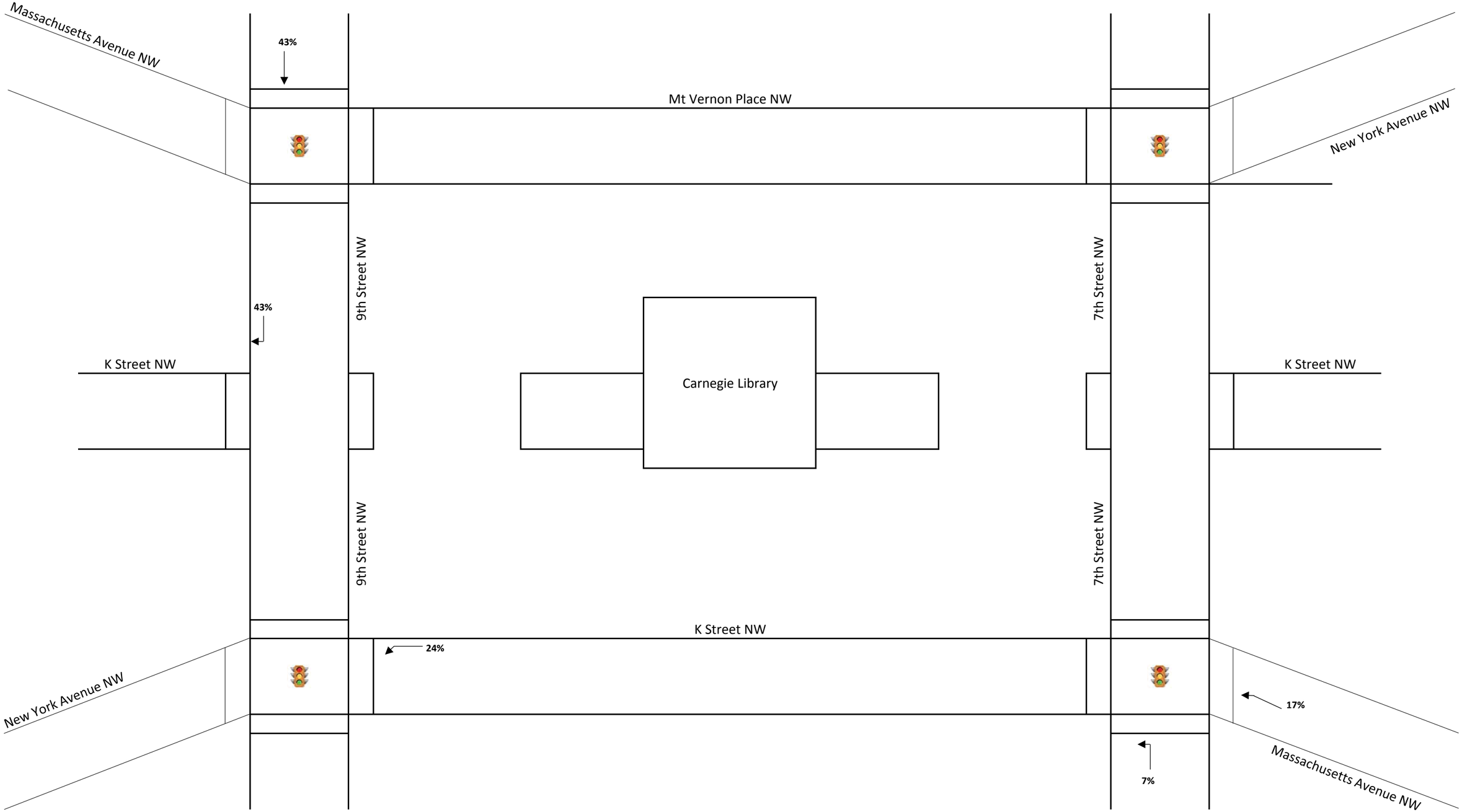

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Exhibit 45
Trip Distribution - 901 K Street NW In
PM Peak Hour

LEGEND

- Traffic Signal
- ← XXX — Vehicular Volume (vph)
- *XXX* — Bicycle Volume (bph)
- ← XXX → — Crosswalk Pedestrian Volume (ped/hr)

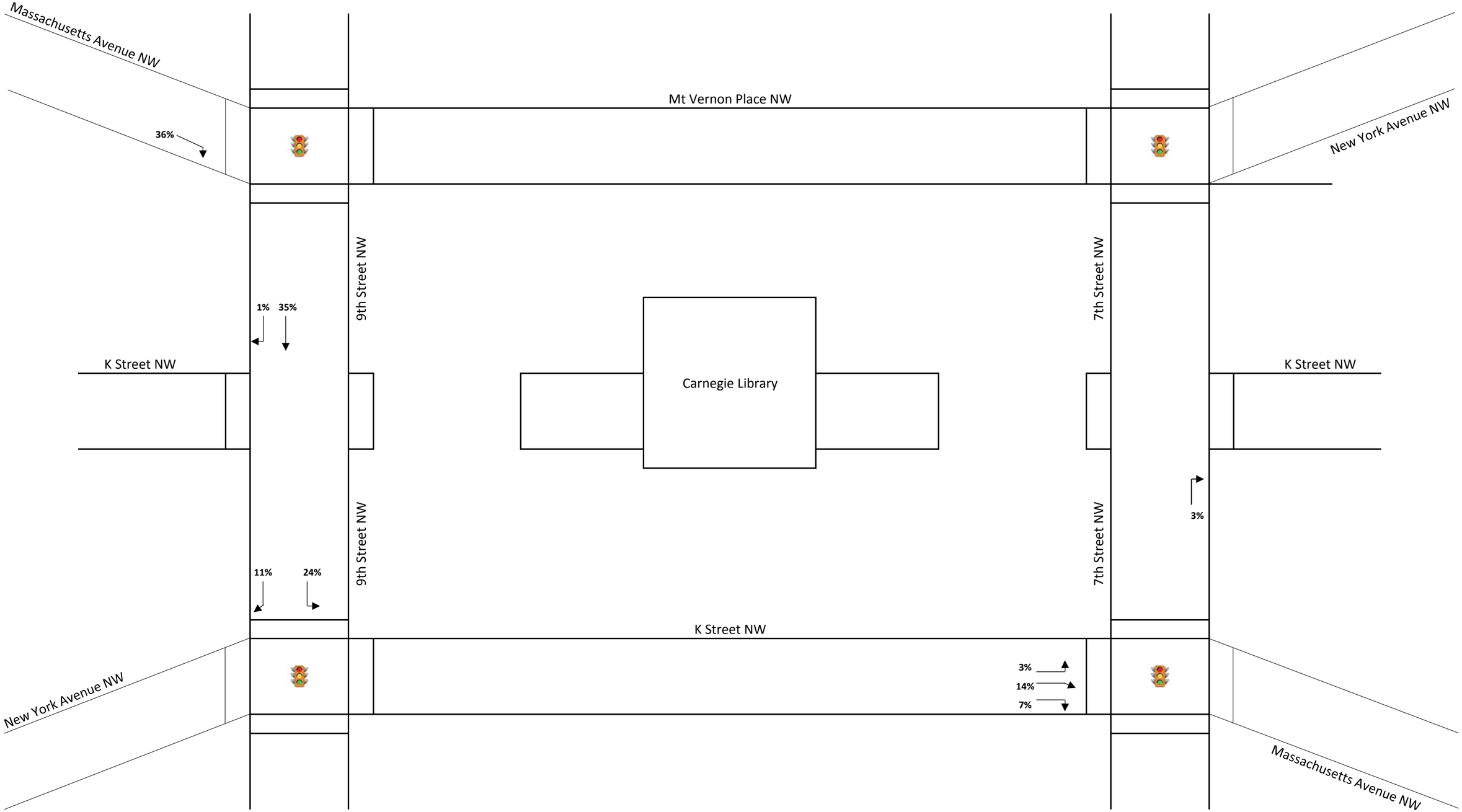

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Exhibit 46
Trip Distribution - 901 K Street NW Out
PM Peak Hour

LEGEND

Traffic Signal

← XXX Vehicular Volume (vph)

XXX Bicycle Volume (bph)

← XXX → Crosswalk Pedestrian Volume (ped/hr)

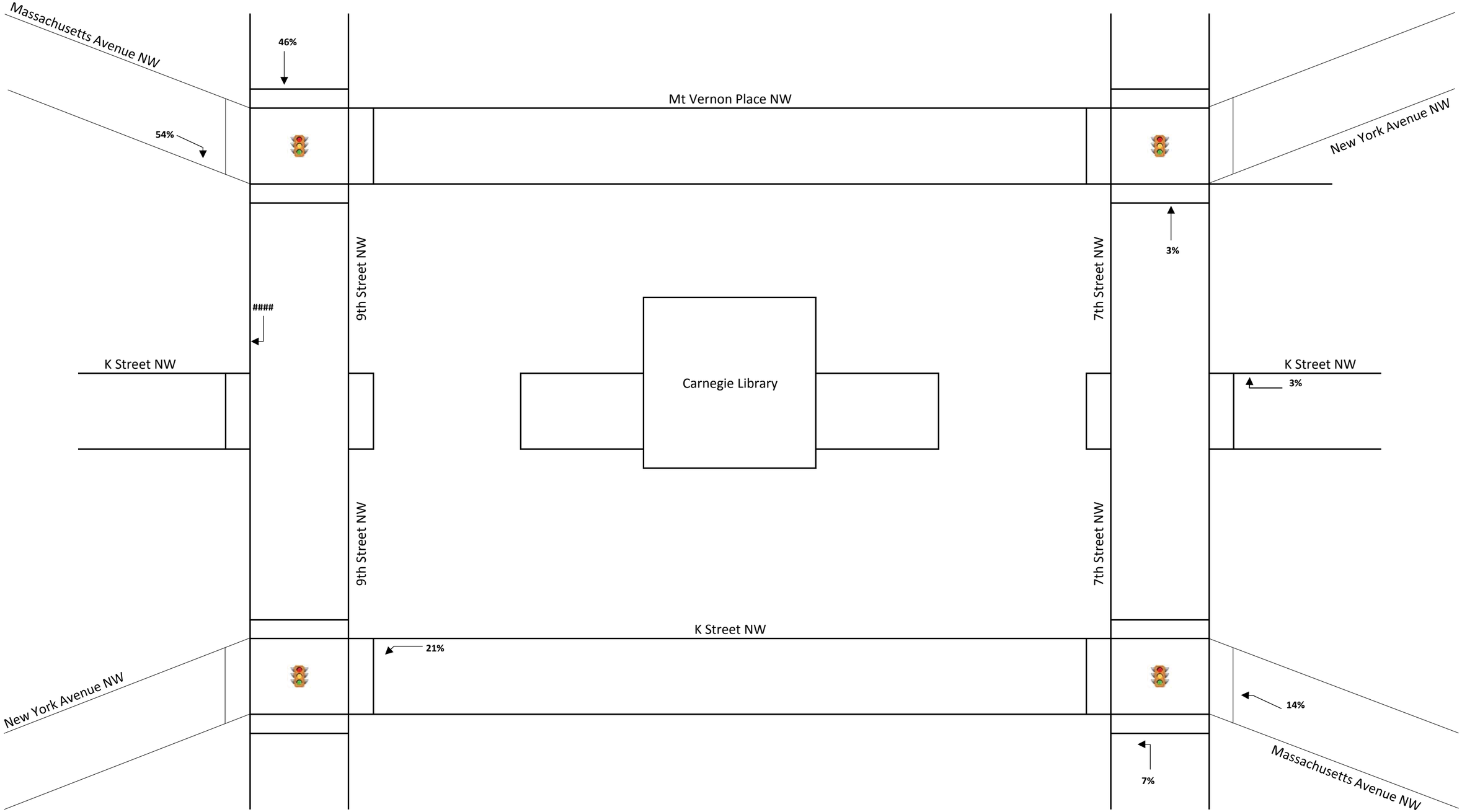

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Exhibit 47
Trip Distribution - 901 New York Ave NW In
PM Peak Hour

LEGEND

- Traffic Signal
- ← XXX — Vehicular Volume (vph)
- *XXX* — Bicycle Volume (bph)
- ← XXX → — Crosswalk Pedestrian Volume (ped/hr)

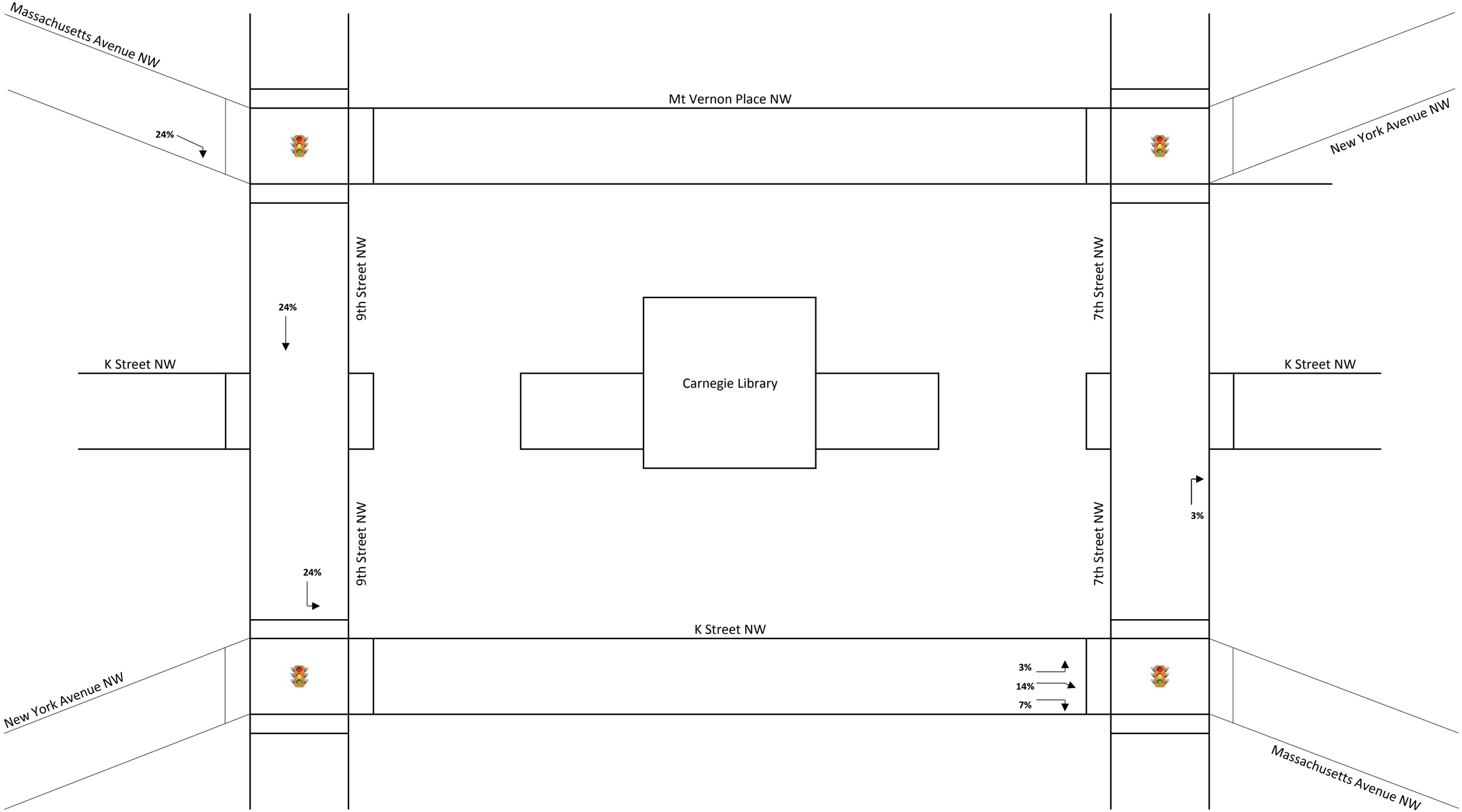

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Exhibit 48
Trip Distribution - 901 New York Ave NW Out
PM Peak Hour

LEGEND

- Traffic Signal
- ← XXX — Vehicular Volume (vph)
- *XXX* — Bicycle Volume (bph)
- ← XXX → — Crosswalk Pedestrian Volume (ped/hr)

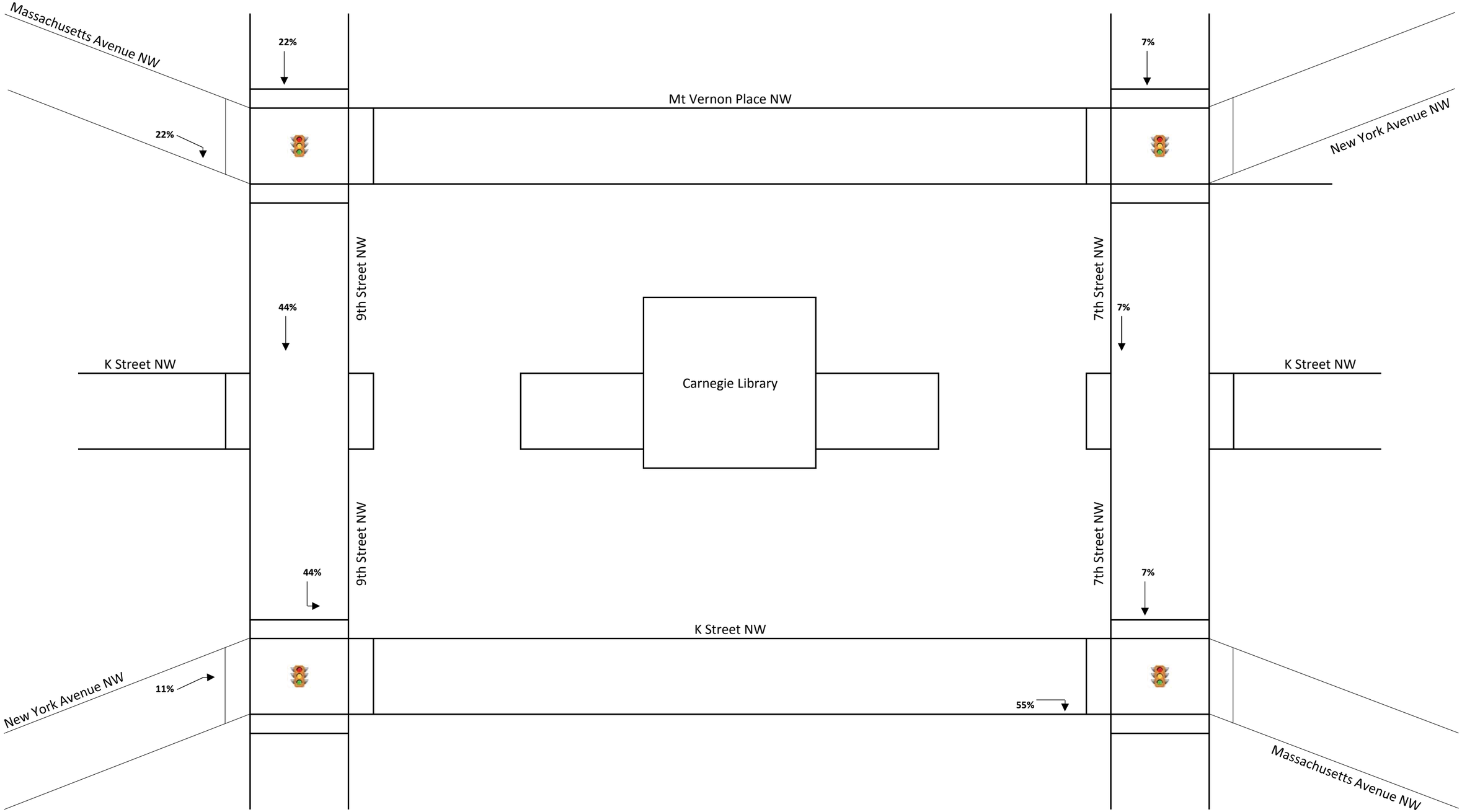

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Exhibit 49
Trip Distribution - 650 Mass Avenue NW In
PM Peak Hour

LEGEND

- Traffic Signal
- ← XXX — Vehicular Volume (vph)
- *XXX* — Bicycle Volume (bph)
- ← XXX → — Crosswalk Pedestrian Volume (ped/hr)

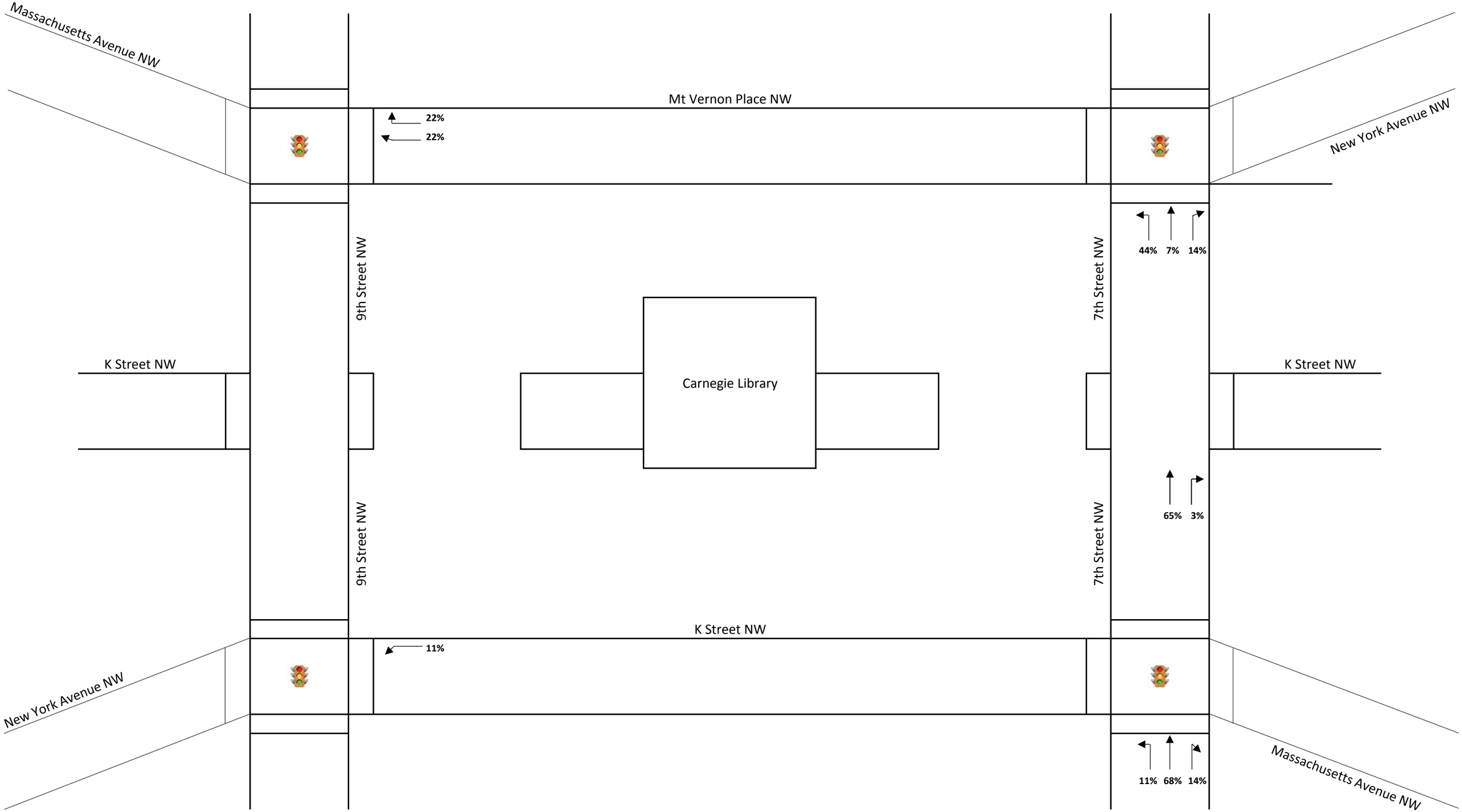

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Exhibit 50
Trip Distribution - 650 Mass Avenue NW Out
PM Peak Hour

LEGEND

- Traffic Signal
- ← XXX — Vehicular Volume (vph)
- *XXX* — Bicycle Volume (bph)
- ← XXX → — Crosswalk Pedestrian Volume (ped/hr)

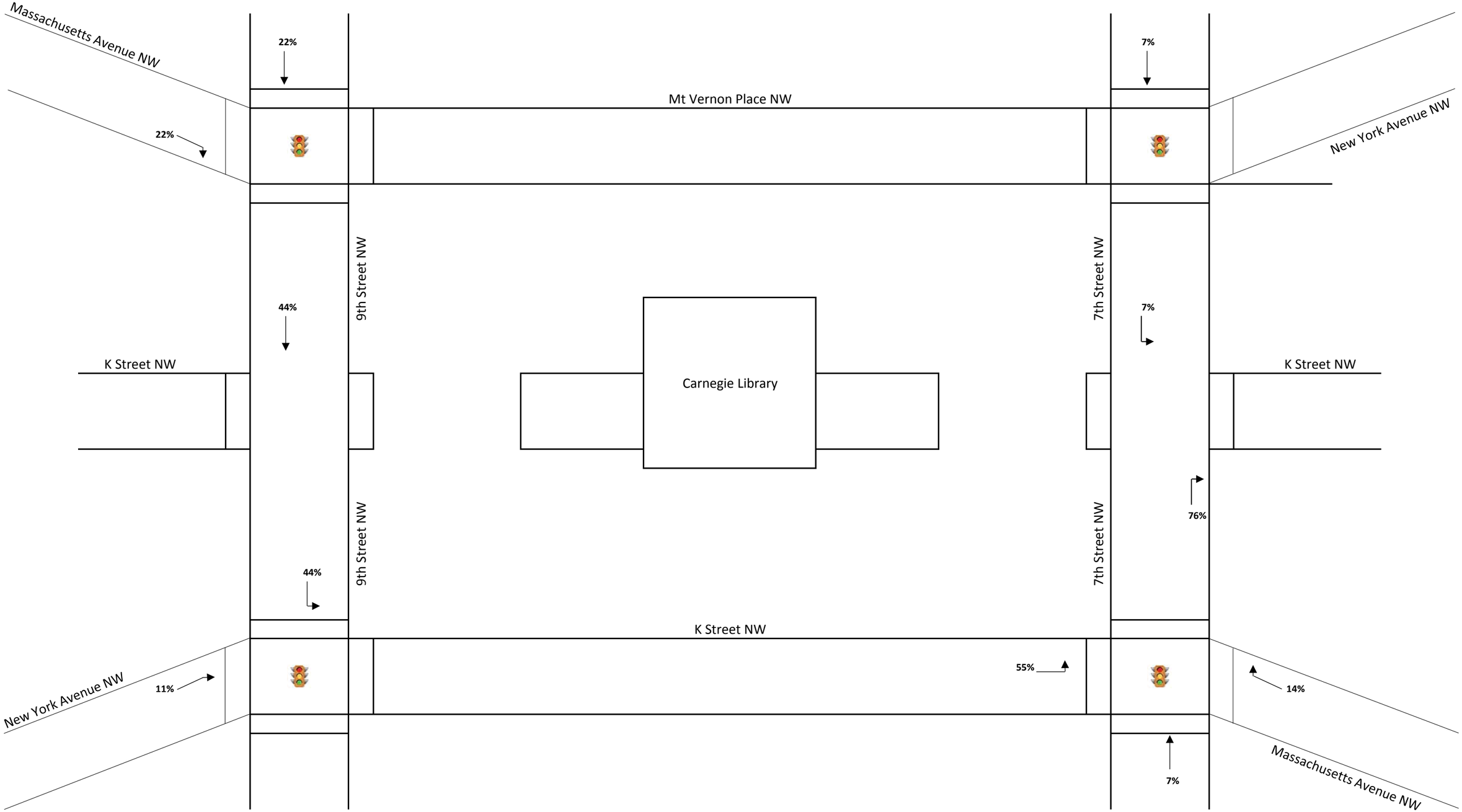

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Exhibit 51
Trip Distribution - 601 Mass Avenue NW In
PM Peak Hour

LEGEND

- Traffic Signal
- ← XXX — Vehicular Volume (vph)
- *XXX* — Bicycle Volume (bph)
- ← XXX → — Crosswalk Pedestrian Volume (ped/hr)

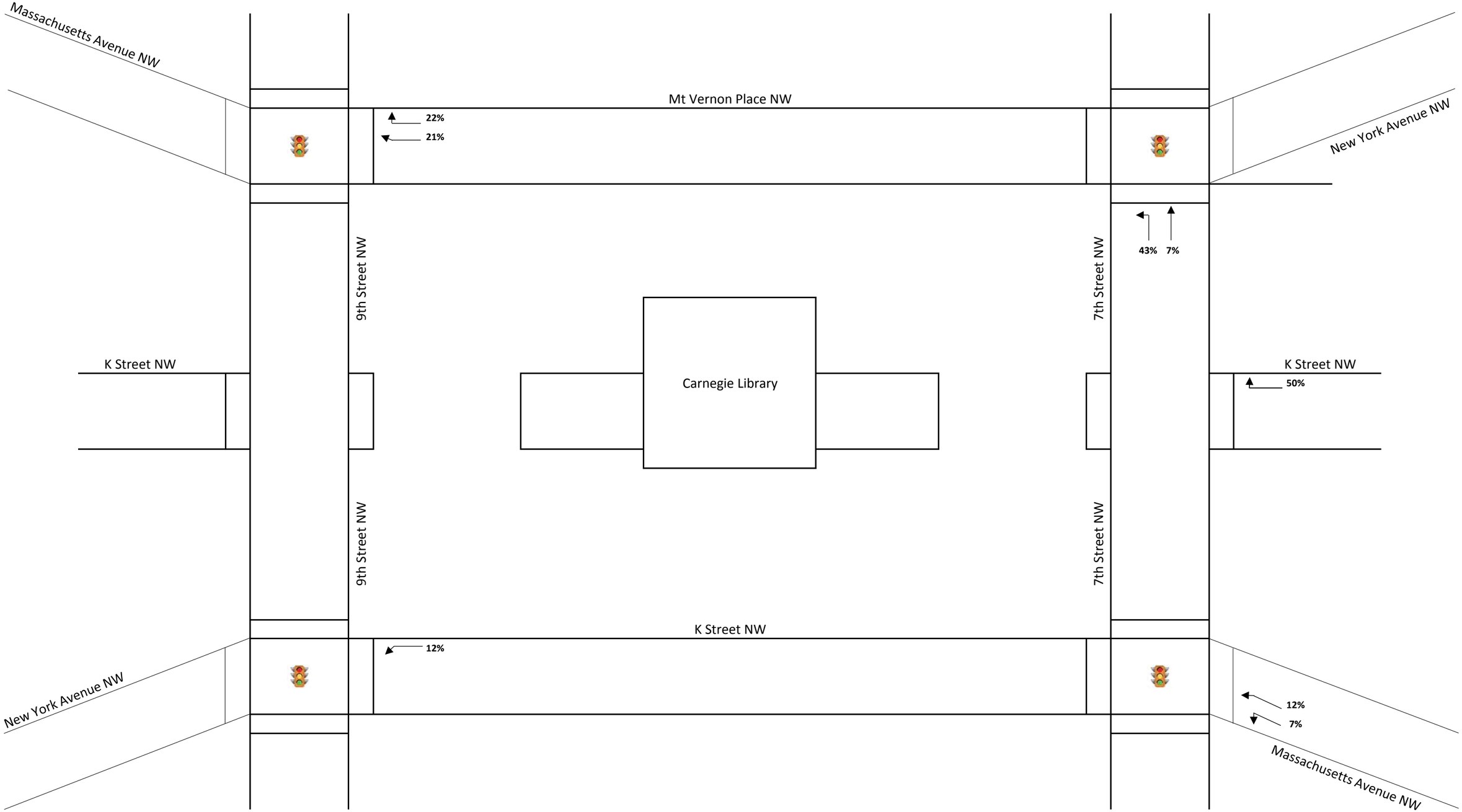

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Exhibit 52
Trip Distribution - 601 Mass Avenue NW Out
PM Peak Hour

LEGEND

- Traffic Signal
- ← XXX — Vehicular Volume (vph)
- *XXX* — Bicycle Volume (bph)
- ← XXX → — Crosswalk Pedestrian Volume (ped/hr)

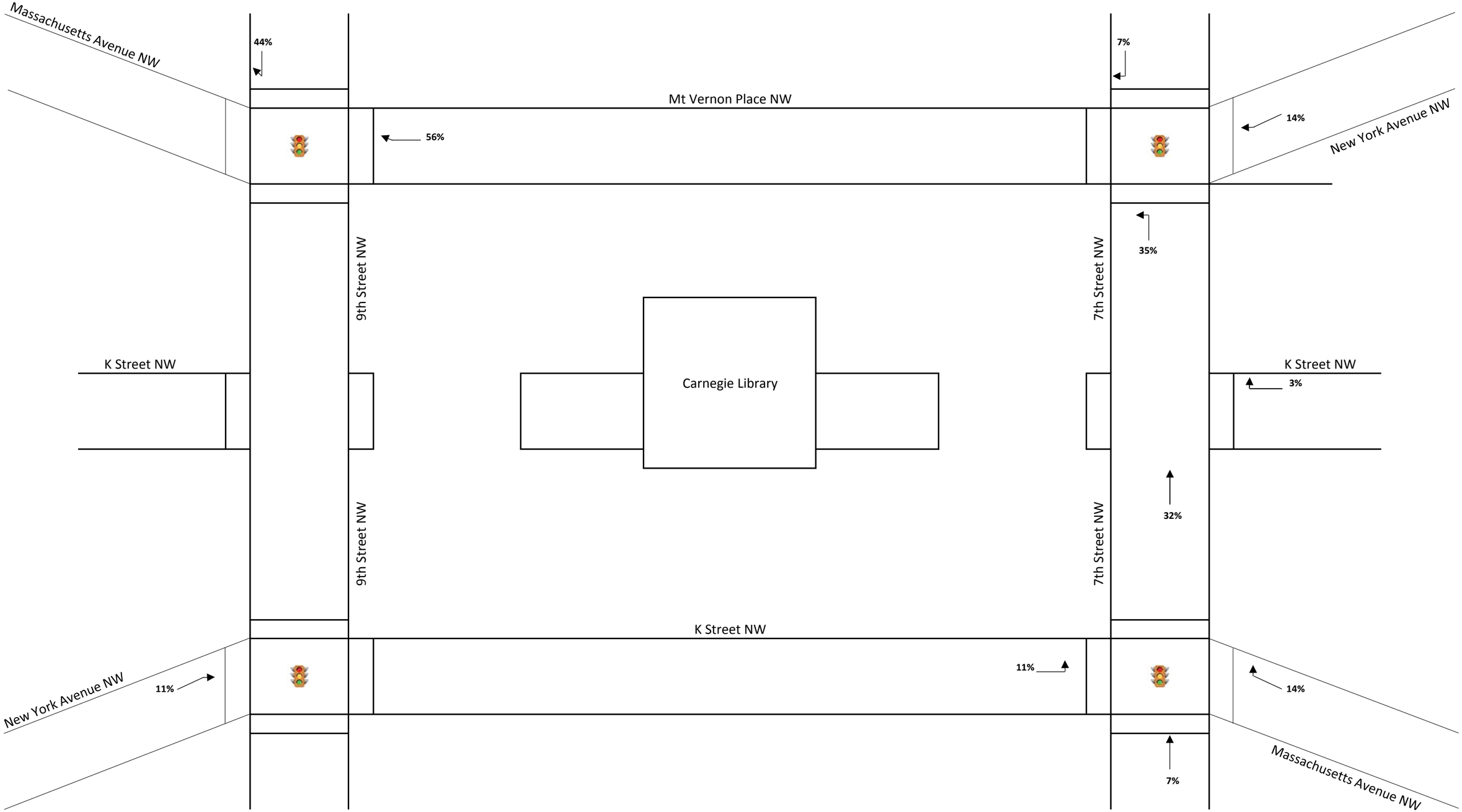

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Exhibit 53
Trip Distribution - Marriott Marquis In
PM and Saturday Peak Hours

LEGEND

Traffic Signal

XXX Vehicular Volume (vph)

XXX Bicycle Volume (bph)

XXX Crosswalk Pedestrian Volume (ped/hr)

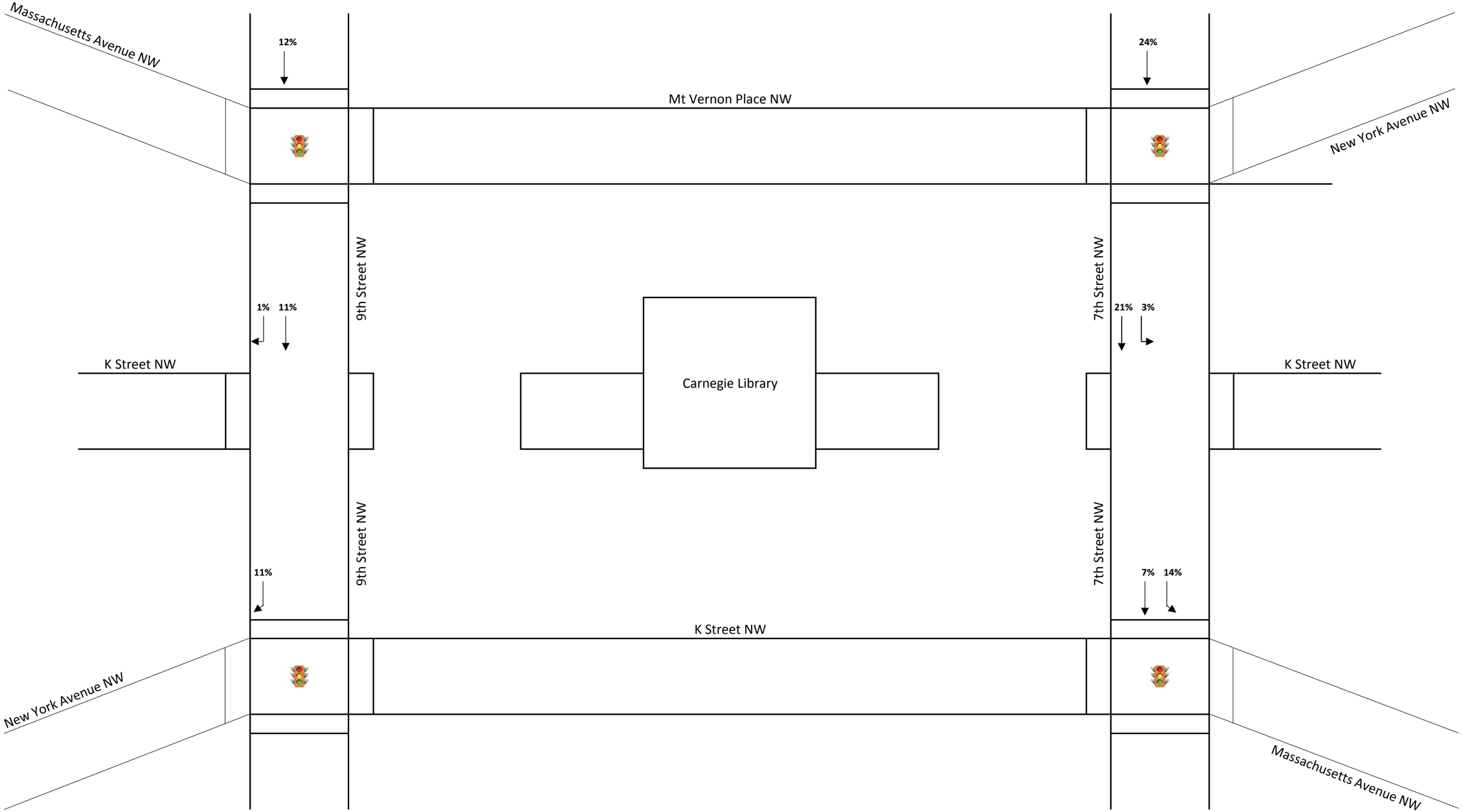

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Exhibit 54
Trip Distribution - Marriott Marquis Out
PM and Saturday Peak Hours

LEGEND

- Traffic Signal
- ← XXX — Vehicular Volume (vph)
- *XXX* — Bicycle Volume (bph)
- ← XXX → — Crosswalk Pedestrian Volume (ped/hr)

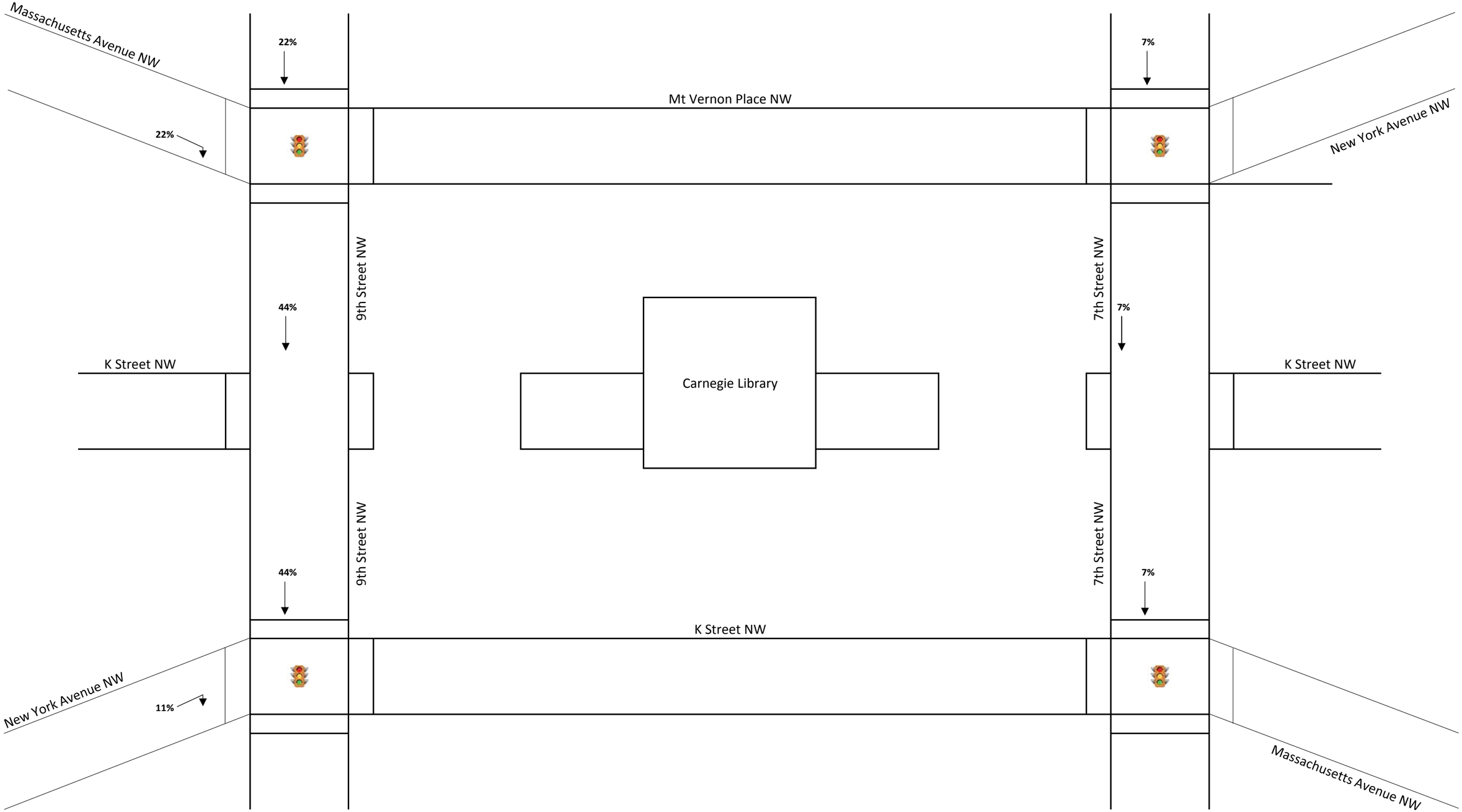

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Exhibit 55
Trip Distribution - 999 9th Street NW In
PM and Saturday Peak Hours

LEGEND

Traffic Signal

← XXX Vehicular Volume (vph)

XXX Bicycle Volume (bph)

← XXX → Crosswalk Pedestrian Volume (ped/hr)

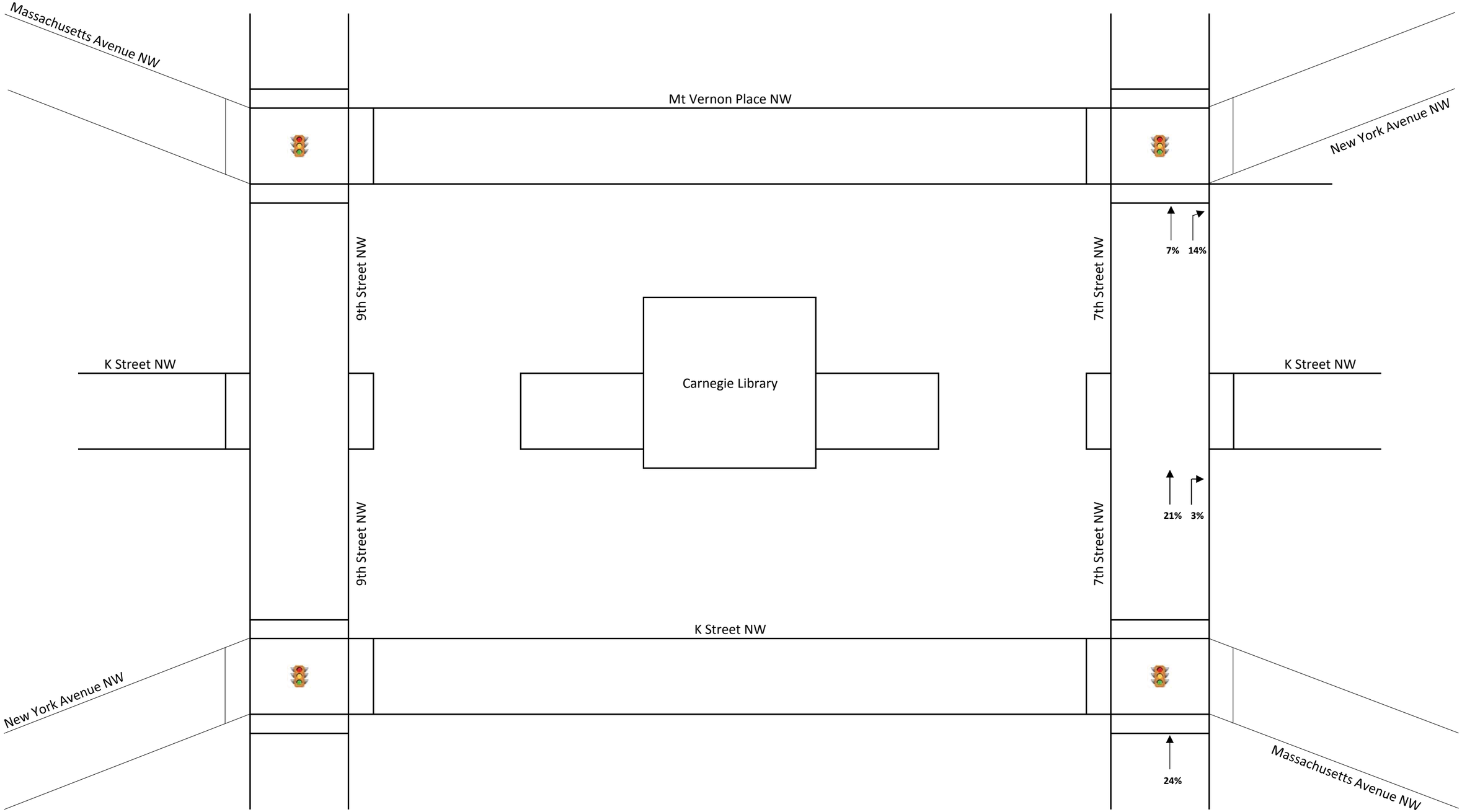

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Exhibit 56
Trip Distribution - 999 9th Street NW Out
PM and Saturday Peak Hours

LEGEND

Traffic Signal

← XXX — Vehicular Volume (vph)

XXX — Bicycle Volume (bph)

← XXX → — Crosswalk Pedestrian Volume (ped/hr)

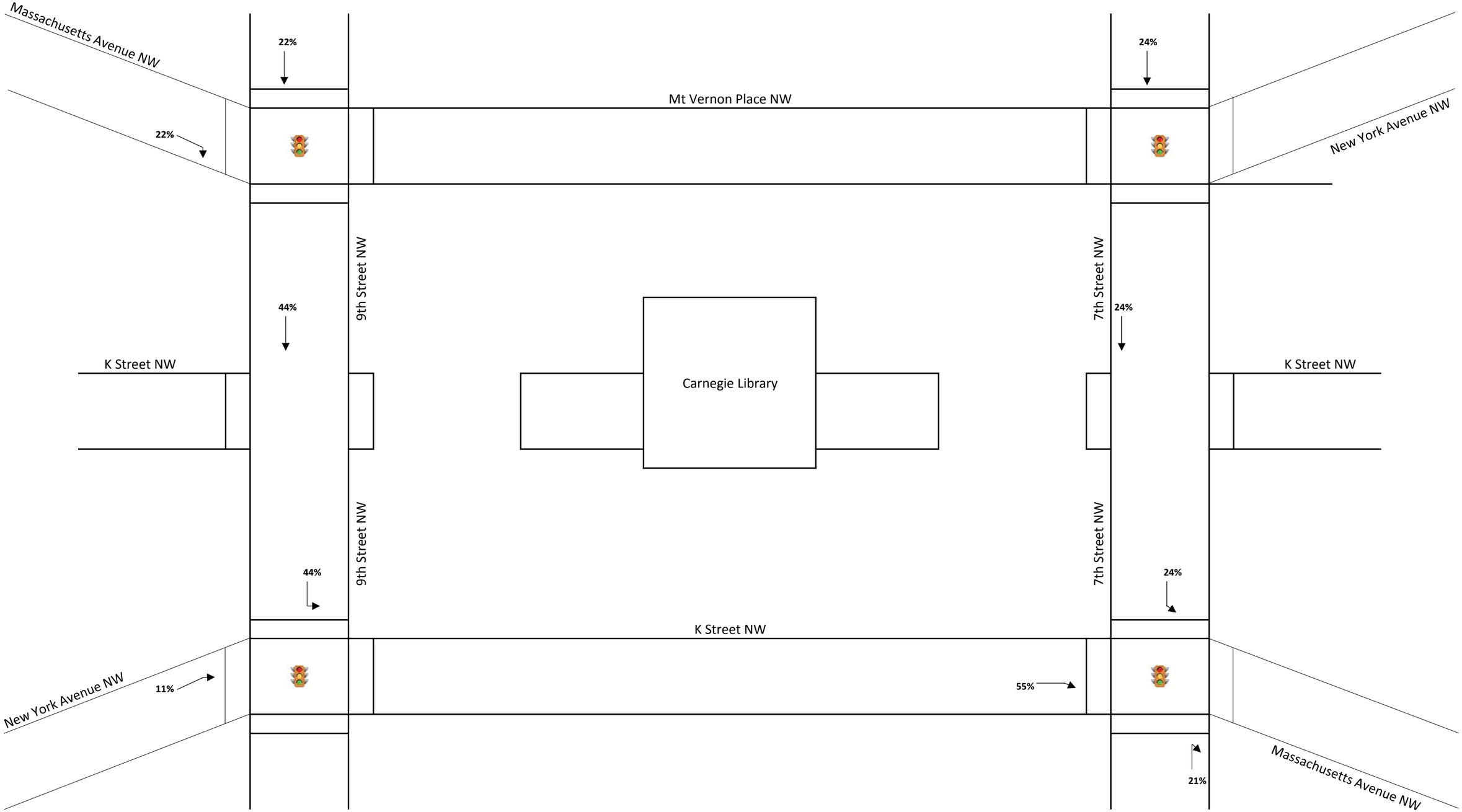

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Exhibit 57
Trip Distribution - 600 Mass Avenue NW In
PM and Saturday Peak Hours

LEGEND

- Traffic Signal
- ← XXX — Vehicular Volume (vph)
- *XXX* — Bicycle Volume (bph)
- ← XXX → — Crosswalk Pedestrian Volume (ped/hr)

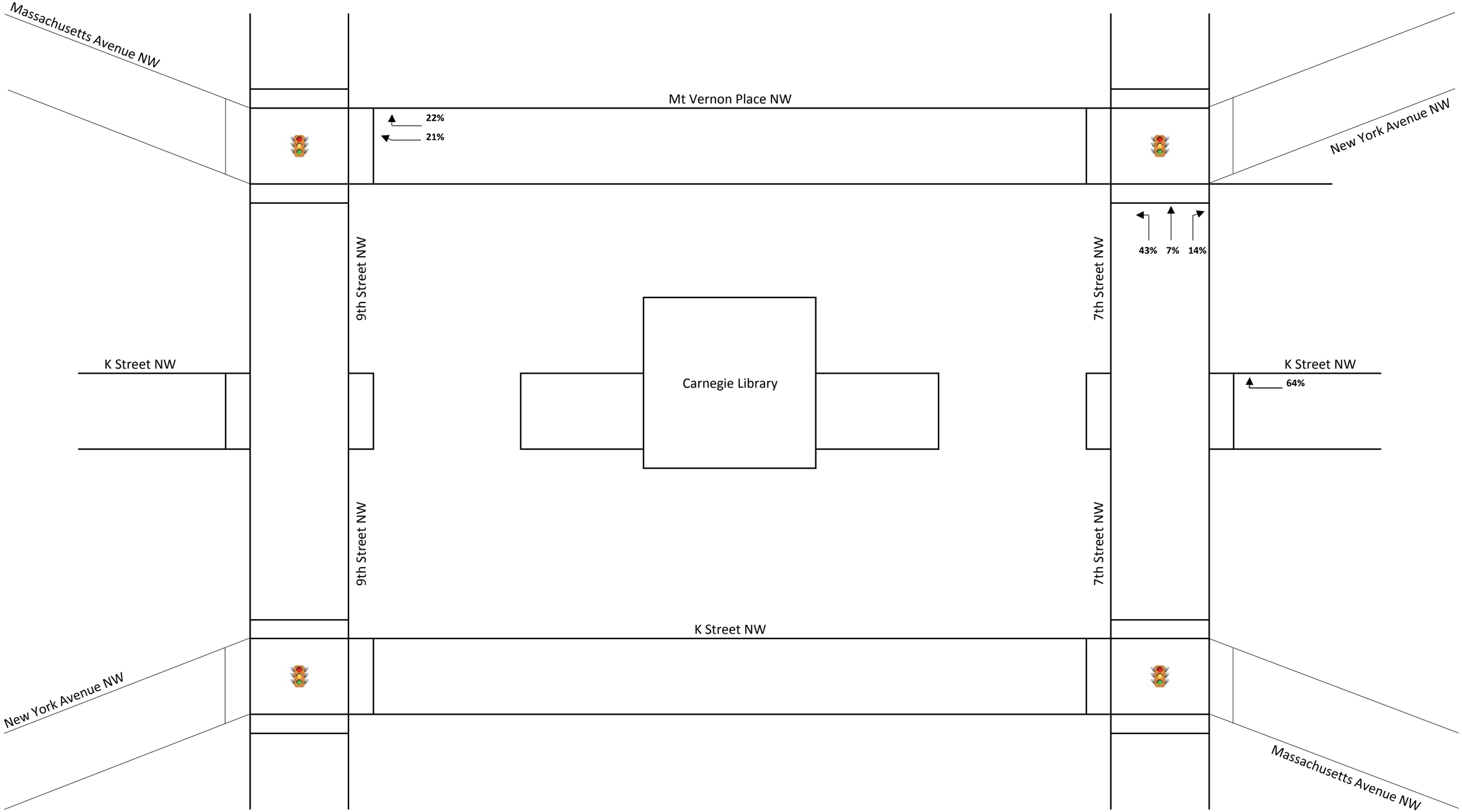

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Exhibit 58
Trip Distribution - 600 Mass Avenue NW Out
PM and Saturday Peak Hours

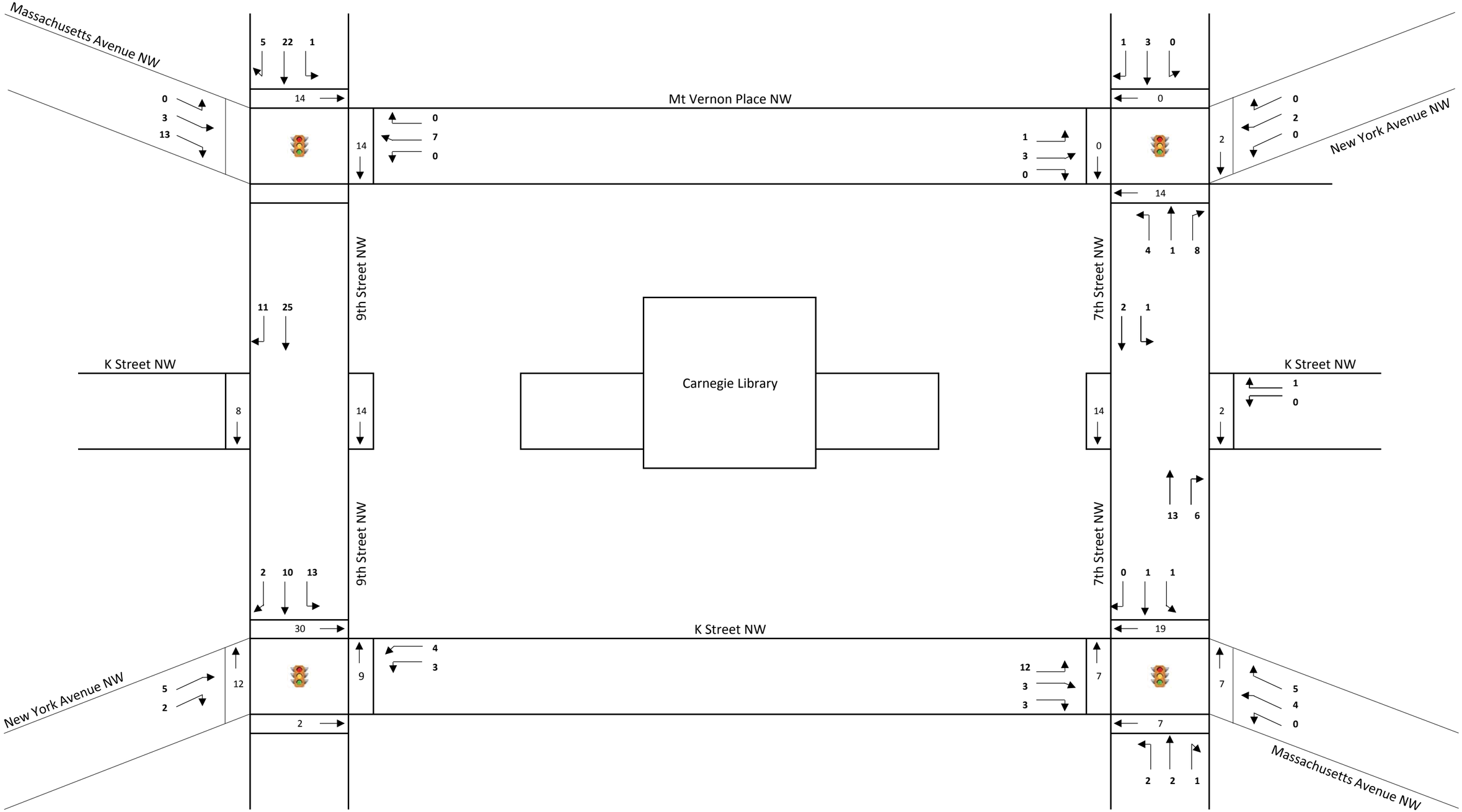
LEGEND

Traffic Signal

← XXX Vehicular Volume (vph)

XXX Bicycle Volume (bph)

← XXX → Crosswalk Pedestrian Volume (ped/hr)



Stantec 6110 Frost Place Laurel, MD 20707-2927 T: (301) 982-2800	**801 K STREET** **WASHINGTON, DC**	**Exhibit 59** **Trip Generation - Vehicle Trips (In)** **PM Peak Hour (4:45 PM - 5:45 PM)**	**LEGEND** Traffic Signal ← XXX Vehicular Volume (vph) ← XXX → Crosswalk Pedestrian Volume (ped/hr)

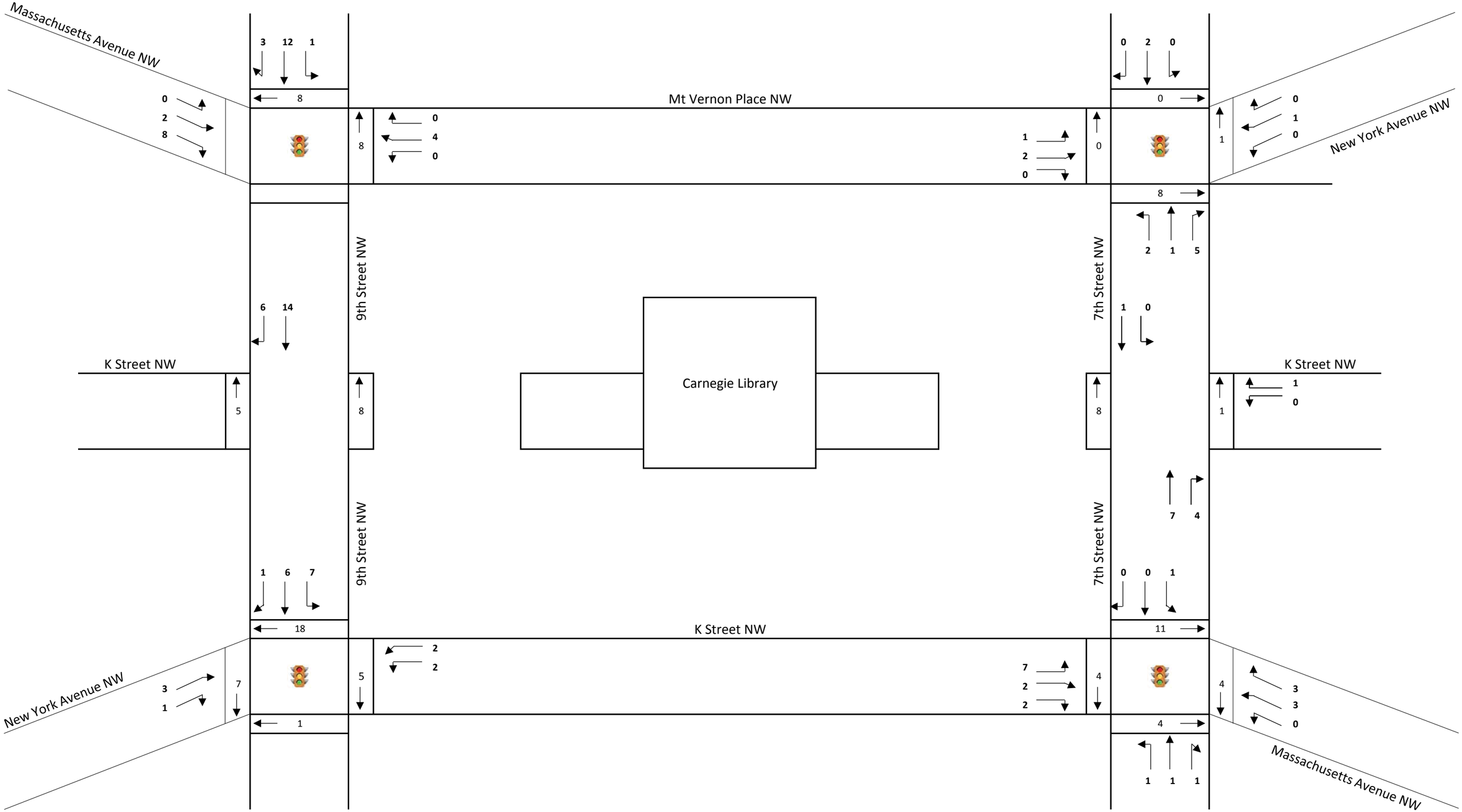


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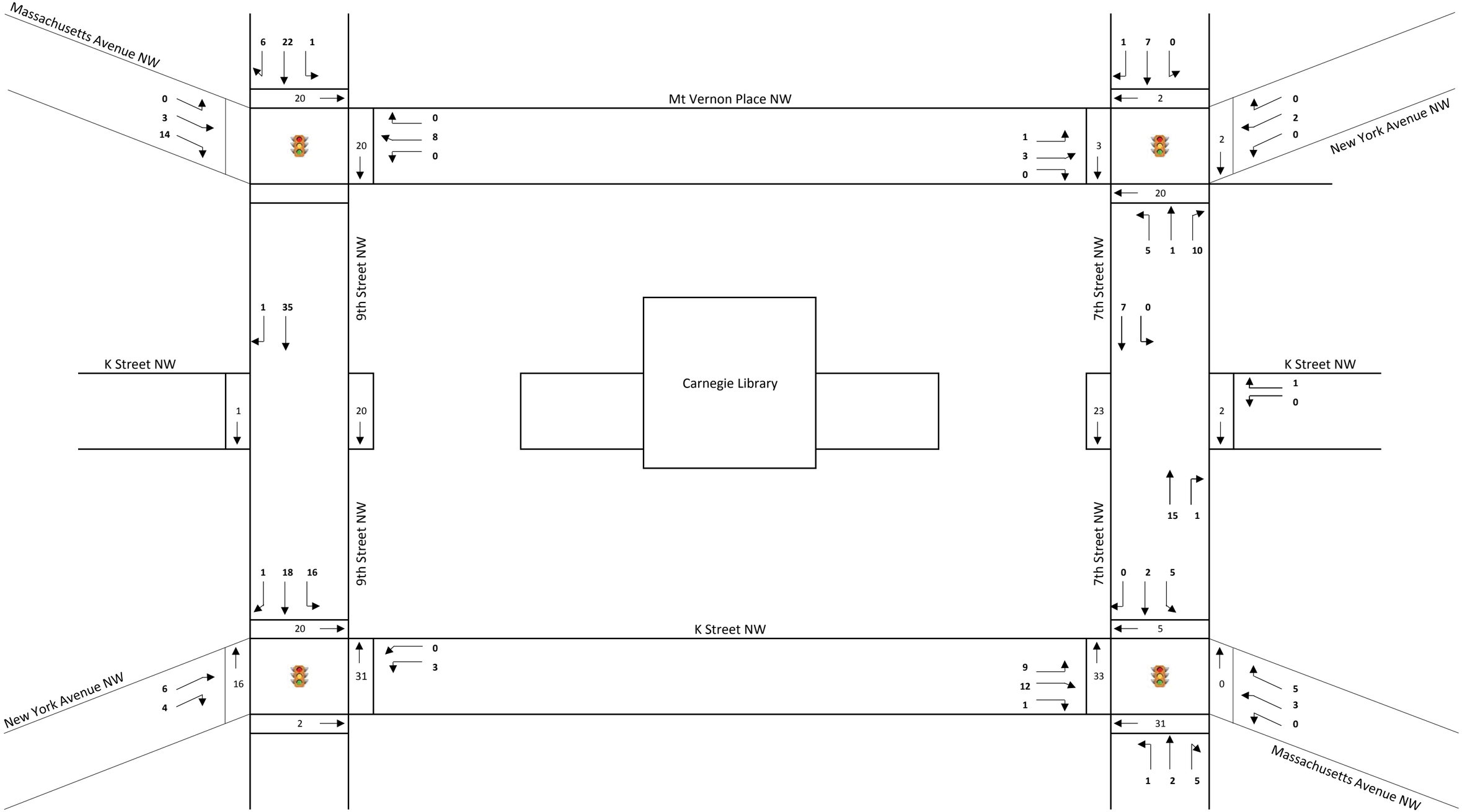
Exhibit 60
Trip Generation - Vehicle Trips (Out)
PM Peak Hour (4:45 PM - 5:45 PM)

LEGEND

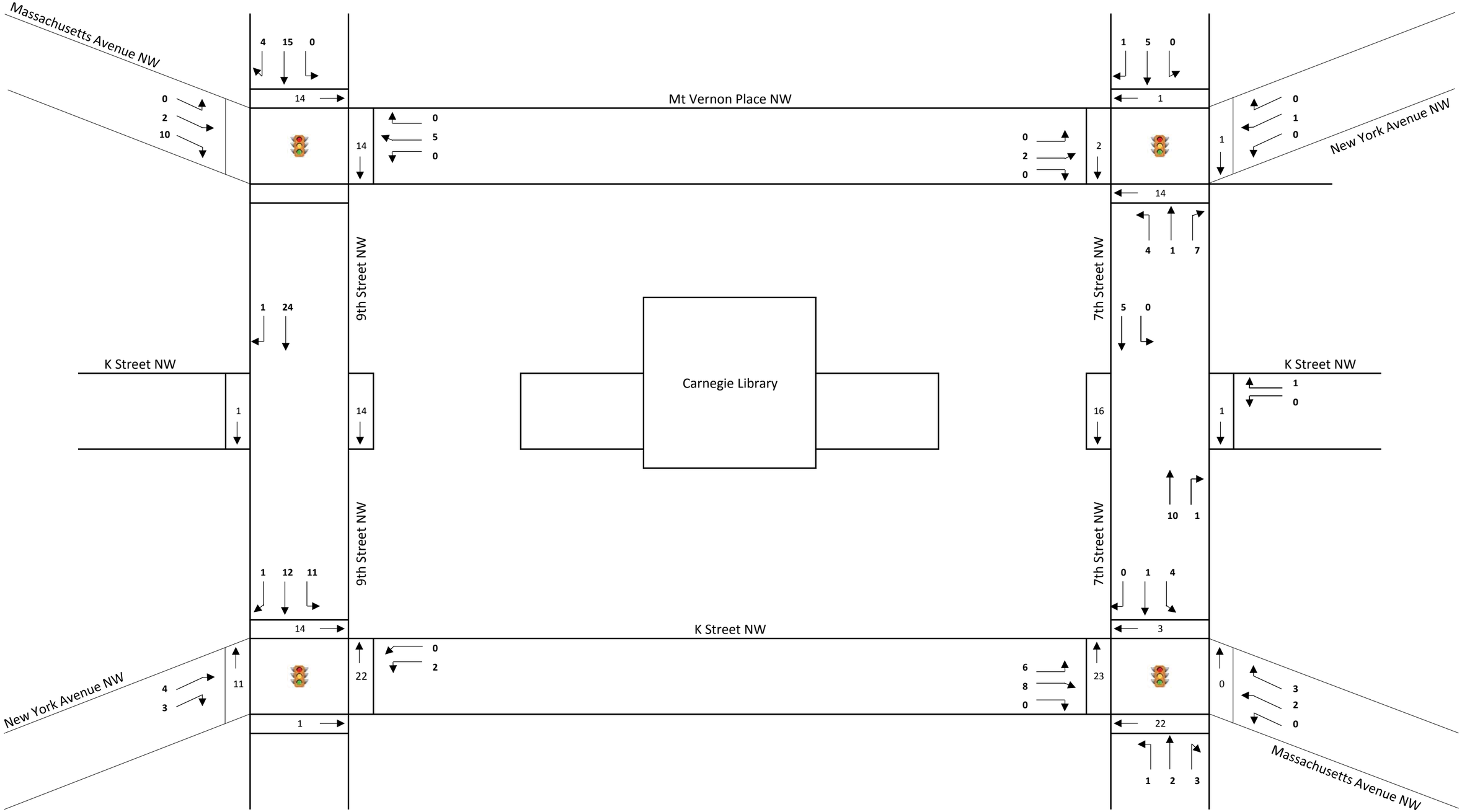
Traffic Signal

← XXX Vehicular Volume (vph)

← XXX → Crosswalk Pedestrian Volume (ped/hr)



Stantec 6110 Frost Place Laurel, MD 20707-2927 T: (301) 982-2800	**801 K STREET** **WASHINGTON, DC**	**Exhibit 61** **Trip Generation - Vehicle Trips (In)** **Saturday Peak Hour (1:00 PM - 2:00 PM)**	**LEGEND** Traffic Signal ← XXX Vehicular Volume (vph) ← XXX → Crosswalk Pedestrian Volume (ped/hr)



Stantec 6110 Frost Place Laurel, MD 20707-2927 T: (301) 982-2800	**801 K STREET** **WASHINGTON, DC**	**Exhibit 62** **Trip Generation - Vehicle Trips (Out)** **Saturday Peak Hour (1:00 PM - 2:00 PM)**	**LEGEND** Traffic Signal ← XXX Vehicular Volume (vph) ← XXX → Crosswalk Pedestrian Volume (ped/hr)

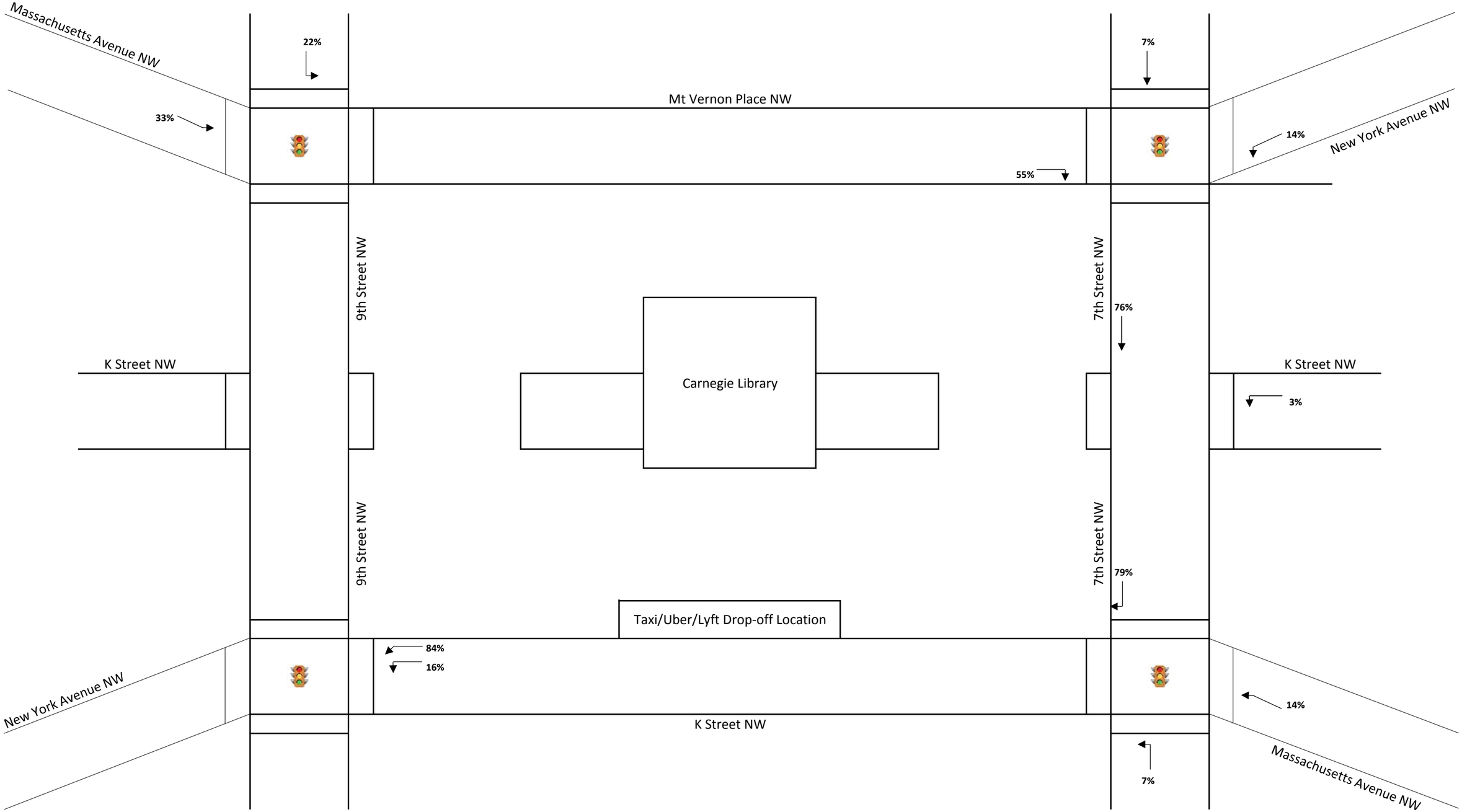


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Exhibit 63
Trip Distribution - Taxi/Uber/Lyft
PM and Saturday Peak Hours

LEGEND

← XXX Vehicular Volume (vph)

Traffic Signal

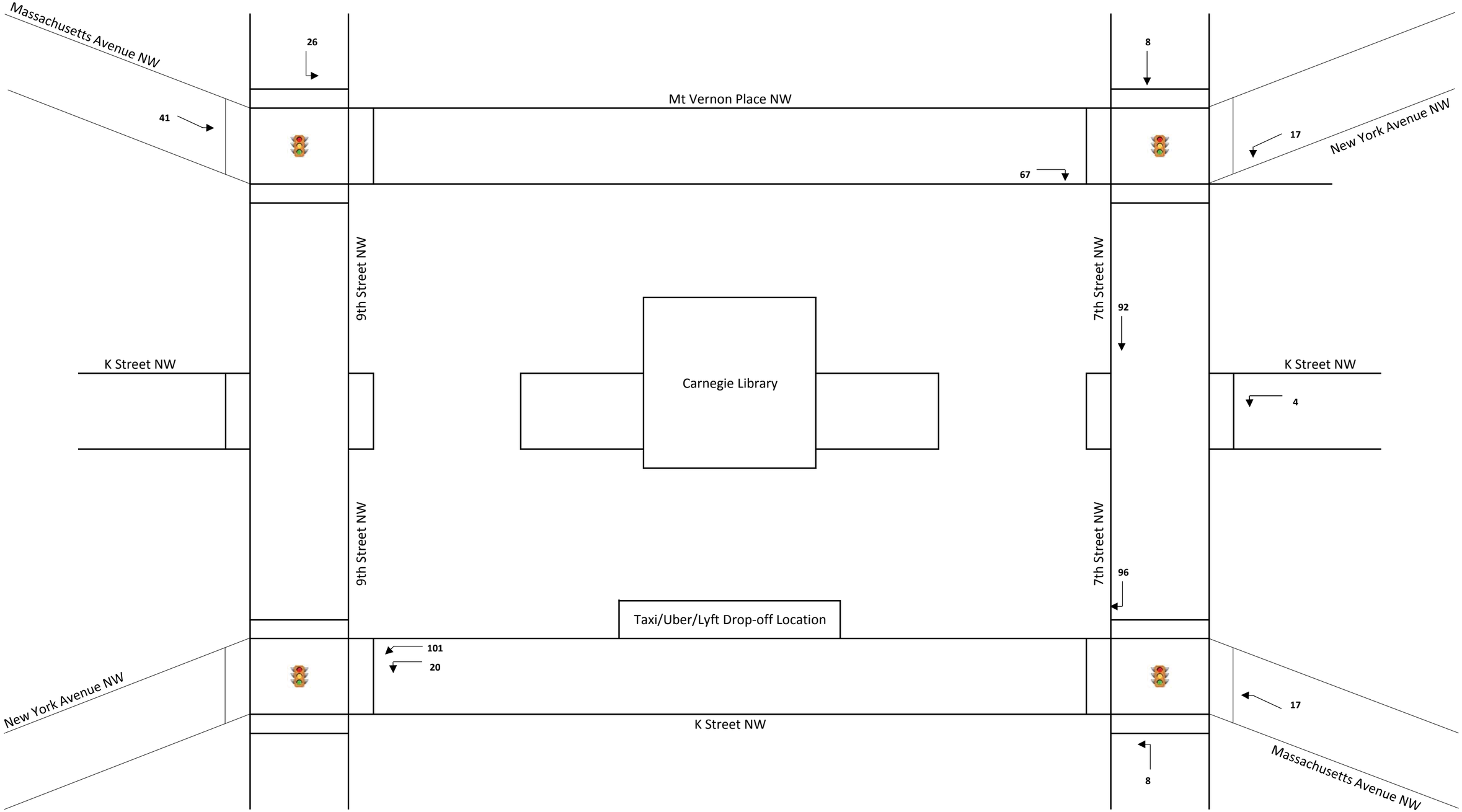

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Exhibit 64
Trip Generation - Taxi/Uber/Lyft
PM Peak Hour (4:45 PM - 5:45 PM)

LEGEND

← XXX Vehicular Volume (vph)

Traffic Signal

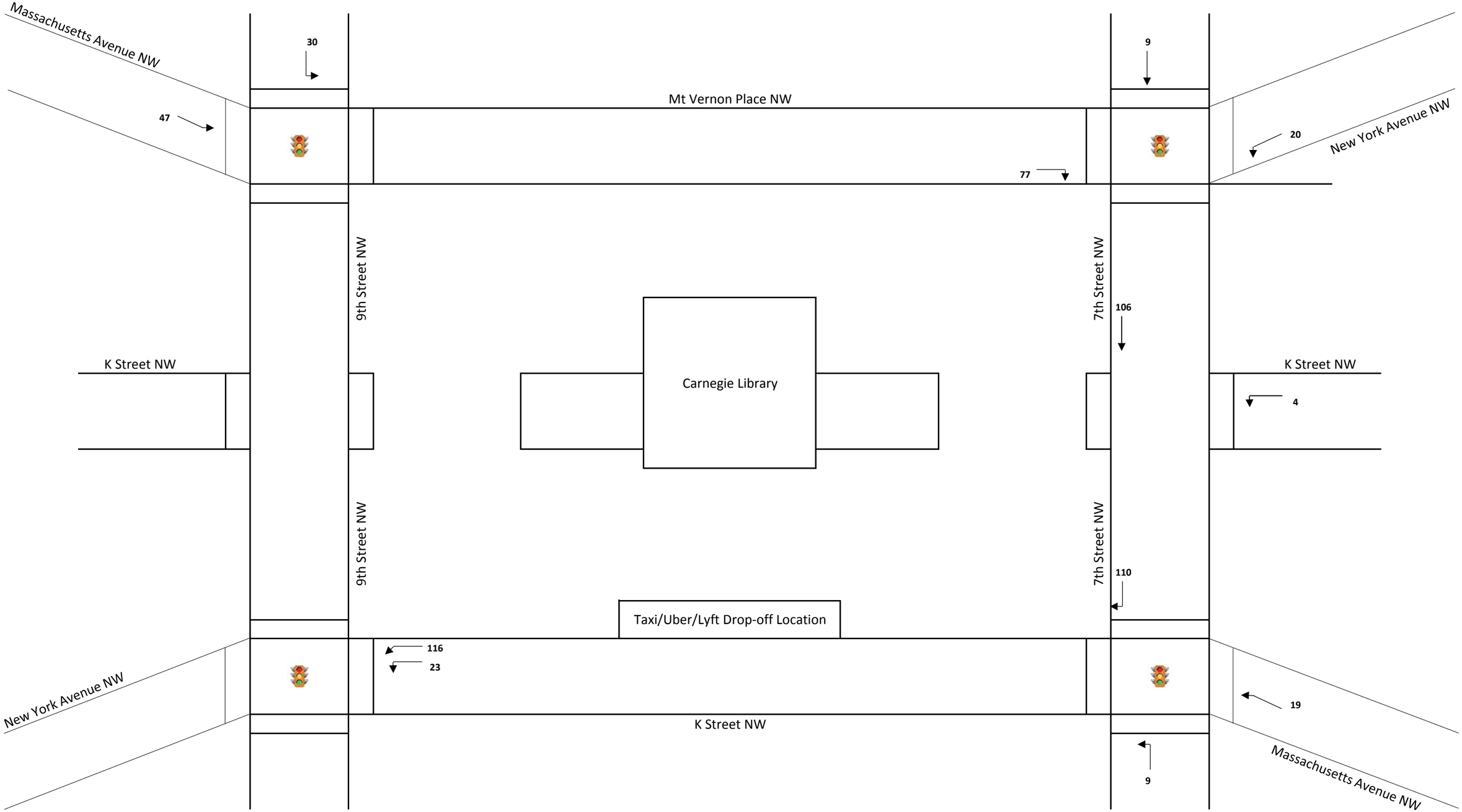

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Exhibit 65
Trip Generation - Taxi/Uber/Lyft
Saturday Peak Hour (1:00 PM - 2:00 PM)

LEGEND

Traffic Signal

← XXX Vehicular Volume (vph)

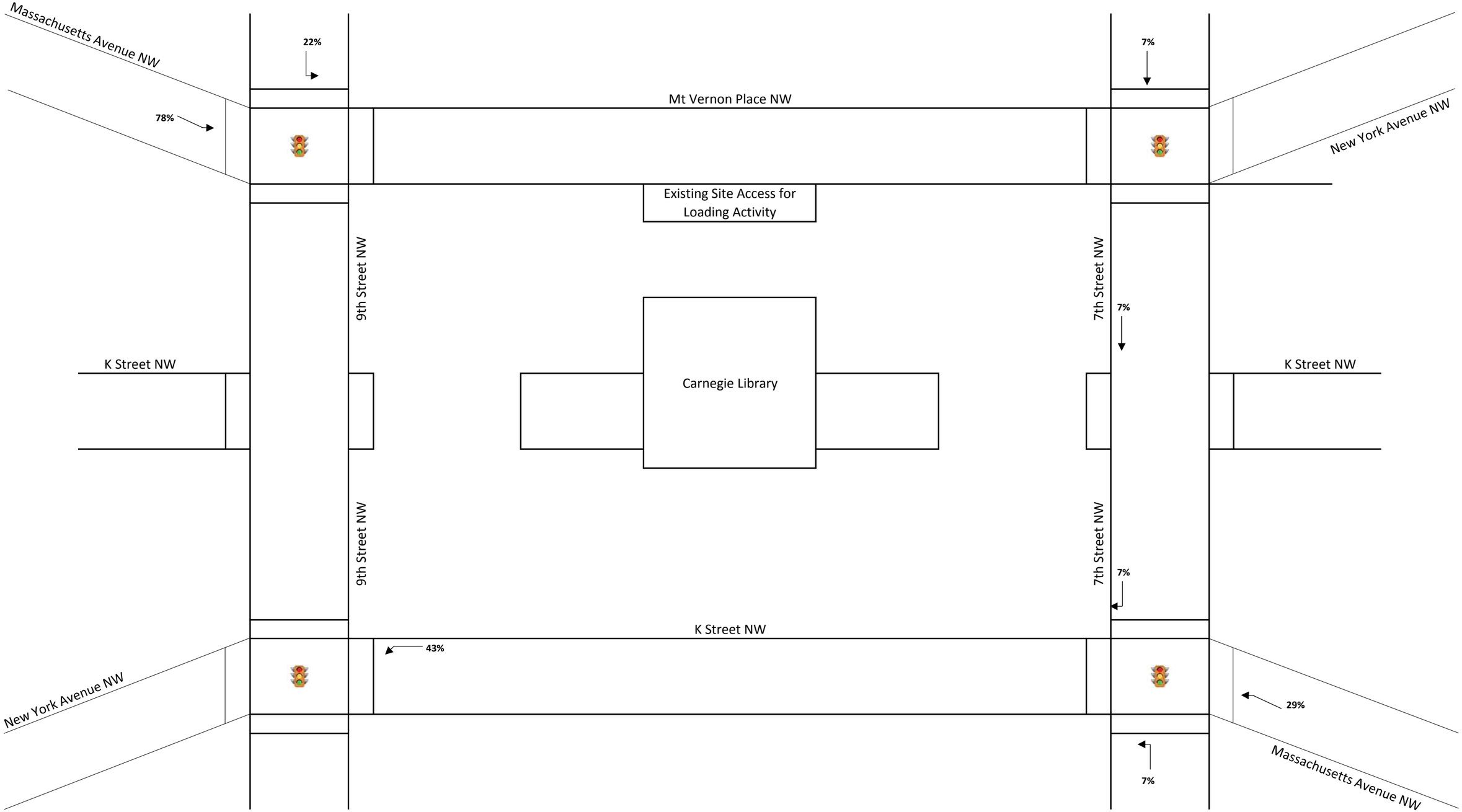

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Exhibit 66
Trip Distribution - Site Access/Loading In
PM and Saturday Peak Hours

LEGEND

Traffic Signal

← XXX Vehicular Volume (vph)

Massachusetts Avenue NW

Mt Vernon Place NW

New York Avenue NW

1%
90%
8%

Existing Site Access for Loading Activity

9th Street NW

7th Street NW

8%

K Street NW

Carnegie Library

K Street NW

9th Street NW

7th Street NW

1%
6%
1%

K Street NW

1%
0%

New York Avenue NW

Massachusetts Avenue NW

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Exhibit 67
Trip Distribution - Site Access/Loading Out
PM and Saturday Peak Hours

LEGEND

XXX Vehicular Volume (vph)

Traffic Signal

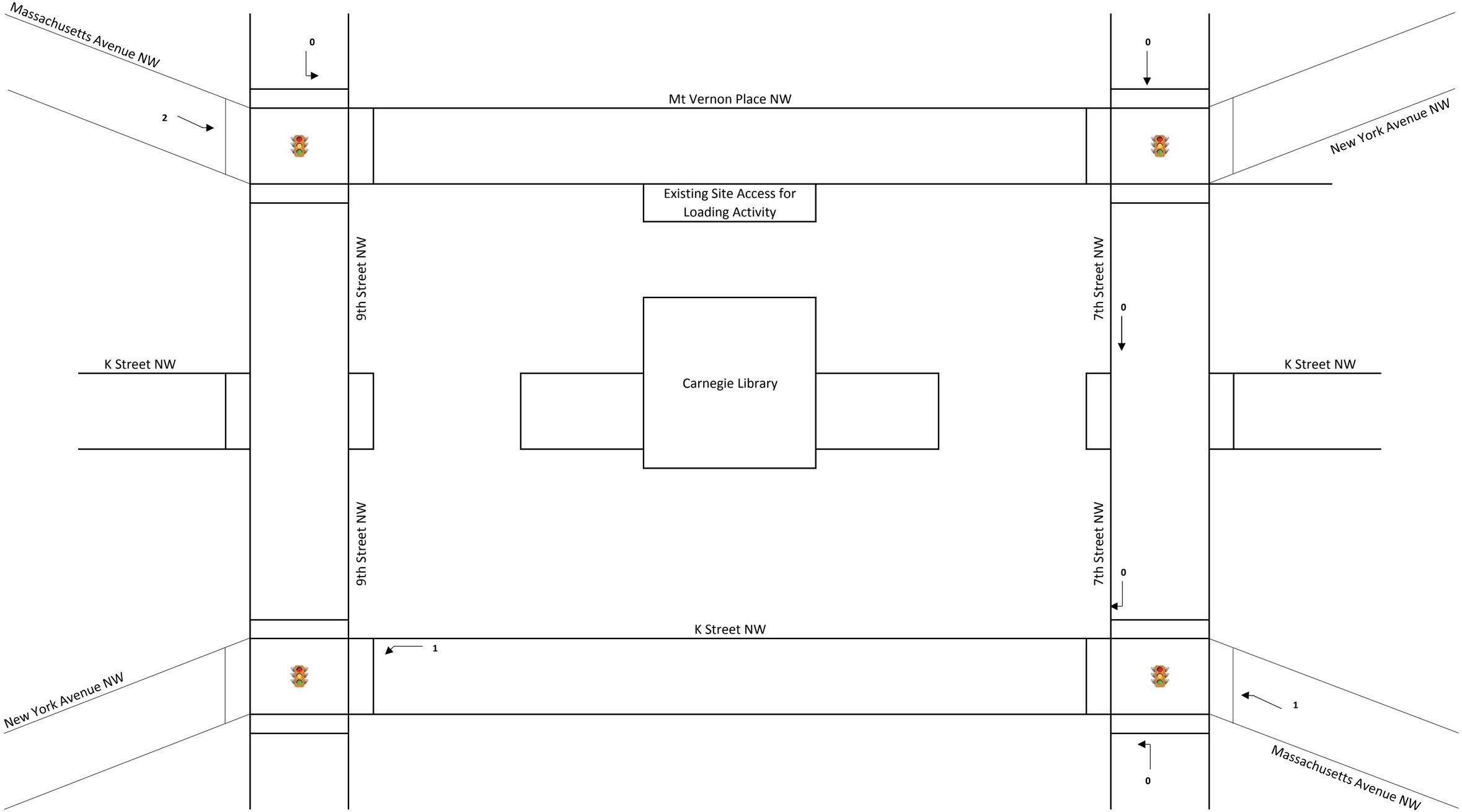

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Exhibit 68
Trip Generation - Site Access/Loading (In)
PM Peak Hour (4:45 PM - 5:45 PM)

LEGEND

← XXX Vehicular Volume (vph)

Traffic Signal

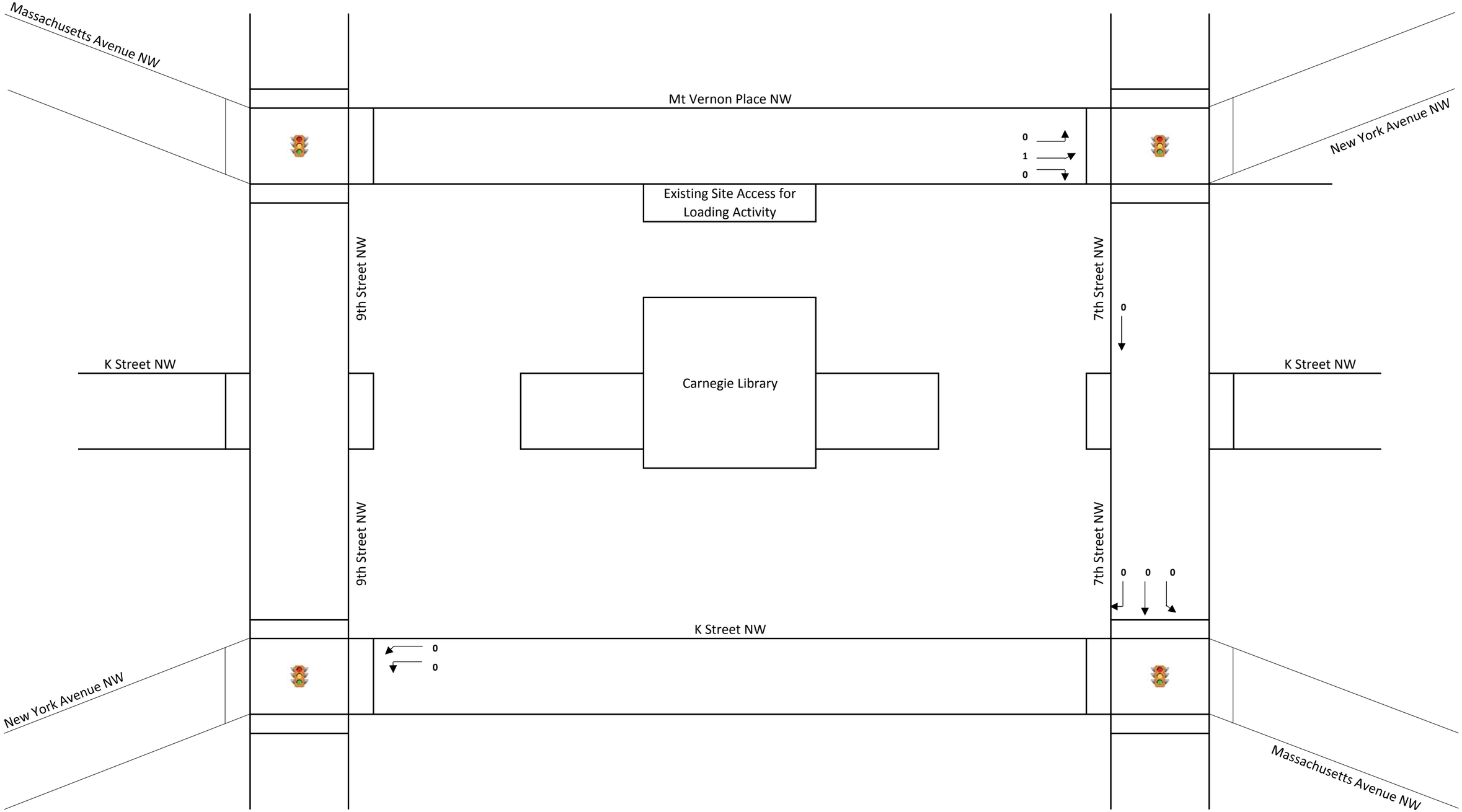

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Exhibit 69
Trip Generation - Site Access/Loading (Out)
PM Peak Hour (4:45 PM - 5:45 PM)

LEGEND

Traffic Signal

← XXX Vehicular Volume (vph)

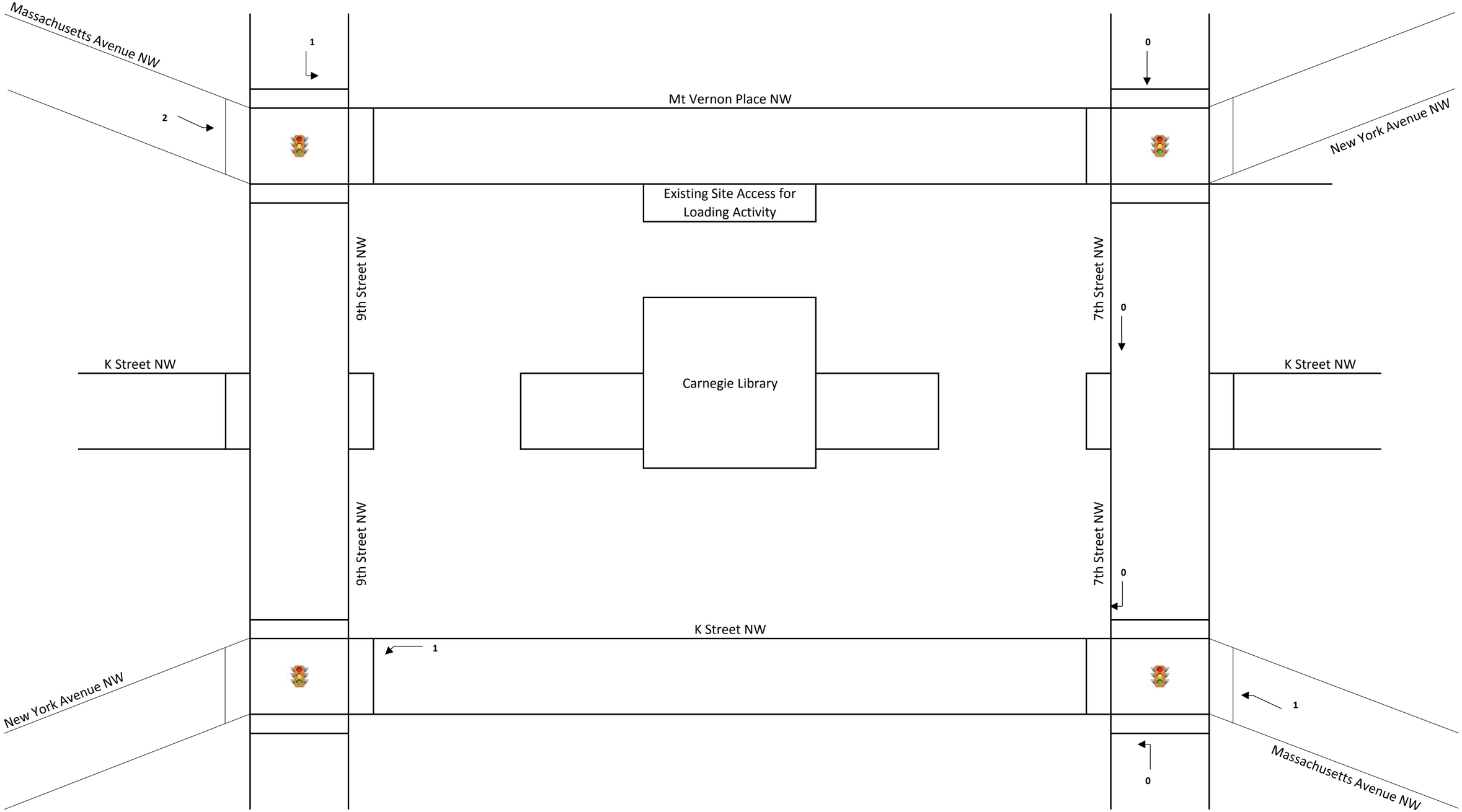

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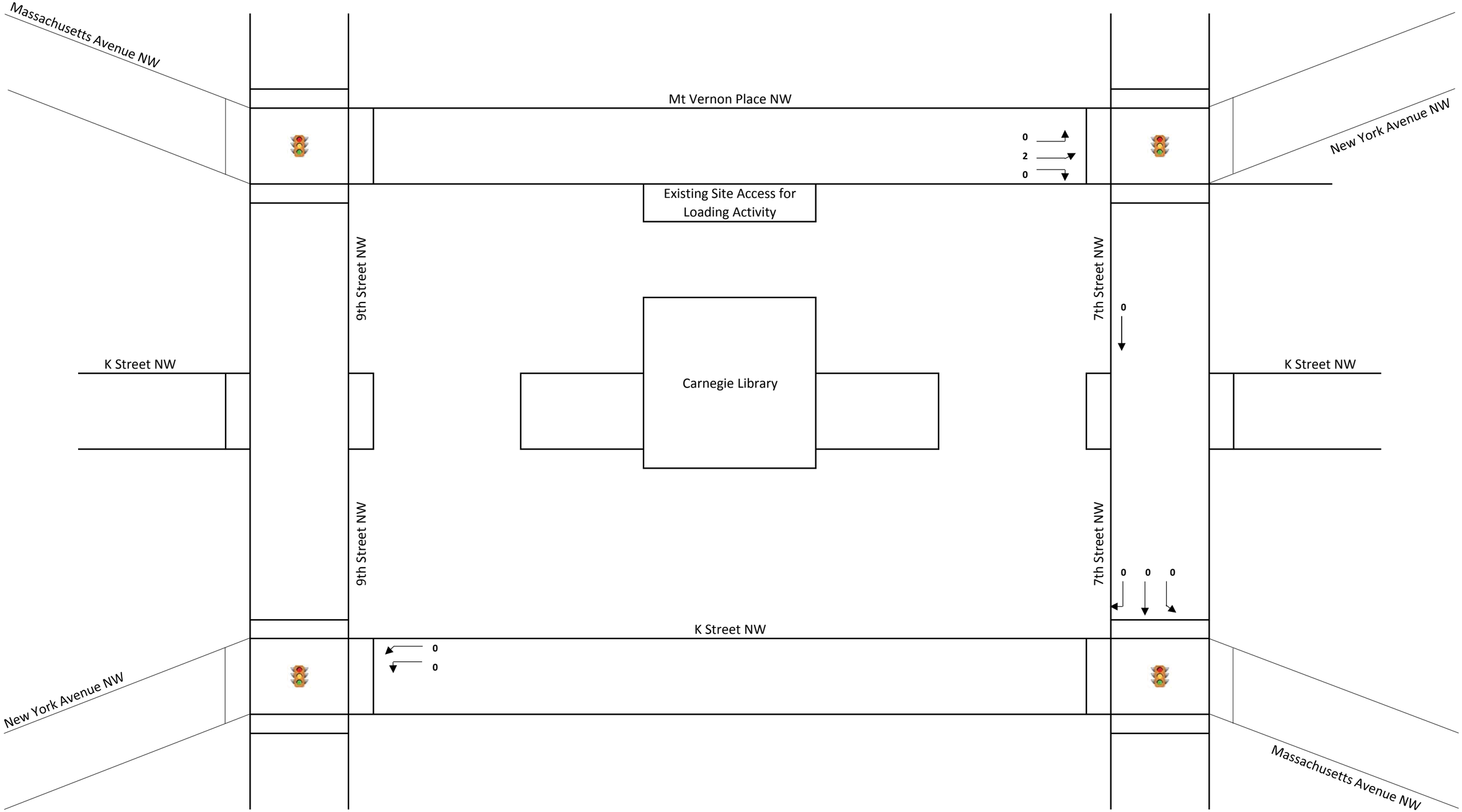
Exhibit 70
Trip Generation - Site Access/Loading (In)
Saturday Peak Hour (1:00 PM - 2:00 PM)

LEGEND

← XXX Vehicular Volume (vph)

Traffic Signal



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WASHINGTON, DC

Exhibit 71
Trip Generation - Site Access/Loading (Out)
Saturday Peak Hour (1:00 PM - 2:00 PM)

LEGEND

Traffic Signal

← XXX Vehicular Volume (vph)

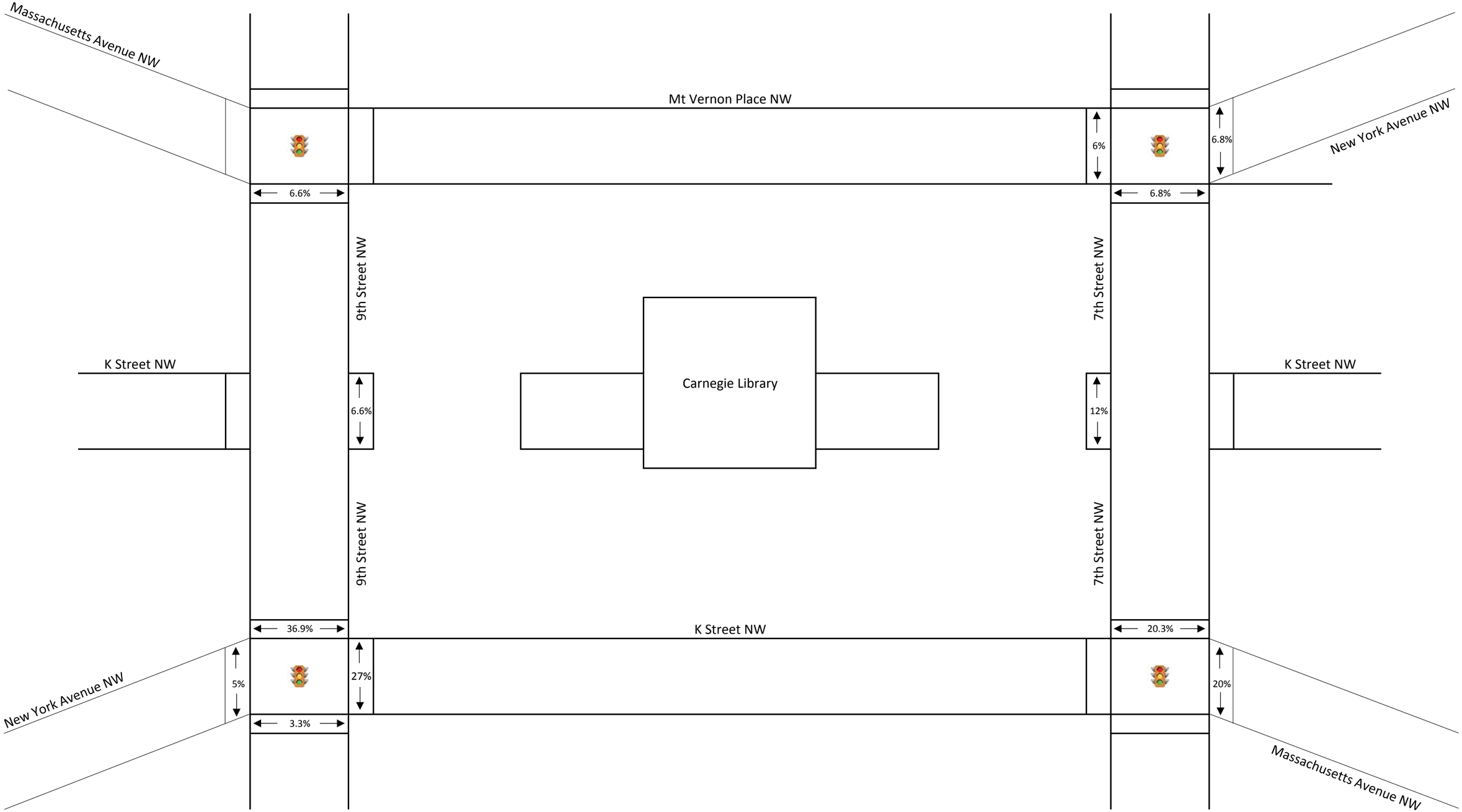
Exhibit 72
801 K Street NW
Bus and Metrorail Trip Distribution

Route	From	To	Line	Wkday Avg	% Wkdy Avg	Sat Avg	% Sat Avg
42	Mt. Pleasant	Gallery Place	Mt. Pleasant	6784	6.6%	3627	6.4%
53	Takoma	McPherson Square	14th Street	13870	13.5%	9113	16.2%
63	Takoma	Federal Triangle	Takoma-Petworth	3551	3.5%	1079	1.9%
64	Fort Totten	Federal Triangle	Fort Totten-Petworth	4564	4.5%	2237	4.0%
70	Silver Spring	Archives	Georgia Avenue-7th Street	11510	11.2%	8652	15.4%
74	Mt. Vernon Square	SW Waterfront	Southwest Waterfront	1485	1.4%	721	1.3%
79	Silver Spring	Archives	Georgia Avenue-7th Street MetroExtra	7006	6.8%	4136	7.4%
80	Fort Totten	Kennedy Center	North Capitol Street	6909	6.7%	2556	4.5%
D1	Glover Park	Franklin Square	Glover Park-Federal Triangle	377	0.4%	0	0.0%
D4	Ivy City	Franklin Square	Ivy City-Franklin Square	1334	1.3%	737	1.3%
D6	Stadium-Armory	Sibley Hospital	Sibley Hospital-Stadium Armory	4423	4.3%	1690	3.0%
G8	Farragut West	Avondale	Rhode Island Avenue	3768	3.7%	1701	3.0%
P17/P19	Fort Washington	Farragut West	Oxon Hill-Fort Washington	1116	1.1%	0	0.0%
P6	Anacostia	Rhode Island Avenue	Anacostia-Eckington Line	4154	4.1%	2029	3.6%
S2	Silver Spring	Federal Triangle	16th Street	12527	12.2%	8821	15.7%
S9	Silver Spring	McPherson Square	16th Street MetroExtra	3703	3.6%	0	0.0%
W13	Fort Washington Forest via Friendly	Farragut West	Bock Road	596	0.6%	0	0.0%
X2	Minnesota Avenue	Lafayette Square	Benning Road-H Street	12439	12.1%	9143	16.3%
X9	Capitol Heights	Metro Center	Benning Road-H Street MetroExtra	2391	2.3%	0	0.0%
Chinatown-Gallery Place	Glenmont	Shady Grove	Red Line	4394	94.5%	7293	71.0%
	Branch Avenue	Greenbelt	Green Line	1131			
	Huntington	Fort Totten	Yellow Line	2092			
Mt. Vernon Square-7th	Branch Avenue	Greenbelt	Green Line	172	5.5%	2974	29.0%
	Huntington	Fort Totten	Yellow Line	268			

Source

Bus: https://www.wmata.com/initiatives/plans/upload/2016-06-JCC-June-2016-bus-ridership.pdf

Metro: https://public.tableau.com/profile/planitmetro#!/vizhome/MetrorailLinkVolumesbyHour/LinkVolumesbyHour



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WASHINGTON, DC

Exhibit 73
Trip Distribution - Bus (Ped Trips)
PM Peak Hour (4:45 PM - 5:45 PM)

LEGEND

Traffic Signal

← XXX → Crosswalk Pedestrian Volume (ped/hr)

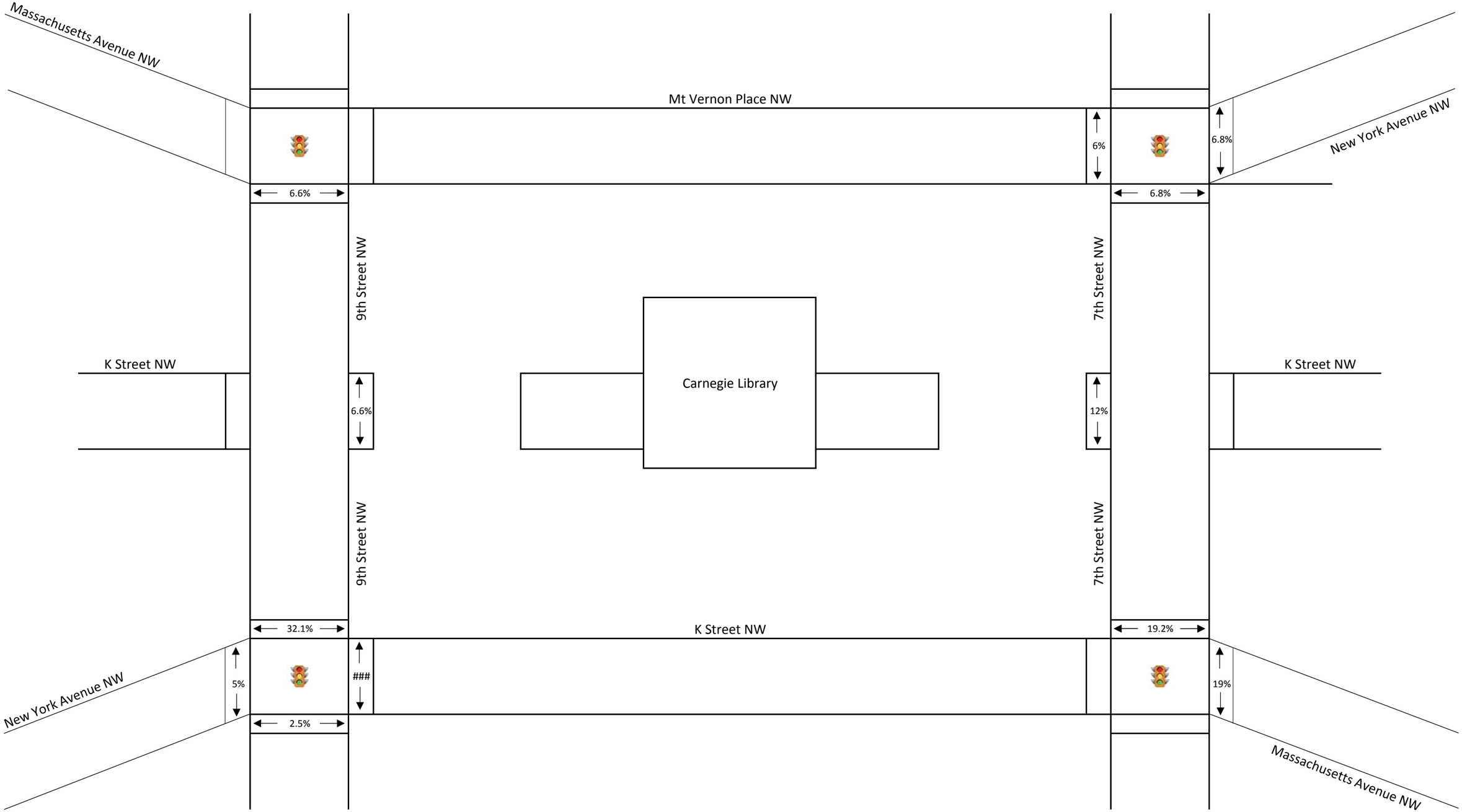

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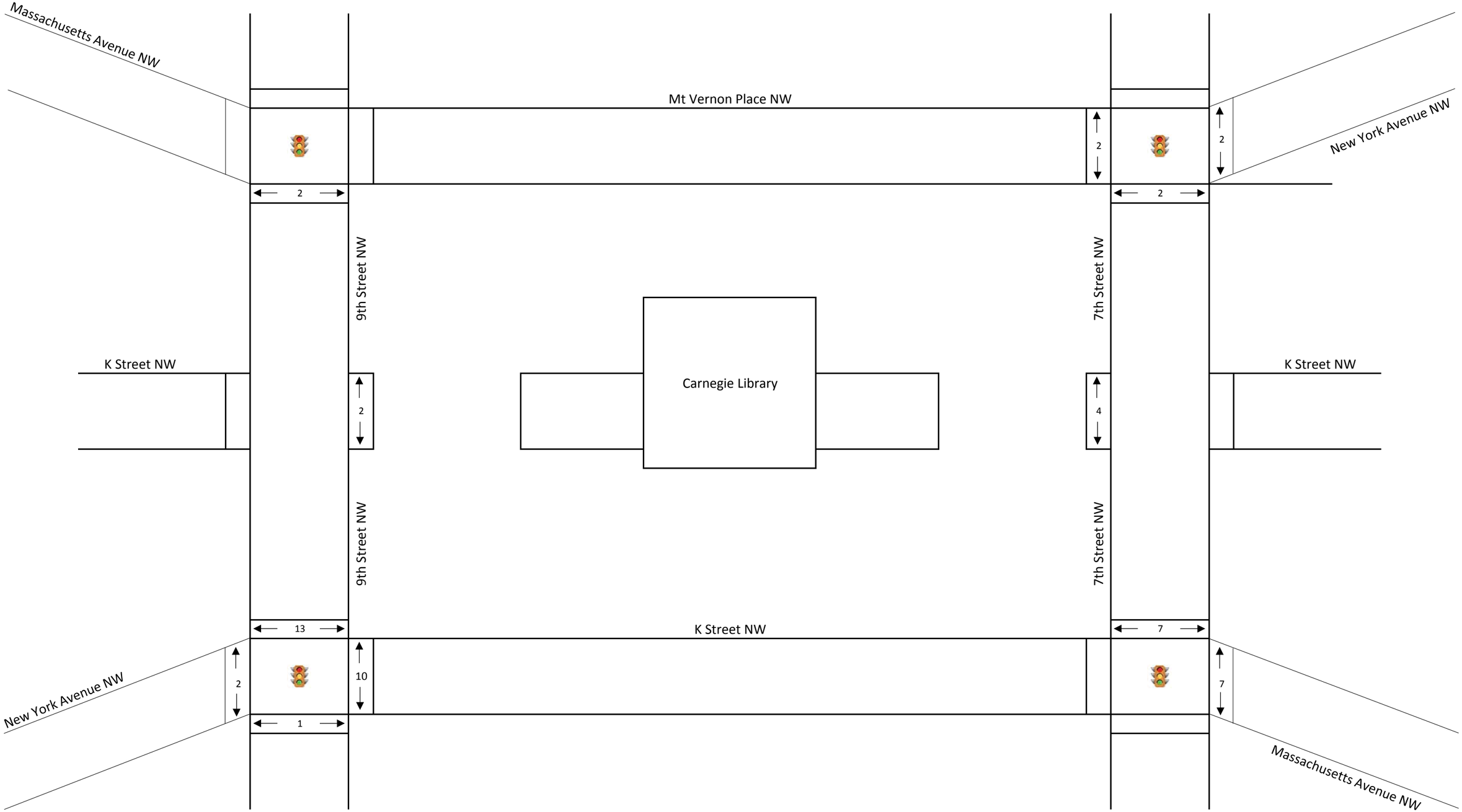
Exhibit 74
Trip Distribution - Bus (Ped Trips)
Saturday Peak Hour (1:00 PM - 2:00 PM)

LEGEND

Traffic Signal

← XXX → Crosswalk Pedestrian Volume (ped/hr)



Stantec
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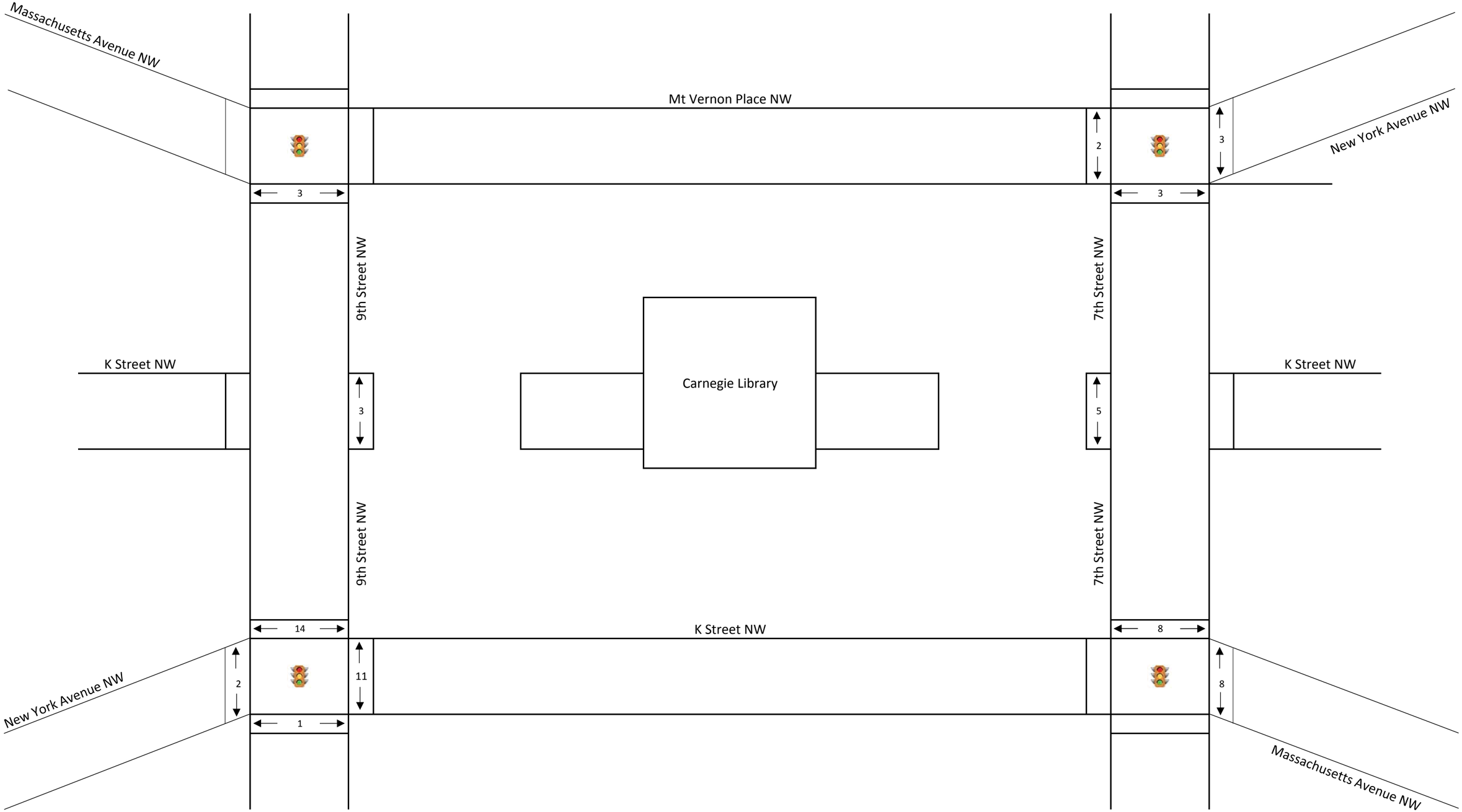
801 K STREET
WASHINGTON, DC

Exhibit 75
Trip Generation - Bus (Ped Trips)
PM Peak Hour (4:45 PM - 5:45 PM)

LEGEND

Traffic Signal

← XXX → Crosswalk Pedestrian Volume (ped/hr)



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801 K STREET
WASHINGTON, DC

Exhibit 76
Trip Generation - Bus (Ped Trips)
Saturday Peak Hour (1:00 PM - 2:00 PM)

LEGEND

Traffic Signal

← XXX → Crosswalk Pedestrian Volume (ped/hr)

Massachusetts Avenue NW

Mt Vernon Place NW

New York Avenue NW

5%

9th Street NW

7th Street NW

K Street NW

Carnegie Library

5%

K Street NW

9th Street NW

7th Street NW

K Street NW

New York Avenue NW

95%

Massachusetts Avenue NW

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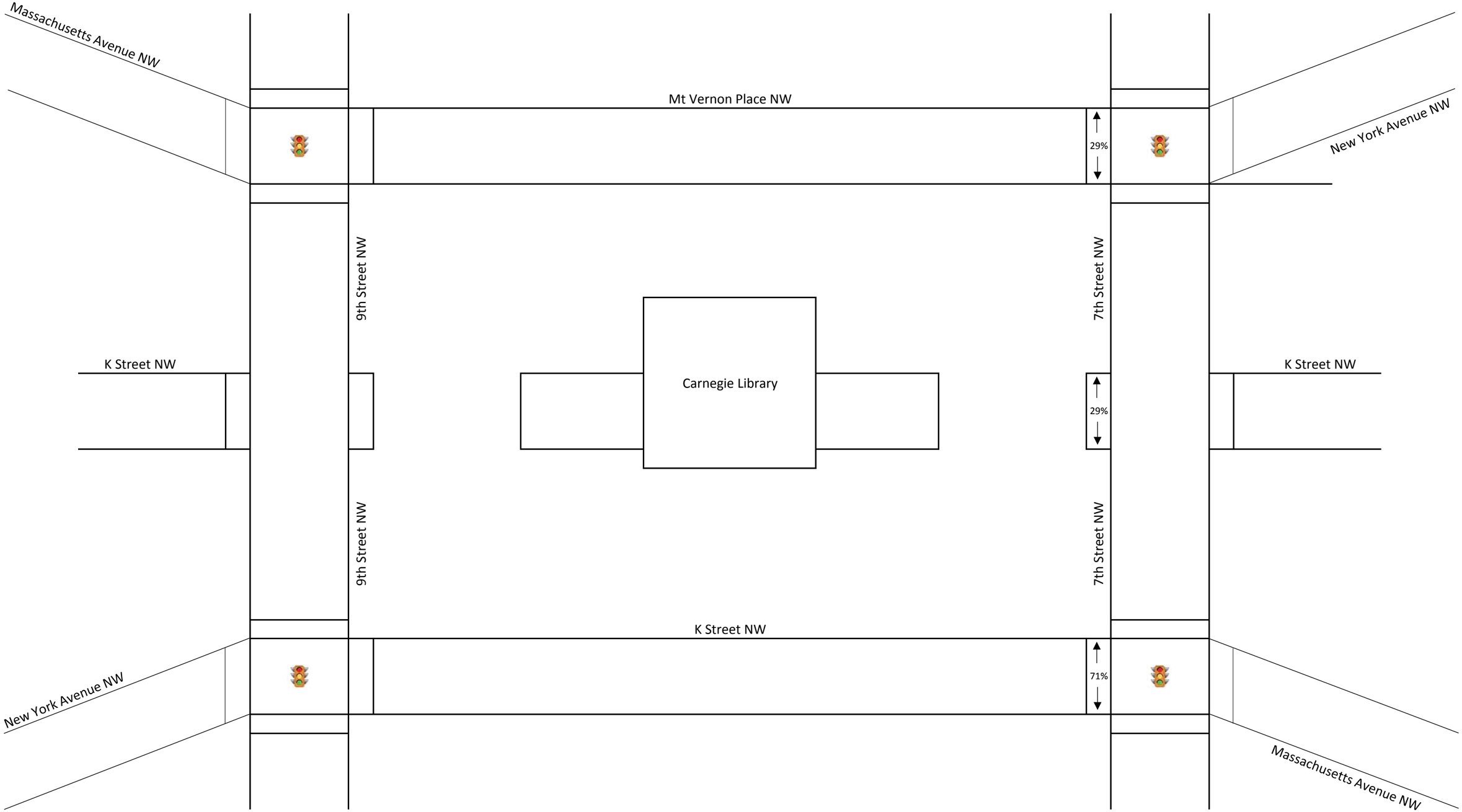
WASHINGTON, DC

Exhibit 77
Trip Distribution - Metro (Ped Trips)
PM Peak Hour (4:45 PM - 5:45 PM)

LEGEND

Traffic Signal

← XXX → Crosswalk Pedestrian Volume (ped/hr)



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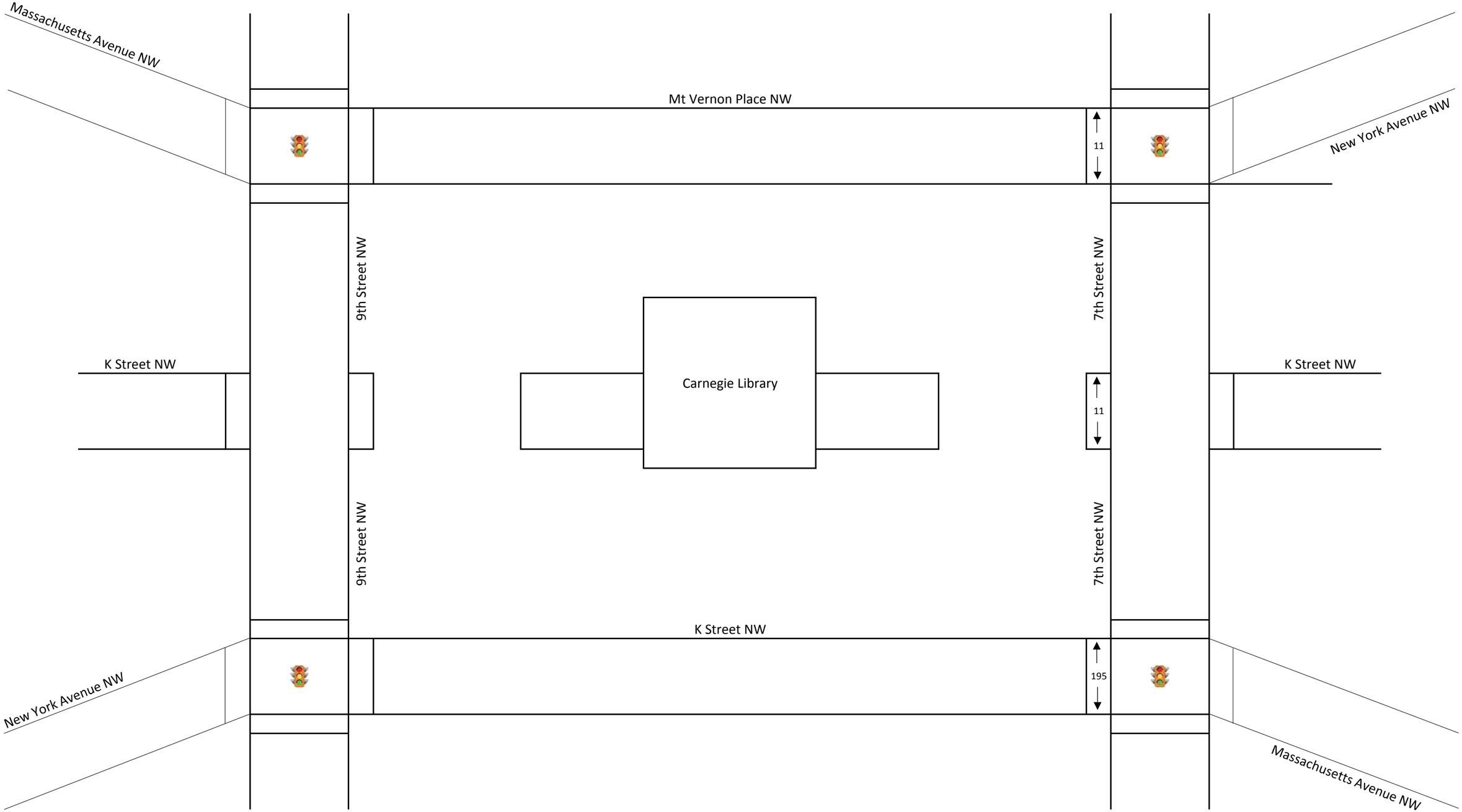
WASHINGTON, DC

Exhibit 78
Trip Distribution - Metro (Ped Trips)
Saturday Peak Hour (1:00 PM - 2:00 PM)

LEGEND

Traffic Signal

← XXX → Crosswalk Pedestrian Volume (ped/hr)



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WASHINGTON, DC

Exhibit 79
Trip Generation - Metro (Ped Trips)
PM Peak Hour (4:45 PM - 5:45 PM)

LEGEND

Traffic Signal

← XXX → Crosswalk Pedestrian Volume (ped/hr)

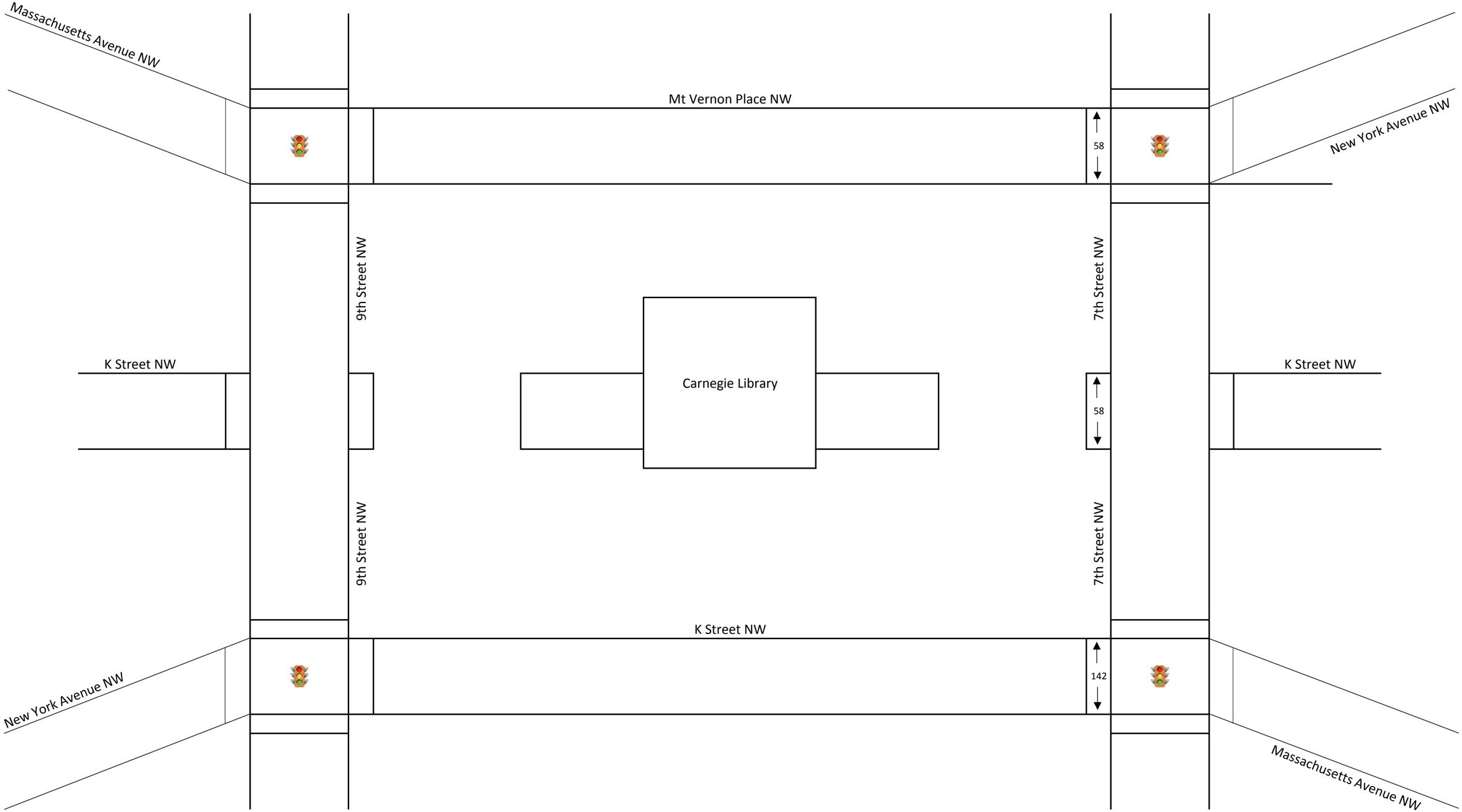

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Exhibit 80
Trip Generation - Metro (Ped Trips)
Saturday Peak Hour (1:00 PM - 2:00 PM)

LEGEND

Traffic Signal

← XXX → Crosswalk Pedestrian Volume (ped/hr)

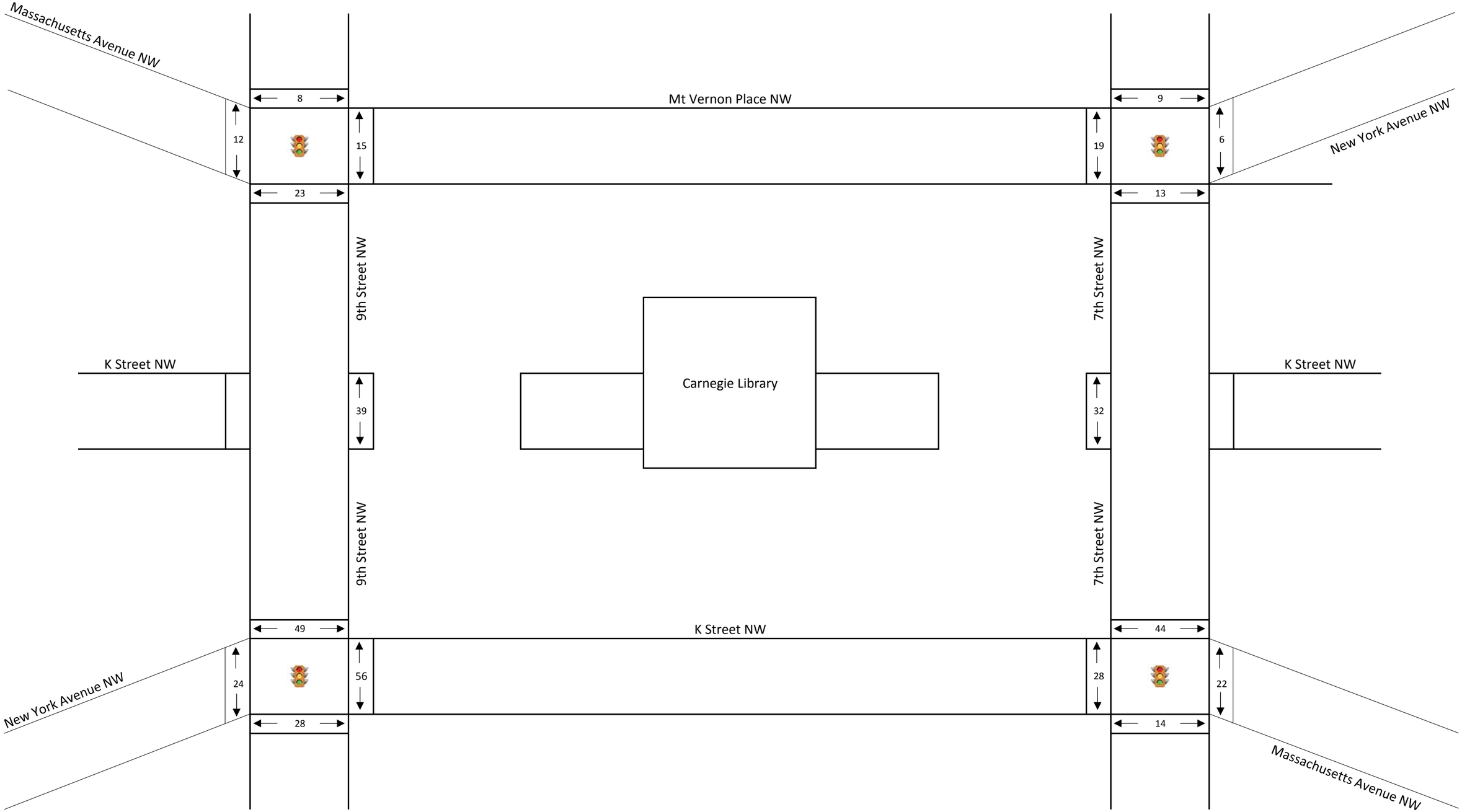

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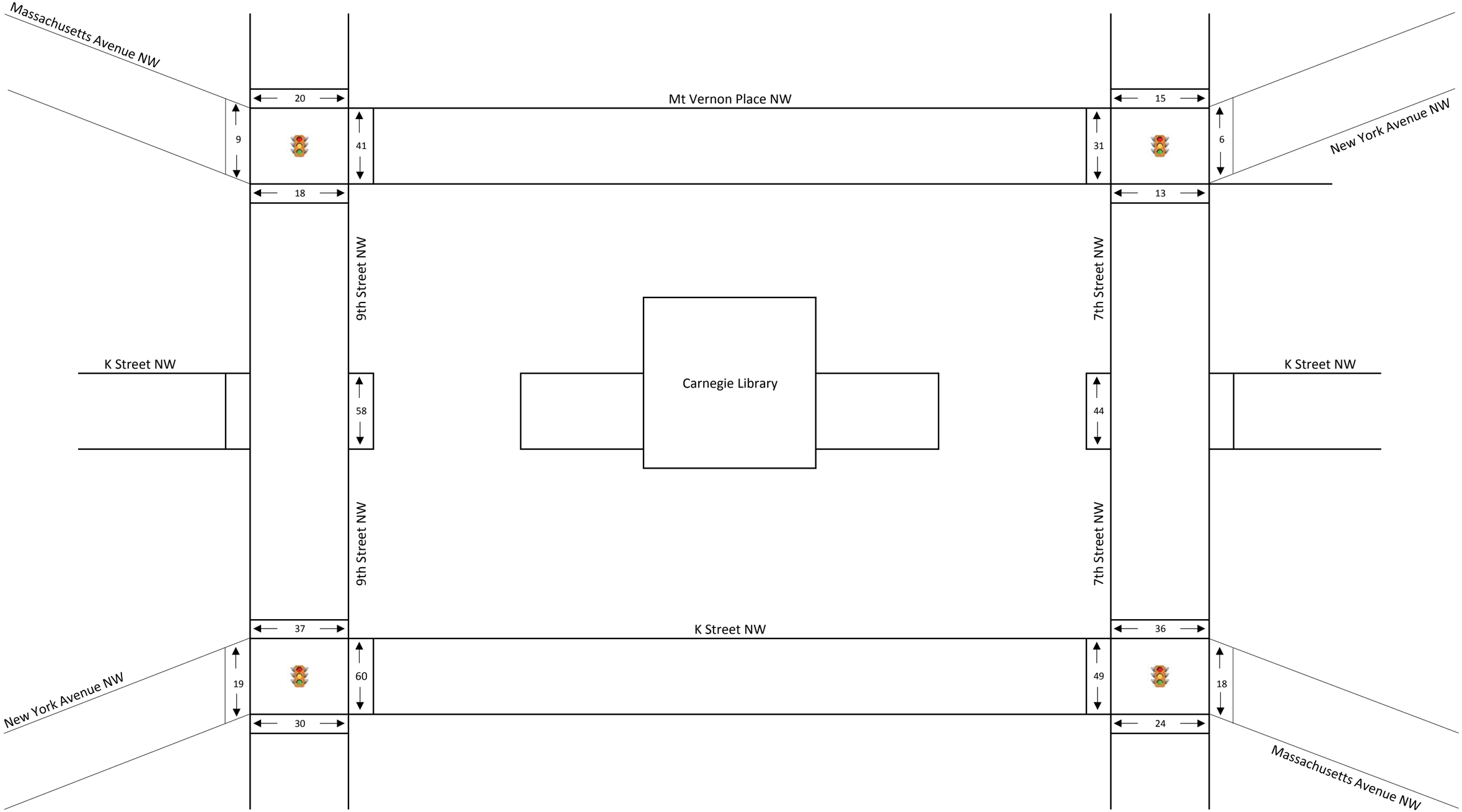
Exhibit 81
Trip Generation - Walk (Ped Trips)
PM Peak Hour (4:45 PM - 5:45 PM)

LEGEND

Traffic Signal

← XXX → Crosswalk Pedestrian Volume (ped/hr)



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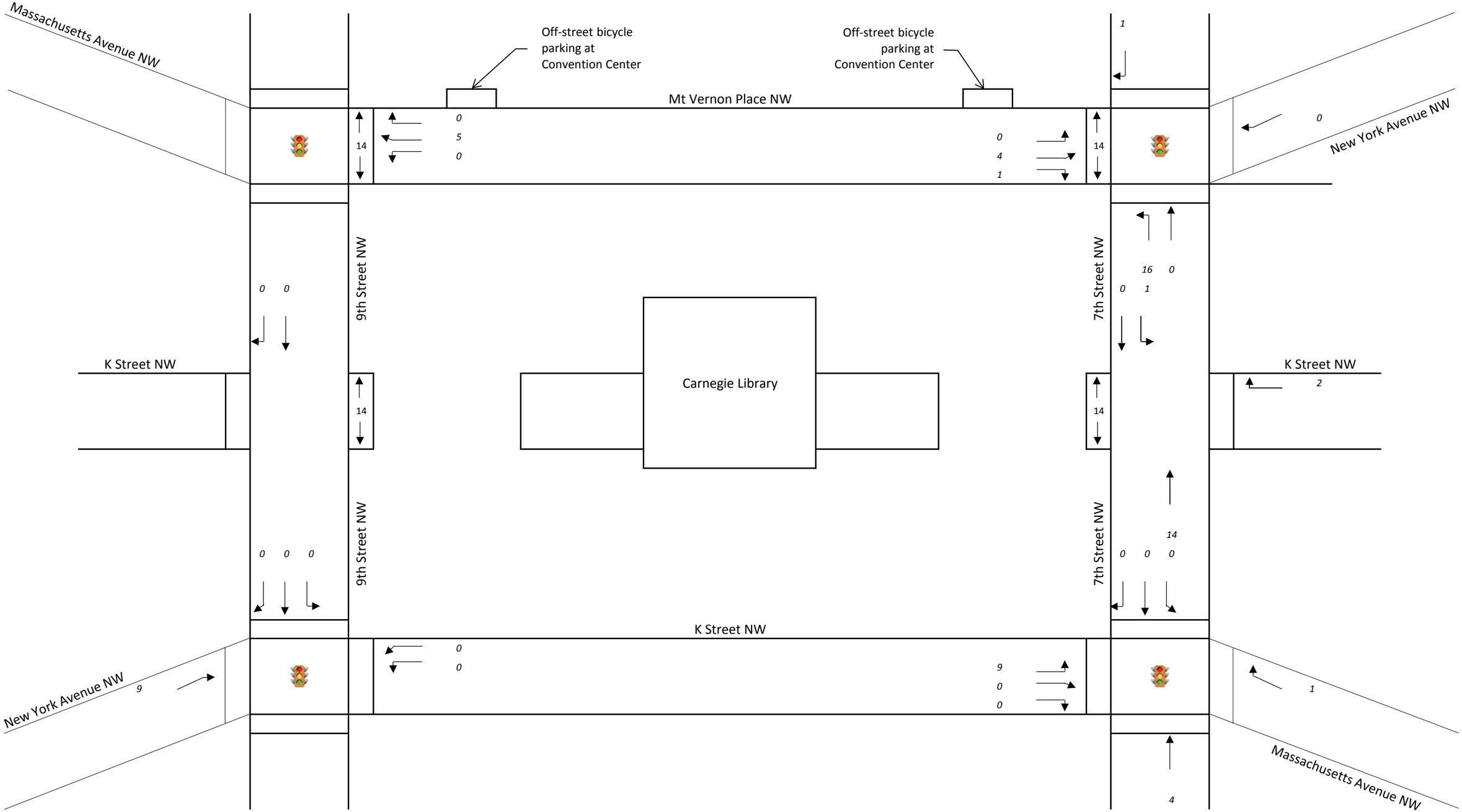
801 K STREET
WASHINGTON, DC

Exhibit 82
Trip Generation - Walk (Ped Trips)
Saturday Peak Hour (1:00 PM - 2:00 PM)

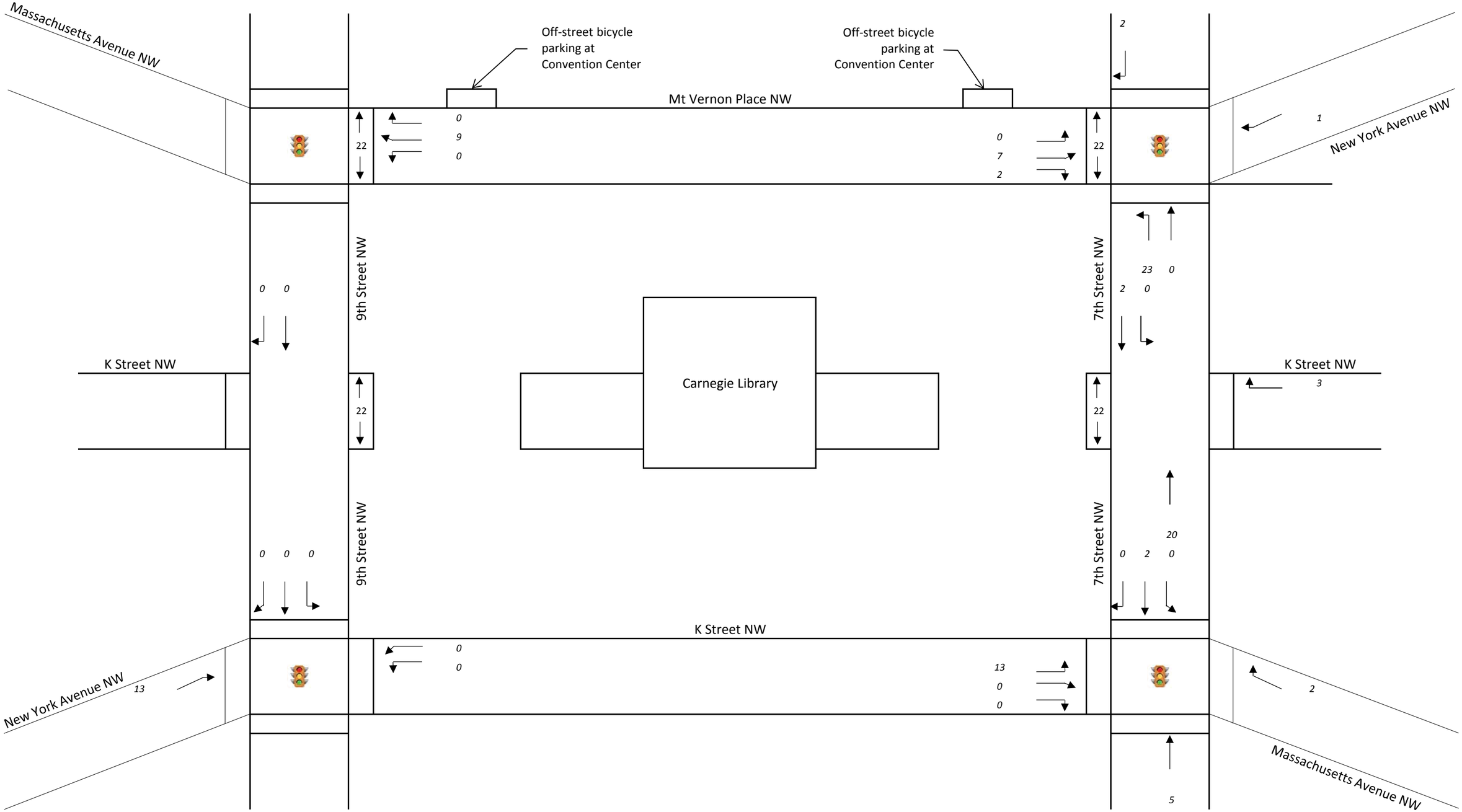
LEGEND

Traffic Signal

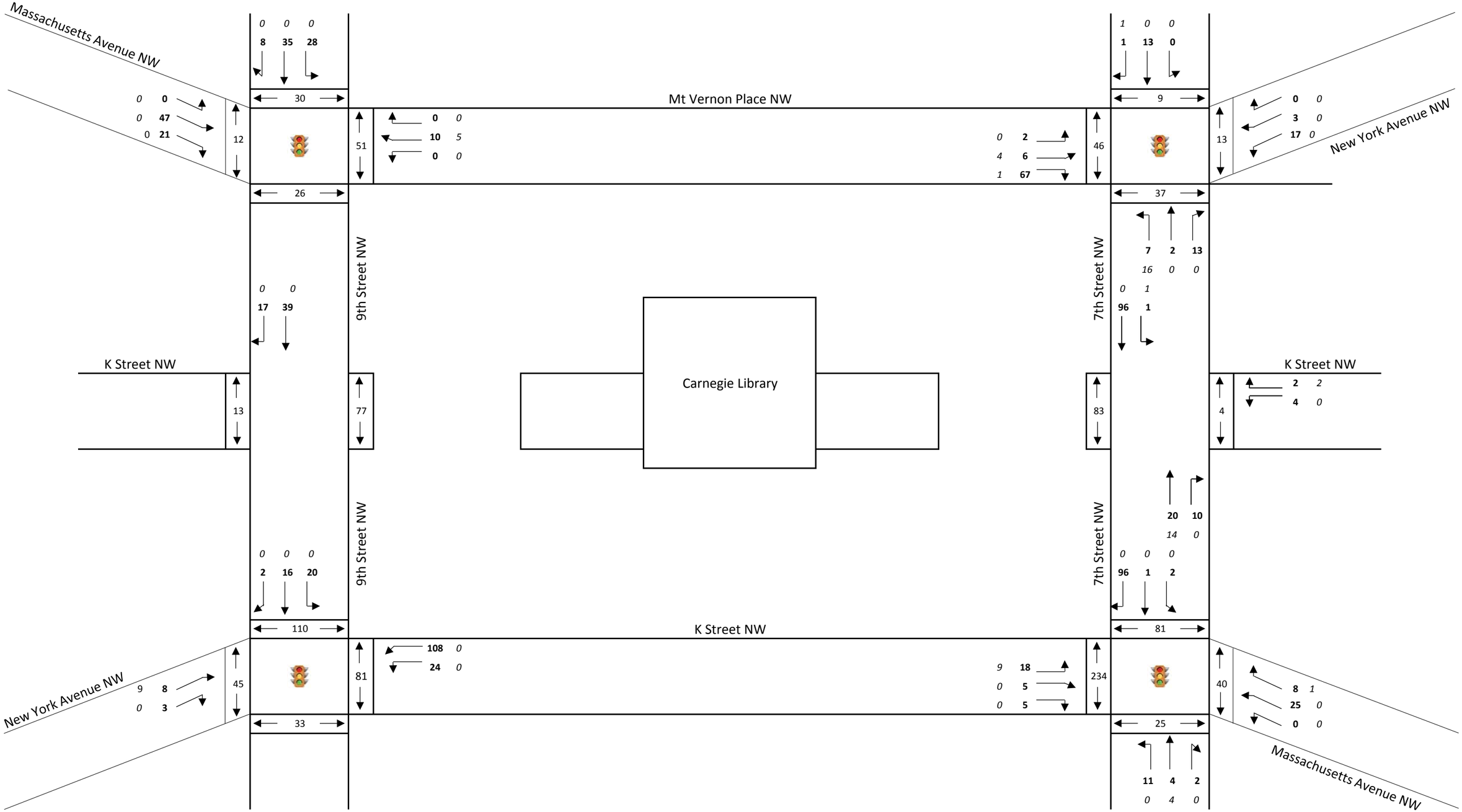
← XXX → Crosswalk Pedestrian Volume (ped/hr)



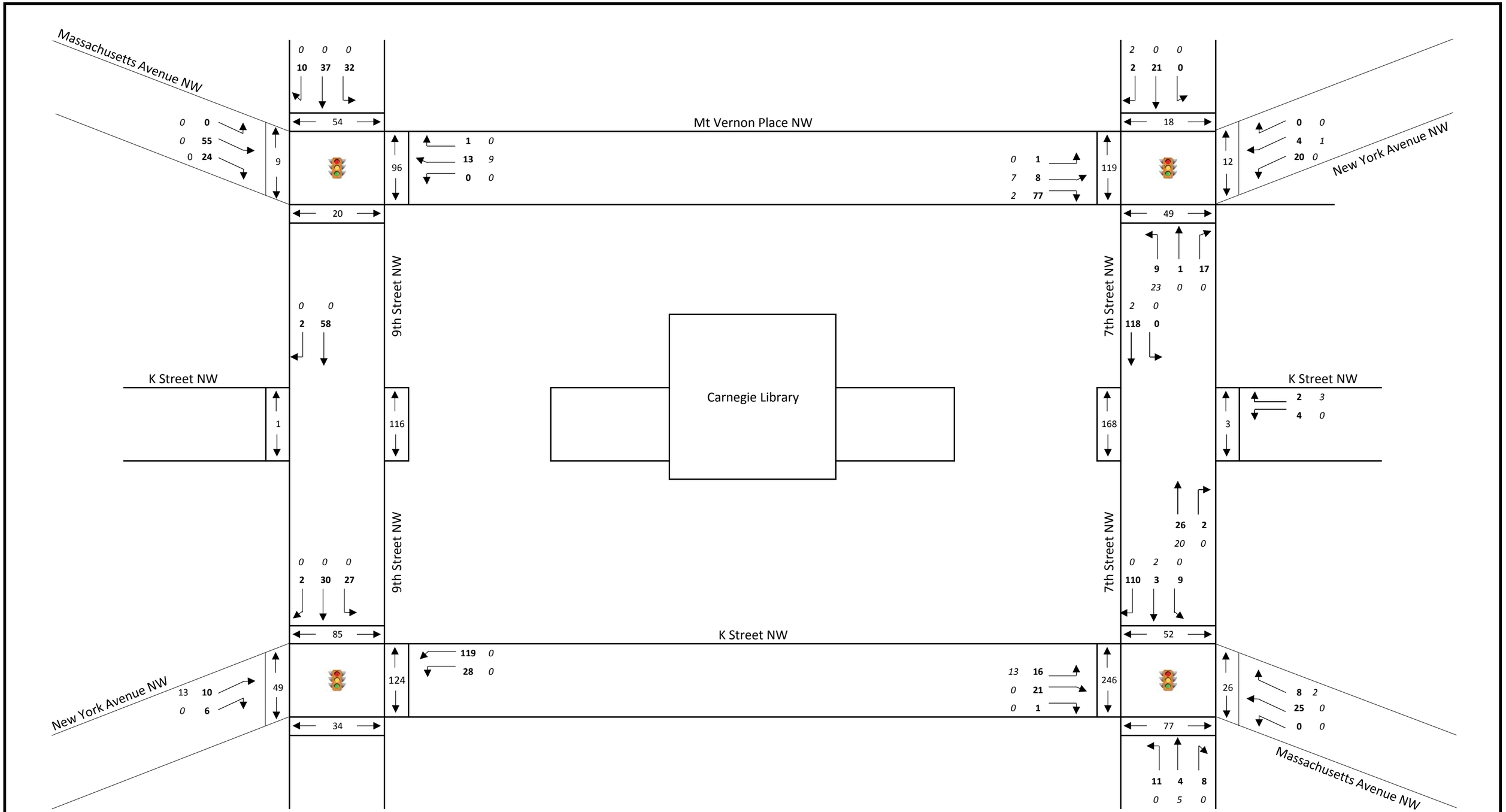
Stantec 6110 Frost Place Laurel, MD 20707-2927 T: (301) 982-2800	**801 K STREET** **WASHINGTON, DC**	**Exhibit 83** **Trip Generation - Bicycle (& Ped) Trips** **PM Peak Hour (4:45 PM - 5:45 PM)**	**LEGEND** Traffic Signal *XXX* Bicycle Volume (bph)



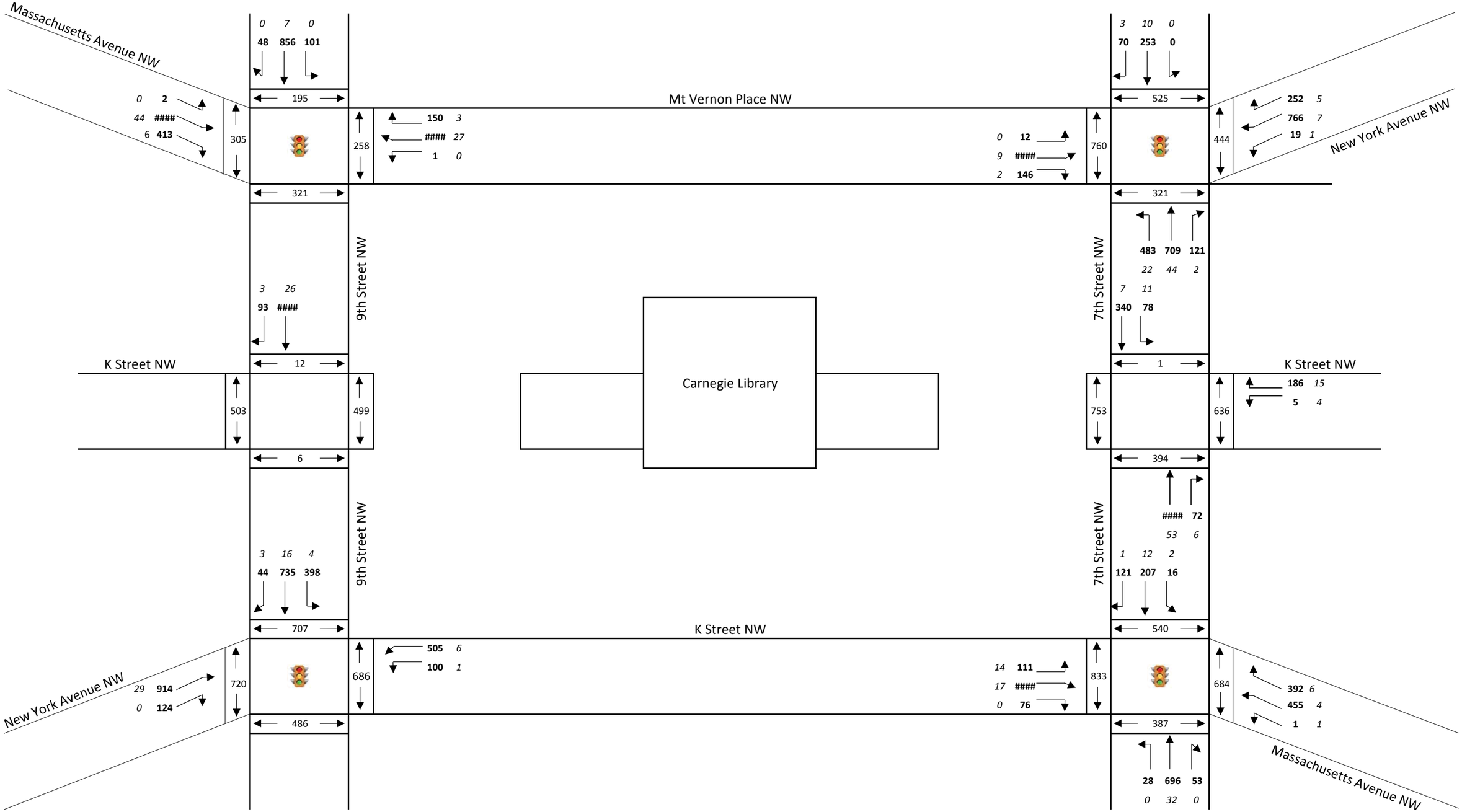
Stantec 6110 Frost Place Laurel, MD 20707-2927 T: (301) 982-2800	**801 K STREET** **WASHINGTON, DC**	**Exhibit 84** **Trip Generation - Bicycle (& Ped) Trips** **Saturday Peak Hour (1:00 PM - 2:00 PM)**	**LEGEND** Traffic Signal *XXX* Bicycle Volume (bph)



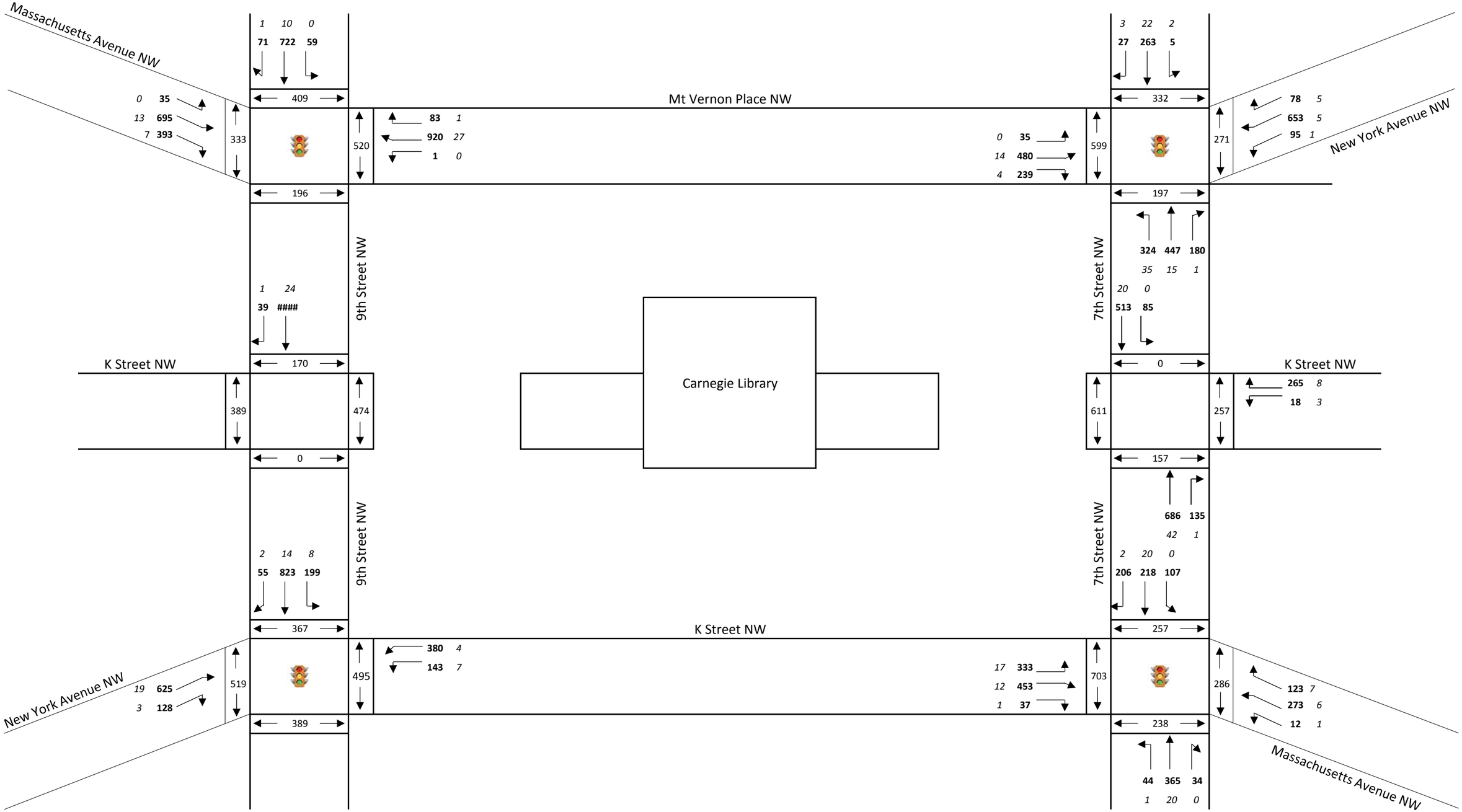
Stantec 6110 Frost Place Laurel, MD 20707-2927 T: (301) 982-2800	**801 K STREET** **WASHINGTON, DC**	**Exhibit 85** **Trip Generation - Site** **PM Peak Hour (4:45 PM - 5:45 PM)**	**LEGEND** Traffic Signal XXX Vehicular Volume (vph) *XXX* Bicycle Volume (bph) XXX Crosswalk Pedestrian Volume (ped/hr)



Stantec 6110 Frost Place Laurel, MD 20707-2927 T: (301) 982-2800	**801 K STREET** **WASHINGTON, DC**	**Exhibit 86** **Trip Generation - Site** **Saturday Peak Hour (1:00 PM - 2:00 PM)**	**LEGEND** Traffic Signal XXX Vehicular Volume (vph) XXX Bicycle Volume (bph) XXX Crosswalk Pedestrian Volume (ped/hr)



Stantec 6110 Frost Place Laurel, MD 20707-2927 T: (301) 982-2800	**801 K STREET** **WASHINGTON, DC**	**Exhibit 87** **2020 Build Traffic Volumes** **PM Peak Hour (4:45 PM - 5:45 PM)**	**LEGEND** Traffic Signal ← XXX — Vehicular Volume (vph) XXX — Bicycle Volume (bph) ← XXX → — Crosswalk Pedestrian Volume (ped/hr)



Stantec 6110 Frost Place Laurel, MD 20707-2927 T: (301) 982-2800	**801 K STREET** **WASHINGTON, DC**	**Exhibit 88** **2020 Build Traffic Volumes** **sat Peak Hour (4:45 sat - 5:45 sat)**	**LEGEND** Traffic Signal ← XXX Vehicular Volume (vph) *XXX* Bicycle Volume (bph) ← XXX → Crosswalk Pedestrian Volume (ped/hr)

Exhibit 89
801 K Street NW
Capacity Analysis Results
2020 Build Condition

Intersection	Lane Group	PM Peak Hour (4:45 PM - 5:45 PM)					Lane Group	Sat Peak Hour (1:00 PM - 2:00 PM)				
		v/c Ratio	Delay (sec)	Level of Service	50th %tile Queue Length (ft)	95th %tile Queue Length (ft)		v/c Ratio	Delay (sec)	Level of Service	50th %tile Queue Length (ft)	95th %tile Queue Length (ft)
9th Street NW & Massachusetts Avenue NW/ Mt Vernon Place NW *Signalized*	**EB-LT**	0.86	76.1	E	441	553	**EB-LT**	0.50	14.8	B	148	198
	EB-R	0.68	17.7	B	86	205	**EB-R**	0.57	6.1	A	0	72
	WB-LTR	0.86	23.5	C	234	m241	**WB-LTR**	0.63	12.8	B	124	m161
	SB-LTR	0.88	42.9	D	354	#477	**SB-LTR**	0.98	60.3	E	297	#434
	Intersection	-	45.5	D	-	-	**Intersection**	-	26.1	C	-	-
9th Street NW & New York Avenue NW/ K Street NW *Signalized*	**EB-T**	1.05	102.2	F	~392	#521	**EB-T**	0.53	26.3	C	167	223
	EB-R	0.47	17.4	B	20	81	**EB-R**	0.36	9.9	A	12	58
	WB-LT	1.59dl	174.0	F	~309	m#425	**WB-LT**	0.73	34.8	C	147	m203
	SB-L	0.57	23.7	C	84	m155	**SB-L**	0.74	62.0	E	119	m150
	SB-LT	0.40	7.3	A	45	m69	**SB-LT**	0.53	34.8	C	163	m176
	SB-R	0.08	1.1	A	0	m1	**SB-R**	0.12	14.8	B	11	m17
	Intersection	-	75.8	E	-	-	**Intersection**	-	32.8	C	-	-
7th Street NW & Mt Vernon Place NW/ New York Avenue NW *Signalized*	**EB-LTR**	1.12	84.4	F	~693	#837	**EB-LTR**	0.72	14.6	B	197	m265
	WB-LT	0.75	30.5	C	245	327	**WB-LT**	0.84	36.7	D	227	#338
	WB-R	0.61	18.9	B	73	169	**WB-R**	0.20	2.0	A	0	8
	NB-L	1.49	262.7	F	~502	m#608	**NB-L**	1.06	117.6	F	~226	m#382
	NB-T	0.52	19.6	B	132	m153	**NB-T**	0.33	19.0	B	94	m132
	NB-R	0.27	9.2	A	20	m32	**NB-R**	0.37	12.2	B	35	m81
	SB-LTR	0.60	41.9	D	105	154	**SB-LTR**	0.57	41.5	D	91	135
	Intersection	-	74.5	E	-	-	**Intersection**	-	35.3	D	-	-
7th Street NW & K Street NW *Unsignalized*	**WB-LR**	4.85	err	F	-	err	**WB-LR**	1.05	107.7	F	-	280
	NB-TR	0.20	0.0	A	-	0	**NB-TR**	0.14	0.0	A	-	0
	SB-LT	0.67	66.1	F	-	89	**SB-LT**	0.21	6.5	A	-	16
	Intersection	-	1062.0	F	-	-	**Intersection**	-	18.8	C	-	-
7th Street NW & K Street NW/ Massachusetts Avenue NW *Signalized*	**EB-LTR**	1.10	81.0	F	~580	m#592	**EB-LTR**	0.85dl	39.7	D	243	293
	WB-LTR	0.62	17.9	B	207	272	**WB-LTR**	0.29	12.4	B	68	98
	NB-LTR	0.91	97.9	F	288	#408	**NB-LTR**	0.52	28.7	C	120	171
	SB-LTR	0.56	20.8	C	118	m121	**SB-LTR**	0.83	44.0	D	157	m#231
	Intersection	-	62.4	E	-	-	**Intersection**	-	33.5	C	-	-

v/c ratio = volume/capacity ratio
Source: Synchro 9

Exhibit 90A
801 K Street NW
Capacity Analysis Results
2020 Build Condition with Mitigation A

Intersection	Lane Group	PM Peak Hour (4:45 PM - 5:45 PM)					Lane Group	Sat Peak Hour (1:00 PM - 2:00 PM)				
		v/c Ratio	Delay (sec)	Level of Service	50th %tile Queue Length (ft)	95th %tile Queue Length (ft)		v/c Ratio	Delay (sec)	Level of Service	50th %tile Queue Length (ft)	95th %tile Queue Length (ft)
9th Street NW & Massachusetts Avenue NW/ Mt Vernon Place NW *Signalized*	**EB-LT**	0.83	33.4	C	421	528	**EB-LT**	0.50	14.8	B	148	198
	EB-R	0.65	15.8	B	77	192	**EB-R**	0.57	6.1	A	0	72
	WB-LTR	0.83	13.7	B	271	m268	**WB-LTR**	0.63	13.7	B	131	m167
	SB-LTR	0.93	52.4	D	365	#501	**SB-LTR**	0.98	60.3	E	297	#434
	Intersection	-	30.0	C	-	-	**Intersection**	-	26.3	C	-	-
9th Street NW & New York Avenue NW/ K Street NW *Signalized*	**EB-T**	0.75	34.4	C	302	383	**EB-T**	0.53	26.3	C	167	223
	EB-R	0.37	11.3	B	16	66	**EB-R**	0.36	9.9	A	12	58
	WB-LT	0.97dl	34.0	C	212	m#324	**WB-LT**	0.73	28.9	C	177	m231
	SB-L	0.88	61.8	E	203	m#300	**SB-L**	0.74	32.0	C	93	m131
	SB-LT	0.53	8.4	A	61	m76	**SB-LT**	0.53	8.1	A	46	m63
	SB-R	0.10	0.8	A	0	m0	**SB-R**	0.12	0.7	A	0	m1
	Intersection	-	27.5	C	-	-	**Intersection**	-	19.3	B	-	-
7th Street NW & Mt Vernon Place NW/ New York Avenue NW *Signalized*	**EB-LTR**	1.12	82.0	F	~653	m#796	**EB-LTR**	0.72	14.6	B	197	m265
	WB-LT	0.75	30.8	C	245	327	**WB-LT**	0.84	36.7	D	227	#338
	WB-R	0.61	18.9	B	73	169	**WB-R**	0.20	2.0	A	0	8
	NB-L	1.21	142.5	F	~427	m#549	**NB-L**	1.06	119.9	F	~231	m#386
	NB-T	0.52	20.8	C	133	m168	**NB-T**	0.33	19.4	B	100	m136
	NB-R	0.27	10.2	B	19	m37	**NB-R**	0.37	12.4	B	26	m86
	SB-LTR	0.77	54.1	D	112	#176	**SB-LTR**	0.57	41.5	D	91	135
	Intersection	-	60.9	E	-	-	**Intersection**	-	35.6	D	-	-
7th Street NW & K Street NW *Unsignalized*	**WB-LR**	4.86	err	F	-	err	**WB-LR**	0.93	71.2	F	-	226
	NB-TR	0.20	0.0	A	-	0	**NB-TR**	0.18	0.0	A	-	0
	SB-LT	0.67	66.1	F	-	89	**SB-LT**	0.21	6.5	A	-	16
	Intersection	-	1062.0	F	-	-	**Intersection**	-	12.8	B	-	-
7th Street NW & K Street NW/ Massachusetts Avenue NW *Signalized*	**EB-LTR**	1.10	68.9	F	~593	#716	**EB-LTR**	0.85dl	15.3	B	92	129
	WB-LTR	0.62	18.0	B	207	272	**WB-LTR**	0.29	12.4	B	68	98
	NB-LTR	0.91	80.8	F	288	#408	**NB-LTR**	0.52	28.7	C	120	171
	SB-LTR	0.56	24.1	C	135	m160	**SB-LTR**	0.83	22.4	C	88	m#210
	Intersection	-	53.9	D	-	-	**Intersection**	-	19.1	B	-	-

v/c ratio = volume/capacity ratio
Source: Synchro 9

Exhibit 90B
801 K Street NW
Capacity Analysis Results
2020 Build Condition with Mitigation B

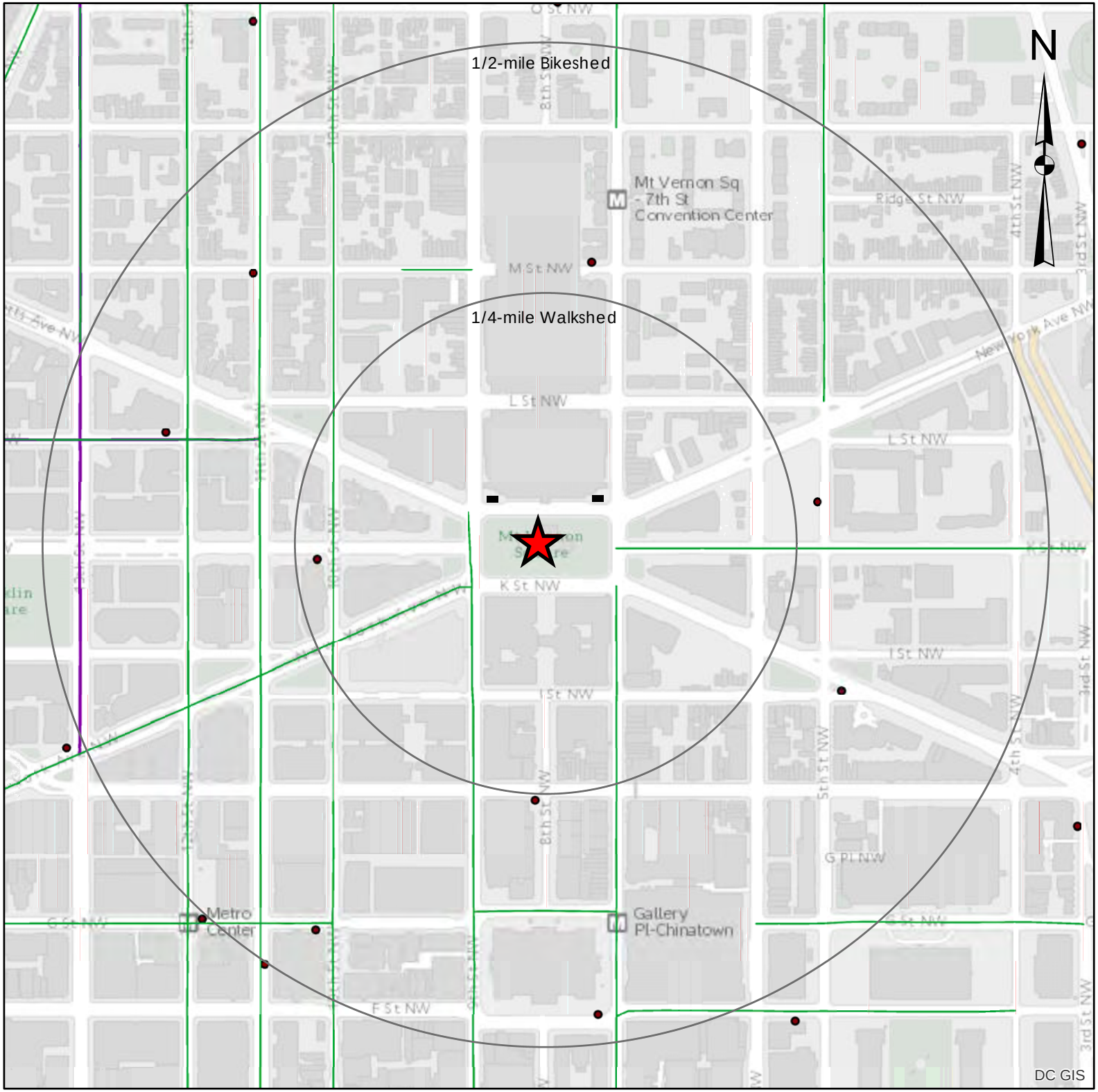
Intersection	Lane Group	PM Peak Hour (4:45 PM - 5:45 PM)					Lane Group	Sat Peak Hour (1:00 PM - 2:00 PM)				
		v/c Ratio	Delay (sec)	Level of Service	50th %tile Queue Length (ft)	95th %tile Queue Length (ft)		v/c Ratio	Delay (sec)	Level of Service	50th %tile Queue Length (ft)	95th %tile Queue Length (ft)
9th Street NW & Massachusetts Avenue NW/ Mt Vernon Place NW *Signalized*	**EB-LT**	0.83	27.4	C	421	528	**EB-LT**	0.57	19.5	B	174	232
	EB-R	0.65	15.8	B	77	192	**EB-R**	0.65	8.9	A	0	86
	WB-LTR	0.83	15.2	B	76	87	**WB-LTR**	0.70	12.9	B	166	263
	SB-LTR	0.93	52.1	D	365	#501	**SB-LTR**	0.81	36.1	D	270	351
	Intersection	-	28.3	C	-	-	**Intersection**	-	20.6	C	-	-
9th Street NW & New York Avenue NW/ K Street NW *Signalized*	**EB-T**	0.89	47.0	D	337	#458	**EB-T**	0.72	37.9	D	196	262
	EB-R	0.40	11.0	B	8	60	**EB-R**	0.42	10.8	B	4	55
	WB-L	0.56	36.1	D	39	m71	**WB-L**	0.55	26.7	C	73	m112
	WB-T	0.37	19.8	B	91	146	**WB-T**	0.30	21.8	C	108	143
	SB-L	0.88	61.2	E	197	m#300	**SB-L**	0.57	23.6	C	101	m136
	SB-LT	0.53	8.9	A	62	m80	**SB-LT**	0.46	5.9	A	39	59
	SB-R	0.09	0.4	A	0	m0	**SB-R**	0.11	0.4	A	0	m0
	Intersection	-	29.2	C	-	-	**Intersection**	-	19.7	B	-	-
7th Street NW & Mt Vernon Place NW/ New York Avenue NW *Signalized*	**EB-LTR**	0.99	25.0	C	94	m#717	**EB-LTR**	0.63	5.1	A	18	26
	WB-LT	0.59	20.7	C	203	264	**WB-LT**	0.70	25.5	C	198	271
	WB-R	0.55	14.4	B	63	146	**WB-R**	0.19	1.6	A	0	7
	NB-L	0.85	51.9	D	186	m#259	**NB-L**	0.53	35.3	D	85	127
	NB-TR	0.75	41.8	D	235	290	**NB-TR**	0.53	20.4	C	134	191
	SB-LTR	0.77	54.3	D	112	#177	**SB-LTR**	0.63	44.4	D	93	139
	Intersection	-	32.3	C	-	-	**Intersection**	-	21.3	C	-	-
7th Street NW & K Street NW *Unsignalized*	**WB-LR**	2.61	843.5	F	-	484	**WB-LR**	0.92	71.0	F	-	226
	NB-TR	0.20	0.0	A	-	0	**NB-TR**	0.12	0.0	A	-	0
	SB-LT	0.67	66.1	F	-	89	**SB-LT**	0.18	6.5	A	-	16
	Intersection	-	95.2	F	-	-	**Intersection**	-	12.8	B	-	-
7th Street NW & K Street NW/ Massachusetts Avenue NW *Signalized*	**EB-L**	0.43	9.2	A	11	m16	**EB-L**	0.64	13.6	B	57	78
	EB-TR	0.76	9.1	A	151	m217	**EB-TR**	0.33	8.2	A	42	55
	WB-LTR	0.75	27.6	C	250	333	**WB-LTR**	0.59	32.1	C	106	158
	NB-LTR	0.73	39.9	D	264	344	**NB-LTR**	0.43	22.5	C	106	151
	SB-LTR	0.43	9.6	A	36	m47	**SB-LTR**	0.70	29.0	C	59	198
	Intersection	-	21.3	C	-	-	**Intersection**	-	21.3	C	-	-

v/c ratio = volume/capacity ratio
Source: Synchro 9

Exhibit 90C
801 K Street NW
SimTraffic Queue Results Comparison

Intersection	Lane Group	PM Peak Hour (4:45 PM - 5:45 PM)								Lane Group	Sat Peak Hour (1:00 PM - 2:00 PM)							
		No Build		Build		Mitigation A		Mitigation B			No Build		Build		Mitigation A		Mitigation B	
		Avg Queue (ft)	95th %tile Queue (ft)	Avg Queue (ft)	95th %tile Queue (ft)	Avg Queue (ft)	95th %tile Queue (ft)	Avg Queue (ft)	95th %tile Queue (ft)		Avg Queue (ft)	95th %tile Queue (ft)	Avg Queue (ft)	95th %tile Queue (ft)	Avg Queue (ft)	95th %tile Queue (ft)	Avg Queue (ft)	95th %tile Queue (ft)
9th Street NW & Massachusetts Avenue NW/ Mt Vernon Place NW *Signalized*	**EB-LT**	722	1005	637	970	691	948	616	1008	**EB-LT**	175	366	456	938	428	851	443	855
	EB-R	650	1048	690	910	677	963	618	985	**EB-R**	215	343	455	879	360	733	607	942
	WB-LTR	220	324	244	319	173	308	162	299	**WB-LTR**	142	199	135	203	132	193	124	202
	SB-LTR	641	968	694	785	678	865	701	760	**SB-LTR**	712	792	698	726	709	755	668	810
9th Street NW & New York Avenue NW/ K Street NW *Signalized*	**EB-T**	717	1073	737	982	684	1142	284	249	**EB-T**	200	340	355	743	385	672	238	332
	EB-R	881	1186	662	1095	495	1194	50	89	**EB-R**	47	88	176	633	51	87	54	99
	WB-LT	249	375	463	614	190	357	74	141	**WB-LT**	149	218	205	330	292	468	101	167
	SB-L	42	85	46	92	88	138	88	150	**SB-L**	44	104	84	155	45	97	56	110
	SB-LT	74	121	71	117	75	123	86	129	**SB-LT**	79	128	75	130	82	129	53	94
	SB-R	22	50	21	52	17	48	23	54	**SB-R**	24	61	24	57	26	66	24	60
7th Street NW & Mt Vernon Place NW/ New York Avenue NW *Signalized*	**EB-LTR**	449	542	464	546	451	548	371	587	**EB-LTR**	267	486	414	615	355	629	265	518
	WB-LT	184	268	356	526	358	633	279	438	**WB-LT**	303	439	514	824	581	959	373	478
	WB-R	114	220	103	185	148	285	120	209	**WB-R**	47	90	62	253	35	77	47	99
	NB-L	163	173	160	176	158	183	117	180	**NB-L**	152	193	151	190	152	205	91	159
	NB-T	104	177	108	178	117	185	156	189	**NB-T**	94	150	84	154	94	181	139	186
	NB-R	34	69	47	90	43	86	-	-	**NB-R**	60	110	58	112	91	160	-	-
	SB-LTR	351	694	392	771	451	793	437	753	**SB-LTR**	321	602	282	580	225	369	223	430
7th Street NW & K Street NW *Unsignalized*	**WB-LR**	719	1045	745	933	705	1088	730	1033	**WB-LR**	225	300	678	1036	755	976	747	971
	NB-TR	109	183	105	200	75	139	112	184	**NB-TR**	32	89	52	115	68	138	63	109
	SB-LT	91	109	92	110	89	122	92	120	**SB-LT**	94	122	99	189	97	169	95	188
7th Street NW & K Street NW/ Massachusetts Avenue NW *Signalized*	**EB-LTR**	475	603	466	624	474	641	169	277	**EB-LTR**	353	540	450	623	502	590	71	226
	WB-LTR	307	573	545	1080	406	874	707	1144	**WB-LTR**	78	141	102	252	92	157	148	233
	NB-LTR	700	821	642	813	717	942	597	881	**NB-LTR**	130	214	173	316	156	280	140	227
	SB-LTR	54	90	128	186	117	183	88	157	**SB-LTR**	73	96	148	177	143	186	136	169

v/c ratio = volume/capacity ratio
Source: Synchro 9



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Legend

- Bicycle Lanes
- Capital Bike Share Locations
- Signed Bike Routes
- Bicycle Rack

Notes

Client/Project

APPLE, INC

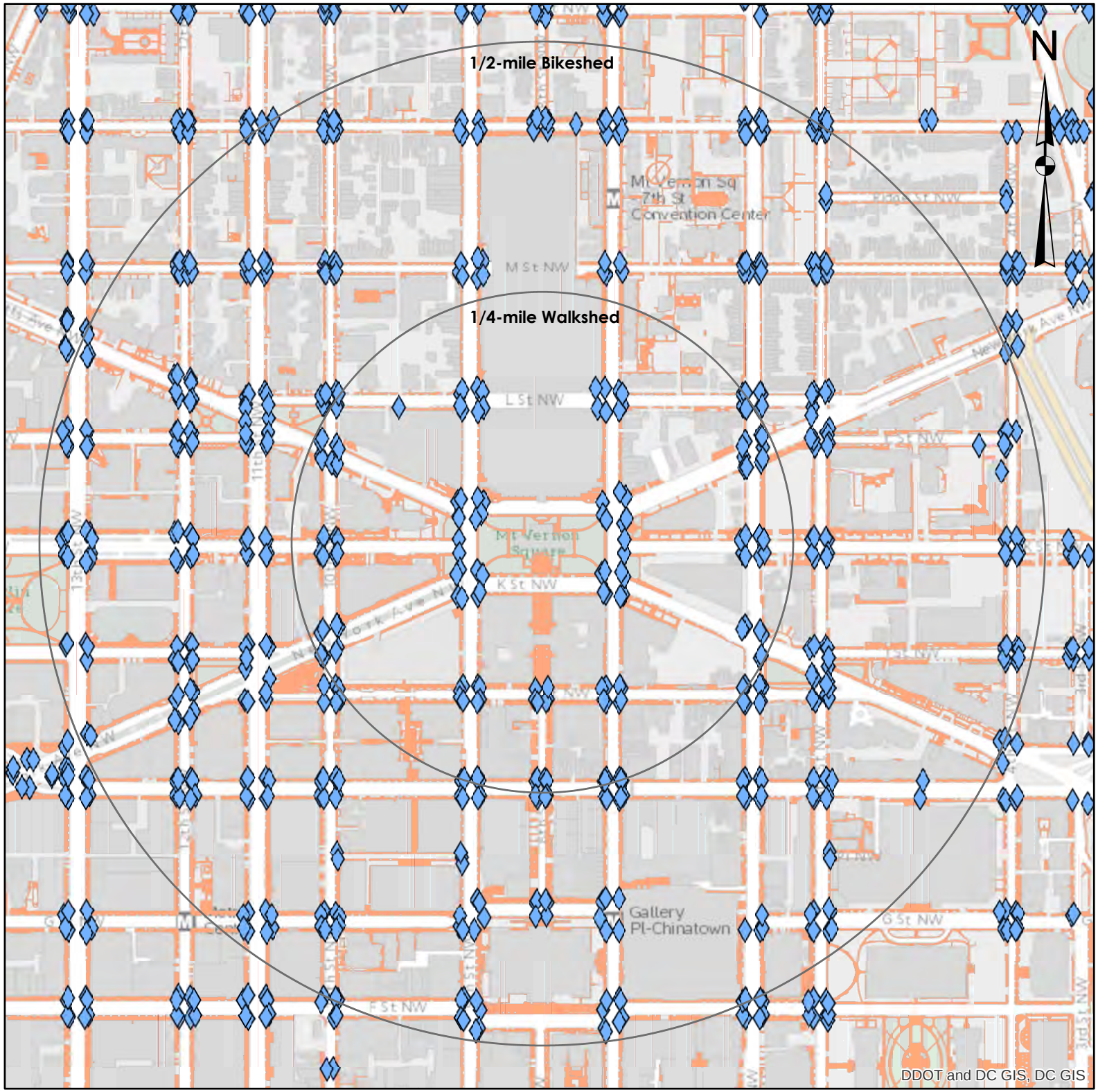
CARNEGIE LIBRARY REDEVELOPMENT
801 K STREET NW
Washington, DC

Title

Exhibit 91 - Existing Bicycle Facilities

Project No.
2028113119

Scale
1:700



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Legend

- Curb Ramp
- Sidewalks - Dark

Notes

Symbols denoting the crosswalks are not included on this figure to avoid overcrowding. However, it should be noted that all curb ramps within the study area, 1/4-mile walkshed, and 1/2-mile bikeshed are connected via marked crosswalks at both unsignalized and signalized intersections.

Client/Project

APPLE, INC

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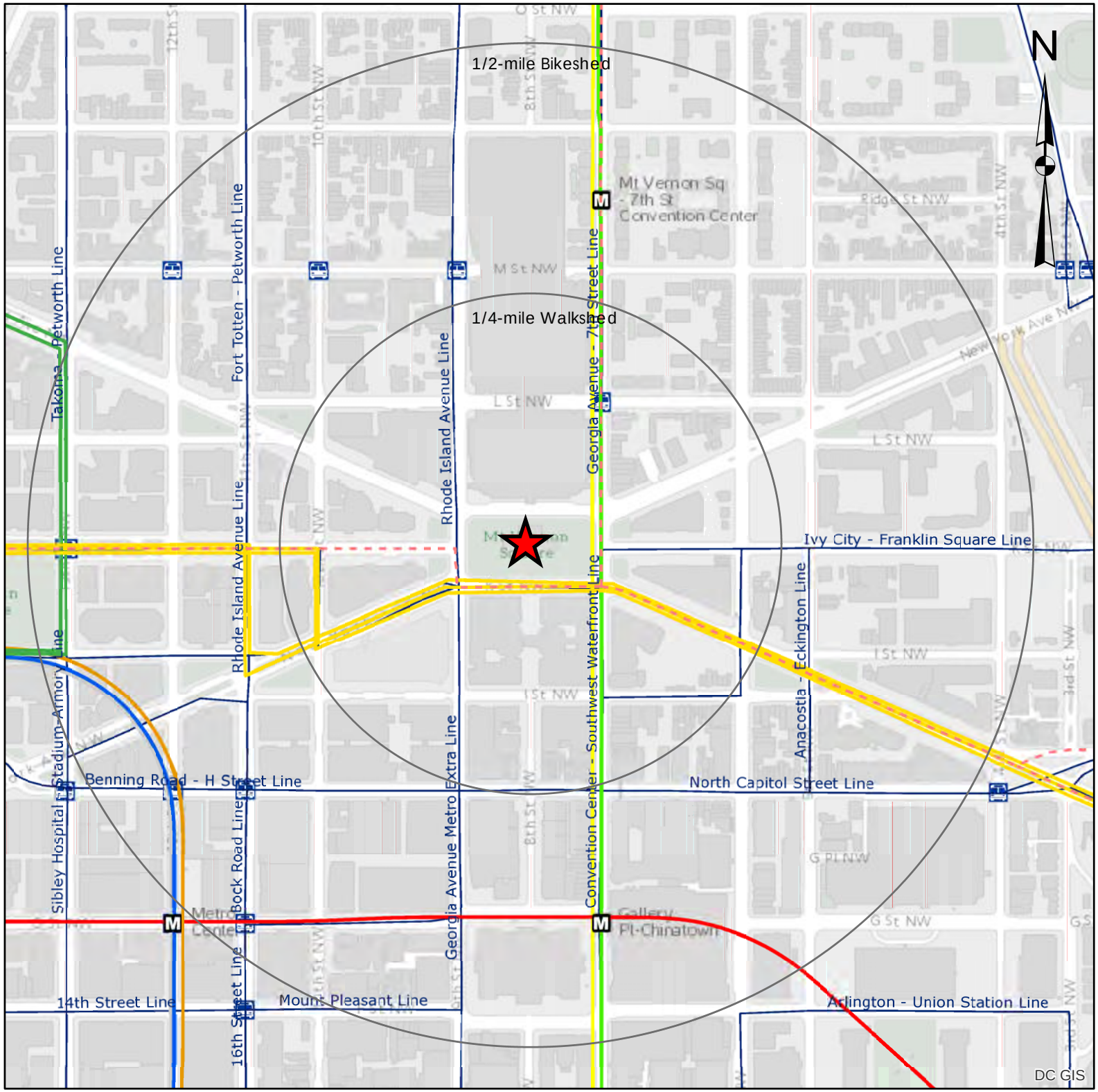
Washington, DC

Title

Exhibit 92 - Existing Pedestrian Facilities

Project No.
2028113119

Scale
1:700



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Legend

- Metro Red Line
- Metro Green Line
- Metro Yellow Line
- Metro Stations (District)
- Metro Bus Lines
- Commuter Bus Locations
- 2030 Proposed Street Car
- DC Circulator Route Union Station-Georgetown

Notes

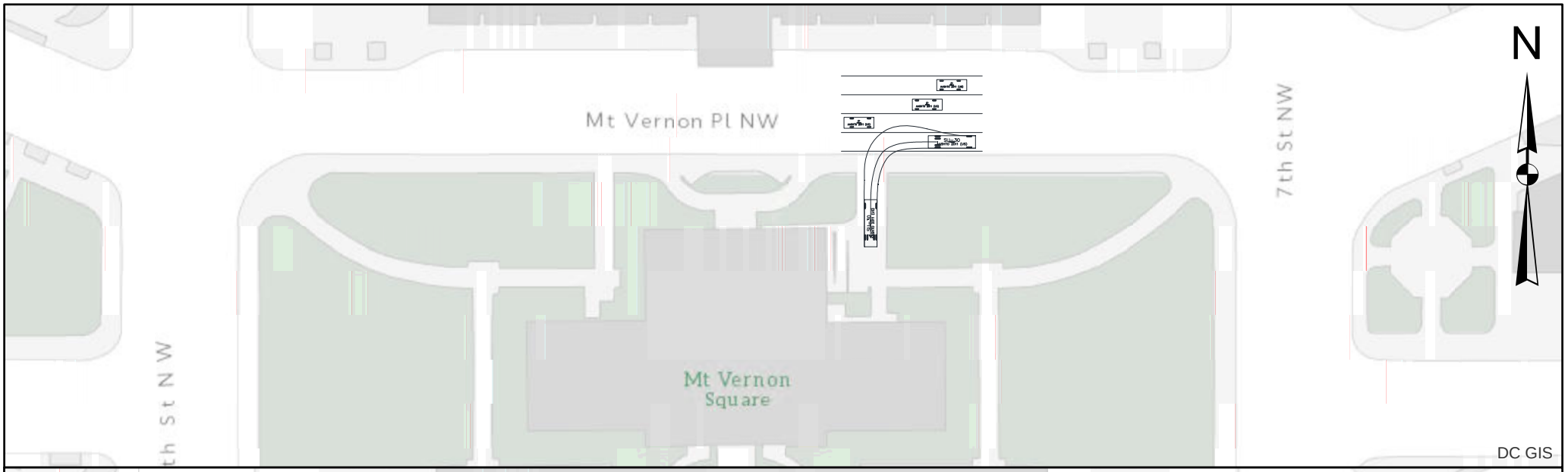
Client/Project
APPLE, INC

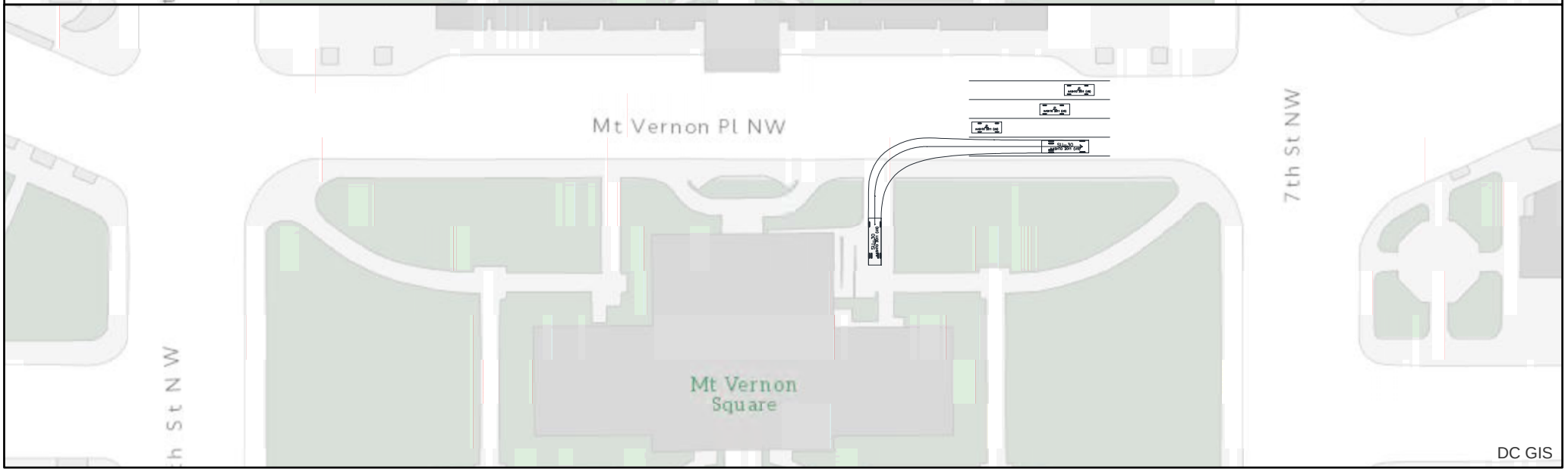
CARNEGIE LIBRARY REDEVELOPMENT
801 K STREET NW
Washington, DC

Title
Exhibit 93 -
Existing and Proposed Transit Facilities

Project No.
2028113119

Scale
1:700





JUNE 2017
2028113119

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Figure No.

EXHIBIT 94

Scale

1:400

Title

DELIVERY TRUCK TURNING MOVEMENTS
IN (TOP), OUT (BOTTOM)

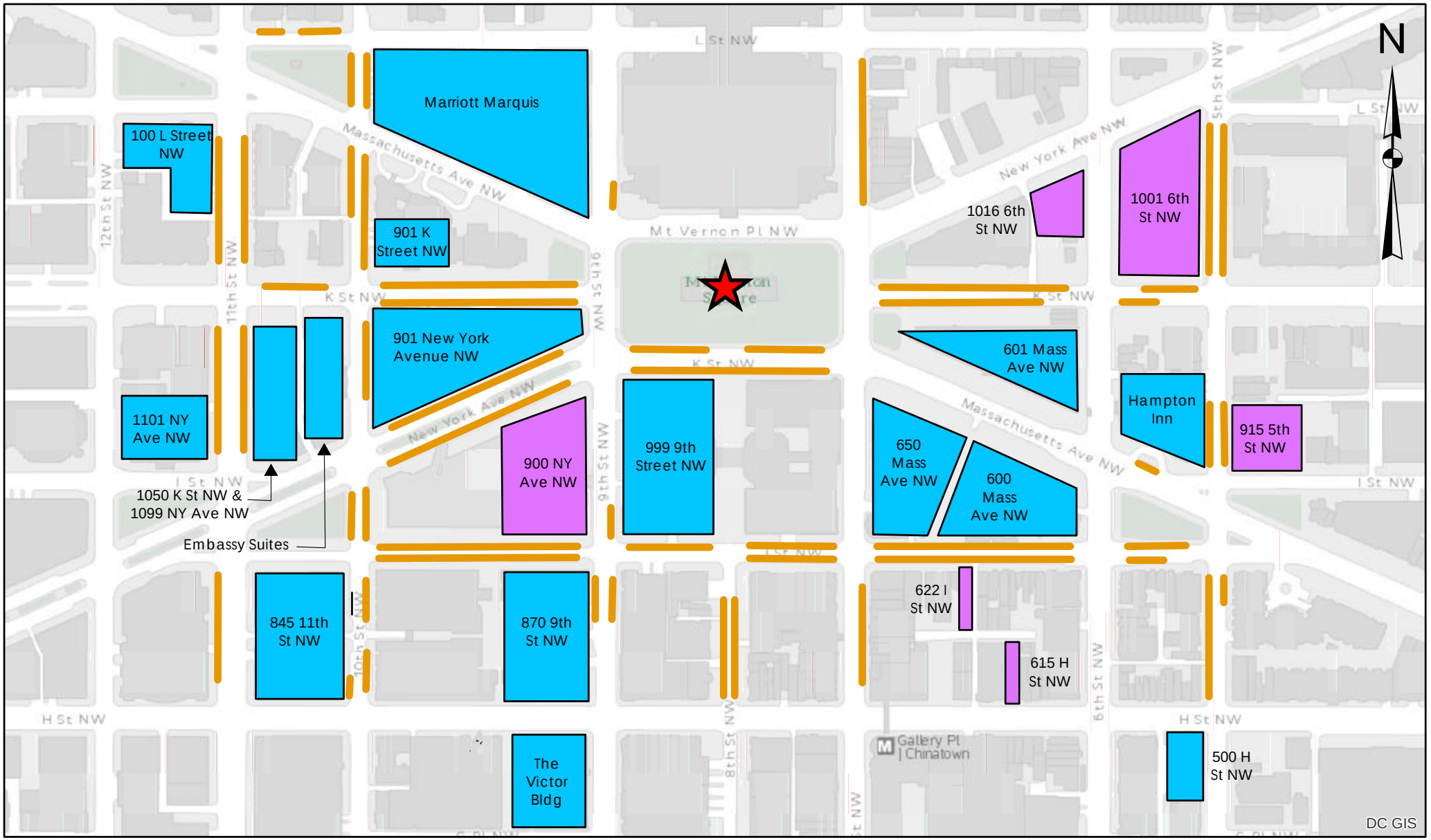

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Figure No.
EXHIBIT 95

Scale
1:400

Title
AVAILABLE PM PEAK HOUR PARKING FACILITIES

Legend
- On-Street Parallel or Angled Parking
- Off-Street Surface Parking Lot
- Off-Street Parking Garage

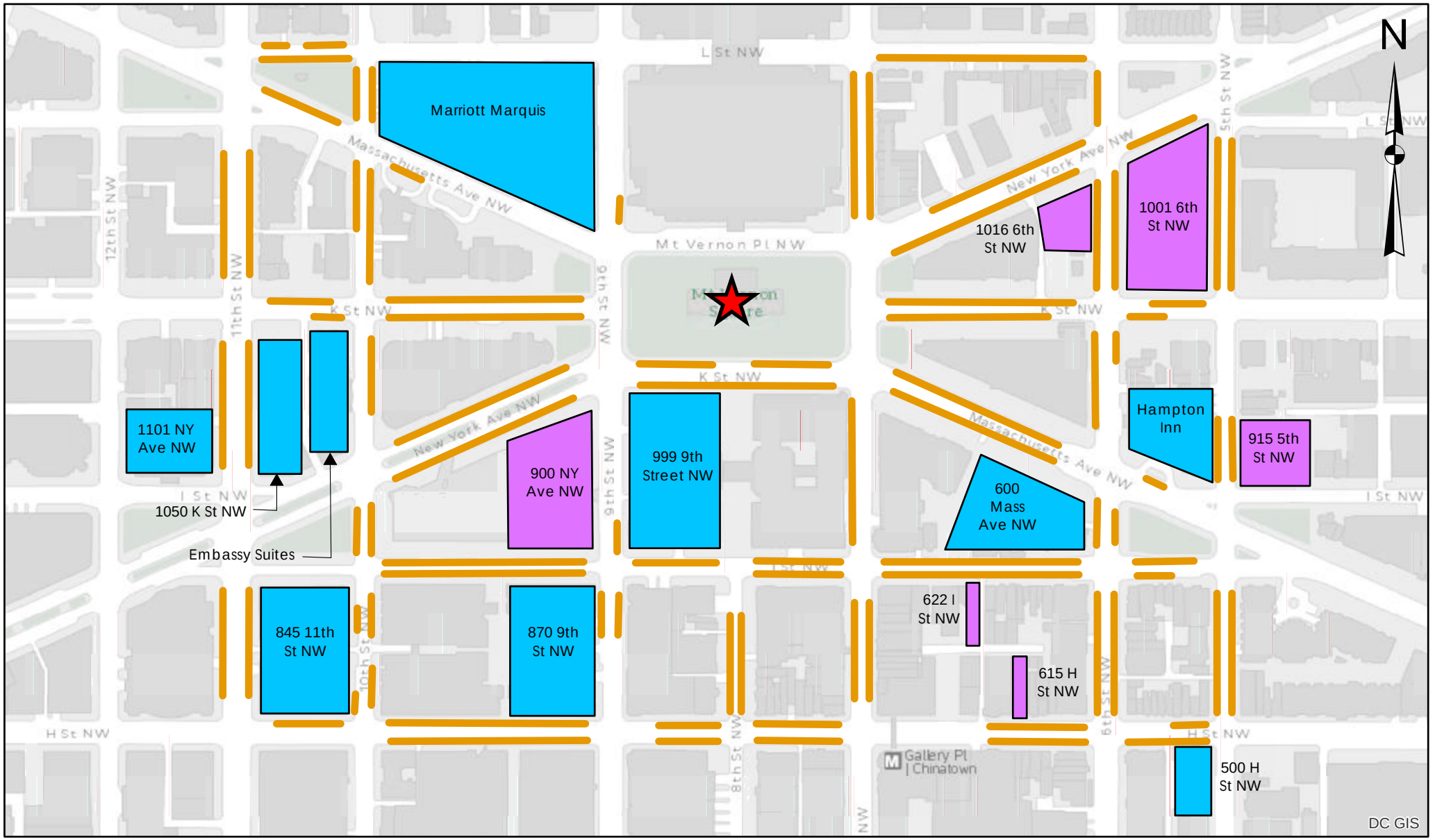

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Figure No.
EXHIBIT 96

Scale
1:400

Title
AVAILABLE SAT PEAK HOUR PARKING FACILITIES

Legend

- On-Street Parallel or Angled Parking
- Off-Street Surface Parking Lot
- Off-Street Parking Garage

APPENDIX B
RAW TRAFFIC DATA

Stantec

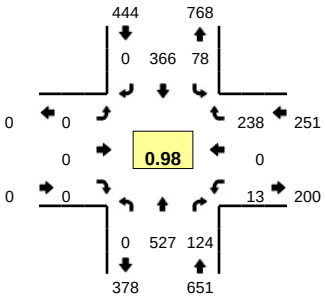
Type of peak hour being reported: Intersection Peak

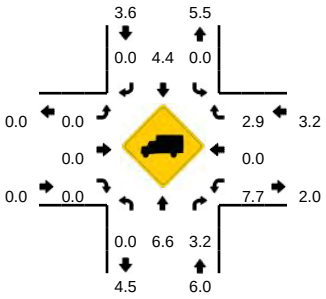
Method for determining peak hour: Total Entering Volume

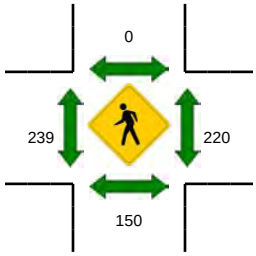
LOCATION: 7th St NW -- K St NW
CITY/STATE: Washington, DC

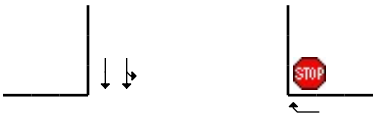
QC JOB #: 14426101
DATE: Sat, May 20 2017

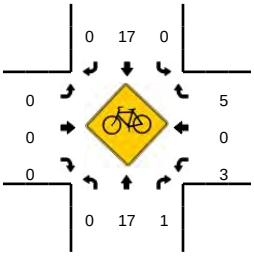
Peak-Hour: 1:00 PM -- 2:00 PM
Peak 15-Min: 1:00 PM -- 1:15 PM

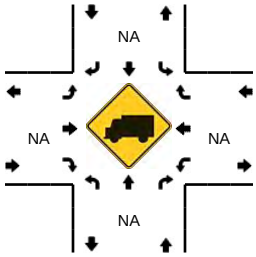


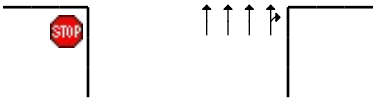


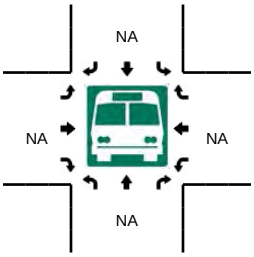












15-Min Count Period Beginning At	7th St NW (Northbound)				7th St NW (Southbound)				K St NW (Eastbound)				K St NW (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
10:00 AM	0	98	17	0	23	69	0	0	0	0	0	0	3	0	46	0	256	
10:15 AM	0	104	12	1	15	75	0	0	0	0	0	0	5	0	64	1	277	
10:30 AM	0	98	14	0	15	82	0	0	0	0	0	0	9	0	62	0	280	
10:45 AM	0	93	25	0	18	64	0	0	0	0	0	0	1	0	65	0	266	1079
11:00 AM	0	115	27	0	18	86	0	0	0	0	0	0	5	0	45	0	296	1119
11:15 AM	0	102	19	0	9	69	0	0	0	0	0	0	4	0	57	0	260	1102
11:30 AM	0	103	28	0	15	90	0	2	0	0	0	0	1	0	60	0	299	1121
11:45 AM	0	125	17	0	13	84	0	0	0	0	0	0	4	0	65	0	308	1163
12:00 PM	0	127	29	0	21	71	0	0	0	0	0	0	0	0	50	0	298	1165
12:15 PM	0	153	34	0	14	72	0	0	0	0	0	0	4	0	63	0	340	1245
12:30 PM	0	127	33	0	13	102	0	0	0	0	0	0	2	0	54	0	331	1277
12:45 PM	0	130	30	0	17	85	0	0	0	0	0	0	1	0	64	1	328	1297
1:00 PM	0	140	36	0	12	92	0	2	0	0	0	0	4	0	56	0	342	1341
1:15 PM	0	127	20	0	20	84	0	1	0	0	0	0	1	0	71	0	324	1325
1:30 PM	0	136	33	0	20	95	0	0	0	0	0	0	2	0	53	0	339	1333
1:45 PM	0	124	35	0	23	95	0	0	0	0	0	0	5	0	58	1	341	1346

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	560	144	0	48	368	0	8	0	0	0	0	16	0	224	0	1368
Heavy Trucks	0	32	4		0	20	0		0	0	0		4	0	4		64
Pedestrians		164				0				268				184			616
Bicycles	0	5	1		0	1	0		0	0	0		1	0	1		9
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/5/2017 5:35 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

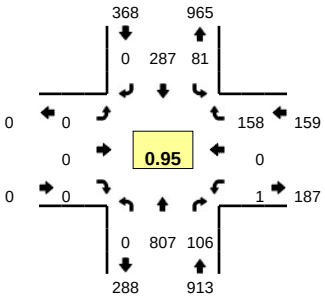
Type of peak hour being reported: Intersection Peak

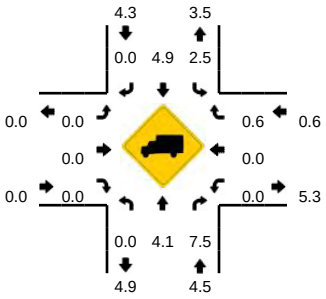
Method for determining peak hour: Total Entering Volume

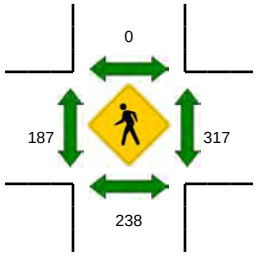
LOCATION: 7th St NW -- K St NW
CITY/STATE: Washington, DC

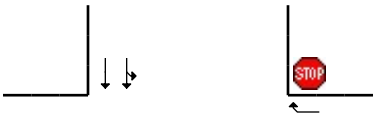
QC JOB #: 14426102
DATE: Tue, May 23 2017

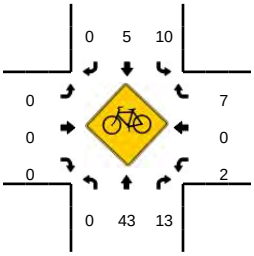
Peak-Hour: 6:00 PM -- 7:00 PM
Peak 15-Min: 6:30 PM -- 6:45 PM

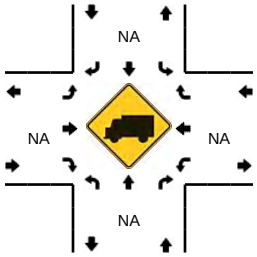


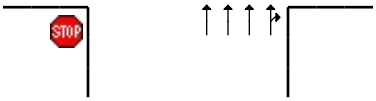


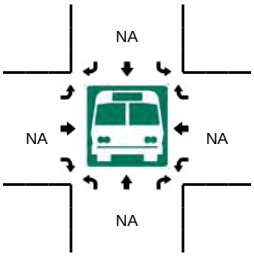












15-Min Count Period Beginning At	7th St NW (Northbound)				7th St NW (Southbound)				K St NW (Eastbound)				K St NW (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	206	23	0	12	42	0	0	0	0	0	0	0	0	39	0	322	
4:15 PM	0	182	12	0	8	65	0	0	0	0	0	0	0	0	50	0	317	
4:30 PM	0	191	18	0	21	46	0	0	0	0	0	0	0	0	34	0	310	
4:45 PM	0	200	16	0	20	58	0	0	0	0	0	0	0	0	33	0	327	1276
5:00 PM	0	242	12	0	17	47	0	0	0	0	0	0	0	0	41	0	359	1313
5:15 PM	0	208	9	0	16	62	0	0	0	0	0	0	0	0	49	0	344	1340
5:30 PM	0	219	22	0	20	64	0	0	0	0	0	0	1	0	49	0	375	1405
5:45 PM	0	188	21	0	27	69	0	0	0	0	0	0	0	0	41	1	347	1425
6:00 PM	0	190	11	0	16	69	0	0	0	0	0	0	0	0	44	0	330	1396
6:15 PM	0	201	27	0	20	73	0	0	0	0	0	0	0	0	33	0	354	1406
6:30 PM	0	212	39	0	15	77	0	0	0	0	0	0	0	0	36	0	379	1410
6:45 PM	0	204	29	0	30	68	0	0	0	0	0	0	1	0	45	0	377	1440

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	848	156	0	60	308	0	0	0	0	0	0	0	0	144	0	1516
Heavy Trucks	0	44	8		0	12	0		0	0	0		0	0	0		64
Pedestrians		164				0				160				252			576
Bicycles	0	6	3		3	1	0		0	0	0		1	0	4		18
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/5/2017 5:35 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: 7th St NW -- New York Ave NW/Mt Vernon

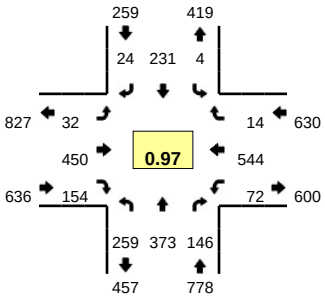
CITY/STATE: Washington, DC

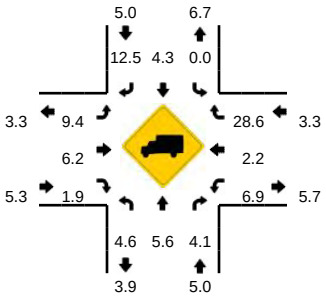
QC JOB #: 14426103

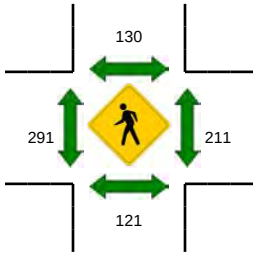
DATE: Sat, May 20 2017

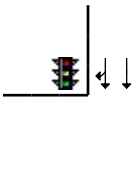
Peak-Hour: 1:00 PM -- 2:00 PM

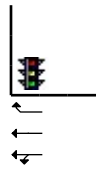
Peak 15-Min: 1:30 PM -- 1:45 PM

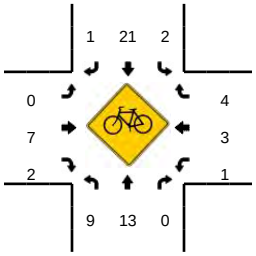


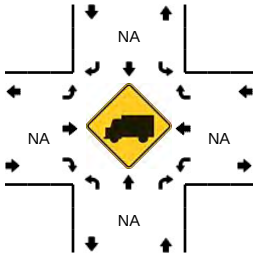


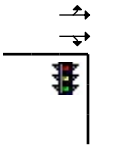


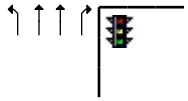


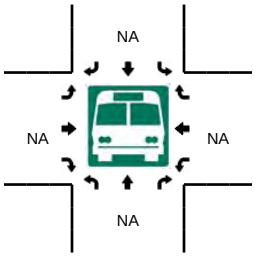












15-Min Count Period Beginning At	7th St NW (Northbound)				7th St NW (Southbound)				New York Ave NW/Mt Vernon (Eastbound)				New York Ave NW/Mt Vernon (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
10:00 AM	54	71	22	0	0	54	4	0	7	141	29	1	10	115	1	0	509	
10:15 AM	56	84	29	0	2	51	7	0	6	140	30	0	12	98	2	0	517	
10:30 AM	59	75	27	0	1	41	7	0	4	144	28	0	19	129	6	0	540	
10:45 AM	64	68	24	0	0	45	7	0	12	131	34	0	7	102	3	0	497	2063
11:00 AM	59	76	29	0	0	45	5	0	6	109	42	0	14	122	4	0	511	2065
11:15 AM	54	79	22	0	0	44	3	0	10	135	29	0	10	132	4	0	522	2070
11:30 AM	62	70	34	1	2	59	7	0	4	146	30	0	11	110	9	0	545	2075
11:45 AM	57	90	46	0	0	54	5	0	6	137	35	0	10	117	3	0	560	2138
12:00 PM	47	107	29	0	2	49	10	0	16	114	36	0	6	137	3	0	556	2183
12:15 PM	71	112	31	0	0	53	14	0	7	117	21	0	15	116	3	0	560	2221
12:30 PM	51	102	35	0	0	62	7	0	12	121	34	0	19	100	3	0	546	2222
12:45 PM	73	95	32	0	0	57	3	0	4	145	37	0	11	107	3	0	567	2229
1:00 PM	65	88	48	0	0	59	5	0	7	94	21	0	26	120	3	0	536	2209
1:15 PM	67	97	33	0	1	58	5	0	12	132	38	0	12	135	3	0	593	2242
1:30 PM	62	96	35	0	1	64	7	0	6	106	43	0	18	153	5	0	596	2292
1:45 PM	65	92	30	0	2	50	7	0	7	118	52	0	16	136	3	0	578	2303

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	248	384	140	0	4	256	28	0	24	424	172	0	72	612	20	0	2384
Heavy Trucks	20	32	0		0	20	0		4	40	4		4	24	4		152
Pedestrians		88				140				200				236			664
Bicycles	4	4	0		0	2	0		0	3	0		1	0	0		14
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/5/2017 5:35 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: 7th St NW -- New York Ave NW/Mt Vernon

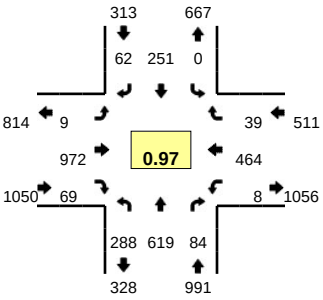
CITY/STATE: Washington, DC

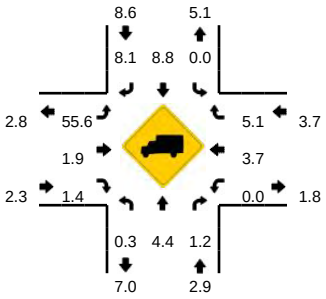
QC JOB #: 14426104

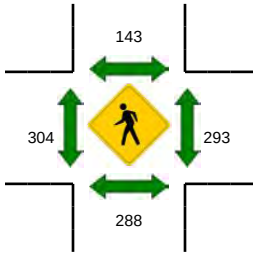
DATE: Tue, May 23 2017

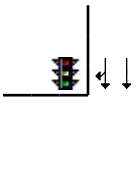
Peak-Hour: 5:00 PM -- 6:00 PM

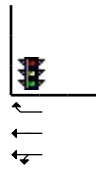
Peak 15-Min: 5:30 PM -- 5:45 PM

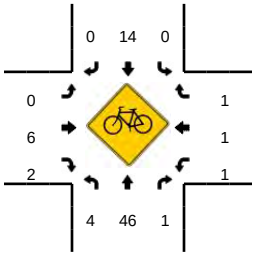


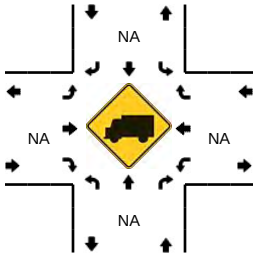


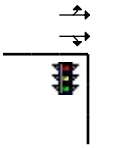


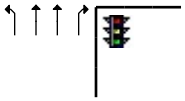


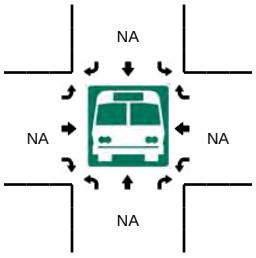












15-Min Count Period Beginning At	7th St NW (Northbound)				7th St NW (Southbound)				New York Ave NW/Mt Vernon (Eastbound)				New York Ave NW/Mt Vernon (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	73	134	25	0	0	40	21	0	1	177	8	0	5	102	4	0	590	
4:15 PM	79	132	15	1	0	57	17	1	1	221	14	0	0	112	4	0	654	
4:30 PM	68	124	21	0	0	49	21	0	0	220	19	0	1	131	7	0	661	
4:45 PM	56	126	28	0	0	57	15	0	2	258	21	0	0	106	7	0	676	2581
5:00 PM	64	164	23	0	0	52	17	0	3	222	17	0	0	126	7	0	695	2686
5:15 PM	75	151	17	0	0	59	13	0	0	255	15	0	1	118	17	0	721	2753
5:30 PM	80	169	25	0	0	62	19	0	5	228	22	0	1	117	10	0	738	2830
5:45 PM	69	135	19	0	0	78	13	0	1	267	15	0	6	103	5	0	711	2865
6:00 PM	90	128	10	0	0	61	13	0	1	241	18	0	2	64	4	0	632	2802
6:15 PM	88	119	33	0	1	61	10	0	0	225	25	0	2	122	5	0	691	2772
6:30 PM	80	137	28	0	1	59	11	0	4	215	32	0	8	106	4	0	685	2719
6:45 PM	76	141	34	0	0	55	7	0	5	219	34	0	7	99	3	0	680	2688

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	320	676	100	0	0	248	76	0	20	912	88	0	4	468	40	0	2952
Heavy Trucks	0	28	0		0	24	8		12	16	4		0	16	8		116
Pedestrians		280				128				232				336			976
Bicycles	0	14	0		0	2	0		0	1	0		1	1	1		20
Railroad																	
Stopped Buses																	

Comments:

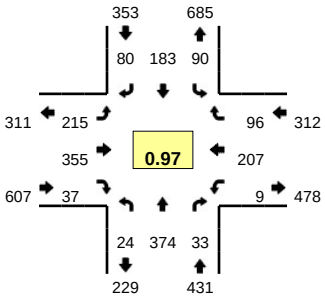
Report generated on 6/5/2017 5:35 AM

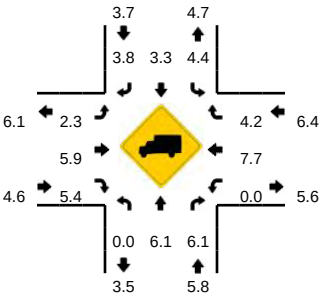
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

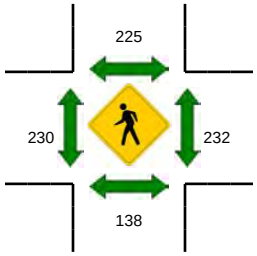
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

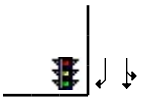
LOCATION: 7th St NW -- K St NW/Massachusetts Ave NW | **QC JOB #:** 14426105
CITY/STATE: Washington, DC | **DATE:** Sat, May 20 2017

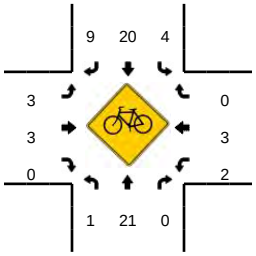
Peak-Hour: 12:15 PM -- 1:15 PM
Peak 15-Min: 12:15 PM -- 12:30 PM

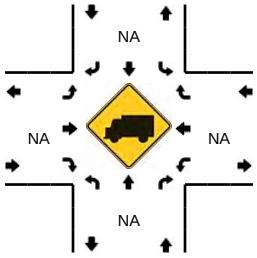


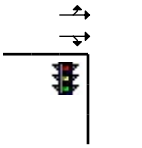


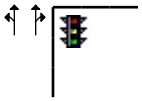


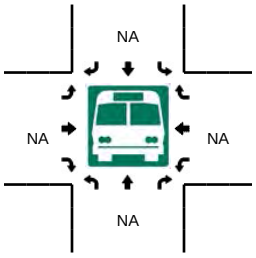












15-Min Count Period Beginning At	7th St NW (Northbound)				7th St NW (Southbound)				K St NW/Massachusetts Ave NW (Eastbound)				K St NW/Massachusetts Ave NW (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
10:00 AM	5	74	6	0	13	38	17	0	33	62	5	0	1	44	8	0	306	
10:15 AM	4	76	13	1	17	49	20	0	37	67	1	0	0	51	12	0	348	
10:30 AM	5	68	3	0	16	41	25	0	36	73	5	0	2	46	10	0	330	
10:45 AM	6	50	7	0	19	40	9	0	43	81	7	0	1	46	21	0	330	1314
11:00 AM	3	75	10	0	28	44	19	0	60	81	1	0	5	45	12	0	383	1391
11:15 AM	8	61	9	0	22	43	9	0	36	78	6	0	0	38	14	0	324	1367
11:30 AM	7	71	6	0	13	54	19	0	44	55	10	0	0	43	18	0	340	1377
11:45 AM	13	79	6	0	23	53	11	0	48	88	6	0	2	40	16	0	385	1432
12:00 PM	5	94	9	0	23	41	8	0	51	91	10	0	1	52	20	1	406	1455
12:15 PM	6	99	14	0	13	46	13	0	66	104	8	0	2	51	19	0	441	1572
12:30 PM	5	100	5	0	34	45	26	0	46	76	15	0	2	62	17	0	433	1665
12:45 PM	10	89	7	0	27	49	15	0	48	84	6	0	4	46	32	0	417	1697
1:00 PM	3	86	7	0	16	43	26	0	55	91	8	0	1	48	28	0	412	1703
1:15 PM	6	82	7	0	25	45	20	0	46	109	9	0	4	60	20	0	433	1695
1:30 PM	7	90	5	0	23	57	14	0	60	109	4	0	4	47	20	0	440	1702
1:45 PM	9	77	6	0	22	44	24	0	63	80	7	0	2	58	21	0	413	1698

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	24	396	56	0	52	184	52	0	264	416	32	0	8	204	76	0	1764
Heavy Trucks	0	24	4		4	12	0		4	20	4		0	20	4		96
Pedestrians		164				248				264				312			988
Bicycles	0	5	0		3	5	1		0	2	0		1	0	0		17
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/5/2017 5:35 AM

Type of peak hour being reported: Intersection Peak

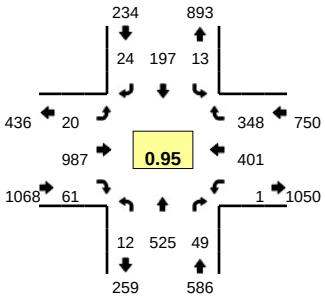
Method for determining peak hour: Total Entering Volume

LOCATION: 7th St NW -- K St NW/Massachusetts Ave NW

QC JOB #: 14426106

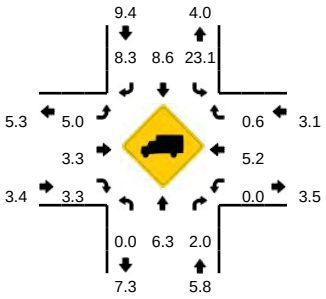
CITY/STATE: Washington, DC

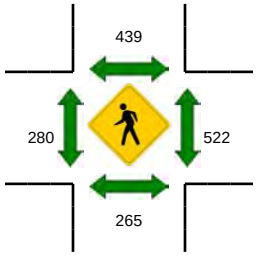
DATE: Tue, May 23 2017

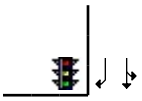


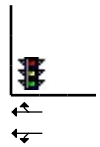
Peak-Hour: 4:45 PM -- 5:45 PM

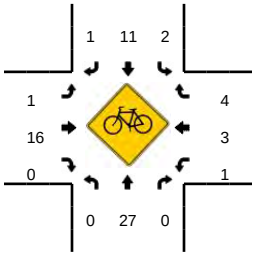
Peak 15-Min: 4:45 PM -- 5:00 PM

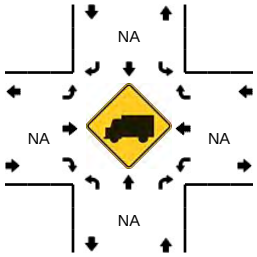


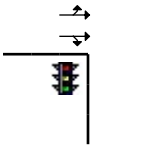


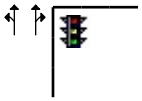


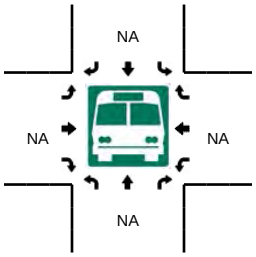












15-Min Count Period Beginning At	7th St NW (Northbound)				7th St NW (Southbound)				K St NW/Massachusetts Ave NW (Eastbound)				K St NW/Massachusetts Ave NW (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	3	146	13	0	5	33	3	1	17	237	9	0	1	103	62	0	633	
4:15 PM	4	95	5	0	0	63	4	0	4	250	11	0	0	96	93	0	625	
4:30 PM	3	106	5	0	2	43	6	0	5	214	15	0	1	120	77	0	597	
4:45 PM	3	132	17	1	2	52	6	0	6	274	17	0	0	103	78	0	691	2546
5:00 PM	2	148	13	0	3	35	7	0	2	240	16	0	0	104	88	0	658	2571
5:15 PM	4	108	7	0	5	52	7	0	7	235	12	0	0	79	88	1	605	2551
5:30 PM	2	137	12	0	3	58	4	0	5	238	16	0	0	115	94	0	684	2638
5:45 PM	2	120	9	0	2	58	10	0	9	249	21	0	0	86	88	0	654	2601
6:00 PM	6	91	12	0	5	55	9	0	3	243	8	0	1	90	109	0	632	2575
6:15 PM	1	140	15	0	4	58	9	0	9	237	8	0	3	69	85	0	638	2608
6:30 PM	7	105	10	0	14	56	11	1	46	175	13	0	1	68	98	0	605	2529
6:45 PM	14	106	13	0	8	42	14	0	42	162	7	0	2	86	81	0	577	2452

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	12	528	68	4	8	208	24	0	24	1096	68	0	0	412	312	0	2764
Heavy Trucks	0	44	0		0	20	0		4	40	8		0	12	4		132
Pedestrians		208				356				312				464			1340
Bicycles	0	4	0		0	3	0		0	2	0		0	1	2		12
Railroad Stopped Buses																	

Comments:

Report generated on 6/5/2017 5:35 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: 9th St NW -- K St NW

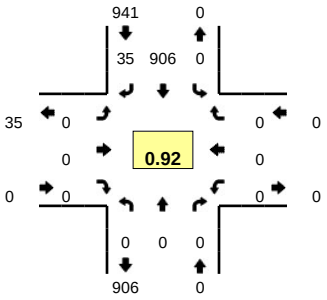
CITY/STATE: Washington, DC

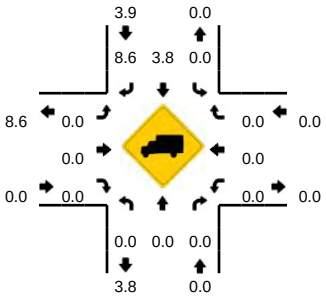
QC JOB #: 14426107

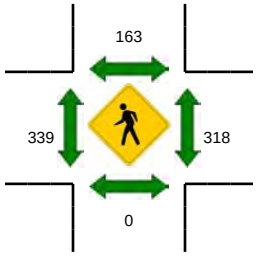
DATE: Sat, May 20 2017

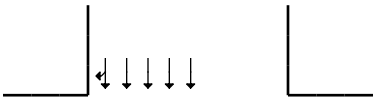
Peak-Hour: 1:00 PM -- 2:00 PM

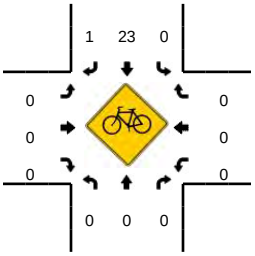
Peak 15-Min: 1:45 PM -- 2:00 PM

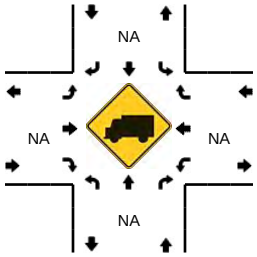


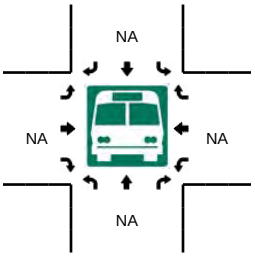












15-Min Count Period Beginning At	9th St NW (Northbound)				9th St NW (Southbound)				K St NW (Eastbound)				K St NW (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
10:00 AM	0	0	0	0	0	200	9	0	0	0	0	0	0	0	0	0	209	
10:15 AM	0	0	0	0	0	218	7	0	0	0	0	0	0	0	0	0	225	
10:30 AM	0	0	0	0	0	172	13	0	0	0	1	0	0	0	0	0	186	
10:45 AM	0	0	0	0	0	190	20	0	0	0	0	0	0	0	0	0	210	830
11:00 AM	0	0	0	0	0	223	13	0	0	0	0	0	0	0	0	0	236	857
11:15 AM	0	0	0	0	0	183	16	0	0	0	0	0	0	0	0	0	199	831
11:30 AM	0	0	0	0	0	184	13	0	0	0	1	0	0	0	0	0	198	843
11:45 AM	0	0	0	0	0	210	17	0	0	0	0	0	0	0	0	0	227	860
12:00 PM	0	0	0	0	0	227	9	0	0	0	0	0	0	0	0	0	236	860
12:15 PM	0	0	0	0	0	210	6	0	0	0	0	0	0	0	0	0	216	877
12:30 PM	0	0	0	0	0	225	14	0	0	0	0	0	0	0	0	0	239	918
12:45 PM	0	0	0	0	0	220	6	0	0	0	0	0	0	0	0	0	226	917
1:00 PM	0	0	0	0	0	213	8	0	0	0	0	0	0	0	0	0	221	902
1:15 PM	0	0	0	0	0	213	7	0	0	0	0	0	0	0	0	0	220	906
1:30 PM	0	0	0	0	0	231	14	0	0	0	0	0	0	0	0	0	245	912
1:45 PM	0	0	0	0	0	249	6	0	0	0	0	0	0	0	0	0	255	941

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	0	996	24	0	0	0	0	0	0	0	0	0	1020
Heavy Trucks	0	0	0		0	28	0		0	0	0		0	0	0		28
Pedestrians		0				144				272				348			764
Bicycles	0	0	0		0	5	0		0	0	0		0	0	0		5
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/5/2017 5:35 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: 9th St NW -- K St NW

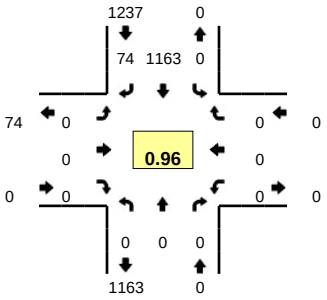
CITY/STATE: Washington, DC

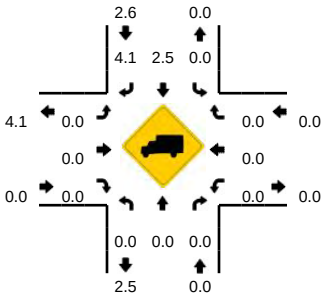
QC JOB #: 14426108

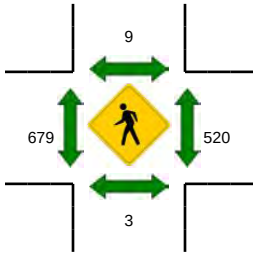
DATE: Tue, Jun 06 2017

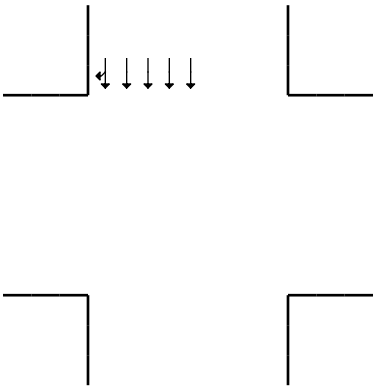
Peak-Hour: 6:00 PM -- 7:00 PM

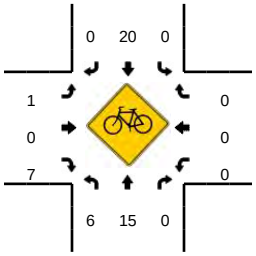
Peak 15-Min: 6:30 PM -- 6:45 PM

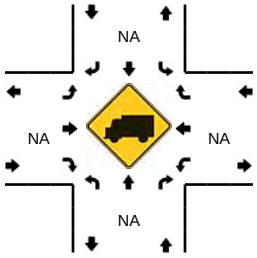


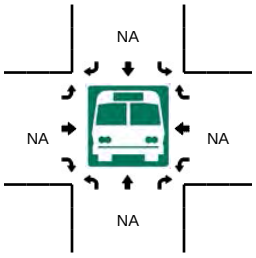












15-Min Count Period Beginning At	9th St NW (Northbound)				9th St NW (Southbound)				K St NW (Eastbound)				K St NW (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	0	296	18	0	0	0	0	0	0	0	0	0	314	
4:15 PM	0	0	0	0	0	297	20	0	0	0	0	0	0	0	0	0	317	
4:30 PM	0	0	0	0	0	269	17	0	0	0	0	0	0	0	0	0	286	
4:45 PM	0	0	0	0	0	231	21	0	0	0	0	0	0	0	0	0	252	1169
5:00 PM	0	0	0	0	0	296	14	0	0	0	0	0	0	0	0	0	310	1165
5:15 PM	0	0	0	0	0	254	22	0	0	0	0	0	0	0	0	0	276	1124
5:30 PM	0	0	0	0	0	257	16	0	0	0	0	0	0	0	0	0	273	1111
5:45 PM	0	0	0	0	0	261	21	0	0	0	0	0	0	0	0	0	282	1141
6:00 PM	0	0	0	0	0	290	23	0	0	0	0	0	0	0	0	0	313	1144
6:15 PM	0	0	0	0	0	277	16	0	0	0	0	0	0	0	0	0	293	1161
6:30 PM	0	0	0	0	0	308	13	0	0	0	0	0	0	0	0	0	321	1209
6:45 PM	0	0	0	0	0	288	22	0	0	0	0	0	0	0	0	0	310	1237

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	0	1232	52	0	0	0	0	0	0	0	0	0	1284
Heavy Trucks	0	0	0		0	32	0		0	0	0		0	0	0		32
Pedestrians		8				12				636				312			968
Bicycles	1	3	0		0	1	0		1	0	1		0	0	0		7
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/12/2017 12:01 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: 9th St NW -- New York Ave NW/K St NW

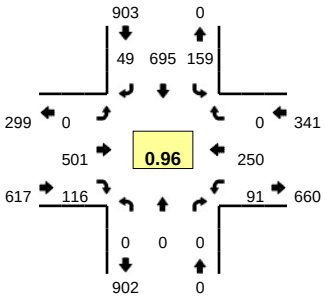
CITY/STATE: Washington, DC

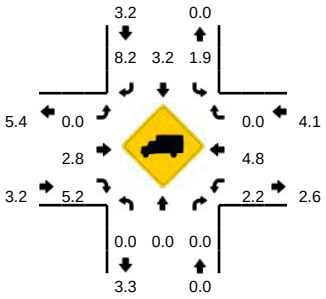
QC JOB #: 14426109

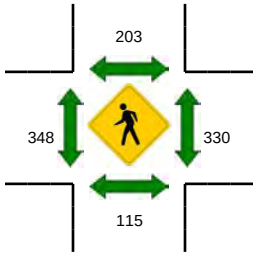
DATE: Sat, May 20 2017

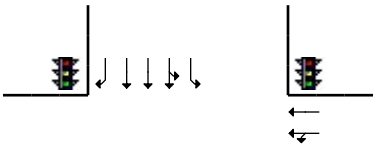
Peak-Hour: 1:00 PM -- 2:00 PM

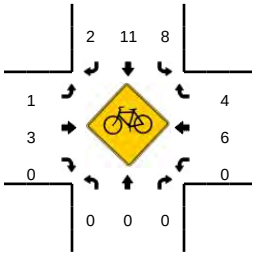
Peak 15-Min: 1:45 PM -- 2:00 PM

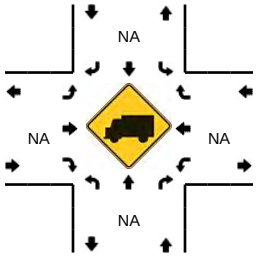


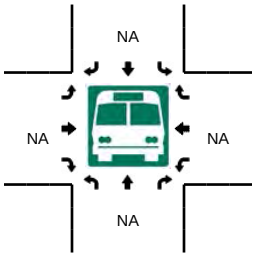












15-Min Count Period Beginning At	9th St NW (Northbound)				9th St NW (Southbound)				New York Ave NW/K St NW (Eastbound)				New York Ave NW/K St NW (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
10:00 AM	0	0	0	0	26	156	12	0	0	63	32	0	5	59	0	0	353	
10:15 AM	0	0	0	0	37	175	10	0	0	73	34	0	10	67	0	0	406	
10:30 AM	0	0	0	0	28	140	7	0	0	93	23	1	14	69	0	0	375	
10:45 AM	0	0	0	0	36	147	9	0	0	99	19	0	14	45	0	0	369	1503
11:00 AM	0	0	0	0	35	178	8	0	0	96	37	0	13	58	0	0	425	1575
11:15 AM	0	0	0	0	27	146	13	0	0	104	26	0	11	40	0	0	367	1536
11:30 AM	0	0	0	0	31	152	9	0	0	79	27	0	13	59	0	1	371	1532
11:45 AM	0	0	0	0	31	167	9	0	0	111	36	0	11	53	0	1	419	1582
12:00 PM	0	0	0	0	29	186	10	0	0	124	33	0	13	53	0	1	449	1606
12:15 PM	0	0	0	0	40	152	20	0	0	140	29	0	14	57	0	1	453	1692
12:30 PM	0	0	0	0	37	167	14	0	0	97	16	0	18	78	0	0	427	1748
12:45 PM	0	0	0	0	38	172	8	0	0	100	34	0	19	54	0	0	425	1754
1:00 PM	0	0	0	0	28	169	13	0	0	124	29	0	21	63	0	0	447	1752
1:15 PM	0	0	0	0	42	160	13	0	0	131	28	0	19	68	0	0	461	1760
1:30 PM	0	0	0	0	52	166	15	0	0	124	35	0	22	52	0	0	466	1799
1:45 PM	0	0	0	0	37	200	8	0	0	122	24	0	29	67	0	0	487	1861

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	148	800	32	0	0	488	96	0	116	268	0	0	1948
Heavy Trucks	0	0	0		0	32	4		0	20	0		0	12	0		68
Pedestrians		148				284				412				400			1244
Bicycles	0	0	0		1	3	1		0	0	0		0	0	0		5
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/5/2017 5:35 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: 9th St NW -- New York Ave NW/K St NW

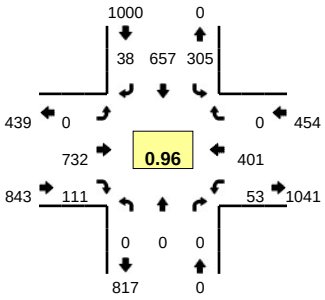
CITY/STATE: Washington, DC

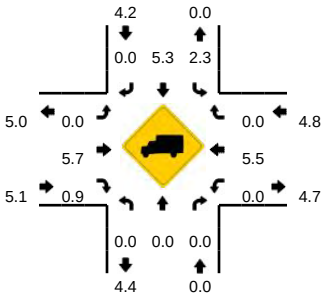
QC JOB #: 14426110

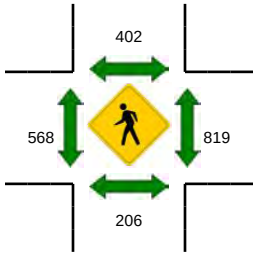
DATE: Tue, May 23 2017

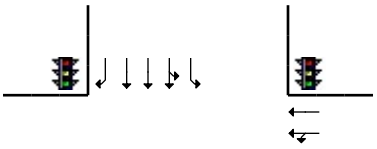
Peak-Hour: 4:00 PM -- 5:00 PM

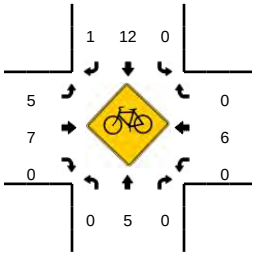
Peak 15-Min: 4:45 PM -- 5:00 PM

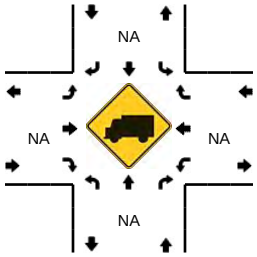


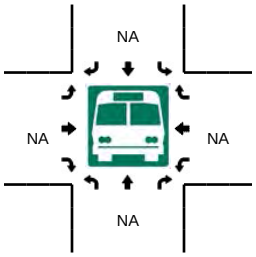












15-Min Count Period Beginning At	9th St NW (Northbound)				9th St NW (Southbound)				New York Ave NW/K St NW (Eastbound)				New York Ave NW/K St NW (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	81	173	12	0	0	183	26	0	15	104	0	0	594	
4:15 PM	0	0	0	0	68	161	6	0	0	190	22	0	10	95	0	0	552	
4:30 PM	0	0	0	0	68	150	11	0	0	163	32	0	15	112	0	3	554	
4:45 PM	0	0	0	0	88	173	9	0	0	196	31	0	9	90	0	1	597	2297
5:00 PM	0	0	0	0	92	153	9	0	0	184	24	2	11	98	0	1	574	2277
5:15 PM	0	0	0	0	82	138	8	0	0	177	30	0	19	84	0	0	538	2263
5:30 PM	0	0	0	0	79	147	11	0	0	176	31	0	15	103	0	0	562	2271
5:45 PM	0	0	0	0	65	145	15	0	0	196	29	0	21	79	0	0	550	2224
6:00 PM	0	0	0	0	89	173	16	0	0	176	26	0	19	82	0	0	581	2231
6:15 PM	0	0	0	0	103	142	12	0	0	163	33	0	10	71	0	0	534	2227
6:30 PM	0	0	0	0	87	167	24	0	0	148	40	0	16	71	0	1	554	2219
6:45 PM	0	0	0	0	49	143	24	0	0	162	32	0	17	89	0	1	517	2186

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	352	692	36	0	0	784	124	0	36	360	0	4	2388
Heavy Trucks	0	0	0		8	32	0		0	40	0		0	12	0		92
Pedestrians		192				400				488				708			1788
Bicycles	0	1	0		0	2	0		3	2	0		0	1	0		9
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/5/2017 5:35 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

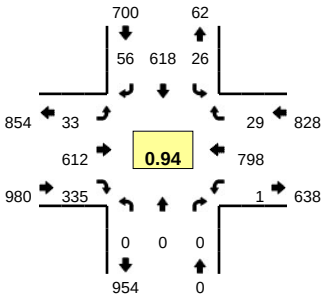
LOCATION: 9th St NW -- Massachusetts Ave NW/ Mt Vernon

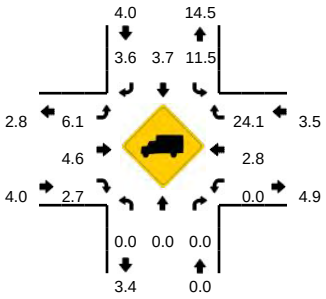
QC JOB #: 14426111

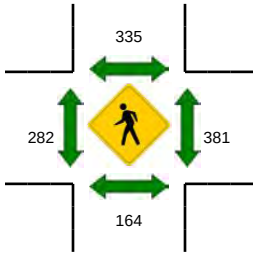
CITY/STATE: Washington, DC

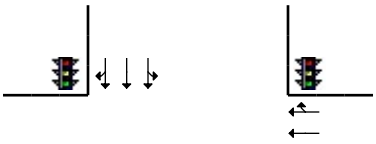
DATE: Sat, May 20 2017

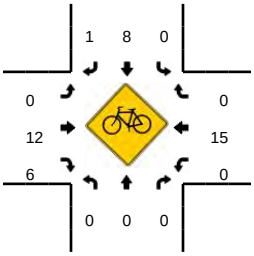
Peak-Hour: 1:00 PM -- 2:00 PM
Peak 15-Min: 1:45 PM -- 2:00 PM

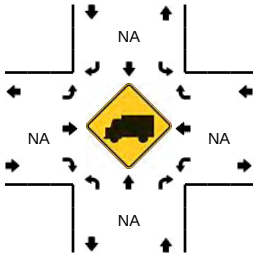


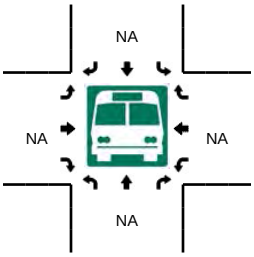












15-Min Count Period Beginning At	9th St NW (Northbound)				9th St NW (Southbound)				Massachusetts Ave NW/ Mt Vernon (Eastbound)				Massachusetts Ave NW/ Mt Vernon (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
10:00 AM	0	0	0	0	5	147	21	0	5	180	64	0	0	168	9	0	599	
10:15 AM	0	0	0	0	5	155	19	0	2	168	65	0	0	150	4	0	568	
10:30 AM	0	0	0	0	6	113	21	0	1	173	58	0	3	192	5	0	572	
10:45 AM	0	0	0	0	5	146	19	0	1	168	74	0	0	172	8	0	593	2332
11:00 AM	0	0	0	0	5	144	14	0	6	151	83	0	0	176	11	0	590	2323
11:15 AM	0	0	0	0	6	147	21	0	3	168	55	0	0	178	8	0	586	2341
11:30 AM	0	0	0	0	6	123	23	0	7	181	59	0	0	173	8	0	580	2349
11:45 AM	0	0	0	0	9	156	12	0	6	174	80	0	0	162	6	0	605	2361
12:00 PM	0	0	0	0	7	155	22	0	9	184	79	0	0	182	13	1	652	2423
12:15 PM	0	0	0	0	5	142	26	0	25	124	66	0	0	181	13	0	582	2419
12:30 PM	0	0	0	0	2	143	23	0	7	170	93	0	0	156	13	0	607	2446
12:45 PM	0	0	0	0	12	136	17	0	9	167	84	0	0	183	9	0	617	2458
1:00 PM	0	0	0	0	6	142	17	0	6	144	78	0	0	181	9	0	583	2389
1:15 PM	0	0	0	0	6	145	20	0	8	154	75	0	1	204	7	0	620	2427
1:30 PM	0	0	0	0	4	161	12	0	10	159	89	0	0	196	6	0	637	2457
1:45 PM	0	0	0	0	10	170	7	0	9	155	93	0	0	217	7	0	668	2508

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	40	680	28	0	36	620	372	0	0	868	28	0	2672
Heavy Trucks	0	0	0		4	12	0		0	32	16		0	24	4		92
Pedestrians		140				388				280				380			1188
Bicycles	0	0	0		0	3	0		0	3	1		0	3	0		10
Railroad																	
Stopped Buses																	

Comments:

Report generated on 6/5/2017 5:35 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: 9th St NW -- Massachusetts Ave NW/ Mt Vernon

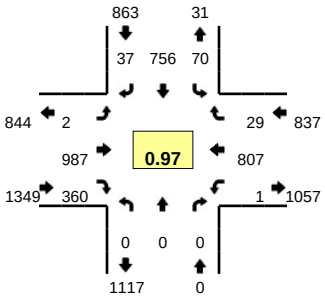
QC JOB #: 14426112

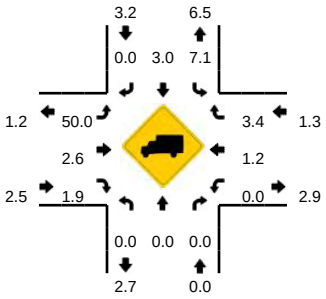
CITY/STATE: Washington, DC

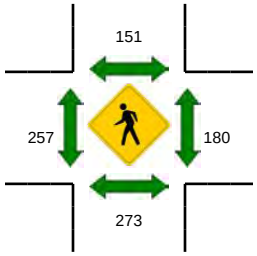
DATE: Wed, May 24 2017

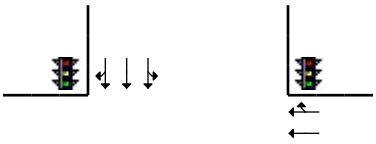
Peak-Hour: 4:45 PM -- 5:45 PM

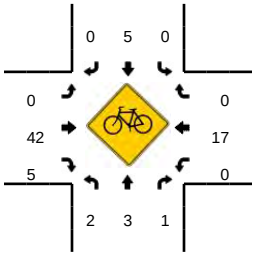
Peak 15-Min: 4:45 PM -- 5:00 PM

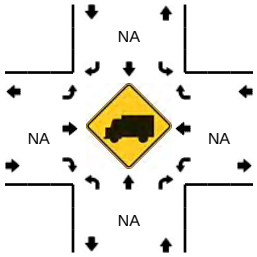


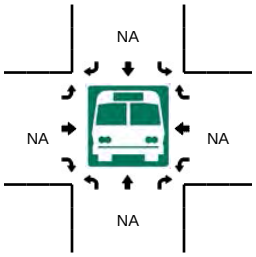












15-Min Count Period Beginning At	9th St NW (Northbound)				9th St NW (Southbound)				Massachusetts Ave NW/ Mt Vernon (Eastbound)				Massachusetts Ave NW/ Mt Vernon (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	16	189	10	0	1	265	91	0	0	194	9	0	775	
4:15 PM	0	0	0	0	18	212	10	0	0	227	93	0	0	178	16	0	754	
4:30 PM	0	0	0	0	15	193	11	0	2	214	74	0	1	197	16	0	723	
4:45 PM	0	0	0	0	18	195	10	0	1	254	94	0	1	211	2	0	786	3038
5:00 PM	0	0	0	0	15	161	8	0	0	219	94	0	0	227	12	0	736	2999
5:15 PM	0	0	0	0	15	196	4	0	0	257	82	0	0	193	10	0	757	3002
5:30 PM	0	0	0	0	22	204	15	0	1	257	90	0	0	176	5	0	770	3049
5:45 PM	0	0	0	0	8	212	11	0	0	266	83	0	0	165	7	0	752	3015
6:00 PM	0	0	0	0	17	187	11	0	0	221	62	0	0	233	7	0	738	3017
6:15 PM	0	0	0	0	5	216	10	1	0	234	100	0	0	195	16	0	777	3037
6:30 PM	0	0	0	0	25	155	7	0	0	245	82	0	0	167	6	0	687	2954
6:45 PM	0	0	0	0	10	145	8	0	3	203	76	0	0	173	7	0	625	2827

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	72	780	40	0	4	1016	376	0	4	844	8	0	3144
Heavy Trucks	0	0	0		0	20	0		4	24	4		0	16	0		68
Pedestrians		228				128				244				184			784
Bicycles	0	1	0		0	1	0		0	7	2		0	3	0		14
Railroad																	
Stopped Buses																	

Comments:

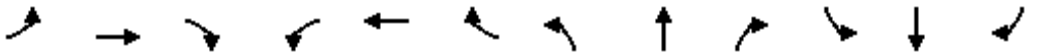
Report generated on 6/5/2017 5:35 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Queuing Observations (PM Peak Hour)

APPENDIX C
SYNCHRO 9 OUTPUTS

Stantec



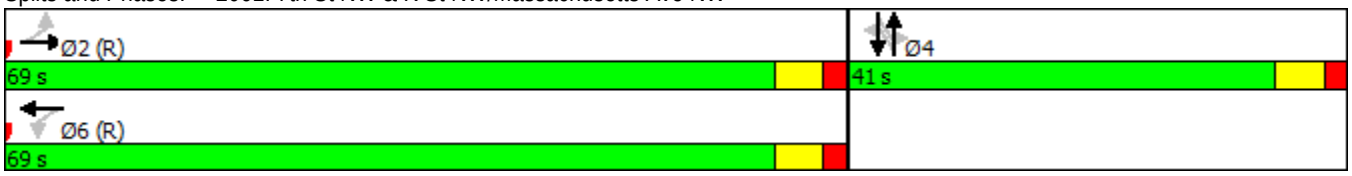
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	1061	62	1	401	348	12	653	49	13	197	24
Future Volume (vph)	20	1061	62	1	401	348	12	653	49	13	197	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	12	12	10	10	10	9	9	9
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor		0.98			0.83			0.97			0.96	
Frt		0.992			0.930			0.990			0.985	
Flt Protected		0.999						0.999			0.997	
Satd. Flow (prot)	0	3240	0	0	2686	0	0	3068	0	0	2811	0
Flt Permitted		0.931			0.954			0.947			0.896	
Satd. Flow (perm)	0	3014	0	0	2563	0	0	2896	0	0	2513	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9						7			12	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		576			341			401			151	
Travel Time (s)		13.1			7.8			9.1			3.4	
Confl. Peds. (#/hr)	439		265	265		439	280		522	522		280
Confl. Bikes (#/hr)			16			3			27			11
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	3%	3%	0%	5%	1%	0%	6%	2%	23%	9%	8%
Parking (#/hr)		0										
Adj. Flow (vph)	21	1117	65	1	422	366	13	687	52	14	207	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1203	0	0	789	0	0	752	0	0	246	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.07	1.00	1.00	1.00	1.00	1.09	1.09	1.09	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			4	
Permitted Phases	2			6			4			4		
Minimum Split (s)	28.0	28.0		28.0	28.0		29.0	29.0		29.0	29.0	
Total Split (s)	69.0	69.0		69.0	69.0		41.0	41.0		41.0	41.0	
Total Split (%)	62.7%	62.7%		62.7%	62.7%		37.3%	37.3%		37.3%	37.3%	
Maximum Green (s)	63.0	63.0		63.0	63.0		35.0	35.0		35.0	35.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.0			6.0			6.0			6.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0		16.0	16.0		16.0	16.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	

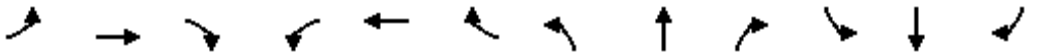
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)		63.0			63.0			35.0			35.0	
Actuated g/C Ratio		0.57			0.57			0.32			0.32	
v/c Ratio		0.70			0.54			0.81			0.30	
Control Delay		23.2			16.2			42.4			10.8	
Queue Delay		1.5			0.0			9.8			0.0	
Total Delay		24.7			16.2			52.1			10.8	
LOS		C			B			D			B	
Approach Delay		24.7			16.2			52.1			10.8	
Approach LOS		C			B			D			B	
Queue Length 50th (ft)		429			171			253			27	
Queue Length 95th (ft)		m111			225			331			m35	
Internal Link Dist (ft)		496			261			321			71	
Turn Bay Length (ft)												
Base Capacity (vph)		1730			1467			926			807	
Starvation Cap Reductn		324			0			0			0	
Spillback Cap Reductn		0			0			152			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.86			0.54			0.97			0.30	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 24 (22%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 60			
Control Type: Pretimed			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 28.2		Intersection LOS: C	
Intersection Capacity Utilization 85.0%		ICU Level of Service E	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2061: 7th St NW & K St NW/Massachusetts Ave NW





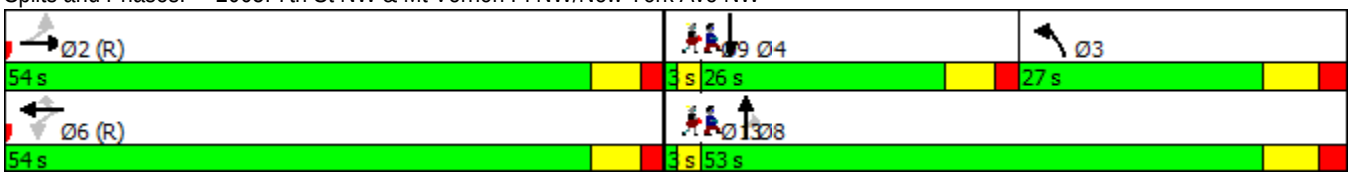
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	1283	75	2	483	41	416	627	93	0	230	66
Future Volume (vph)	10	1283	75	2	483	41	416	627	93	0	230	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	11	11	11	12	11	11	11
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor		0.98				0.71	0.73		0.66		0.91	
Frt		0.992				0.850			0.850		0.967	
Flt Protected							0.950					
Satd. Flow (prot)	0	3347	0	0	3505	1487	1728	3323	1615	0	2845	0
Flt Permitted		0.951			0.945		0.950					
Satd. Flow (perm)	0	3180	0	0	3312	1053	1267	3323	1071	0	2845	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7				119			50		30	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		574			375			144			280	
Travel Time (s)		13.0			8.5			3.3			6.4	
Confl. Peds. (#/hr)	147		248	248		147	360		322	322		360
Confl. Bikes (#/hr)			5			1			41			10
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	70%	1%	3%	0%	3%	5%	1%	5%	0%	0%	8%	6%
Adj. Flow (vph)	10	1336	78	2	503	43	433	653	97	0	240	69
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1424	0	0	505	43	433	653	97	0	309	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			8			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.00	1.04	1.04	1.04	1.00	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA	Perm		NA	
Protected Phases		2			6		3	8			4	
Permitted Phases	2			6		6			8			
Minimum Split (s)	27.0	27.0		24.0	24.0	24.0	25.0	33.0	33.0		21.0	
Total Split (s)	54.0	54.0		54.0	54.0	54.0	27.0	53.0	53.0		26.0	
Total Split (%)	49.1%	49.1%		49.1%	49.1%	49.1%	24.5%	48.2%	48.2%		23.6%	
Maximum Green (s)	48.0	48.0		48.0	48.0	48.0	20.0	46.0	46.0		20.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.5	4.5	4.5		4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.5	2.5	2.5		2.0	
Lost Time Adjust (s)		-1.5			-1.5	-1.5	-1.5	-1.5	-1.5		-1.5	
Total Lost Time (s)		4.5			4.5	4.5	5.5	5.5	5.5		4.5	
Lead/Lag											Lag	
Lead-Lag Optimize?											Yes	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0		4.0	4.0		4.0	
Flash Dont Walk (s)	14.0	14.0		10.0	10.0	10.0		22.0	22.0		10.0	
Pedestrian Calls (#/hr)	0	0		0	0	0		0	0		0	
Act Effct Green (s)		49.5			49.5	49.5	21.5	47.5	47.5		21.5	

Lane Group	Ø9	Ø13
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Turn Type		
Protected Phases	9	13
Permitted Phases		
Minimum Split (s)	3.0	3.0
Total Split (s)	3.0	3.0
Total Split (%)	3%	3%
Maximum Green (s)	1.0	1.0
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	
Lead-Lag Optimize?	Yes	
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio		0.45			0.45	0.45	0.20	0.43	0.43		0.20	
v/c Ratio		0.99			0.34	0.08	1.28	0.46	0.20		0.53	
Control Delay		39.0			20.4	0.3	176.4	15.8	6.8		39.6	
Queue Delay		37.8			0.0	0.0	1.1	1.1	0.0		0.0	
Total Delay		76.8			20.4	0.3	177.6	16.9	6.8		39.6	
LOS		E			C	A	F	B	A		D	
Approach Delay		76.8			18.9			74.9			39.6	
Approach LOS		E			B			E			D	
Queue Length 50th (ft)		566			118	0	~396	102	7		93	
Queue Length 95th (ft)		#706			159	0	m#553	128	m21		140	
Internal Link Dist (ft)		494			295			64			200	
Turn Bay Length (ft)												
Base Capacity (vph)		1434			1490	539	337	1434	490		580	
Starvation Cap Reductn		176			0	0	32	508	0		0	
Spillback Cap Reductn		0			0	0	0	0	0		0	
Storage Cap Reductn		0			0	0	0	0	0		0	
Reduced v/c Ratio		1.13			0.34	0.08	1.42	0.71	0.20		0.53	

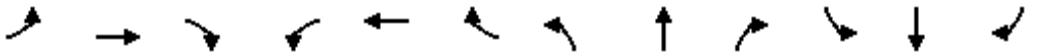
Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 30 (27%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 110			
Control Type: Pretimed			
Maximum v/c Ratio: 1.28			
Intersection Signal Delay: 63.6		Intersection LOS: E	
Intersection Capacity Utilization 92.2%		ICU Level of Service F	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 2065: 7th St NW & Mt Vernon Pl NW/New York Ave NW



Lane Group	Ø9	Ø13
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	784	116	57	380	0	0	0	0	360	645	39
Future Volume (vph)	0	784	116	57	380	0	0	0	0	360	645	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	9	10	9	12	12	12	12	12	12	13	12	12
Lane Util. Factor	1.00	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.86	0.86	1.00
Ped Bike Factor			0.65							0.66	0.94	0.62
Frt			0.850									0.850
Flt Protected					0.994					0.950	0.992	
Satd. Flow (prot)	0	3240	1425	0	3394	0	0	0	0	1573	4689	1615
Flt Permitted					0.581					0.950	0.992	
Satd. Flow (perm)	0	3240	922	0	1984	0	0	0	0	1031	4418	1006
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			94									50
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		585			576			255			113	
Travel Time (s)		13.3			13.1			5.8			2.6	
Confl. Peds. (#/hr)	485		218	218		485	514		561	561		514
Confl. Bikes (#/hr)			15			6			1			13
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	4%	2%	4%	6%	0%	0%	0%	0%	2%	4%	0%
Adj. Flow (vph)	0	825	122	60	400	0	0	0	0	379	679	41
Shared Lane Traffic (%)										32%		
Lane Group Flow (vph)	0	825	122	0	460	0	0	0	0	258	800	41
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		22			0			13			13	
Link Offset(ft)		0			-22			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.14	1.09	1.14	1.00	1.00	1.00	1.00	1.00	1.00	0.96	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type		NA	Perm	Perm	NA					Prot	NA	Perm
Protected Phases		6			2					7	4	
Permitted Phases			6	2								4
Minimum Split (s)		20.0	20.0	24.0	24.0					11.5	32.5	32.5
Total Split (s)		35.5	35.5	35.5	35.5					40.5	71.5	71.5
Total Split (%)		32.3%	32.3%	32.3%	32.3%					36.8%	65.0%	65.0%
Maximum Green (s)		29.5	29.5	29.5	29.5					34.0	65.0	65.0
Yellow Time (s)		4.0	4.0	4.0	4.0					4.0	4.0	4.0
All-Red Time (s)		2.0	2.0	2.0	2.0					2.5	2.5	2.5
Lost Time Adjust (s)		-1.5	-1.5		-1.5					-1.5	-1.5	-1.5
Total Lost Time (s)		4.5	4.5		4.5					5.0	5.0	5.0
Lead/Lag		Lag	Lag	Lag	Lag					Lag		
Lead-Lag Optimize?		Yes	Yes	Yes	Yes					Yes		
Walk Time (s)		4.0	4.0	4.0	4.0						7.0	7.0
Flash Dont Walk (s)		10.0	10.0	14.0	14.0						19.0	19.0
Pedestrian Calls (#/hr)		0	0	0	0						0	0
Act Effct Green (s)		31.0	31.0		31.0					35.5	66.5	66.5

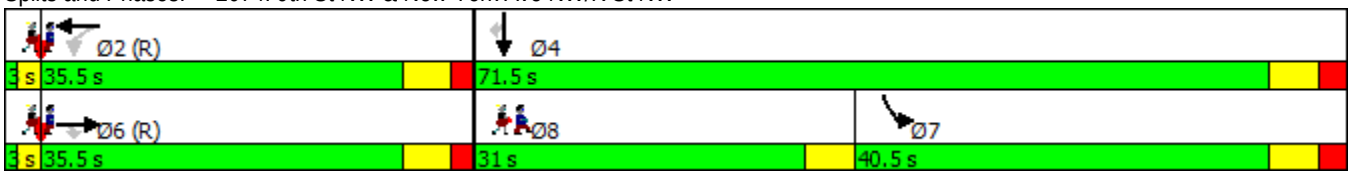
Lane Group	Ø1	Ø5	Ø8
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Lane Width (ft)			
Lane Util. Factor			
Ped Bike Factor			
Frt			
Flt Protected			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Right Turn on Red			
Satd. Flow (RTOR)			
Link Speed (mph)			
Link Distance (ft)			
Travel Time (s)			
Confl. Peds. (#/hr)			
Confl. Bikes (#/hr)			
Peak Hour Factor			
Heavy Vehicles (%)			
Adj. Flow (vph)			
Shared Lane Traffic (%)			
Lane Group Flow (vph)			
Enter Blocked Intersection			
Lane Alignment			
Median Width(ft)			
Link Offset(ft)			
Crosswalk Width(ft)			
Two way Left Turn Lane			
Headway Factor			
Turning Speed (mph)			
Turn Type			
Protected Phases	1	5	8
Permitted Phases			
Minimum Split (s)	3.0	3.0	31.0
Total Split (s)	3.0	3.0	31.0
Total Split (%)	3%	3%	28%
Maximum Green (s)	1.0	1.0	27.0
Yellow Time (s)	2.0	2.0	4.0
All-Red Time (s)	0.0	0.0	0.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes
Walk Time (s)			7.0
Flash Dont Walk (s)			20.0
Pedestrian Calls (#/hr)			0
Act Effct Green (s)			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio		0.28	0.28		0.28					0.32	0.60	0.60
v/c Ratio		0.90	0.37		0.91dl					0.51	0.36	0.07
Control Delay		52.6	13.5		69.9					17.6	5.7	0.4
Queue Delay		1.0	0.0		0.0					2.1	0.3	0.0
Total Delay		53.6	13.5		69.9					19.7	6.1	0.4
LOS		D	B		E					B	A	A
Approach Delay		48.5			69.9						9.1	
Approach LOS		D			E						A	
Queue Length 50th (ft)		295	15		184					73	42	0
Queue Length 95th (ft)		#410	66		m#253					m132	51	m1
Internal Link Dist (ft)		505			496			175			33	
Turn Bay Length (ft)												
Base Capacity (vph)		913	327		559					507	2251	627
Starvation Cap Reductn		0	0		0					136	802	0
Spillback Cap Reductn		17	0		0					0	4	0
Storage Cap Reductn		0	0		0					0	0	0
Reduced v/c Ratio		0.92	0.37		0.82					0.70	0.55	0.07

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBT, Start of Green			
Natural Cycle: 80			
Control Type: Pretimed			
Maximum v/c Ratio: 0.90			
Intersection Signal Delay: 35.1		Intersection LOS: D	
Intersection Capacity Utilization 70.0%		ICU Level of Service C	
Analysis Period (min) 15			

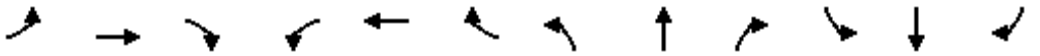
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.
dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 2074: 9th St NW & New York Ave NW/K St NW



Lane Group	Ø1	Ø5	Ø8
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
Queue Length 50th (ft)			
Queue Length 95th (ft)			
Internal Link Dist (ft)			
Turn Bay Length (ft)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			

Intersection Summary



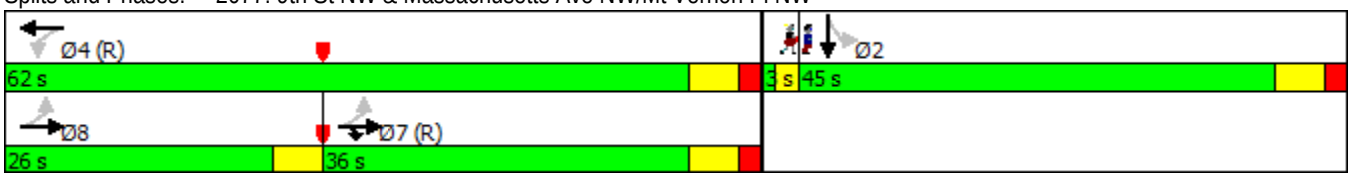
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	1298	360	1	935	29	0	0	0	70	756	37
Future Volume (vph)	2	1298	360	1	935	29	0	0	0	70	756	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	12	12	12	11	11	11
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	0.95	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		1.00			0.99						0.96	
Frt			0.850		0.995						0.994	
Flt Protected											0.996	
Satd. Flow (prot)	0	3269	1478	0	3292	0	0	0	0	0	3300	0
Flt Permitted		0.954			0.954						0.996	
Satd. Flow (perm)	0	3118	1478	0	3141	0	0	0	0	0	3221	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			265		4						5	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		334			574			169			292	
Travel Time (s)		7.6			13.0			3.8			6.6	
Confl. Peds. (#/hr)	151		275	275		151	262		180	180		262
Confl. Bikes (#/hr)			42			17			3			5
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	50%	3%	2%	0%	1%	3%	0%	0%	0%	7%	3%	0%
Adj. Flow (vph)	2	1338	371	1	964	30	0	0	0	72	779	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1340	371	0	995	0	0	0	0	0	889	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.00	1.00	1.00	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	custom	Perm	NA					Perm	NA	
Protected Phases		8 7	7		4						2	
Permitted Phases	8 7			4						2		
Minimum Split (s)			11.0	27.0	27.0					26.0	26.0	
Total Split (s)			36.0	62.0	62.0					45.0	45.0	
Total Split (%)			32.7%	56.4%	56.4%					40.9%	40.9%	
Maximum Green (s)			30.0	56.0	56.0					39.0	39.0	
Yellow Time (s)			4.0	4.0	4.0					4.0	4.0	
All-Red Time (s)			2.0	2.0	2.0					2.0	2.0	
Lost Time Adjust (s)			-1.5		-1.5						-1.5	
Total Lost Time (s)			4.5		4.5						4.5	
Lead/Lag			Lag							Lag	Lag	
Lead-Lag Optimize?			Yes							Yes	Yes	
Walk Time (s)				7.0	7.0					7.0	7.0	
Flash Dont Walk (s)				14.0	14.0					13.0	13.0	
Pedestrian Calls (#/hr)				0	0					0	0	
Act Effct Green (s)		59.5	31.5		57.5						40.5	

Lane Group	Ø1	Ø8
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Turn Type		
Protected Phases	1	8
Permitted Phases		
Minimum Split (s)	3.0	26.0
Total Split (s)	3.0	26.0
Total Split (%)	3%	24%
Maximum Green (s)	1.0	22.0
Yellow Time (s)	2.0	4.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Walk Time (s)		7.0
Flash Dont Walk (s)		15.0
Pedestrian Calls (#/hr)		0
Act Effct Green (s)		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio		0.54	0.29		0.52						0.37	
v/c Ratio		0.79	0.61		0.61						0.75	
Control Delay		24.8	14.5		9.4						34.9	
Queue Delay		33.3	0.0		0.3						0.0	
Total Delay		58.1	14.5		9.7						34.9	
LOS		E	B		A						C	
Approach Delay		48.6			9.7						34.9	
Approach LOS		D			A						C	
Queue Length 50th (ft)		382	58		90						283	
Queue Length 95th (ft)		480	159		m114						361	
Internal Link Dist (ft)		254			494			89			212	
Turn Bay Length (ft)												
Base Capacity (vph)		1686	612		1643						1189	
Starvation Cap Reductn		0	0		169						0	
Spillback Cap Reductn		426	0		0						0	
Storage Cap Reductn		0	0		0						0	
Reduced v/c Ratio		1.06	0.61		0.68						0.75	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 23 (21%), Referenced to phase 4:WBTL and 7:EBTL, Start of Green			
Natural Cycle: 70			
Control Type: Pretimed			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 34.4		Intersection LOS: C	
Intersection Capacity Utilization 93.5%		ICU Level of Service F	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 2077: 9th St NW & Massachusetts Ave NW/Mt Vernon Pl NW



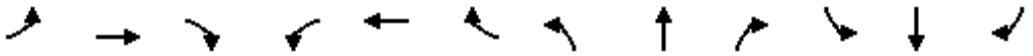
Lane Group	Ø1	Ø8
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1	172	964	57	74	233
Future Volume (Veh/h)	1	172	964	57	74	233
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	1	183	1026	61	79	248
Pedestrians	531		377			1
Lane Width (ft)	12.0		10.0			9.0
Walking Speed (ft/s)	3.5		3.5			3.5
Percent Blockage	51		30			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			151			144
pX, platoon unblocked	0.93					
vC, conflicting volume	2246	819			1618	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2188	819			1618	
tC, single (s)	6.8	7.0			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	87	0			61	
cM capacity (veh/h)	8	156			202	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2
Volume Total	184	293	293	293	208	162	165
Volume Left	1	0	0	0	0	79	0
Volume Right	183	0	0	0	61	0	0
cSH	142	1700	1700	1700	1700	202	1700
Volume to Capacity	1.30	0.17	0.17	0.17	0.12	0.39	0.10
Queue Length 95th (ft)	284	0	0	0	0	43	0
Control Delay (s)	236.9	0.0	0.0	0.0	0.0	23.7	0.0
Lane LOS	F					C	
Approach Delay (s)	236.9	0.0				11.7	
Approach LOS	F						

Intersection Summary			
Average Delay	29.7		
Intersection Capacity Utilization	45.0%	ICU Level of Service	A
Analysis Period (min)	15		



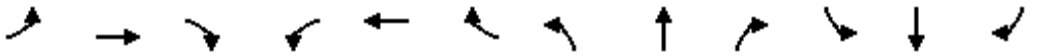
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	232	402	29	11	223	89	26	335	25	93	205	91
Future Volume (vph)	232	402	29	11	223	89	26	335	25	93	205	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	12	12	10	10	10	9	9	9
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor		0.94			0.92			0.97			0.89	
Frt		0.993			0.958			0.990			0.965	
Flt Protected		0.983			0.998			0.997			0.988	
Satd. Flow (prot)	0	3108	0	0	3020	0	0	3170	0	0	2716	0
Flt Permitted		0.713			0.929			0.903			0.716	
Satd. Flow (perm)	0	2123	0	0	2807	0	0	2839	0	0	1900	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			53			8			44	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		576			341			389			151	
Travel Time (s)		13.1			7.8			8.8			3.4	
Confl. Peds. (#/hr)	195		97	97		195	266		209	209		266
Confl. Bikes (#/hr)			11			5			14			17
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	9%	4%	3%	6%	5%	2%	3%	4%	9%	5%	3%
Parking (#/hr)		0										
Adj. Flow (vph)	242	419	30	11	232	93	27	349	26	97	214	95
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	691	0	0	336	0	0	402	0	0	406	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.07	1.00	1.00	1.00	1.00	1.09	1.09	1.09	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			4	
Permitted Phases	2			6			4			4		
Minimum Split (s)	28.0	28.0		28.0	28.0		29.0	29.0		29.0	29.0	
Total Split (s)	60.0	60.0		60.0	60.0		40.0	40.0		40.0	40.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Maximum Green (s)	54.0	54.0		54.0	54.0		34.0	34.0		34.0	34.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.0			6.0			6.0			6.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0		16.0	16.0		16.0	16.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)		54.0			54.0			34.0			34.0	
Actuated g/C Ratio		0.54			0.54			0.34			0.34	
v/c Ratio		0.60			0.22			0.41			0.60	
Control Delay		32.1			10.4			26.4			39.0	
Queue Delay		0.0			0.0			0.0			0.4	
Total Delay		32.1			10.4			26.5			39.4	
LOS		C			B			C			D	
Approach Delay		32.1			10.4			26.5			39.4	
Approach LOS		C			B			C			D	
Queue Length 50th (ft)		193			45			100			128	
Queue Length 95th (ft)		239			70			143			179	
Internal Link Dist (ft)		496			261			309			71	
Turn Bay Length (ft)												
Base Capacity (vph)		1149			1540			970			675	
Starvation Cap Reductn		0			0			0			51	
Spillback Cap Reductn		3			5			22			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.60			0.22			0.42			0.65	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 67 (67%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 60
Control Type: Pretimed
Maximum v/c Ratio: 0.60
Intersection Signal Delay: 28.5 Intersection LOS: C
Intersection Capacity Utilization 95.7% ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 2061: 7th St NW & K St NW/Massachusetts Ave NW



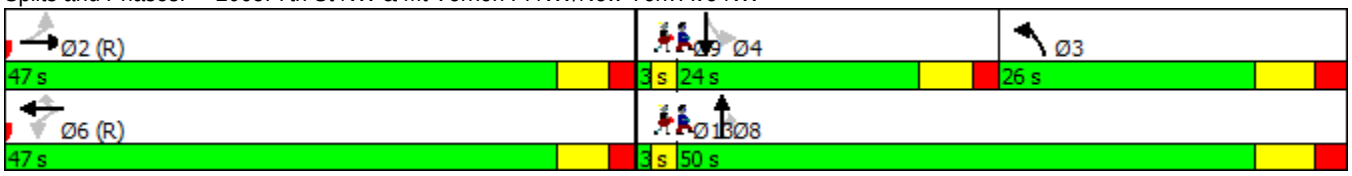
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	451	154	72	544	14	259	373	146	4	231	24
Future Volume (vph)	32	451	154	72	544	14	259	373	146	4	231	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	11	11	11	12	11	11	11
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	1.00	1.00	0.95	1.00	0.95	0.95	0.95
Ped Bike Factor		0.95			0.99	0.76	0.75		0.75		0.96	
Frt		0.964				0.850			0.850		0.986	
Flt Protected		0.997			0.994		0.950				0.999	
Satd. Flow (prot)	0	3047	0	0	3498	1210	1662	3292	1553	0	3167	0
Flt Permitted		0.892			0.741		0.950				0.947	
Satd. Flow (perm)	0	2716	0	0	2591	922	1243	3292	1158	0	2995	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		52				131			135		9	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		574			375			144			280	
Travel Time (s)		13.0			8.5			3.3			6.4	
Confl. Peds. (#/hr)	130		121	121		130	291		211	211		291
Confl. Bikes (#/hr)			7			3			13			21
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	9%	6%	2%	7%	2%	29%	5%	6%	4%	0%	4%	12%
Adj. Flow (vph)	33	465	159	74	561	14	267	385	151	4	238	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	657	0	0	635	14	267	385	151	0	267	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			8			11			11	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.00	1.04	1.04	1.04	1.00	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA	Perm	Perm	NA	
Protected Phases		2			6		3	8			4	
Permitted Phases	2			6		6			8	4		
Minimum Split (s)	27.0	27.0		24.0	24.0	24.0	25.0	33.0	33.0	21.0	21.0	
Total Split (s)	47.0	47.0		47.0	47.0	47.0	26.0	50.0	50.0	24.0	24.0	
Total Split (%)	47.0%	47.0%		47.0%	47.0%	47.0%	26.0%	50.0%	50.0%	24.0%	24.0%	
Maximum Green (s)	41.0	41.0		41.0	41.0	41.0	19.0	43.0	43.0	18.0	18.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.5	4.5	4.5	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.5	2.5	2.5	2.0	2.0	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0	0.0		0.0	
Total Lost Time (s)		6.0			6.0	6.0	7.0	7.0	7.0		6.0	
Lead/Lag										Lag	Lag	
Lead-Lag Optimize?										Yes	Yes	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0		4.0	4.0	4.0	4.0	
Flash Dont Walk (s)	14.0	14.0		10.0	10.0	10.0		22.0	22.0	10.0	10.0	
Pedestrian Calls (#/hr)	0	0		0	0	0		0	0	0	0	
Act Effct Green (s)		41.0			41.0	41.0	19.0	43.0	43.0		18.0	

Lane Group	Ø9	Ø13
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Turn Type		
Protected Phases	9	13
Permitted Phases		
Minimum Split (s)	3.0	3.0
Total Split (s)	3.0	3.0
Total Split (%)	3%	3%
Maximum Green (s)	1.0	1.0
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	
Lead-Lag Optimize?	Yes	
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio		0.41			0.41	0.41	0.19	0.43	0.43		0.18	
v/c Ratio		0.57			0.60	0.03	0.85	0.27	0.26		0.49	
Control Delay		11.5			26.0	0.1	58.4	16.9	5.0		39.1	
Queue Delay		0.0			0.0	0.0	3.9	0.7	0.0		0.0	
Total Delay		11.5			26.0	0.1	62.2	17.6	5.0		39.1	
LOS		B			C	A	E	B	A		D	
Approach Delay		11.5			25.4			30.1			39.1	
Approach LOS		B			C			C			D	
Queue Length 50th (ft)		157			163	0	129	72	9		78	
Queue Length 95th (ft)		215			222	0	#293	112	41		119	
Internal Link Dist (ft)		494			295			64			200	
Turn Bay Length (ft)												
Base Capacity (vph)		1144			1062	455	315	1415	574		546	
Starvation Cap Reductn		0			0	0	17	680	0		0	
Spillback Cap Reductn		0			0	0	0	0	0		0	
Storage Cap Reductn		0			0	0	0	0	0		0	
Reduced v/c Ratio		0.57			0.60	0.03	0.90	0.52	0.26		0.49	

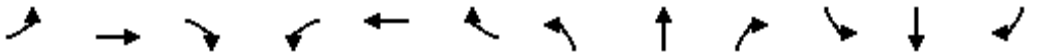
Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 52 (52%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 80			
Control Type: Pretimed			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 24.7		Intersection LOS: C	
Intersection Capacity Utilization 91.2%		ICU Level of Service F	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 2065: 7th St NW & Mt Vernon Pl NW/New York Ave NW



Lane Group	Ø9	Ø13
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary



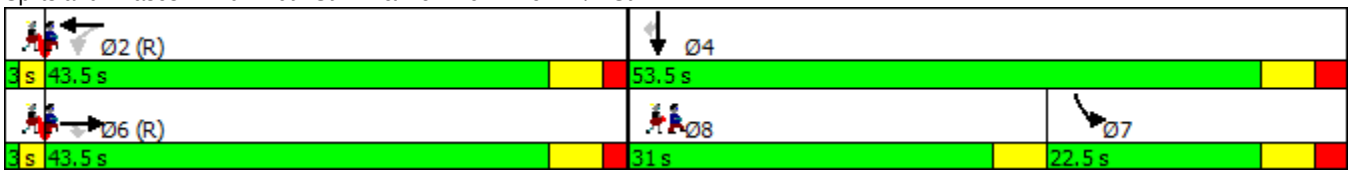
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	501	116	91	250	0	0	0	0	162	707	50
Future Volume (vph)	0	501	116	91	250	0	0	0	0	162	707	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	9	10	9	12	12	12	12	12	12	13	12	12
Lane Util. Factor	1.00	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.86	0.86	1.00
Ped Bike Factor			0.75		0.97					0.64	0.99	0.67
Frt			0.850									0.850
Flt Protected					0.987					0.950	0.999	
Satd. Flow (prot)	0	3271	1384	0	3420	0	0	0	0	1573	4756	1495
Flt Permitted					0.659					0.950	0.999	
Satd. Flow (perm)	0	3271	1032	0	2224	0	0	0	0	1001	4722	1004
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			104									55
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		559			576			255			113	
Travel Time (s)		12.7			13.1			5.8			2.6	
Confl. Peds. (#/hr)	203		115	115		203	348		330	330		348
Confl. Bikes (#/hr)			3			6						11
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	3%	5%	2%	5%	0%	0%	0%	0%	2%	3%	8%
Adj. Flow (vph)	0	522	121	95	260	0	0	0	0	169	736	52
Shared Lane Traffic (%)										10%		
Lane Group Flow (vph)	0	522	121	0	355	0	0	0	0	152	753	52
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		22			0			13			13	
Link Offset(ft)		0			-22			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.14	1.09	1.14	1.00	1.00	1.00	1.00	1.00	1.00	0.96	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type		NA	Perm	Perm	NA					Prot	NA	Perm
Protected Phases		6			2					7	4	
Permitted Phases			6	2								4
Minimum Split (s)		20.0	20.0	24.0	24.0					11.5	32.5	32.5
Total Split (s)		43.5	43.5	43.5	43.5					22.5	53.5	53.5
Total Split (%)		43.5%	43.5%	43.5%	43.5%					22.5%	53.5%	53.5%
Maximum Green (s)		37.5	37.5	37.5	37.5					16.0	47.0	47.0
Yellow Time (s)		4.0	4.0	4.0	4.0					4.0	4.0	4.0
All-Red Time (s)		2.0	2.0	2.0	2.0					2.5	2.5	2.5
Lost Time Adjust (s)		0.0	0.0		0.0					0.0	0.0	0.0
Total Lost Time (s)		6.0	6.0		6.0					6.5	6.5	6.5
Lead/Lag		Lag	Lag	Lag	Lag					Lag		
Lead-Lag Optimize?		Yes	Yes	Yes	Yes					Yes		
Walk Time (s)		4.0	4.0	4.0	4.0						7.0	7.0
Flash Dont Walk (s)		10.0	10.0	14.0	14.0						19.0	19.0
Pedestrian Calls (#/hr)		0	0	0	0						0	0
Act Effct Green (s)		37.5	37.5		37.5					16.0	47.0	47.0

Lane Group	Ø1	Ø5	Ø8
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Lane Width (ft)			
Lane Util. Factor			
Ped Bike Factor			
Frt			
Flt Protected			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Right Turn on Red			
Satd. Flow (RTOR)			
Link Speed (mph)			
Link Distance (ft)			
Travel Time (s)			
Confl. Peds. (#/hr)			
Confl. Bikes (#/hr)			
Peak Hour Factor			
Heavy Vehicles (%)			
Adj. Flow (vph)			
Shared Lane Traffic (%)			
Lane Group Flow (vph)			
Enter Blocked Intersection			
Lane Alignment			
Median Width(ft)			
Link Offset(ft)			
Crosswalk Width(ft)			
Two way Left Turn Lane			
Headway Factor			
Turning Speed (mph)			
Turn Type			
Protected Phases	1	5	8
Permitted Phases			
Minimum Split (s)	3.0	3.0	31.0
Total Split (s)	3.0	3.0	31.0
Total Split (%)	3%	3%	31%
Maximum Green (s)	1.0	1.0	27.0
Yellow Time (s)	2.0	2.0	4.0
All-Red Time (s)	0.0	0.0	0.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes
Walk Time (s)			7.0
Flash Dont Walk (s)			20.0
Pedestrian Calls (#/hr)			0
Act Effct Green (s)			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio		0.38	0.38		0.38					0.16	0.47	0.47
v/c Ratio		0.43	0.27		0.43					0.61	0.45	0.10
Control Delay		24.6	7.5		25.7					57.0	30.5	13.6
Queue Delay		0.0	0.0		0.0					0.0	0.9	0.0
Total Delay		24.6	7.5		25.7					57.0	31.4	13.6
LOS		C	A		C					E	C	B
Approach Delay		21.4			25.7						34.5	
Approach LOS		C			C						C	
Queue Length 50th (ft)		128	7		85					91	130	7
Queue Length 95th (ft)		175	45		134					m140	170	m18
Internal Link Dist (ft)		479			496			175			33	
Turn Bay Length (ft)												
Base Capacity (vph)		1226	452		834					251	1666	501
Starvation Cap Reductn		0	0		0					0	596	0
Spillback Cap Reductn		0	0		0					0	0	0
Storage Cap Reductn		0	0		0					0	0	0
Reduced v/c Ratio		0.43	0.27		0.43					0.61	0.70	0.10

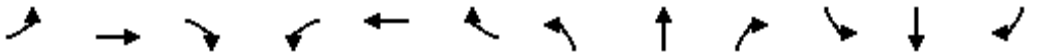
Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 16 (16%), Referenced to phase 2:WBTL and 6:EBT, Start of Green			
Natural Cycle: 70			
Control Type: Pretimed			
Maximum v/c Ratio: 0.61			
Intersection Signal Delay: 28.6		Intersection LOS: C	
Intersection Capacity Utilization 65.9%		ICU Level of Service C	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 2074: 9th St NW & New York Ave NW/K St NW



Lane Group	Ø1	Ø5	Ø8
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
Queue Length 50th (ft)			
Queue Length 95th (ft)			
Internal Link Dist (ft)			
Turn Bay Length (ft)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			

Intersection Summary



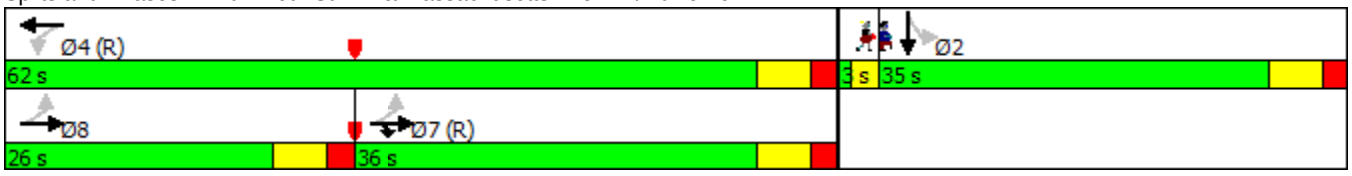
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	612	335	1	798	29	0	0	0	26	618	56
Future Volume (vph)	33	612	335	1	798	29	0	0	0	26	618	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	12	12	12	11	11	11
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	0.95	1.00	1.00	1.00	0.95	0.95	0.95
Ped Bike Factor		1.00			0.99						0.96	
Frt			0.850		0.995						0.988	
Flt Protected		0.997									0.998	
Satd. Flow (prot)	0	3293	1478	0	3247	0	0	0	0	0	3284	0
Flt Permitted		0.868			0.955						0.998	
Satd. Flow (perm)	0	2856	1478	0	3101	0	0	0	0	0	3240	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			356		6						9	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		334			574			169			292	
Travel Time (s)		7.6			13.0			3.8			6.6	
Confl. Peds. (#/hr)	335		164	164		335	282		381	381		282
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	35	651	356	1	849	31	0	0	0	28	657	60
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	686	356	0	881	0	0	0	0	0	745	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.09	1.09	1.09	1.09	1.09	1.00	1.00	1.00	1.04	1.04	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	custom	Perm	NA					Perm	NA	
Protected Phases		8 7	7		4						2	
Permitted Phases	8 7			4						2		
Minimum Split (s)			11.0	28.0	28.0					26.0	26.0	
Total Split (s)			36.0	62.0	62.0					35.0	35.0	
Total Split (%)			36.0%	62.0%	62.0%					35.0%	35.0%	
Maximum Green (s)			30.0	56.0	56.0					29.0	29.0	
Yellow Time (s)			4.0	4.0	4.0					4.0	4.0	
All-Red Time (s)			2.0	2.0	2.0					2.0	2.0	
Lost Time Adjust (s)			0.0		0.0						0.0	
Total Lost Time (s)			6.0		6.0						6.0	
Lead/Lag			Lag							Lag	Lag	
Lead-Lag Optimize?			Yes							Yes	Yes	
Walk Time (s)				7.0	7.0					7.0	7.0	
Flash Dont Walk (s)				14.0	14.0					13.0	13.0	
Pedestrian Calls (#/hr)				0	0					0	0	
Act Effct Green (s)		56.0	30.0		56.0						29.0	
Actuated g/C Ratio		0.56	0.30		0.56						0.29	
v/c Ratio		0.43	0.51		0.51						0.79	

Lane Group	Ø1	Ø8
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Peak Hour Factor		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Turn Type		
Protected Phases	1	8
Permitted Phases		
Minimum Split (s)	3.0	26.0
Total Split (s)	3.0	26.0
Total Split (%)	3%	26%
Maximum Green (s)	1.0	20.0
Yellow Time (s)	2.0	4.0
All-Red Time (s)	0.0	2.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Walk Time (s)		7.0
Flash Dont Walk (s)		15.0
Pedestrian Calls (#/hr)		0
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay		13.8	5.9		8.4						39.4	
Queue Delay		0.0	0.0		0.0						0.0	
Total Delay		13.8	5.9		8.4						39.4	
LOS		B	A		A						D	
Approach Delay		11.1			8.4						39.4	
Approach LOS		B			A						D	
Queue Length 50th (ft)		125	0		57						226	
Queue Length 95th (ft)		168	66		m115						298	
Internal Link Dist (ft)		254			494			89			212	
Turn Bay Length (ft)												
Base Capacity (vph)		1599	692		1739						945	
Starvation Cap Reductn		0	0		0						0	
Spillback Cap Reductn		0	0		0						0	
Storage Cap Reductn		0	0		0						0	
Reduced v/c Ratio		0.43	0.51		0.51						0.79	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 54 (54%), Referenced to phase 4:WBTL and 7:EBTL, Start of Green			
Natural Cycle: 70			
Control Type: Pretimed			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 18.1		Intersection LOS: B	
Intersection Capacity Utilization 86.7%		ICU Level of Service E	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 2077: 9th St NW & Massachusetts Ave NW/Mt Vernon Pl NW



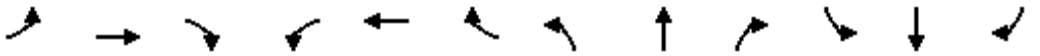
Lane Group	Ø1	Ø8
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	13	247	531	125	80	377
Future Volume (Veh/h)	13	247	531	125	80	377
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	13	252	542	128	82	385
Pedestrians	239		150			
Lane Width (ft)	12.0		12.0			
Walking Speed (ft/s)	3.5		3.5			
Percent Blockage	23		14			
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			151			144
pX, platoon unblocked	0.94					
vC, conflicting volume	1352	438			909	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1239	438			909	
tC, single (s)	7.0	7.0			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.3			2.2	
p0 queue free %	85	42			86	
cM capacity (veh/h)	85	435			585	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2
Volume Total	265	155	155	155	205	210	257
Volume Left	13	0	0	0	0	82	0
Volume Right	252	0	0	0	128	0	0
cSH	362	1700	1700	1700	1700	585	1700
Volume to Capacity	0.73	0.09	0.09	0.09	0.12	0.14	0.15
Queue Length 95th (ft)	140	0	0	0	0	12	0
Control Delay (s)	37.8	0.0	0.0	0.0	0.0	5.9	0.0
Lane LOS	E					A	
Approach Delay (s)	37.8	0.0				2.6	
Approach LOS	E						

Intersection Summary			
Average Delay	8.0		
Intersection Capacity Utilization	52.1%	ICU Level of Service	A
Analysis Period (min)	15		

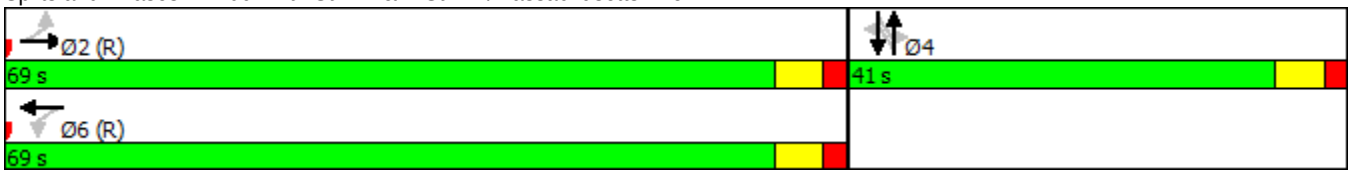


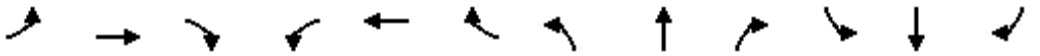
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	93	1120	70	1	431	384	17	692	51	14	206	25
Future Volume (vph)	93	1120	70	1	431	384	17	692	51	14	206	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	12	12	10	10	10	9	9	9
Satd. Flow (prot)	0	3221	0	0	2667	0	0	3063	0	0	2786	0
Flt Permitted		0.735			0.954			0.943			0.869	
Satd. Flow (perm)	0	2362	0	0	2544	0	0	2873	0	0	2415	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2						7			11	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		576			341			401			151	
Travel Time (s)		13.1			7.8			9.1			3.4	
Confl. Peds. (#/hr)	459		362	362		459	600		644	644		600
Confl. Bikes (#/hr)			17			4			28			12
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	3%	3%	0%	5%	1%	0%	6%	2%	23%	9%	8%
Parking (#/hr)		0										
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1351	0	0	859	0	0	800	0	0	258	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			4	
Permitted Phases	2			6			4			4		
Minimum Split (s)	28.0	28.0		28.0	28.0		29.0	29.0		29.0	29.0	
Total Split (s)	69.0	69.0		69.0	69.0		41.0	41.0		41.0	41.0	
Total Split (%)	62.7%	62.7%		62.7%	62.7%		37.3%	37.3%		37.3%	37.3%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.0			6.0			6.0			6.0	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)		63.0			63.0			35.0			35.0	
Actuated g/C Ratio		0.57			0.57			0.32			0.32	
v/c Ratio		1.00			0.59			0.87			0.33	
Control Delay		45.2			17.3			46.8			10.9	
Queue Delay		3.5			0.0			40.7			0.0	
Total Delay		48.7			17.3			87.5			10.9	
LOS		D			B			F			B	
Approach Delay		48.7			17.3			87.5			10.9	
Approach LOS		D			B			F			B	
Queue Length 50th (ft)		488			194			276			28	
Queue Length 95th (ft)		m#507			256			#385			m36	
Internal Link Dist (ft)		496			261			321			71	
Turn Bay Length (ft)												
Base Capacity (vph)		1353			1457			918			775	
Starvation Cap Reductn		18			0			0			0	
Spillback Cap Reductn		18			19			178			0	
Storage Cap Reductn		0			0			0			0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		1.01			0.60			1.08			0.33	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 24 (22%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 80			
Control Type: Pretimed			
Maximum v/c Ratio: 1.00			
Intersection Signal Delay: 47.0		Intersection LOS: D	
Intersection Capacity Utilization 114.0%		ICU Level of Service H	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 2061: 7th St NW & K St NW/Massachusetts Ave NW





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	1342	79	2	763	252	477	707	107	0	241	69
Future Volume (vph)	10	1342	79	2	763	252	477	707	107	0	241	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	11	11	11	12	11	11	11
Satd. Flow (prot)	0	3345	0	0	3505	1487	1728	3323	1615	0	2758	0
Flt Permitted		0.948			0.912		0.950					
Satd. Flow (perm)	0	3169	0	0	3197	826	1132	3323	1027	0	2758	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7				119			50		28	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		574			375			144			280	
Travel Time (s)		13.0			8.5			3.3			6.4	
Confl. Peds. (#/hr)	516		284	284		516	714		432	432		714
Confl. Bikes (#/hr)			5			6			44			10
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	70%	1%	3%	0%	3%	5%	1%	5%	0%	0%	8%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1490	0	0	797	263	497	736	111	0	323	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA	Perm		NA	
Protected Phases		2			6		3	8			4	
Permitted Phases	2			6		6			8			
Minimum Split (s)	27.0	27.0		24.0	24.0	24.0	25.0	33.0	33.0		21.0	
Total Split (s)	54.0	54.0		54.0	54.0	54.0	27.0	53.0	53.0		26.0	
Total Split (%)	49.1%	49.1%		49.1%	49.1%	49.1%	24.5%	48.2%	48.2%		23.6%	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.5	4.5	4.5		4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.5	2.5	2.5		2.0	
Lost Time Adjust (s)		-1.5			-1.5	-1.5	-1.5	-1.5	-1.5		-1.5	
Total Lost Time (s)		4.5			4.5	4.5	5.5	5.5	5.5		4.5	
Lead/Lag											Lag	
Lead-Lag Optimize?											Yes	
Act Effct Green (s)		49.5			49.5	49.5	21.5	47.5	47.5		21.5	
Actuated g/C Ratio		0.45			0.45	0.45	0.20	0.43	0.43		0.20	
v/c Ratio		1.04			0.55	0.60	1.47	0.51	0.24		0.58	
Control Delay		52.0			24.0	18.7	254.5	17.2	8.3		41.2	
Queue Delay		23.3			0.0	0.0	1.1	1.9	0.0		0.0	
Total Delay		75.2			24.0	18.7	255.7	19.1	8.3		41.2	
LOS		E			C	B	F	B	A		D	
Approach Delay		75.2			22.7			105.7			41.2	
Approach LOS		E			C			F			D	
Queue Length 50th (ft)		~617			211	73	~493	128	14		100	
Queue Length 95th (ft)		#761			272	168	m#621	m154	m27		148	
Internal Link Dist (ft)		494			295			64			200	
Turn Bay Length (ft)												
Base Capacity (vph)		1429			1438	437	337	1434	471		561	
Starvation Cap Reductn		171			0	0	32	514	0		0	
Spillback Cap Reductn		0			0	0	0	0	0		0	
Storage Cap Reductn		0			0	0	0	0	0		0	
Reduced v/c Ratio		1.18			0.55	0.60	1.63	0.80	0.24		0.58	

Lane Group	Ø9	Ø13
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	9	13
Permitted Phases		
Minimum Split (s)	3.0	3.0
Total Split (s)	3.0	3.0
Total Split (%)	3%	3%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	
Lead-Lag Optimize?	Yes	
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

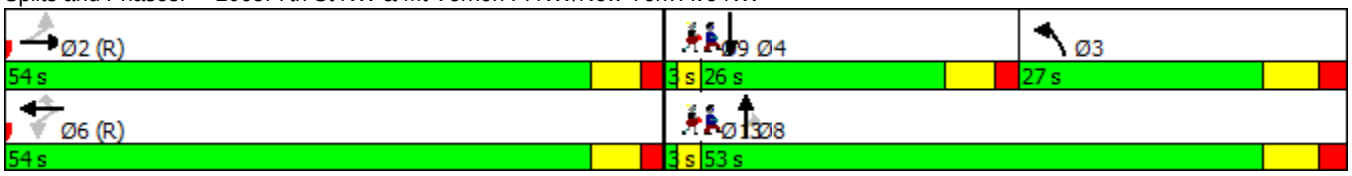
Intersection Summary	
Area Type:	Other
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 30 (27%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 130	
Control Type: Pretimed	
Maximum v/c Ratio: 1.47	
Intersection Signal Delay: 69.1	Intersection LOS: E
Intersection Capacity Utilization 99.7%	ICU Level of Service F
Analysis Period (min) 15	

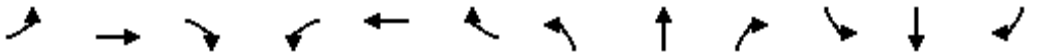
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2065: 7th St NW & Mt Vernon Pl NW/New York Ave NW





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	906	121	76	398	0	0	0	0	377	718	41
Future Volume (vph)	0	906	121	76	398	0	0	0	0	377	718	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	9	10	9	12	12	12	12	12	12	13	12	12
Satd. Flow (prot)	0	3240	1425	0	3389	0	0	0	0	1573	4693	1615
Flt Permitted					0.517					0.950	0.993	
Satd. Flow (perm)	0	3240	769	0	1766	0	0	0	0	1018	4441	942
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			94									50
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		585			576			255			113	
Travel Time (s)		13.3			13.1			5.8			2.6	
Confl. Peds. (#/hr)	597		453	453		597	675		606	606		675
Confl. Bikes (#/hr)			20			6						16
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	4%	2%	4%	6%	0%	0%	0%	0%	2%	4%	0%
Shared Lane Traffic (%)										30%		
Lane Group Flow (vph)	0	954	127	0	499	0	0	0	0	278	875	43
Turn Type		NA	Perm	Perm	NA					Prot	NA	Perm
Protected Phases		6			2					7	4	
Permitted Phases			6	2								4
Minimum Split (s)		20.0	20.0	24.0	24.0					11.5	32.5	32.5
Total Split (s)		35.5	35.5	35.5	35.5					40.5	71.5	71.5
Total Split (%)		32.3%	32.3%	32.3%	32.3%					36.8%	65.0%	65.0%
Yellow Time (s)		4.0	4.0	4.0	4.0					4.0	4.0	4.0
All-Red Time (s)		2.0	2.0	2.0	2.0					2.5	2.5	2.5
Lost Time Adjust (s)		-1.5	-1.5		-1.5					-1.5	-1.5	-1.5
Total Lost Time (s)		4.5	4.5		4.5					5.0	5.0	5.0
Lead/Lag		Lag	Lag	Lag	Lag					Lag		
Lead-Lag Optimize?		Yes	Yes	Yes	Yes					Yes		
Act Effct Green (s)		31.0	31.0		31.0					35.5	66.5	66.5
Actuated g/C Ratio		0.28	0.28		0.28					0.32	0.60	0.60
v/c Ratio		1.04	0.45		1.21dl					0.55	0.39	0.07
Control Delay		81.2	16.1		96.3					18.9	6.3	0.9
Queue Delay		21.5	0.0		0.0					2.9	0.4	0.0
Total Delay		102.7	16.1		96.3					21.8	6.7	0.9
LOS		F	B		F					C	A	A
Approach Delay		92.5			96.3						10.0	
Approach LOS		F			F						A	
Queue Length 50th (ft)		~385	18		~201					80	45	0
Queue Length 95th (ft)		#515	76		m#309					m158	70	m1
Internal Link Dist (ft)		505			496			175			33	
Turn Bay Length (ft)												
Base Capacity (vph)		913	284		497					507	2258	589
Starvation Cap Reductn		0	0		0					136	805	0
Spillback Cap Reductn		57	0		0					0	38	0
Storage Cap Reductn		0	0		0					0	0	0
Reduced v/c Ratio		1.11	0.45		1.00					0.75	0.60	0.07

Lane Group	Ø1	Ø5	Ø8
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Lane Width (ft)			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Right Turn on Red			
Satd. Flow (RTOR)			
Link Speed (mph)			
Link Distance (ft)			
Travel Time (s)			
Confl. Peds. (#/hr)			
Confl. Bikes (#/hr)			
Peak Hour Factor			
Heavy Vehicles (%)			
Shared Lane Traffic (%)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	1	5	8
Permitted Phases			
Minimum Split (s)	3.0	3.0	31.0
Total Split (s)	3.0	3.0	31.0
Total Split (%)	3%	3%	28%
Yellow Time (s)	2.0	2.0	4.0
All-Red Time (s)	0.0	0.0	0.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
Queue Length 50th (ft)			
Queue Length 95th (ft)			
Internal Link Dist (ft)			
Turn Bay Length (ft)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			

Intersection Summary		
Area Type:	Other	
Cycle Length: 110		
Actuated Cycle Length: 110		
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBT, Start of Green		
Natural Cycle: 90		
Control Type: Pretimed		
Maximum v/c Ratio: 1.04		
Intersection Signal Delay: 57.7		Intersection LOS: E
Intersection Capacity Utilization 73.4%		ICU Level of Service D
Analysis Period (min) 15		

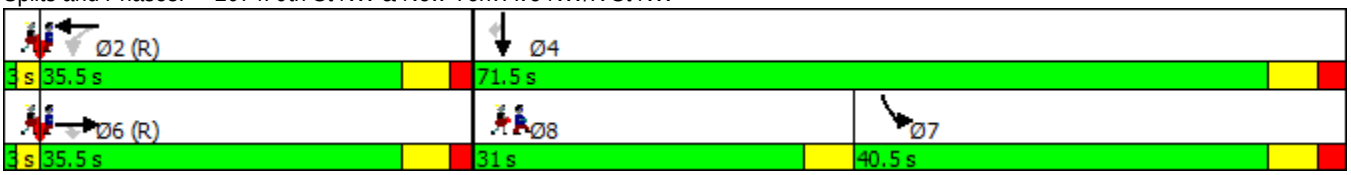
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

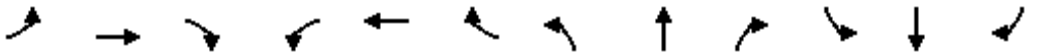
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 2074: 9th St NW & New York Ave NW/K St NW





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	1358	392	1	1158	150	0	0	0	73	822	40
Future Volume (vph)	2	1358	392	1	1158	150	0	0	0	73	822	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	12	12	12	11	11	11
Satd. Flow (prot)	0	3269	1478	0	3169	0	0	0	0	0	3299	0
Flt Permitted		0.954			0.954						0.996	
Satd. Flow (perm)	0	3119	1478	0	3024	0	0	0	0	0	3220	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			276		19						5	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		334			574			169			292	
Travel Time (s)		7.6			13.0			3.8			6.6	
Confl. Peds. (#/hr)	166		295	295		166	293		207	207		293
Confl. Bikes (#/hr)			44			22						7
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	50%	3%	2%	0%	1%	3%	0%	0%	0%	7%	3%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1402	404	0	1350	0	0	0	0	0	963	0
Turn Type	Perm	NA	custom	Perm	NA					Perm	NA	
Protected Phases		8 7	7		4						2	
Permitted Phases	8 7			4						2		
Minimum Split (s)			11.0	27.0	27.0					26.0	26.0	
Total Split (s)			36.0	62.0	62.0					45.0	45.0	
Total Split (%)			32.7%	56.4%	56.4%					40.9%	40.9%	
Yellow Time (s)			4.0	4.0	4.0					4.0	4.0	
All-Red Time (s)			2.0	2.0	2.0					2.0	2.0	
Lost Time Adjust (s)			-1.5		-1.5						-1.5	
Total Lost Time (s)			4.5		4.5						4.5	
Lead/Lag			Lag							Lag	Lag	
Lead-Lag Optimize?			Yes							Yes	Yes	
Act Effct Green (s)		59.5	31.5		57.5						40.5	
Actuated g/C Ratio		0.54	0.29		0.52						0.37	
v/c Ratio		0.83	0.65		0.85						0.81	
Control Delay		26.6	16.3		21.2						37.7	
Queue Delay		48.0	0.0		0.2						0.0	
Total Delay		74.6	16.3		21.4						37.7	
LOS		E	B		C						D	
Approach Delay		61.5			21.4						37.7	
Approach LOS		E			C						D	
Queue Length 50th (ft)		414	73		197						317	
Queue Length 95th (ft)		520	186		m210						402	
Internal Link Dist (ft)		254			494			89			212	
Turn Bay Length (ft)												
Base Capacity (vph)		1687	620		1589						1188	
Starvation Cap Reductn		0	0		23						0	
Spillback Cap Reductn		512	0		0						5	
Storage Cap Reductn		0	0		0						0	
Reduced v/c Ratio		1.19	0.65		0.86						0.81	

Lane Group	Ø1	Ø8
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	1	8
Permitted Phases		
Minimum Split (s)	3.0	26.0
Total Split (s)	3.0	26.0
Total Split (%)	3%	24%
Yellow Time (s)	2.0	4.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary		
Area Type:	Other	
Cycle Length: 110		
Actuated Cycle Length: 110		
Offset: 23 (21%), Referenced to phase 4:WBTL and 7:EBTL, Start of Green		
Natural Cycle: 70		
Control Type: Pretimed		
Maximum v/c Ratio: 0.85		
Intersection Signal Delay: 42.8		Intersection LOS: D
Intersection Capacity Utilization 108.3%		ICU Level of Service G
Analysis Period (min) 15		

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2077: 9th St NW & Massachusetts Ave NW/Mt Vernon Pl NW

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1	184	1107	62	77	244
Future Volume (Veh/h)	1	184	1107	62	77	244
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	1	196	1178	66	82	260
Pedestrians	632		394			1
Lane Width (ft)	12.0		10.0			9.0
Walking Speed (ft/s)	3.5		3.5			3.5
Percent Blockage	60		31			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			151			144
pX, platoon unblocked	0.92					
vC, conflicting volume	2531	960			1876	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2492	960			1876	
tC, single (s)	6.8	7.0			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	56	0			37	
cM capacity (veh/h)	2	101			129	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2
Volume Total	197	337	337	337	234	169	173
Volume Left	1	0	0	0	0	82	0
Volume Right	196	0	0	0	66	0	0
cSH	83	1700	1700	1700	1700	129	1700
Volume to Capacity	2.37	0.20	0.20	0.20	0.14	0.63	0.10
Queue Length 95th (ft)	457	0	0	0	0	83	0
Control Delay (s)	733.5	0.0	0.0	0.0	0.0	59.7	0.0
Lane LOS	F					F	
Approach Delay (s)	733.5	0.0				29.4	
Approach LOS	F						

Intersection Summary			
Average Delay	86.7		
Intersection Capacity Utilization	48.2%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection: 13: 9th St NW & K St NW

Movement	SB	SB	SB	SB	SB
Directions Served	T	T	T	T	TR
Maximum Queue (ft)	46	65	50	66	64
Average Queue (ft)	4	8	4	7	13
95th Queue (ft)	26	37	27	35	44
Link Distance (ft)	92	92	92	92	92
Upstream Blk Time (%)	0	0		0	0
Queuing Penalty (veh)	0	0		0	0
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 15: 7th St NW & K St NW

Movement	WB	NB	NB	NB	NB	SB	SB
Directions Served	LR	T	T	T	TR	LT	T
Maximum Queue (ft)	829	179	88	98	84	105	100
Average Queue (ft)	719	109	18	26	22	91	37
95th Queue (ft)	1045	183	65	81	68	109	101
Link Distance (ft)	799	65	65	65	65	80	80
Upstream Blk Time (%)	75	31	3	5	2	55	1
Queuing Penalty (veh)	0	90	9	14	6	89	2
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2061: 7th St NW & K St NW/Massachusetts Ave NW

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	TR	LT	TR	LT	TR	LT	TR
Maximum Queue (ft)	536	537	457	565	756	758	71	85
Average Queue (ft)	471	475	204	307	698	700	29	54
95th Queue (ft)	603	602	420	573	821	819	69	90
Link Distance (ft)	512	512	895	895	698	698	65	65
Upstream Blk Time (%)	6	6			80	87	6	6
Queuing Penalty (veh)	39	36			0	0	8	8
Storage Bay Dist (ft)								
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 2065: 7th St NW & Mt Vernon Pl NW/New York Ave NW

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	LT	TR	LT	T	R	L	T	T	R	T	TR
Maximum Queue (ft)	498	503	309	295	280	188	168	166	87	632	623
Average Queue (ft)	437	449	184	160	114	163	70	104	34	351	319
95th Queue (ft)	550	542	268	249	220	173	130	177	69	694	673
Link Distance (ft)	462	462	869	869	869	80	80	80	80	697	697
Upstream Blk Time (%)	9	11				78	5	13	1	7	4
Queuing Penalty (veh)	61	77				252	17	42	3	0	0
Storage Bay Dist (ft)											
Storage Blk Time (%)											
Queuing Penalty (veh)											

Intersection: 2074: 9th St NW & New York Ave NW/K St NW

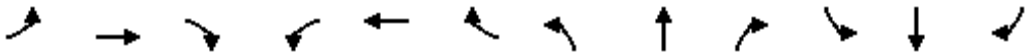
Movement	EB	EB	EB	WB	WB	SB	SB	SB	SB	SB
Directions Served	T	T	R	LT	T	L	LT	T	T	R
Maximum Queue (ft)	891	880	881	434	406	104	138	83	90	52
Average Queue (ft)	717	698	543	249	234	42	74	33	36	22
95th Queue (ft)	1073	1076	1186	375	361	85	121	67	78	50
Link Distance (ft)	840	840	840	512	512	65	65	65	65	65
Upstream Blk Time (%)	52	55	42	0	0	6	15	3	2	0
Queuing Penalty (veh)	0	0	0	0	0	14	34	6	4	0
Storage Bay Dist (ft)										
Storage Blk Time (%)										
Queuing Penalty (veh)										

Intersection: 2077: 9th St NW & Massachusetts Ave NW/Mt Vernon Pl NW

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	LT	T	R	LT	TR	LT	TR
Maximum Queue (ft)	854	854	844	352	352	756	760
Average Queue (ft)	722	710	650	215	220	580	641
95th Queue (ft)	1005	1013	1048	318	324	968	908
Link Distance (ft)	806	806	806	462	462	709	709
Upstream Blk Time (%)	37	48	40			33	56
Queuing Penalty (veh)	0	0	0			0	0
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Network Summary

Network wide Queuing Penalty: 811

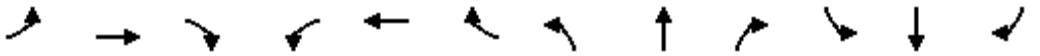


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	318	433	36	12	248	115	33	361	26	98	215	95
Future Volume (vph)	318	433	36	12	248	115	33	361	26	98	215	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	12	12	10	10	10	9	9	9
Satd. Flow (prot)	0	3093	0	0	2969	0	0	3166	0	0	2684	0
Flt Permitted		0.677			0.921			0.888			0.697	
Satd. Flow (perm)	0	1997	0	0	2735	0	0	2782	0	0	1824	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			31			7			43	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		576			341			389			151	
Travel Time (s)		13.1			7.8			8.8			3.4	
Confl. Peds. (#/hr)	204		161	161		204	456		260	260		456
Confl. Bikes (#/hr)			12			6			15			18
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	9%	4%	3%	6%	5%	2%	3%	4%	9%	5%	3%
Parking (#/hr)		0										
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	820	0	0	391	0	0	437	0	0	425	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			4	
Permitted Phases	2			6			4			4		
Minimum Split (s)	28.0	28.0		28.0	28.0		29.0	29.0		29.0	29.0	
Total Split (s)	60.0	60.0		60.0	60.0		40.0	40.0		40.0	40.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.0			6.0			6.0			6.0	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)		54.0			54.0			34.0			34.0	
Actuated g/C Ratio		0.54			0.54			0.34			0.34	
v/c Ratio		0.76			0.26			0.46			0.66	
Control Delay		37.6			11.8			27.3			40.8	
Queue Delay		0.2			0.0			0.1			0.3	
Total Delay		37.9			11.8			27.4			41.1	
LOS		D			B			C			D	
Approach Delay		37.9			11.8			27.4			41.1	
Approach LOS		D			B			C			D	
Queue Length 50th (ft)		237			60			111			136	
Queue Length 95th (ft)		288			88			158			187	
Internal Link Dist (ft)		496			261			309			71	
Turn Bay Length (ft)												
Base Capacity (vph)		1082			1491			950			648	
Starvation Cap Reductn		0			0			0			26	
Spillback Cap Reductn		30			41			37			0	
Storage Cap Reductn		0			0			0			0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		0.78			0.27			0.48			0.68	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 67 (67%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 60			
Control Type: Pretimed			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 31.4		Intersection LOS: C	
Intersection Capacity Utilization 99.4%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 2061: 7th St NW & K St NW/Massachusetts Ave NW



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	472	162	75	649	78	315	445	163	4	242	25
Future Volume (vph)	34	472	162	75	649	78	315	445	163	4	242	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	11	11	11	12	11	11	11
Satd. Flow (prot)	0	3018	0	0	3504	1210	1662	3292	1553	0	3144	0
Flt Permitted		0.878			0.733		0.950				0.946	
Satd. Flow (perm)	0	2647	0	0	2564	778	1159	3292	1073	0	2971	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		52				131			111		9	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		574			375			144			280	
Travel Time (s)		13.0			8.5			3.3			6.4	
Confl. Peds. (#/hr)	314		147	147		314	481		259	259		481
Confl. Bikes (#/hr)			7			5			15			22
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	9%	6%	2%	7%	2%	29%	5%	6%	4%	0%	4%	12%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	689	0	0	746	80	325	459	168	0	279	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA	Perm	Perm	NA	
Protected Phases		2			6		3	8			4	
Permitted Phases	2			6		6			8	4		
Minimum Split (s)	27.0	27.0		24.0	24.0	24.0	25.0	33.0	33.0	21.0	21.0	
Total Split (s)	47.0	47.0		47.0	47.0	47.0	26.0	50.0	50.0	24.0	24.0	
Total Split (%)	47.0%	47.0%		47.0%	47.0%	47.0%	26.0%	50.0%	50.0%	24.0%	24.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.5	4.5	4.5	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.5	2.5	2.5	2.0	2.0	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0	0.0		0.0	
Total Lost Time (s)		6.0			6.0	6.0	7.0	7.0	7.0		6.0	
Lead/Lag										Lag	Lag	
Lead-Lag Optimize?										Yes	Yes	
Act Effct Green (s)		41.0			41.0	41.0	19.0	43.0	43.0		18.0	
Actuated g/C Ratio		0.41			0.41	0.41	0.19	0.43	0.43		0.18	
v/c Ratio		0.62			0.71	0.20	1.03	0.32	0.32		0.51	
Control Delay		12.3			29.1	1.9	94.7	17.4	7.7		39.7	
Queue Delay		0.0			0.0	0.0	17.6	0.9	0.5		0.0	
Total Delay		12.3			29.1	1.9	112.3	18.3	8.2		39.7	
LOS		B			C	A	F	B	A		D	
Approach Delay		12.3			26.5			48.6			39.7	
Approach LOS		B			C			D			D	
Queue Length 50th (ft)		168			204	0	~188	91	17		82	
Queue Length 95th (ft)		m231			275	8	m#381	131	m55		125	
Internal Link Dist (ft)		494			295			64			200	
Turn Bay Length (ft)												
Base Capacity (vph)		1115			1051	396	315	1415	524		542	
Starvation Cap Reductn		0			0	0	15	662	129		0	
Spillback Cap Reductn		0			0	0	0	0	0		0	
Storage Cap Reductn		0			0	0	0	0	0		0	
Reduced v/c Ratio		0.62			0.71	0.20	1.08	0.61	0.43		0.51	

Lane Group	Ø9	Ø13
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	9	13
Permitted Phases		
Minimum Split (s)	3.0	3.0
Total Split (s)	3.0	3.0
Total Split (%)	3%	3%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	
Lead-Lag Optimize?	Yes	
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

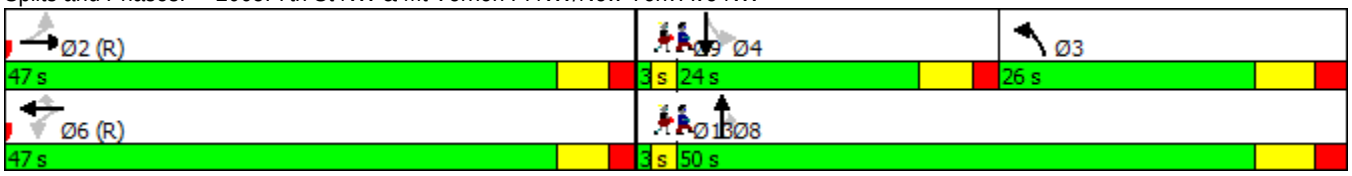
Intersection Summary	
Area Type:	Other
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 52 (52%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 80	
Control Type: Pretimed	
Maximum v/c Ratio: 1.03	
Intersection Signal Delay: 31.9	Intersection LOS: C
Intersection Capacity Utilization 95.2%	ICU Level of Service F
Analysis Period (min) 15	

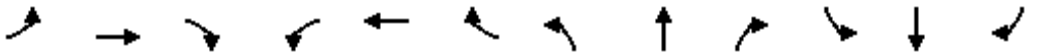
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2065: 7th St NW & Mt Vernon Pl NW/New York Ave NW





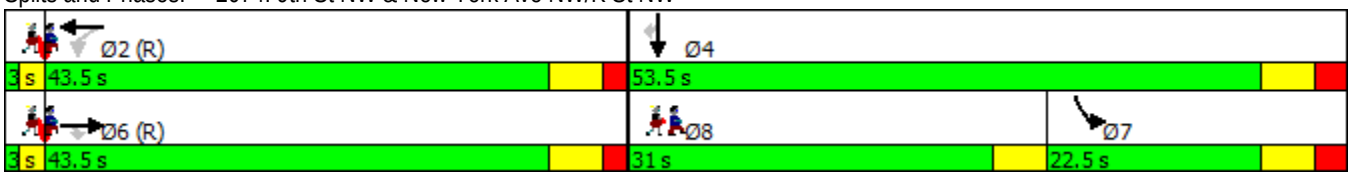
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	615	121	115	261	0	0	0	0	171	794	53
Future Volume (vph)	0	615	121	115	261	0	0	0	0	171	794	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	9	10	9	12	12	12	12	12	12	13	12	12
Satd. Flow (prot)	0	3271	1384	0	3416	0	0	0	0	1573	4755	1495
Flt Permitted					0.591					0.950	0.999	
Satd. Flow (perm)	0	3271	834	0	1979	0	0	0	0	976	4722	962
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			104									55
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		559			576			255			113	
Travel Time (s)		12.7			13.1			5.8			2.6	
Confl. Peds. (#/hr)	283		355	355		283	471		371	371		471
Confl. Bikes (#/hr)			5			7						14
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	3%	5%	2%	5%	0%	0%	0%	0%	2%	3%	8%
Shared Lane Traffic (%)										10%		
Lane Group Flow (vph)	0	641	126	0	392	0	0	0	0	160	845	55
Turn Type		NA	Perm	Perm	NA					Prot	NA	Perm
Protected Phases		6			2					7	4	
Permitted Phases			6	2								4
Minimum Split (s)		20.0	20.0	24.0	24.0					11.5	32.5	32.5
Total Split (s)		43.5	43.5	43.5	43.5					22.5	53.5	53.5
Total Split (%)		43.5%	43.5%	43.5%	43.5%					22.5%	53.5%	53.5%
Yellow Time (s)		4.0	4.0	4.0	4.0					4.0	4.0	4.0
All-Red Time (s)		2.0	2.0	2.0	2.0					2.5	2.5	2.5
Lost Time Adjust (s)		0.0	0.0		0.0					0.0	0.0	0.0
Total Lost Time (s)		6.0	6.0		6.0					6.5	6.5	6.5
Lead/Lag		Lag	Lag	Lag	Lag					Lag		
Lead-Lag Optimize?		Yes	Yes	Yes	Yes					Yes		
Act Effct Green (s)		37.5	37.5		37.5					16.0	47.0	47.0
Actuated g/C Ratio		0.38	0.38		0.38					0.16	0.47	0.47
v/c Ratio		0.52	0.33		0.53					0.64	0.51	0.11
Control Delay		26.2	8.9		28.7					58.2	32.1	14.4
Queue Delay		0.0	0.0		0.0					0.0	1.5	0.0
Total Delay		26.2	8.9		28.7					58.2	33.6	14.4
LOS		C	A		C					E	C	B
Approach Delay		23.4			28.7						36.3	
Approach LOS		C			C						D	
Queue Length 50th (ft)		164	9		101					100	152	12
Queue Length 95th (ft)		219	52		156					m139	m184	m17
Internal Link Dist (ft)		479			496			175			33	
Turn Bay Length (ft)												
Base Capacity (vph)		1226	377		742					251	1666	481
Starvation Cap Reductn		0	0		0					0	588	0
Spillback Cap Reductn		0	0		0					0	0	0
Storage Cap Reductn		0	0		0					0	0	0
Reduced v/c Ratio		0.52	0.33		0.53					0.64	0.78	0.11

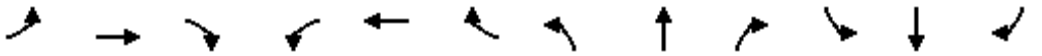
Lane Group	Ø1	Ø5	Ø8
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Lane Width (ft)			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Right Turn on Red			
Satd. Flow (RTOR)			
Link Speed (mph)			
Link Distance (ft)			
Travel Time (s)			
Confl. Peds. (#/hr)			
Confl. Bikes (#/hr)			
Peak Hour Factor			
Heavy Vehicles (%)			
Shared Lane Traffic (%)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	1	5	8
Permitted Phases			
Minimum Split (s)	3.0	3.0	31.0
Total Split (s)	3.0	3.0	31.0
Total Split (%)	3%	3%	31%
Yellow Time (s)	2.0	2.0	4.0
All-Red Time (s)	0.0	0.0	0.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
Queue Length 50th (ft)			
Queue Length 95th (ft)			
Internal Link Dist (ft)			
Turn Bay Length (ft)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			

Intersection Summary		
Area Type:	Other	
Cycle Length: 100		
Actuated Cycle Length: 100		
Offset: 16 (16%), Referenced to phase 2:WBTL and 6:EBT, Start of Green		
Natural Cycle: 75		
Control Type: Pretimed		
Maximum v/c Ratio: 0.64		
Intersection Signal Delay: 30.5		Intersection LOS: C
Intersection Capacity Utilization 69.1%		ICU Level of Service C
Analysis Period (min) 15		

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2074: 9th St NW & New York Ave NW/K St NW





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	640	369	1	907	82	0	0	0	28	686	61
Future Volume (vph)	35	640	369	1	907	82	0	0	0	28	686	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	12	12	12	11	11	11
Satd. Flow (prot)	0	3293	1478	0	3169	0	0	0	0	0	3282	0
Flt Permitted		0.845			0.955						0.998	
Satd. Flow (perm)	0	2784	1478	0	3026	0	0	0	0	0	3238	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			393		15						9	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		334			574			169			292	
Travel Time (s)		7.6			13.0			3.8			6.6	
Confl. Peds. (#/hr)	355		175	175		355	324		424	424		324
Confl. Bikes (#/hr)			13			18						10
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	718	393	0	1053	0	0	0	0	0	825	0
Turn Type	Perm	NA	custom	Perm	NA					Perm	NA	
Protected Phases		8 7	7		4						2	
Permitted Phases	8 7			4						2		
Minimum Split (s)			11.0	28.0	28.0					26.0	26.0	
Total Split (s)			36.0	62.0	62.0					35.0	35.0	
Total Split (%)			36.0%	62.0%	62.0%					35.0%	35.0%	
Yellow Time (s)			4.0	4.0	4.0					4.0	4.0	
All-Red Time (s)			2.0	2.0	2.0					2.0	2.0	
Lost Time Adjust (s)			0.0		0.0						0.0	
Total Lost Time (s)			6.0		6.0						6.0	
Lead/Lag			Lag							Lag	Lag	
Lead-Lag Optimize?			Yes							Yes	Yes	
Act Effct Green (s)		56.0	30.0		56.0						29.0	
Actuated g/C Ratio		0.56	0.30		0.56						0.29	
v/c Ratio		0.46	0.55		0.62						0.87	
Control Delay		14.3	6.0		11.0						45.0	
Queue Delay		0.0	0.0		0.1						0.0	
Total Delay		14.3	6.0		11.1						45.0	
LOS		B	A		B						D	
Approach Delay		11.3			11.1						45.0	
Approach LOS		B			B						D	
Queue Length 50th (ft)		134	0		97						260	
Queue Length 95th (ft)		180	70		m148						#366	
Internal Link Dist (ft)		254			494			89			212	
Turn Bay Length (ft)												
Base Capacity (vph)		1559	718		1701						945	
Starvation Cap Reductn		0	0		77						0	
Spillback Cap Reductn		0	0		0						0	
Storage Cap Reductn		0	0		0						0	
Reduced v/c Ratio		0.46	0.55		0.65						0.87	

Intersection Summary

Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 54 (54%), Referenced to phase 4:WBTL and 7:EBTL, Start of Green			
Natural Cycle: 70			
Control Type: Pretimed			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 20.5		Intersection LOS: C	
Intersection Capacity Utilization 96.2%		ICU Level of Service F	
Analysis Period (min) 15			

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2077: 9th St NW & Massachusetts Ave NW/Mt Vernon Pl NW

Lane Group	Ø1	Ø8
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	1	8
Permitted Phases		
Minimum Split (s)	3.0	26.0
Total Split (s)	3.0	26.0
Total Split (%)	3%	26%
Yellow Time (s)	2.0	4.0
All-Red Time (s)	0.0	2.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	14	263	661	133	84	394
Future Volume (Veh/h)	14	263	661	133	84	394
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	14	268	674	136	86	402
Pedestrians	254		157			
Lane Width (ft)	12.0		12.0			
Walking Speed (ft/s)	3.5		3.5			
Percent Blockage	24		15			
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			151			144
pX, platoon unblocked	0.93					
vC, conflicting volume	1526	490			1064	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1418	490			1064	
tC, single (s)	7.0	7.0			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.3			2.2	
p0 queue free %	77	32			83	
cM capacity (veh/h)	60	395			502	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2
Volume Total	282	193	193	193	232	220	268
Volume Left	14	0	0	0	0	86	0
Volume Right	268	0	0	0	136	0	0
cSH	310	1700	1700	1700	1700	502	1700
Volume to Capacity	0.91	0.11	0.11	0.11	0.14	0.17	0.16
Queue Length 95th (ft)	218	0	0	0	0	15	0
Control Delay (s)	68.5	0.0	0.0	0.0	0.0	6.9	0.0
Lane LOS	F					A	
Approach Delay (s)	68.5	0.0				3.1	
Approach LOS	F						

Intersection Summary			
Average Delay	13.2		
Intersection Capacity Utilization	53.7%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection: 13: 9th St NW & K St NW

Movement	SB	SB	SB	SB	SB
Directions Served	T	T	T	T	TR
Maximum Queue (ft)	88	88	91	119	77
Average Queue (ft)	17	26	31	44	15
95th Queue (ft)	58	69	80	94	52
Link Distance (ft)	92	92	92	92	92
Upstream Blk Time (%)	0	0	0	0	0
Queuing Penalty (veh)	0	0	0	1	0
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 15: 7th St NW & K St NW

Movement	WB	NB	NB	NB	NB	SB	SB
Directions Served	LR	T	T	T	TR	LT	T
Maximum Queue (ft)	278	113	74	61	89	104	110
Average Queue (ft)	225	32	16	13	37	94	86
95th Queue (ft)	300	89	55	49	84	112	122
Link Distance (ft)	219	65	65	65	65	79	79
Upstream Blk Time (%)	77	4	1	1	2	37	17
Queuing Penalty (veh)	0	8	2	1	4	89	40
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2061: 7th St NW & K St NW/Massachusetts Ave NW

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	TR	LT	TR	LT	TR	LT	TR
Maximum Queue (ft)	516	497	181	156	206	242	106	82
Average Queue (ft)	353	303	78	60	86	130	68	73
95th Queue (ft)	540	506	141	117	171	214	96	81
Link Distance (ft)	512	512	936	936	674	674	65	65
Upstream Blk Time (%)	6	1					33	34
Queuing Penalty (veh)	23	5					68	69
Storage Bay Dist (ft)								
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 2065: 7th St NW & Mt Vernon Pl NW/New York Ave NW

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	LT	TR	LT	T	R	L	T	T	R	LT	TR
Maximum Queue (ft)	457	471	482	448	122	193	167	165	124	579	553
Average Queue (ft)	257	267	303	268	47	152	87	94	60	321	288
95th Queue (ft)	477	486	439	404	90	193	151	150	110	602	585
Link Distance (ft)	462	462	883	883	883	79	79	79	79	688	688
Upstream Blk Time (%)	3	4				50	10	14	5	2	2
Queuing Penalty (veh)	9	13				116	24	31	11	0	0
Storage Bay Dist (ft)											
Storage Blk Time (%)											
Queuing Penalty (veh)											

Intersection: 2074: 9th St NW & New York Ave NW/K St NW

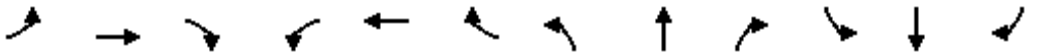
Movement	EB	EB	EB	WB	WB	SB	SB	SB	SB	SB
Directions Served	T	T	R	LT	T	L	LT	T	T	R
Maximum Queue (ft)	348	313	117	239	209	119	144	132	128	81
Average Queue (ft)	200	151	47	149	126	44	79	72	71	24
95th Queue (ft)	340	301	88	218	191	104	128	117	116	61
Link Distance (ft)	897	897	897	512	512	64	64	64	64	64
Upstream Blk Time (%)						14	30	22	22	1
Queuing Penalty (veh)						28	61	44	45	1
Storage Bay Dist (ft)										
Storage Blk Time (%)										
Queuing Penalty (veh)										

Intersection: 2077: 9th St NW & Massachusetts Ave NW/Mt Vernon Pl NW

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	LT	T	R	LT	TR	LT	TR
Maximum Queue (ft)	341	308	388	207	215	742	752
Average Queue (ft)	175	145	215	114	142	686	712
95th Queue (ft)	366	337	343	180	199	923	792
Link Distance (ft)	772	772	772	462	462	702	702
Upstream Blk Time (%)						64	89
Queuing Penalty (veh)						0	0
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Network Summary

Network wide Queuing Penalty: 695

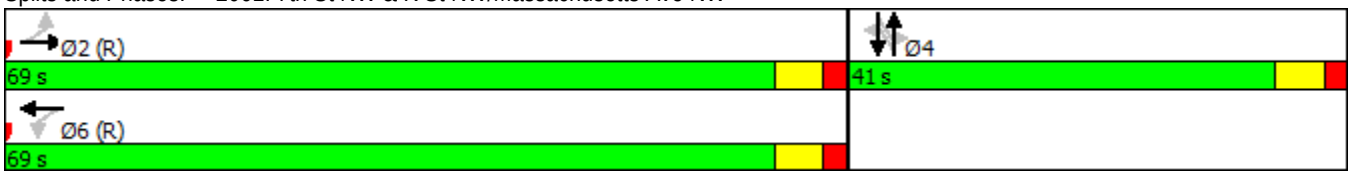


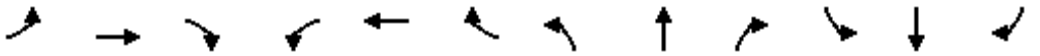
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	111	1125	76	1	455	392	28	696	53	16	207	121
Future Volume (vph)	111	1125	76	1	455	392	28	696	53	16	207	121
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	12	12	10	10	10	9	9	9
Satd. Flow (prot)	0	3212	0	0	2646	0	0	3059	0	0	2333	0
Flt Permitted		0.684			0.954			0.926			0.854	
Satd. Flow (perm)	0	2189	0	0	2524	0	0	2811	0	0	1988	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)								7			27	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		576			341			401			151	
Travel Time (s)		13.1			7.8			9.1			3.4	
Confl. Peds. (#/hr)	540		387	387		540	833		684	684		833
Confl. Bikes (#/hr)			17			4			32			12
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	3%	3%	0%	5%	1%	0%	6%	2%	23%	9%	8%
Parking (#/hr)		0										
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1381	0	0	893	0	0	818	0	0	362	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			4	
Permitted Phases	2			6			4			4		
Minimum Split (s)	28.0	28.0		28.0	28.0		29.0	29.0		29.0	29.0	
Total Split (s)	69.0	69.0		69.0	69.0		41.0	41.0		41.0	41.0	
Total Split (%)	62.7%	62.7%		62.7%	62.7%		37.3%	37.3%		37.3%	37.3%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.0			6.0			6.0			6.0	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)		63.0			63.0			35.0			35.0	
Actuated g/C Ratio		0.57			0.57			0.32			0.32	
v/c Ratio		1.10			0.62			0.91			0.56	
Control Delay		80.9			17.9			51.1			19.9	
Queue Delay		0.1			0.0			46.7			0.9	
Total Delay		81.0			17.9			97.9			20.8	
LOS		F			B			F			C	
Approach Delay		81.0			17.9			97.9			20.8	
Approach LOS		F			B			F			C	
Queue Length 50th (ft)		~580			207			288			118	
Queue Length 95th (ft)		m#592			272			#408			m121	
Internal Link Dist (ft)		496			261			321			71	
Turn Bay Length (ft)												
Base Capacity (vph)		1253			1445			899			650	
Starvation Cap Reductn		0			0			0			106	
Spillback Cap Reductn		20			23			176			0	
Storage Cap Reductn		0			0			0			0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		1.12			0.63			1.13			0.67	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 24 (22%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 90			
Control Type: Pretimed			
Maximum v/c Ratio: 1.10			
Intersection Signal Delay: 62.4		Intersection LOS: E	
Intersection Capacity Utilization 124.4%		ICU Level of Service H	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 2061: 7th St NW & K St NW/Massachusetts Ave NW





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	1347	146	19	766	252	483	709	121	0	253	70
Future Volume (vph)	12	1347	146	19	766	252	483	709	121	0	253	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	11	11	11	12	11	11	11
Satd. Flow (prot)	0	3264	0	0	3504	1487	1728	3323	1615	0	2771	0
Flt Permitted		0.945			0.690		0.950					
Satd. Flow (perm)	0	3082	0	0	2420	821	1143	3323	1022	0	2771	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13				119			50		28	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		574			375			144			280	
Travel Time (s)		13.0			8.5			3.3			6.4	
Confl. Peds. (#/hr)	525		321	321		525	760		444	444		760
Confl. Bikes (#/hr)			9			7			44			10
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	70%	1%	3%	0%	3%	5%	1%	5%	0%	0%	8%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1568	0	0	818	263	503	739	126	0	337	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA	Perm		NA	
Protected Phases		2			6		3	8			4	
Permitted Phases	2			6		6			8			
Minimum Split (s)	27.0	27.0		24.0	24.0	24.0	25.0	33.0	33.0		21.0	
Total Split (s)	54.0	54.0		54.0	54.0	54.0	27.0	53.0	53.0		26.0	
Total Split (%)	49.1%	49.1%		49.1%	49.1%	49.1%	24.5%	48.2%	48.2%		23.6%	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.5	4.5	4.5		4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.5	2.5	2.5		2.0	
Lost Time Adjust (s)		-1.5			-1.5	-1.5	-1.5	-1.5	-1.5		-1.5	
Total Lost Time (s)		4.5			4.5	4.5	5.5	5.5	5.5		4.5	
Lead/Lag											Lag	
Lead-Lag Optimize?											Yes	
Act Effct Green (s)		49.5			49.5	49.5	21.5	47.5	47.5		21.5	
Actuated g/C Ratio		0.45			0.45	0.45	0.20	0.43	0.43		0.20	
v/c Ratio		1.12			0.75	0.61	1.49	0.52	0.27		0.60	
Control Delay		84.0			30.5	18.9	261.5	17.4	9.2		41.9	
Queue Delay		0.4			0.0	0.0	1.2	2.3	0.0		0.0	
Total Delay		84.4			30.5	18.9	262.7	19.6	9.2		41.9	
LOS		F			C	B	F	B	A		D	
Approach Delay		84.4			27.7			108.0			41.9	
Approach LOS		F			C			F			D	
Queue Length 50th (ft)		~693			245	73	~502	132	20		105	
Queue Length 95th (ft)		#837			327	169	m#608	m153	m32		154	
Internal Link Dist (ft)		494			295			64			200	
Turn Bay Length (ft)												
Base Capacity (vph)		1394			1089	434	337	1434	469		564	
Starvation Cap Reductn		130			0	0	34	534	0		0	
Spillback Cap Reductn		0			0	0	0	0	0		0	
Storage Cap Reductn		0			0	0	0	0	0		0	
Reduced v/c Ratio		1.24			0.75	0.61	1.66	0.82	0.27		0.60	

Lane Group	Ø9	Ø13
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	9	13
Permitted Phases		
Minimum Split (s)	3.0	3.0
Total Split (s)	3.0	3.0
Total Split (%)	3%	3%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	
Lead-Lag Optimize?	Yes	
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

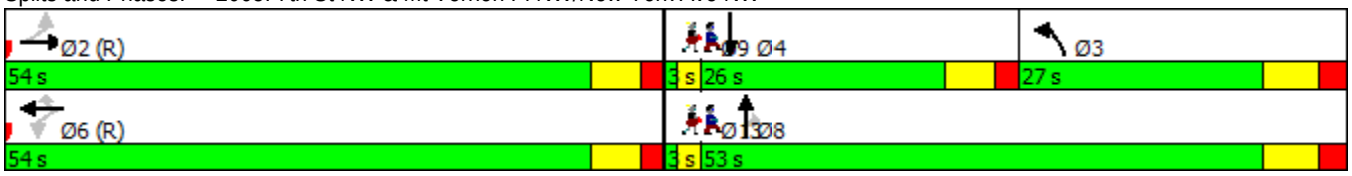
Intersection Summary	
Area Type:	Other
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 30 (27%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 140	
Control Type: Pretimed	
Maximum v/c Ratio: 1.49	
Intersection Signal Delay: 74.5	Intersection LOS: E
Intersection Capacity Utilization 102.5%	ICU Level of Service G
Analysis Period (min) 15	

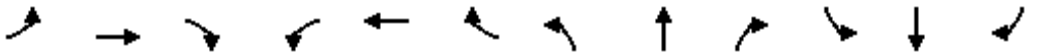
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2065: 7th St NW & Mt Vernon Pl NW/New York Ave NW





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	914	124	100	505	0	0	0	0	398	735	44
Future Volume (vph)	0	914	124	100	505	0	0	0	0	398	735	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	9	10	9	12	12	12	12	12	12	13	12	12
Satd. Flow (prot)	0	3240	1425	0	3389	0	0	0	0	1573	4693	1615
Flt Permitted					0.523					0.950	0.993	
Satd. Flow (perm)	0	3240	746	0	1787	0	0	0	0	995	4414	924
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			94									50
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		585			576			255			113	
Travel Time (s)		13.3			13.1			5.8			2.6	
Confl. Peds. (#/hr)	707		486	486		707	720		686	686		720
Confl. Bikes (#/hr)			29			6						16
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	4%	2%	4%	6%	0%	0%	0%	0%	2%	4%	0%
Shared Lane Traffic (%)										31%		
Lane Group Flow (vph)	0	962	131	0	637	0	0	0	0	289	904	46
Turn Type		NA	Perm	Perm	NA					Prot	NA	Perm
Protected Phases		6			2					7	4	
Permitted Phases			6	2								4
Minimum Split (s)		20.0	20.0	24.0	24.0					11.5	32.5	32.5
Total Split (s)		35.5	35.5	35.5	35.5					40.5	71.5	71.5
Total Split (%)		32.3%	32.3%	32.3%	32.3%					36.8%	65.0%	65.0%
Yellow Time (s)		4.0	4.0	4.0	4.0					4.0	4.0	4.0
All-Red Time (s)		2.0	2.0	2.0	2.0					2.5	2.5	2.5
Lost Time Adjust (s)		-1.5	-1.5		-1.5					-1.5	-1.5	-1.5
Total Lost Time (s)		4.5	4.5		4.5					5.0	5.0	5.0
Lead/Lag		Lag	Lag	Lag	Lag					Lag		
Lead-Lag Optimize?		Yes	Yes	Yes	Yes					Yes		
Act Effct Green (s)		31.0	31.0		31.0					35.5	66.5	66.5
Actuated g/C Ratio		0.28	0.28		0.28					0.32	0.60	0.60
v/c Ratio		1.05	0.47		1.59dl					0.57	0.40	0.08
Control Delay		83.8	17.4		174.0					19.9	6.8	1.1
Queue Delay		18.4	0.0		0.0					3.8	0.5	0.0
Total Delay		102.2	17.4		174.0					23.7	7.3	1.1
LOS		F	B		F					C	A	A
Approach Delay		92.0			174.0						10.9	
Approach LOS		F			F						B	
Queue Length 50th (ft)		~392	20		~309					84	45	0
Queue Length 95th (ft)		#521	81		m#425					m155	m69	m1
Internal Link Dist (ft)		505			496			175			33	
Turn Bay Length (ft)												
Base Capacity (vph)		913	277		503					507	2251	578
Starvation Cap Reductn		0	0		0					140	820	0
Spillback Cap Reductn		64	0		0					98	304	0
Storage Cap Reductn		0	0		0					0	0	0
Reduced v/c Ratio		1.13	0.47		1.27					0.79	0.63	0.08

Lane Group	Ø1	Ø5	Ø8
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Lane Width (ft)			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Right Turn on Red			
Satd. Flow (RTOR)			
Link Speed (mph)			
Link Distance (ft)			
Travel Time (s)			
Confl. Peds. (#/hr)			
Confl. Bikes (#/hr)			
Peak Hour Factor			
Heavy Vehicles (%)			
Shared Lane Traffic (%)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	1	5	8
Permitted Phases			
Minimum Split (s)	3.0	3.0	31.0
Total Split (s)	3.0	3.0	31.0
Total Split (%)	3%	3%	28%
Yellow Time (s)	2.0	2.0	4.0
All-Red Time (s)	0.0	0.0	0.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
Queue Length 50th (ft)			
Queue Length 95th (ft)			
Internal Link Dist (ft)			
Turn Bay Length (ft)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			

Intersection Summary		
Area Type:	Other	
Cycle Length: 110		
Actuated Cycle Length: 110		
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBT, Start of Green		
Natural Cycle: 90		
Control Type: Pretimed		
Maximum v/c Ratio: 1.27		
Intersection Signal Delay: 75.8		Intersection LOS: E
Intersection Capacity Utilization 75.5%		ICU Level of Service D
Analysis Period (min) 15		

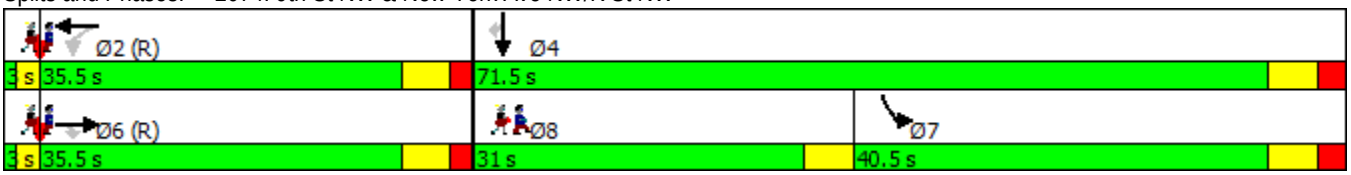
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

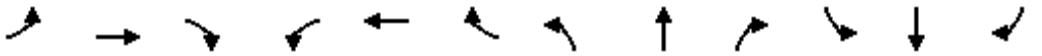
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 2074: 9th St NW & New York Ave NW/K St NW





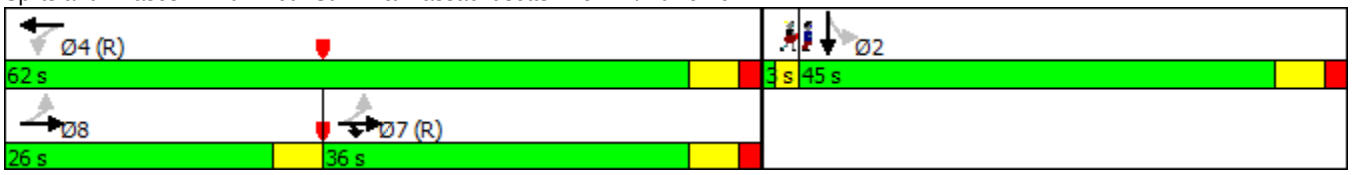
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	1405	413	1	1168	150	0	0	0	101	856	48
Future Volume (vph)	2	1405	413	1	1168	150	0	0	0	101	856	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	12	12	12	11	11	11
Satd. Flow (prot)	0	3269	1478	0	3155	0	0	0	0	0	3284	0
Flt Permitted		0.954			0.954						0.995	
Satd. Flow (perm)	0	3119	1478	0	3010	0	0	0	0	0	3177	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			282		19						5	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		334			574			169			292	
Travel Time (s)		7.6			13.0			3.8			6.6	
Confl. Peds. (#/hr)	195		321	321		195	305		258	258		305
Confl. Bikes (#/hr)			44			27						7
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	50%	3%	2%	0%	1%	3%	0%	0%	0%	7%	3%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1450	426	0	1360	0	0	0	0	0	1035	0
Turn Type	Perm	NA	custom	Perm	NA					Perm	NA	
Protected Phases		8 7	7		4						2	
Permitted Phases	8 7			4						2		
Minimum Split (s)			11.0	27.0	27.0					26.0	26.0	
Total Split (s)			36.0	62.0	62.0					45.0	45.0	
Total Split (%)			32.7%	56.4%	56.4%					40.9%	40.9%	
Yellow Time (s)			4.0	4.0	4.0					4.0	4.0	
All-Red Time (s)			2.0	2.0	2.0					2.0	2.0	
Lost Time Adjust (s)			-1.5		-1.5						-1.5	
Total Lost Time (s)			4.5		4.5						4.5	
Lead/Lag			Lag							Lag	Lag	
Lead-Lag Optimize?			Yes							Yes	Yes	
Act Effct Green (s)		59.5	31.5		57.5						40.5	
Actuated g/C Ratio		0.54	0.29		0.52						0.37	
v/c Ratio		0.86	0.68		0.86						0.88	
Control Delay		28.3	17.7		22.1						42.7	
Queue Delay		47.8	0.0		1.4						0.2	
Total Delay		76.1	17.7		23.5						42.9	
LOS		E	B		C						D	
Approach Delay		62.8			23.5						42.9	
Approach LOS		E			C						D	
Queue Length 50th (ft)		441	86		234						354	
Queue Length 95th (ft)		553	205		m241						#477	
Internal Link Dist (ft)		254			494			89			212	
Turn Bay Length (ft)												
Base Capacity (vph)		1687	624		1582						1172	
Starvation Cap Reductn		0	0		91						0	
Spillback Cap Reductn		552	0		0						7	
Storage Cap Reductn		0	0		0						0	
Reduced v/c Ratio		1.28	0.68		0.91						0.89	

Lane Group	Ø1	Ø8
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	1	8
Permitted Phases		
Minimum Split (s)	3.0	26.0
Total Split (s)	3.0	26.0
Total Split (%)	3%	24%
Yellow Time (s)	2.0	4.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary		
Area Type:	Other	
Cycle Length: 110		
Actuated Cycle Length: 110		
Offset: 23 (21%), Referenced to phase 4:WBTL and 7:EBTL, Start of Green		
Natural Cycle: 75		
Control Type: Pretimed		
Maximum v/c Ratio: 0.88		
Intersection Signal Delay: 45.5		Intersection LOS: D
Intersection Capacity Utilization 112.1%		ICU Level of Service H
Analysis Period (min) 15		

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2077: 9th St NW & Massachusetts Ave NW/Mt Vernon Pl NW



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	186	1127	72	78	340
Future Volume (Veh/h)	5	186	1127	72	78	340
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	5	198	1199	77	83	362
Pedestrians	636		394			1
Lane Width (ft)	12.0		10.0			9.0
Walking Speed (ft/s)	3.5		3.5			3.5
Percent Blockage	61		31			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			151			144
pX, platoon unblocked	0.92					
vC, conflicting volume	2614	975			1912	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2580	975			1912	
tC, single (s)	6.8	7.0			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	0			33	
cM capacity (veh/h)	2	98			124	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2
Volume Total	203	343	343	343	248	204	241
Volume Left	5	0	0	0	0	83	0
Volume Right	198	0	0	0	77	0	0
cSH	42	1700	1700	1700	1700	124	1700
Volume to Capacity	4.85	0.20	0.20	0.20	0.15	0.67	0.14
Queue Length 95th (ft)	Err	0	0	0	0	89	0
Control Delay (s)	Err	0.0	0.0	0.0	0.0	66.1	0.0
Lane LOS	F					F	
Approach Delay (s)	Err	0.0				30.2	
Approach LOS	F						

Intersection Summary			
Average Delay	1062.0		
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection: 13: 9th St NW & K St NW

Movement	SB	SB	SB
Directions Served	T	T	TR
Maximum Queue (ft)	30	31	55
Average Queue (ft)	2	4	9
95th Queue (ft)	14	21	36
Link Distance (ft)	92	92	92
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 15: 7th St NW & K St NW

Movement	WB	NB	NB	NB	NB	SB	SB
Directions Served	LR	T	T	T	TR	LT	T
Maximum Queue (ft)	847	187	76	105	81	117	194
Average Queue (ft)	745	105	16	23	27	92	65
95th Queue (ft)	993	200	60	78	70	110	151
Link Distance (ft)	795	64	64	64	64	80	80
Upstream Blk Time (%)	80	22	2	2	1	46	8
Queuing Penalty (veh)	0	66	5	7	4	95	16
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2061: 7th St NW & K St NW/Massachusetts Ave NW

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	TR	LT	TR	LT	TR	LT	TR
Maximum Queue (ft)	548	552	910	928	710	692	147	166
Average Queue (ft)	462	466	503	545	642	641	60	128
95th Queue (ft)	620	624	1027	1080	813	803	119	186
Link Distance (ft)	512	512	876	876	658	658	64	64
Upstream Blk Time (%)	4	3	12	20	81	85	18	56
Queuing Penalty (veh)	27	23	0	0	0	0	32	98
Storage Bay Dist (ft)								
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 2065: 7th St NW & Mt Vernon Pl NW/New York Ave NW

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	LT	TR	LT	T	R	L	T	T	R	T	TR
Maximum Queue (ft)	493	509	596	553	224	163	182	163	125	700	681
Average Queue (ft)	459	464	356	314	103	160	76	108	47	392	391
95th Queue (ft)	546	543	526	480	185	176	137	178	90	765	771
Link Distance (ft)	461	461	848	848	848	80	80	80	80	657	657
Upstream Blk Time (%)	20	20				71	6	14	1	7	14
Queuing Penalty (veh)	154	154				234	18	46	5	0	0
Storage Bay Dist (ft)											
Storage Blk Time (%)											
Queuing Penalty (veh)											

Intersection: 2074: 9th St NW & New York Ave NW/K St NW

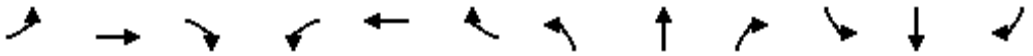
Movement	EB	EB	EB	WB	WB	SB	SB	SB	SB	SB
Directions Served	T	T	R	LT	T	L	LT	T	T	R
Maximum Queue (ft)	818	818	800	531	556	106	130	66	70	52
Average Queue (ft)	737	727	662	463	460	46	71	31	37	21
95th Queue (ft)	961	982	1095	607	614	92	117	57	71	52
Link Distance (ft)	766	766	766	512	512	64	64	64	64	64
Upstream Blk Time (%)	67	75	62	32	15	9	13	1	2	0
Queuing Penalty (veh)	0	0	0	97	45	21	31	3	4	0
Storage Bay Dist (ft)										
Storage Blk Time (%)										
Queuing Penalty (veh)										

Intersection: 2077: 9th St NW & Massachusetts Ave NW/Mt Vernon Pl NW

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	LT	T	R	LT	TR	LT	TR
Maximum Queue (ft)	804	768	804	343	354	723	723
Average Queue (ft)	637	636	690	227	244	689	694
95th Queue (ft)	970	983	910	309	319	785	761
Link Distance (ft)	752	752	752	461	461	684	684
Upstream Blk Time (%)	47	56	47			46	86
Queuing Penalty (veh)	0	0	0			0	0
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Network Summary

Network wide Queuing Penalty: 1185

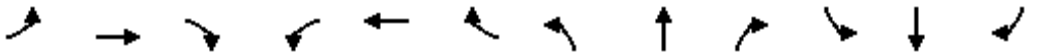


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	333	453	37	12	273	123	44	365	34	107	218	206
Future Volume (vph)	333	453	37	12	273	123	44	365	34	107	218	206
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	12	12	10	10	10	9	9	9
Satd. Flow (prot)	0	3082	0	0	2947	0	0	3140	0	0	2402	0
Flt Permitted		0.663			0.922			0.830			0.704	
Satd. Flow (perm)	0	1942	0	0	2716	0	0	2575	0	0	1656	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			24			9			154	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		576			341			389			151	
Travel Time (s)		13.1			7.8			8.8			3.4	
Confl. Peds. (#/hr)	257		238	238		257	703		286	286		703
Confl. Bikes (#/hr)			12			6			20			20
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	9%	4%	3%	6%	5%	2%	3%	4%	9%	5%	3%
Parking (#/hr)		0										
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	858	0	0	425	0	0	461	0	0	553	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			4	
Permitted Phases	2			6			4			4		
Minimum Split (s)	28.0	28.0		28.0	28.0		29.0	29.0		29.0	29.0	
Total Split (s)	60.0	60.0		60.0	60.0		40.0	40.0		40.0	40.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.0			6.0			6.0			6.0	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)		54.0			54.0			34.0			34.0	
Actuated g/C Ratio		0.54			0.54			0.34			0.34	
v/c Ratio		0.85dl			0.29			0.52			0.83	
Control Delay		39.2			12.4			28.5			43.7	
Queue Delay		0.5			0.0			0.1			0.3	
Total Delay		39.7			12.4			28.7			44.0	
LOS		D			B			C			D	
Approach Delay		39.7			12.4			28.7			44.0	
Approach LOS		D			B			C			D	
Queue Length 50th (ft)		243			68			120			157	
Queue Length 95th (ft)		293			98			171			m#231	
Internal Link Dist (ft)		496			261			309			71	
Turn Bay Length (ft)												
Base Capacity (vph)		1049			1477			881			664	
Starvation Cap Reductn		0			0			0			8	
Spillback Cap Reductn		33			47			42			0	
Storage Cap Reductn		0			0			0			0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		0.84			0.30			0.55			0.84	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 67 (67%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 65			
Control Type: Pretimed			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 33.5		Intersection LOS: C	
Intersection Capacity Utilization 101.2%		ICU Level of Service G	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			
dl Defacto Left Lane. Recode with 1 though lane as a left lane.			

Splits and Phases: 2061: 7th St NW & K St NW/Massachusetts Ave NW



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	480	239	95	653	78	324	447	180	5	263	27
Future Volume (vph)	35	480	239	95	653	78	324	447	180	5	263	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	11	11	11	12	11	11	11
Satd. Flow (prot)	0	2872	0	0	3496	1210	1662	3292	1553	0	3132	0
Flt Permitted		0.877			0.641		0.950				0.944	
Satd. Flow (perm)	0	2515	0	0	2235	771	1121	3292	1068	0	2952	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		92				131			85		9	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		574			375			144			280	
Travel Time (s)		13.0			8.5			3.3			6.4	
Confl. Peds. (#/hr)	332		197	197		332	599		271	271		599
Confl. Bikes (#/hr)			14			5			15			22
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	9%	6%	2%	7%	2%	29%	5%	6%	4%	0%	4%	12%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	777	0	0	771	80	334	461	186	0	304	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA	Perm	Perm	NA	
Protected Phases		2			6		3	8			4	
Permitted Phases	2			6		6			8	4		
Minimum Split (s)	27.0	27.0		24.0	24.0	24.0	25.0	33.0	33.0	21.0	21.0	
Total Split (s)	47.0	47.0		47.0	47.0	47.0	26.0	50.0	50.0	24.0	24.0	
Total Split (%)	47.0%	47.0%		47.0%	47.0%	47.0%	26.0%	50.0%	50.0%	24.0%	24.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.5	4.5	4.5	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.5	2.5	2.5	2.0	2.0	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0	0.0		0.0	
Total Lost Time (s)		6.0			6.0	6.0	7.0	7.0	7.0		6.0	
Lead/Lag										Lag	Lag	
Lead-Lag Optimize?										Yes	Yes	
Act Effct Green (s)		41.0			41.0	41.0	19.0	43.0	43.0		18.0	
Actuated g/C Ratio		0.41			0.41	0.41	0.19	0.43	0.43		0.18	
v/c Ratio		0.72			0.84	0.20	1.06	0.33	0.37		0.57	
Control Delay		14.6			36.7	2.0	102.9	18.1	11.6		40.9	
Queue Delay		0.0			0.0	0.0	14.7	1.0	0.7		0.6	
Total Delay		14.6			36.7	2.0	117.6	19.0	12.2		41.5	
LOS		B			D	A	F	B	B		D	
Approach Delay		14.6			33.4			51.3			41.5	
Approach LOS		B			C			D			D	
Queue Length 50th (ft)		197			227	0	~226	94	35		91	
Queue Length 95th (ft)		m265			#338	8	m#382	m132	m81		135	
Internal Link Dist (ft)		494			295			64			200	
Turn Bay Length (ft)												
Base Capacity (vph)		1085			916	393	315	1415	507		538	
Starvation Cap Reductn		0			0	0	16	668	123		0	
Spillback Cap Reductn		2			0	0	0	0	0		57	
Storage Cap Reductn		0			0	0	0	0	0		0	
Reduced v/c Ratio		0.72			0.84	0.20	1.12	0.62	0.48		0.63	

Lane Group	Ø9	Ø13
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	9	13
Permitted Phases		
Minimum Split (s)	3.0	3.0
Total Split (s)	3.0	3.0
Total Split (%)	3%	3%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	
Lead-Lag Optimize?	Yes	
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

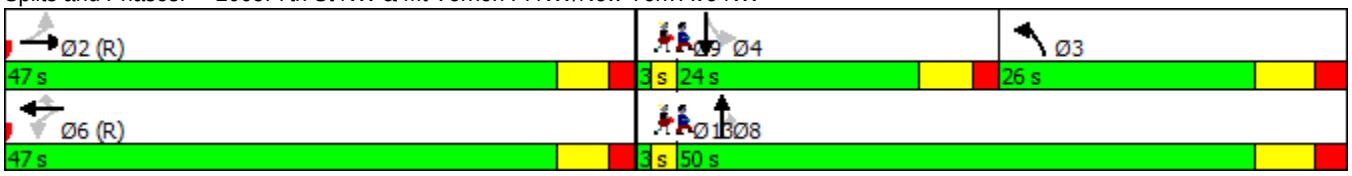
Intersection Summary		
Area Type:	Other	
Cycle Length: 100		
Actuated Cycle Length: 100		
Offset: 52 (52%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green		
Natural Cycle: 90		
Control Type: Pretimed		
Maximum v/c Ratio: 1.06		
Intersection Signal Delay: 35.3	Intersection LOS: D	
Intersection Capacity Utilization 99.4%	ICU Level of Service F	
Analysis Period (min) 15		

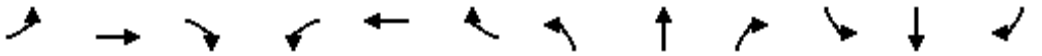
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2065: 7th St NW & Mt Vernon Pl NW/New York Ave NW





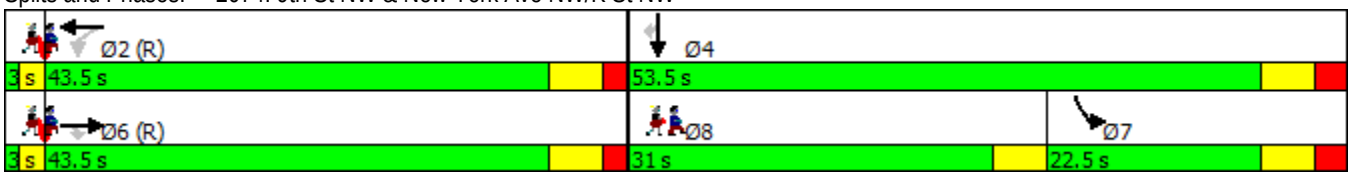
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	625	128	143	380	0	0	0	0	199	823	55
Future Volume (vph)	0	625	128	143	380	0	0	0	0	199	823	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	9	10	9	12	12	12	12	12	12	13	12	12
Satd. Flow (prot)	0	3271	1384	0	3420	0	0	0	0	1573	4756	1495
Flt Permitted					0.597					0.950	0.999	
Satd. Flow (perm)	0	3271	811	0	2004	0	0	0	0	903	4715	946
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			104									55
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		559			576			255			113	
Travel Time (s)		12.7			13.1			5.8			2.6	
Confl. Peds. (#/hr)	367		389	389		367	519		495	495		519
Confl. Bikes (#/hr)			19			7						14
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	3%	5%	2%	5%	0%	0%	0%	0%	2%	3%	8%
Shared Lane Traffic (%)										10%		
Lane Group Flow (vph)	0	651	133	0	545	0	0	0	0	186	878	57
Turn Type		NA	Perm	Perm	NA					Prot	NA	Perm
Protected Phases		6			2					7	4	
Permitted Phases			6	2								4
Minimum Split (s)		20.0	20.0	24.0	24.0					11.5	32.5	32.5
Total Split (s)		43.5	43.5	43.5	43.5					22.5	53.5	53.5
Total Split (%)		43.5%	43.5%	43.5%	43.5%					22.5%	53.5%	53.5%
Yellow Time (s)		4.0	4.0	4.0	4.0					4.0	4.0	4.0
All-Red Time (s)		2.0	2.0	2.0	2.0					2.5	2.5	2.5
Lost Time Adjust (s)		0.0	0.0		0.0					0.0	0.0	0.0
Total Lost Time (s)		6.0	6.0		6.0					6.5	6.5	6.5
Lead/Lag		Lag	Lag	Lag	Lag					Lag		
Lead-Lag Optimize?		Yes	Yes	Yes	Yes					Yes		
Act Effct Green (s)		37.5	37.5		37.5					16.0	47.0	47.0
Actuated g/C Ratio		0.38	0.38		0.38					0.16	0.47	0.47
v/c Ratio		0.53	0.36		0.73					0.74	0.53	0.12
Control Delay		26.3	9.9		34.8					62.0	32.9	14.8
Queue Delay		0.0	0.0		0.0					0.0	1.9	0.0
Total Delay		26.3	9.9		34.8					62.0	34.8	14.8
LOS		C	A		C					E	C	B
Approach Delay		23.5			34.8						38.3	
Approach LOS		C			C						D	
Queue Length 50th (ft)		167	12		147					119	163	11
Queue Length 95th (ft)		223	58		m203					m150	m176	m17
Internal Link Dist (ft)		479			496			175			33	
Turn Bay Length (ft)												
Base Capacity (vph)		1226	369		751					251	1664	473
Starvation Cap Reductn		0	0		0					0	598	0
Spillback Cap Reductn		0	0		0					0	0	0
Storage Cap Reductn		0	0		0					0	0	0
Reduced v/c Ratio		0.53	0.36		0.73					0.74	0.82	0.12

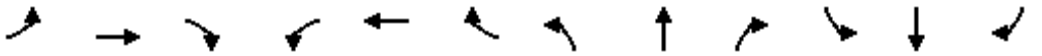
Lane Group	Ø1	Ø5	Ø8
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Lane Width (ft)			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Right Turn on Red			
Satd. Flow (RTOR)			
Link Speed (mph)			
Link Distance (ft)			
Travel Time (s)			
Confl. Peds. (#/hr)			
Confl. Bikes (#/hr)			
Peak Hour Factor			
Heavy Vehicles (%)			
Shared Lane Traffic (%)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	1	5	8
Permitted Phases			
Minimum Split (s)	3.0	3.0	31.0
Total Split (s)	3.0	3.0	31.0
Total Split (%)	3%	3%	31%
Yellow Time (s)	2.0	2.0	4.0
All-Red Time (s)	0.0	0.0	0.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
Queue Length 50th (ft)			
Queue Length 95th (ft)			
Internal Link Dist (ft)			
Turn Bay Length (ft)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			

Intersection Summary		
Area Type:	Other	
Cycle Length: 100		
Actuated Cycle Length: 100		
Offset: 16 (16%), Referenced to phase 2:WBTL and 6:EBT, Start of Green		
Natural Cycle: 80		
Control Type: Pretimed		
Maximum v/c Ratio: 0.74		
Intersection Signal Delay: 32.8		Intersection LOS: C
Intersection Capacity Utilization 69.4%		ICU Level of Service C
Analysis Period (min) 15		

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2074: 9th St NW & New York Ave NW/K St NW





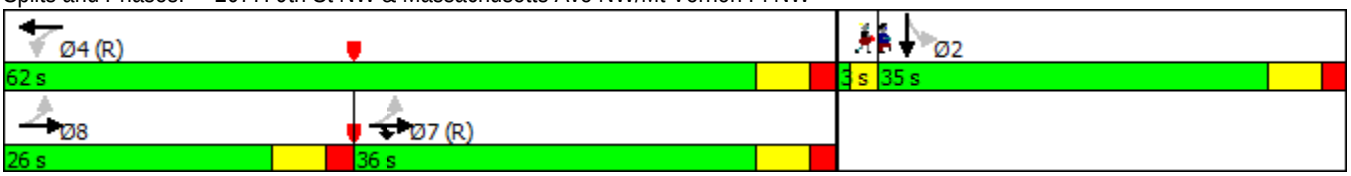
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	695	393	1	920	83	0	0	0	59	722	71
Future Volume (vph)	35	695	393	1	920	83	0	0	0	59	722	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	12	12	12	11	11	11
Satd. Flow (prot)	0	3297	1478	0	3165	0	0	0	0	0	3268	0
Flt Permitted		0.849			0.955						0.997	
Satd. Flow (perm)	0	2797	1478	0	3023	0	0	0	0	0	3178	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			418		15						10	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		334			574			169			292	
Travel Time (s)		7.6			13.0			3.8			6.6	
Confl. Peds. (#/hr)	409		196	196		409	333		520	520		333
Confl. Bikes (#/hr)			13			27						10
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	776	418	0	1068	0	0	0	0	0	907	0
Turn Type	Perm	NA	custom	Perm	NA					Perm	NA	
Protected Phases		8 7	7		4						2	
Permitted Phases	8 7			4						2		
Minimum Split (s)			11.0	28.0	28.0					26.0	26.0	
Total Split (s)			36.0	62.0	62.0					35.0	35.0	
Total Split (%)			36.0%	62.0%	62.0%					35.0%	35.0%	
Yellow Time (s)			4.0	4.0	4.0					4.0	4.0	
All-Red Time (s)			2.0	2.0	2.0					2.0	2.0	
Lost Time Adjust (s)			0.0		0.0						0.0	
Total Lost Time (s)			6.0		6.0						6.0	
Lead/Lag			Lag							Lag	Lag	
Lead-Lag Optimize?			Yes							Yes	Yes	
Act Effct Green (s)		56.0	30.0		56.0						29.0	
Actuated g/C Ratio		0.56	0.30		0.56						0.29	
v/c Ratio		0.50	0.57		0.63						0.98	
Control Delay		14.8	6.1		12.8						60.3	
Queue Delay		0.0	0.0		0.2						0.0	
Total Delay		14.8	6.1		13.0						60.3	
LOS		B	A		B						E	
Approach Delay		11.7			13.0						60.3	
Approach LOS		B			B						E	
Queue Length 50th (ft)		148	0		124						297	
Queue Length 95th (ft)		198	72		m161						#434	
Internal Link Dist (ft)		254			494			89			212	
Turn Bay Length (ft)												
Base Capacity (vph)		1566	736		1699						928	
Starvation Cap Reductn		0	0		114						0	
Spillback Cap Reductn		0	0		0						0	
Storage Cap Reductn		0	0		0						0	
Reduced v/c Ratio		0.50	0.57		0.67						0.98	

Intersection Summary

Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 54 (54%), Referenced to phase 4:WBTL and 7:EBTL, Start of Green			
Natural Cycle: 70			
Control Type: Pretimed			
Maximum v/c Ratio: 0.98			
Intersection Signal Delay: 26.1		Intersection LOS: C	
Intersection Capacity Utilization 100.6%		ICU Level of Service G	
Analysis Period (min) 15			
Description: S			

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2077: 9th St NW & Massachusetts Ave NW/Mt Vernon Pl NW



Lane Group	Ø1	Ø8
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	1	8
Permitted Phases		
Minimum Split (s)	3.0	26.0
Total Split (s)	3.0	26.0
Total Split (%)	3%	26%
Yellow Time (s)	2.0	4.0
All-Red Time (s)	0.0	2.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	18	265	686	135	85	513
Future Volume (Veh/h)	18	265	686	135	85	513
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	18	270	700	138	87	523
Pedestrians	257		157			
Lane Width (ft)	12.0		12.0			
Walking Speed (ft/s)	3.5		3.5			
Percent Blockage	24		15			
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			151			144
pX, platoon unblocked	0.92					
vC, conflicting volume	1618	501			1095	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1504	501			1095	
tC, single (s)	7.0	7.0			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.3			2.2	
p0 queue free %	65	30			82	
cM capacity (veh/h)	52	387			487	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2
Volume Total	288	200	200	200	238	261	349
Volume Left	18	0	0	0	0	87	0
Volume Right	270	0	0	0	138	0	0
cSH	275	1700	1700	1700	1700	487	1700
Volume to Capacity	1.05	0.12	0.12	0.12	0.14	0.18	0.21
Queue Length 95th (ft)	280	0	0	0	0	16	0
Control Delay (s)	107.7	0.0	0.0	0.0	0.0	6.5	0.0
Lane LOS	F					A	
Approach Delay (s)	107.7	0.0				2.8	
Approach LOS	F						

Intersection Summary			
Average Delay	18.8		
Intersection Capacity Utilization	57.6%	ICU Level of Service	B
Analysis Period (min)	15		

Intersection: 13: 9th St NW & K St NW

Movement	SB	SB	SB	SB	SB
Directions Served	T	T	T	T	TR
Maximum Queue (ft)	97	112	97	97	76
Average Queue (ft)	39	46	30	36	16
95th Queue (ft)	103	106	78	85	56
Link Distance (ft)	92	92	92	92	92
Upstream Blk Time (%)	18	15	0	0	0
Queuing Penalty (veh)	41	33	0	0	0
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 15: 7th St NW & K St NW

Movement	WB	NB	NB	NB	NB	SB	SB
Directions Served	LR	T	T	T	TR	LT	T
Maximum Queue (ft)	819	125	91	87	102	183	188
Average Queue (ft)	678	52	21	14	43	97	99
95th Queue (ft)	1036	115	71	57	100	141	189
Link Distance (ft)	784	65	65	65	65	79	79
Upstream Blk Time (%)	70	18	6	1	5	49	21
Queuing Penalty (veh)	0	37	13	3	10	146	63
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2061: 7th St NW & K St NW/Massachusetts Ave NW

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	TR	LT	TR	LT	TR	LT	TR
Maximum Queue (ft)	543	559	343	316	345	375	169	175
Average Queue (ft)	450	399	102	87	130	173	104	148
95th Queue (ft)	623	623	280	252	287	316	191	177
Link Distance (ft)	512	512	865	865	672	672	65	65
Upstream Blk Time (%)	32	14	0		0	0	42	62
Queuing Penalty (veh)	133	56	0		0	0	112	166
Storage Bay Dist (ft)								
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 2065: 7th St NW & Mt Vernon Pl NW/New York Ave NW

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	LT	TR	LT	T	R	L	T	T	R	LT	TR
Maximum Queue (ft)	509	507	772	746	259	189	149	154	127	512	496
Average Queue (ft)	402	414	514	471	62	151	71	84	58	282	251
95th Queue (ft)	615	615	824	781	253	190	134	154	112	580	561
Link Distance (ft)	462	462	849	849	849	79	79	79	79	663	663
Upstream Blk Time (%)	23	32	4	2	2	59	8	14	4	6	5
Queuing Penalty (veh)	87	120	0	0	0	141	20	34	9	0	0
Storage Bay Dist (ft)											
Storage Blk Time (%)											
Queuing Penalty (veh)											

Intersection: 2074: 9th St NW & New York Ave NW/K St NW

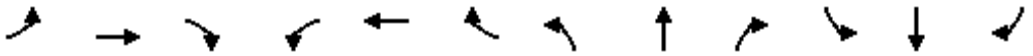
Movement	EB	EB	EB	WB	WB	SB	SB	SB	SB	SB
Directions Served	T	T	R	LT	T	L	LT	T	T	R
Maximum Queue (ft)	639	642	517	328	322	140	160	125	132	74
Average Queue (ft)	355	313	176	205	180	79	84	73	75	24
95th Queue (ft)	743	733	633	330	302	155	150	125	130	57
Link Distance (ft)	768	768	768	512	512	64	64	64	64	64
Upstream Blk Time (%)	16	15	12			42	38	23	24	1
Queuing Penalty (veh)	0	0	0			91	81	50	52	1
Storage Bay Dist (ft)										
Storage Blk Time (%)										
Queuing Penalty (veh)										

Intersection: 2077: 9th St NW & Massachusetts Ave NW/Mt Vernon Pl NW

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	LT	T	R	LT	TR	LT	TR
Maximum Queue (ft)	793	798	794	182	199	725	727
Average Queue (ft)	456	451	445	120	135	676	698
95th Queue (ft)	926	938	879	190	203	848	726
Link Distance (ft)	774	774	774	462	462	682	682
Upstream Blk Time (%)	18	26	27			68	90
Queuing Penalty (veh)	0	0	0			0	0
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Network Summary

Network wide Queuing Penalty: 1497

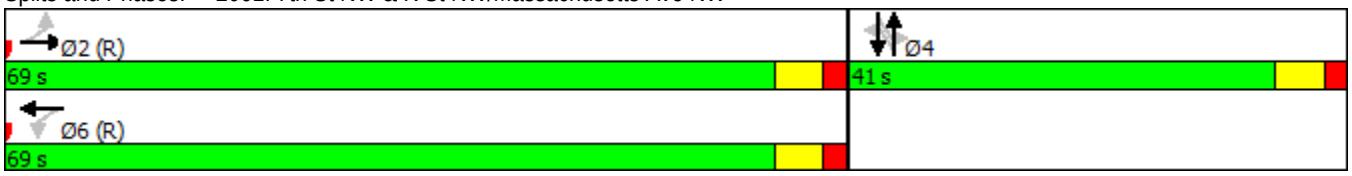


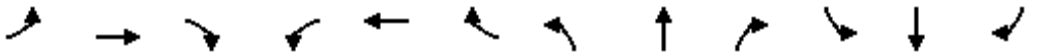
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	111	1125	76	1	455	392	28	696	53	16	207	121
Future Volume (vph)	111	1125	76	1	455	392	28	696	53	16	207	121
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	12	12	10	10	10	9	9	9
Satd. Flow (prot)	0	3212	0	0	2646	0	0	3059	0	0	2333	0
Flt Permitted		0.684			0.954			0.926			0.854	
Satd. Flow (perm)	0	2189	0	0	2524	0	0	2811	0	0	1988	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)								7			27	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		576			341			401			151	
Travel Time (s)		13.1			7.8			9.1			3.4	
Confl. Peds. (#/hr)	540		387	387		540	833		684	684		833
Confl. Bikes (#/hr)			17			4			32			12
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	3%	3%	0%	5%	1%	0%	6%	2%	23%	9%	8%
Parking (#/hr)		0										
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1381	0	0	893	0	0	818	0	0	362	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			4	
Permitted Phases	2			6			4			4		
Minimum Split (s)	28.0	28.0		28.0	28.0		29.0	29.0		29.0	29.0	
Total Split (s)	69.0	69.0		69.0	69.0		41.0	41.0		41.0	41.0	
Total Split (%)	62.7%	62.7%		62.7%	62.7%		37.3%	37.3%		37.3%	37.3%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.0			6.0			6.0			6.0	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)		63.0			63.0			35.0			35.0	
Actuated g/C Ratio		0.57			0.57			0.32			0.32	
v/c Ratio		1.10			0.62			0.91			0.56	
Control Delay		68.8			17.9			51.1			23.2	
Queue Delay		0.1			0.1			29.7			0.9	
Total Delay		68.9			18.0			80.8			24.1	
LOS		E			B			F			C	
Approach Delay		68.9			18.0			80.8			24.1	
Approach LOS		E			B			F			C	
Queue Length 50th (ft)		~593			207			288			135	
Queue Length 95th (ft)		#716			272			#408			m160	
Internal Link Dist (ft)		496			261			321			71	
Turn Bay Length (ft)												
Base Capacity (vph)		1253			1445			899			650	
Starvation Cap Reductn		0			0			0			106	
Spillback Cap Reductn		39			46			125			0	
Storage Cap Reductn		0			0			0			0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		1.14			0.64			1.06			0.67	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 100 (91%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 90			
Control Type: Pretimed			
Maximum v/c Ratio: 1.10			
Intersection Signal Delay: 53.9		Intersection LOS: D	
Intersection Capacity Utilization 124.4%		ICU Level of Service H	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 2061: 7th St NW & K St NW/Massachusetts Ave NW





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	1347	146	19	766	252	483	709	121	0	253	70
Future Volume (vph)	12	1347	146	19	766	252	483	709	121	0	253	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	11	11	11	12	11	11	11
Satd. Flow (prot)	0	3264	0	0	3504	1487	1728	3323	1615	0	2771	0
Flt Permitted		0.945			0.690		0.950					
Satd. Flow (perm)	0	3082	0	0	2420	821	1143	3323	1022	0	2771	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13				119			50		27	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		574			375			144			280	
Travel Time (s)		13.0			8.5			3.3			6.4	
Confl. Peds. (#/hr)	525		321	321		525	760		444	444		760
Confl. Bikes (#/hr)			9			7			44			10
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	70%	1%	3%	0%	3%	5%	1%	5%	0%	0%	8%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1568	0	0	818	263	503	739	126	0	337	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA	Perm		NA	
Protected Phases		2			6		3	8			4	
Permitted Phases	2			6		6			8			
Minimum Split (s)	27.0	27.0		24.0	24.0	24.0	25.0	33.0	33.0		21.0	
Total Split (s)	54.0	54.0		54.0	54.0	54.0	32.0	53.0	53.0		21.0	
Total Split (%)	49.1%	49.1%		49.1%	49.1%	49.1%	29.1%	48.2%	48.2%		19.1%	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.5	4.5	4.5		4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.5	2.5	2.5		2.0	
Lost Time Adjust (s)		-1.5			-1.5	-1.5	-1.5	-1.5	-1.5		-1.5	
Total Lost Time (s)		4.5			4.5	4.5	5.5	5.5	5.5		4.5	
Lead/Lag											Lag	
Lead-Lag Optimize?											Yes	
Act Effct Green (s)		49.5			49.5	49.5	26.5	47.5	47.5		16.5	
Actuated g/C Ratio		0.45			0.45	0.45	0.24	0.43	0.43		0.15	
v/c Ratio		1.12			0.75	0.61	1.21	0.52	0.27		0.77	
Control Delay		82.0			30.5	18.9	140.7	18.5	10.2		54.1	
Queue Delay		0.0			0.3	0.0	1.8	2.3	0.0		0.0	
Total Delay		82.0			30.8	18.9	142.5	20.8	10.2		54.1	
LOS		F			C	B	F	C	B		D	
Approach Delay		82.0			27.9			64.6			54.1	
Approach LOS		F			C			E			D	
Queue Length 50th (ft)		~653			245	73	~427	133	19		112	
Queue Length 95th (ft)		m#796			327	169	m#549	m168	m37		#176	
Internal Link Dist (ft)		494			295			64			200	
Turn Bay Length (ft)												
Base Capacity (vph)		1394			1089	434	416	1434	469		438	
Starvation Cap Reductn		0			0	0	68	534	0		0	
Spillback Cap Reductn		0			34	0	0	0	0		0	
Storage Cap Reductn		0			0	0	0	0	0		0	
Reduced v/c Ratio		1.12			0.78	0.61	1.45	0.82	0.27		0.77	

Lane Group	Ø9	Ø13
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	9	13
Permitted Phases		
Minimum Split (s)	3.0	3.0
Total Split (s)	3.0	3.0
Total Split (%)	3%	3%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	
Lead-Lag Optimize?	Yes	
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

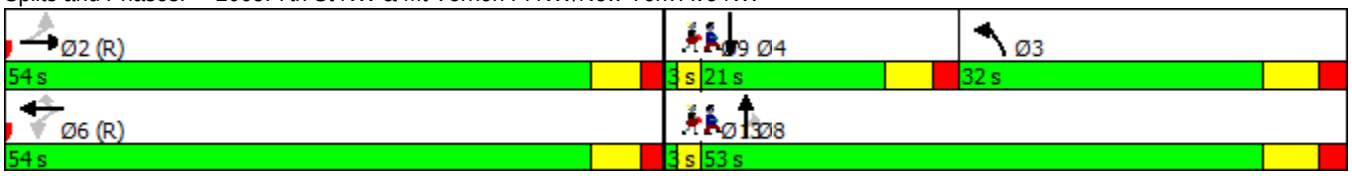
Intersection Summary	
Area Type:	Other
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 102 (93%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 140	
Control Type: Pretimed	
Maximum v/c Ratio: 1.21	
Intersection Signal Delay: 60.9	Intersection LOS: E
Intersection Capacity Utilization 102.5%	ICU Level of Service G
Analysis Period (min) 15	

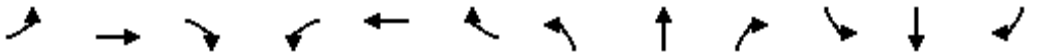
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2065: 7th St NW & Mt Vernon Pl NW/New York Ave NW



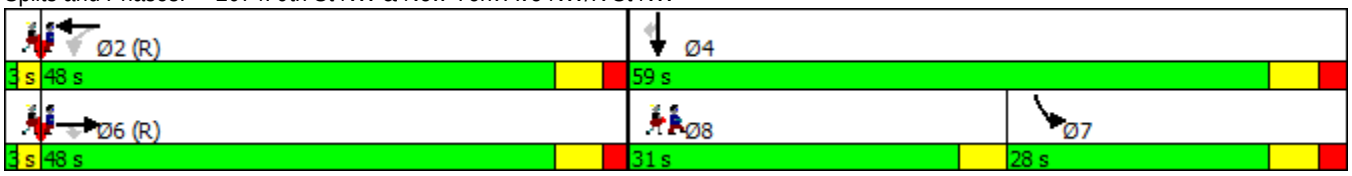


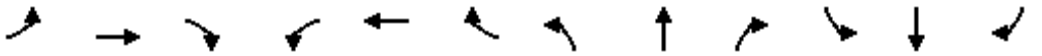
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	914	124	100	505	0	0	0	0	398	735	44
Future Volume (vph)	0	914	124	100	505	0	0	0	0	398	735	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	9	10	9	12	12	12	12	12	12	13	12	12
Satd. Flow (prot)	0	3240	1425	0	3389	0	0	0	0	1573	4693	1615
Flt Permitted					0.544					0.950	0.993	
Satd. Flow (perm)	0	3240	748	0	1858	0	0	0	0	886	4414	923
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			94									50
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		585			576			255			113	
Travel Time (s)		13.3			13.1			5.8			2.6	
Confl. Peds. (#/hr)	707		486	486		707	720		686	686		720
Confl. Bikes (#/hr)			29			6						16
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	4%	2%	4%	6%	0%	0%	0%	0%	2%	4%	0%
Shared Lane Traffic (%)										31%		
Lane Group Flow (vph)	0	962	131	0	637	0	0	0	0	289	904	46
Turn Type		NA	Perm	Perm	NA					Prot	NA	Perm
Protected Phases		6			2					7	4	
Permitted Phases			6	2								4
Minimum Split (s)		20.0	20.0	24.0	24.0					11.5	32.5	32.5
Total Split (s)		48.0	48.0	48.0	48.0					28.0	59.0	59.0
Total Split (%)		43.6%	43.6%	43.6%	43.6%					25.5%	53.6%	53.6%
Yellow Time (s)		4.0	4.0	4.0	4.0					4.0	4.0	4.0
All-Red Time (s)		2.0	2.0	2.0	2.0					2.5	2.5	2.5
Lost Time Adjust (s)		-1.5	-1.5		-1.5					-1.5	-1.5	-1.5
Total Lost Time (s)		4.5	4.5		4.5					5.0	5.0	5.0
Lead/Lag		Lag	Lag	Lag	Lag					Lag		
Lead-Lag Optimize?		Yes	Yes	Yes	Yes					Yes		
Act Effct Green (s)		43.5	43.5		43.5					23.0	54.0	54.0
Actuated g/C Ratio		0.40	0.40		0.40					0.21	0.49	0.49
v/c Ratio		0.75	0.37		0.97dl					0.88	0.53	0.10
Control Delay		33.1	11.3		34.0					43.0	7.4	0.8
Queue Delay		1.3	0.0		0.0					18.8	1.0	0.0
Total Delay		34.4	11.3		34.0					61.8	8.4	0.8
LOS		C	B		C					E	A	A
Approach Delay		31.6			34.0						20.6	
Approach LOS		C			C						C	
Queue Length 50th (ft)		302	16		212					203	61	0
Queue Length 95th (ft)		383	66		m#324					m#300	m76	m0
Internal Link Dist (ft)		505			496			175			33	
Turn Bay Length (ft)												
Base Capacity (vph)		1281	352		734					328	1717	478
Starvation Cap Reductn		0	0		0					39	514	0
Spillback Cap Reductn		145	0		0					0	0	0
Storage Cap Reductn		0	0		0					0	0	0
Reduced v/c Ratio		0.85	0.37		0.87					1.00	0.75	0.10

Lane Group	Ø1	Ø5	Ø8
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Lane Width (ft)			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Right Turn on Red			
Satd. Flow (RTOR)			
Link Speed (mph)			
Link Distance (ft)			
Travel Time (s)			
Confl. Peds. (#/hr)			
Confl. Bikes (#/hr)			
Peak Hour Factor			
Heavy Vehicles (%)			
Shared Lane Traffic (%)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	1	5	8
Permitted Phases			
Minimum Split (s)	3.0	3.0	31.0
Total Split (s)	3.0	3.0	31.0
Total Split (%)	3%	3%	28%
Yellow Time (s)	2.0	2.0	4.0
All-Red Time (s)	0.0	0.0	0.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
Queue Length 50th (ft)			
Queue Length 95th (ft)			
Internal Link Dist (ft)			
Turn Bay Length (ft)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			

Intersection Summary		
Area Type:	Other	
Cycle Length: 110		
Actuated Cycle Length: 110		
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBT, Start of Green		
Natural Cycle: 90		
Control Type: Pretimed		
Maximum v/c Ratio: 0.88		
Intersection Signal Delay: 27.5		Intersection LOS: C
Intersection Capacity Utilization 75.5%		ICU Level of Service D
Analysis Period (min) 15		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		
m Volume for 95th percentile queue is metered by upstream signal.		
dl Defacto Left Lane. Recode with 1 though lane as a left lane.		

Splits and Phases: 2074: 9th St NW & New York Ave NW/K St NW





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	1405	413	1	1168	150	0	0	0	101	856	48
Future Volume (vph)	2	1405	413	1	1168	150	0	0	0	101	856	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	12	12	12	11	11	11
Satd. Flow (prot)	0	3269	1478	0	3155	0	0	0	0	0	3284	0
Flt Permitted		0.954			0.954						0.995	
Satd. Flow (perm)	0	3119	1478	0	3010	0	0	0	0	0	3177	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			289		20						5	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		334			574			169			292	
Travel Time (s)		7.6			13.0			3.8			6.6	
Confl. Peds. (#/hr)	195		321	321		195	305		258	258		305
Confl. Bikes (#/hr)			44			27						7
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	50%	3%	2%	0%	1%	3%	0%	0%	0%	7%	3%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1450	426	0	1360	0	0	0	0	0	1035	0
Turn Type	Perm	NA	custom	Perm	NA					Perm	NA	
Protected Phases		8 7	7		4						2	
Permitted Phases	8 7			4						2		
Minimum Split (s)			11.0	27.0	27.0					26.0	26.0	
Total Split (s)			38.0	64.0	64.0					43.0	43.0	
Total Split (%)			34.5%	58.2%	58.2%					39.1%	39.1%	
Yellow Time (s)			4.0	4.0	4.0					4.0	4.0	
All-Red Time (s)			2.0	2.0	2.0					2.0	2.0	
Lost Time Adjust (s)			-1.5		-1.5						-1.5	
Total Lost Time (s)			4.5		4.5						4.5	
Lead/Lag			Lag							Lag	Lag	
Lead-Lag Optimize?			Yes							Yes	Yes	
Act Effct Green (s)		61.5	33.5		59.5						38.5	
Actuated g/C Ratio		0.56	0.30		0.54						0.35	
v/c Ratio		0.83	0.65		0.83						0.93	
Control Delay		25.4	15.7		12.8						49.3	
Queue Delay		8.1	0.0		0.9						3.1	
Total Delay		33.4	15.8		13.7						52.4	
LOS		C	B		B						D	
Approach Delay		29.4			13.7						52.4	
Approach LOS		C			B						D	
Queue Length 50th (ft)		421	77		271						365	
Queue Length 95th (ft)		528	192		m268						#501	
Internal Link Dist (ft)		254			494			89			212	
Turn Bay Length (ft)												
Base Capacity (vph)		1743	651		1637						1115	
Starvation Cap Reductn		0	0		92						0	
Spillback Cap Reductn		269	3		0						39	
Storage Cap Reductn		0	0		0						0	
Reduced v/c Ratio		0.98	0.66		0.88						0.96	

Lane Group	Ø1	Ø8
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	1	8
Permitted Phases		
Minimum Split (s)	3.0	26.0
Total Split (s)	3.0	26.0
Total Split (%)	3%	24%
Yellow Time (s)	2.0	4.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 16 (15%), Referenced to phase 4:WBTL and 7:EBTL, Start of Green			
Natural Cycle: 75			
Control Type: Pretimed			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 30.0		Intersection LOS: C	
Intersection Capacity Utilization 112.1%		ICU Level of Service H	
Analysis Period (min) 15			

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2077: 9th St NW & Massachusetts Ave NW/Mt Vernon Pl NW

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	186	1127	72	78	340
Future Volume (Veh/h)	5	186	1127	72	78	340
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	5	198	1199	77	83	362
Pedestrians	636		394			1
Lane Width (ft)	12.0		10.0			9.0
Walking Speed (ft/s)	3.5		3.5			3.5
Percent Blockage	61		31			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			151			144
pX, platoon unblocked	0.91					
vC, conflicting volume	2614	975			1912	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2577	975			1912	
tC, single (s)	6.8	7.0			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	0			33	
cM capacity (veh/h)	2	98			124	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2
Volume Total	203	343	343	343	248	204	241
Volume Left	5	0	0	0	0	83	0
Volume Right	198	0	0	0	77	0	0
cSH	42	1700	1700	1700	1700	124	1700
Volume to Capacity	4.86	0.20	0.20	0.20	0.15	0.67	0.14
Queue Length 95th (ft)	Err	0	0	0	0	89	0
Control Delay (s)	Err	0.0	0.0	0.0	0.0	66.1	0.0
Lane LOS	F					F	
Approach Delay (s)	Err	0.0				30.2	
Approach LOS	F						

Intersection Summary			
Average Delay	1062.0		
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection: 13: 9th St NW & K St NW

Movement	SB	SB	SB	SB	SB
Directions Served	T	T	T	T	TR
Maximum Queue (ft)	92	67	52	62	63
Average Queue (ft)	8	7	5	5	12
95th Queue (ft)	45	35	27	31	42
Link Distance (ft)	92	92	92	92	92
Upstream Blk Time (%)	0	0		0	0
Queuing Penalty (veh)	0	0		0	0
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 15: 7th St NW & K St NW

Movement	WB	NB	NB	NB	NB	SB	SB
Directions Served	LR	T	T	T	TR	LT	T
Maximum Queue (ft)	872	166	88	102	87	137	150
Average Queue (ft)	705	75	18	32	32	89	45
95th Queue (ft)	1088	139	66	88	79	122	122
Link Distance (ft)	831	65	65	65	65	79	79
Upstream Blk Time (%)	66	17	2	5	3	41	2
Queuing Penalty (veh)	0	51	5	15	9	86	4
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2061: 7th St NW & K St NW/Massachusetts Ave NW

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	TR	LT	TR	LT	TR	LT	TR
Maximum Queue (ft)	540	568	618	717	816	814	150	173
Average Queue (ft)	471	474	324	406	717	709	59	117
95th Queue (ft)	637	641	800	874	942	951	126	183
Link Distance (ft)	512	512	953	953	756	756	65	65
Upstream Blk Time (%)	8	8	9	11	62	70	21	29
Queuing Penalty (veh)	51	52	0	0	0	0	37	50
Storage Bay Dist (ft)								
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 2065: 7th St NW & Mt Vernon Pl NW/New York Ave NW

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	LT	TR	LT	T	R	L	T	T	R	T	TR
Maximum Queue (ft)	496	503	650	614	336	179	154	167	99	717	721
Average Queue (ft)	447	451	358	327	148	158	78	117	43	441	451
95th Queue (ft)	549	548	633	588	285	183	124	185	86	791	793
Link Distance (ft)	461	461	859	859	859	79	79	79	79	689	689
Upstream Blk Time (%)	10	12	1	0		59	7	17	2	20	21
Queuing Penalty (veh)	74	90	0	0		193	23	56	5	0	0
Storage Bay Dist (ft)											
Storage Blk Time (%)											
Queuing Penalty (veh)											

Intersection: 2074: 9th St NW & New York Ave NW/K St NW

Movement	EB	EB	EB	WB	WB	SB	SB	SB	SB	SB
Directions Served	T	T	R	LT	T	L	LT	T	T	R
Maximum Queue (ft)	932	924	928	334	327	140	146	86	128	63
Average Queue (ft)	684	667	495	190	175	80	88	41	75	17
95th Queue (ft)	1142	1142	1194	357	330	140	138	81	123	48
Link Distance (ft)	880	880	880	512	512	64	64	64	64	64
Upstream Blk Time (%)	46	49	39			15	24	2	8	0
Queuing Penalty (veh)	0	0	0			35	57	4	20	1
Storage Bay Dist (ft)										
Storage Blk Time (%)										
Queuing Penalty (veh)										

Intersection: 2077: 9th St NW & Massachusetts Ave NW/Mt Vernon Pl NW

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	LT	T	R	LT	TR	LT	TR
Maximum Queue (ft)	780	779	776	354	361	740	744
Average Queue (ft)	691	688	677	141	173	652	678
95th Queue (ft)	948	956	963	287	308	922	865
Link Distance (ft)	734	734	734	461	461	700	700
Upstream Blk Time (%)	53	70	51	0	1	46	72
Queuing Penalty (veh)	0	0	0	3	4	0	0
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Network Summary

Network wide Queuing Penalty: 923

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	111	1125	76	1	455	392	28	696	53	16	207	121
Future Volume (vph)	111	1125	76	1	455	392	28	696	53	16	207	121
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	12	12	12	10	10	10	9	9	9
Storage Length (ft)	125		0	0		0	0		100	0		0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1604	3009	0	0	2646	0	0	3059	0	0	2333	0
Flt Permitted	0.204				0.954			0.928			0.899	
Satd. Flow (perm)	322	3009	0	0	2524	0	0	2818	0	0	2093	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			60			8			103	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		576			946			756			151	
Travel Time (s)		13.1			21.5			17.2			3.4	
Confl. Peds. (#/hr)	540		387	387		540	833		684	684		833
Confl. Bikes (#/hr)			17			4			32			12
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	3%	3%	0%	5%	1%	0%	6%	2%	23%	9%	8%
Parking (#/hr)		0										
Shared Lane Traffic (%)												
Lane Group Flow (vph)	117	1264	0	0	893	0	0	818	0	0	362	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			4			4	
Permitted Phases	2			6			4			4		
Minimum Split (s)	10.0	28.0		28.0	28.0		29.0	29.0		29.0	29.0	
Total Split (s)	10.0	65.0		55.0	55.0		45.0	45.0		45.0	45.0	
Total Split (%)	9.1%	59.1%		50.0%	50.0%		40.9%	40.9%		40.9%	40.9%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	0.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.5	-1.5			-1.5			-1.5			-1.5	
Total Lost Time (s)	2.5	4.5			4.5			4.5			4.5	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Act Effct Green (s)	62.5	60.5			50.5			40.5			40.5	
Actuated g/C Ratio	0.57	0.55			0.46			0.37			0.37	
v/c Ratio	0.43	0.76			0.75			0.79			0.43	
Control Delay	9.2	9.1			27.6			37.0			8.8	
Queue Delay	0.0	0.0			0.0			2.9			0.8	
Total Delay	9.2	9.1			27.6			39.9			9.6	
LOS	A	A			C			D			A	
Approach Delay		9.2			27.6			39.9			9.6	
Approach LOS		A			C			D			A	
Queue Length 50th (ft)	11	151			250			264			36	
Queue Length 95th (ft)	m16	m217			333			344			m47	
Internal Link Dist (ft)		496			866			676			71	
Turn Bay Length (ft)	125											
Base Capacity (vph)	270	1655			1191			1042			835	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn	0	9			0			0			229	
Spillback Cap Reductn	0	0			2			131			0	
Storage Cap Reductn	0	0			0			0			0	
Reduced v/c Ratio	0.43	0.77			0.75			0.90			0.60	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 1 (1%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 70			
Control Type: Pretimed			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 21.3		Intersection LOS: C	
Intersection Capacity Utilization 117.5%		ICU Level of Service H	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2061: 7th St NW & K St NW/Massachusetts Ave NW

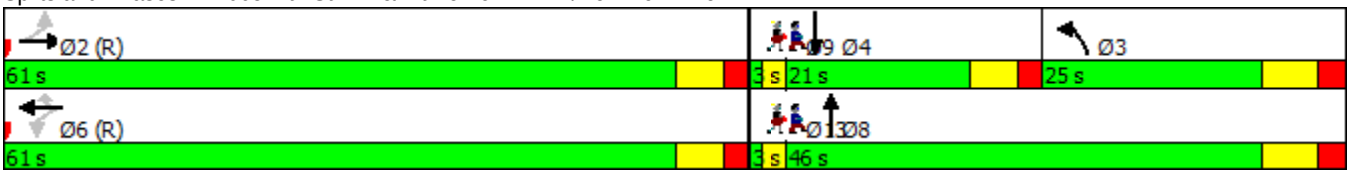
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	1347	146	19	766	252	483	709	121	0	253	70
Future Volume (vph)	12	1347	146	19	766	252	483	709	121	0	253	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	11	11	11	12	11	11	11
Satd. Flow (prot)	0	3264	0	0	3504	1487	3351	3097	0	0	2771	0
Flt Permitted		0.945			0.776		0.950					
Satd. Flow (perm)	0	3082	0	0	2722	821	1463	3097	0	0	2771	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15				119		20			26	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		574			930			144			740	
Travel Time (s)		13.0			21.1			3.3			16.8	
Confl. Peds. (#/hr)	525		321	321		525	760		444	444		760
Confl. Bikes (#/hr)			9			7			44			10
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	70%	1%	3%	0%	3%	5%	1%	5%	0%	0%	8%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1568	0	0	818	263	503	865	0	0	337	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA			NA	
Protected Phases		2			6		3	8			4	
Permitted Phases	2			6		6						
Minimum Split (s)	27.0	27.0		24.0	24.0	24.0	25.0	33.0			21.0	
Total Split (s)	61.0	61.0		61.0	61.0	61.0	25.0	46.0			21.0	
Total Split (%)	55.5%	55.5%		55.5%	55.5%	55.5%	22.7%	41.8%			19.1%	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.5	4.5			4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.5	2.5			2.0	
Lost Time Adjust (s)		-1.5			-1.5	-1.5	-1.5	-1.5			-1.5	
Total Lost Time (s)		4.5			4.5	4.5	5.5	5.5			4.5	
Lead/Lag											Lag	
Lead-Lag Optimize?											Yes	
Act Effct Green (s)		56.5			56.5	56.5	19.5	40.5			16.5	
Actuated g/C Ratio		0.51			0.51	0.51	0.18	0.37			0.15	
v/c Ratio		0.99			0.59	0.55	0.85	0.75			0.77	
Control Delay		25.0			20.7	14.4	47.1	24.7			54.3	
Queue Delay		0.0			0.0	0.0	4.8	17.1			0.0	
Total Delay		25.0			20.7	14.4	51.9	41.8			54.3	
LOS		C			C	B	D	D			D	
Approach Delay		25.0			19.2			45.5			54.3	
Approach LOS		C			B			D			D	
Queue Length 50th (ft)		94			203	63	186	235			112	
Queue Length 95th (ft)		m#717			265	146	m#259	290			#177	
Internal Link Dist (ft)		494			850			64			660	
Turn Bay Length (ft)												
Base Capacity (vph)		1590			1398	479	594	1152			437	
Starvation Cap Reductn		0			0	0	50	293			0	
Spillback Cap Reductn		0			0	0	0	0			0	
Storage Cap Reductn		0			0	0	0	0			0	
Reduced v/c Ratio		0.99			0.59	0.55	0.92	1.01			0.77	

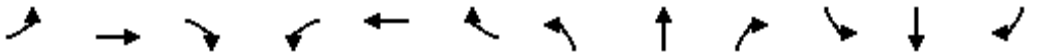
Lane Group	Ø9	Ø13
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	9	13
Permitted Phases		
Minimum Split (s)	3.0	3.0
Total Split (s)	3.0	3.0
Total Split (%)	3%	3%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	
Lead-Lag Optimize?	Yes	
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary	
Area Type:	Other
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 108 (98%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 100	
Control Type: Pretimed	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay: 32.3	Intersection LOS: C
Intersection Capacity Utilization 105.7%	ICU Level of Service G
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2065: 7th St NW & Mt Vernon Pl NW/New York Ave NW





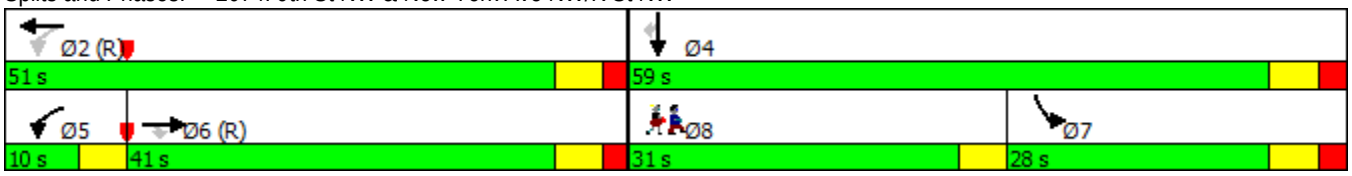
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	914	124	100	505	0	0	0	0	398	735	44
Future Volume (vph)	0	914	124	100	505	0	0	0	0	398	735	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	9	10	9	12	12	12	12	12	12	13	12	12
Storage Length (ft)	0		0	100		0	0		0	0		0
Storage Lanes	0		1	1		0	0		0	1		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	3240	1425	1736	3406	0	0	0	0	1573	4693	1615
Flt Permitted				0.103						0.950	0.993	
Satd. Flow (perm)	0	3240	747	188	3406	0	0	0	0	886	4414	923
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			114									69
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		971			576			255			113	
Travel Time (s)		22.1			13.1			5.8			2.6	
Confl. Peds. (#/hr)	707		486	486		707	720		686	686		720
Confl. Bikes (#/hr)			29			6						16
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	4%	2%	4%	6%	0%	0%	0%	0%	2%	4%	0%
Shared Lane Traffic (%)										31%		
Lane Group Flow (vph)	0	962	131	105	532	0	0	0	0	289	904	46
Turn Type		NA	Perm	pm+pt	NA					Prot	NA	Perm
Protected Phases		6		5	2					7	4	
Permitted Phases			6	2								4
Minimum Split (s)		20.0	20.0	10.0	24.0					11.5	32.5	32.5
Total Split (s)		41.0	41.0	10.0	51.0					28.0	59.0	59.0
Total Split (%)		37.3%	37.3%	9.1%	46.4%					25.5%	53.6%	53.6%
Yellow Time (s)		4.0	4.0	4.0	4.0					4.0	4.0	4.0
All-Red Time (s)		2.0	2.0	0.0	2.0					2.5	2.5	2.5
Lost Time Adjust (s)		-1.5	-1.5	-1.5	-1.5					-1.5	-1.5	-1.5
Total Lost Time (s)		4.5	4.5	2.5	4.5					5.0	5.0	5.0
Lead/Lag		Lag	Lag	Lead						Lag		
Lead-Lag Optimize?		Yes	Yes	Yes						Yes		
Act Effct Green (s)		36.5	36.5	48.5	46.5					23.0	54.0	54.0
Actuated g/C Ratio		0.33	0.33	0.44	0.42					0.21	0.49	0.49
v/c Ratio		0.89	0.40	0.56	0.37					0.88	0.53	0.09
Control Delay		47.0	11.0	36.1	19.8					43.3	7.9	0.4
Queue Delay		0.0	0.0	0.0	0.0					17.9	1.0	0.0
Total Delay		47.0	11.0	36.1	19.8					61.2	8.9	0.4
LOS		D	B	D	B					E	A	A
Approach Delay		42.7			22.5						20.8	
Approach LOS		D			C						C	
Queue Length 50th (ft)		337	8	39	91					197	62	0
Queue Length 95th (ft)		#458	60	m71	146					m#300	m80	m0
Internal Link Dist (ft)		891			496			175			33	
Turn Bay Length (ft)				100								
Base Capacity (vph)		1075	324	188	1439					328	1717	488
Starvation Cap Reductn		0	0	0	0					38	512	0

Lane Group	Ø8
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	8
Permitted Phases	
Minimum Split (s)	31.0
Total Split (s)	31.0
Total Split (%)	28%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn		0	0	0	0					0	0	0
Storage Cap Reductn		0	0	0	0					0	0	0
Reduced v/c Ratio		0.89	0.40	0.56	0.37					1.00	0.75	0.09

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 6 (5%), Referenced to phase 2:WBTL and 6:EBT, Start of Green			
Natural Cycle: 100			
Control Type: Pretimed			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 29.2		Intersection LOS: C	
Intersection Capacity Utilization 63.7%		ICU Level of Service B	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 2074: 9th St NW & New York Ave NW/K St NW



Lane Group	Ø8
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

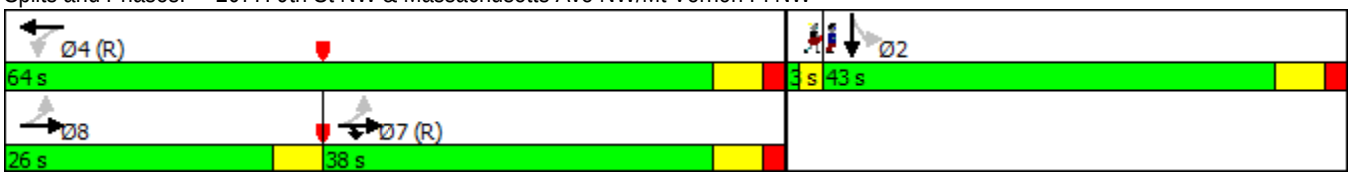
Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	1405	413	1	1168	150	0	0	0	101	856	48
Future Volume (vph)	2	1405	413	1	1168	150	0	0	0	101	856	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	12	12	12	11	11	11
Satd. Flow (prot)	0	3269	1478	0	3155	0	0	0	0	0	3284	0
Flt Permitted		0.954			0.954						0.995	
Satd. Flow (perm)	0	3119	1478	0	3010	0	0	0	0	0	3177	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			289		20						5	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		858			574			169			748	
Travel Time (s)		19.5			13.0			3.8			17.0	
Confl. Peds. (#/hr)	195		321	321		195	305		258	258		305
Confl. Bikes (#/hr)			44			27						7
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	50%	3%	2%	0%	1%	3%	0%	0%	0%	7%	3%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1450	426	0	1360	0	0	0	0	0	1035	0
Turn Type	Perm	NA	custom	Perm	NA					Perm	NA	
Protected Phases		8 7	7		4						2	
Permitted Phases	8 7			4						2		
Minimum Split (s)			11.0	27.0	27.0					26.0	26.0	
Total Split (s)			38.0	64.0	64.0					43.0	43.0	
Total Split (%)			34.5%	58.2%	58.2%					39.1%	39.1%	
Yellow Time (s)			4.0	4.0	4.0					4.0	4.0	
All-Red Time (s)			2.0	2.0	2.0					2.0	2.0	
Lost Time Adjust (s)			-1.5		-1.5						-1.5	
Total Lost Time (s)			4.5		4.5						4.5	
Lead/Lag			Lag							Lag	Lag	
Lead-Lag Optimize?			Yes							Yes	Yes	
Act Effct Green (s)		61.5	33.5		59.5						38.5	
Actuated g/C Ratio		0.56	0.30		0.54						0.35	
v/c Ratio		0.83	0.65		0.83						0.93	
Control Delay		25.4	15.7		14.8						49.3	
Queue Delay		2.1	0.0		0.4						2.8	
Total Delay		27.4	15.8		15.2						52.1	
LOS		C	B		B						D	
Approach Delay		24.8			15.2						52.1	
Approach LOS		C			B						D	
Queue Length 50th (ft)		421	77		76						365	
Queue Length 95th (ft)		528	192		87						#501	
Internal Link Dist (ft)		778			494			89			668	
Turn Bay Length (ft)												
Base Capacity (vph)		1743	651		1637						1115	
Starvation Cap Reductn		0	0		55						0	
Spillback Cap Reductn		166	3		0						36	
Storage Cap Reductn		0	0		0						0	
Reduced v/c Ratio		0.92	0.66		0.86						0.96	

Lane Group	Ø1	Ø8
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	1	8
Permitted Phases		
Minimum Split (s)	3.0	26.0
Total Split (s)	3.0	26.0
Total Split (%)	3%	24%
Yellow Time (s)	2.0	4.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary		
Area Type:	Other	
Cycle Length: 110		
Actuated Cycle Length: 110		
Offset: 16 (15%), Referenced to phase 4:WBTL and 7:EBTL, Start of Green		
Natural Cycle: 75		
Control Type: Pretimed		
Maximum v/c Ratio: 0.93		
Intersection Signal Delay: 28.3	Intersection LOS: C	
Intersection Capacity Utilization 112.1%	ICU Level of Service H	
Analysis Period (min) 15		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		

Splits and Phases: 2077: 9th St NW & Massachusetts Ave NW/Mt Vernon Pl NW



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	3	186	1127	72	78	340
Future Volume (Veh/h)	3	186	1127	72	78	340
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	3	198	1199	77	83	362
Pedestrians	636					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	61					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			151			144
pX, platoon unblocked	0.91					
vC, conflicting volume	2220	974			1912	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2144	974			1912	
tC, single (s)	6.8	7.0			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	41	0			33	
cM capacity (veh/h)	5	98			124	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2
Volume Total	201	343	343	343	248	204	241
Volume Left	3	0	0	0	0	83	0
Volume Right	198	0	0	0	77	0	0
cSH	77	1700	1700	1700	1700	124	1700
Volume to Capacity	2.61	0.20	0.20	0.20	0.15	0.67	0.14
Queue Length 95th (ft)	484	0	0	0	0	89	0
Control Delay (s)	843.5	0.0	0.0	0.0	0.0	66.1	0.0
Lane LOS	F					F	
Approach Delay (s)	843.5	0.0				30.2	
Approach LOS	F						

Intersection Summary			
Average Delay	95.2		
Intersection Capacity Utilization	51.5%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection: 13: 9th St NW & K St NW

Movement	SB	SB	SB	SB	SB
Directions Served	T	T	T	T	TR
Maximum Queue (ft)	61	61	57	48	65
Average Queue (ft)	9	9	6	4	15
95th Queue (ft)	42	44	32	26	47
Link Distance (ft)	92	92	92	92	92
Upstream Blk Time (%)	0	0	0	0	0
Queuing Penalty (veh)	0	0	0	0	0
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 15: 7th St NW & K St NW

Movement	WB	NB	NB	NB	NB	SB	SB
Directions Served	LR	T	T	T	TR	LT	T
Maximum Queue (ft)	850	82	84	88	198	134	105
Average Queue (ft)	730	7	20	9	112	92	25
95th Queue (ft)	1033	41	65	48	184	120	89
Link Distance (ft)	807	59	59	59	59	76	76
Upstream Blk Time (%)	73	0	3	1	34	49	1
Queuing Penalty (veh)	0	1	9	3	103	103	2
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2061: 7th St NW & K St NW/Massachusetts Ave NW

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	LT	TR	LT	TR	LT	TR
Maximum Queue (ft)	149	327	350	923	939	738	738	155	155
Average Queue (ft)	79	154	169	707	753	597	577	58	88
95th Queue (ft)	150	267	277	1179	1144	879	881	131	157
Link Distance (ft)		512	512	888	888	690	690	59	59
Upstream Blk Time (%)				46	60	48	45	29	21
Queuing Penalty (veh)				0	0	0	0	50	36
Storage Bay Dist (ft)	125								
Storage Blk Time (%)	5	8							
Queuing Penalty (veh)	30	9							

Intersection: 2065: 7th St NW & Mt Vernon Pl NW/New York Ave NW

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	LT	TR	LT	T	R	L	L	T	TR	T	TR
Maximum Queue (ft)	497	506	474	449	239	162	158	146	187	675	682
Average Queue (ft)	371	385	279	250	120	97	117	85	156	428	437
95th Queue (ft)	583	587	438	407	209	156	180	127	189	745	753
Link Distance (ft)	463	463	852	852	852	76	76	76	76	660	660
Upstream Blk Time (%)	6	7				12	27	18	62	10	12
Queuing Penalty (veh)	47	55				40	87	59	204	0	0
Storage Bay Dist (ft)											
Storage Blk Time (%)											
Queuing Penalty (veh)											

Intersection: 2074: 9th St NW & New York Ave NW/K St NW

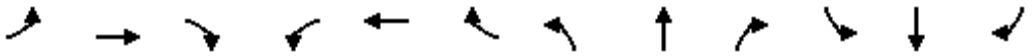
Movement	EB	EB	EB	WB	WB	WB	SB	SB	SB	SB	SB
Directions Served	T	T	R	L	T	T	L	LT	T	T	R
Maximum Queue (ft)	428	406	115	120	160	174	139	141	104	134	69
Average Queue (ft)	284	249	50	54	64	74	88	87	49	86	23
95th Queue (ft)	398	368	89	107	135	141	150	133	95	129	54
Link Distance (ft)	886	886	886		512	512	64	64	64	64	64
Upstream Blk Time (%)							12	21	3	11	0
Queuing Penalty (veh)							29	48	7	25	1
Storage Bay Dist (ft)				100							
Storage Blk Time (%)				3	3						
Queuing Penalty (veh)				8	3						

Intersection: 2077: 9th St NW & Massachusetts Ave NW/Mt Vernon Pl NW

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	LT	T	R	LT	TR	LT	TR
Maximum Queue (ft)	831	829	826	335	342	716	738
Average Queue (ft)	616	605	618	133	162	683	701
95th Queue (ft)	1008	1013	985	282	299	799	760
Link Distance (ft)	789	789	789	463	463	687	687
Upstream Blk Time (%)	31	41	32	0	0	40	80
Queuing Penalty (veh)	0	0	0	1	1	0	0
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Network Summary

Network wide Queuing Penalty: 960



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	333	453	37	12	273	123	44	365	34	107	218	206
Future Volume (vph)	333	453	37	12	273	123	44	365	34	107	218	206
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	12	12	10	10	10	9	9	9
Satd. Flow (prot)	0	3082	0	0	2947	0	0	3140	0	0	2402	0
Flt Permitted		0.663			0.922			0.830			0.704	
Satd. Flow (perm)	0	1942	0	0	2716	0	0	2575	0	0	1656	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			24			9			154	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		576			924			736			151	
Travel Time (s)		13.1			21.0			16.7			3.4	
Confl. Peds. (#/hr)	257		238	238		257	703		286	286		703
Confl. Bikes (#/hr)			12			6			20			20
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	9%	4%	3%	6%	5%	2%	3%	4%	9%	5%	3%
Parking (#/hr)		0										
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	858	0	0	425	0	0	461	0	0	553	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			4	
Permitted Phases	2			6			4			4		
Minimum Split (s)	28.0	28.0		28.0	28.0		29.0	29.0		29.0	29.0	
Total Split (s)	60.0	60.0		60.0	60.0		40.0	40.0		40.0	40.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.0			6.0			6.0			6.0	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)		54.0			54.0			34.0			34.0	
Actuated g/C Ratio		0.54			0.54			0.34			0.34	
v/c Ratio		0.85dl			0.29			0.52			0.83	
Control Delay		14.7			12.4			28.5			21.1	
Queue Delay		0.5			0.0			0.1			1.3	
Total Delay		15.3			12.4			28.7			22.4	
LOS		B			B			C			C	
Approach Delay		15.3			12.4			28.7			22.4	
Approach LOS		B			B			C			C	
Queue Length 50th (ft)		92			68			120			88	
Queue Length 95th (ft)		129			98			171			m#210	
Internal Link Dist (ft)		496			844			656			71	
Turn Bay Length (ft)												
Base Capacity (vph)		1049			1477			881			664	
Starvation Cap Reductn		0			0			0			28	
Spillback Cap Reductn		32			44			53			0	
Storage Cap Reductn		0			0			0			0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		0.84			0.30			0.56			0.87	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 30 (30%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 65			
Control Type: Pretimed			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 19.1		Intersection LOS: B	
Intersection Capacity Utilization 101.2%		ICU Level of Service G	
Analysis Period (min) 15			

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.
dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Splits and Phases: 2061: 7th St NW & K St NW/Massachusetts Ave NW

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	480	239	95	653	78	324	447	180	5	263	27
Future Volume (vph)	35	480	239	95	653	78	324	447	180	5	263	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	11	11	11	12	11	11	11
Satd. Flow (prot)	0	2872	0	0	3496	1210	1662	3292	1553	0	3132	0
Flt Permitted		0.877			0.641		0.950				0.944	
Satd. Flow (perm)	0	2515	0	0	2235	771	1121	3292	1068	0	2952	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		92				131			85		9	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		574			940			144			749	
Travel Time (s)		13.0			21.4			3.3			17.0	
Confl. Peds. (#/hr)	332		197	197		332	599		271	271		599
Confl. Bikes (#/hr)			14			5			15			22
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	9%	6%	2%	7%	2%	29%	5%	6%	4%	0%	4%	12%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	777	0	0	771	80	334	461	186	0	304	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA	Perm	Perm	NA	
Protected Phases		2			6		3	8			4	
Permitted Phases	2			6		6			8	4		
Minimum Split (s)	27.0	27.0		24.0	24.0	24.0	25.0	33.0	33.0	21.0	21.0	
Total Split (s)	47.0	47.0		47.0	47.0	47.0	26.0	50.0	50.0	24.0	24.0	
Total Split (%)	47.0%	47.0%		47.0%	47.0%	47.0%	26.0%	50.0%	50.0%	24.0%	24.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.5	4.5	4.5	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.5	2.5	2.5	2.0	2.0	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0	0.0		0.0	
Total Lost Time (s)		6.0			6.0	6.0	7.0	7.0	7.0		6.0	
Lead/Lag										Lag	Lag	
Lead-Lag Optimize?										Yes	Yes	
Act Effct Green (s)		41.0			41.0	41.0	19.0	43.0	43.0		18.0	
Actuated g/C Ratio		0.41			0.41	0.41	0.19	0.43	0.43		0.18	
v/c Ratio		0.72			0.84	0.20	1.06	0.33	0.37		0.57	
Control Delay		14.6			36.7	2.0	105.1	18.5	11.6		40.9	
Queue Delay		0.0			0.0	0.0	14.9	1.0	0.9		0.6	
Total Delay		14.6			36.7	2.0	119.9	19.4	12.4		41.5	
LOS		B			D	A	F	B	B		D	
Approach Delay		14.6			33.4			52.3			41.5	
Approach LOS		B			C			D			D	
Queue Length 50th (ft)		197			227	0	~231	100	26		91	
Queue Length 95th (ft)		m265			#338	8	m#386	m136	m86		135	
Internal Link Dist (ft)		494			860			64			669	
Turn Bay Length (ft)												
Base Capacity (vph)		1085			916	393	315	1415	507		538	
Starvation Cap Reductn		0			0	0	20	668	138		0	
Spillback Cap Reductn		0			0	0	0	0	0		55	
Storage Cap Reductn		0			0	0	0	0	0		0	
Reduced v/c Ratio		0.72			0.84	0.20	1.13	0.62	0.50		0.63	

Lane Group	Ø9	Ø13
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	9	13
Permitted Phases		
Minimum Split (s)	3.0	3.0
Total Split (s)	3.0	3.0
Total Split (%)	3%	3%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	
Lead-Lag Optimize?	Yes	
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

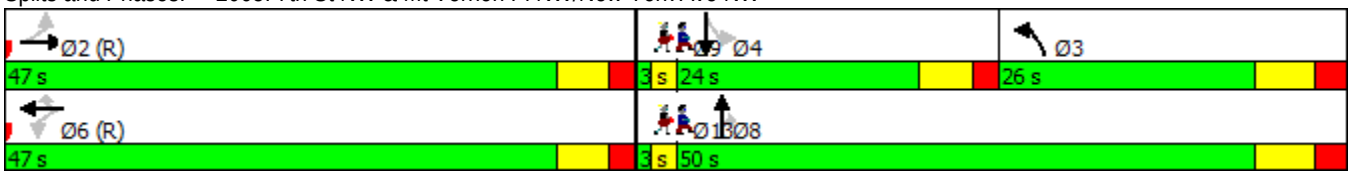
Intersection Summary	
Area Type:	Other
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 52 (52%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 90	
Control Type: Pretimed	
Maximum v/c Ratio: 1.06	
Intersection Signal Delay: 35.6	Intersection LOS: D
Intersection Capacity Utilization 99.4%	ICU Level of Service F
Analysis Period (min) 15	

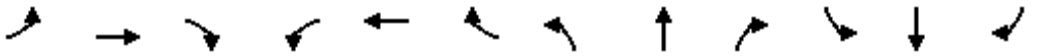
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2065: 7th St NW & Mt Vernon Pl NW/New York Ave NW





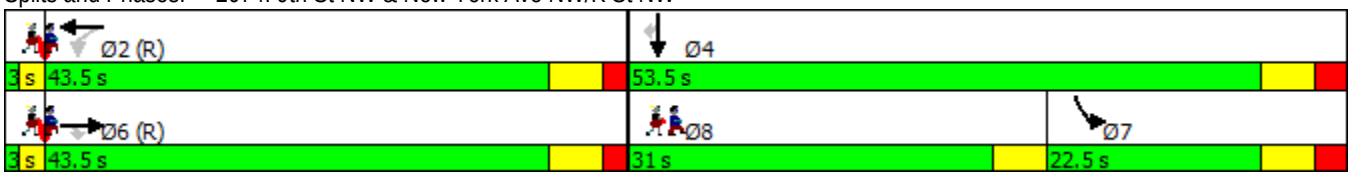
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	625	128	143	380	0	0	0	0	199	823	55
Future Volume (vph)	0	625	128	143	380	0	0	0	0	199	823	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	9	10	9	12	12	12	12	12	12	13	12	12
Satd. Flow (prot)	0	3271	1384	0	3420	0	0	0	0	1573	4756	1495
Flt Permitted					0.597					0.950	0.999	
Satd. Flow (perm)	0	3271	811	0	2004	0	0	0	0	903	4715	946
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			104									55
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		839			576			255			113	
Travel Time (s)		19.1			13.1			5.8			2.6	
Confl. Peds. (#/hr)	367		389	389		367	519		495	495		519
Confl. Bikes (#/hr)			19			7						14
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	3%	5%	2%	5%	0%	0%	0%	0%	2%	3%	8%
Shared Lane Traffic (%)										10%		
Lane Group Flow (vph)	0	651	133	0	545	0	0	0	0	186	878	57
Turn Type		NA	Perm	Perm	NA					Prot	NA	Perm
Protected Phases		6			2					7	4	
Permitted Phases			6	2								4
Minimum Split (s)		20.0	20.0	24.0	24.0					11.5	32.5	32.5
Total Split (s)		43.5	43.5	43.5	43.5					22.5	53.5	53.5
Total Split (%)		43.5%	43.5%	43.5%	43.5%					22.5%	53.5%	53.5%
Yellow Time (s)		4.0	4.0	4.0	4.0					4.0	4.0	4.0
All-Red Time (s)		2.0	2.0	2.0	2.0					2.5	2.5	2.5
Lost Time Adjust (s)		0.0	0.0		0.0					0.0	0.0	0.0
Total Lost Time (s)		6.0	6.0		6.0					6.5	6.5	6.5
Lead/Lag		Lag	Lag	Lag	Lag					Lag		
Lead-Lag Optimize?		Yes	Yes	Yes	Yes					Yes		
Act Effct Green (s)		37.5	37.5		37.5					16.0	47.0	47.0
Actuated g/C Ratio		0.38	0.38		0.38					0.16	0.47	0.47
v/c Ratio		0.53	0.36		0.73					0.74	0.53	0.12
Control Delay		26.3	9.9		28.9					32.0	7.4	0.7
Queue Delay		0.0	0.0		0.0					0.0	0.6	0.0
Total Delay		26.3	9.9		28.9					32.0	8.1	0.7
LOS		C	A		C					C	A	A
Approach Delay		23.5			28.9						11.6	
Approach LOS		C			C						B	
Queue Length 50th (ft)		167	12		177					93	46	0
Queue Length 95th (ft)		223	58		m231					m131	m63	m1
Internal Link Dist (ft)		759			496			175			33	
Turn Bay Length (ft)												
Base Capacity (vph)		1226	369		751					251	1664	473
Starvation Cap Reductn		0	0		0					0	407	0
Spillback Cap Reductn		0	0		0					0	0	0
Storage Cap Reductn		0	0		0					0	0	0
Reduced v/c Ratio		0.53	0.36		0.73					0.74	0.70	0.12

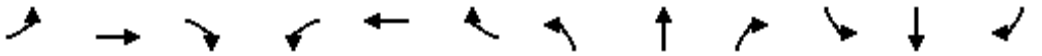
Lane Group	Ø1	Ø5	Ø8
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Lane Width (ft)			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Right Turn on Red			
Satd. Flow (RTOR)			
Link Speed (mph)			
Link Distance (ft)			
Travel Time (s)			
Confl. Peds. (#/hr)			
Confl. Bikes (#/hr)			
Peak Hour Factor			
Heavy Vehicles (%)			
Shared Lane Traffic (%)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	1	5	8
Permitted Phases			
Minimum Split (s)	3.0	3.0	31.0
Total Split (s)	3.0	3.0	31.0
Total Split (%)	3%	3%	31%
Yellow Time (s)	2.0	2.0	4.0
All-Red Time (s)	0.0	0.0	0.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
Queue Length 50th (ft)			
Queue Length 95th (ft)			
Internal Link Dist (ft)			
Turn Bay Length (ft)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			

Intersection Summary		
Area Type:	Other	
Cycle Length: 100		
Actuated Cycle Length: 100		
Offset: 36 (36%), Referenced to phase 2:WBTL and 6:EBT, Start of Green		
Natural Cycle: 80		
Control Type: Pretimed		
Maximum v/c Ratio: 0.74		
Intersection Signal Delay: 19.3		Intersection LOS: B
Intersection Capacity Utilization 69.4%		ICU Level of Service C
Analysis Period (min) 15		

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2074: 9th St NW & New York Ave NW/K St NW





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	695	393	1	920	83	0	0	0	59	722	71
Future Volume (vph)	35	695	393	1	920	83	0	0	0	59	722	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	12	12	12	11	11	11
Satd. Flow (prot)	0	3297	1478	0	3165	0	0	0	0	0	3268	0
Flt Permitted		0.849			0.955						0.997	
Satd. Flow (perm)	0	2797	1478	0	3023	0	0	0	0	0	3178	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			418		15						10	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		810			574			169			753	
Travel Time (s)		18.4			13.0			3.8			17.1	
Confl. Peds. (#/hr)	409		196	196		409	333		520	520		333
Confl. Bikes (#/hr)			13			27						10
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	776	418	0	1068	0	0	0	0	0	907	0
Turn Type	Perm	NA	custom	Perm	NA					Perm	NA	
Protected Phases		8 7	7		4						2	
Permitted Phases	8 7			4						2		
Minimum Split (s)			11.0	28.0	28.0					26.0	26.0	
Total Split (s)			36.0	62.0	62.0					35.0	35.0	
Total Split (%)			36.0%	62.0%	62.0%					35.0%	35.0%	
Yellow Time (s)			4.0	4.0	4.0					4.0	4.0	
All-Red Time (s)			2.0	2.0	2.0					2.0	2.0	
Lost Time Adjust (s)			0.0		0.0						0.0	
Total Lost Time (s)			6.0		6.0						6.0	
Lead/Lag			Lag							Lag	Lag	
Lead-Lag Optimize?			Yes							Yes	Yes	
Act Effct Green (s)		56.0	30.0		56.0						29.0	
Actuated g/C Ratio		0.56	0.30		0.56						0.29	
v/c Ratio		0.50	0.57		0.63						0.98	
Control Delay		14.8	6.1		13.5						60.3	
Queue Delay		0.0	0.0		0.2						0.0	
Total Delay		14.8	6.1		13.7						60.3	
LOS		B	A		B						E	
Approach Delay		11.7			13.7						60.3	
Approach LOS		B			B						E	
Queue Length 50th (ft)		148	0		131						297	
Queue Length 95th (ft)		198	72		m167						#434	
Internal Link Dist (ft)		730			494			89			673	
Turn Bay Length (ft)												
Base Capacity (vph)		1566	736		1699						928	
Starvation Cap Reductn		0	0		114						0	
Spillback Cap Reductn		0	0		0						0	
Storage Cap Reductn		0	0		0						0	
Reduced v/c Ratio		0.50	0.57		0.67						0.98	

Intersection Summary

Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 53 (53%), Referenced to phase 4:WBTL and 7:EBTL, Start of Green			
Natural Cycle: 70			
Control Type: Pretimed			
Maximum v/c Ratio: 0.98			
Intersection Signal Delay: 26.3		Intersection LOS: C	
Intersection Capacity Utilization 100.6%		ICU Level of Service G	
Analysis Period (min) 15			

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2077: 9th St NW & Massachusetts Ave NW/Mt Vernon Pl NW

Lane Group	Ø1	Ø8
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	1	8
Permitted Phases		
Minimum Split (s)	3.0	26.0
Total Split (s)	3.0	26.0
Total Split (%)	3%	26%
Yellow Time (s)	2.0	4.0
All-Red Time (s)	0.0	2.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	18	265	686	135	85	513
Future Volume (Veh/h)	18	265	686	135	85	513
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	18	270	700	138	87	523
Pedestrians	257					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	24					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			151			144
pX, platoon unblocked	0.92					
vC, conflicting volume	1462	501			1095	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1334	501			1095	
tC, single (s)	7.0	7.0			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.3			2.2	
p0 queue free %	77	30			82	
cM capacity (veh/h)	79	387			487	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2
Volume Total	288	200	200	200	238	261	349
Volume Left	18	0	0	0	0	87	0
Volume Right	270	0	0	0	138	0	0
cSH	311	1700	1700	1700	1700	487	1700
Volume to Capacity	0.93	0.12	0.12	0.12	0.14	0.18	0.21
Queue Length 95th (ft)	226	0	0	0	0	16	0
Control Delay (s)	71.2	0.0	0.0	0.0	0.0	6.5	0.0
Lane LOS	F					A	
Approach Delay (s)	71.2	0.0				2.8	
Approach LOS	F						

Intersection Summary			
Average Delay	12.8		
Intersection Capacity Utilization	57.6%	ICU Level of Service	B
Analysis Period (min)	15		

Intersection: 13: 9th St NW & K St NW

Movement	SB	SB	SB	SB	SB
Directions Served	T	T	T	T	TR
Maximum Queue (ft)	93	91	91	98	78
Average Queue (ft)	14	23	36	34	21
95th Queue (ft)	51	68	86	81	63
Link Distance (ft)	92	92	92	92	92
Upstream Blk Time (%)	0	0	0	0	0
Queuing Penalty (veh)	0	0	0	0	0
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 15: 7th St NW & K St NW

Movement	WB	NB	NB	NB	NB	SB	SB
Directions Served	LR	T	T	T	TR	LT	T
Maximum Queue (ft)	837	166	77	77	96	119	189
Average Queue (ft)	755	68	24	10	28	97	80
95th Queue (ft)	976	138	71	44	79	113	169
Link Distance (ft)	785	64	64	64	64	79	79
Upstream Blk Time (%)	68	14	2	1	1	35	13
Queuing Penalty (veh)	0	29	4	3	3	104	39
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2061: 7th St NW & K St NW/Massachusetts Ave NW

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	TR	LT	TR	LT	TR	LT	TR
Maximum Queue (ft)	540	555	173	214	211	354	159	196
Average Queue (ft)	502	407	92	76	116	156	110	143
95th Queue (ft)	590	687	157	152	195	280	163	186
Link Distance (ft)	512	512	866	866	679	679	64	64
Upstream Blk Time (%)	16	4					48	64
Queuing Penalty (veh)	67	16					129	171
Storage Bay Dist (ft)								
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 2065: 7th St NW & Mt Vernon Pl NW/New York Ave NW

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	LT	TR	LT	T	R	L	T	T	R	LT	TR
Maximum Queue (ft)	495	498	907	860	91	181	181	163	161	374	359
Average Queue (ft)	342	355	581	519	35	152	94	91	79	225	177
95th Queue (ft)	627	629	1059	975	77	205	181	160	130	369	315
Link Distance (ft)	463	463	868	868	868	79	79	79	79	670	670
Upstream Blk Time (%)	19	24	5	0		50	10	13	6		
Queuing Penalty (veh)	70	92	0	0		119	24	30	13		
Storage Bay Dist (ft)											
Storage Blk Time (%)											
Queuing Penalty (veh)											

Intersection: 2074: 9th St NW & New York Ave NW/K St NW

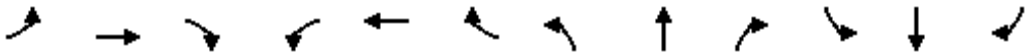
Movement	EB	EB	EB	WB	WB	SB	SB	SB	SB	SB
Directions Served	T	T	R	LT	T	L	LT	T	T	R
Maximum Queue (ft)	688	648	95	477	440	108	88	71	156	86
Average Queue (ft)	385	328	51	292	255	45	44	45	85	26
95th Queue (ft)	672	622	87	468	436	97	77	73	129	66
Link Distance (ft)	754	754	754	512	512	64	64	64	64	64
Upstream Blk Time (%)						8	4	1	10	1
Queuing Penalty (veh)						16	8	2	22	2
Storage Bay Dist (ft)										
Storage Blk Time (%)										
Queuing Penalty (veh)										

Intersection: 2077: 9th St NW & Massachusetts Ave NW/Mt Vernon Pl NW

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	LT	T	R	LT	TR	LT	TR
Maximum Queue (ft)	775	757	780	174	186	745	745
Average Queue (ft)	428	418	360	117	132	704	709
95th Queue (ft)	850	851	733	187	193	755	720
Link Distance (ft)	741	741	741	463	463	693	693
Upstream Blk Time (%)	14	20	15			65	95
Queuing Penalty (veh)	0	0	0			0	0
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Network Summary

Network wide Queuing Penalty: 964

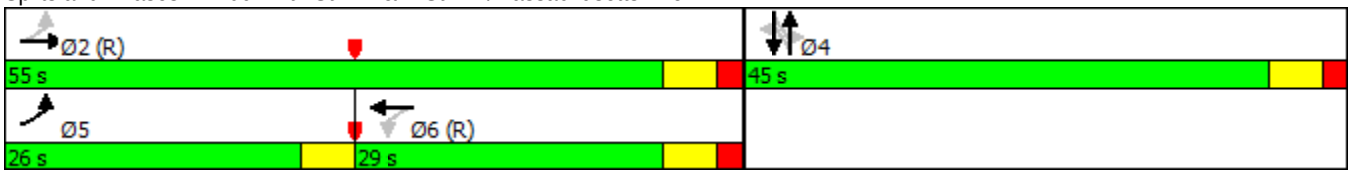


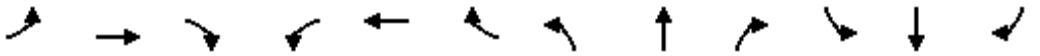
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	333	453	37	12	273	123	44	365	34	107	218	206
Future Volume (vph)	333	453	37	12	273	123	44	365	34	107	218	206
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	12	12	10	10	10	9	9	9
Storage Length (ft)	125		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1678	3048	0	0	2945	0	0	3140	0	0	2402	0
Flt Permitted	0.341				0.931			0.848			0.719	
Satd. Flow (perm)	519	3048	0	0	2735	0	0	2632	0	0	1693	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			64			10			171	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		576			912			718			151	
Travel Time (s)		13.1			20.7			16.3			3.4	
Confl. Peds. (#/hr)	257		238	238		257	703		286	286		703
Confl. Bikes (#/hr)			12			6			20			20
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	4%	9%	4%	3%	6%	5%	2%	3%	4%	9%	5%	3%
Parking (#/hr)		0										
Shared Lane Traffic (%)												
Lane Group Flow (vph)	347	511	0	0	425	0	0	461	0	0	553	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			4			4	
Permitted Phases	2			6			4			4		
Minimum Split (s)	10.0	28.0		28.0	28.0		29.0	29.0		29.0	29.0	
Total Split (s)	26.0	55.0		29.0	29.0		45.0	45.0		45.0	45.0	
Total Split (%)	26.0%	55.0%		29.0%	29.0%		45.0%	45.0%		45.0%	45.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	0.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.5	-1.5			-1.5			-1.5			-1.5	
Total Lost Time (s)	2.5	4.5			4.5			4.5			4.5	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Act Effct Green (s)	52.5	50.5			24.5			40.5			40.5	
Actuated g/C Ratio	0.52	0.50			0.24			0.40			0.40	
v/c Ratio	0.64	0.33			0.59			0.43			0.70	
Control Delay	13.5	8.2			32.0			22.5			28.4	
Queue Delay	0.0	0.0			0.1			0.0			0.6	
Total Delay	13.6	8.2			32.1			22.5			29.0	
LOS	B	A			C			C			C	
Approach Delay		10.4			32.1			22.5			29.0	
Approach LOS		B			C			C			C	
Queue Length 50th (ft)	57	42			106			106			59	
Queue Length 95th (ft)	78	55			158			151			198	
Internal Link Dist (ft)		496			832			638			71	
Turn Bay Length (ft)	125											
Base Capacity (vph)	544	1540			718			1071			787	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn	0	0			0			0			53	
Spillback Cap Reductn	3	0			18			0			0	
Storage Cap Reductn	0	0			0			0			0	
Reduced v/c Ratio	0.64	0.33			0.61			0.43			0.75	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 79 (79%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 70			
Control Type: Pretimed			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 21.3		Intersection LOS: C	
Intersection Capacity Utilization 91.0%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 2061: 7th St NW & K St NW/Massachusetts Ave NW



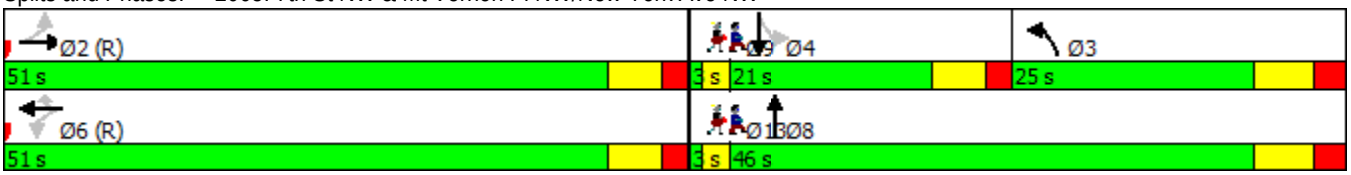


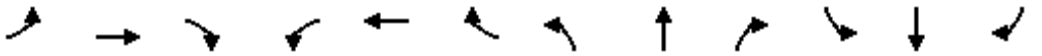
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	480	239	95	653	78	324	447	180	5	263	27
Future Volume (vph)	35	480	239	95	653	78	324	447	180	5	263	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	12	11	11	11	12	11	11	11
Satd. Flow (prot)	0	2873	0	0	3496	1210	3224	2883	0	0	3132	0
Flt Permitted		0.884			0.680		0.950				0.917	
Satd. Flow (perm)	0	2535	0	0	2370	771	1474	2883	0	0	2870	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		102				131		73			9	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		574			912			144			739	
Travel Time (s)		13.0			20.7			3.3			16.8	
Confl. Peds. (#/hr)	332		197	197		332	599		271	271		599
Confl. Bikes (#/hr)			14			5			15			22
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	9%	6%	2%	7%	2%	29%	5%	6%	4%	0%	4%	12%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	777	0	0	771	80	334	647	0	0	304	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Perm	NA	
Protected Phases		2			6		3	8			4	
Permitted Phases	2			6		6				4		
Minimum Split (s)	27.0	27.0		24.0	24.0	24.0	25.0	33.0		21.0	21.0	
Total Split (s)	51.0	51.0		51.0	51.0	51.0	25.0	46.0		21.0	21.0	
Total Split (%)	51.0%	51.0%		51.0%	51.0%	51.0%	25.0%	46.0%		21.0%	21.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.5	4.5		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.5	2.5		2.0	2.0	
Lost Time Adjust (s)		-1.5			-1.5	-1.5	-1.5	-1.5			-1.5	
Total Lost Time (s)		4.5			4.5	4.5	5.5	5.5			4.5	
Lead/Lag										Lag	Lag	
Lead-Lag Optimize?										Yes	Yes	
Act Effct Green (s)		46.5			46.5	46.5	19.5	40.5			16.5	
Actuated g/C Ratio		0.46			0.46	0.46	0.20	0.40			0.16	
v/c Ratio		0.63			0.70	0.19	0.53	0.53			0.63	
Control Delay		5.1			25.5	1.6	35.3	18.6			44.4	
Queue Delay		0.0			0.0	0.0	0.0	1.8			0.0	
Total Delay		5.1			25.5	1.6	35.3	20.4			44.4	
LOS		A			C	A	D	C			D	
Approach Delay		5.1			23.2			25.5			44.4	
Approach LOS		A			C			C			D	
Queue Length 50th (ft)		18			198	0	85	134			93	
Queue Length 95th (ft)		26			271	7	127	191			139	
Internal Link Dist (ft)		494			832			64			659	
Turn Bay Length (ft)												
Base Capacity (vph)		1233			1102	428	628	1211			481	
Starvation Cap Reductn		0			0	0	0	388			0	
Spillback Cap Reductn		0			0	0	0	0			0	
Storage Cap Reductn		0			0	0	0	0			0	
Reduced v/c Ratio		0.63			0.70	0.19	0.53	0.79			0.63	

Lane Group	Ø9	Ø13
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	9	13
Permitted Phases		
Minimum Split (s)	3.0	3.0
Total Split (s)	3.0	3.0
Total Split (%)	3%	3%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	
Lead-Lag Optimize?	Yes	
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary		
Area Type:	Other	
Cycle Length: 100		
Actuated Cycle Length: 100		
Offset: 34 (34%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green		
Natural Cycle: 80		
Control Type: Pretimed		
Maximum v/c Ratio: 0.70		
Intersection Signal Delay: 21.3	Intersection LOS: C	
Intersection Capacity Utilization 94.4%	ICU Level of Service F	
Analysis Period (min) 15		

Splits and Phases: 2065: 7th St NW & Mt Vernon Pl NW/New York Ave NW





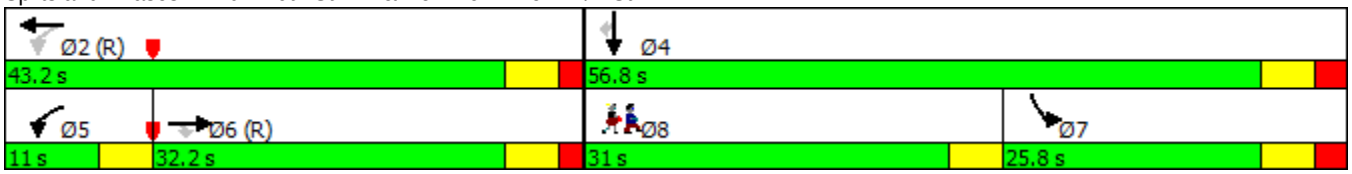
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	625	128	143	380	0	0	0	0	199	823	55
Future Volume (vph)	0	625	128	143	380	0	0	0	0	199	823	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	9	10	9	12	12	12	12	12	12	13	12	12
Storage Length (ft)	0		0	100		0	0		0	0		0
Storage Lanes	0		1	1		0	0		0	1		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	3271	1384	1770	3438	0	0	0	0	1573	4756	1495
Flt Permitted				0.204						0.950	0.999	
Satd. Flow (perm)	0	3271	809	380	3438	0	0	0	0	971	4715	947
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			125									76
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		838			576			255			113	
Travel Time (s)		19.0			13.1			5.8			2.6	
Confl. Peds. (#/hr)	367		389	389		367	519		495	495		519
Confl. Bikes (#/hr)			19			7						14
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	3%	5%	2%	5%	0%	0%	0%	0%	2%	3%	8%
Shared Lane Traffic (%)										10%		
Lane Group Flow (vph)	0	651	133	149	396	0	0	0	0	186	878	57
Turn Type		NA	Perm	pm+pt	NA					Prot	NA	Perm
Protected Phases		6		5	2					7	4	
Permitted Phases			6	2								4
Minimum Split (s)		20.0	20.0	10.0	24.0					11.5	32.5	32.5
Total Split (s)		32.2	32.2	11.0	43.2					25.8	56.8	56.8
Total Split (%)		32.2%	32.2%	11.0%	43.2%					25.8%	56.8%	56.8%
Yellow Time (s)		4.0	4.0	4.0	4.0					4.0	4.0	4.0
All-Red Time (s)		2.0	2.0	0.0	2.0					2.5	2.5	2.5
Lost Time Adjust (s)		-1.5	-1.5	-1.5	-1.5					-1.5	-1.5	-1.5
Total Lost Time (s)		4.5	4.5	2.5	4.5					5.0	5.0	5.0
Lead/Lag		Lag	Lag	Lead						Lag		
Lead-Lag Optimize?		Yes	Yes	Yes						Yes		
Act Effct Green (s)		27.7	27.7	40.7	38.7					20.8	51.8	51.8
Actuated g/C Ratio		0.28	0.28	0.41	0.39					0.21	0.52	0.52
v/c Ratio		0.72	0.42	0.55	0.30					0.57	0.46	0.11
Control Delay		37.9	10.8	26.7	21.8					22.8	5.4	0.4
Queue Delay		0.0	0.0	0.0	0.0					0.8	0.5	0.0
Total Delay		37.9	10.8	26.7	21.8					23.6	5.9	0.4
LOS		D	B	C	C					C	A	A
Approach Delay		33.3			23.1						8.6	
Approach LOS		C			C						A	
Queue Length 50th (ft)		196	4	73	108					101	39	0
Queue Length 95th (ft)		262	55	m112	143					m136	59	m0
Internal Link Dist (ft)		758			496			175			33	
Turn Bay Length (ft)				100								
Base Capacity (vph)		906	314	272	1330					327	1892	527
Starvation Cap Reductn		0	0	0	0					29	539	0

Lane Group	Ø8
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	8
Permitted Phases	
Minimum Split (s)	31.0
Total Split (s)	31.0
Total Split (%)	31%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn		0	0	0	0					0	0	0
Storage Cap Reductn		0	0	0	0					0	0	0
Reduced v/c Ratio		0.72	0.42	0.55	0.30					0.62	0.65	0.11

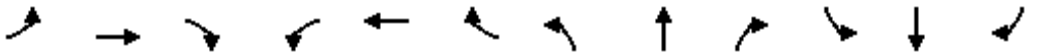
Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 41 (41%), Referenced to phase 2:WBTL and 6:EBT, Start of Green			
Natural Cycle: 80			
Control Type: Pretimed			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 19.7		Intersection LOS: B	
Intersection Capacity Utilization 58.1%		ICU Level of Service B	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 2074: 9th St NW & New York Ave NW/K St NW



Lane Group	Ø8
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	695	393	1	920	83	0	0	0	59	722	71
Future Volume (vph)	35	695	393	1	920	83	0	0	0	59	722	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	12	12	12	11	11	11
Satd. Flow (prot)	0	3297	1478	0	3165	0	0	0	0	0	3269	0
Flt Permitted		0.830			0.955						0.997	
Satd. Flow (perm)	0	2735	1478	0	3022	0	0	0	0	0	3179	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			418		13						10	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		819			574			169			735	
Travel Time (s)		18.6			13.0			3.8			16.7	
Confl. Peds. (#/hr)	409		196	196		409	333		520	520		333
Confl. Bikes (#/hr)			13			27						10
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	776	418	0	1068	0	0	0	0	0	907	0
Turn Type	Perm	NA	custom	Perm	NA					Perm	NA	
Protected Phases		8 7	7		4						2	
Permitted Phases	8 7			4						2		
Minimum Split (s)			11.0	28.0	28.0					26.0	26.0	
Total Split (s)			27.0	56.0	56.0					41.0	41.0	
Total Split (%)			27.0%	56.0%	56.0%					41.0%	41.0%	
Yellow Time (s)			4.0	4.0	4.0					4.0	4.0	
All-Red Time (s)			2.0	2.0	2.0					2.0	2.0	
Lost Time Adjust (s)			0.0		0.0						0.0	
Total Lost Time (s)			6.0		6.0						6.0	
Lead/Lag			Lag							Lag	Lag	
Lead-Lag Optimize?			Yes							Yes	Yes	
Act Effct Green (s)		50.0	21.0		50.0						35.0	
Actuated g/C Ratio		0.50	0.21		0.50						0.35	
v/c Ratio		0.57	0.65		0.70						0.81	
Control Delay		19.5	8.9		12.8						36.1	
Queue Delay		0.0	0.0		0.1						0.0	
Total Delay		19.5	8.9		12.9						36.1	
LOS		B	A		B						D	
Approach Delay		15.8			12.9						36.1	
Approach LOS		B			B						D	
Queue Length 50th (ft)		174	0		166						270	
Queue Length 95th (ft)		232	86		263						351	
Internal Link Dist (ft)		739			494			89			655	
Turn Bay Length (ft)												
Base Capacity (vph)		1367	640		1517						1119	
Starvation Cap Reductn		0	0		44						0	
Spillback Cap Reductn		0	0		0						0	
Storage Cap Reductn		0	0		0						0	
Reduced v/c Ratio		0.57	0.65		0.73						0.81	

Intersection Summary

Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 53 (53%), Referenced to phase 4:WBTL and 7:EBTL, Start of Green			
Natural Cycle: 70			
Control Type: Pretimed			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 20.6		Intersection LOS: C	
Intersection Capacity Utilization 100.6%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 2077: 9th St NW & Massachusetts Ave NW/Mt Vernon Pl NW

Lane Group	Ø1	Ø8
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	1	8
Permitted Phases		
Minimum Split (s)	3.0	26.0
Total Split (s)	3.0	29.0
Total Split (%)	3%	29%
Yellow Time (s)	2.0	4.0
All-Red Time (s)	0.0	2.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	18	265	686	135	85	513
Future Volume (Veh/h)	18	265	686	135	85	513
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	18	270	700	138	87	523
Pedestrians	257					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	24					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			151			144
pX, platoon unblocked	0.92					
vC, conflicting volume	1462	501			1095	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1331	501			1095	
tC, single (s)	7.0	7.0			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.3			2.2	
p0 queue free %	77	30			82	
cM capacity (veh/h)	79	387			487	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2
Volume Total	288	200	200	200	238	261	349
Volume Left	18	0	0	0	0	87	0
Volume Right	270	0	0	0	138	0	0
cSH	311	1700	1700	1700	1700	487	1700
Volume to Capacity	0.92	0.12	0.12	0.12	0.14	0.18	0.21
Queue Length 95th (ft)	226	0	0	0	0	16	0
Control Delay (s)	71.0	0.0	0.0	0.0	0.0	6.5	0.0
Lane LOS	F					A	
Approach Delay (s)	71.0	0.0				2.8	
Approach LOS	F						

Intersection Summary			
Average Delay	12.8		
Intersection Capacity Utilization	57.6%	ICU Level of Service	B
Analysis Period (min)	15		

Intersection: 13: 9th St NW & K St NW

Movement	SB	SB	SB	SB	SB
Directions Served	T	T	T	T	TR
Maximum Queue (ft)	81	80	92	114	66
Average Queue (ft)	19	25	38	40	13
95th Queue (ft)	61	65	87	92	47
Link Distance (ft)	92	92	92	92	92
Upstream Blk Time (%)	0	0	0	0	0
Queuing Penalty (veh)	0	0	0	0	0
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 15: 7th St NW & K St NW

Movement	WB	NB	NB	NB	NB	SB	SB
Directions Served	LR	T	T	T	TR	LT	T
Maximum Queue (ft)	831	68	60	89	125	152	187
Average Queue (ft)	747	11	8	23	63	94	95
95th Queue (ft)	971	46	36	72	109	141	188
Link Distance (ft)	783	59	59	59	59	76	76
Upstream Blk Time (%)	80	1	1	3	15	30	18
Queuing Penalty (veh)	0	1	1	6	30	90	54
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2061: 7th St NW & K St NW/Massachusetts Ave NW

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	LT	TR	LT	TR	LT	TR
Maximum Queue (ft)	149	276	161	261	243	254	222	155	170
Average Queue (ft)	104	71	62	148	119	140	103	101	136
95th Queue (ft)	166	226	120	233	217	227	193	166	169
Link Distance (ft)		511	511	856	856	654	654	59	59
Upstream Blk Time (%)		0						36	60
Queuing Penalty (veh)		0						95	158
Storage Bay Dist (ft)	125								
Storage Blk Time (%)	13	0							
Queuing Penalty (veh)	30	1							

Intersection: 2065: 7th St NW & Mt Vernon Pl NW/New York Ave NW

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	LT	TR	LT	T	R	L	L	T	TR	LT	TR
Maximum Queue (ft)	431	462	538	498	118	172	168	178	189	423	398
Average Queue (ft)	245	265	313	273	47	91	86	109	139	223	202
95th Queue (ft)	501	518	478	434	99	159	149	171	186	430	404
Link Distance (ft)	463	463	835	835	835	76	76	76	76	659	659
Upstream Blk Time (%)	5	7				20	21	21	50		
Queuing Penalty (veh)	18	25				48	49	50	120		
Storage Bay Dist (ft)											
Storage Blk Time (%)											
Queuing Penalty (veh)											

Intersection: 2074: 9th St NW & New York Ave NW/K St NW

Movement	EB	EB	EB	WB	WB	WB	SB	SB	SB	SB	SB
Directions Served	T	T	R	L	T	T	L	LT	T	T	R
Maximum Queue (ft)	356	318	121	124	198	190	125	106	80	128	79
Average Queue (ft)	238	168	54	81	94	101	56	53	30	63	24
95th Queue (ft)	332	277	99	135	166	167	110	94	66	108	60
Link Distance (ft)	752	752	752		511	511	65	65	65	65	65
Upstream Blk Time (%)							6	7	2	5	1
Queuing Penalty (veh)							12	14	4	11	2
Storage Bay Dist (ft)				100							
Storage Blk Time (%)				8	5						
Queuing Penalty (veh)				15	7						

Intersection: 2077: 9th St NW & Massachusetts Ave NW/Mt Vernon Pl NW

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	LT	T	R	LT	TR	LT	TR
Maximum Queue (ft)	730	769	792	201	213	719	722
Average Queue (ft)	443	529	607	100	124	647	668
95th Queue (ft)	855	983	942	190	202	889	810
Link Distance (ft)	750	750	750	463	463	674	674
Upstream Blk Time (%)	6	40	47			56	82
Queuing Penalty (veh)	0	0	0			0	0
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Network Summary

Network wide Queuing Penalty: 844

APPENDIX D
TRIP GENERATION MEMO

Stantec

Stantec

Memo

To:	Haley Peckett, AICP DDOT	From:	Adam Catherine, PE, PTOE Stantec
File:	2028113119	Date:	June 2, 2017

Reference: 801 K Street Trip Generation and Mode Split Estimates

I. Introduction

This memorandum documents the trip generation and mode split analysis that was conducted for a proposed 12,614 square-foot flagship retail store to be located in a portion of the existing Carnegie Library at 801 K Street in Washington, DC. The proposed retail store is located directly across Mt. Vernon Place from the Washington Convention Center and is located approximately 0.2 miles from the nearest Metrorail station (Chinatown/Gallery Place). Based on a pre-scoping meeting with the District Department of Transportation (DDOT) held on February 7, 2017, it was determined that the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, would not provide an adequate estimate of the number of trips generated. Therefore, site-specific trip generation and mode split data was collected at five existing retail brand stores that have locational and/or operational features that are similar to those of the proposed location.

II. Methodology

Stantec consulted with the retail brand to identify five existing store locations that are anticipated to have similar operations and/or similar levels of transit access as the proposed 801 K Street location. The five selected locations include:

- 815 Boylston Street, Boston, MA (12,508 SF). The Boylston Street store is a flagship location and is located 0.3 miles from the Copley T station and is directly across the street from the John B. Hynes Veterans Memorial Convention Center.

- 940 Madison Avenue, New York, NY (4,856 SF). The Upper East side store is located 0.25 miles from the 77th Street subway station and is located in a refurbished historic building. It should be noted that the flagship location on Fifth Avenue was not analyzed because of the large amount of tourist activity that occurs at that location which is not anticipated for the proposed location.

- 1607 Walnut Street, Philadelphia, PA (6,112 SF). The Walnut Street store is located within 0.25 miles of a station on SEPTA's Broad Street subway line, as well as a station on the Market Street subway line. It is also in a center-city location similar to that of the proposed location.

- 1229 Wisconsin Avenue NW, Washington, DC (6,031 SF). The Georgetown location was selected to provide data representative of an urban DC location. However, it should be noted that this location is not easily accessible from Metrorail.

- Fashion Centre at Pentagon City, Arlington, VA (4,396 SF). The Pentagon City location was selected to provide data representative of an urban location in the DC area that can be

accessed via Metrorail. It should be noted that this location is the only store surveyed that is not stand-alone.

Data was collected on a typical weekday between 3:00 PM and 7:00 PM, as well as a typical Saturday between 11:00 AM and 7:00 PM. A summary of the specific dates for each location is provided below:

- Boston, New York City, and Philadelphia locations: Thursday, March 23, 2017 and Saturday, March 25, 2017.
- Georgetown location: Thursday, March 30, 2017 and Saturday, April 1, 2017.
- Pentagon City location: Wednesday, March 29, 2017 and Saturday, April 8, 2017.

Data collection consisted of a continuous count of the number of patrons entering and exiting the store, summarized in 15-minute periods. Patrons were also asked to complete a verbal survey consisting of the following two questions:

- *What mode of transportation did you use to travel to the store today?* This question was utilized to establish mode split.
- *Is the purpose of your trip today to visit the store, or are you visiting as part of a general trip to the area?* This question was utilized to identify trips that would be considered "pass-by" trips.

The mode split data was collected in a manner that would allow the data to be aggregated based on whether the trip was specific to the retail store or a pass-by trip. Furthermore, if multiple people arrived as a group, each individual was accounted for in the survey.

The survey and site-specific trip generation data was then reviewed against the specific transportation network features and transit service schedules, within the vicinity of 801 K Street, to identify PM and Saturday peak hour trip generation rates and mode splits.

III. Trip Generation Results

The results of the site surveys reveal that the relationship between the size of the store and the number of person trips is likely not a positive linear correlation (Tables 1 and 2). The Boston location, which was the only site of similar size to that of the proposed K Street location, and is a flagship store, experienced the lowest weekday and Saturday peak hour trip generation rate. Conversely, the Pentagon City location, which was the only non-stand-alone location experienced the highest trip generation rate.

This data also indicates that the trip generation rate for a store is likely influenced by the location of a store, as well as the market area. In many urbanized areas, there are multiple retail stores within an urban center, as well as in the outlying suburbs. Therefore, regardless of store size, there is a certain "market" cap on the number of customers that would utilize each store on an average day. While a flagship store may attract customers from a broader area when there is a special event, it is likely

that on a typical daily basis customers would use the store that is closest to where they live or work and would not make a special trip to a flagship location for typical shopping or technical support.

Furthermore, data collection teams at several stores, including Boston, Philadelphia, and Pentagon City saw many repeat visitors throughout the data collection period that were counted each time they entered and exited the store. Repeat visitors were often observed utilizing one of the sample devices, or charging their own device, leaving, and then returning, sometimes in the same hour, to repeat the process. Pentagon City was noted to have a significant number of repeat visitors, likely due to its location in a regional shopping mall. The data collection team at Pentagon City noted that repeat patrons would enter and exit the store multiple times within the same hour, checking-in, and then leaving while they waited for their approximate time to meet with retail store staff or for their device to be repaired.

Based on the assessment of the data, a basic average trip generation rate would likely overestimate the number of person-trips that would be generated by the proposed 801 K Street location. Therefore, a weighted average rate was calculated utilizing the guidelines:

- The Pentagon City location is eliminated from the rate and pass-by trip calculation. It's location within the mall, as well as the significant amount of repeat visitor activity, would skew the trip generation rate higher than what is anticipated for the proposed location.

- A weight of 4 is applied to the Boston location and an average weighted trip generation rate is calculated. Of the four remaining locations, the Boston location is most similar to the proposed 801 K Street location. It is a flagship store of similar size, is in similar proximity to mass transit, and is located across the street from a convention center. Therefore, a weight of 4 was calculated to provide on extra point for each of the surveyed locations (excluding Pentagon City).

- The surveyed locations are in areas with other attractions and retail within close proximity. Therefore, there are likely more pass-by trips than would be experienced at the 801 K Street location. In order to account for this, Stantec calculated a trip generation rate based on new trips only. Pass-by trips would then be added to the new trips to generate a total number of trips (see Section V).

Tables 1 and 2, below, show the resulting trip generation rate for new trips. It is estimated that the 801 K Street site would generated 40.5 new person-trips per 1,000 square feet during a weekday PM peak hour and 53.0 new person-trips during a Saturday peak hour.

Reference: 801 K Street Trip Generation and Mode Split

Table 1: Weekday PM Peak Hour Trip Generation Rate and Pass-By Percentage for Surveyed Locations

Location	Peak Hour	Trips In	Trips Out	Total Trips	% Pass-By	New Trips	Square Footage	New Trip Generation Rate (per 1,000 SF)
Boston	3:15 – 4:15 PM	360	242	602	13.3%	522	12,508	41.7
NYC	4:45 – 5:45 PM	148	129	277	24.9%	208	4,856	42.9
Philadelphia	3:15 – 4:15 PM	224	214	438	43.2%	248	6,112	40.7
Georgetown	5:15 – 6:15 PM	162	174	336	40.2%	200	6,031	33.3
						Weighted Average		40.5

Table 2: Saturday Peak Hour Trip Generation Rate and Pass-By Percentage for Surveyed Locations

Location	Peak Hour	Trips In	Trips Out	Total Trips	% Pass-By	New Trips	Square Footage	New Trip Generation Rate (per 1,000 SF)
Boston	2:00 – 3:00 PM	498	501	999	33.5%	664	12,508	53.1
NYC	1:15 – 2:15 PM	265	291	556	47.9%	290	4,856	59.7
Philadelphia	4:00 – 5:00 PM	355	353	708	62.0%	269	6,112	44.0
Georgetown	3:15 – 4:15 PM	310	290	600	44.6%	333	6,031	55.1
						Weighted Average		53.0

IV. Mode Split Results

Survey response rates varied by site from a high of 36.6% at Pentagon City, to a low of 6.8% in Boston (see Table 3). The recommended mode split for 801 K Street was developed utilizing the data collected in the site surveys as well as an assessment of the transportation and transit network in the vicinity of the proposed retail store. The following assumptions and findings were utilized in the development of the mode splits:

- The responses for Pentagon City were removed from consideration. Given the location of the Pentagon City store in a shopping mall, it likely will skew the data to show a higher auto mode than would be experienced at the 801 K Street site.
- A higher weight was given to subway/rail than walking. This accounts for the adjacent land uses near the proposed retail store as well as the likelihood that some respondents indicated they walked to the store during the survey, when in fact they likely walked from a transit station to the store. Thus, their primary trip mode would be transit.
- Metrorail service is less frequent on weekends. Therefore, the Saturday rail mode split was reduced by 20% when compared to the weekday rail mode split.

The resulting mode split data for primary trips is summarized in Tables 4 and 5.

It should be noted that many repeat visitors, as described in Section III, did not respond to the survey, and those that did were only surveyed once. Therefore, it is likely that the survey results indicate a higher percentage of vehicle and transit modes than would be realized. For example, a repeat visitor may have arrived to the area via car, but their repeat visits would likely be made on foot. However, their trip was only registered as a single vehicle trip, even though they were likely counted multiple times. Thus, when these percentages are applied to the total trip generation estimate, they will likely lead to a higher number of vehicle and transit trips than would be experienced.

Table 3: Survey Response Rate by Location

Location	Weekday Number of Surveys (Response Rate)	Saturday Number of Surveys (Response Rate)
Boston	98 (8.0%)	209 (6.8%)
NYC	181 (33.2%)	119 (6.9%)
Philadelphia	155 (17.2%)	500 (23.8%)
Georgetown	174 (25.3%)	276 (14.1%)
Pentagon City	276 (36.6%)	578 (33.4%)

Table 4: Weekday Mode Split by Location for Retail Generated Trips

Location	Drive Alone	Carpool	Taxi/ Uber/ Lyft	Car-share	Bus	Rail/ Subway	Walk	Bike	Delivery
Boston	16.5%	0.0%	12.9%	0.0%	0.0%	22.4%	43.5%	3.5%	0.0%
NYC	7.5%	2.3%	4.5%	0.8%	6.8%	11.3%	65.4%	0.0%	1.5%
Philadelphia	15.9%	9.1%	13.6%	0.0%	6.8%	21.6%	29.5%	3.4%	0.0%
Georgetown	24.0%	4.8%	36.5%	0.0%	5.8%	1.0%	26.0%	1.9%	0.0%
Average	16.0%	4.0%	16.9%	0.2%	4.8%	14.5%	41.1%	2.2%	0.4%
Adjusted Average	16%	4%	17%	0.5%	5%	29%	24%	4%	0.5%

Table 5: Saturday Mode Split by Location for Retail Generated Trips

Location	Drive Alone	Carpool	Taxi/ Uber/ Lyft	Car-share	Bus	Rail/ Subway	Walk	Bike	Delivery
Boston	18.7%	0.0%	15.1%	0.0%	5.0%	31.7%	26.6%	2.9%	0.0%
NYC	3.2%	4.8%	21.0%	0.0%	0.0%	41.9%	25.8%	1.6%	1.6%
Philadelphia	17.9%	18.4%	5.3%	0.0%	6.3%	8.4%	41.6%	1.6%	0.5%
Georgetown	14.4%	22.2%	22.2%	1.3%	4.6%	0.7%	30.7%	3.9%	0.0%
Average	13.6%	11.4%	15.9%	0.3%	4.0%	20.7%	31.2%	2.5%	0.5%
Adjusted Average	14%	11%	16%	0.5%	5%	23%	25%	5%	0.5%

V. Proposed 801 K Street Location Trip Generation and Mode Split Projections

The trip generation and mode split for an average weekday PM peak hour and average Saturday peak hour for 801 K Street was calculated utilizing the average trip generation rate calculated from the results in Tables 1 and 2. Because pass-by trips are not included in the trip generation rates, they were then added back in utilizing a 15% PM peak hour and 10% Saturday peak hour pass-by trip rate. The pass-by rates are approximately 50% lower than what was recorded in the surveys of existing facilities to account for the location of the proposed retail and its separation from other retail and attractions.

Finally, event trips were added into the trip generation estimate. Information provided by the retailer indicates that the average event size will be approximately 200 people. However, they were unable to predict frequency, indicating that large events would be relatively infrequent and would likely be oriented around events at the Washington Convention Center. In order to provide a conservative analysis, it was decided that event trips would be added to the total number of typical trips to

create a "highest case" scenario for the traffic analysis. Therefore, 200 person-trips were added to the PM and Saturday peak hour, with the assumption that 90% would enter and 10% would exit (representing the arrival to an event).

The resulting number of person-trips were then assigned based on the recommended mode split percentages for non pass-by trips calculated from the results in Tables 4 and 5. The results of the trip generation and mode split calculations are shown in Tables 6 and 7. The modes are grouped into the following categories:

- New vehicle trips destined for parking. No onsite parking will be provided. Therefore, it was assumed that patrons that drive alone, carpool, or utilize carshare, would be parking off-site, either on-street or within an existing parking facility. Therefore, these trips would be accounted for in the analysis as vehicle trips within the study area, as well as pedestrian trips between nearby parking areas and the proposed retail store. However, it should be noted that patrons that indicated they carpooled were often part of a group that arrived together. Based on the survey data, an average of three people were in a carpool group. Therefore, carpool vehicle trips were estimated by dividing the number of individual carpool survey responses by the average group size (3).

- New pass-through vehicle trips. Taxi, Uber, Lyft, or other delivery vehicles will be accounted for as a pass-through trip. While they represent a new vehicle trip, they are assumed to enter the study area, stop at the front door of the site, and exit the study area.

- Multi-Modal Trips. A multi-modal trip represents a patron that would arrive by bus, Metrorail, walking, biking, or other mode. Bus and Metrorail patrons will be accounted for as pedestrians traveling to/from nearby bus stops and Metrorail stations.

Again, it should be noted that repeat visitors, as described in Section III, were counted multiple times but were only surveyed once or not at all. Therefore, it is likely that the number of vehicle and transit trips are higher than would be realized. For example, a repeat visitor may have arrived to the area via car, but their repeat visits would likely be made on foot. However, their trip was only registered as a vehicle trip. Thus, when these percentages are applied to the total trip generation estimate, they likely result in a higher number of vehicle and transit trips and a lower number of pedestrian trips than would be experienced.

Reference: 801 K Street Trip Generation and Mode Split

Table 6: Weekday PM Peak Hour Trips for 801 K Street

	Units	Total Trips	Entering (54%)	Exiting (46%)
New Person Trips	12,614 SF	512	277	235
Additional Pass-By Trips	15%	76	38	38
Event Trips	-	200	180	20
Total Trips	-	788	495	293
Drive Alone	16%	114	73	41
Carpool	4%	29	18	11
Carshare	0.5%	4	2	2
Total New Vehicle Trips to Parking*	-	125	80	45
Total Vehicle Person Trips Reflect as Pedestrians Entering Site	-	147	93	54
Taxi/Uber/Lyft	17%	121	78	43
Delivery	0.5%	3	2	1
Total New Pass-Through Vehicle Trips	-	124	80	44
Bus	5%	36	23	13
Rail/Subway	29%	206	132	74
Walk**	22%	247	148	99
Bike	4%	28	18	10
Total Multi-Modal Trips	-	517	321	196

*Total New Vehicle Trips to Parking = Drive Alone + Carpool/3
**Walk = 22% Mode Split + Pass-By Trips

Reference: 801 K Street Trip Generation and Mode Split

Table 7: Saturday Peak Hour Trips for 801 K Street

	Units	Total Trips	Entering (50%)	Exiting (50%)
New Person Trips	12,614 SF	669	335	335
Additional Pass-By Trips	10%	67	33	33
Event Trips	-	200	180	20
Total Trips	-	936	548	388
Drive Alone	14%	122	72	50
Carpool	11%	96	57	39
Carshare	0.5%	4	2	2
Total New Vehicle Trips to Parking*	-	158	94	64
Total Vehicle Person Trips Reflect as Pedestrians Entering Site	-	222	131	91
Taxi/Uber/Lyft	16%	139	82	57
Delivery	0.5%	5	3	2
Total New Vehicle Trips Stopping at Site	-	144	85	59
Bus	5%	44	26	18
Rail/Subway	23%	200	118	82
Walk**	25%	284	162	122
Bike	5%	44	26	18
Total Multi-Modal Trips	-	572	332	240

*Total New Vehicle Trips to Parking = Drive Alone + Carpool/3
**Walk = 26% Mode Split + Pass-By Trips

Reference: 801 K Street Trip Generation and Mode Split

VI. Conclusions

The results of the trip generation analysis reveal that the proposed retail store at 801 K Street would generate approximately 788 person trips on a weekday PM peak hour, and 936 new person trips on a Saturday peak hour. These trip generation estimates account for the anticipated typical trip generation as well as an average large event of 200 attendees to develop a "highest-case" analysis. The mode split analysis indicates that approximately 38% of weekday PM peak hour trips and 42% of Saturday peak hour trips would be conducted utilizing a vehicle, including driving alone, carpool, carshare, and taxi/Uber/Lyft. Given that there is no parking provided onsite, it is assumed that drive alone, carpool, and carshare trips would be generated to nearby parking facilities.

However, it should be noted that multiple store locations experienced many repeat visitors, which were counted each time they entered and exited the store. Repeat visitors were less likely to respond to the survey and those that did only responded once. Therefore, it is likely that the total number of new person trips, as well as the number of trips arriving by primary modes, such as vehicle or transit, are higher than would be realized. However, given that the proposed 801 K Street location is a flagship store and will have training classes and other small events on a relatively regular basis, it is our opinion that the trip generation and mode split estimates provided in Tables 6 and 7 are a fair and conservative estimate of the number of person trips that would be generated by the proposed retail store.

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APPENDIX E
CRASH ANALYSIS SUMMARIES

Stantec