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CAPITOL HILL SAFEWAY REDEVELOPMENT
COMPREHENSIVE TRANSPORTATION REVIEW
WASHINGTON, D.C.

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Submission: February 17, 2017

Transportation Consultants
INNOVATION + SOLUTIONS

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INTRODUCTION

Overview

This report presents a Comprehensive Transportation Review (CTR) conducted in conjunction with the proposal by Foulger-Pratt Development, LLC (herein referred to as the Applicant) to redevelop the existing Capitol Hill Safeway at 415 14th St SE for a mixed-use development located on Square 1042, Lot 109 in southeast Washington, DC. The site is bounded by D Street SE to the north, 14th Street SE to the east, E Street SE to the south and a public alley to the west. The site location is shown on Figure 1.

The site is currently occupied by a 50,000 SF Safeway and served by approximately 128 surface parking spaces. The applicant proposes to reconstruct the existing Safeway with a new 60,187 S.F. store, 10,403 S.F. of retail space, and four (4) stories of residential development (approximately 327 apartment units). The proposed site would be served by a below grade parking garage with approximately 354 parking spaces. Access to the proposed parking garage is proposed via 14th Street SE for grocery customers and via the public alley for residents. The Site Plan is shown on Figures 2A and 2B.

The purpose of this report is to:

- Evaluate existing traffic operational and safety conditions,
- Evaluate future traffic conditions without the proposed development,
- Evaluate future traffic conditions with the proposed development,
- Identify existing mode choice alternatives,
- Identify any traffic operational impacts associated with the proposed development,
- Evaluate the appropriateness of the proposed parking,
- Evaluate effectiveness of the proposed loading facilities, and
- Recommend transportation improvements (including roadway, operational, and demand management strategies) to mitigate the impact of the redevelopment and promote the safe and efficient flow of vehicular and pedestrian traffic associated with the proposed redevelopment.

Study Scope

In order to assess the impacts of the proposed development on the surrounding roadway network, the Applicant commissioned this transportation impact study. The scope of the study and proposed methodologies were approved by the District Department of Transportation (DDOT) prior to beginning the study. The agreed upon scoping document is included in Appendix B.

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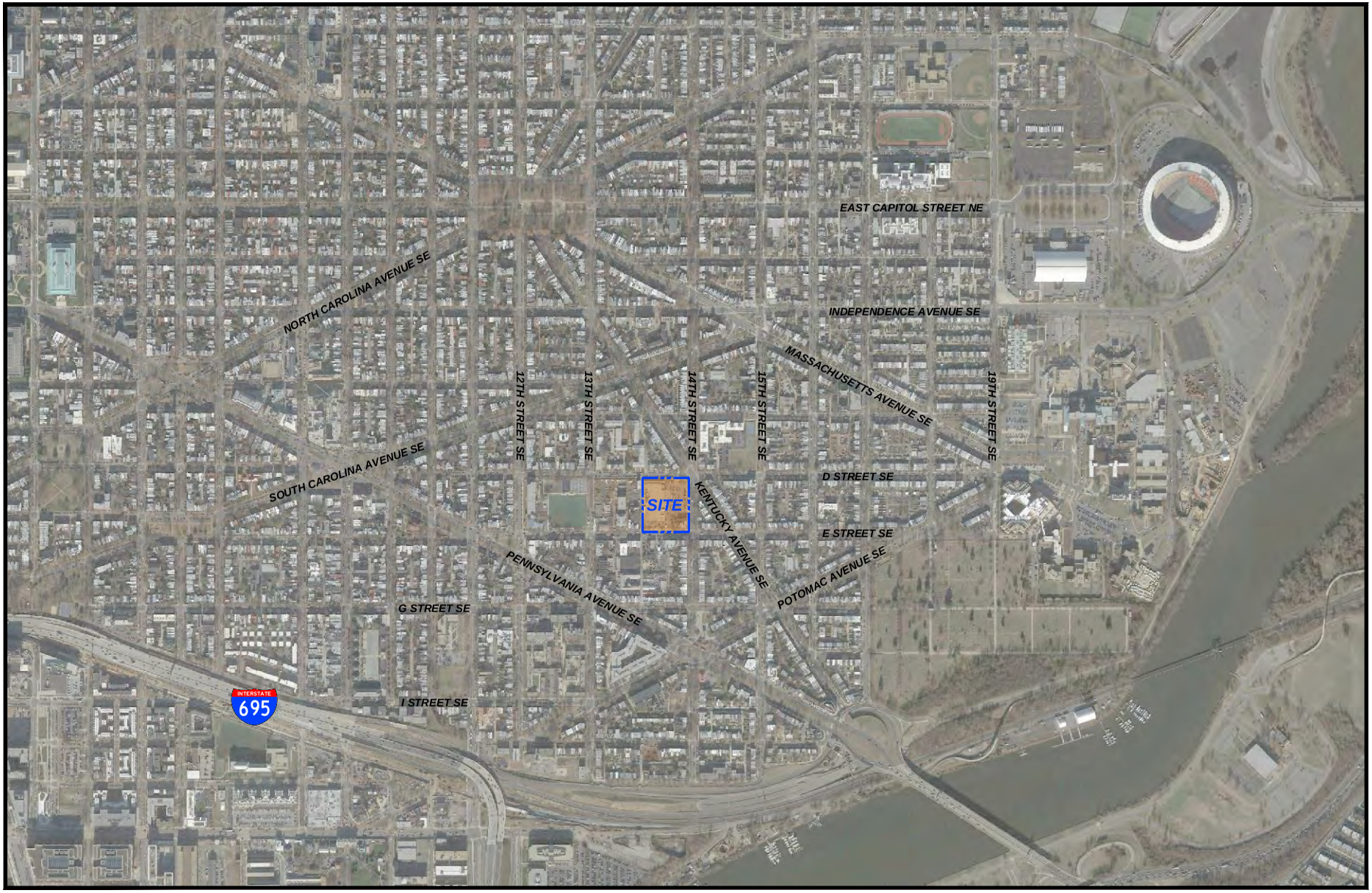

Figure 1
Site Location
Capitol Hill Safeway
Washington, DC

NORTH

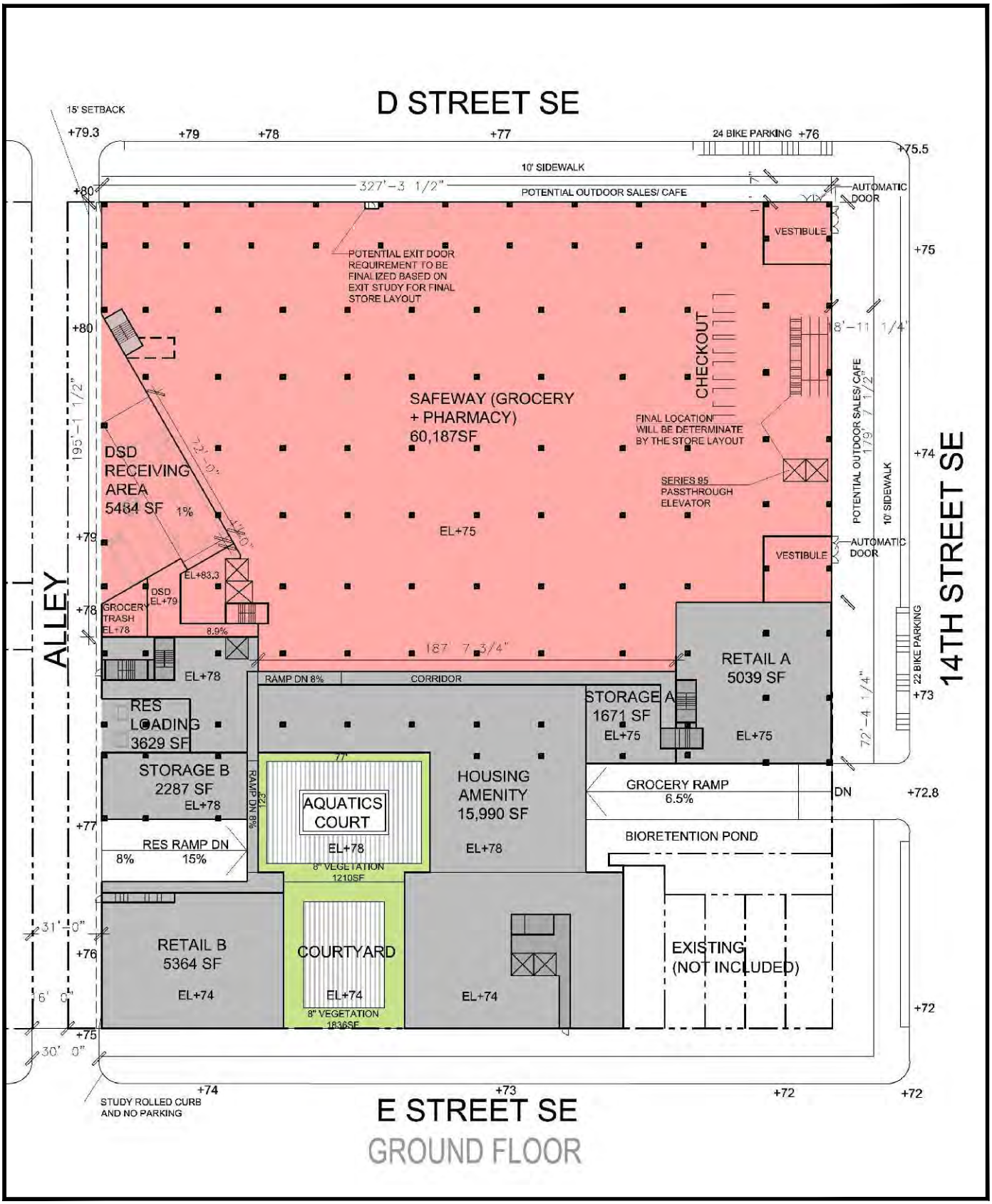

Figure 2A
Site Plan Ground Floor
Capitol Hill Safeway
Washington, DC

NORTH

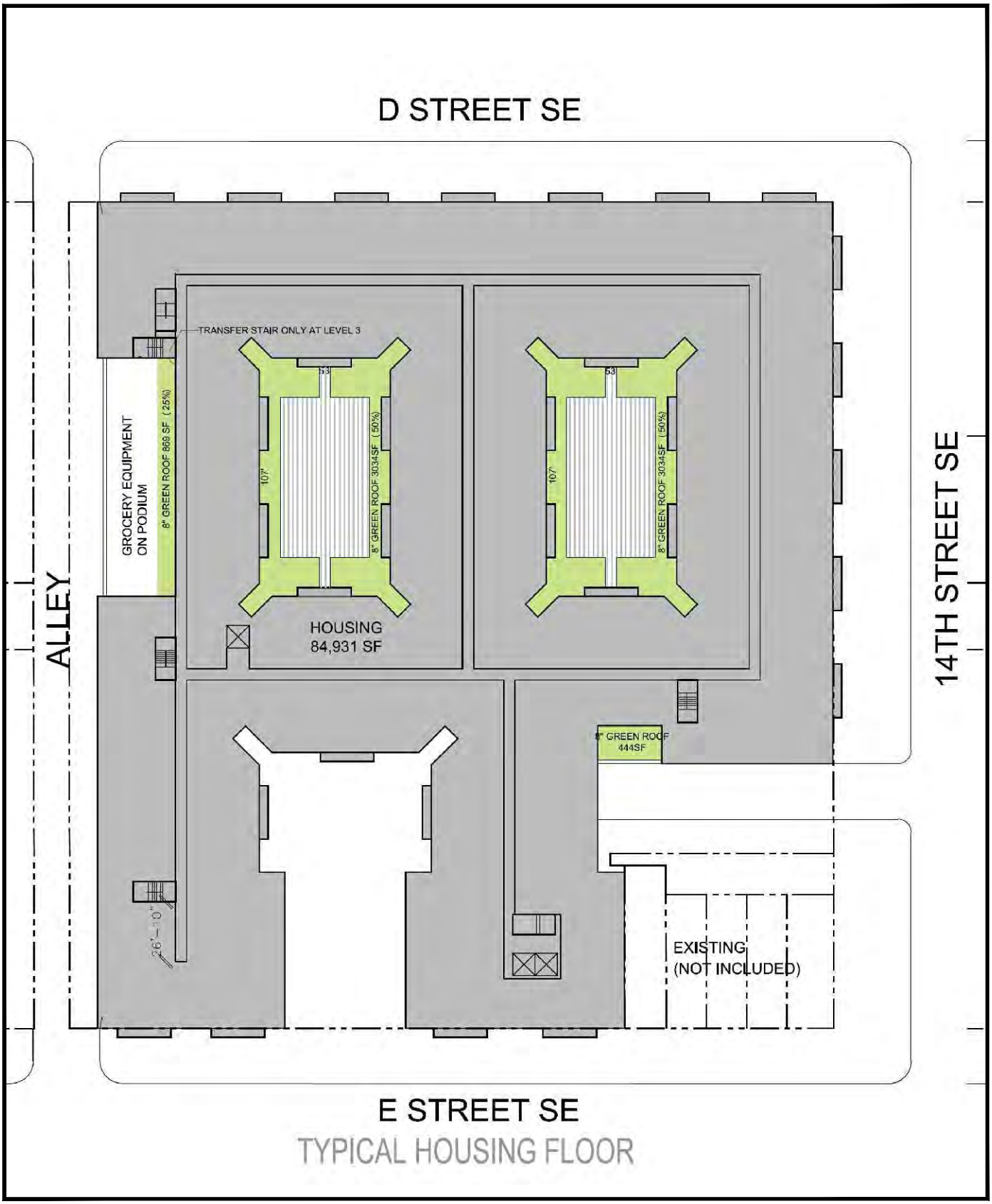

Figure 2B
Site Plan Typical Residential Floor

Capitol Hill Safeway
Washington, DC

NORTH

The study area was selected based on those roadway segments that potentially could be affected by the proposed redevelopment. The following intersections were identified for detailed analysis and agreed to by DDOT:

1. 11th Street SE/D Street SE
2. 12th Street SE/D Street SE
3. 13th Street SE/D Street SE
4. 14th Street SE/D Street SE/Kentucky Avenue SE
5. 11th Street SE/E Street SE/Pennsylvania Avenue SE
6. 12th Street SE/E Street SE
7. 13th Street SE/E Street SE
8. 14th Street SE/E Street SE
9. E Street SE/Kentucky Avenue SE
10. 12th Street SE/Pennsylvania Avenue SE
11. 13th Street SE/G Street SE/Pennsylvania Avenue SE
12. D Street/North Site Driveway West (Alley)
13. D Street/North Site Driveway East
14. 14th Street/West Site Driveway North
15. 14th Street/West Site Driveway South
16. E Street/South Site Driveway (Alley)

EXISTING TRANSPORTATON FACILITIES

Roadway Network

General details regarding the surrounding roadway segments, including functional classification, average daily traffic volume (ADT), and speed limit are summarized in Table 1.

Table 1
Roadway Segment Details

Roadway	Functional Classification	Average Daily Traffic* (vehicles per day)	Speed Limit (miles per hour)
D Street	Local	4,200	25†
E Street	Local	N/A	25†
G Street	Local	2,400	25†
11th Street	Minor Arterial	6,300	25
12th Street	Local	N/A	25
13th Street	Local	5,900	25†
14th Street	Local	10,100	25†
Pennsylvania Avenue	Principal Arterial	24,900	30
Kentucky Avenue	Collector	1,200	25†

* The ADT volume is based on DDOT historical traffic volume data collected in 2012 and 2014, which are the most recent data available.

† Speed limit unposted in the study area; assumed to be 25 mph.

With the following exceptions all roadways in the study area operate as two-way streets:

- 14th Street operates one-way southbound north of D Street and south of E-Street.
- E Street operates one-way westbound between 12th Street and Pennsylvania Avenue.

Non-Auto Transportation Facilities

Public Transportation Facilities and Services

The subject site is well served by public transportation, including both bus and Metrorail, as shown on Figure 3. The proposed project is located approximately 1,000 feet from the Potomac Avenue Metro Station entrance.

The Potomac Avenue Metro Station provides access to the Metro Blue, Orange and Silver lines. Riders can transfer to the Green and Yellow lines at L'Enfant Plaza Metro Station and to the Red Line at Metro Center Metro Station.

The minimum, maximum, and average headways for the Blue, Orange and Silver Lines are summarized in Table 2.

Table 2
Metrorail Headways (in minutes)

Headway*	AM Rush 5:00 AM – 9:30 AM	Midday 9:30 AM – 3:00 PM	PM Rush 3:00 PM – 7:00 PM	Evening 7:00 PM – 9:30 PM	Late Night 9:30 PM – Close	Weekend Open – 9:30 PM	Weekend 9:30 PM – Close
BLUE LINE (FRANCONIA SPRINGFIELD - LARGO TOWN CENTER)							
Min	0:12	0:12	0:12	0:12	0:20	0:12	0:20
Max	0:12	0:12	0:12	0:12	0:20	0:15	0:20
ORANGE LINE (VIENNA - NEW CARROLLTON)							
Min	0:06	0:12	0:06	0:12	0:20	0:12	0:20
Max	0:06	0:12	0:06	0:12	0:20	0:15	0:20
SILVER LINE (WIEHLE-RESTON EAST - LARGO TOWN CENTER)							
Min	0:06	0:12	0:06	0:12	0:20	0:12	0:20
Max	0:06	0:12	0:06	0:12	0:20	0:15	0:20

* Headways presented represent headways in both directions.

The site also is within a ¼ mile radius of bus stops serving 8 WMATA and DC Circulator routes. Stops along Pennsylvania Avenue are served by six Metrobus routes (30N, 30S, 32, 34, 36, 39) and the DC Circulator Potomac Avenue Metro – Skyland via Barracks Row route Stops on Potomac Avenue are served by the B2 Metrobus route.

The minimum, maximum, and average headways for the WMATA and DC Circulator routes are provided in Table 3.

Table 3
Metrobus and DC Circulator Headways (in minutes)

Headway	Northbound/Westbound			Southbound/Eastbound		
	AM Peak Period 7:00 AM – 10:00 AM	Midday Period 10:00 AM – 4:00 PM	PM Peak Period 4:00 PM – 7:00 PM	AM Peak Period 7:00 AM – 10:00 AM	Midday Period 10:00 AM – 4:00 PM	PM Peak Period 4:00 PM – 7:00 PM
Friendship Heights - Southeast Line (30N)						
Min	1:00	1:00	0:54	0:54	0:52	0:59
Max	1:05	1:04	1:04	1:09	1:05	1:01
Avg	1:02	1:01	0:59	1:01	1:00	1:00
Friendship Heights - Southeast Line (30S)						
Min	1:02	1:00	0:59	0:55	0:54	0:55
Max	1:02	1:02	1:00	1:06	1:06	1:06
Avg	1:02	1:01	0:59	1:00	1:00	1:00
Pennsylvania Avenue Line (32)						
Min	0:07	0:20	0:20	0:20	0:10	0:09
Max	0:35	0:42	0:58	0:43	0:42	0:43
Avg	0:12	0:29	0:39	0:31	0:25	0:18
Pennsylvania Avenue Line (34)						
Min	0:22	0:25	0:18	0:22	0:16	0:16
Max	0:35	0:42	0:33	0:36	0:42	0:34
Avg	0:28	0:39	0:25	0:29	0:36	0:21
Pennsylvania Avenue Line (36)						
Min	0:07	0:18	0:18	0:17	0:04	0:14
Max	0:37	0:42	0:59	0:45	1:04	0:35
Avg	0:21	0:29	0:41	0:33	0:28	0:21
Pennsylvania Avenue Limited Line (39)						
Min	0:07	N/A	N/A	N/A	N/A	0:14
Max	0:22	N/A	N/A	N/A	N/A	0:22
Avg	0:17	N/A	N/A	N/A	N/A	0:17

Table 3 (continued)
Metrobus and DC Circulator Headways (in minutes)

Headway	Northbound/Westbound			Southbound/Eastbound		
	AM Peak Period 7:00 AM – 10:00 AM	Midday Period 10:00 AM – 4:00 PM	PM Peak Period 4:00 PM – 7:00 PM	AM Peak Period 7:00 AM – 10:00 AM	Midday Period 10:00 AM – 4:00 PM	PM Peak Period 4:00 PM – 7:00 PM
Bladensburg Road - Anacostia Line (B2)						
Min	0:00	0:00	0:00	0:00	0:00	0:00
Max	0:00	0:00	0:00	0:00	0:00	0:00
Avg	0:00	0:00	0:00	0:00	0:00	0:00
DC Circulator Potomac Avenue Metro - Skyland Line						
Min	0:10	0:10	0:10	0:10	0:10	0:10
Max	0:10	0:10	0:10	0:10	0:10	0:10
Avg	0:10	0:10	0:10	0:10	0:10	0:10

The alternate modes of transportation are shown on Figure 3.

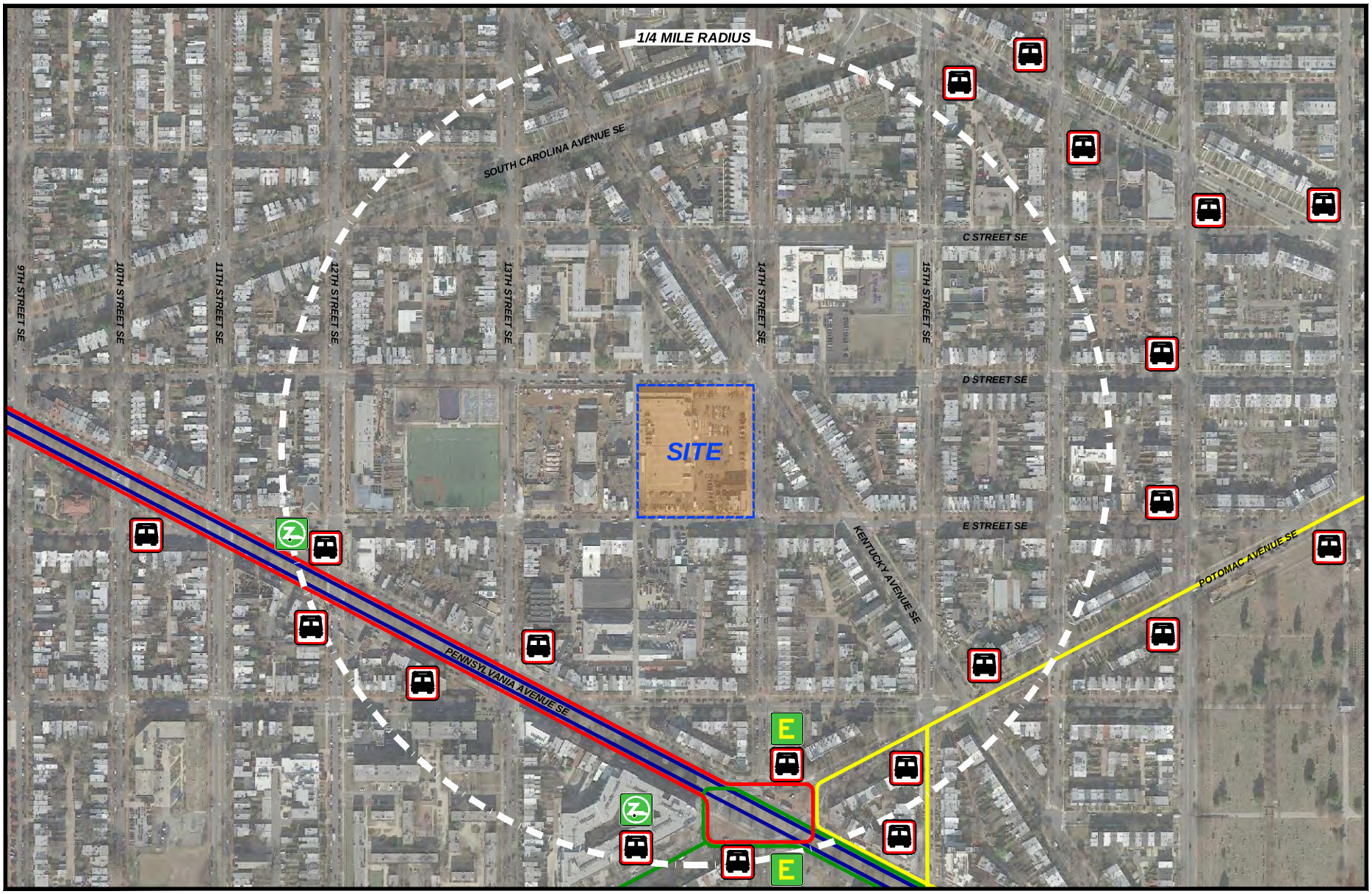

Figure 3
Alternate Modes of Transportation

Capitol Hill Safeway
Washington, DC

DC CIRCULATOR
WMATA - B2
WMATA - V1 & V4
WMATA - 30N/30S, 32, 36, 38, 29

Bus Stop
ZipCar
Enterprise

NORTH

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Pedestrian Facilities

The District of Columbia Pedestrian Master Plan[i] (the Pedestrian Plan) strives to make Washington, DC safer and more walkable by improving sidewalks, roadway crossings, and the quality of the pedestrian environment as well as by ensuring that the District's policies and procedures support walking.

The Pedestrian Plan provides an overview of existing pedestrian conditions, recommends new pedestrian projects and programs, establishes performance measures, and provides a plan for implementation through 2018. The Pedestrian Plan also estimates areas of pedestrian activity and deficiency.

As part of the Pedestrian Plan, eight priority corridors (one in each ward) were identified based on areas of heavy pedestrian traffic and deficient walking conditions. The priority corridor in Ward 6 is M Street between 6th Street SW and Isaac Hull SE, which is not included within the study area

A summary of the pedestrian inventory at all study intersections is shown on Table 4 below. All signalized intersections have pedestrian heads and countdown signals. High visibility crosswalks are installed at all intersections with the exception of the E Street and G Street crossings on Pennsylvania Avenue. One ramp per crosswalk, per ADA standards, is generally available at all crosswalks with some exceptions, as noted in Table 4. All study intersections have tactile warning strips except at the 14th St. SE/D St. SE/Kentucky Ave. SE intersection.

Table 4
Pedestrian Inventory

Intersection	Pedestrian Heads/ Countdown	Type of Crosswalks	One Ramp/ Crosswalk	Tactile Warning Strip
11th St. SE/D St. SE (Unsignalized)	No	All Legs - High Visibility	Yes	Yes
12th St. SE/D St. SE (Unsignalized)	No	All Legs - High Visibility	Yes	Yes
13th St. SE/D St. SE (Unsignalized)	Yes	All Legs - High Visibility	Yes	Yes
14th St. SE/D St. SE/ Kentucky Ave. SE (Signalized)	Yes	All Legs - High Visibility	No[1]	No

11th St. SE/ E St. SE/ Pennsylvania Ave. SE (Signalized)	Yes	Legs Crossing E St. - Standard All Other Legs- High Visibility	No[2]	Yes
12th St. SE/E St. SE (Unsignalized)	No	All Legs - High Visibility	Yes	Yes
13th St. SE/E St. SE (Unsignalized)	No	All Legs - High Visibility	Yes	Yes
14th St. SE/E St. SE (Unsignalized)	No	All Legs - High Visibility	Yes	Yes
E St. SE/Kentucky Ave. SE (Unsignalized)	No	All Legs - High Visibility	Yes	Yes
12th St. SE/ Pennsylvania Ave. SE (Signalized)	No	All Legs - High Visibility	No[3]	Yes
13th St. SE/G St. SE/ Pennsylvania Ave. SE (Signalized)	No	Crossing G Street, East Side - Standard All Other Legs - High Visibility	Yes	Yes

1. Ramps missing on northwest side of D St. and northwest side of 14th St.
2. Ramps missing on southeast and northwest sides of Pennsylvania Ave.
3. Ramp missing on northwest side of 12th St.

The ¼-mile walkshed is shown on Figure 4.

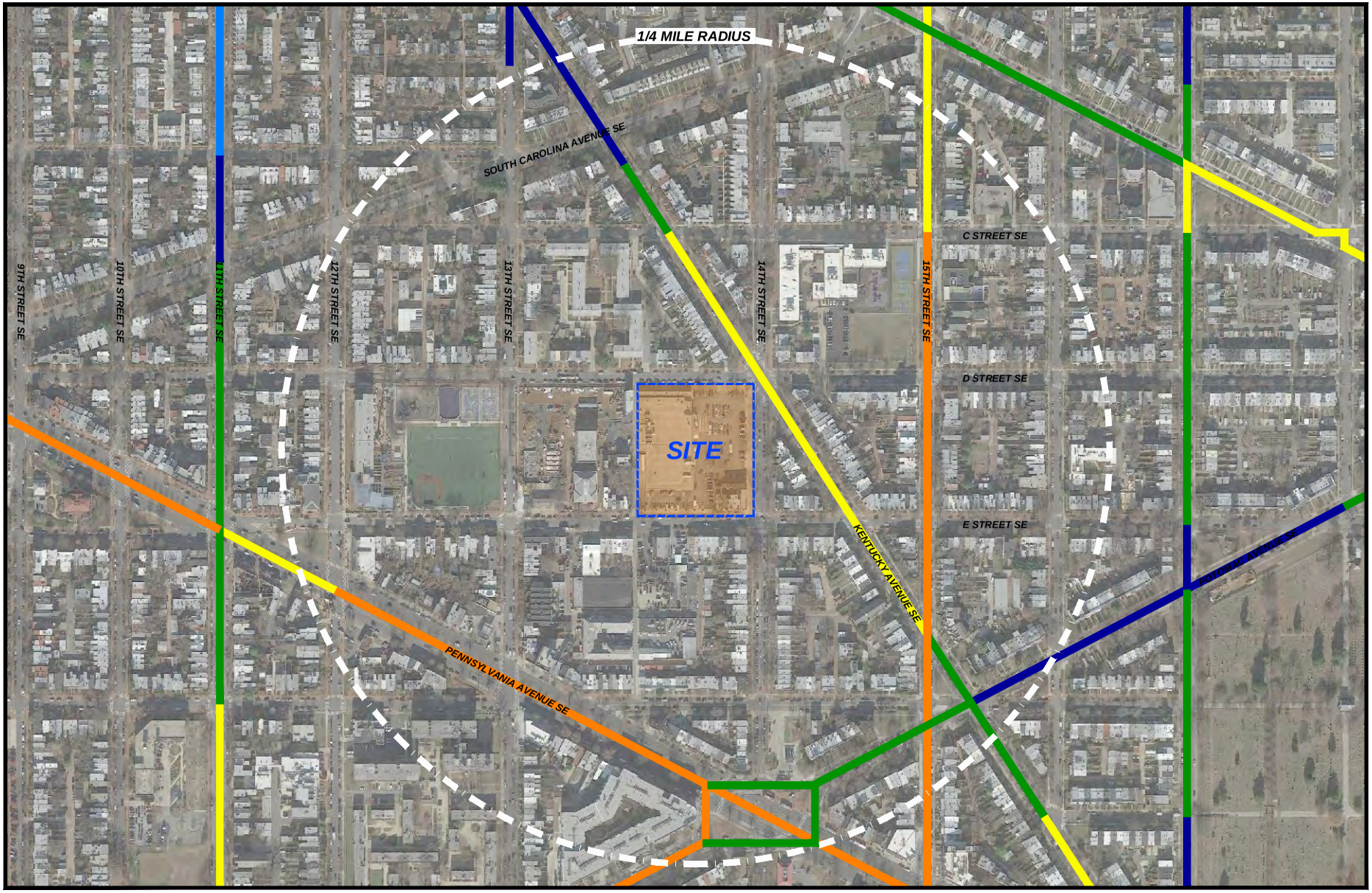

Figure 4
One-Quarter Mile Walk-Shed

Capitol Hill Safeway
Washington, DC

HIGH PEDESTRIAN ACTIVITY & DEFICIENCY

LOW PEDESTRIAN ACTIVITY & DEFICIENCY

NORTH

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Bicycle Facilities

The District of Columbia Bicycle Master Plan[ii] (the Bicycle Plan) seeks to create a more bicycle-friendly city by establishing high-quality bicycle facilities and programs that are safe and convenient.

The Bicycle Plan provides bicycle levels of service (BLOS) for roadways in the District where bicycles share the road with vehicles. The Bicycle Plan also reports the number of bicycle crashes that occurred between 2000 and 2002.

Finally, the Bicycle Plan identifies areas and corridors that are barriers to cyclists. These barriers include "freeways, railroad and highway grade separations, neighborhoods with heavy traffic, and other impediments to bicycle travel."[iii] No barrier areas are located within the study area.

Bicycle facilities and likely biking routes to the Metro Station, nearest bus stops within a ¼ mile of the site, and key generators in the site vicinity are shown on Figure 5. This figure also shows the BLOS for roadways in the study area and the reported bicycle crashes in the study area, per the Bicycle Plan.

Capital Bikeshare

Capital Bikeshare is an automated bicycle rental or bicycle sharing program that provides over 2,500 bicycles at 340 stations across Washington, DC, Maryland, and Virginia.

Membership, which is required to use Capital Bikeshare, includes four options for joining: 24 hours ($7), three days ($15), 30 days ($25), or one year ($75). The first 30 minutes of use are free; users then are charged a usage fee for each additional 30-minute period. Bicycles can be returned to any station with an available dock.

As shown on Figure 5, one Bikeshare station is located at the existing site. This station includes 15 docks. Two additional Bikeshare stations are located within ¼ mile from the site. One is located southwest of the site at 12th St. SE/Pennsylvania Ave. SE and houses 19 docks. The other is located south of the site, at the Potomac Avenue Metro station and houses 15 docks.

Car Sharing Services

Three car-sharing providers currently operate in the District. Zipcar requires a $25 application fee and members can choose from three plans: $60 per year (pay as you go based on the standard hourly or daily rate), $6 per month (pay as you go based on the standard hourly or daily rate), or $50 per month (pay as you go based on a discounted hourly or daily rate). Cars must be returned to the same designated parking spaces from which they were picked up. Ten Zipcars are located just over ¼ mile of the site, as shown on Figure 3. Two Zipcars are parked on the street at 12th Street/E Street. Eight Zipcars are located in the Jenkins Row Harris Teeter Parking Garage on Potomac Avenue southwest of Pennsylvania Avenue.

Car2Go requires a one-time $35 application fee. No reservation is required and car usage is charged by the minute, with hourly and daily maximum fees. Unlike Zipcar, a Car2Go vehicle does not have to be returned to its original location; a Car2Go vehicle can be parked in any unrestricted curbside parking space, in any metered/paystation curbside parking space (without paying meter/paystation fees), or in any residential permit parking space. Car2Go currently has 500 vehicles in the District.

Enterprise CarShare has a $40 annual membership fee. Cars can be reserved by the hour or day (hourly and daily fees are charged per usage). In the District, cars must be returned to their original location. Six Enterprise CarShare vehicles are located just over ¼ mile south of the site. Three vehicles are parked at the Potomac Avenue Metro Station along 14th Street and three other vehicles are parked along 14th Street south of Potomac Avenue.

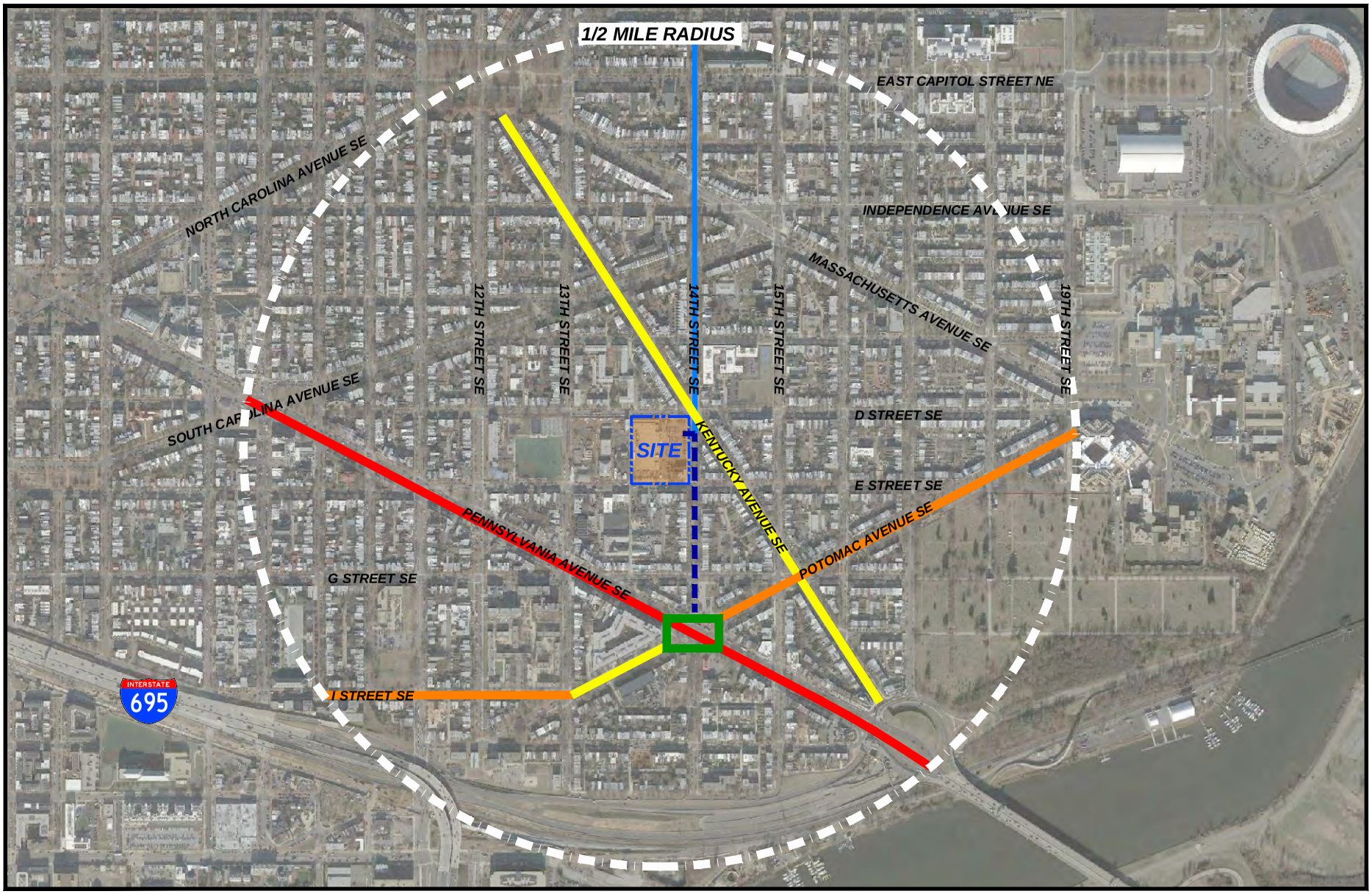

Figure 5
One-Half Mile Bike Shed

Capitol Hill Safeway
Washington, DC

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EXISTING CONDITONS ANALYSIS

Traffic Volumes

Existing vehicular turning movement, bicycle, and pedestrian counts were conducted on Tuesday May 3, 2016 and Thursday, June 16, 2016 from 7:00 AM to 10:00 AM and from 4:00 PM to 7:00 PM. AM and PM peak hours for each of the study intersections were determined individually to provide the most conservative peak hour analysis, per standard DDOT practice.

The study intersections are shown on Figure 6. The existing vehicular peak hour traffic volumes are shown on Figure 7. Pedestrian volumes are shown on Figure 8. Traffic count data are included in Appendix C.

Capacity Analysis

Capacity/level of service (LOS) analyses were conducted at the study intersections based on the existing traffic volumes shown on Figure 7, pedestrian volumes shown on Figure 8, the existing lane use and traffic control shown on Figure 9, and traffic signal timings obtained from DDOT, included in Appendix D.

Synchro software (Version 9) was used to evaluate levels of service at the study intersections during the peak hours. Synchro is a macroscopic model used to evaluate the effects of changing intersection geometrics, traffic demands, traffic control, and/or traffic signal settings and to optimize traffic signal timings. The levels of service reported were taken from the Highway Capacity Manual 2000 (HCM) reports generated by Synchro. Levels of service descriptions are included in Appendix E.

The results of the analyses are summarized in Table 5. Capacity analysis worksheets are included in Appendix F.

The results indicate the following:

- All of the signalized intersections currently operate at overall acceptable levels of service, with the exception of the 14th Street/D Street/Kentucky Avenue intersection that operates at an adequate LOS D during the AM peak hour but at LOS E during the PM peak hour.
- Some individual turning movements or approaches at the major signalized intersections operate near or beyond capacity during the AM and/or PM peak hours.
- All of the movements at the unsignalized intersections (including the existing site access drives) currently operate at acceptable levels of service (LOS D or better) during both the AM and PM peak hours.

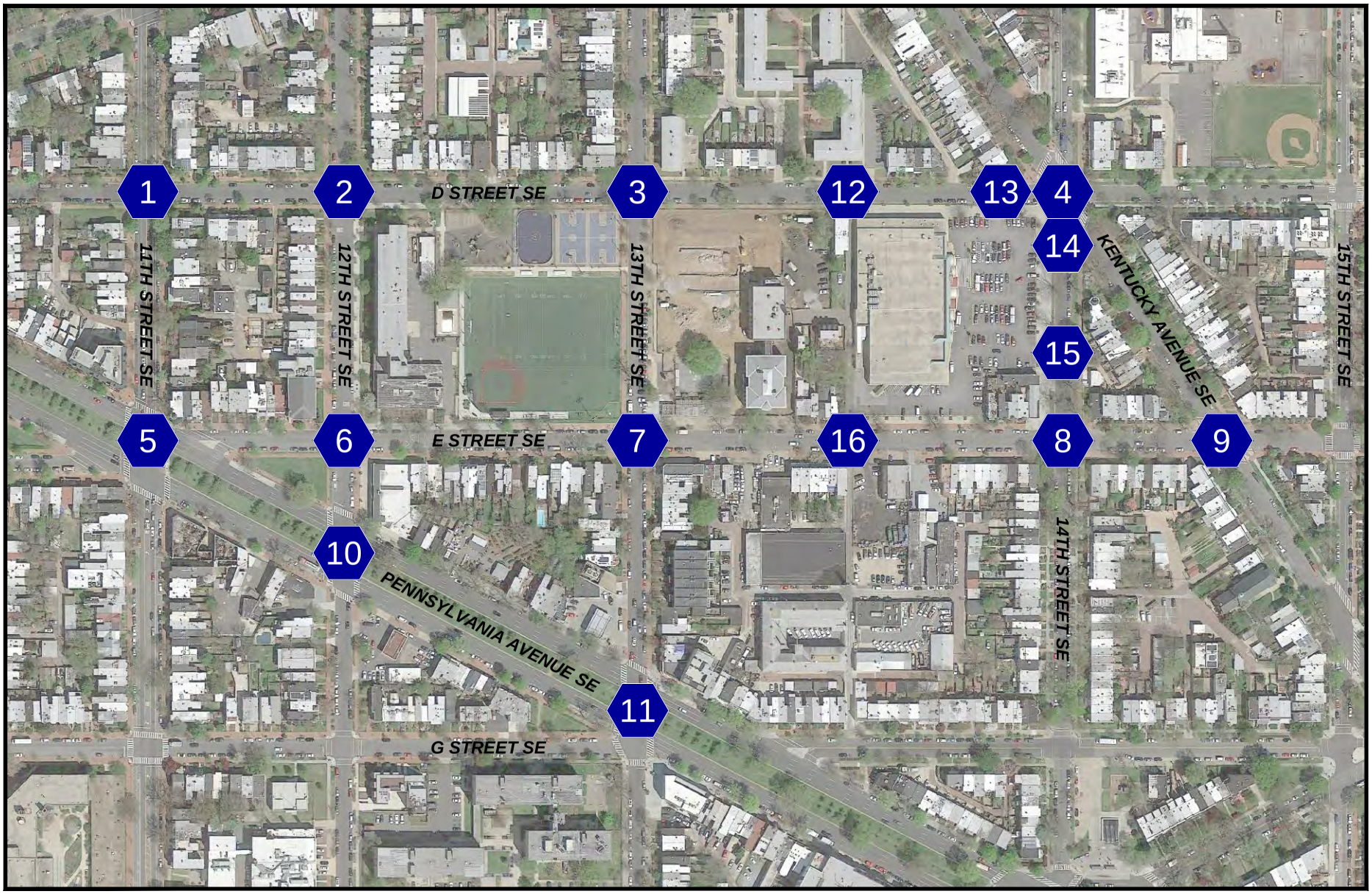

Figure 6
Intersection Numbering Map

Capitol Hill Safeway
Washington, DC

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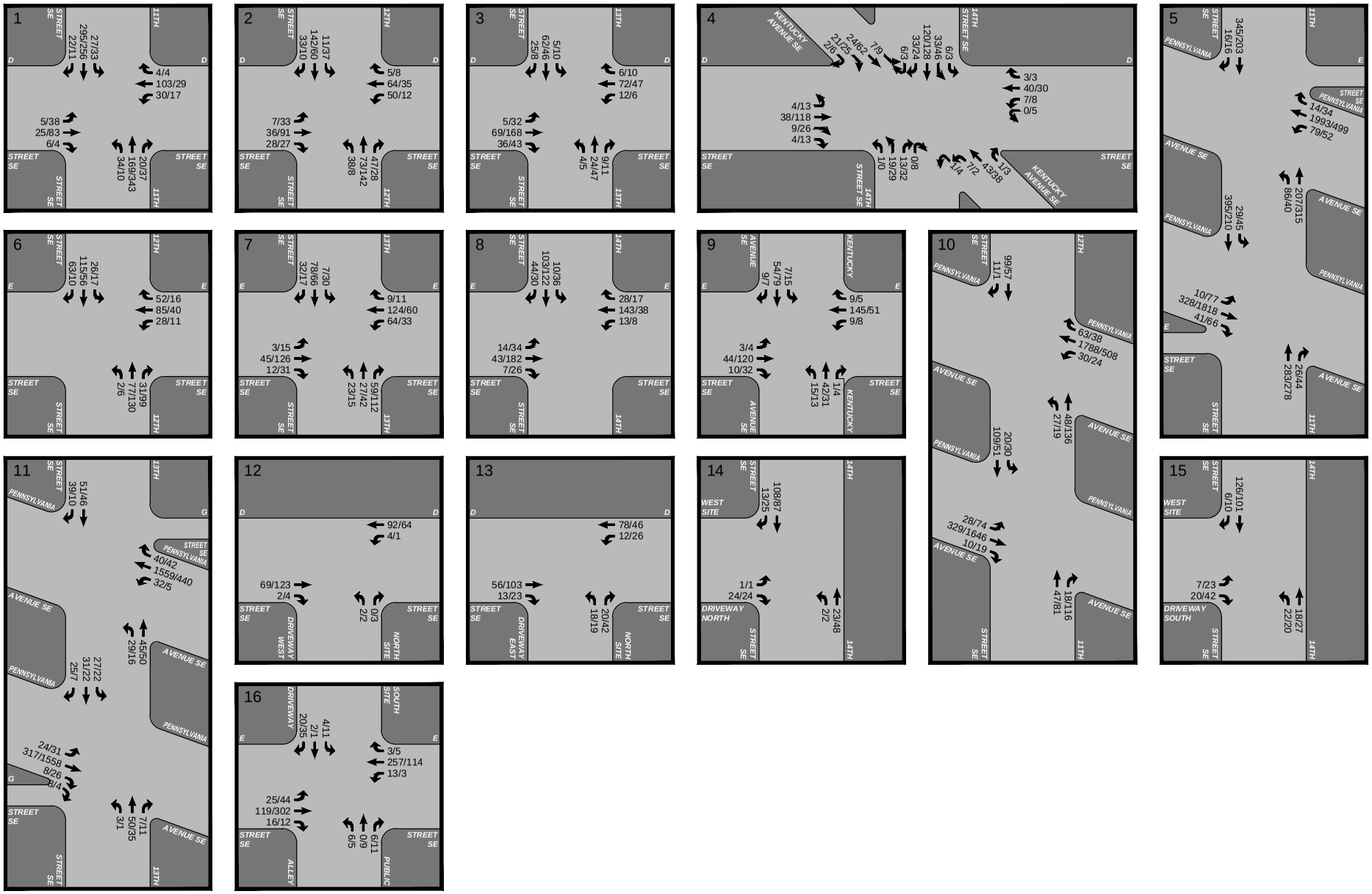

Figure 7
Existing Peak Hour Traffic Counts

Capitol Hill Safeway
Washington, DC

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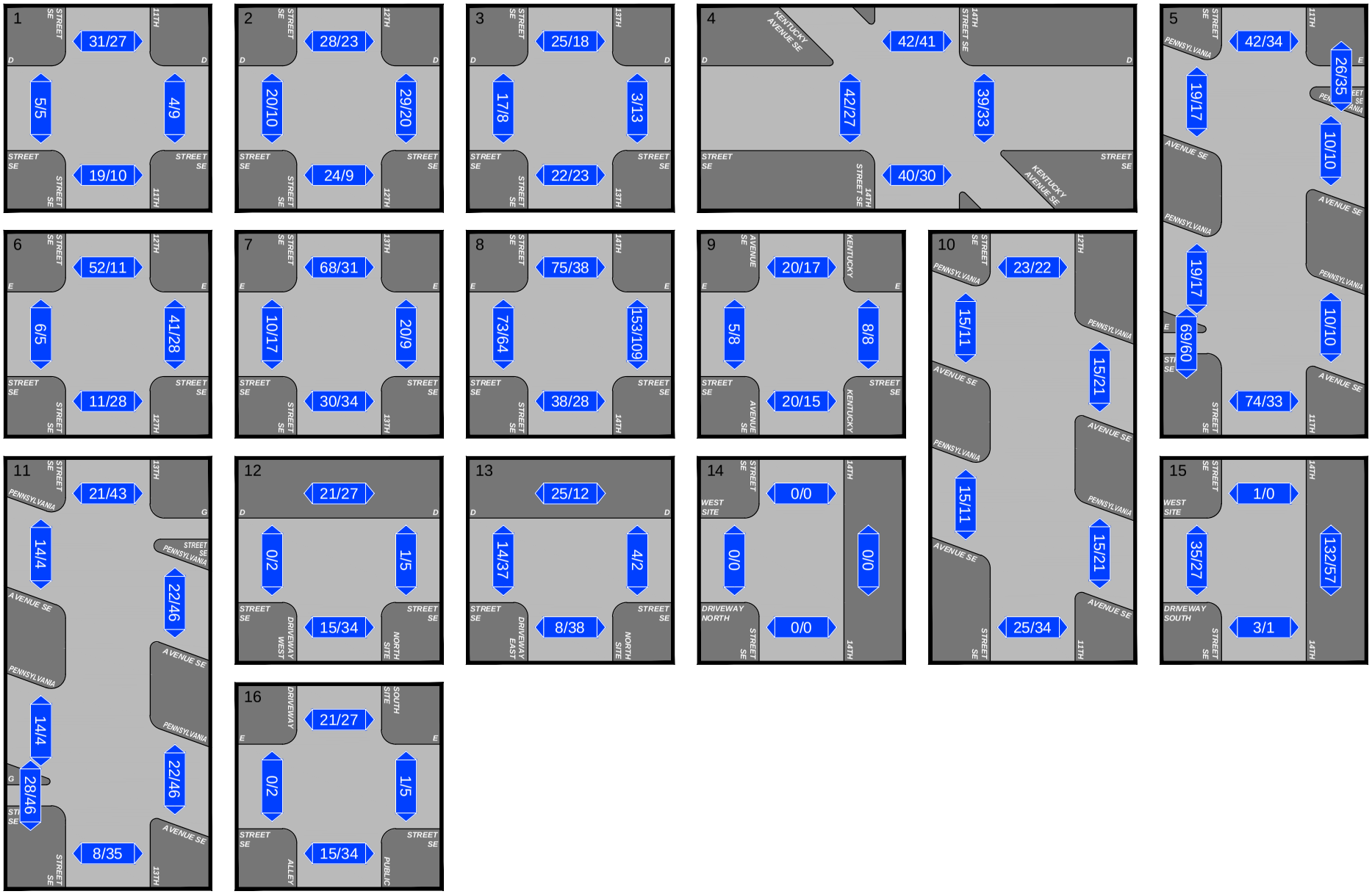

Figure 8
Existing Peak Hour Pedestrian Counts

Capitol Hill Safeway
Washington, DC

AM PEAK HOUR
PM PEAK HOUR
000 / 000

NORTH

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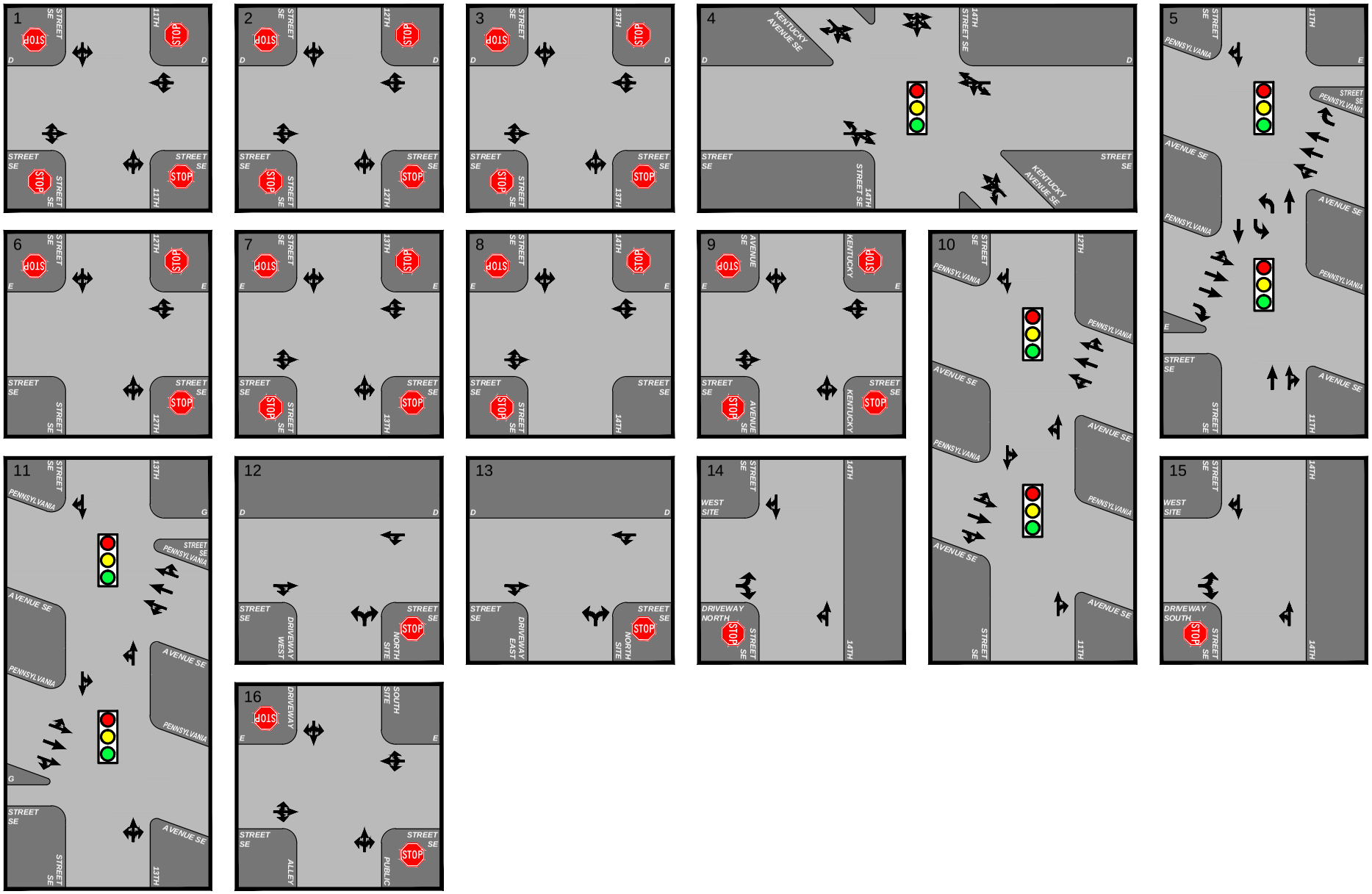

Figure 9
Existing Lane Use and Traffic Controls

Capitol Hill Safeway
Washington, DC

Represents One Travel Lane
Signalized Intersection
Stop Sign

NORTH

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Table 5
Level of Service Summary

Intersection	Control	Lane Group or Approach	2016 Existing				2020 Background				2020 Total Future				2020 Background vs. 2020 Total Future	
			AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak	PM Peak
			LOS	HCM Delay sec/veh	LOS	HCM Delay sec/veh	LOS	HCM Delay sec/veh	LOS	HCM Delay sec/veh	LOS	HCM Delay sec/veh	LOS	HCM Delay sec/veh	Net Delay sec/veh	Net Delay sec/veh
(1) 11th St. SE/D St. SE	Unsignalized	EBLTR	A	9.3	B	10.9	A	9.5	B	11.2	A	9.7	B	11.7	0.2	0.5
		WBLTR	B	10.5	A	10.0	B	10.8	B	10.2	B	11.2	B	10.6	0.4	0.4
		NBLTR	B	11.0	B	14.4	B	11.4	C	15.5	B	11.8	C	16.6	0.4	1.1
		SBLTR	B	13.2	B	12.9	B	13.9	B	13.7	B	14.7	C	15.1	0.8	1.4
(2) 12th St. SE/D St. SE	Unsignalized	EBLTR	A	8.4	A	9.3	A	8.6	A	9.5	A	8.8	C	10.0	0.2	0.5
		WBLTR	A	9.4	A	8.5	A	9.6	A	8.6	B	10.0	A	8.9	0.4	0.3
		NBLTR	A	9.0	A	9.3	A	9.2	A	9.5	A	9.4	A	9.8	0.2	0.3
		SBLTR	A	9.4	A	8.8	A	9.6	A	9.0	A	9.9	A	9.3	0.3	0.3
(3) 13th St. SE/D St. SE Whitehall Blvd	Unsignalized	EBLTR	A	8.0	A	9.4	A	8.1	A	9.7	A	8.3	B	10.3	0.2	0.6
		WBLTR	A	8.2	A	8.1	A	8.3	A	8.2	A	8.6	A	8.5	0.3	0.3
		NBLTR	A	7.8	A	8.3	A	7.9	A	8.4	A	8.0	A	8.6	0.1	0.2
		SBLTR	A	8.1	A	8.4	A	8.2	A	8.5	A	8.4	A	8.7	0.2	0.2
(4) 14th St. SE/D St. SE/ Kentucky Ave. SE	Signalized	EBLTRR	D	46.2	F	125.5	D	47.6	F	146.3	E	57.3	F	231.7	9.7	85.4
		WBLLTR	D	44.0	D	46.1	D	44.3	D	47.6	D	53.2	F	175.8	8.9	128.2
		NBLLRR	D	42.9	D	37.1	D	44.0	D	37.2	F	121.4	D	43.3	77.4	6.1
		SBLLTRR	E	57.2	E	77.1	E	61.9	F	103.1	E	74.4	F	154.9	12.5	51.8
		SEBLTRR	C	29.3	C	31.5	C	29.4	C	31.7	C	29.4	C	31.7	0.0	0
		NWBLLTR	C	27.7	C	27.8	C	27.8	C	27.8	C	27.8	C	27.8	0.0	0
		Overall	**D**	**46.2**	**E**	**70.7**	**D**	**48.6**	**F**	**85.0**	**E**	**70.1**	**F**	**126.6**	**21.5**	**41.6**
(5) 11th St. SE/G St. SE Pennsylvania Ave. SE																
51 - (North)	Signalized	NBL	F	88.9	B	11.8	F	152.0	B	11.9	F	151.3	B	11.7	-0.7	-0.2
		NBT	A	7.1	C	23.7	A	7.3	C	25.1	A	7.3	C	24.4	0.0	-0.7
		SBTR	F	110.7	D	45.7	F	125.5	D	47.1	F	125.5	D	47.1	0.0	0
		NWBLT	A	5.8	A	3.5	A	6.3	A	3.5	A	6.7	A	3.7	0.4	0.2
		NWBR	A	6.2	A	0.7	A	6.2	A	0.6	A	6.2	A	0.6	0.0	0
		North Node	C	22.6	B	17.0	C	26.9	B	17.6	C	26.9	B	17.2	0.0	-0.4
52 - (South)	Signalized	NBTR	D	37.7	D	37.8	D	38.1	D	38.2	D	38.3	D	39.0	0.2	0.8
		SBL	A	8.0	B	12.1	A	8.2	B	12.5	A	9.4	B	14.4	1.2	1.9
		SBT	B	19.5	B	14.5	C	31.7	B	15.0	D	48.3	B	17.6	16.6	2.6
		SEBLT	A	6.8	B	11.1	A	6.8	B	11.6	A	6.8	B	11.7	0.0	0.1
		SEBR	A	6.4	A	6.4	A	6.4	A	6.5	A	6.4	A	6.5	0.0	0
		South Node	B	19.4	B	14.7	C	23.7	B	15.2	C	29.6	B	15.8	5.9	0.6
53 - (West)	Unsignalized	EBR	A	9.2	C	19.3	A	9.3	C	20.8	A	9.3	C	21.2	0.0	0.4
		SEBT	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	0.0	0
54 - (East)	Unsignalized	WBR	A	9.4	A	9.3	A	9.5	A	9.3	A	9.5	A	9.3	0.0	0
		NWBT	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	0.0	0
51/52/53/54 Total Delay Per Vehicle		**Overall**	**C**	**26.9**	**B**	**19.6**	**C**	**32.2**	**C**	**20.3**	**C**	**34.3**	**C**	**20.6**	**2.1**	**0.3**
(6) 12th St. SE/E St. SE	Unsignalized	WBLTR	A	9.0	A	8.2	A	9.4	A	8.6	B	10.1	A	9.2	0.7	0.6
		NBLTR	A	8.4	A	8.8	A	8.6	A	9.2	A	9.0	B	10.0	0.4	0.8
		SBLTR	A	9.0	A	8.0	A	9.2	A	8.2	A	9.6	A	8.4	0.4	0.2
(7) 13th St. SE/E St. SE	Unsignalized	EBLTR	A	8.4	A	9.6	A	8.7	B	10.5	A	9.2	B	11.9	0.5	1.4
		WBLTR	B	10.0	A	9.3	B	10.6	A	10.0	B	11.6	B	10.9	1.0	0.9
		NBLTR	A	8.6	A	9.4	A	8.9	B	10.1	A	9.2	B	10.8	0.3	0.7
		SBLTR	A	8.9	A	9.2	A	9.2	A	9.8	A	9.6	B	10.3	0.4	0.5
(8) 14th St. SE/E St. SE	Unsignalized	EBLTR	A	8.0	A	9.9	A	8.3	B	10.7	A	9.1	B	14.0	0.8	3.3
		WBLTR	A	8.9	A	8.2	A	9.3	A	8.7	A	9.8	A	9.6	0.5	0.9
		SBLTR	A	8.6	A	9.6	A	8.9	B	10.3	A	9.7	B	12.8	0.8	2.5
(9) E St. SE/Kentucky Ave. SE	Unsignalized	EBLTR	A	7.8	A	8.4	A	8.0	A	8.8	A	8.1	A	9.0	0.1	0.2
		WBLTR	A	8.7	A	8.1	A	9.0	A	8.4	A	9.2	A	8.7	0.2	0.3
		NBLTR	A	8.1	A	8.1	A	8.2	A	8.3	A	8.3	A	8.4	0.1	0.1
		SBLTR	A	8.1	A	8.5	A	8.2	A	8.7	A	8.3	A	8.9	0.1	0.2
(10) 12th St. SE/ Pennsylvania Ave. SE																
102 - (North)	Signalized	NBTL	C	22.4	C	24.4	C	22.9	C	24.9	C	28.8	C	31.8	5.9	6.9
		SBTR	D	39.5	D	36.6	D	39.8	D	36.7	D	40.0	D	36.8	0.2	0.1
		NWBLTR	A	5.1	A	3.6	A	5.4	A	3.6	A	5.4	A	3.6	0.0	0
		North Node	A	7.8	B	10.8	A	8.1	B	11.0	A	8.6	B	13.7	0.5	2.7
101 - (South)	Signalized	NBTR	D	36.1	D	49.8	D	36.2	D	52.9	D	36.3	D	53.6	0.1	0.7
		SBTL	B	17.4	B	16.2	B	17.7	B	16.6	B	17.7	B	16.4	0.0	-0.2
		SEBLTR	A	3.9	A	4.5	A	4.0	A	4.6	A	4.1	A	4.7	0.1	0.1
		South Node	B	11.2	A	9.9	B	11.3	B	10.3	B	11.3	B	10.4	0.0	0.1
101/102 Total Delay Per Vehicle		**Overall**	**A**	**9.2**	**B**	**11.1**	**A**	**9.5**	**B**	**11.5**	**A**	**10.0**	**B**	**12.6**	**0.5**	**1.1**
(11) 13th St. SE/G St. SE Pennsylvania Avenue SE																
111 - (North)	Signalized	NBTL	B	17.6	C	23.1	B	17.7	C	22.8	B	17.8	C	22.8	0.1	0
		SBTR	D	36.8	D	35.3	D	37.4	D	35.4	D	37.4	D	35.4	0.0	0
		NWBLTR	A	9.1	A	6.2	A	9.4	A	6.2	A	9.4	A	6.2	0.0	0
		North Node	B	11.1	B	11.3	B	11.4	B	11.3	B	11.4	B	11.3	0.0	0
112 - (South)	Signalized	NBLTR	D	35.1	C	34.4	D	35.2	C	34.5	D	35.2	C	34.5	0.0	0
		SBLTR	C	22.8	A	7.2	C	21.6	A	7.1	C	21.6	A	7.1	0.0	0
		SEBLT	A	4.6	A	7.8	A	4.6	A	8.3	A	4.5	A	8.4	-0.1	0.1
		South Node	B	11.2	A	8.5	B	11.0	A	9.0	B	10.9	A	9.0	-0.1	0
113 - (East)	Unsignalized	WBR	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	0.0	0
		NWBT	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	0.0	0
111/112/113 Total Delay Per Vehicle		**Overall**	**B**	**11.9**	**A**	**9.7**	**B**	**12.1**	**B**	**10.1**	**B**	**12.1**	**B**	**10.1**	**0.0**	**0.0**
(12) North Driveway-W/ D St. SE	Unsignalized	EBTR	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	0.0	0
		WBLT	A	0.3	A	0.1	A	0.4	A	0.5	A	0.6	A	2.3	0.2	1.8
		NBLR	A	9.9	A	9.7	A	9.5	A	9.8	A	9.9	B	10.4	0.4	0.6
(13) North Driveway-E/ D St. SE	Unsignalized	EBTR	A	0.0	A	0.0	A	0.0	A	0.0	Intersection Removed		Intersection Removed		-	-
		WBLT	A	1.1	A	2.9	A	1.0	A	2.6					-	-
		NBLR	A	9.6	B	10.4	A	9.7	B	10.5					-	-
(14) East Driveway-N/ 14th St. SE	Unsignalized	EBLR	A	9.1	A	9.0	A	9.1	A	9.1	Intersection Removed		Intersection Removed		-	-
		NBLT	A	0.7	A	0.4	A	0.7	A	0.4					-	-
		SBTR	A	0.0	A	0.0	A	0.0	A	0.0					-	-
(15) East Driveway-S/ 14th St. SE	Unsignalized	EBLR	A	9.8	A	9.9	A	9.9	B	10.1	B	13.4	C	20.8	3.5	10.7
		NBLT	A	4.3	A	3.3	A	4.2	A	3.3	A	6.7	A	7.1	2.5	3.8
		SBTR	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	0.0	0
(16) South Driveway/E St. SE	Unsignalized	EBLTR	A	1.5	A	1.2	A	1.5	A	1.3	A	0.4	A	0.7	-1.1	-0.6
		WBLTR	A	0.5	A	0.2	A	0.5	A	0.2	A	0.5	A	0.2	0.0	0
		NBLTR	B	12.5	B	14.3	B	13.0	C	15.3	B	13.7	B	13.7	0.7	-1.6
		SBLTR	B	11.6	B	11.7	B	12.2	B	12.4	B	13.4	B	13.6	1.2	1.2

Note: Analyses performed using Synchro analysis software (Version 9).

Queue Analysis

A queuing analysis was conducted for existing conditions. Synchro was used to conduct the analyses, using the 95th percentile queue lengths. The results are summarized in Table 6. Queue reports are provided in Appendix F.

As shown in Table 6, the following lane groups have 95th percentile queues that exceed the available storage under existing conditions:

- 11th Street/G Street/Pennsylvania Avenue – southbound through/right,
- 11th Street/G Street/Pennsylvania Avenue – southeastbound through/left.
- 12th Street/Pennsylvania Avenue – southbound through/right.

Queues that extend to adjacent intersections are typical in urban environments where intersections are closely spaced.

Table 6
Synchro 95th Percentile Queue Summary (in feet)

Intersection	Control	Lane Group or Approach	Turn Lane Storage (Feet)	2016 Existing				2020 Background				2020 Total Future				2020 Background vs. 2020 Total Future			
				AM Peak		PM Peak		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
				50th Percentile	95th Percentile	50th Percentile	95th Percentile	50th Percentile	95th Percentile	50th Percentile	95th Percentile	50th Percentile	95th Percentile	50th Percentile	95th Percentile	50th Percentile	95th Percentile	50th Percentile	95th Percentile
(1) 11th St. SE/D St. SE*	Unsignalized	EBLTR	250	-	5	-	23	-	8	-	25	-	8	-	28	-	0	-	3
		WBLTR	310	-	25	-	10	-	28	-	10	-	30	-	15	-	2	-	5
		NBLTR	345	-	45	-	90	-	48	-	100	-	50	-	108	-	2	-	8
		SBLTR	275	-	75	-	65	-	85	-	73	-	93	-	85	-	8	-	12
(2) 12th St. SE/D St. SE*	Unsignalized	EBLTR	310	-	10	-	23	-	10	-	25	-	10	-	30	-	0	-	5
		WBLTR	500	-	20	-	8	-	23	-	10	-	28	-	13	-	5	-	3
		NBLTR	390	-	20	-	28	-	23	-	28	-	23	-	30	-	0	-	2
		SBLTR	400	-	28	-	15	-	30	-	18	-	30	-	18	-	0	-	0
(3) 13th St. SE/D St. SE Whitehall Blvd*	Unsignalized	EBLTR	500	-	13	-	35	-	13	-	40	-	15	-	48	-	2	-	8
		WBLTR	720	-	13	-	10	-	15	-	10	-	18	-	13	-	3	-	3
		NBLTR	400	-	5	-	8	-	5	-	10	-	5	-	10	-	0	-	0
		SBLTR	380	-	13	-	8	-	13	-	10	-	15	-	10	-	2	-	0
(4) 14th St. SE/D St. SE/ Kentucky Ave. SE	Signalized	EBLTRR	720	41	71	~132	#269	49	80	~149	#289	62	98	~171	#315	13	18	22	26
		WBLLTR	450	39	67	34	67	41	70	36	70	51	83	~66	#148	10	13	30	78
		NBLLRR	340	25	48	0	0	27	52	0	0	~88	#161	4	#102	61	109	4	102
		SBLLTRR	350	131	#248	144	#279	141	#271	~174	#327	154	#302	~231	#383	13	31	57	56
		SEBLTRR	425	29	62	68	98	30	64	72	102	30	64	72	102	0	0	0	0
		NWBLLTR	420	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(5) 11th St. SE/G St. SE Pennsylvania Ave. SE																			
51 - (North)	Signalized	NBL	250	35	#169	7	m13	~74	#181	7	m14	~76	#183	7	m13	2	2	0	-1
		NBT	460	9	31	212	#327	9	33	222	#350	10	29	58	#350	1	-4	-164	0
		SBTR	360	~287	#475	142	226	~304	#494	148	234	~309	#500	#238	261	5	6	90	27
		NWBLTR	325	39	41	16	19	41	43	17	19	387	47	19	22	346	4	2	3
52 - (South)	Signalized	NBTR	420	98	144	97	143	103	149	103	150	106	152	112	160	3	3	9	10
		SBL	75	4	m4	8	m12	4	m4	8	m13	5	m5	9	m15	1	1	1	2
		SBT	455	58	m58	35	51	~70	m#62	37	m54	~330	m#318	46	66	260	256	9	12
		SEBLT	260	33	41	246	290	35	42	264	311	36	44	270	317	1	2	6	6
		SEBR	115	0	7	0	14	0	8	0	14	0	8	0	14	0	0	0	0
53 - (West)	Unsignalized	EBR	175	-	2	-	48	-	2	-	55	-	2	-	56	-	0	-	1
		SEBT	260	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-	0
54 - (East)	Unsignalized	WBR	225	-	7	-	3	-	7	-	3	-	7	-	3	-	0	-	0
		NWBT	325	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-	0
(6) 12th St. SE/E St. SE*	Unsignalized	WBLTR	490	-	23	-	10	-	28	-	13	-	35	-	20	-	7	-	7
		NBLTR	80	-	15	-	33	-	18	-	38	-	20	-	50	-	2	-	12
		SBLTR	390	-	28	-	10	-	30	-	10	-	30	-	10	-	0	-	0
(7) 13th St. SE/E St. SE*	Unsignalized	EBLTR	490	-	10	-	25	-	10	-	35	-	15	-	50	-	5	-	15
		WBLTR	740	-	35	-	18	-	43	-	25	-	53	-	33	-	10	-	8
		NBLTR	360	-	15	-	30	-	18	-	35	-	18	-	38	-	0	-	3
		SBLTR	400	-	18	-	18	-	20	-	20	-	23	-	23	-	3	-	3
(8) 14th St. SE/E St. SE*	Unsignalized	EBLTR	340	-	8	-	38	-	10	-	48	-	18	-	80	-	8	-	32
		WBLTR	555	-	25	-	8	-	30	-	13	-	35	-	18	-	5	-	5
		SBLTR	340	-	20	-	30	-	23	-	38	-	30	-	63	-	7	-	25
(9) E St. SE/Kentucky Ave. SI	Unsignalized	EBLTR	220	-	8	-	18	-	8	-	23	-	10	-	25	-	2	-	2
		WBLTR	150	-	23	-	8	-	28	-	13	-	30	-	15	-	2	-	2
		NBLTR	310	-	8	-	8	-	8	-	8	-	8	-	8	-	0	-	0
		SBLTR	420	-	10	-	15	-	10	-	18	-	10	-	18	-	0	-	0
(10) 12th St. SE/ Pennsylvania Ave. SE																			
102 - (North)	Signalized	NBTL	355	27	46	64	m93	29	48	70	m101	45	72	111	m177	16	24	41	76
		SBTR	90	71	119	41	69	74	123	43	71	76	125	44	73	2	2	1	2
		NWBLTR	530	264	167	12	16	282	192	13	17	282	192	13	17	0	0	0	0
101 - (South)	Signalized	NBTR	245	31	70	117	#192	32	71	123	#214	34	75	131	#229	2	4	8	15
		SBTL	185	38	47	21	31	40	48	22	32	40	49	22	32	0	1	0	0
		SEBLT	325	19	24	78	84	20	26	82	89	23	28	88	95	3	2	6	6
		SEBR	325	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(11) 13th St. SE/G St. SE Pennsylvania Avenue SE																			
111 - (North)	Signalized	NBTL	690	21	38	31	m52	22	40	31	m51	22	39	31	m51	0	-1	0	0
		SBTR	360	47	79	35	61	54	87	37	63	54	87	37	63	0	0	0	0
		NWBLTR	720	191	226	38	52	202	240	40	53	202	240	40	53	0	0	0	0
112 - (South)	Signalized	NBLTR	650	32	70	21	54	34	72	22	56	34	72	22	56	0	0	0	0
		SBLTR	420	32	48	7	9	32	48	7	9	32	48	7	9	0	0	0	0
		SEBLTR	536	22	28	141	182	23	29	153	201	23	28	163	204	0	-1	10	3
113 - (East)	Unsignalized	WBR	465	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-	0
		NWBT	720	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-	0
(12) North Driveway-W/ D St. SE	Unsignalized	EBTR	-	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-	0
		WBLT	-	-	0	-	0	-	0	-	0	-	1	-	2	-	1	-	2
		NBLR	-	-	0	-	1	-	1	-	1	-	6	-	4	-	5	-	3
(13) North Driveway-E/ D St. SE	Unsignalized	EBTR	-	-	0	-	0	-	0	-	0	Intersection Removed		Intersection Removed		-	-	-	-
		WBLT	-	-	1	-	2	-	1	-	2					-	-	-	-
		NBLR	-	-	5	-	9	-	5	-	9					-	-	-	-
(14) East Driveway-N/ 14th St. SE	Unsignalized	EBLR	-	-	3	-	3	-	3	-	3	Intersection Removed		Intersection Removed		-	-	-	-
		NBLT	-	-	0	-	0	-	0	-	0					-	-	-	-
		SBTR	-	-	0	-	0	-	0	-	0					-	-	-	-
(15) East Driveway-S/ 14th St. SE	Unsignalized	EBLR	-	-	4	-	8	-	4	-	9	-	37	-	111	-	33	-	102
		NBLT	-	-	2	-	1	-	2	-	1	-	6	-	11	-	4	-	10
		SBTR	-	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-	0
(16) South Driveway/E St. SI	Unsignalized	EBLTR	-	-	2	-	3	-	2	-	3	-	1	-	2	-	-1	-	-1
		WBLTR	-	-	1	-	0	-	1	-	0	-	1	-	0	-	0	-	0
		NBLTR	-	-	2	-	7	-	3	-	7	-	3	-	6	-	0	-	-1
		SBLTR	-	-	4	-	9	-	5	-	10	-	8	-	5	-	3	-	-5

*Queue length determined using HCM 2010 All Way Stop Control and assuming 25ft per vehicle in queue

Safety Analysis

Crash data at the study intersections were obtained from DDOT. The information provided by DDOT included the total number of crashes over the latest three years of available data (i.e. 2013, 2014, and 2015) at each intersection and was further categorized by type of crash. The overall intersection crash rates at each of the study intersections was calculated based on the average daily traffic volume and is summarized on Table 7.

As shown in Table 7, the crash rates at the 12th Street/D Street, 13th Street/D Street, 14th Street/D Street/Kentucky Avenue, and 11th Street/D Street/Pennsylvania Avenue intersections are above 1.0, which is considered high by DDOT.

Table 7
Crash Data Summary

Intersection	Type of Control	No. of Crashes (3 Years)	ADT (veh/day)	Crash Rate (MEV)
11th St./D St.	All-way Stop	2	8,650	0.21
12th St./D St.	All-way Stop	8	4,910	1.49
13th St./D St.	All-way Stop	5	4,330	1.05
14th St./D St./ Kentucky Ave.	Signal	8	4,210	1.74
11th St./ E St./ Pennsylvania Ave.	Signal	37	25,260	1.34
12th St./E St.	All-way Stop	3	3,890	0.70
13th St./E St.	All-way Stop	4	5,580	0.65
14th St./E St.	All-way Stop	1	4,930	0.19
E St./Kentucky Ave.	All-way Stop	1	3,690	0.25
12th St./ Pennsylvania Ave.	Signal	19	26,620	0.65
13th St./G St./ Pennsylvania Ave.	Signal	40	38,640	0.95

12th Street/D Street

A review of the crash types at the 12th Street/D Street intersection reveals that the most common cause of crashes that have occurred at the intersection (25 percent each) were right angle, right turn and pedestrian collisions. Rear end crashes made up 12.5 percent of the crashes at the intersection. The other 12.5 percent of crashes did not specify a type of collision.

Based on the limited information provided, no discernable pattern, trend, or causation factors could be identified. In order to make recommendations to improve safety, details regarding the crash history including direction of travel, time of day (daylight or nighttime), and weather conditions would be needed.

13th Street/D Street

A review of the crash types at the 13th Street/D Street intersection reveals that the majority of crashes that have occurred at the intersection (60 percent) were fixed object collisions. Head on and backing crashes each made up 20 percent of the crashes at the intersection.

Based on the limited information provided, no discernable pattern, trend, or causation factors could be identified. In order to make recommendations to improve safety, details regarding the crash history including direction of travel, time of day (daylight or nighttime), and weather conditions would be needed.

14th Street/D Street/Kentucky Avenue

A review of the crash types at the 14th Street/D Street/Kentucky Avenue intersection reveals that the most common cause of crashes that have occurred at the intersection (25 percent each) were side swipe, parked and fixed object collisions. Right angle and rear end crashes each made up 12.5 percent of the crashes at the intersection.

Based on the limited information provided, no discernable pattern, trend, or causation factors could be identified. In order to make recommendations to improve safety, details regarding the crash history including direction of travel, time of day (daylight or nighttime), and weather conditions would be needed.

11th Street/E Street/Pennsylvania Avenue

A review of the crash types at the 11th Street/E Street/Pennsylvania Avenue intersection reveals that the most common cause of crashes that have occurred at the intersection (35.1 percent) were side swipe collisions. Rear end collisions, which are not uncommon at signalized intersections, made up 16.2 percent of the crashes at the intersection. Other documented crash types that occurred at the intersection were right angle (8.1 percent), left turn (8 percent), right turn (5.4 percent), pedestrian (5.4 percent), fixed object (2.7 percent), and backing (2.7 percent). The other 16.2 percent of crashes at the intersection did not specify a type of collision.

Based on the limited information provided, no discernable pattern, trend, or causation factors could be identified. In order to make recommendations to improve safety, details regarding the crash history including direction of travel, time of day (daylight or nighttime), and weather conditions would be needed.

FUTURE BACKGROUND CONDITIONS

Traffic Volumes

Overview

In order to forecast year 2020 background traffic volumes in the study area without the proposed redevelopment, increases in traffic associated with growth outside the immediate site vicinity (regional growth) and increases in traffic associated with planned or approved but not yet constructed developments in the study area (pipeline developments) were considered.

Regional Growth

DDOT's historical average daily traffic (ADT) volume maps were examined to determine an appropriate growth rate for the study area. The historical ADTs indicate that traffic volumes in the study area generally have a growth rate less than one (1.0) percent. Therefore, a growth rate of one (1.0) percent per year, compounded annually over a four (4) year period (2016 to 2020), conservatively was applied to the existing vehicular volumes shown on Figure 7. The added regional growth to the year 2020 is shown on Figure 10.

Pipeline Developments

Three other developments that are planned in and around the study area were identified during the scoping process and were considered as part of the background traffic growth for the 2020 study year (see Figure 11 for locations). A summary of each pipeline development is provided below.

Hine Junior High School Redevelopment

The mixed-use development at 310 7th Street, formerly occupied by Hine Junior High School, is currently under construction. The redevelopment will include approximately 180,000 SF of office space, 60,000 SF of ground floor retail and 162 residential dwelling units. Construction is expected to be complete by June 2017.

Capitol Hill East Redevelopment

A new mixed-use development is planned at the intersection of 19th Street and Massachusetts Avenue, the former location of the National Capital Medical Center Campus. The redevelopment will include approximately 354 residential dwelling units and approximately 40,000 SF of ground floor retail.

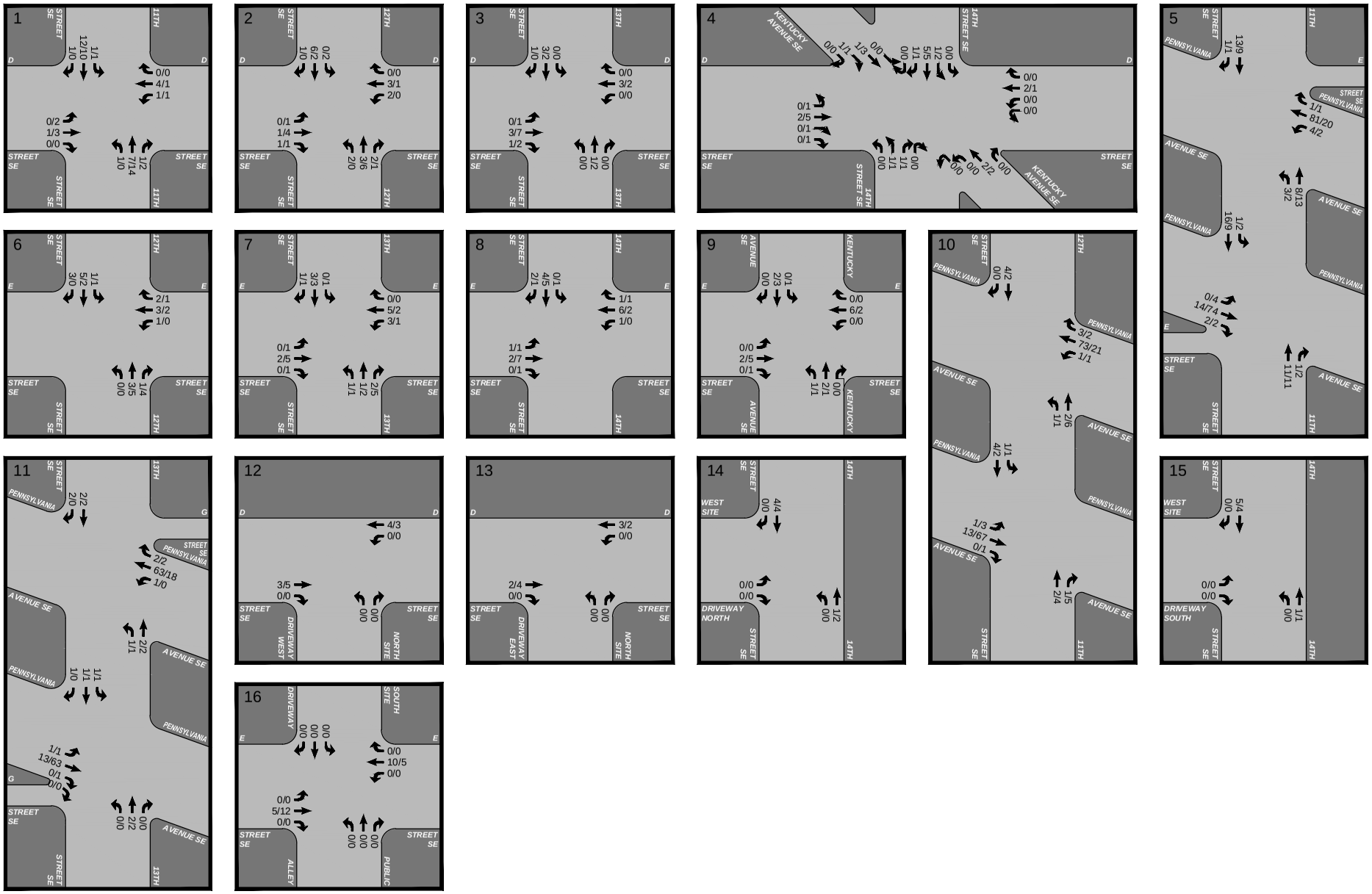

Figure 10
Regional Growth Added to Existing Volumes

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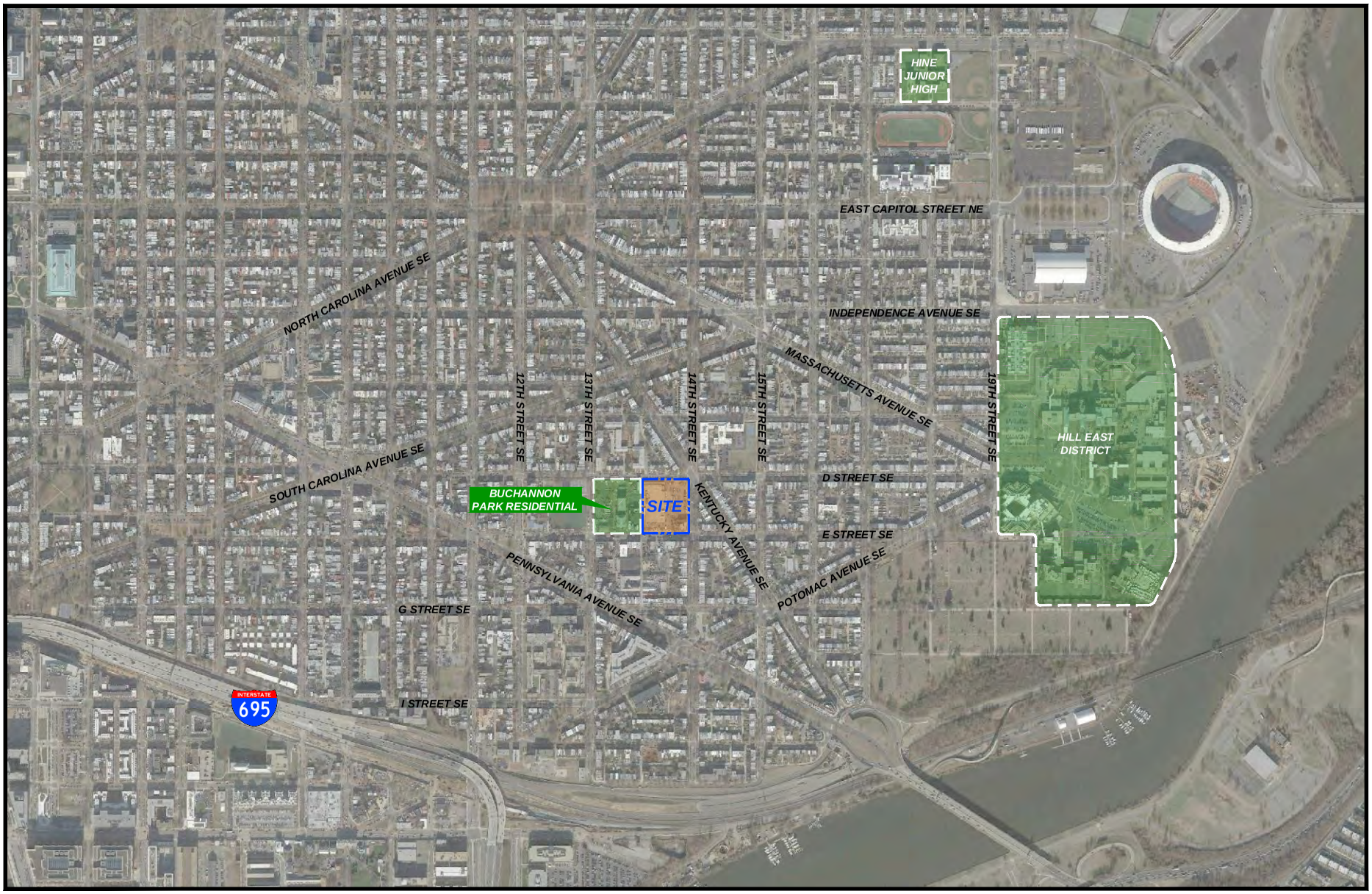

Figure 11
Locations of Pipeline Developments

Capitol Hill Safeway
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NORTH

Buchannan Park Residential

This development is located at 13th and E Street, SE, and is planned to be developed with 81 residential condominium/townhouses.

The number of net new vehicle trips expected to be generated by each of the planned developments was calculated using the Institute of Transportation Engineers' (ITE) Trip Generation, 9th Edition Manual with appropriate adjustments for non-auto mode share and passby trips. The results are shown on Table 8, and indicate that these projects would generate 575 AM peak hour trips and 889 PM peak hour trips when complete. The AM and PM peak hour trips were added to the roadway network utilizing distributions based on existing traffic patterns in the study area and general knowledge of commuter routes to and from the development.

Table 8
Pipeline Development Summary

Development/Land Use	Size	Units	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total
P1) Hine Junior High School Redevelopment								
Office Space	180,000	SF	269	37	306	48	232	280
Non-Auto Mode (1)	39.0%		105	14	119	19	90	109
Auto Trips			164	23	187	29	142	171
Retail Space	60,000	SF	71	43	114	204	221	425
Pass-by Trips - PM Peak Hour Only (2)	34.0%		0	0	0	69	75	145
New Trips			71	43	114	135	146	280
Apartment Units	162	DU	17	66	83	70	37	107
Non-Auto Mode (1)	39.0%		7	26	32	27	14	42
Auto Trips			10	40	51	43	23	65
Total New Auto Trips			**245**	**106**	**352**	**207**	**311**	**516**
P2) Capitol Hill East Redevelopment								
Retail Space	40,000	SF	55	34	89	156	168	324
Pass-by Trips - PM Peak Hour Only (2)	34.0%		0	0	0	53	57	110
New Trips			55	34	89	103	111	214
Apartment Units	354	DU	35	142	177	138	74	212
Non-Auto Mode (1)	39.0%		14	55	69	54	29	83
Auto Trips			21	87	108	84	45	129
Total New Auto Trips			**76**	**121**	**197**	**187**	**156**	**343**
P3) Buchannan Park Residential 13th and E Street SE								
Residential Condominium/Townhouse Units	81	DU	7	37	44	34	17	51
Non-Auto Mode (1)	41.9%		3	16	18	14	7	21
Auto Trips			4	21	26	20	10	30
Total New Auto Trips			**4**	**21**	**26**	**20**	**10**	**30**
Total New Auto Trips - All Pipeline Developments			**325**	**248**	**575**	**414**	**477**	**889**

Notes:
(1) From Transit Ridership Trends and Markets, WMATA, Cambridge Systematics, March 2009
(2) Based on Pass-by Rates for Retail Shopping Center from ITE Trip Generation Handbook, 3rd Edition

Background Traffic Forecasts

Background 2020 traffic forecasts (without the proposed redevelopment) were developed by combining the existing traffic volumes (shown on Figure 7) with regional traffic growth to the year 2020 (shown on Figure 10) with the combined pipeline traffic assignments (shown on Figure 12). The resulting 2020 background traffic forecasts are shown on Figure 13.

Capacity Analysis

Capacity/level of service (LOS) analyses were conducted at the study intersections based on the existing lane use and traffic control shown on Figure 9, future background traffic forecasts shown on Figure 13, and existing DDOT traffic signal timings.

The level of service results for the 2020 background conditions without the Capitol Hill Safeway development are presented in Appendix H and summarized in Table 5. The results indicate that several of the study intersections would experience an increase in delay as a result of the background traffic growth and the various pipeline projects. However, the overall intersection LOS at all of the intersections will not drop from an acceptable overall intersection level of service (i.e. LOS D or better), to an overall LOS E or F under background conditions.

As shown in Table 5, a number of lane groups at the study intersections would operate at a LOS E or LOS F during the AM and PM peak hours under background conditions.

Queue Analysis

A queuing analysis was conducted for 2020 conditions without the Capitol Hill Safeway redevelopment. Synchro was used to conduct the analyses, using the 95th percentile queue lengths. The results are summarized in Table 6. Queue reports are provided in Appendix H.

As shown in Table 6, the 95th percentile queues at several study intersections will increase under background conditions. An increase in queue lengths from existing conditions for lane groups that exceed the available storage will occur at:

- 11th Street/G Street/Pennsylvania Avenue – southbound through/right,
- 11th Street/G Street/Pennsylvania Avenue – southeastbound through/left.
- 12th Street/Pennsylvania Avenue – southbound through/right.

Queues for each of these lane groups will increase by approximately 1 vehicle due to the increase in traffic volumes expected between existing and 2020 background conditions.

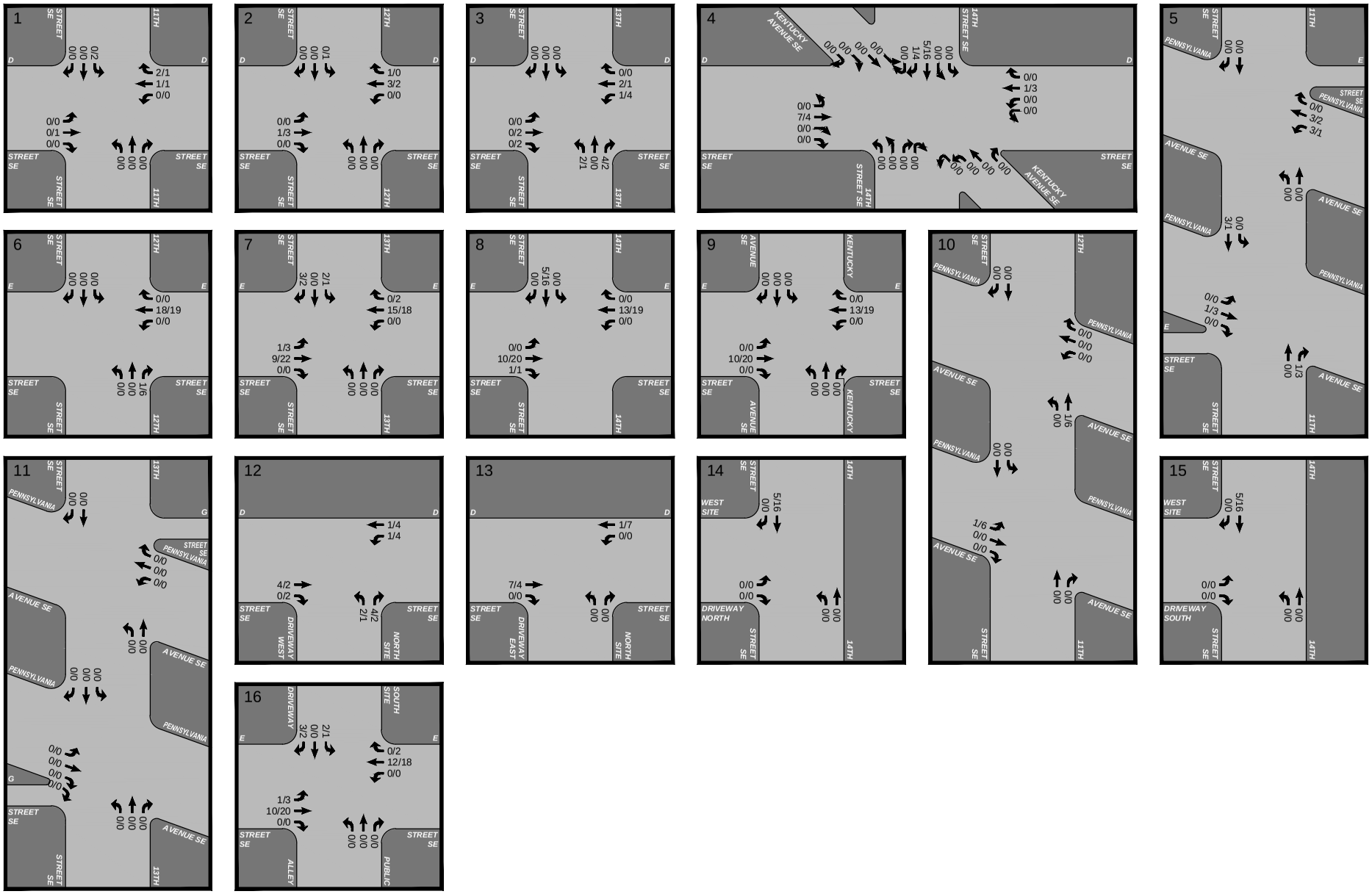

Figure 12
Combined Pipeline Traffic Assignments

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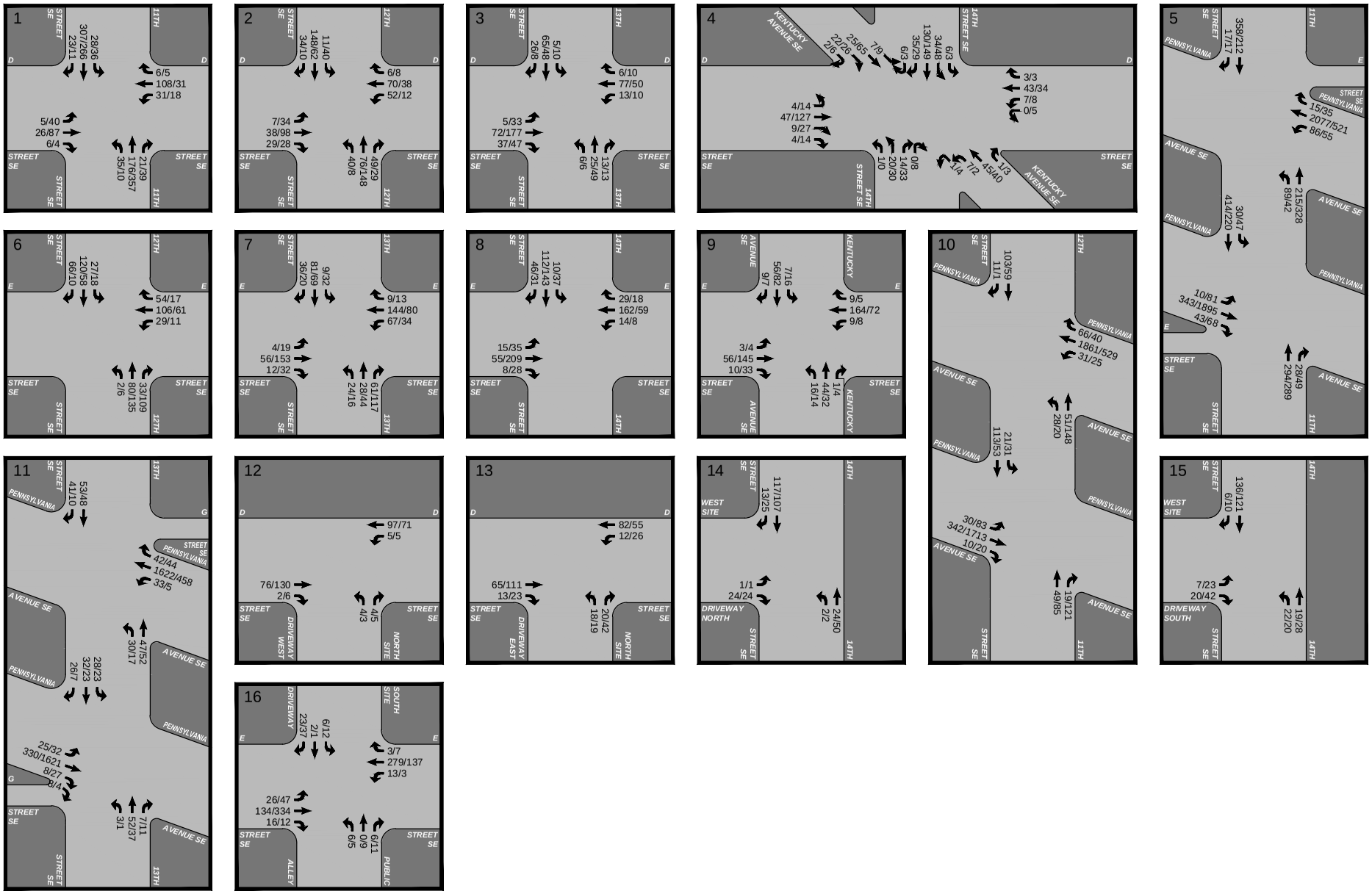

Figure 13
2020 Background Traffic Volumes

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SITE ANALYSIS

Overview

The subject site is located on Square 1042, Lot 109 in Ward 6, which is in the southeast quadrant of the District. The site is located in the C-2-A zone and is currently occupied by an existing Safeway of approximately 50,000 S.F.

The Applicant proposes to redevelop the site with a new 60,187 S.F. Safeway grocery store, 10,403 S.F. of general retail space, and approximately 327 new residential apartment units.

Site Access and Circulation

Overview

The proposed development has been designed to facilitate access via all modes of transportation including vehicular (parking and loading/service), pedestrian, and bicycle. The proposed circulation for the site is shown on Figure 14. Access for each mode is more fully described below.

Vehicular Access

DDOT policy indicates that vehicular access should be provided via public alleys or expended alley systems when possible. The site provides access to residential parking and all loading facilities along the existing public alley on the west side of the site. Customer parking for grocery patrons would be provided by a single driveway on 14th Street in the approximate location of the existing southern driveway. Two (2) existing site driveways, one (1) on D Street and one (1) on 14th Street that provide access to the existing surface parking area will be closed.

Parking for both residents and grocery customers will be provided in a new below grade parking garage that would include a total of 371 parking spaces.

Access to the loading facilities for the subject site will be provided via the public alley. Trucks and service vehicles will enter the public alley front-first from the south via E Street and back into one of the loading berths from the public alley. Trucks will then exit the loading area onto the public alley front-first and proceed north to D Street. Diagrams showing the truck maneuvers in and out of the proposed loading area are included in Appendix I.

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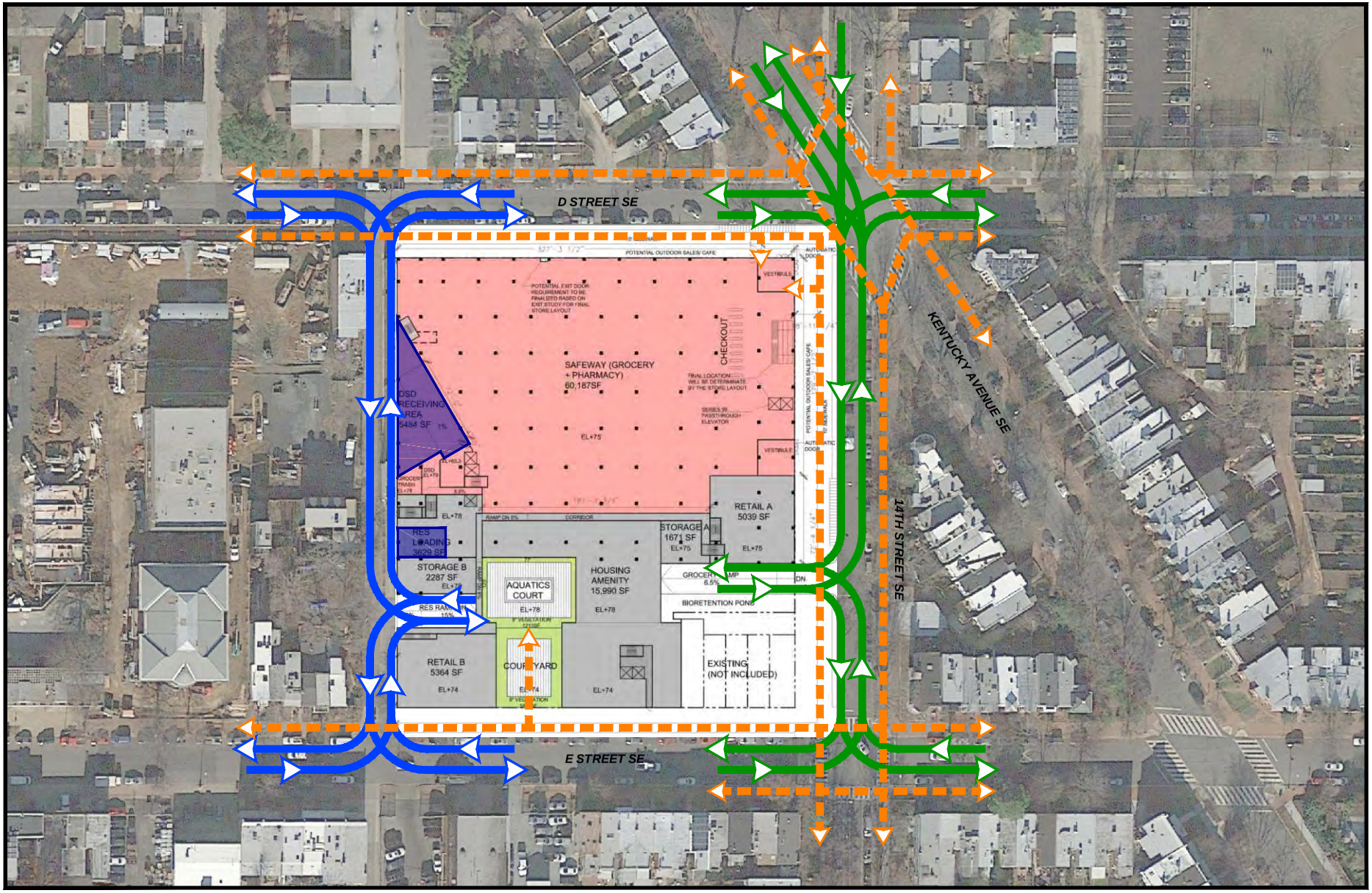

Figure 14
Site Circulation Plan

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