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CONGRESS HEIGHTS PUD

Transportation Impact Study

July 2014

INTRODUCTION

Overview

This report presents a Transportation Impact Study (TIS) conducted in support of the Planned Unit Development (PUD) application filed by Square 5914, LLC (herein referred to as the Applicant). The proposed mixed-use project, known as Congress Heights, is located at 1333 Alabama Avenue in southeast Washington, DC (Square 5914). The site is situated on the south side of Alabama Avenue with 13th Street on the west and Malcolm X Elementary School on the east, as shown on Figure 1. The area surrounding the site is comprised mainly of residential uses. The Congress Heights Metro Station Kiss 'n Ride lot is located across Alabama Avenue. Access to the Kiss 'n Ride lot is located on the north side of the Alabama Avenue/13th Street intersection.

The Applicant proposes to demolish four existing apartment buildings on the site, rezone the property from the R-5-A to the C-3-B zoning district, and redevelop it with a mixed-use development, which will include approximately 206 residential units, 220,447 square feet (SF) of office space, and 19,452 SF of general retail space. For zoning purposes, the redevelopment will occur on two lots, herein after referred to as the Office Lot and the Residential Lot. The Office Lot will occupy the eastern portion of the site and will contain an eight-story office building, housing 218,561 SF of office space and 10,582 SF of ground floor retail. The Residential Lot will occupy the western portion of the site and will include a nine-story residential building housing 206 units, 8,870 SF of ground floor retail, and 1,886 SF of ground floor office space.

Approximately 218 parking spaces (192 below-grade and 26 at-grade spaces) would be provided for the proposed redevelopment, as summarized below:

- Office Lot – 132 spaces (120 for office, 12 for retail) and
- Residential Lot – 86 spaces (72 for residential and 14 for office and retail).

Access to the below-grade garage and at-grade spaces would be provided via a private alley that intersects Alabama Avenue on the eastern edge of the site and 13th Street on the western edge of the property. Access to the loading and service area for the site also would be provided via the private alley.

The proposed redevelopment plans are shown on Figures 2A – 2C.

The purpose of this report is to determine the impact of the proposed Congress Heights redevelopment and recommend improvements required to mitigate the impact at full build out (2017).

Study Scope and Objectives

In order to assess the impacts of the proposed redevelopment 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 A.

The study area was selected based on those intersections that potentially could be affected by the proposed redevelopment. The following intersections were selected, in consultation with DDOT, for detailed analysis:

- Alabama Avenue/Randle Place,
- Alabama Avenue/Wheeler Road,
- Alabama Avenue/11th Place,
- Alabama Avenue/13th Street,
- Alabama Avenue/15th Street,
- Alabama Avenue/15th Place, and
- Alabama Avenue/Stanton Road.

The objectives of this study were to:

- Evaluate existing traffic conditions,
- Evaluate future traffic conditions without the proposed redevelopment,
- Evaluate future traffic conditions with the proposed redevelopment,
- Identify existing mode choice alternatives,
- Identify any traffic operational impacts associated with the proposed redevelopment,
- Identify on-street parking impacts (if any) associated with the redevelopment,
- Evaluate effectiveness of the proposed loading facilities, and
- Recommend transportation improvements to mitigate the impact of the redevelopment and promote the safe and efficient flow of vehicular and pedestrian traffic associated with the proposed redevelopment.

EXISTING TRANSPORTATON FACILITIES

Roadway Network

The subject site is served by a connected network of arterial, collector, and local streets. The existing lane use and traffic controls in the study area are shown on Figure 3. A description of each of the roadways in the study area is included below:

Alabama Avenue is a four-lane minor arterial with a posted speed limit of 25 miles per hour (mph) in the vicinity of the subject site, with a 15 mph school zone established between 13th Street and 14th Street.† On-street parking restrictions vary throughout the corridor, which constricts Alabama Avenue to two lanes in several locations in the study area. The average daily traffic (ADT) on Alabama Avenue in the vicinity of the site was 6,600 vehicles per day (vpd).[1]

Wheeler Road is a four-lane minor arterial with a posted speed limit of 30 mph in the vicinity of the subject site. No on-street parking is permitted. Wheeler Road serves as a connection between Alabama Avenue and access to/from the state of Maryland to the south. The Wheeler Road/Alabama Avenue T-intersection is controlled by a traffic signal. Wheeler Road carries an average daily traffic volume of 10,800 vpd.[2]

Randle Place is a north-south, two-lane collector roadway with no on-street parking. The speed limit is not posted in the vicinity of the site. Randle Place serves as a connection between Alabama Avenue and Martin Luther King (MLK) Jr. Avenue to provide access to/from Malcolm X Avenue and subsequently, Interstate 295. The Randle Place/Alabama Avenue/MLK Jr. Elementary School Driveway intersection is controlled by a traffic signal. Randle Place carries an average daily traffic volume of 2,400 vpd.[3]

Stanton Road is a north-south, two-lane collector roadway with a posted speed limit of 25 mph and no on-street parking. Stanton Road serves as a connection between Alabama Avenue and Suitland Parkway to the north. The intersection of Stanton Road and Alabama Avenue is controlled by a traffic signal. Stanton Road carries an average daily traffic volume of 5,600 vpd.[4]

11th Street is a north-south, two-lane local street with on-street parking on both sides of the street south of Alabama Avenue. The speed limit is not posted in the vicinity of the site. The intersection of 11th Street and Alabama Avenue is controlled by a traffic signal.

† 15 mph School Zone Speed Limit signs are posted immediately east of 13th Street for eastbound traffic and immediately east of 14th Street for westbound traffic. No "End School Zone" signs are posted. Additionally, a School Crossing Sign with a 15 mph speed limit "When Children are Present" is posted west of the Alabama Avenue/13th Street intersection for eastbound traffic, but no such sign is posted for westbound traffic.

13th Street is a north-south two-lane local street with on-street parking on both sides of the street South of Alabama Avenue. The speed limit is not posted in the vicinity of the site. The intersection of 13th Street and Alabama Avenue is controlled by a traffic signal and is located at the northwestern corner of the subject site. 13th Street provides access to Wheeler Road and the state of Maryland via Mississippi Avenue.

15th Street is a north-south, two-lane local street with on-street parking on both sides of the street. The speed limit is not posted in the vicinity of the site. The intersection of 15th Street and Alabama Avenue operates as a T-intersection with stop control on the 15th Street approach.

15th Place is a north-south, two-lane local street with on-street parking on both sides of the street. The speed limit is not posted in the vicinity of the site. The intersection of 15th Place and Alabama Avenue operates as a T-intersection with stop control on the 15th Place approach.

Non-Auto Transportation Facilities

Public Transportation Facilities and Services

The subject site is served by both bus and Metrorail as shown on Figure 4. The Congress Heights Metro Station has an entrance located on the subject site. This station has an average weekday ridership of 2,819 passengers (based on 2011 data).[1]

Washington Metropolitan Area Transit Authority (WMATA) currently provides Metrobus service near the site. Metrobus routes that service the Congress Heights Metro Station directly across the street from the site include:

- United Medical Center – Anacostia Line (Routes W2 and W3),
- Congress Heights Shuttle Line (Routes M8 and M9),
- U Street-Garfield Line (Routes 92 and 93), and
- Duke Ellington School of the Arts Shuttle (Route D51).

The Deanwood-Alabama Avenue Line (Route W4) services the site via bus stops located immediately adjacent to the site on Alabama Avenue. In addition, the Garfield-Anacostia Loop Line (Routes W6 and W8) and Stanton Road Line (Route 94) operate near the site, to the east of the site and the Anacostia-Congress Heights Line (Routes A6, A7, A46) operate to the west of the site.

A total of 754 bus-trips operate on these lines on a typical weekday, 503 bus-trips operate on a typical Saturday, and 439 bus-trips operate on a typical Sunday, as shown in Table 1.

Table 1
Metrobus Service (number of bus-trips)

Line	Weekday Service	Saturday Service	Sunday Service	Total
W2, W3: United Medical Center-Anacostia Line	100	78	70	**248***
M8, M9: Congress Heights Shuttle Line	64	--	--	**64***
92, 93: U-Street-Garfield Line	78	65	51	**194***
D51: Duke Ellington School for the Arts Shuttle†	1	--	--	**1***
W4: Deanwood-Alabama Line	118	93	71	**282**
W6, W8: Garfield-Anacostia Loop Line	112	80	74	**266**
94: Stanton Road Line	130	74	93	**297**
A6, A7, A46: Anacostia-Congress Heights Line	151	113	80	**344**
Total	**754**	**503**	**439**	**1696**

* Metrobus stop located at Congress Heights Metro Station.
† Routes D51 operates only when DC public schools are open.

WMATA has confirmed that they have no plans to expand the bus stop immediately adjacent to the subject site, on the south side of Alabama Avenue. WMATA personnel indicated that they are evaluating the potential of providing a right-in/right-out driveway east of the traffic signal at Alabama Avenue/13th Street. However, no other definitive plans are known at this time.

Streetcar

DDOT has developed a plan for a 37-mile streetcar network throughout the District. The Streetcar network plan is part of a 30-year DC Transit vision that will touch all eight Wards. As a first priority, DDOT identified 22 miles to be implemented first. The 22-mile priority system includes the Anacostia Initial Line, which will run from M Street to Buzzard Point via the 11th Street Bridge. No other lines have been prioritized in Ward 8. As part of the complete 37-mile streetcar network, four lines will traverse Ward 8, including the Anacostia Initial Line, a line between Bolling Air Force Base and Benning Road, a line between Woodley Park/Adams Morgan and Congress Heights, and a line between Washington Circle and Congress Heights. The proposed streetcar lines are listed as possible routes and corridors at this time. Specific street alignments and destinations for all routes that will traverse Congress Heights will be determined upon further study.

The plans for the proposed redevelopment will not in any way preclude or interfere with any potential streetcar routes throughout the study intersections as no existing street infrastructure will be altered. All site curb cuts have been designed to let vehicles enter front-in and exit front-out.

Pedestrian Facilities

Sidewalks are present along both sides of the following roadways within the study area:

- Alabama Avenue between Randle Place and Stanton Road,
- Stanton Road between Congress Place and Savannah Street,
- 15th Place between Congress Place and Alabama Avenue,
- 13th Street between Alabama Avenue and Savannah Street,
- 11th Place between Dogwood Street and Savannah Street,
- Wheeler Road between Alabama Avenue and Savannah Street, and
- Randle Place between Martin Luther King Jr Avenue and Alabama Avenue.

Sidewalks are present along the western side of 15th Street between Alabama Avenue and Smith Place.

The signalized intersections on Alabama Avenue at Randle Place, Wheeler Road, 11th Place, 13th Street, and Stanton Road include high visibility painted crosswalks and pedestrian count down signals. The crosswalks at these intersections are ADA accessible with tactile warning strips. The unsignalized intersection on Alabama Avenue at 15th Place includes high visibility painted crosswalks across both Alabama Avenue and the side street approach, and ADA ramps with tactile warning strips. The unsignalized intersection on Alabama Avenue at 15th Street includes high visibility painted crosswalks across both Alabama Avenue and the side street approach, and ADA ramps on the south side of Alabama Avenue. No ADA ramp exists on the northern side of Alabama Avenue.

Pedestrian Master Plan

The District of Columbia Pedestrian Master Plan[5] (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 estimates areas of pedestrian activity and deficiency. Within the site vicinity, Alabama Avenue contains areas of average to moderate pedestrian activity and average to moderate pedestrian deficiency, Wheeler Road contains areas of average pedestrian activity and average pedestrian deficiency. Stanton Road contains areas of average pedestrian activity and average pedestrian deficiency.

The Pedestrian Plan provides pedestrian crash data for the years 2000 through 2006. There were multiple pedestrian crashes that occurred within the site vicinity during the seven-year period. At the Alabama Avenue/Stanton Road intersection, there were nine to 13 reported crashes. At the Alabama Avenue/Congress Street intersection, there were two to four reported crashes. At the Alabama Avenue/Wheeler Road intersection, there were two to four reported crashes.

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 8 is Alabama Avenue from MLK Jr. Avenue to Naylor Road. The Pedestrian Plan recommendations along Alabama Avenue from Randle Place to Stanton Road are included in Appendix B. Of note, the Pedestrian Plan recommends installation of bulb outs and landscape nubs along both sides of Alabama Avenue between 15th Place and Stanton Road, thereby removing rush hour parking restrictions. Also, the relocation of multiple bus stops, addition of leading pedestrian intervals, addition of Right Turn on Red restrictions, and construction of curb extensions at multiple study intersections are recommended.

Although no near-term pedestrian improvements currently are planned in the study area (according to DDOT staff), the proposed project will support and compliment the pedestrian priority area by providing streetscape improvements along its Alabama Avenue frontage and by activating the area and enhancing the pedestrian experience with ground floor retail along Alabama Avenue and around the Metro plaza.

Bicycle Facilities

A review of the existing facilities indicated that separate bike lanes are not provided on any of the roadways within the study area. A multi-use trail exists along Oxon Run between 13th Street and South Capitol Street.

Bicycle Master Plan

The District of Columbia Bicycle Master Plan[6] (the Bicycle Plan) seeks to create a more bicycle-friendly city by establishing high-quality bicycle facilities and programs that are safe and convenient.

Under existing conditions where bicycles share the road with vehicles, the bicycle levels of service (BLOS) in the site vicinity are presented in the Bicycle Plan and have been replicated in Table 2.

Table 2
Bicycle Level of Service

Roadway	Bicycle LOS
Alabama Avenue	D
Randle Place	C
Wheeler Road	C
11th Place	N/A
13th Street	N/A
Congress Street	N/A
Stanton Road	D

The Bicycle Plan also reports the number of bicycle crashes that occurred between 2000 and 2002. One crash was reported in the study area during this timeframe. One crash was reported at the Alabama Avenue/Stanton Road intersection.

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."[7] No barrier areas or corridors identified in the Bicycle Plan fall within the study area.

Capital Bikeshare

Capital Bikeshare is an automated bicycle rental or bicycle sharing program that provides over 1,800 bicycles at more than 315 stations across Washington, DC, Arlington, VA, and Alexandria, VA.

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.

The closest Bikeshare station is located on the site, directly in front of the site on Alabama Avenue. This station includes 15 docks. A second Bikeshare station is located approximately 0.6 miles west of the site at MLK Jr. Avenue and Alabama Avenue. This station includes 11 docks. These locations are shown on Figure 4.

Car Sharing Services

Four 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. The nearest Zipcar facility, located at 18th Street and Massachusetts Avenue, is one block south of the site and is equipped with one vehicle.

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 300 vehicles in the District.

Hertz 24/7 has no annual fee and Enterprise CarShare has a $40 annual membership fee. Cars can be reserved for both services by the hour or day (hourly and daily fees are charged per usage). In the District, cars must be returned to their original location.

The nearest Zipcar location is at the Congress Heights Metro Station, which is directly across from the site. Three vehicles are stationed at this location on weekdays, while six are stationed at this location on weekends. Zipcars are also located east of the site, at The Shops at Park Village. The nearest Hertz 24/7 car location is at 1822 Bruce Place SE, about 0.8 miles from the subject site. One vehicle is stationed at this location. All car sharing locations are shown on Figure 4.

EXISTING CONDITONS ANALYSIS

Traffic Volumes

Vehicular turning movement, bicycle, and pedestrian counts were conducted at the study intersections on Tuesday, April 9, 2013 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.

During the morning counts at the Alabama Avenue/Stanton Road intersection, the traffic signal was operating as an all-way stop, potentially due to an earlier crash near Suitland Parkway. Therefore, additional counts at this intersection were conducted on Thursday, April 18, 2013 from 7:00 AM to 10:00 AM. The counts conducted on April 18th were used in the analysis.

Existing vehicular peak hour traffic volumes are shown on Figure 5. 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 lane use and traffic control shown on Figure 3, baseline traffic volumes shown on Figure 5, and traffic signal timings obtained from DDOT, included in Appendix D.

Synchro software (Version 7, Build 773) 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 3. Capacity analysis worksheets are included in Appendix F.

As shown in Table 3, under existing conditions, the following intersections currently operate with an overall intersection LOS E or LOS F:

- Alabama Avenue/Wheeler Road – AM peak and
- Alabama Avenue/13th Street – AM peak.

Additionally, the northbound (minor street) approach at the Alabama Avenue/15th Street intersection currently operates at capacity during the PM peak hour.

Table 3
Level of Service Summary

Approach	Existing Conditions		Background Conditions		Total Future Conditions	
	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
1. Alabama Avenue/Randle Place						
EBLT	B	B	B	B	C	C
EBR	B	A	B	B	B	B
WBLTR	B	B	B	C	C	D
NBLTR	D	E	D	D	D	D
SBLTR	D	D	D	D	C	D
Overall	**B**	**C**	**C**	**C**	**C**	**C**
2. Alabama Avenue/Wheeler Road						
EBT	D	C	D	D	F (82.6)	D
EBR	A	A	A	A	A	A
WBLT	C	A	C	A	D	B
NBL	F (177.0)	E	F (215.8)	E	F (215.8)	E
NBR	B	C	B	C	B	C
Overall	**E**	**C**	**F (91.7)**	**C**	**F (104.1)**	**C**
3. Alabama Avenue/11th Place						
EBLTR	B	A	B	B	C	B
WBLTR	A	B	B	B	B	B
NBLTR	D	D	E	D	E	D
SBLT	D	D	D	D	D	D
SBR	D	D	D	D	D	D
Overall	**B**	**B**	**B**	**B**	**C**	**B**
4. Alabama Avenue/13th Street						
EBL	E	E	F (92.2)	E	F (85.8)	E
EBTR	E	E	F (91.5)	F (83.7)	F (210.6)	F (117.5)
WBL	E	D	F (196.8)	D	F (217.1)	D
WBTR	F (106.3)	D	F (116.6)	D	F (116.5)	D
NBLTR	C	C	C	C	C	D
SBL	C	C	C	C	C	C
SBT	C	C	C	C	C	C
SBR	C	C	C	C	C	C
Overall	**F (82.9)**	**D**	**F (95.7)**	**E**	**F (139.0)**	**E**

[x.x] = unsignalized intersection control delay in sec/veh
(x.x) = signalized intersection control delay in sec/veh

Table 3 (Continued)
Level of Service Summary

Approach	Existing Conditions		Background Conditions		Total Future Conditions	
	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
5. Alabama Avenue/15th Street						
WBLT	A	A	A	A	A	A
NBLR	C	E	E	F [90.6]	E	F [119.4]
6. Alabama Avenue/15th Place						
EBLT	A	A	A	A	A	A
SBLR	D	C	F [52.1]	C	F [67.0]	C
7. Alabama Avenue/Stanton Road						
EBLT	B	B	B	C	C	D
EBR	B	A	B	A	B	A
WBLT	B	B	B	B	B	B
WBR	A	A	A	A	A	A
NBLTR	D	D	E	E	E	E
SBLT	D	E	D	E	D	E
SBR	C	C	C	C	C	C
Overall	**C**	**C**	**C**	**C**	**C**	**D**
8. Alabama Avenue/Site Driveway						
WBLT	NA	NA	NA	NA	A	A
NBLR	NA	NA	NA	NA	D	D
9. 13th Street/Site Driveway						
SBLT	NA	NA	NA	NA	A	A
WBLR	NA	NA	NA	NA	A	A

[x.x] = unsignalized intersection control delay in sec/veh
(x.x) = signalized intersection control delay in sec/veh

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 4. Queue reports are provided in Appendix G.

As shown in Table 4, the Alabama Avenue/Wheeler Road intersection eastbound through and northbound left lane groups have 95th percentile queues that exceed the available storage under the existing conditions.

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

Table 4
Synchro 95th Percentile Queue Summary (in feet)

Approach	Available Storage†	Existing Conditions		Background Conditions		Total Future Conditions	
		AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
1. Alabama Avenue/Randle Place							
EBLT	410'	170	206	189	245	198	250
EBR	410'	15	3	15	3	15	3
WBT	445'	87m	102m	117m	84m	134m	245m#
NBT	75'	23	17	29	24	29	24
SBT	320'	149	198	166	335#	294#	380#
2. Alabama Avenue/Wheeler Road							
EBT	415'	467#	626#	479#	739#	637#	793#
EBR	415'	24m	96	16m	117m	19m	57
WBLT	190'	184	91	213m	101	256m#	181
NBL	425'	836#	275#	910#	298#	910#	298#
NBR	425'	26	27	31	28	50	34

† All distances measured to nearest intersection or end of turn lane, as appropriate. Where two storage lengths are given, the first is the distance to the driveway, the second is the distance to the nearest intersection.
m Volume for 95th percentile queue is metered by upstream signal.
95th percentile volume exceeds capacity; queue may be longer.
~ Volume exceeds capacity; queue is theoretically infinite.
* Delay theoretically greater than 999.9 seconds; queue cannot be calculated.

Table 4 (Continued)
Synchro 95th Percentile Queue Summary (in feet)

Approach	Available Storage†	Existing Conditions		Background Conditions		Total Future Conditions	
		AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
3. Alabama Avenue/11th Place							
EBT	450’	193m	114m	216m	111m	250m#	119m
WBT	830’	145m	340m	185m	348m	190m	451m
NBT	440’	48	23	69	34	69	34
SBT	160’	34	49	33	50	33	50
SBR	160’	22	37	21	37	21	37
4. Alabama Avenue/13th Street							
EBL	115’	42m	30m	83m#	27m	64m#	25m
EBT	840’	573#	666#	597#	646m#	803m#	663m#
WBL	85’	39m	43m	179m#	35m	187m#	44m
WBT	365’/945’	806#	457#	820#	458#	824m#	486m#
NBT	75’/445’	75	44	102	54	135	158
SBL	75’	29	41	72	88	72	90
SBT	75’	20	13	30	35	30	35
SBR	75’	17	18	20	19	20	19
5. Alabama Avenue/15th Street							
WBLT	115’	10	19	11	23	11	25
NBLR	415’	40	97	77	169	92	196
6. Alabama Avenue/15th Place							
EBLT	120’	9	4	11	4	12	4
SBLR	380’	88	36	141	37	166	40

† All distances measured to nearest intersection or end of turn lane, as appropriate. Where two storage lengths are given, the first is the distance to the driveway, the second is the distance to the nearest intersection.
m Volume for 95th percentile queue is metered by upstream signal.
95th percentile volume exceeds capacity; queue may be longer.
~ Volume exceeds capacity; queue is theoretically infinite.
* Delay theoretically greater than 999.9 seconds; queue cannot be calculated.

Table 4 (Continued)
Synchro 95th Percentile Queue Summary (in feet)

Approach	Available Storage†	Existing Conditions		Background Conditions		Total Future Conditions	
		AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
7. Alabama Avenue/Stanton Road							
EBT	680'	253m	506m	256m	635m#	254m	675m#
EBR	680'	8m	1m	8m	1m	7m	1m
WBT	390'	329	299	485	282	507	305
WBR	390'	16	16	17	16	17	16
NBT	410'	182	143	227#	188	240#	194
SBT	205'	138	203	159	220	159	220
SBR	50'	39	40	43	57	52	61
8. Alabama Avenue/Site Driveway							
WBLT	530'	NA	NA	NA	NA	4	2
NBLR	NA	NA	NA	NA	NA	12	40
9. 13th Street/Site Driveway							
WBLR	NA	NA	NA	NA	NA	4	13
SBLT	155'	NA	NA	NA	NA	4	2

† All distances measured to nearest intersection or end of turn lane, as appropriate. Where two storage lengths are given, the first is the distance to the driveway, the second is the distance to the nearest intersection.
m Volume for 95th percentile queue is metered by upstream signal.
95th percentile volume exceeds capacity; queue may be longer.
~ Volume exceeds capacity; queue is theoretically infinite.
* Delay theoretically greater than 999.9 seconds; queue cannot be calculated.

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. 2011, 2012, and 2013) at each intersection and was further categorized by type of crash.

Based on this data, Table 3 shows the overall intersection crash rates at each of the study intersections.

Table 5
Crash Data Summary

Intersection	Number of Crashes	Rate
Alabama Avenue/Randle Place	9	0.89
Alabama Avenue/Wheeler Road	26	0.82
Alabama Avenue/11th Place	9	0.60
Alabama Avenue/13th Street	18	1.23
Alabama Avenue/15th Street	10	0.60
Alabama Avenue/15th Place	31	1.82
Alabama Avenue/Stanton Road	52	2.47

As a point of reference, the crash rates for the 100 intersections in the District with the highest crash rates (found in DDOT's *Traffic Safety Report Statistics 2009-2011*)[8] were reviewed. The crash rates for the top 100 intersections ranged from 1.57 to 5.21. As shown in Table 3, the crash rates for the majority of the intersections are significantly below this range.

The crash rates at the Alabama Avenue/15th Place and Alabama Avenue/Stanton Road intersections fall within the range of the top 100 intersections. Although the crash rate at the Alabama Avenue/13th Street intersection does not fall within the range of the top 100 intersections, the crash rate is above 1.0, which is considered high by DDOT.

A review of the crash types at the Alabama Avenue/15th Place intersection reveals that the majority of the crashes that have occurred there (26 percent) involved hitting a parked vehicle. Other categories that made up more than 10 percent of the crashes included back hit moving vehicle (19 percent), side swipe (16 percent), and pedestrian (10 percent). Note that the number of angle crashes would not meet the criteria outlined in the Manual on Uniform Traffic Control Devices' Crash Warrant.[9] Based on the information provided, no discernable pattern, trend, or causation factors could be identified.

A review of the crash types at the Alabama Avenue/Stanton Road intersection reveals that 31 percent of the crashes were sideswipe crashes. Another 33 percent involved rear end crashes, which are not uncommon at signalized intersections. Crashes involving pedestrians made up 13 percent of the crashes. Based on the information provided, no discernable pattern, trend, or causation factors could be identified.

A review of the crash types at the Alabama Avenue/13th Street intersection reveals that 67 percent involved rear end crashes, which are not uncommon at signalized intersections. Another 22 percent of crashes were sideswipe crashes. No crashes at this intersection involved pedestrians. Based on the information provided, no discernable pattern, trend, or causation factors could be identified.

FUTURE BACKGROUND CONDITIONS

Traffic Volumes

Overview

In order to forecast year 2017 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 have increased 0.13% per year from 2002 (the earliest year of data available) to 2010 (the last year of data of available). Therefore, a growth rate of one percent per year, compounded annually over four years (2013 to 2017), conservatively was applied to the existing vehicular volumes shown on Figure 5. The resulting 2017 volumes with regional growth are shown on Figure 6.

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 2017 study year (see Figure 7 for locations).

Archer Park

The Archer Park residential development is proposed at the intersection of Mississippi Avenue and 10th Place in southeast Washington, DC. The proposed PUD will include 74 townhouses and 190 to 205 apartment units. The proposed PUD will be heard by the Zoning Commission on May 22, 2014. In anticipation of its approval, and to provide a more conservative analysis, full build out of Archer Park was assumed to occur by 2017.

Site trip assignments for the Archer Park development were taken from the Traffic Impact Study for Archer Pake (Brownstein Commons LP) PUD prepared by Gorove/Slade.[10] According to the study, the Archer Park development will generate an estimated 95 AM peak hour vehicle trips and 120 PM peak hour vehicle trips.

Asheford Court Phase II

The Asheford Court development is located east of 15th Street and north of Mississippi Avenue in southeast Washington, DC. Phase II of the development consists of 75 single-family detached residential dwellings units. The proposed development received approval from the BZA in July 2005. At the time that this study was conducted, 20 dwelling units were constructed and occupied; therefore, the traffic that would be generated by the remaining 55 dwelling units was included in the 2017 traffic forecasts.

Based on the Institute of Transportation Engineers' (ITE) Trip Generation[11] LUC 210 (Single-Family Detached Housing), the 55 dwelling units to be constructed in Asheford Court would generate 33 AM peak hour vehicular trips and 43 PM peak hour vehicular trips. 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/from the development.

U.S. Coast Guard Headquarters Building

The U.S. Coast Guard Headquarters (USCG HQ) Building is part of the redevelopment of the 176-acre West Campus of St. Elizabeth's Hospital. Phase 1A includes 1,179,550 SF for the USCG HQ. Although the Coast Guard completed its move to the St. Elizabeth's campus in December 2013, at the time counts were conducted for this study, the Coast Guard had not yet relocated. Therefore, traffic associated with the USCG HQ was included in 2017 forecasts. The St. Elizabeth's Final Environmental Impact Statement (FEIS)[12], dated March 2012, includes traffic forecasts for 2020 background conditions (No Build, assuming USCG HQ will not move to the Campus) and 2020 Total Future conditions (denoted as 2020 preferred Build Alternative 2 Modified). The difference between the background and total future conditions are a measure of the amount of site trips the USCG HQ will produce for each of the study intersections. Supporting data for the USCG HQ Building trip generation are included in Appendix H.

Combined Pipeline Developments

Details for each of the pipeline developments are included in Appendix I. The traffic associated with the pipeline developments combined is shown at each of the study intersections on Figure 8.

Background Forecasts

Background 2017 traffic forecasts (without the proposed redevelopment) were developed by combining the existing traffic volumes grown to the year 2017 (shown on Figure 6) with the pipeline traffic volumes shown on Figure 8. The resulting 2017 background traffic forecasts are shown on Figure 9.

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 3, future background traffic forecasts shown on Figure 9, and existing DDOT traffic signal timings.

The Synchro level of service results for the 2017 background conditions without the Congress Heights redevelopment are presented in Appendix J and summarized in Table 3. As shown in Table 3, under background conditions, many of the study intersections will experience an increase in delay as a result of the background traffic growth and growth associated with the pipeline developments. Of note, the Alabama Avenue/Wheeler Road intersection would drop from an overall LOS E to an overall LOS F during the AM peak hour.

Additionally, the southbound (minor street) approach at the Alabama Avenue/15th Street intersection would drop from a LOS E to a LOS F during the PM peak hour. Likewise, the northbound (minor street) approach at the Alabama Avenue/15th Place intersection would drop from a LOS D to a LOF F during the AM peak hour.

Queue Analysis

A queuing analysis was conducted for 2017 conditions without the Congress Heights redevelopment. Synchro was used to conduct the analyses, using the 95th percentile queue lengths. The results are summarized in Table 4. Queue reports are provided in Appendix K.

As shown in Table 4, the 95th percentile queues at each study section under background conditions generally are consistent with existing conditions. Exceptions include an increase of queuing from the existing conditions that would exceed the available storage for the following lane groups:

- Southbound through at the Alabama Avenue/Randle Place intersection during the PM peak hour,
- Westbound left/through at the Alabama Avenue/Wheeler Road intersection during the AM peak hour,
- Westbound left at the Alabama Avenue/13th Street intersection during the AM peak hour,
- Southbound left at the Alabama Avenue/13th Street intersection during the PM peak hour,
- Westbound through at the Alabama Avenue/Stanton Road intersection during the AM peak hour, and
- Southbound through at the Alabama Avenue/Stanton Road intersection during the PM peak hour.

SITE ANALYSIS

Overview

The subject site is located in the Congress Heights neighborhood of Ward 8, which is in the southeast quadrant of the District. The site currently is zoned R-5-A and site is occupied by four, three-story garden apartment buildings and the Congress Heights Metro Station entrance and plaza.

Currently, the subject site consists of the entrance to the Congress Heights Metro Station and four apartment buildings, one of which is abandoned. The proposed redevelopment would include demolishing the four apartment buildings to construct two buildings: a nine-story residential building and an eight-story office building, both of which would include ground floor retail.

In conjunction with the proposed PUD, the site will be rezoned from the R-5-A to the C-3-B district. The proposed mixed-use redevelopment would include approximately 220,447 SF of office space (including 218,561 SF in the office building and 1,886 SF in the residential building), 206 residential units, and 19,452 SF of ground floor retail space (including 10,582 SF in the office building and 8,870 SF in the residential building).

Site Access

Currently, three curb cuts provide access to the site. Two are located on Alabama Avenue and one is located on 13th Street.

In conjunction with the proposed redevelopment, the western curb cut on Alabama Avenue will be closed. The curb cut on 13th Street will be relocated to the south and a new private alley will be constructed behind the proposed buildings and will connect the relocated 13th Street curb cut with the eastern curb cut on Alabama Avenue.

Vehicular access to the below-grade and at-grade parking will be provided via the proposed private alley, which will operate as two-way for passenger cars. The private alley also will provide access to the site's loading facilities. Trucks and service vehicles will enter the site front-first from Alabama Avenue and will then back into one of the loading berths or the service delivery spaces from the private alley. Trucks will then exit the loading area onto 13th Street front-first. Diagrams showing the truck maneuvers in and out of the proposed private alley and loading areas are included in Appendix L.

Pedestrians can access the residential lobby via the Alabama Avenue sidewalk and the office lobby via the plaza surrounding the Metro entrance. Pedestrian access to the ground floor retail stores will be provided by the Alabama Avenue sidewalk or the pedestrian plaza surrounding the Metro entrance.

Proposed Loading

The loading requirements for the proposed redevelopment are prescribed by the District of Columbia Municipal Regulations (DCMR), and are summarized in Table 6 along with the proposed loading facilities.

Table 6
Loading Summary

Component	Office Building		Residential Building	
	Required[13]	Provided	Required[13]	Provided
Office	> 200kSF 3 berths @ 30' 3 platforms @ 100 SF 1 srvc/dlvry @ 20'	3 berths @ 30' 3 platforms @ 100 SF 1 srvc/dlvry @ 20'†	< 30kSF None	None
Retail	8kSF – 20kSF 1 berth @ 30' 1 platform @ 100 SF 1 srvc/dlvry @ 20'	1 berth @ 30' 1 platform @ 100 SF 1 srvc/dlvry @ 20'	None‡	1 berth @ 30' 1 platform @ 200 SF 2 srvc/dlvry @ 20'
Residential	NA	NA	≥ 50 units 1 berth @ 55' 1 platform @ 200 SF 1 srvc/dlvry @ 20'	
Total	4 berths @ 30' 4 platforms @ 100 SF 2 srvc/dlvry @ 20'	4 berths @ 30' 4 platforms @ 100 SF 2 srvc/dlvry @ 20'	1 berth @ 55' 1 platform @ 200 SF 1 srvc/dlvry @ 20'	1 berth @ 30' 1 platform @ 200 SF 2 srvc/dlvry @ 20'

† This service/delivery space will be provided on the residential lot.
‡ §2201.2 of the DCMR indicates that if a use occupies more than 90% of the building, the loading requirements are calculated as if that use occupies the entire building.

The proposed redevelopment will require relief from the residential loading requirement. In lieu of providing a 55-foot loading berth for residential, a 30-foot loading berth (with a 200 SF platform) will be provided.

Although 55-foot trucks are not anticipated, except in rare circumstances, a Loading Management Plan will be implemented for the residential building. The purpose of the Loading Management Plan is to promote safe and efficient travel for all users, (e.g. cars, trucks, and pedestrians) and to set forth guidelines and procedures for loading and delivery operations that will avoid adverse impacts on the residents of the proposed building and the surrounding community. The following are the components of the loading management plan:

1) A member of the on-site management team will be designated as the loading coordinator (duties may be part of other duties assigned to the individual). He or she will coordinate the various retail and residential deliveries (including deliveries, trash disposal, and residential move-in and move-out activities).
2) The loading coordinator will inform tenants of the guidelines and procedures for loading and delivery operations. The loading coordinator will inform residents of DDOT's regulations for moving trucks.
3) A lease provision will require all tenants to use only the loading dock for deliveries and move-in/move-out activities, except in special circumstances as outlined in #5 below.
4) All tenants will be required to notify the loading coordinator before moving in or out so that the loading coordinator can ensure no conflicting loading activities will occur and the proper permits, as required, can be obtained from DDOT. The tenant shall provide the loading coordinator the following information: time and date that the truck is anticipated to arrive, size of truck being used, and name of the moving service (if any).
5) In the rare event that a 55-foot truck is required, accommodations will be made in the private alley or, in accordance with DDOT policies, a permit is required and a temporary no parking zone can be established on an adjacent street to allow for curb-side loading or unloading adjacent to the building. In this case, the tenants shall notify the loading manager in advance so proper permits can be obtained from DDOT and Emergency No Parking signs issued. The tenant shall provide the loading coordinator the following information: time and date that the truck is anticipated to arrive, size of truck being used, and name of the moving service (if any).
6) Permits are required by DDOT for trucks over 40 feet long. The loading coordinator will assist tenants in obtaining appropriate permits; however, issuance of permits is at the discretion of DDOT.
7) No truck idling shall be permitted anywhere on the premises.

Proposed Parking

On-site Parking Supply

Based on parking requirements prescribed in the DCMR, a total of 190 parking spaces are required for the proposed development. A summary of the parking required and provided for each building is provided in Table 7.

Table 7
Parking Summary

Component	Office Building		Residential Building	
	Required[14]	Provided	Required[14]	Provided
Office	> 2kSF, 1/1,800 SF (218,561-2,000)/1,800 = 120 spaces	120 spaces	> 2kSF, 1/1,800 SF (1,886-2,000)/1,800 = 0 Spaces	14 spaces
Retail	>3kSF, 1/750 SF (10,582-3,000)/750 = 10 spaces	12 spaces	>3kSF, 1/750 SF (8,870-3,000)/750 = 8 spaces	
Residential	NA	NA	1/4 units 206/4 =52 spaces	72 spaces
Total	130 spaces	132 spaces	60 spaces	86 spaces

On-Street Parking Inventory

The existing on-street parking restrictions in the study area are shown on Figure 10. In conjunction with the proposed redevelopment, the Applicant proposes to establish metered parking along the frontage of the site. It is anticipated that this parking would serve the retail uses on the site and the neighborhood in general. Further, the establishment of a parking lane would create a buffer between pedestrians and vehicular traffic on Alabama Avenue. As shown on Figure 10, approximately 11 spaces could be accommodated along the frontage.

Parking is permitted on the south side of Alabama Avenue immediately west of the site, immediately east of the site (except from 8:00 AM to 4:00 PM on school days), and east of Congress Street. Therefore, the eastbound curb lane does not function as a continuous travel lane. As such, the loss of capacity associated with the addition of parking along the site frontage would be insignificant.

Bicycle Parking

According to the DCMR, for office and retail uses in the C-3-B district, the number of bicycle parking spaces provided shall be at least equal to five percent of the number of automobile parking spaces required.[15] Considering 130 automobile parking spaces are required for the office and retail components of the office building, seven bicycle parking spaces would be required. No bicycle parking would be required per the DCMR in the residential building (five percent of the required eight retail spaces is zero spaces). Although the DCMR does not require bicycle parking for residential buildings, District law requires that one bicycle parking space be provided for every three residential dwelling units.[16]

Therefore, the proposed residential component would require 69 bicycle parking spaces. In total, the redevelopment will require 76 bicycle parking spaces.

Bicycle parking, including bicycle storage rooms will be provided on the first floor and on the first below-grade garage level. Additional bicycle parking will be located on the second level of the garage. In total, a minimum of 76 spaces will be provided. Locations of the bicycle parking and storage room are shown on Figures 2B and 2C.

Trip Generation Analysis

Proposed Development

Overview

The total number of trips generated by the proposed redevelopment would be comprised of vehicular trips, pedestrian/bicycle trips, and transit trips. Additionally, the total number of trips would be made up of both internal (occurring within the confines of the site) and external trips.

Total Trips

The number of trips anticipated to be generated by the proposed redevelopment was estimated based on ITE's Trip Generation.[17] LUC 710 (General Office), LUC 220 (Apartment), and LUC 820 (Retail) were used to estimate the total number of trips to/from the redeveloped site. The square footage of office and retail land uses and the number of dwelling units for the residential use were used as the independent variables.

The trip generation for the proposed redevelopment is summarized in Table 7. As shown, the proposed development would generate 522 ***total*** AM peak hour trips and 636 ***total*** PM peak hour trips based on standard ITE rates/equations.

Internal Trips

A portion of the trips generated by the proposed redevelopment would be captured internally within the mixed-use development. By its nature and character of uses, the redevelopment would experience a naturally occurring synergy. For example, a portion of individual residential trips may use the proposed retail uses or, similarly, some retail customers may come from or be destined to the office component. As a result of this naturally occurring synergy, the volume of external trips generated by the site would be reduced.

In order to estimate the number of internal trips that would occur between the office, residential, and retail uses, the internal capture rates outlined in ITE's Trip Generation

Manual[18] were used. Since internal capture rates are not provided for the AM peak hour, the AM internal capture rates were assumed to be half of the PM rates.

Based on this methodology, and estimated four AM peak hour trips and 52 PM peak hour trips will be captured internally between the proposed mix of uses.

Non-auto Mode Split

A portion of the trips generated by the proposed redevelopment would be made via non-auto modes of transportation. The percentage of site-generated trips that would use public transportation is dependent on the proximity of the site to transit stops, the walkability of the surrounding area, and the degree to which the use of public transit is encouraged, such as by implementation of a transportation demand management (TDM) program.

Based on these factors and as agreed upon during the scoping process, the non-auto mode split for the site was estimated to be 60 percent for the residential use, 60 percent for the retail use, and 45 percent for office use. Therefore, 262 AM peak hour trips and 282 PM peak hour trips are projected to be made by non-auto modes of transportation.

Pass-by Trips

Some of the trips generated by the retail portion of the proposed redevelopment would be made by vehicles already using the adjacent streets to reach a different destination but stop at the site in passing. This type of trip is called a pass-by trip, and is defined by Trip Generation Manual[19] as a trip in which the retail or service destination is the secondary part of a primary trip, such as a work-to-shopping-to-home trip. An example of a pass-by trip would be one in which a driver stops at the retail uses on his/her way home from work.

Based on data contained in ITE's Trip Generation Manual[20] the average pass-by rate for retail shopping centers is 34 percent during the PM peak hour. However, for purposes of this study, pass-by rates prescribed by DDOT were used. Specifically, a pass-by rate of 10 percent was used for the AM peak hour and a pass-by rate of 25 percent was used for the PM peak hour. Accordingly, three AM peak hour trips and 23 PM peak hour trips are projected to be pass-by trips.

External Vehicle Trips

Taking into account the internal trips, non-auto mode share, and pass-by reduction, the proposed redevelopment would generate an estimated 253 new AM peak hour external vehicular trips and 279 new PM peak hour external vehicular trips, as shown on Table 7.

Trip Generation for Existing Buildings

Overview

In order to account for the existing buildings that will be demolished as part of the redevelopment, the total number of trips, the number of non-auto trips, and the resulting number of external vehicular trips were estimated for the existing uses on the site.

Total Trips

The number of trips anticipated to be generated by the proposed redevelopment was estimated based on ITE's Trip Generation.[21] LUC 220 (Apartment) was used to estimate the total number of trips for the three existing occupied residential buildings. The number of dwelling units was selected as the independent variable.

The trip generation for the existing buildings is summarized in Table 7. As shown, the existing buildings generate 27 AM peak hour ***total*** trips and 44 PM peak hour ***total*** trips based on standard ITE rates/equations.

Non-auto Mode Split

The non-auto mode split for the existing buildings was estimated to be 60 percent, consistent with the proposed residential component. Therefore, 11 AM peak hour trips and 18 PM peak hour trips are projected to be made by non-auto modes of transportation.

External Vehicle Trips

Taking into account the non-auto mode share, the existing buildings generate an estimated 11 AM peak hour external vehicular trips and 18 PM peak hour external vehicular trips, as shown on Table 7.

Net Additional Trip Generation

To determine the net number of trips that would be added to the surrounding roadway network with the proposed redevelopment, the trip generation for the existing buildings that will be demolished was subtracted from the trip generation for the proposed redevelopment. As shown in Table 7, the proposed redevelopment would result in an estimated 247 net new AM peak hour external vehicular trips and 252 net new PM peak hour external vehicular trips.

Appendix M provides additional details on the trip generation calculations for the proposed development and the existing buildings.

Table 7
Site Trip Generation Summary

Land Use		AM Peak Hour			PM Peak Hour			ADT
		In	Out	Total	In	Out	Total	
Proposed Development								
206 DU Apartment (LUC 220)	Total Trips	21	84	105	85	46	131	1,372
	Internal Trips	*1*	*1*	*2*	*14*	*9*	*23*	*255*
	External Trips	20	83	103	71	37	108	1,117
	Non-auto Trips	*12*	*49*	*61*	*43*	*22*	*65*	*670*
	Vehicle Trips	8	34	42	28	15	43	447
220,447 SF Office (LUC 710)	Total Trips	317	43	360	55	270	325	2,394
	Internal Trips	--	--	--	*3*	*4*	*7*	*103*
	External Trips	317	43	360	52	266	318	2,291
	Non-auto Trips	143	19	162	23	120	143	1,031
	Vehicle Trips	174	24	198	29	146	175	1,260
19,452 SF Retail (LUC 820)	Total Trips	35	22	57	96	104	200	2,343
	Internal Trips	*2*	*1*	*3*	*11*	*15*	*26*	*316*
	External Trips	33	21	54	85	89	174	2,027
	Non-auto Trips	*20*	*13*	*33*	*51*	*53*	*104*	*1,216*
	Vehicle Trips	13	8	21	34	36	70	811
	Pass-by Trips	*1*	*1*	*2*	*9*	*9*	*18*	*203*
	New External Trips	12	7	19	25	27	52	308
Total Proposed Development	Total Trips	373	149	522	236	420	656	6,109
	Internal Trips	*3*	*2*	*5*	*28*	*28*	*56*	*674*
	External Trips	370	147	517	208	392	600	5,435
	Non-auto Trips	*175*	*81*	*256*	*117*	*195*	*312*	*2,917*
	Vehicle Trips	195	66	261	91	197	288	2,518
	Pass-by Trips	*1*	*1*	*2*	*9*	*9*	*18*	*203*
	New External Trips	194	65	259	82	188	270	2,315

Table 7 (Continued)
Site Trip Generation Summary

Land Use		AM Peak Hour			PM Peak Hour			ADT
		In	Out	Total	In	Out	Total	
Existing Buildings to be Demolished								
48 DU Apartment (LUC 220)	Total Trips	5	22	27	29	15	44	414
	Internal Trips	--	--	--	--	--	--	--
	External Trips	5	22	27	29	15	44	414
	Non-auto Trips	*3*	*13*	*16*	*17*	*9*	*26*	*248*
	Vehicle Trips	**2**	**9**	**11**	**12**	**6**	**18**	**166**
Net Additional Site Trips								
Total Trips		368	127	495	207	405	612	5,695
Internal Trips		*3*	*3*	*6*	*28*	*28*	*56*	*674*
External Trips		365	124	489	179	377	556	5,021
Non-auto Trips		*172*	*68*	*240*	*100*	*186*	*286*	*2,669*
Vehicle Trips		193	56	249	79	191	270	2,352
Pass-by Trips		*1*	*1*	*2*	*9*	*9*	*18*	*203*
Net New External Vehicle Trips		**192**	**55**	**247**	**70**	**182**	**252**	**2,149**

Site Trip Distribution and Assignment

The distribution of new peak hour site trips generated by the proposed redevelopment was based on existing traffic patterns in the study area and general knowledge of commuter routes to/from the site.

The trip distributions shown in Table 8 were applied to the new vehicle trip generation for the proposed redevelopment. The resulting traffic assignments for the proposed redevelopment are shown on Figure 11.

Pass-by site trips associated with the retail use were assumed to occur directly from Alabama Avenue; therefore, the pass-by site trip distributions were based on the directional flow on the corridor. Accordingly, during the AM peak hour, 45 percent of the pass-by trips were assumed to come from the west on Alabama Avenue and proceed east after stopping at the site. The remaining 55 percent of the pass-by trips during the AM peak hour were assumed to come from the east on Alabama Avenue and continue west after stopping at the site. During the PM peak hour, 55 percent of the pass-by trips were assumed to come from the west on Alabama Avenue and proceed east after stopping at the site. The remaining 45 percent of the pass-by trips during the PM peak hour were assumed to come from the east on Alabama Avenue and continue west after stopping at the site. The

resulting pass-by trips are shown on Figure 12. The net new external vehicle trips for the proposed redevelopment are shown on Figure 13.

Table 8
Site Trip Distributions

Roadway	Direction	Residential	Office	Retail
Alabama Avenue	West	10	5	11
	East	14	5	20
Randle Place	North	45	45	25
Wheeler Road	South	5	15	18
11th Place	North	0	0	0
	South	0	0	0
13th Street	North	0	0	0
	South	9	15	3
15th Street	South	0	0	4
15th Place	North	0	0	4
Stanton Road	North	17	15	9
	South	0	0	6

The distributions shown in Table 8 also were applied to the trips estimated to be generated by the existing buildings that would be demolished with the redevelopment. The estimated site trips for the existing residential buildings are shown on Figure 14.

TOTAL FUTURE CONDITIONS

Traffic Forecasts

Total future traffic forecasts with the proposed redevelopment were determined by combining the 2017 background traffic forecasts shown in Figure 9 with the site traffic volumes shown on Figure 14 to yield the 2017 total future traffic forecasts shown on Figure 15.

Capacity Analysis

Capacity analyses were performed at the study intersections using the existing lane use and traffic controls shown on Figure 3, the total future peak hour traffic forecasts shown on Figure 15, and existing signal timings.

The Synchro level of service results for the 2017 total future conditions with the proposed redevelopment are included in Appendix N and summarized in Table 3.

As shown in Table 3, where overall intersection levels of service under background conditions are projected to be at a LOS D or better, overall intersection levels of service under total future conditions with the proposed redevelopment also are projected to be at a LOS D or better, with one exception. At the Alabama Avenue/13th Street intersection, the overall intersection level of service is projected to drop from a LOS D to a LOS E during the PM peak hour.

Additionally, at the Alabama Avenue/Wheeler Road and Alabama Avenue/13th Street intersection, the AM peak hour overall level of service is projected to be at a LOS F under background conditions. With the proposed development, the overall LOS will remain at a LOS, but the delay will increase.

Queue Analysis

A queuing analysis was conducted for 2017 total future conditions. Synchro was used to conduct the analyses, using the 95th percentile queue lengths. The results are summarized in Table 5 and queue reports are provided in Appendix O.

As shown in Table 4, in cases where the queue length did not exceed the available storage length under background conditions, the available storage would not be exceeded under total future conditions with the proposed redevelopment. Where the available storage was exceeded under background conditions, the queue length would increase by two car lengths or less under total future conditions with the proposed redevelopment, with one exception. At the Alabama Avenue/Wheeler Road intersection, the eastbound queue is

projected to increase by six car lengths during the AM peak hour. Under both background and total future conditions, the queue would extend beyond the upstream intersection.

Improvement Analysis

To mitigate the impact of the proposed redevelopment, improvements were examined at each impacted intersection. Note that the cycle lengths and offsets are consistent with existing conditions. Results of the analyses are summarized in Tables 9 and 10. For comparison purposes, the background and total future (without improvements) conditions also are provided in Tables 9 and 10.

Alabama Avenue/Randle Place

To reduce the southbound queue to be consistent with background conditions, minor traffic signal timing adjustments are recommended during the PM peak. These adjustments include shifting five seconds of green time from the eastbound/westbound phase and one second from the northbound phase to the southbound phase.

Alabama Avenue/Wheeler Road

The northbound, Wheeler Road approach of the intersection is currently operates over capacity and is projected to operate with significant delay under future conditions with or without the proposed redevelopment. In order to offset the impact associated with the proposed redevelopment and improve the overall level of service at the intersection, the northbound approach could be restriped from its existing configuration, which includes separate left and right turn turns, to include an exclusive left turn lane and a shared left/right turn lane. This improvement would require the removal of the northbound right turn overlap phase and would require the stop bar on the eastbound approach to be setback approximately 10 feet to accommodate dual left turning vehicles from the northbound approach. In addition to the restriping on the northbound approach, the following minor timing adjustments should be made to better accommodate the revised configuration:

- During the AM peak, shift six seconds of green time from the northbound phase to the eastbound/westbound phase and
- During the PM peak, shift four seconds of green time from the northbound phase to the eastbound/westbound phase and shift one second of green time from the westbound advance phase to the eastbound/westbound phase.

The resulting improvement would significantly improve the overall intersection level of service during the AM peak hour from a LOS F under existing conditions to a LOS D, as shown in Table 9. Swept area diagrams showing dual vehicles turning left from Wheeler Road onto Alabama Avenue are included in Appendix P.

Alabama Avenue/13th Street

Minor timing adjustments in both the AM and PM peaks would improve the overall levels of service and offset the impact of the proposed redevelopment. The following timing adjustments are recommended:

- During the AM peak, shift eight seconds of green time from the northbound/ southbound phase to the eastbound/westbound phase and shift one second of green time from the northbound/southbound approach to the eastbound left/westbound left turn phase and
- During the PM peak, shift five seconds of green time from the northbound/ southbound phase to the eastbound/westbound phase.

As shown on Table 9, the proposed timing adjustments would improve the overall intersection level of service during the AM peak from a LOS F to a LOS E and during the PM peak from a LOS E to a LOS D.

Alabama Avenue/Stanton Road

As a result of the proposed changes along the corridor, the queues and levels of service at the Alabama Avenue/Stanton Road intersection would be impacted. To ensure that the levels of service and queues would be generally consistent with background conditions, timing adjustments should include a shift of two seconds from the northbound/southbound phase to the eastbound/westbound phase during the AM peak and a shift of six seconds from the northbound/southbound phase to the eastbound/westbound phase during the PM peak.

The Synchro reports for level of service and queue improvement analyses are provided in Appendix Q and Appendix R, respectively.

Table 9
Level of Service Summary with Recommended Improvements

Approach	Background Conditions		Total Future Conditions		Total Future Conditions With Improvements	
	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
1. Alabama Avenue/Randle Place						
EBLT	B	B	C	C	C	B
EBR	B	B	B	B	B	B
WBLTR	B	C	C	D	C	C
NBLTR	D	D	D	D	D	D
SBLTR	D	D	C	D	C	D
Overall	**C**	**C**	**C**	**C**	**C**	**C**
2. Alabama Avenue/Wheeler Road						
EBT	D	D	F (82.6)	D	D	D
EBR	A	A	A	A	A	A
WBLT	C	A	D	B	C	B
NBL	F (215.8)	E	F (215.8)	E	E	D
NBR	B	C	B	C		
Overall	**F (91.7)**	**C**	**F (104.1)**	**C**	**D**	**C**
3. Alabama Avenue/11th Place						
EBLTR	B	B	C	B	B	B
WBLTR	B	B	A	B	B	B
NBLTR	E	D	E	D	E	D
SBLT	D	D	D	D	D	D
SBR	D	D	D	D	D	D
Overall	**B**	**B**	**C**	**B**	**B**	**B**
4. Alabama Avenue/13th Street						
EBL	F (92.2)	E	F (85.8)	E	E	E
EBTR	F (91.5)	F (83.7)	F (210.6)	F (117.5)	F (111.6)	E
WBL	F (196.8)	D	F (217.1)	D	F (156.5)	D
WBTR	F (116.6)	D	F (116.5)	D	D	C
NBLTR	C	C	C	C	D	D
SBL	C	C	C	C	C	C
SBT	C	C	C	C	C	C
SBR	C	C	C	C	C	C
Overall	**F (95.7)**	**E**	**F (139.0)**	**E**	**E**	**D**

[x.x] = unsignalized intersection control delay in sec/veh
(x.x) = signalized intersection control delay in sec/veh

Table 9 (continued)
Level of Service Summary with Recommended Improvements

Approach	Background Conditions		Total Future Conditions		Total Future Conditions With Improvements	
	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
5. Alabama Avenue/15th Street						
WBLT	A	A	A	A	A	A
NBLR	E	F [90.6]	E	F [119.4]	E	F [119.4]
6. Alabama Avenue/15th Place						
EBLT	A	A	A	A	A	A
SBLR	F [52.1]	C	F [67.0]	C	F [67.1]	C
7. Alabama Avenue/Stanton Road						
EBLT	B	C	C	D	C	D
EBR	B	A	B	A	B	A
WBLT	B	B	B	B	B	B
WBR	A	A	A	A	A	A
NBLTR	E	E	E	E	E	E
SBLT	D	E	D	E	D	E
SBR	C	C	C	C	C	C
Overall	**C**	**C**	**C**	**D**	**C**	**D**
8. Alabama Avenue/Site Driveway						
WBLT	NA	NA	A	A	A	A
NBLR	NA	NA	D	D	D	D
9. 13th Street/Site Driveway						
SBLT	NA	NA	A	A	A	A
WBLR	NA	NA	A	A	A	A

[x.x] = unsignalized intersection control delay in sec/veh
(x.x) = signalized intersection control delay in sec/veh

Table 10
Synchro 95th Percentile Queue Summary (in feet)

Approach	Available Storage†	Background Conditions		Total Future Conditions		Total Future with Improvements	
		AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
1. Alabama Avenue/Randle Place							
EBLT	410’	189	245	198	250	198	278
EBR	410’	15	3	15	3	15	3
WBT	445’	117m	84m	134m	245m#	161m	471m#
NBT	75’	29	24	29	24	29	24
SBT	320’	166	335#	294#	380#	294#	335#
2. Alabama Avenue/Wheeler Road							
EBT	415’	479#	739#	637#	793#	575#	758m#
EBR	415’	16m	117m	19m	57	19m	144m
WBLT	190’	213m	101	256m#	181	178m#	98
NBL	425’	910#	298#	910#	298#	458#	154
NBR	425’	31	28	50	34		
3. Alabama Avenue/11th Place							
EBT	450’	216m	111m	250m#	119m	291m#	425m#
WBT	830’	185m	348m	190m	451m	181m#	457
NBT	440’	69	34	69	34	72	34
SBT	160’	33	50	33	50	34	50
SBR	160’	21	37	21	37	22	37
4. Alabama Avenue/13th Street							
EBL	115’	83m#	27m	64m#	25m	59m	25m
EBT	840’	597#	646m#	803m#	663m#	731#	615m#
WBL	85’	179m#	35m	187m#	44m	177m#	44m
WBT	365’/945’	820#	458#	824m#	486m#	739#	387m
NBT	445’	102	54	135	158	157	173
SBL	75’‡	72	88	72	90	83	98
SBT	75’‡	30	35	30	35	34	38
SBR	75’‡	20	19	20	19	23	21

† All distances measured to nearest intersection or end of turn lane, as appropriate. Where two storage lengths are given, the first is the distance to the driveway, the second is the distance to the nearest intersection.
m Volume for 95th percentile queue is metered by upstream signal.
95th percentile volume exceeds capacity; queue may be longer.
~ Volume exceeds capacity; queue is theoretically infinite.
* Delay theoretically greater than 999.9 seconds; queue cannot be calculated.
‡ All-way stop is present at adjacent intersection to the north. Therefore, if queue exceeds 75’, it will not “block” intersection. That is, the all-way stop requires that all approaches take turns thereby ensuring all movements are served.

Table 5 (Continued)
Synchro 95th Percentile Queue Summary (in feet)

Approach	Available Storage†	Background Conditions		Total Future Conditions		Total Future with Improvements	
		AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
5. Alabama Avenue/15th Street							
WBLT	115'	11	23	11	25	11	25
NBLR	415'	77	169	92	196	92	196
6. Alabama Avenue/15th Place							
EBLT	120'	11	4	12	4	12	4
SBLR	380'	141	37	166	40	166	40
7. Alabama Avenue/Stanton Road							
EBT	680'	256m	635m#	254m	675m#	271m	680m#
EBR	680'	8m	1m	7m	1m	8m	1m
WBT	390'	485	282	507	305	476	253
WBR	390'	17	16	17	16	16	13
NBT	410'	227#	188	240#	194	260#	243#
SBT	205'	159	220	159	220	166	274#
SBR	50'	43	57	52	61	56	71
8. Alabama Avenue/Site Driveway							
WBLT	530'	NA	NA	4	2	4	2
NBLR	NA	NA	NA	12	40	13	41
9. 13th Street/Site Driveway							
WBLR	NA	NA	NA	4	13	4	13
SBLT	155'	NA	NA	4	2	4	2

† All distances measured to nearest intersection or end of turn lane, as appropriate. Where two storage lengths are given, the first is the distance to the driveway, the second is the distance to the nearest intersection.
m Volume for 95th percentile queue is metered by upstream signal.
95th percentile volume exceeds capacity; queue may be longer.
~ Volume exceeds capacity; queue is theoretically infinite.
* Delay theoretically greater than 999.9 seconds; queue cannot be calculated.

TRANSPORTATION DEMAND MANAGEMENT

Traffic and parking congestion can be solved in one of two ways: 1) increase supply or 2) decrease demand. Increasing supply requires building new roads, widening existing roads, building more parking spaces, or operating additional transit service. These solutions are often infeasible in constrained conditions in urban environments and, where feasible, can be expensive, time consuming, and in many instances, unacceptable to businesses, government agencies, and/or the general public. The demand for travel and parking can be influenced by TDM plans implemented by those in the private sector. Typical TDM measures include incentives to use transit or other non-auto modes of transportation, bicycle and pedestrian amenities, parking management, alternative work schedules, telecommuting, and better management of existing resources. TDM plans are most effective when tailored to a specific project or user group and have been proven to be effective in reducing vehicle travel and parking demand.

While the location of the proposed redevelopment at the Congress Heights Metro station will naturally encourage the use of non-auto modes of transportation, the Applicant also has developed a TDM plan with strategies to limit the need for vehicular travel to/from the proposed redevelopment. Specifically, the TDM plan would include:

1. A member of the property management team will be designated as the Transportation Management Coordinator (TMC). The TMC will be responsible for ensuring that information is disseminated to tenants of the buildings. The position may be part of other duties assigned to the individual.
2. Information on and/or links to the following programs and services will be provided on the property management website:
    - Capital Bikeshare,
    - Car-sharing services,
    - Uber,
    - Ridescout,
    - Commuter Connections Rideshare Program, which provides complimentary information on a variety of commuter programs to assist in determining which commuting options work best for commuters,
    - Commuter Connections Guaranteed Ride Home, which provides commuters who regularly (twice a week) carpool, vanpool, bike, walk or take transit to work with a free and reliable ride home in an emergency, and
    - Commuter Connections Pools Program, which incentivizes commuters who currently drive alone to carpool. Participants can earn money for carpooling to work and must complete surveys and log information about their experience.

3. An electronic display will be provided in a common, shared space in each of the buildings and will provide public transit information such as nearby Metrorail stations and schedules, Metrobus stops and schedules, car-sharing locations, and nearby Capital BikeShare locations indicating the number of bicycles available at each location.
4. Convenient and covered secure bike parking facilities will be provided with storage for a minimum of 76 bicycles for the entire development.

CONCLUSIONS AND RECOMMENDATIONS

The conclusions and recommendations of this study are as follows:

1. The redevelopment of Square 5194 would include demolishing the existing uses on the site to allow for the construction of a mixed use project including office, residential, and retail uses.
2. The subject site is well served by a high-quality multi-modal transportation system that includes: a corridor of arterial, collector, and local streets; a connected network of sidewalks; the adjacent Congress Heights Metrorail station; multiple bus lines; and bicycle facilities, including a Capital Bikeshare station immediately in front of the site.
3. The proposed redevelopment will include approximately 206 residential units, 220,447 SF of office space, and 19,452 SF of general retail space. The proposed redevelopment is anticipated to generate 247 AM peak hour vehicle trips and 252 PM peak hour vehicle trips.
4. A total of 218 parking spaces would be provided for the project, which exceeds the minimum number of parking spaces (190) required by the DCMR by 15 percent.
5. The Applicant proposes to establish metered parking along the frontage of the site. It is anticipated that this parking would serve the retail uses on the site and the neighborhood in general.
6. Bicycle parking, including bicycle storage rooms will be provided on the first floor and first below-grade garage level. Additional bicycle parking will be located on the second level of the garage. In total, a minimum of 76 spaces will be provided.
7. A private alley is proposed as vehicular access for the site. The private alley will be accessed via a relocated curb cut 13th Street and by an existing curb cut on Alabama Avenue. The proposed private alley will operate as two-way for passenger cars. Loading operations will occur via the private alley. Trucks to the site will enter the site from Alabama Avenue and exit the site onto 13th Street.
8. The Applicant is seeking relief from the requirement to provide a 55-foot loading berth for the residential component. In lieu of the 55-foot berth, a 30-foot berth will

be provided. A Loading Management Plan is recommended to address rare situations when a 55-foot truck may be required.

9. A number of improvements are recommended to improve existing conditions and/or offset the impact of the proposed redevelopment. These improvements include the following:

- Minor timing adjustments at the following intersections:
  - Alabama Avenue/Randall Place,
  - Alabama Avenue/13th Street, and
  - Alabama Avenue/Stanton Road.
- Restripe the northbound, Wheeler Road approach at Alabama Avenue to include an exclusive left turn lane and a shared left/right turn lane (rather than separate left and right turn lanes.
- Implement the proposed Loading Management Plan and Transportation Demand Management Plan.

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2 Ibid.

3 2012 Traffic Volumes, District Department of Transportation, Washington, DC, September 2013, [http://ddot.dc.gov/sites/default/files/dc/sites/ddot/publication/attachments/traffic_volume_2009.pdf]

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5 Rail Ridership By Station, Washington Metropolitan Area Transit Authority, June 2011. [http://www.wmata.com/pdfs/planning/FY11_Rail_Ridership_By_Station.pdf]

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18 Trip Generation Manual, 9th Edition, Volume 1, Institute of Transportation Engineers, Washington, DC, 2012.

19 Ibid.

20 Ibid.

21 Trip Generation, 9th Edition, Volume 2, Institute of Transportation Engineers, Washington, DC, 2012.

Figure 1
Site Location Map

North

Congress Heights
Washington, DC

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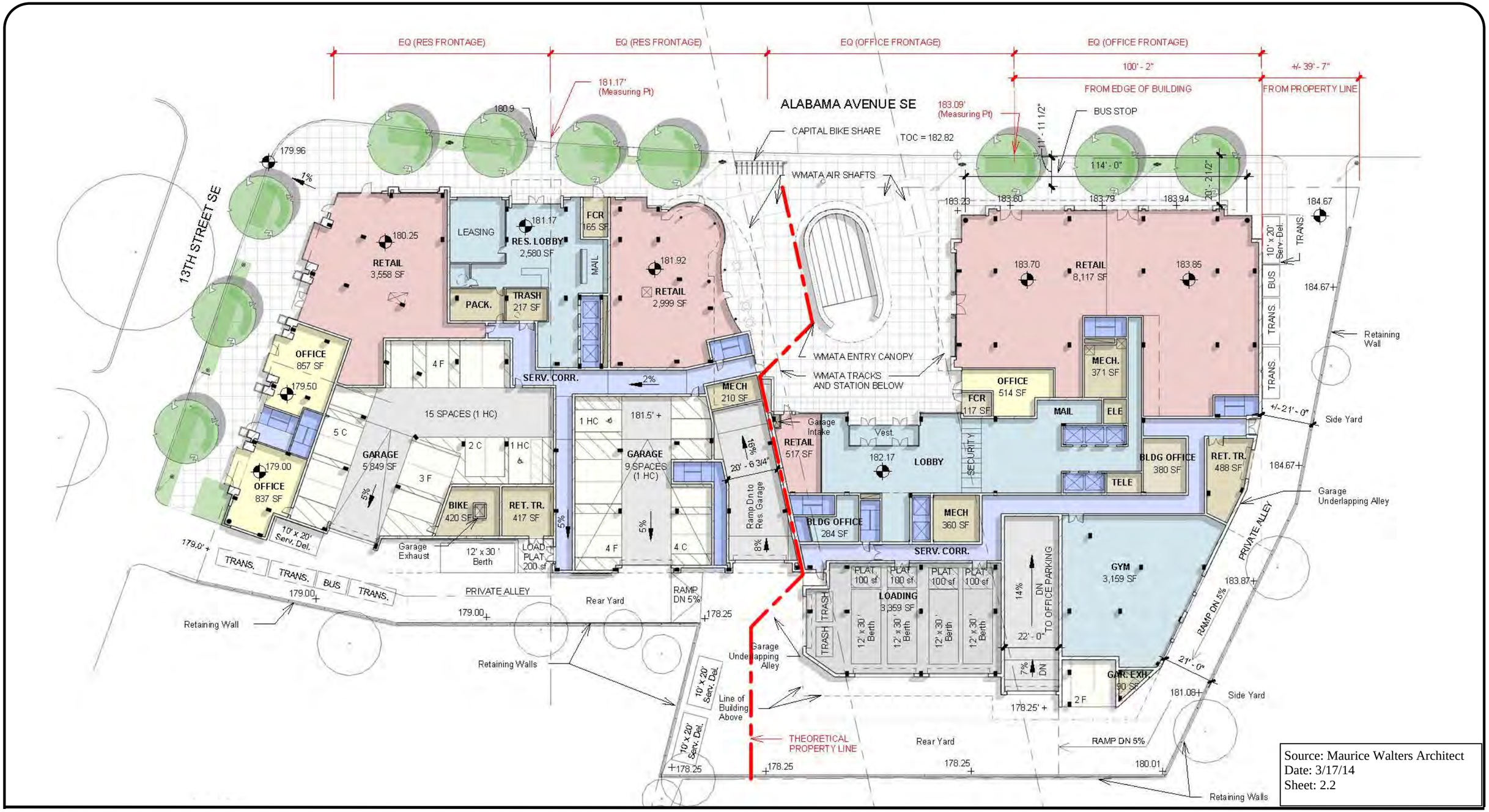

Source: Maurice Walters Architect
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Figure 2A
Site Plan—First Floor Plan

Not To Scale

North

Congress Heights
Washington, DC

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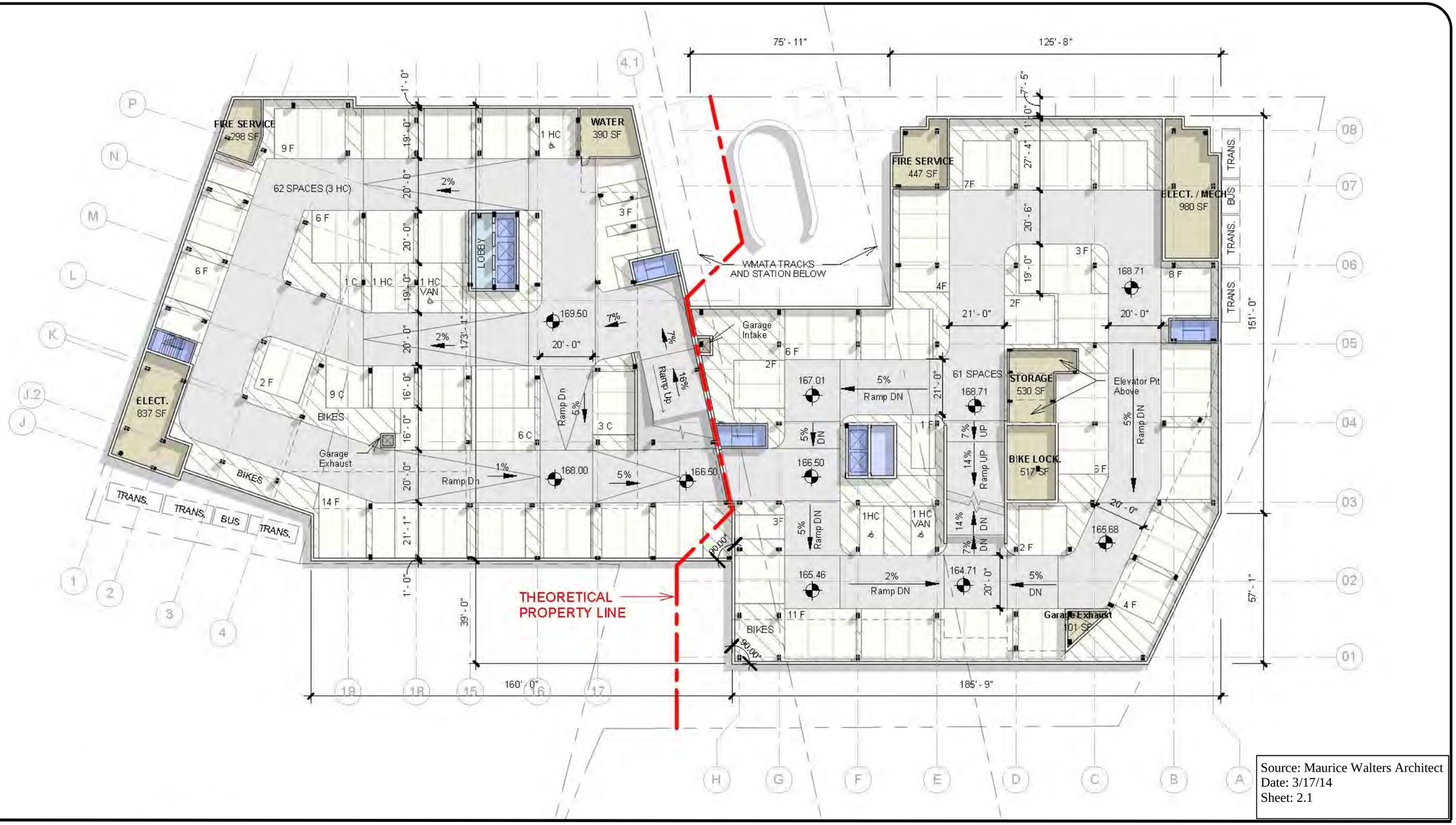

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Figure 2B
Site Plan—G1 Garage Plan

Not To Scale

North

Congress Heights
Washington, DC

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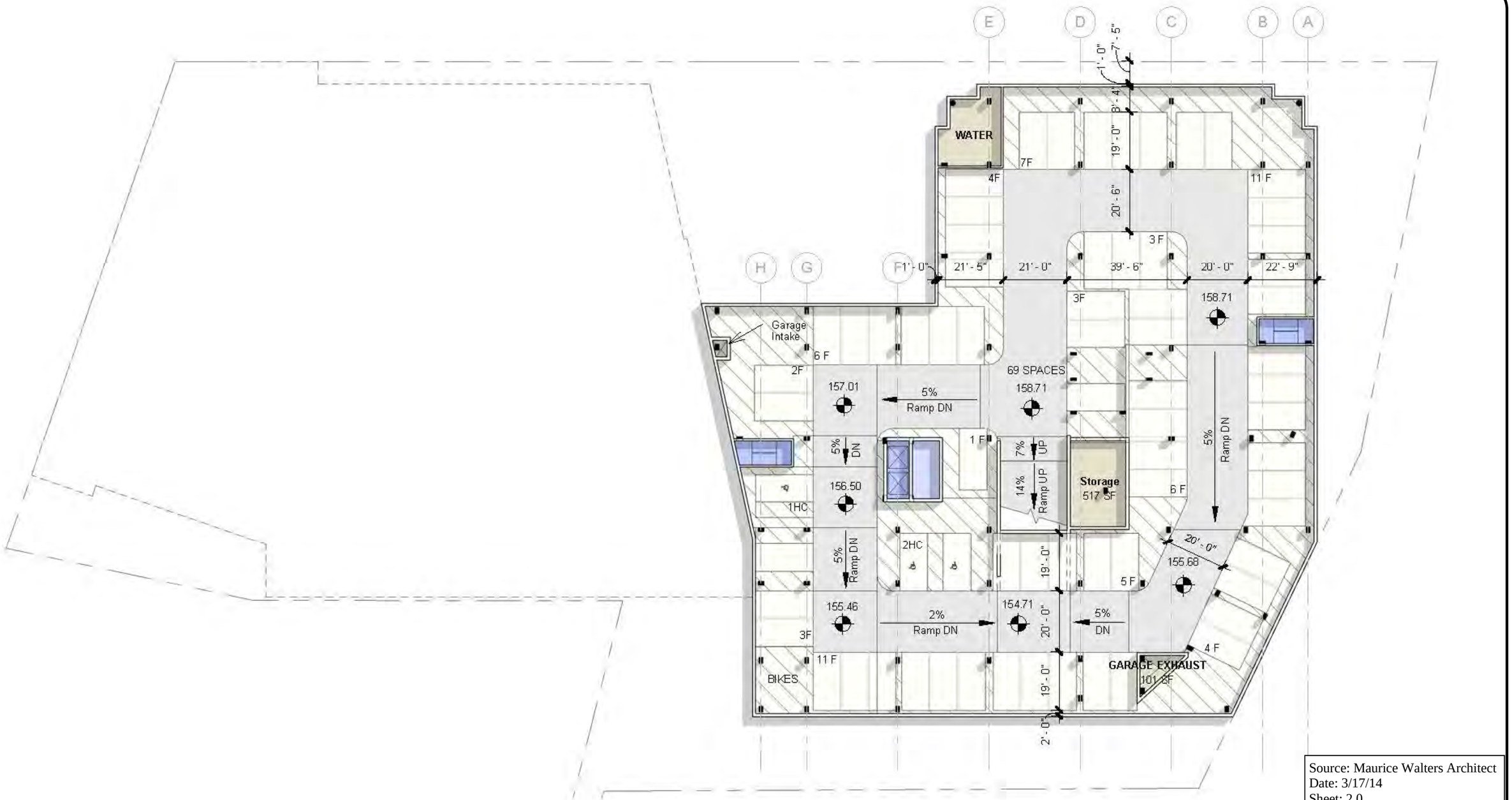

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Figure 2C
Site Plan—G2 Garage Plan

Not To Scale

North

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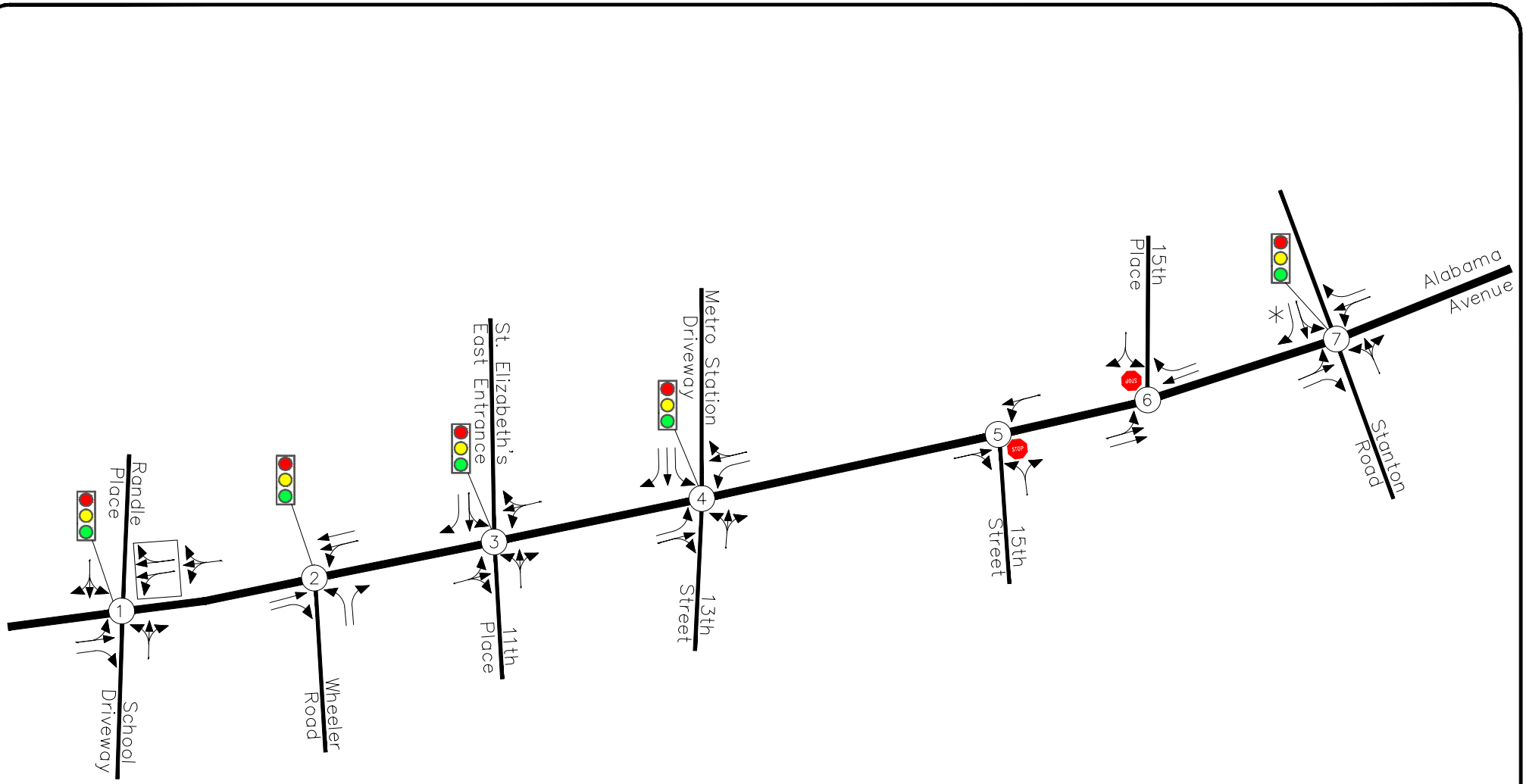

*Southbound approach is not striped with an exclusive right turn lane. However, field operations indicate motorists are using it as such.

Figure 3
Existing Lane Use and Traffic Control

Represents One Travel Lane
Signalized Intersection
Stop Sign

North
Not to Scale

Congress Heights
Washington, DC

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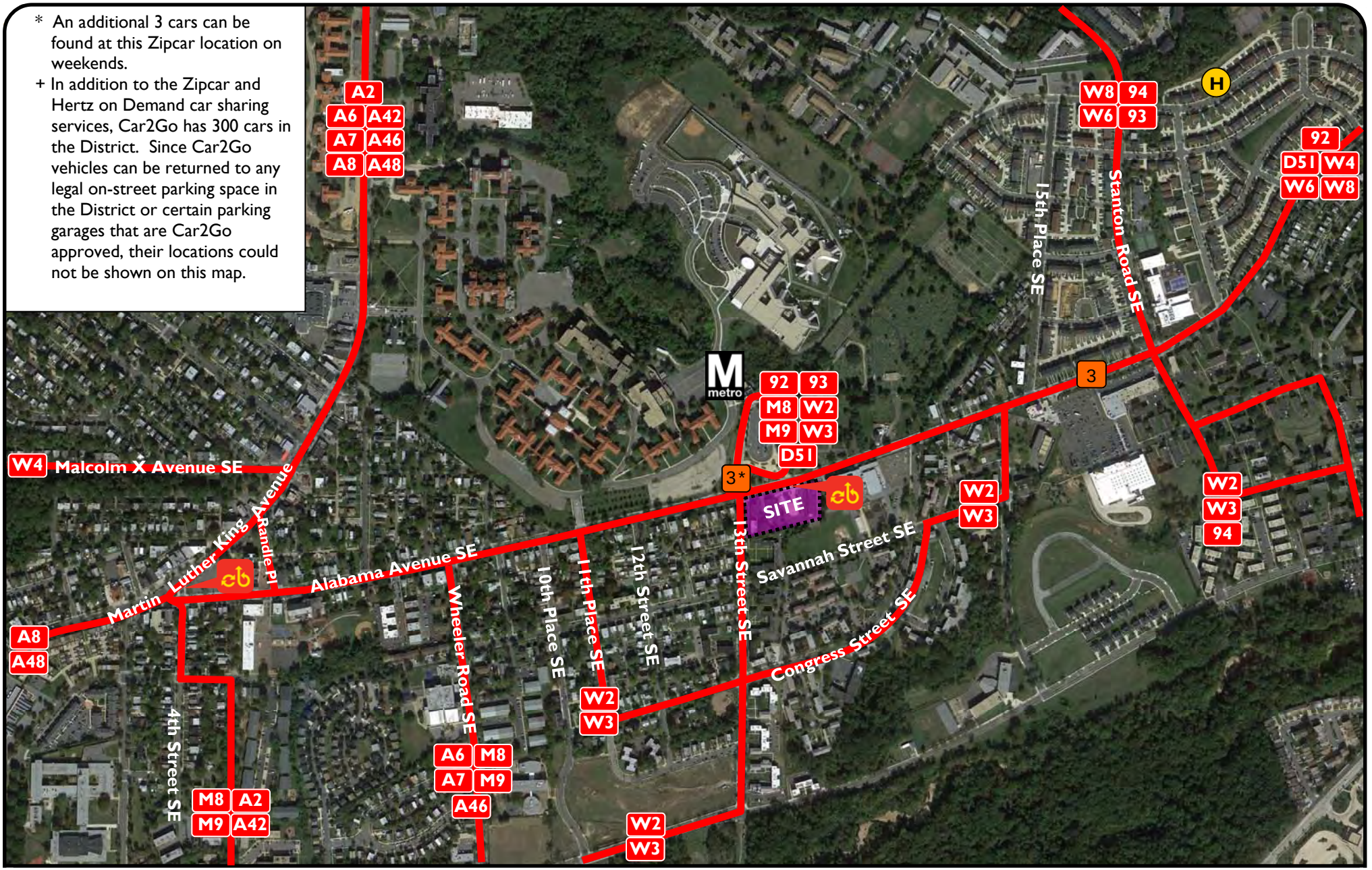

Figure 4
Non-auto Transportation Modes

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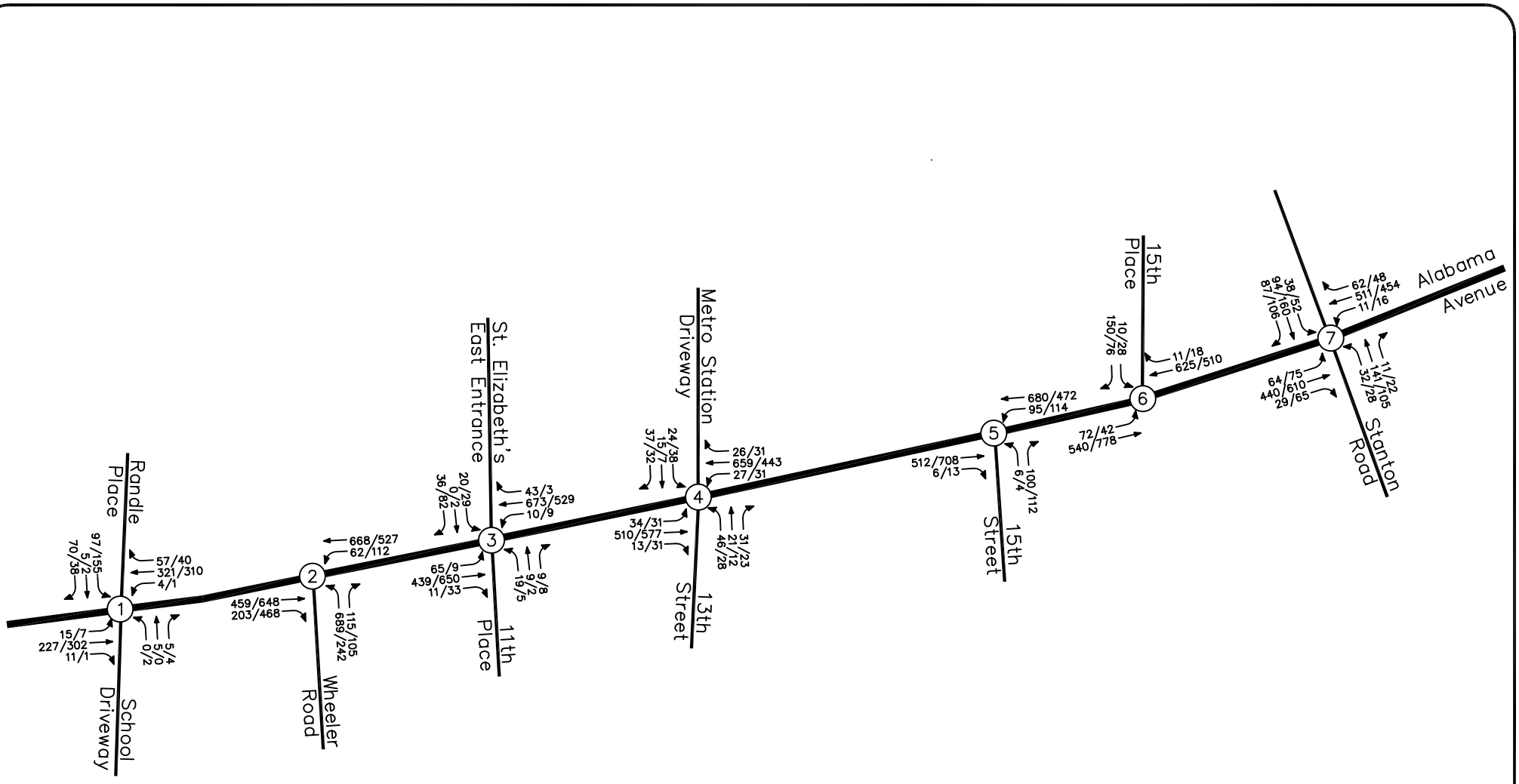

Figure 5
Existing Peak Hour Traffic Volumes

000/000 AM/PM Peak Hour Volume
Existing Roadway/Driveway
Proposed Roadway/Driveway

North
Not to Scale

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Washington, DC

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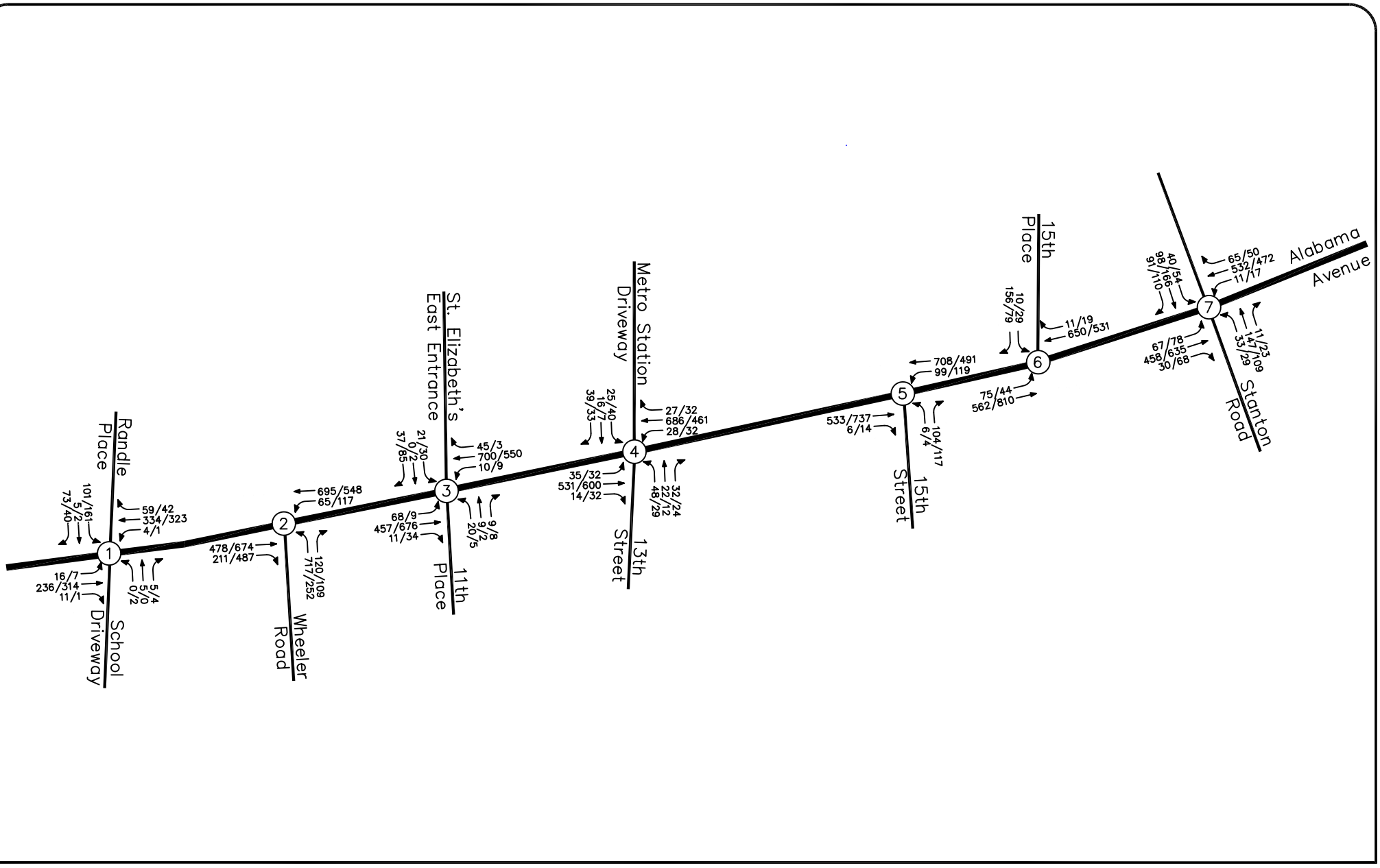

Figure 6
Volumes with Regional Growth

000/000 AM/PM Peak Hour Volume
Existing Roadway/Driveway
Proposed Roadway/Driveway

North
Not to Scale

Congress Heights
Washington, DC

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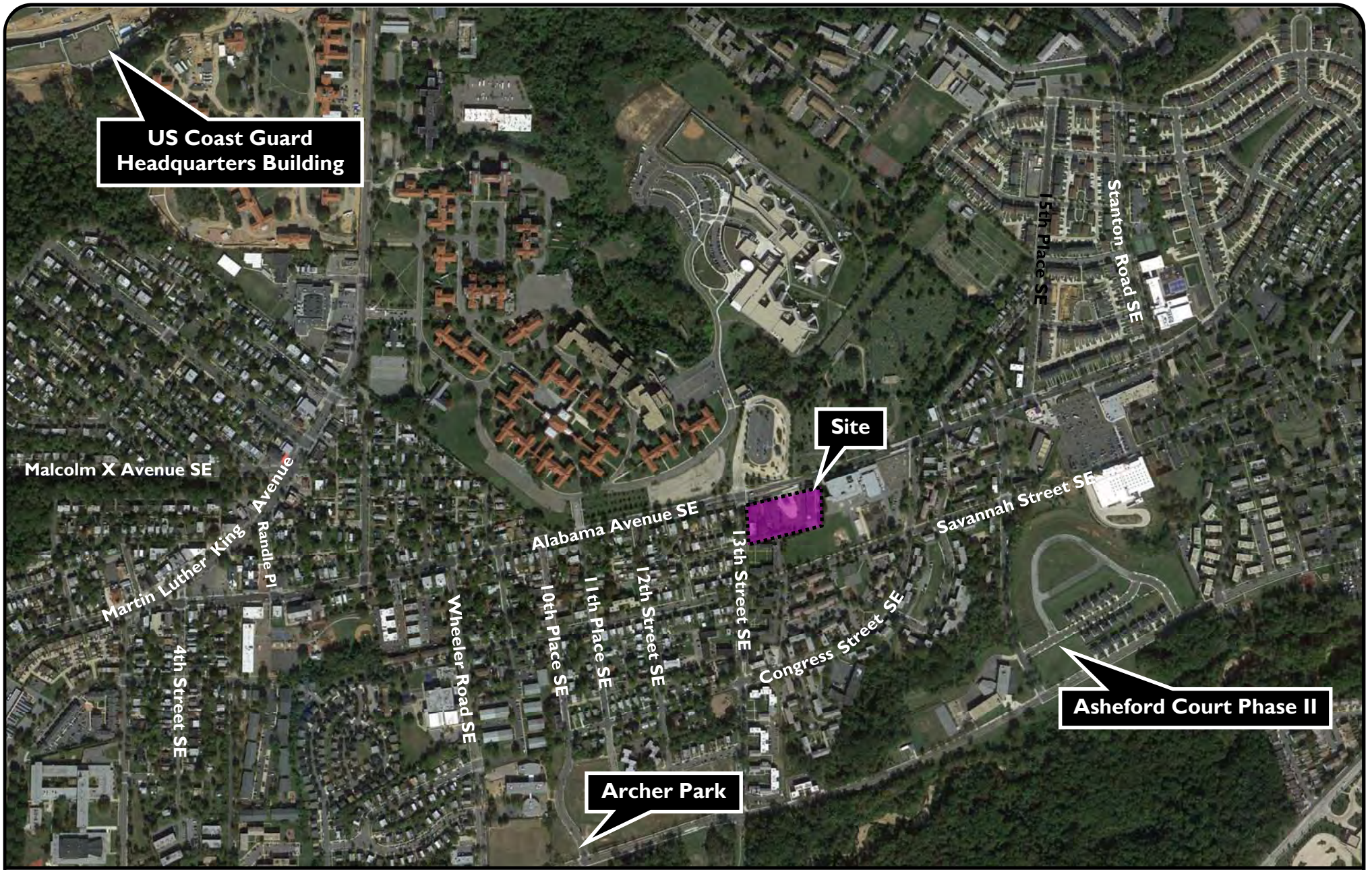

Figure 7
Pipeline Locations

North

Congress Heights
Washington, DC

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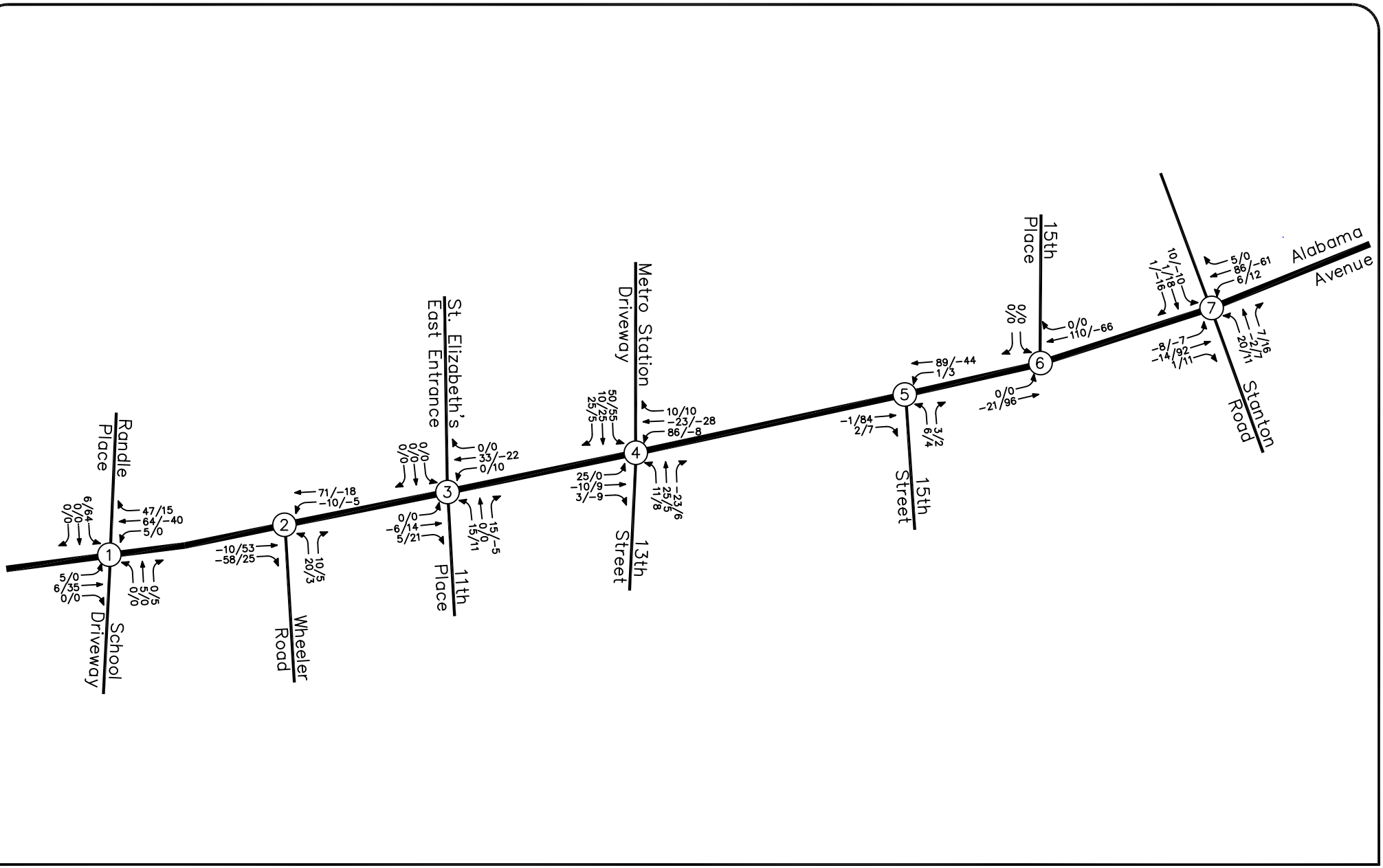

Figure 8
Pipeline Forecasts

000/000 AM/PM Peak Hour Volume
Existing Roadway/Driveway
Proposed Roadway/Driveway

North
Not to Scale

Congress Heights
Washington, DC

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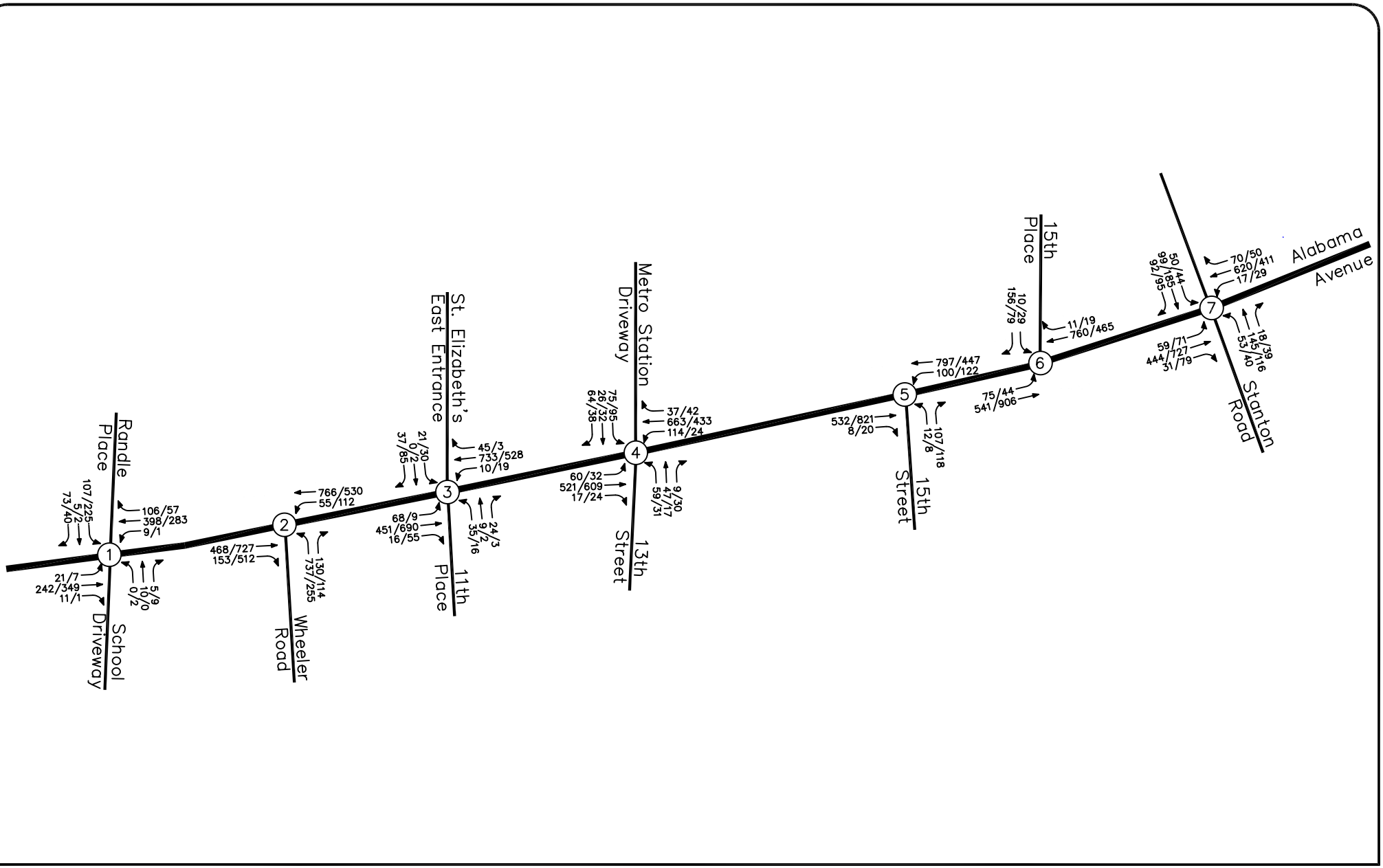

Figure 9
2017 Background Traffic Forecasts

Congress Heights
Washington, DC

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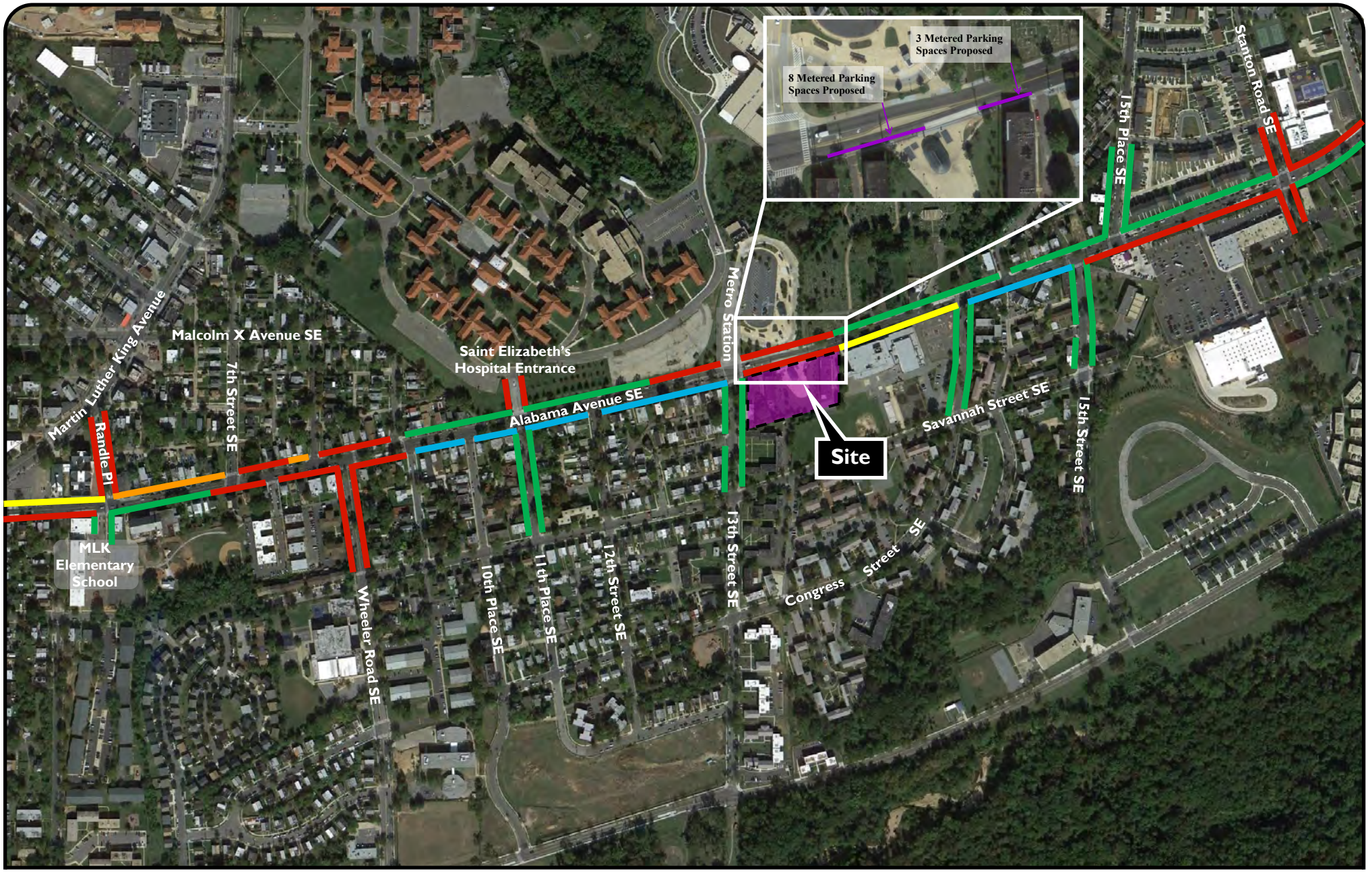

Figure 10
Parking Restrictions Map

Congress Heights
Washington, DC

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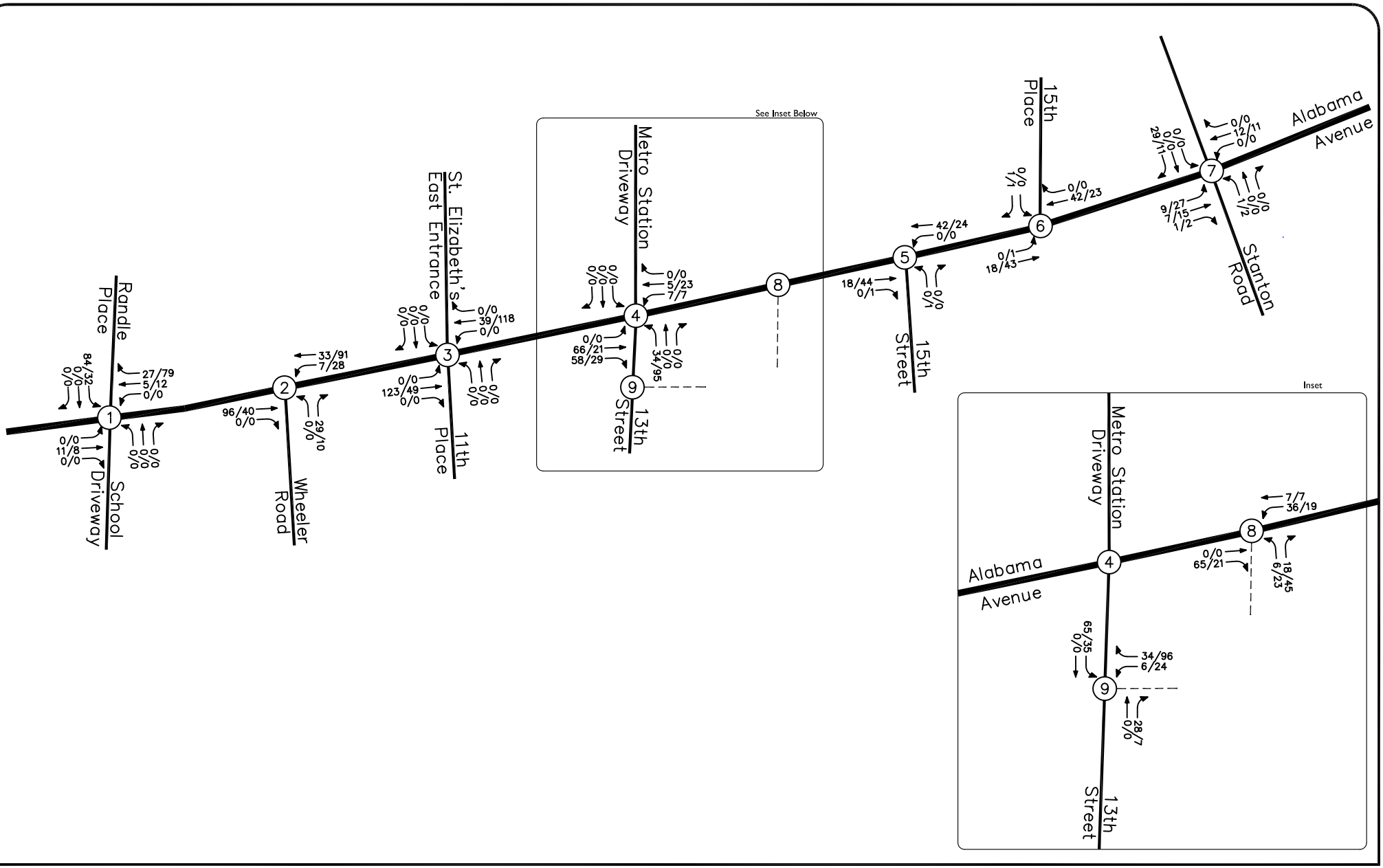

Figure 11
Proposed New Site Trips (Residential, Office, and Retail)

000/000 AM/PM Peak Hour Volume
Existing Roadway/Driveway
Proposed Roadway/Driveway

North
Not to Scale

Congress Heights
Washington, DC

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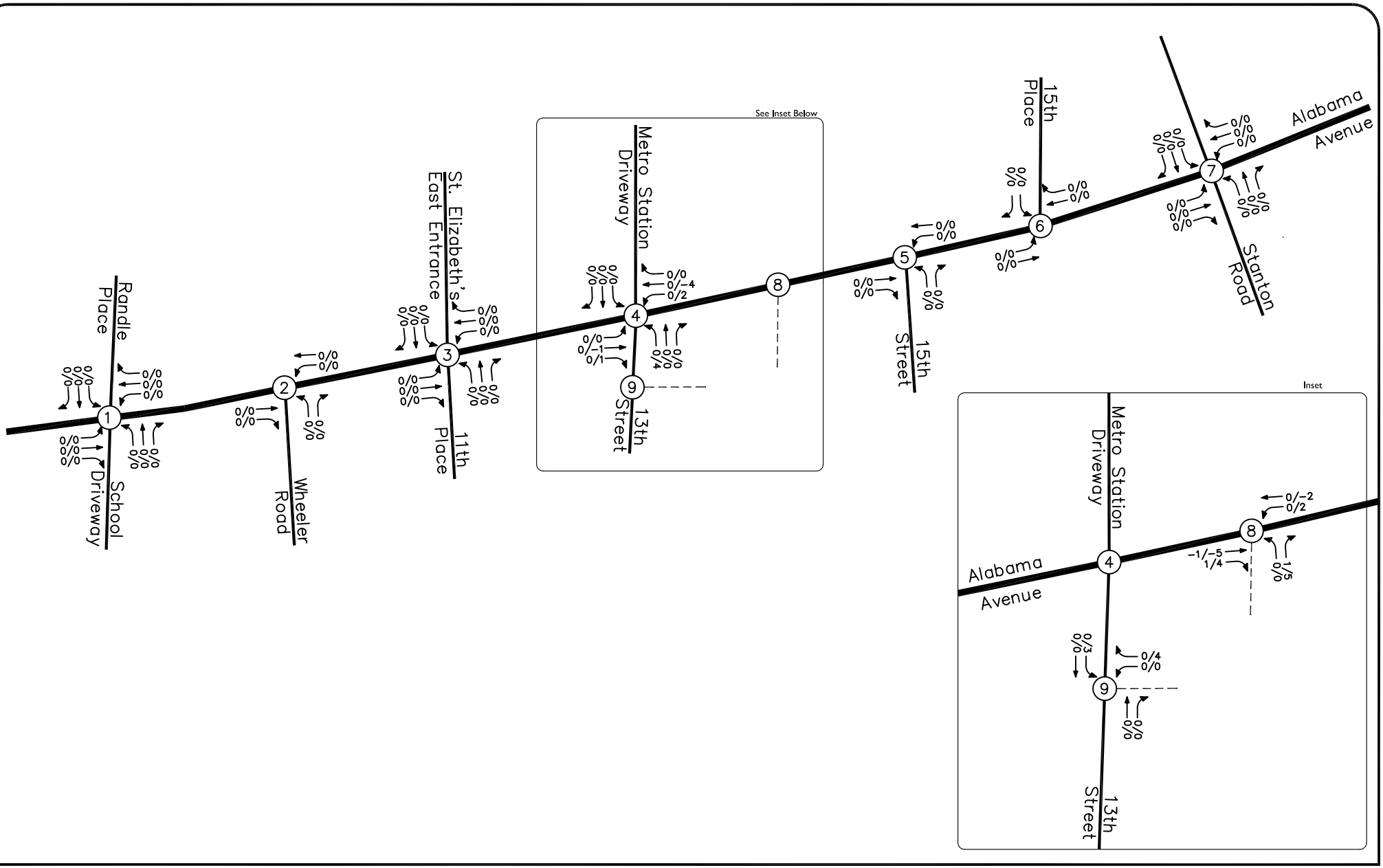

Figure 12
Proposed Retail Pass-By Trips

000/000 AM/PM Peak Hour Volume
Existing Roadway/Driveway
Proposed Roadway/Driveway

North
Not to Scale

Congress Heights
Washington, DC

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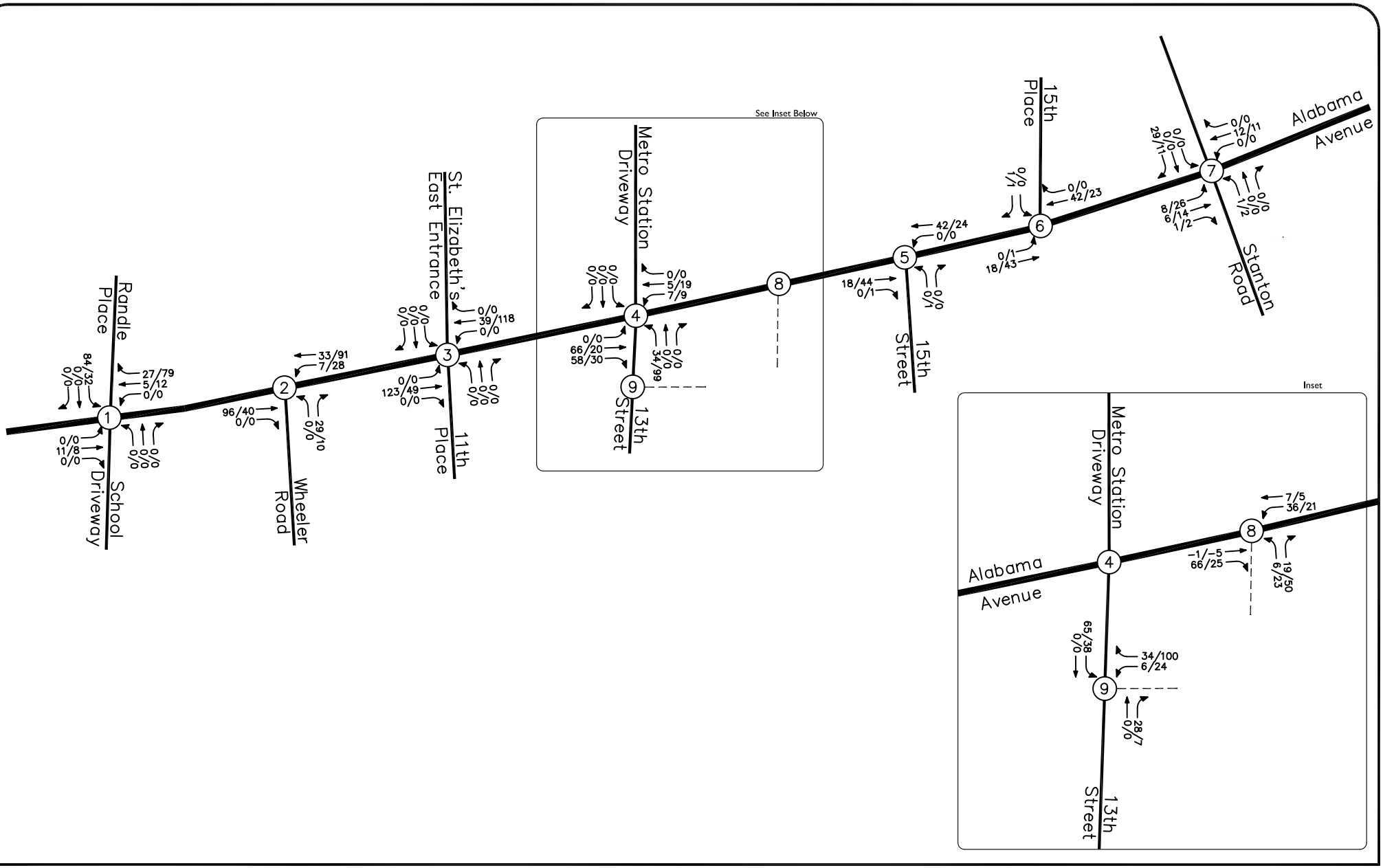

Figure 13
Proposed Total Site Trips (Residential, Office, and Retail)

000/000 AM/PM Peak Hour Volume
Existing Roadway/Driveway
Proposed Roadway/Driveway

North
Not to Scale

Congress Heights
Washington, DC

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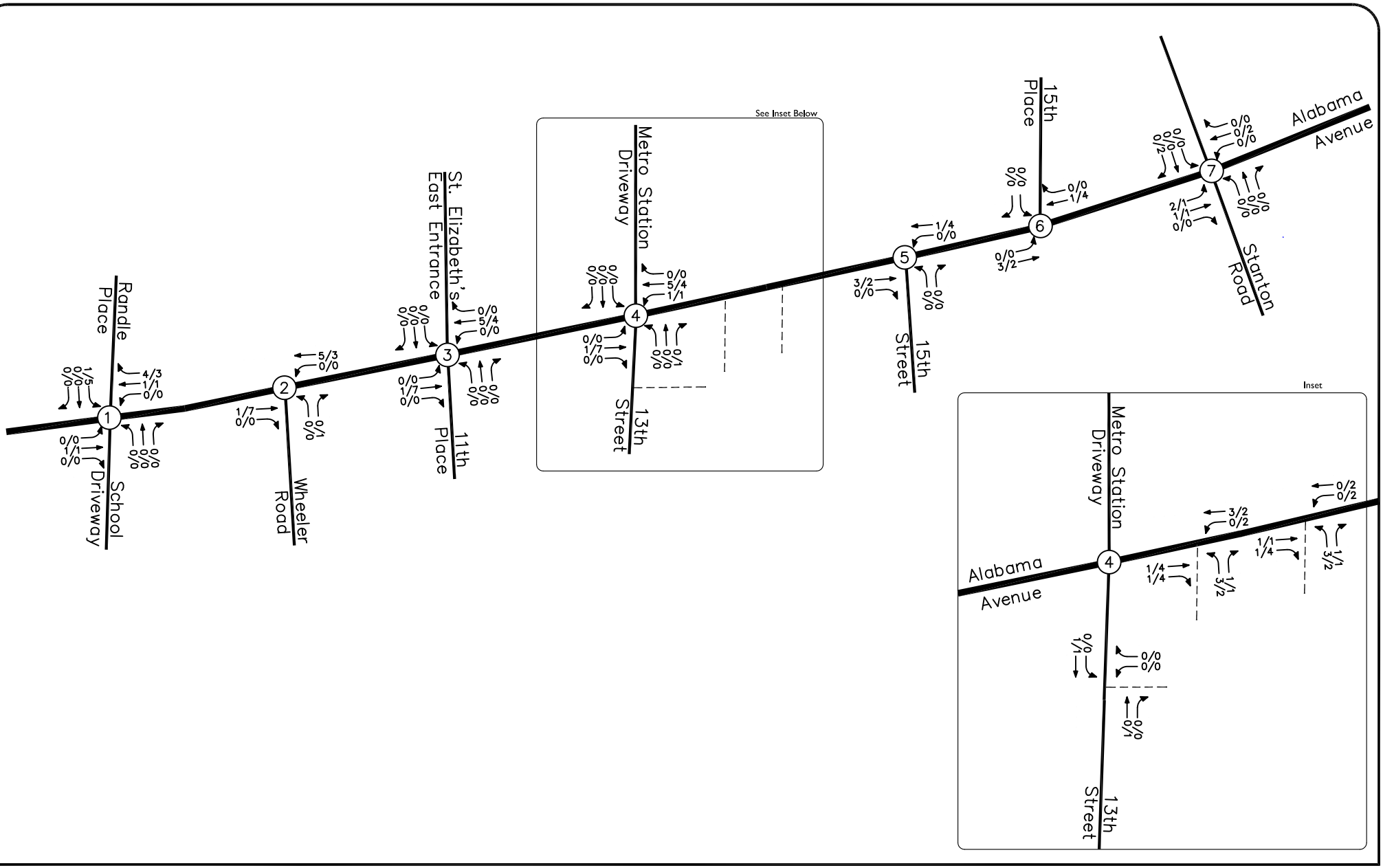

Figure 14
Existing Site Trips

000/000 AM/PM Peak Hour Volume
Existing Roadway/Driveway
Proposed Roadway/Driveway

North
Not to Scale

Congress Heights
Washington, DC

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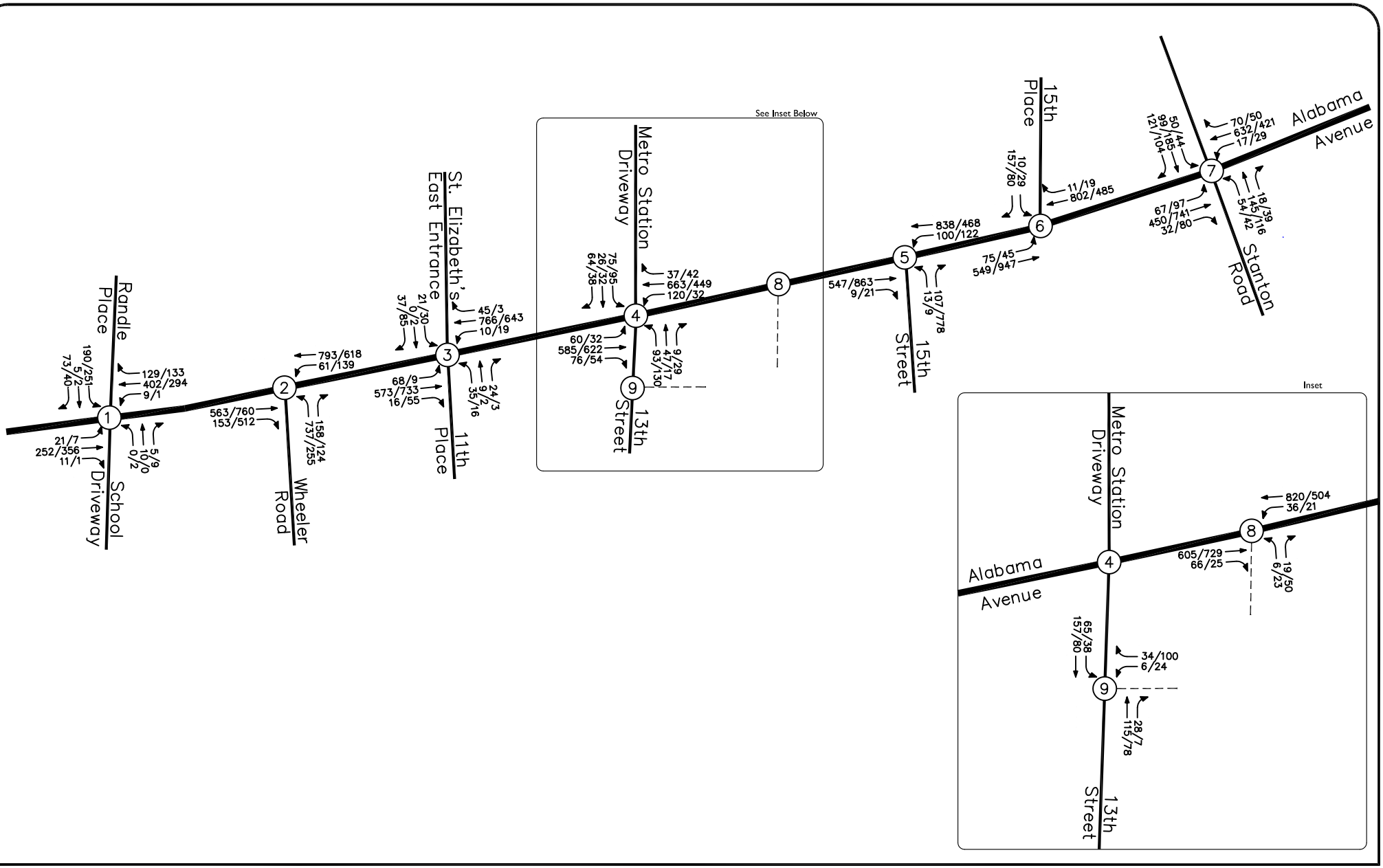

Figure 15
Total Future Traffic Forecasts

000/000 AM/PM Peak Hour Volume
Existing Roadway/Driveway
Proposed Roadway/Driveway

North
Not to Scale

Congress Heights
Washington, DC

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