Remington Row

Traffic Impact Study

October 2014

DEPARTMENT OF TRANSPORTATION
BALTIMORE CITY

Sabra, Wang & Associates, Inc.
Engineers • Planners • Analysts

Table of Contents

Index of Figures

Index of Tables

I. INTRODUCTION

The Remington Row project is a multi-block mixed-use redevelopment located in the Remington Neighborhood of Baltimore. As shown in Figure 1, the project is in an area approximately bounded by 27th Street and 29th Street to the south and north respectively, and by Fox Street and Crestmont Ave to the west and east, respectively. The area is currently improved with multiple commercial and retail lots, along with several single family dwellings that will remain and are not part of the project. Per the draft Planned Unit Development (PUD), Remington Row is proposed to be developed in three phases:

1. Area A, 2700 Remington Ave – to be Completed in 2017
    a. 35,000 square feet of office
    b. 15,000 square feet of retail
    c. 108 apartment dwelling units
2. Area B, 2810 Remington Ave – to be Completed in 2019
    a. 10,000 square feet of office
    b. 15,000 square feet of retail
    c. And/or up to 40,0000 square feet of permitted use, per the approved PUD
3. Area C, 211 West 28th Street – to be Completed in 2026
    a. 3,000 square feet of retail

Because the Project is located in a grid network of streets, regional access will remain the same, while the number of direct site access points to each individual area will be reduced through driveway consolidation and the abandonment of an east-west alley in Area A.

The purpose of this study is to assess the impacts of traffic associated with the proposed development on the surrounding transportation network, and determine what, if any, improvements are required to mitigate adverse impacts caused by the proposed development. The proposed construction of the site will occur in multiple phases, with full build out estimated for year 2026.

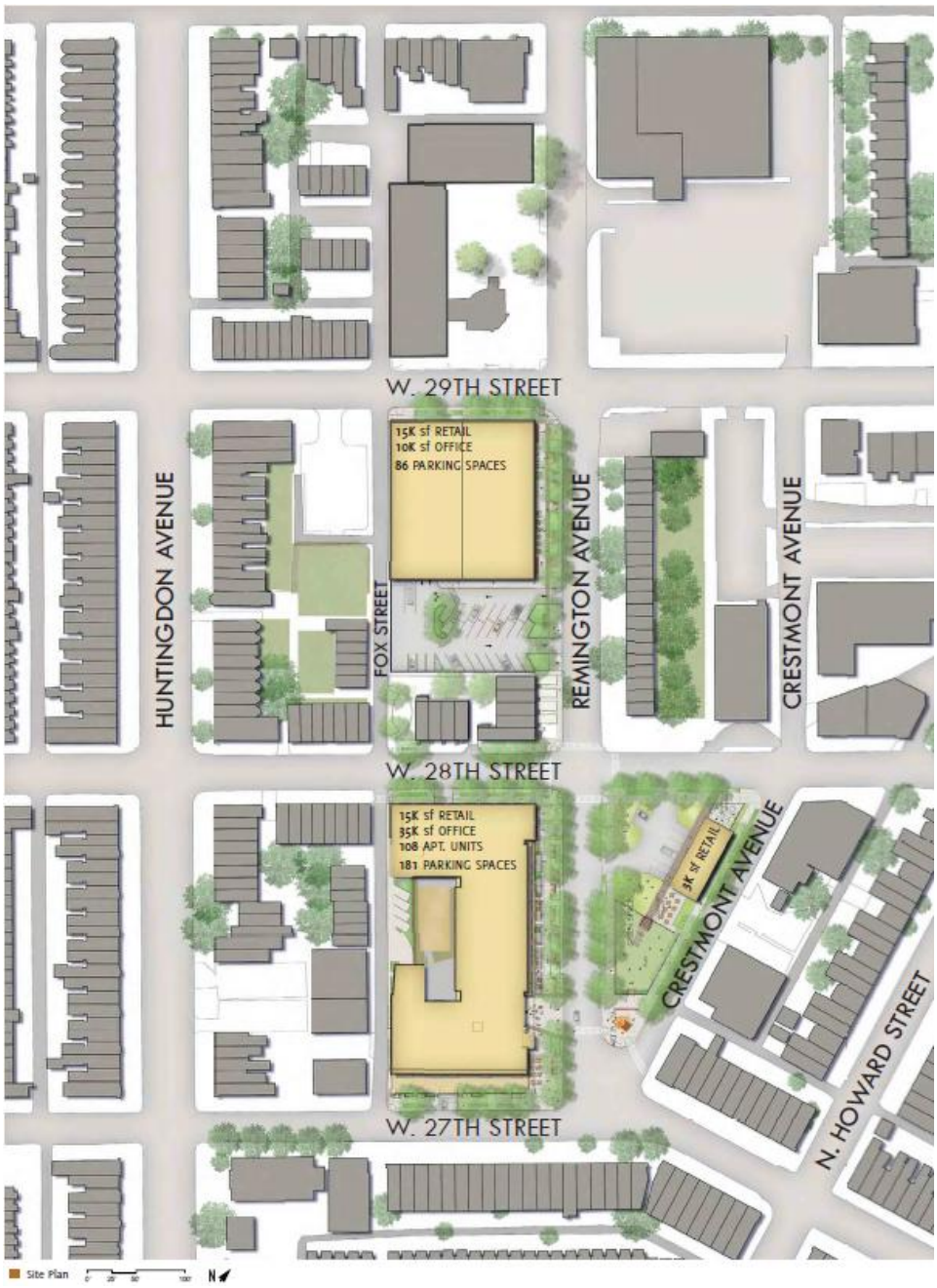


Figure 1: Site Map (source: Hord Coplan Macht)

This traffic impact statement is divided into three sections:

1. Existing Conditions near the Site;
2. Background Conditions for year 2026;
3. Year 2026 Build-out conditions

Existing conditions evaluated and documented include the existing roadway network, traffic volumes, intersection capacity, and level of service. Background conditions incorporate growth in existing traffic volumes, traffic from other nearby planned, approved or current development activity, and planned improvements to the transportation network – absent the proposed PUD. Future conditions include the total future traffic volumes, and future intersection capacity and level of service with the proposed PUD incorporated. Finally, special analyses include: Saturday midday traffic data collection and analysis; on-street

parking inventory and utilization; and site driveway ingress/egress sight distance; and driveway queuing evaluation.

II. EXISTING CONDITIONS

Study Area Roadways

The Remington Row development will be located in the Remington area of Baltimore City. Based on discussions with the Baltimore City Department of Transportation, the study network includes eleven intersections along Howard Street, Remington Ave, Huntingdon Ave, Sisson Street, and 27th, 28th, and 29th Avenues.

The following roadways were included in the analysis:

27th Street is a two-lane local roadway in the study area that connects Sisson Street in the west to points east. 27th Street is one-way westbound, between Sisson Street and Huntington Ave, and two-way east of Huntington Ave. The posted speed limit is 25 miles per hour and there is curbside parking permitted along all blocks in the study area. Intersections evaluated include Huntingdon Ave, Remington Ave, and Howard Street.

28th Street is a one-way four-lane arterial roadway in the study area that connects I-83 and Sisson Street in the west to points east. 28th Street is one-way eastbound, with full time curbside parking allowed on the each outside lane. The posted speed limit is 30 miles per hour. Intersections evaluated include Huntingdon Ave, Remington Ave, and Howard Street and Sisson Street.

29th Street is a one-way four-lane arterial roadway in the study area that connects I-83 and Sisson Street in the west to points east. 28th Street is one-way westbound, with full time parking allowed on the north outside lane and a mix of metered and partially-restricted parking on the south outside lane. The posted speed limit is 25 miles per hour. Intersections evaluated include Huntingdon Ave, Remington Ave, and Howard Street and Sisson Street.

Sisson Street is a two-way four-lane collector road in the study area that connects 24th Street in the south to Wyman Park Drive to the north. The posted speed limit is 25 miles per hour and there are partial peak hour parking restrictions along the roadway segment in the study area. Intersections evaluated include 28th and 29th Streets.

Huntingdon Ave is a two-way two-lane collector road in the study area that connects 25th Street in the south to 30th Street to the north. The posted speed limit is 30 miles per hour and there is full time curbside parking allowed in the study area. Intersections evaluated include 27th, 28th and 29th Streets.

Remington Ave is a two-way two-lane collector road in the study area that connects 25th Street in the south to 33rd Street to the north. The posted speed limit is 25 miles per hour and there is full time curbside parking allowed in the study area. Intersections evaluated include 27th, 28th and 29th Streets.

N. Howard Street is a two-way two-lane arterial road in the study area that connects Downtown Baltimore in the south to Johns Hopkins University to the north. The posted speed limit is 30 miles per hour and there is full time curbside parking allowed in the study area. Intersections evaluated include 27th, 28th and 29th Streets.

Study Area intersections:

1. 27th Street and N. Howard Street
2. 28th Street and N. Howard Street
3. 29th Street and N. Howard Street

4. 27th Street and Remington Ave
5. 28th Street and Remington Ave
6. 29th Street and Huntingdon Ave
7. 27th Street and Huntingdon Ave
8. 28th Street and Huntingdon Ave
9. 29th Street and Remington Ave
10. 28th Street and Sisson Street
11. 29th Street and Sisson Street

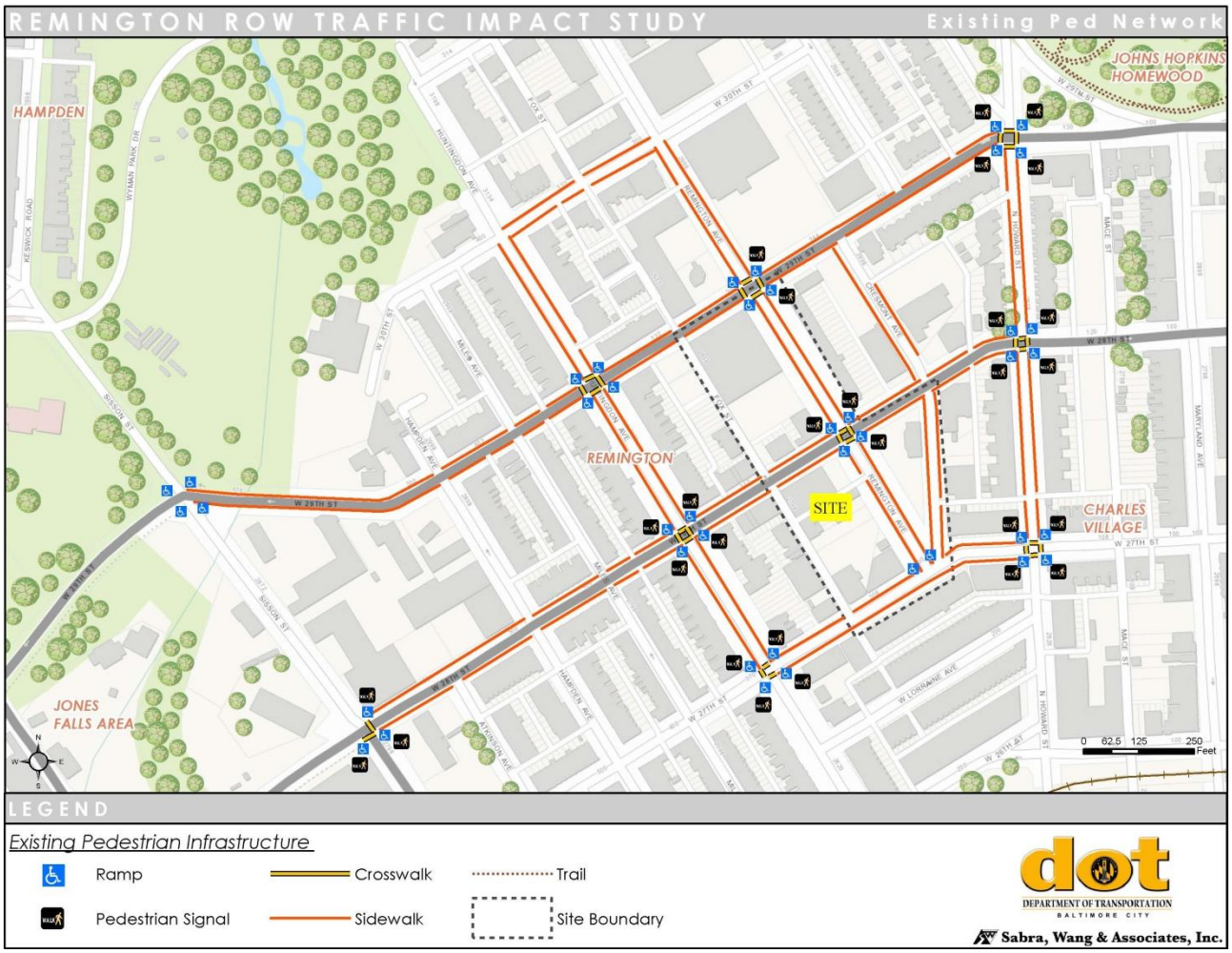
Figure 2 shows the existing study area intersections relative to the development Site.

Figure 2: Area Map and Study Area intersections

Existing Bike and Pedestrian Conditions

No formal designated signed bicycle routes or marked lanes are provided within the study area. However, the Jones Fall Trail is immediately adjacent to the study area, providing direct access to Downtown, Harbor East and Druid Hill Park. Pedestrian infrastructure includes sidewalks on both sides of the street for every block in the study area and marked crosswalks, curb ramps and pedestrian signals, which are located at all signalized intersections and many of the unsignalized intersections within the study area. Figure 3 shows the existing bike and pedestrian conditions in the surrounding area.

Figure 3: Existing Pedestrian and Biking Infrastructure

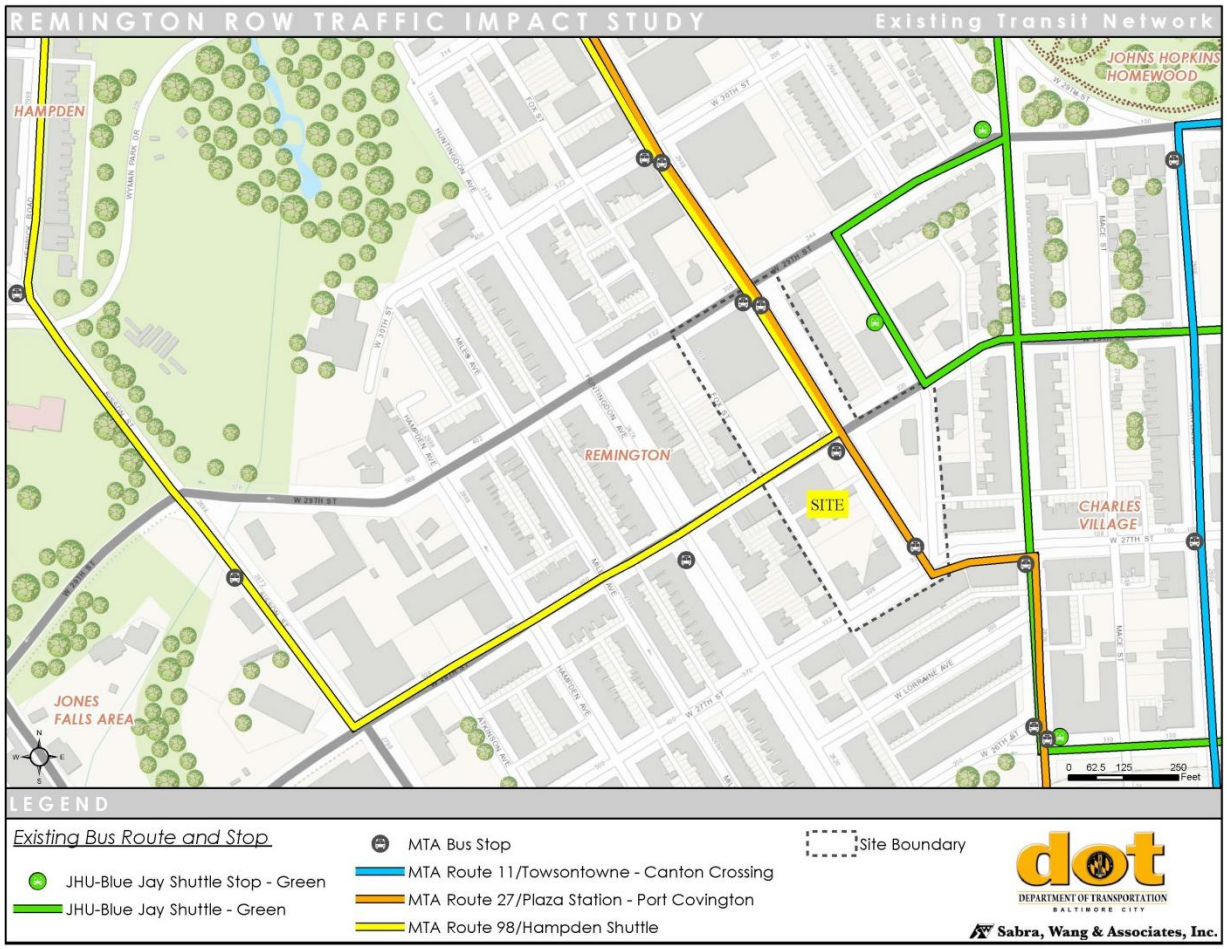


Existing Transit Conditions

The study area is served by the Maryland Transit Administration's (MTA) bus line number 27 along Remington Ave, the number 11 line along Maryland Ave, and the 98 Hamden Shuttle and the Blue Jay *Green* Shuttle serving Johns Hopkins University. The BlueJay *Green* Shuttle has 30 minute headways with service that coincides with only the PM peak hour. Daily ridership along this route is about 30 persons. The MTA busses have about 400 boardings/alightings per day within the study area[1]. Both the MTA #11 and #27 buses run from 5:00 AM to 1:00 AM daily with the #11 having 30 minute headways and the #27 having 40 minute headways. Figure 4 shows the existing transit service in the surrounding area.

[1] APC Average Weekday Ridership Daily Total Boardings for the Winter 2012 schedule period.

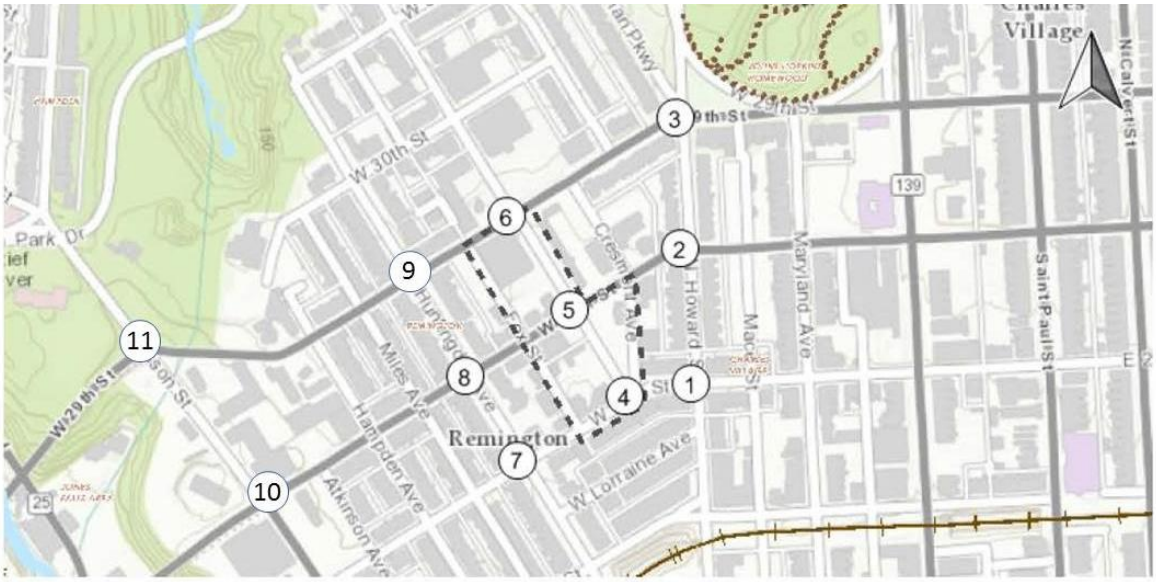
Figure 4: Available Public Transit service



Existing Intersection Lane Geometry, Traffic Control, and Traffic Volumes

Data collection was performed in September 2014 on Tuesday/Wednesday/Thursday when public schools and local colleges were in session. Morning and evening weekday peak hour turning volumes, data collected also included existing lane geometry for each approach of the study area intersections, as well as their traffic control.

Figure **5** shows the existing lane geometry and traffic control for all study area intersections, while Figure 6 and Figure 7shows the existing peak hour traffic volumes in the morning and evening, respectively.



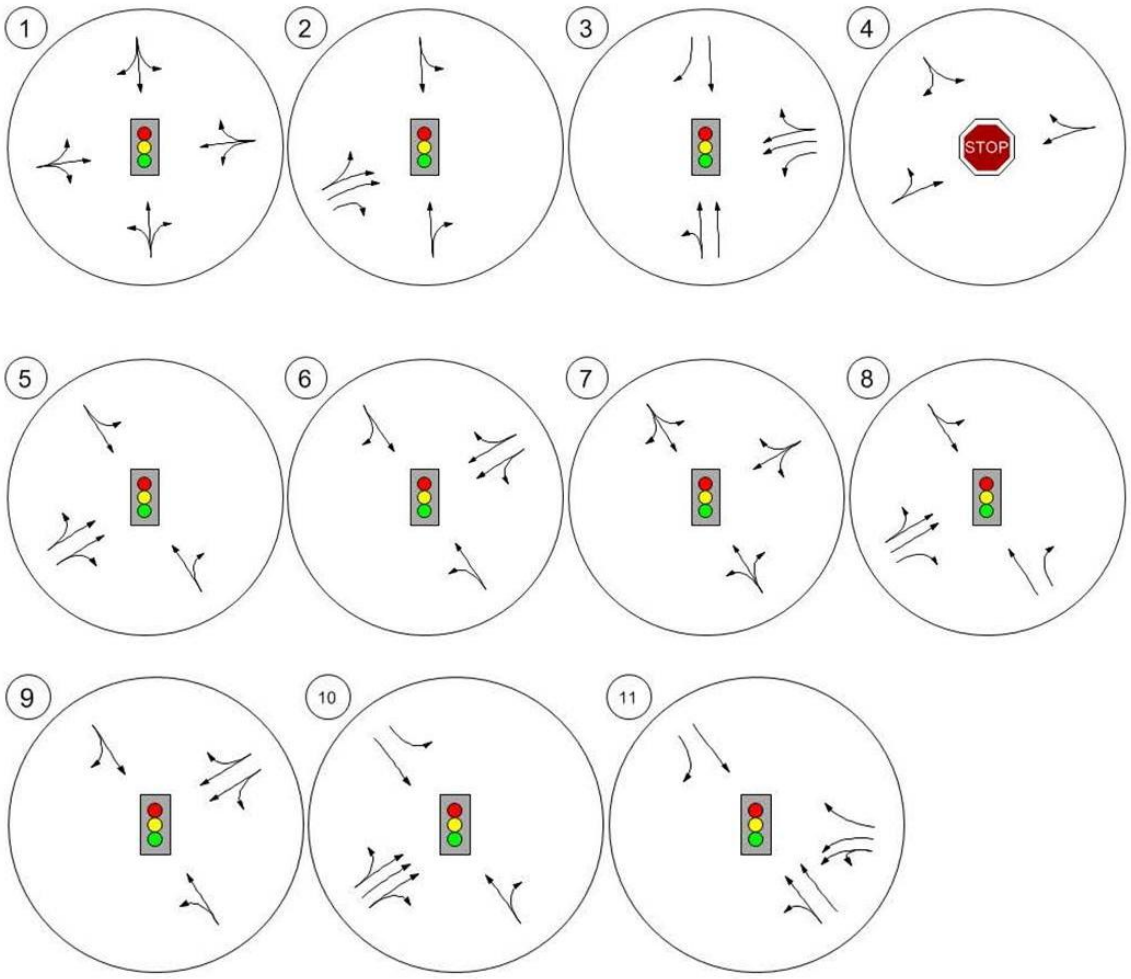


Figure 5: Existing Lane usage and traffic control at study area intersections

Figure 6: Existing AM peak hour volumes at study area intersections

Figure 7: Existing PM peak hour volumes at study area intersections

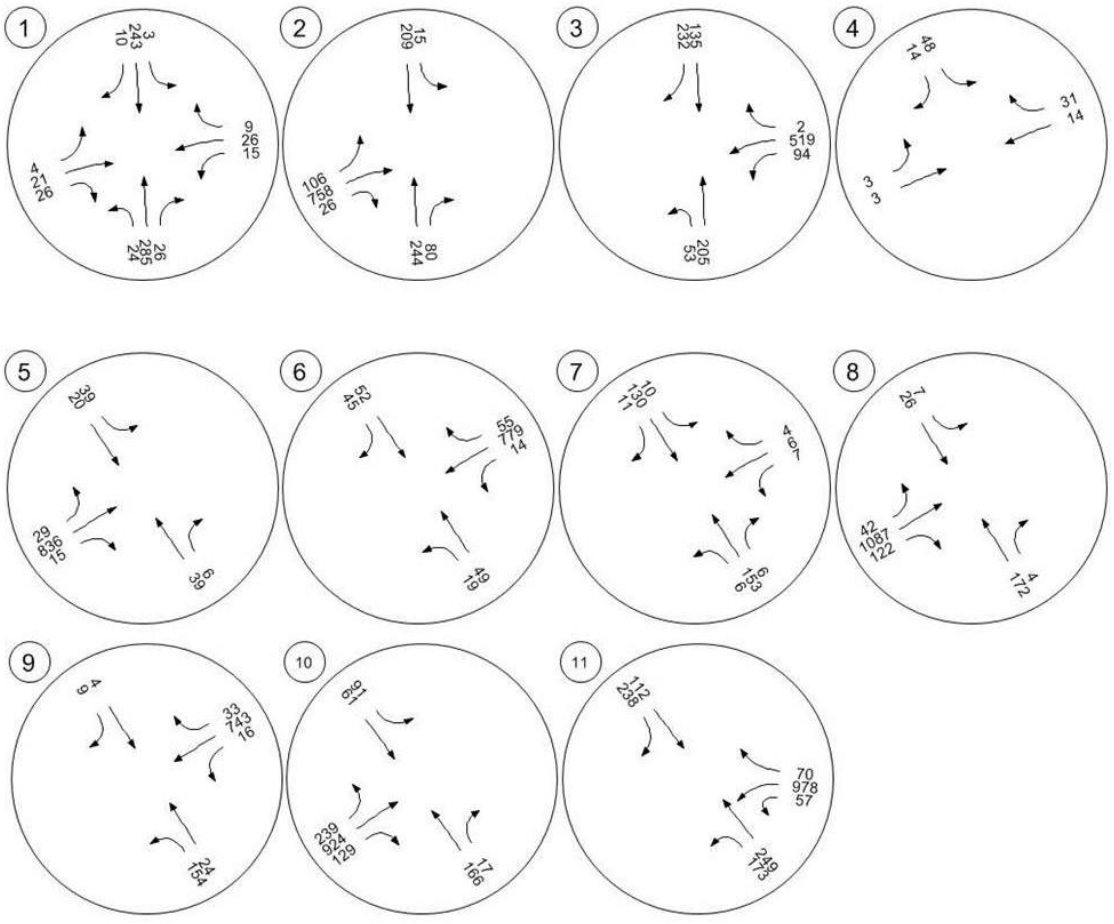


Figure 8: Existing Saturday Peak hour volumes at study area intersections

Based on the substantially lower Saturday peak hour volumes seen on the main east-west and north sound routes through Remington (25-40% lower than the PM peak hours), the remaining analysis will omit *Saturday* peak hour traffic and focus on the *AM* and *PM* peak hours.

Existing Intersection Capacity and Level of Service

The methodology of the Highway Capacity Manual (HCM) was used to evaluate capacity for selected intersections during the AM and PM peak hours. A Synchro traffic model was developed and coded for each peak period with the existing conditions data including roadway geometry, traffic volumes and signal timing and phasing data as inventoried and documented in the field or as provided by Baltimore City.

Performance measures of effectiveness for HCM intersection analysis include level of service, delay and volume-to-capacity ratio. The level of service (LOS) is a letter designation that corresponds to a certain range of roadway operating conditions. The levels of service range from A to F, with A indicating the best operating conditions and F indicating the worst, or a failing, operating condition. The volume-to-capacity ratio (v/c ratio) is the ratio of current flow rate to the capacity of the intersection. This ratio is often used to determine how sufficient capacity is on a given roadway. Generally speaking, a ratio of 1.0 indicates that the roadway is operating at capacity. A ratio of greater than 1.0 indicates that the facility is operating above capacity as the number of vehicles exceeds the roadway capacity. The results of the existing conditions intersection capacity analysis, including average delay per vehicle, are summarized in Table 1.

Table 1: Summary of Intersection Capacity Analysis- Existing Conditions - AM (PM)

Intersection	Existing - AM (PM)		
	LOS	Delay / Veh (sec)	Volume / Capacity Ratio
27th Street at Howard Street	B (C)	12.5 (20)	0.44 (0.54)
28th Street at Howard Street	B (C)	13.5 (20.5)	0.69 (0.85)
29th Street at Howard Street	C (C)	21.8 (23.8)	0.6 (0.5)
27th Street at Remington Avenue	A (A)	7.3 (7.3)	0.1 (0.09)
28th Street at Remington Avenue	B (D)	12.2 (43.2)	0.5 (0.62)
29th Street at Remington Avenue	C (C)	32.9 (25.2)	0.54 (0.47)
27th Street at Huntington Avenue	A (A)	6.8 (8)	0.17 (0.18)
28th Street at Huntington Avenue	C (C)	27.2 (33.1)	0.55 (0.67)
29th Street at Huntington Avenue	B (B)	16.9 (16.4)	0.74 (0.62)
28th Street at Sisson Street	C (C)	21.3 (25.4)	0.66 (0.77)
29th Street at Sisson Street	C (C)	29 (22.5)	0.95 (0.74)

The results of the existing conditions capacity analysis indicate that all intersections are currently operating at a level of service D or better in the AM and PM peak hours.

III. BACKGROUND TRAFFIC CONDITIONS

Background conditions refer to factors that will affect the performance of the transportation network but are not directly related to the subject development, including:

- Planned improvements to the transportation network by the City in the study area
- Growth in existing regional traffic volumes through the study are during the study period, and
- Other planned, approved or current developments in the study area,

Planned Transportation Network Improvements

After a review of the City's Capital Improvement Plan (CIP), no planned transportation improvements are expected between now and the full build-out year.

Growth in Existing Traffic Volumes

Annual growth in regional traffic through the study area was estimated using the prior decade's worth of historical traffic count data collected by the State Highway Administration (SHA) at two locations: Huntingdon Ave, between 27th and 28th and 29th Street between Howard Street and Remington Ave[2]. The prior decade's worth of traffic data, illustrated graphically in the appendix, show declining traffic volume through these two locations. Rather than incorporating negative regional growth into the analysis, the annual increase in regional through-traffic was estimated at 0.5% per year from now until the build-out year.

Background Developments

25th Street Station has been approved for redevelopment as a PUD, and is proposed to be redeveloped as a mixed-use property with retail and apartments. The proposed development is bounded by West 25th Street to the north, Maryland Avenue to the east, West 24th Street to the south, and the CSX Railroad line to the west. Based on conversations with the City's Department of Planning, 25th Street Station is the only known approved development, affecting the study area, that is expected to be completed prior to full build out of Remington Row.

The Institute of Transportation Engineer (ITE) Trip Generation Manual, 9th Edition, was utilized to estimate the vehicle trips generated by the development. The manual is an ever-growing collection of site-generated traffic data for myriad land uses. The manual was used to estimate trips generated by each land use of the 25th Street Station. The Approved PUD for the development includes:

- 86, 000 square feet of undisclosed retail for Site II (ITE land use code 820 "Shopping Center")
- Walmart:
  - 35,0000 square feet "Discount Supermarket" (ITE land use code 854)
  - 52,000 square feet "Free Standing Discount Store" (ITE land use code 815
- 146,000 square feet Home Improvement Superstore" (ITE land use 862)
- 72 Apartments (ITE land use code 220)

The ITE data is largely derived from suburban vehicle-accessible locations. To account for the setting of 25th Street Station within a grid street network in an urban setting with walkable streets and transit access, reduction factors were applied to the ITE trip generation data. For example, retail-based trips and apartment-based trips were discounted by 5% and 10%, respectively, to account for bus/walking trips[3]. Similarly, to account for the fact that apartments were included in the mixed-use development, *internal capture* would reduce vehicle trips to retail establishments by 5%. Based on the Census's 2008-2012 American Commuter Survey, the apartment land use is expected to see a 10% reduction in AM and PM vehicle trips, as residents in the 21211 zip code have a 10% higher non-vehicle commuting mode share than Maryland as a whole. Finally, the ITE trip generation manual provides estimates for pass-by trips – these are trips that are generated by the site, *but are not new trips to the road network* (e.g. a commuter who is on their way, but stops at the grocery store for dinner). The ITE trip generation manual has developed well-sourced pass-by rates for multiple land uses. The pass-by rates – applied in the PM peak hour only – are:

- ITE 815, Free Standing Discount Store – 17%
- ITE 854, Discount Supermarket – 23%
- ITE 862, Home Improvement Superstore – 48%

[2] SHA's Internet Traffic Monitoring System (I-TMS), 3 year program counts, 2002-2014
[3] No trip reductions were made for walking/bussing to the proposed Home Improvement Superstore

- ITE 820, Shopping Center – 54%

Based on the above assumptions, the approved 25th Street Station PUD is anticipated to generate 512 AM peak hour trips and 870 PM peak hour trips, as detailed in the following table.

Table 2: Trip generation estimation for 25th Street Station

Land Use	Size	Traffic Impact AM		Traffic Impact PM	
		Entry	Exit	Entry	Exit
820 - Shopping Center		88	54	260	282
Transit/Walk Reduction	86,000 Sq. Feet	4	3	13	14
Internal Capture	Gross Leasable	1	0	1	2
Pass-by	Area	0	0	133	143
Non-pass-by		83	51	113	123
220 - Apartment		8	31	37	20
Reduction	72 Dwelling Units	*1*	*3*	*4*	*2*
Internal		*0*	*3*	*6*	*3*
Pass-by		*0*	*0*	*0*	*0*
Non-pass-by		7	25	27	15
815 - Free-Standing Discount Store		37	18	130	129
Transit/Walk Reduction	52,000 Sq. Feet	*2*	*1*	*6*	*6*
Internal Capture	Gross Floor	*3*	*1*	*1*	*2*
Pass-by	Area	*0*	*0*	*21*	*20*
Non-pass-by		32	16	102	101
854 - Discount Supermarket		52	37	146	146
Transit/Walk Reduction	35,000 Sq. Feet	*3*	*2*	*7*	*7*
Internal Capture	Gross Floor	*2*	*2*	*1*	*2*
Pass-by	Area	*0*	*0*	*32*	*31*
Non-pass-by		47	33	106	106
862 - Home Improvement Superstore		124	94	167	173
Transit/Walk Reduction	146,000 Sq. Feet	*0*	*0*	*0*	*0*
Internal Capture	Gross Floor	*0*	*0*	*0*	*0*
Pass-by	Area	*0*	*0*	*80*	*83*
Non-pass-by		124	94	87	90
Total		309	234	740	750
Total Transit/Walk Reduction		*10*	*9*	*30*	*29*
Total Internal Capture		*6*	*6*	*9*	*9*
Total Pass-by		*0*	*0*	*266*	*277*
Total New Non-pass-by Trips		**293**	**219**	**435**	**435**

The distribution of background trips and affected intersections can be seen in the following figure. The distribution of site traffic for the 25th Street Station is based on the current distribution of inbound and outbound traffic counts entering and leaving the study area along the major arterials surrounding the study area. The distribution of trips is summarized as follows:

- From the East: 25% will enter the study area from 29th Street and exit via 28th Street.
- From the West: 30% will enter the study area from 28th Street and exit via 29th Street.
- From the North: 15% will enter and exit the study area from Howard Street, while 10% will enter and exit via Remington Street.

- From the South: 20% will enter and exit the study area from Howard Street.

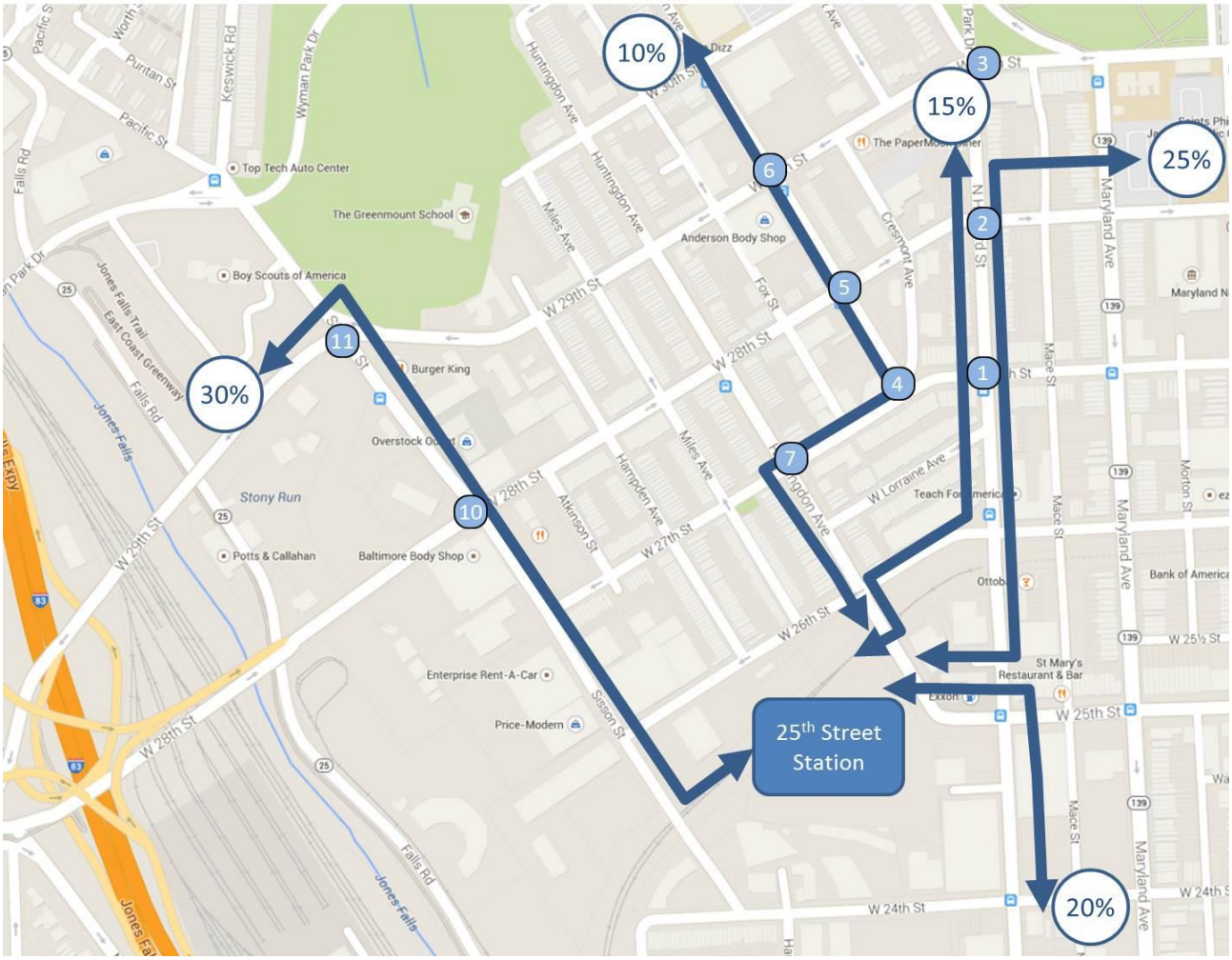
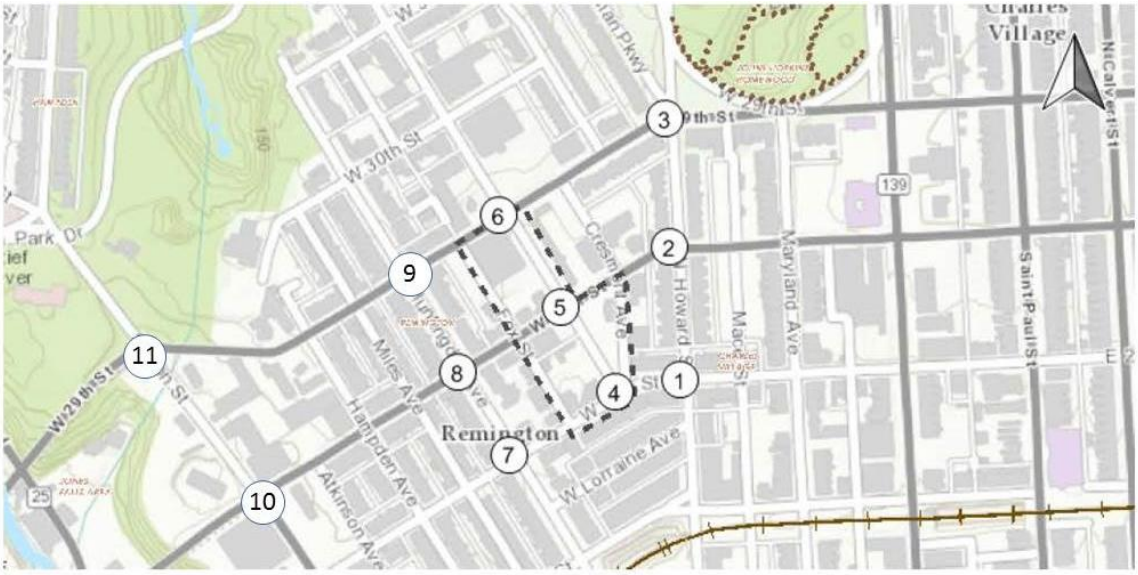


Figure 9: Distribution of Background Trips and Intersections affected by 25th Street Station

Figure 10 and Figure 11 show the additional background traffic added to the existing traffic in the study area from 25th Street Station.



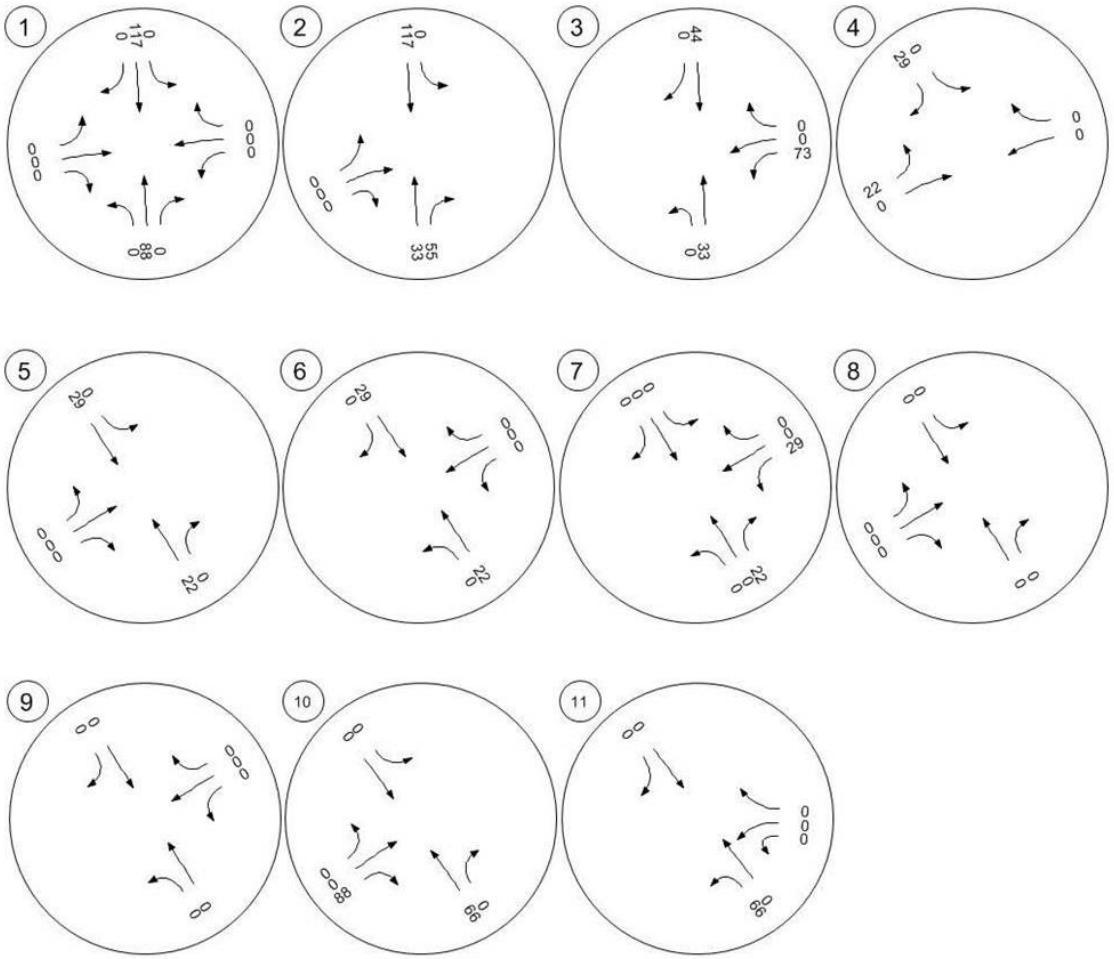
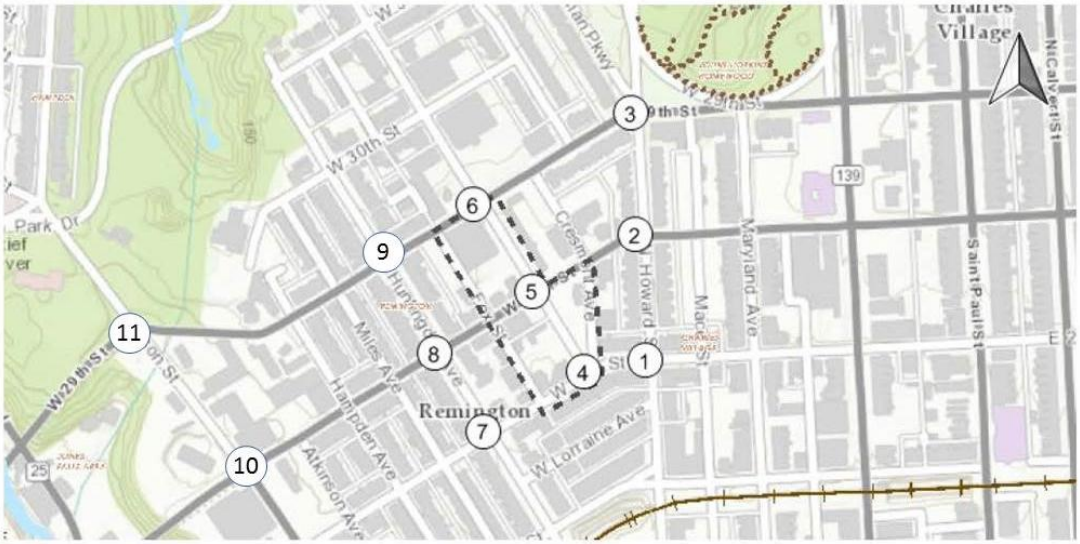


Figure 10: Background trips added to the Site Area intersections in the AM peak hour

Figure 11: Background trips added to the Site Area intersections in the PM peak hour

Figure 12 and Figure 13 show the future year AM and PM peak hour future year traffic conditions without the Remington Row development – assuming the ½% yearly increase in regional through traffic and the new trips associated with the 25th Street Station development.



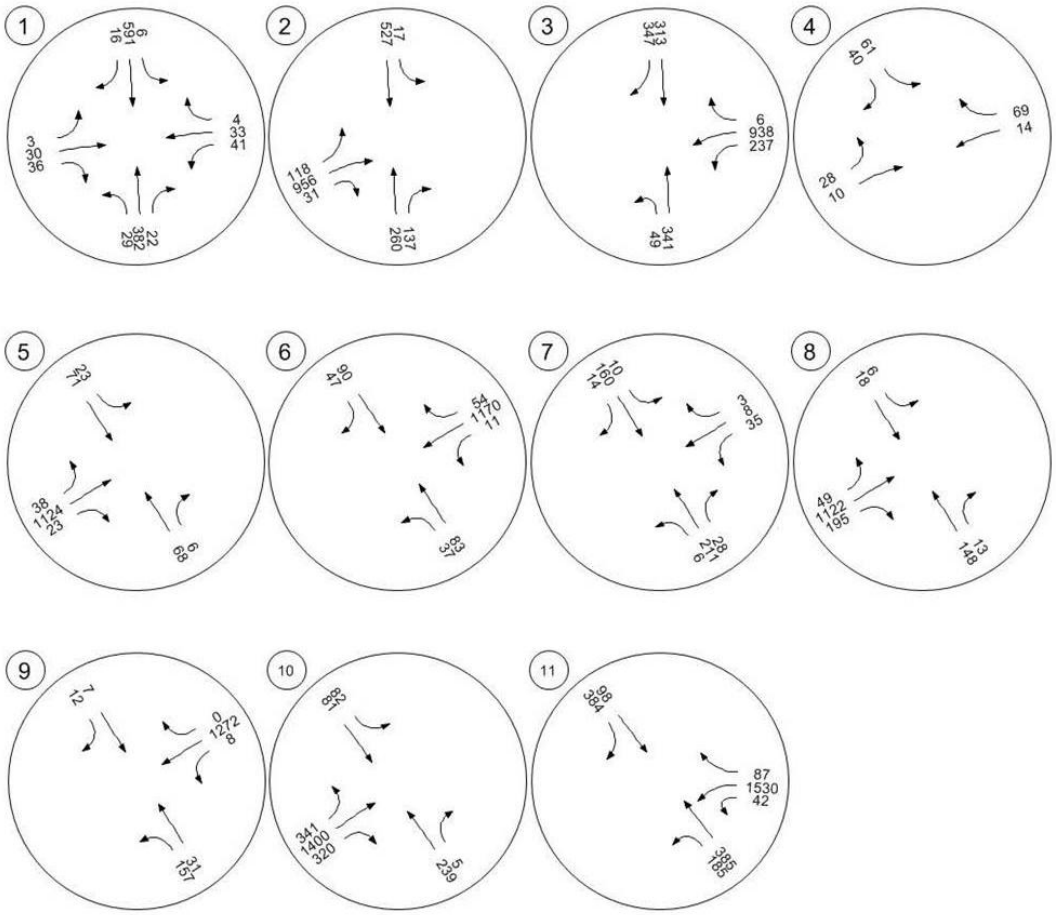


Figure 12: Total AM Background Conditions - with inclusion of 25th Street Station traffic

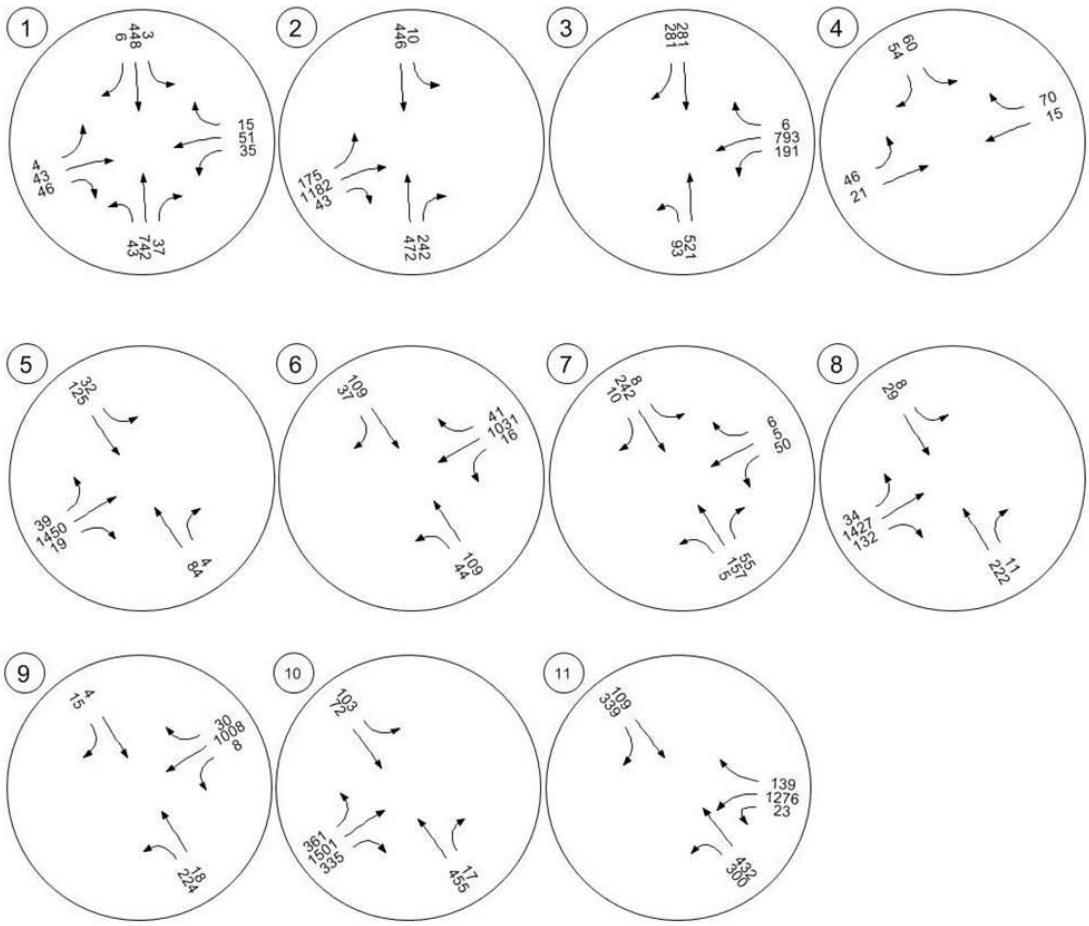


Figure 13: Total PM Background growth - with inclusion of 25th Street Station traffic

Background Intersection Capacity and Level of Service

A capacity analysis was performed for the background condition, where background trips from 25th Street Station were added into existing trips to determine the future background congestion levels, absent the Remington Row development. The results of this background conditions capacity analysis are summarized in Table 3.

Table 3: Summary of Intersection Capacity Analysis – Background Conditions

Measures of Effectiveness			
Intersection	Background - AM (PM)		
	LOS	Delay / Veh (sec)	Volume / Capacity Ratio
27th Street at Howard Street	B (D)	13.9 (40)	0.56 (0.69)
28th Street at Howard Street	B (D)	16.4 (37.8)	0.78 (1.04)
29th Street at Howard Street	C (C)	23.7 (24.7)	0.63 (0.58)
27th Street at Remington Avenue	A (A)	7.3 (7.5)	0.1 (0.1)
28th Street at Remington Avenue	B (E)	13.5 (62.1)	0.54 (0.68)
29th Street at Remington Avenue	C (C)	34.1 (27.3)	0.59 (0.53)
27th Street at Huntington Avenue	A (B)	8.5 (10)	0.21 (0.21)
28th Street at Huntington Avenue	C (C)	28 (32.9)	0.57 (0.7)
29th Street at Huntington Avenue	B (B)	20 (16.4)	0.77 (0.65)
28th Street at Sisson Street	C (D)	23.7 (41.7)	0.74 (1)
29th Street at Sisson Street	C (C)	33.2 (25.8)	0.99 (0.85)

The results of the background conditions capacity analysis indicate that with additional traffic from the background development, the intersection of 28th Street and Remington Avenue will have an LOS E in the PM peak hour.

IV. FUTURE CONDITIONS

Proposed Development

Per the approved PUD, Remington Row is proposed to be developed in three phases:

1. Area A, 2700 Remington Ave – to be Completed in 2017
    a. 35,000 square feet of office
    b. 15,000 square feet of retail
    c. 108 apartment dwelling units
2. Area B, 2810 Remington Ave – to be Completed in 2019
    a. 10,000 square feet of office
    b. 15,000 square feet of retail
    c. And/or up to 40,0000 square feet of permitted use, per the approved PUD
3. Area C, 211 West 28th Street – to be Completed in 2026
    a. 3,000 square feet of retail

Projected Site Traffic Volumes

Projecting the number of new vehicular trips generated by a proposed development is the most critical aspect of assessing traffic impact. The objective of a trip generation analysis is to forecast the number of new trips that will begin or end at a proposed land use. A primary source for data on vehicular trip generation is the *Trip Generation Handbook* published by the Institute of Transportation Engineers. The *Handbook* compiles

data from numerous studies of trip rates at hundreds of specific types of land uses such as recreational, residential, commercial, office, institutional, and industrial throughout the country. The data is sorted by various time periods such as morning and evening peak hour, and plotted against independent variables for specific land uses such as square feet of commercial space, number of hotel rooms, number of dwelling units, etc. The data is presented in chart format with mean averages, standard deviations, and fitted curve linear regression equations, where enough data is available.

Several site-specific factors can reduce the number of new personal vehicular trips generated by a new development or land use. These include 1) the availability of non-vehicular modes of transportation such as sidewalks, bicycle facilities, and public transportation; 2) the effect of pass-by traffic which includes vehicles already on the roadway network making an intermediate stop on the way from an origin to a primary trip destination without a route diversion, and 3) the effect of internally captured trips composed of traffic originating and destined for differing land uses *within* the same development that do not travel on the external public roadway network. An example of an internal trip would be a trip from an office building to a restaurant or from a hotel to an office building within the same development.

Using the ITE Trip Generation Manual, 9th Edition (2012), baseline peak hour trip generation rates were determined based on the future land uses. The average number of vehicle trip ends and percentage of entering and exiting volumes were calculated. Land use categories, 220 (apartments), 710 (Office) and 820 (Retail- shopping center) were selected and 850 (supermarket - for the 40,000 square feet of undefined space permissible in the PUD).

Internal capture and non-auto discount rates were developed for each land use based on the type of retail (neighborhood serving versus regional, the amount and cost of parking, the integration of the project into the existing street grid, and Census's *2008-2012 American Commuter Survey*. Based on the census survey, the apartment land use is expected to see a 10% reduction in AM and PM vehicle trips, as residents in the 21211 zip code have a 10% higher non-vehicle commuting mode share than Maryland as a whole. Similarly, an additional 5% of AM and PM retail/grocer trips are expected to be non-vehicular based on their site layout within an established grid network of streets. Finally, a 5% internal capture estimation was used for AM and PM trips between new apartments and the retail/grocery land use. In addition, a 54% and 34% pass-by trip reduction factor, based on ITE guidelines, was also applied for retail uses – shopping center and supermarket, respectively, *but only in the PM peak hour*. For the Saturday peak hour, a 38% pass-by trip percentage was utilized, per ITE, for the shopping center land use only.

Error! Not a valid bookmark self-reference. below shows the site generated trips for the proposed development at full build-out.

Table 4: Site Generated Trips

Land Use	Size	Traffic Impact AM		Traffic Impact PM	
		Entry	Exit	Entry	Exit
820 - Shopping Center	33,000 Sq. Feet Gross Leasable Area	49	30	137	148
Reduction		*2*	*1*	*7*	*7*
Internal		*2*	*1*	*1*	*2*
Pass-by		*0*	*0*	*70*	*75*
Sub-total Non-pass-by		45	28	59	64
710 - General Office Building	45,000 Sq. Feet Gross Floor Area	89	12	22	107
Reduction		*0*	*0*	*0*	*0*
Internal		*0*	*0*	*0*	*0*
Pass-by		*0*	*0*	*0*	*0*
Sub-total Non-pass-by		89	12	22	107
220 - Apartment	108 Dwelling Units	18	43	49	31
Reduction		*2*	*4*	*5*	*3*
Internal		*2*	*4*	*4*	*2*
Pass-by		*0*	*0*	*0*	*0*
Sub-total Non-pass-by		14	35	40	26
850 - Supermarket	40,000 Sq. Feet Gross Floor Area	147	136	174	161
Reduction		*7*	*7*	*9*	*8*
Internal		*2*	*1*	*1*	*2*
Pass-by		*0*	*0*	*59*	*54*
Sub-total Non-pass-by		138	128	105	97
Total Trip before trip reduction		303	221	382	447
Total Reduction from non-vehicular modes		*11*	*12*	*21*	*18*
Total Internal capture		*6*	*6*	*6*	*6*
Total Pass-by trip reduction		*0*	*0*	*129*	*129*
Total Non-pass-by		**286**	**203**	**226**	**294**

Existing Site Trips

The project site is currently improved with retail and some commercial uses. Because the associated buildings are to be replaced, trips originating are subtracted from the new site generated trips in the previous table to obtain the final net trip generation. Existing trips were counted for the AM and PM peak hours at driveways serving the affected sites and are shown in the figure below. The current land uses – autobody shop and convenience store – generated the following total trips.

Table 5: Existing Site trips from current uses

Time Frame	Entering the Site Area	Exiting the Site Area	Total Trips
AM Peak Hour	59	54	113
PM Peak Hour	40	46	86

These trips were subtracted from the proposed Remington Row Development to obtain the net trip generation, shown in the following table.

Table 6: Net Trip Generation for Remington Row

Time Frame	Entering the Site Area	Exiting the Site Area	Total Trips
AM Peak Hour	227	163	390
PM Peak Hour	186	248	434

The net site trip generation is expected to be 389 AM peak hour trips, 447 PM peak hour trips, and 770 Saturday peak hour trips added the study area.

Distribution and Assignment of Site Trips

Distribution of site trips to and from the subject development is based on existing traffic patterns, land uses within the site, and access points to the proposed development and its parking facilities.
The trip distribution for the development is shown graphically in Figure 14.

Figure 14: Distribution of Retail Trips to and from the Site

Based on the amount of parking 1/3rd of all site trips were assigned to the single Remington Ave driveway between 28th and 29th Streets, while the remaining 2/3rd were assigned to the 27th and 28th Street driveway as follows:

- All trips from the west
  - North Site: enter the Remington driveway from 28th Street and exit the Remington Driveway to northbound Remington and west on 29th Street.

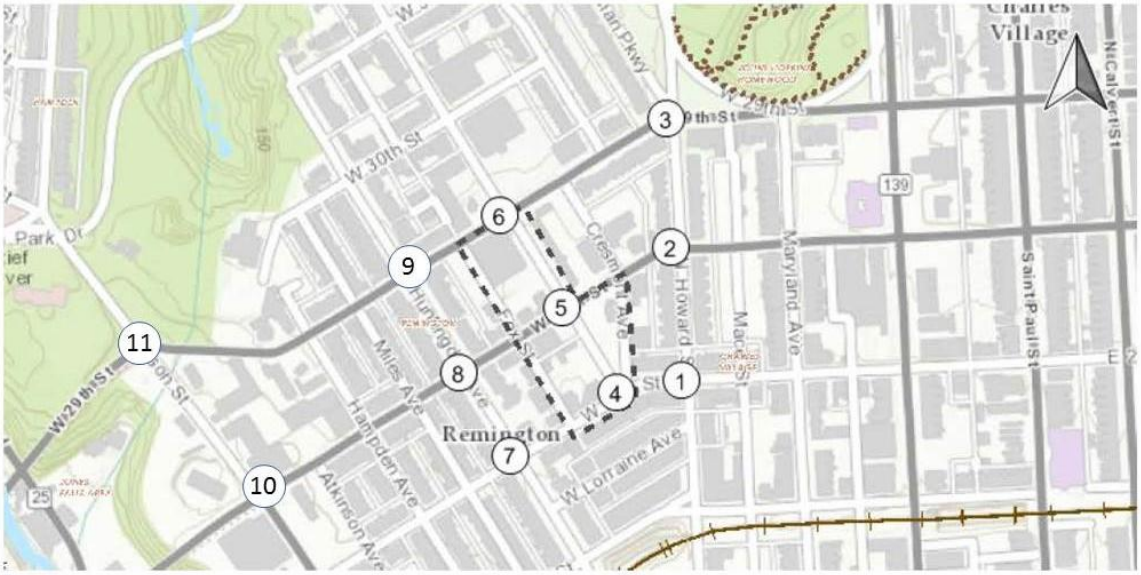
    - South Site: enter the 28th Street driveway and exit the 28th Street driveway to northbound Remington and west on 29th Street. All trips from the north/south/east entered the 27th Street driveway and exited the 28th Street driveway.
- All trips from the North and East
    - North Site: enter the Remington driveway from 29th Street and exit the Remington Driveway to southbound Remington and east on 28th Street to North Howard Street.
    - South Site: enter the 27th Street driveway from Howard Street and exit the 28th Street driveway toward Howard Street.
- All trips from the South
    - North Site: enter the Remington driveway from 27th Street and exit the Remington Driveway to southbound Remington and east on 27th Street to North Howard Street.
    - South Site: enter the 27th Street driveway from Howard Street and exit the 27th Street driveway toward Howard Street.

Figure 15 and Figure 16 show the new trips added to the study area from Remington Row in the AM and PM peak hour, respectively.

Figure 15: AM net Site Trip generation from Remington Row

Figure 16: PM net Site Trip generation from Remington Row

The AM and PM site generated trips were added to the background conditions to determine the 2026 full build-out traffic conditions in the study area. These intersection volumes under *total future* conditions are shown for the AM and PM peak hours in Figure 17 and Figure 18, respectively.



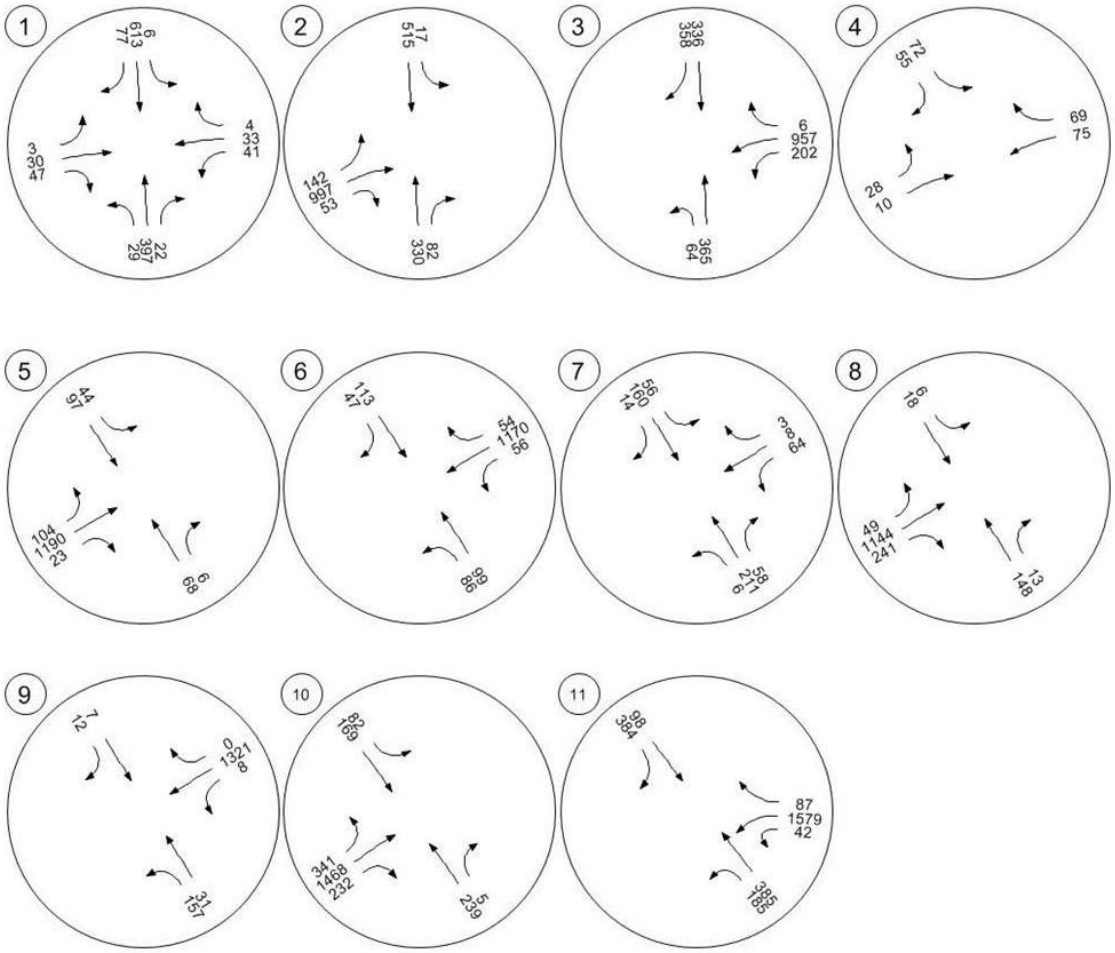


Figure 17: Total Future AM peak hour traffic in the study area

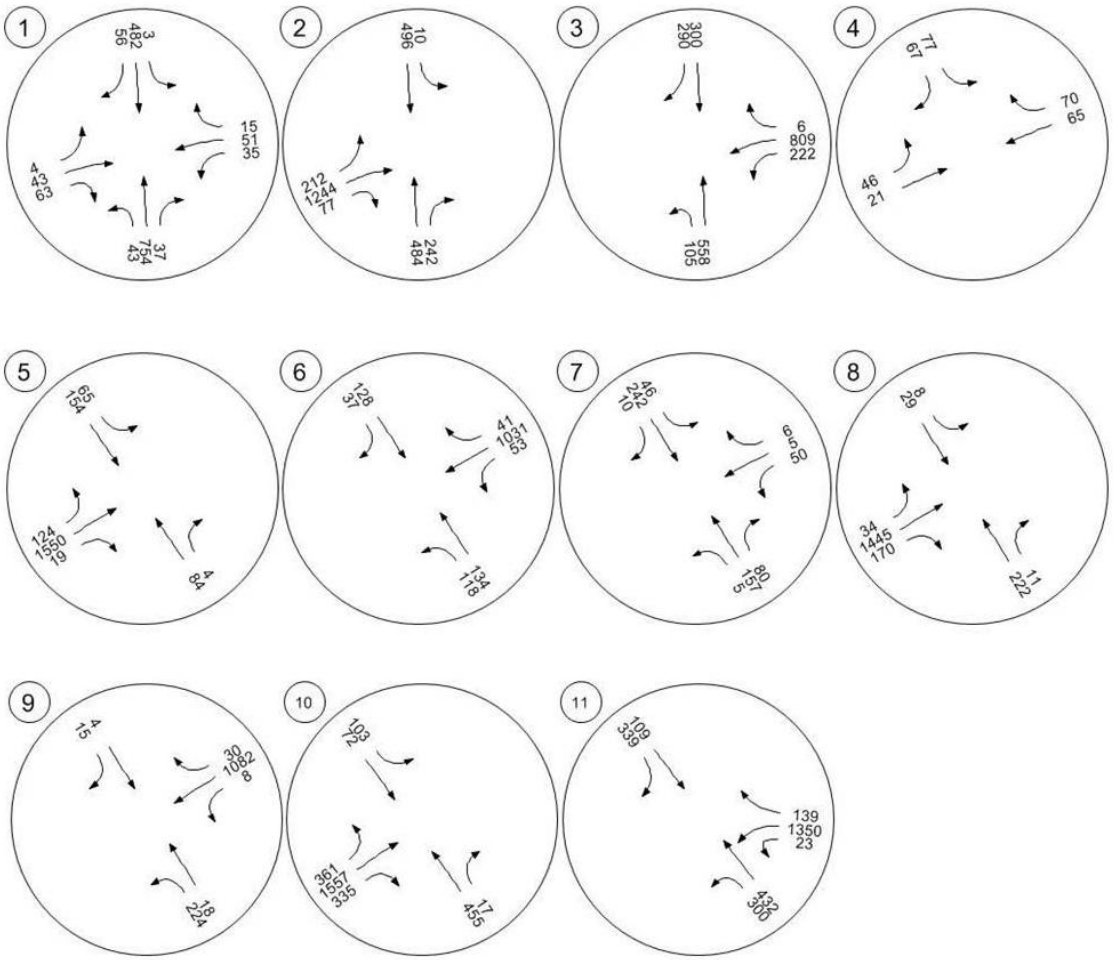


Figure 18: Total Future PM peak hour traffic in the study area

A capacity analysis was performed for the total future 2026 conditions. Results for the intersections on the site peninsula are summarized in Table 7 while results for other intersections in the study area will be included in a subsequent memorandum.

Table 7: Summary of Intersection Capacity Analysis – Future Conditions

Intersection	Future - AM (PM)		
	LOS	Delay / Veh (sec)	Volume / Capacity Ratio
27th Street at Howard Street	B (D)	19.9 (42.6)	0.64 (0.7)
28th Street at Howard Street	C (E)	33.2 (59.1)	0.96 (1.09)
29th Street at Howard Street	C (C)	24.6 (24.9)	0.66 (0.62)
27th Street at Remington Avenue	A (A)	8 (7.9)	0.23 (0.13)
28th Street at Remington Avenue	B (F)	16 (114.1)	0.64 (0.81)
29th Street at Remington Avenue	C (C)	35 (28.8)	0.66 (0.66)
27th Street at Huntington Avenue	A (B)	4.1 (10)	0.16 (0.25)
28th Street at Huntington Avenue	C (C)	28.5 (32.8)	0.62 (0.71)
29th Street at Huntington Avenue	C (B)	24.6 (18.9)	0.79 (0.68)
28th Street at Sisson Street	C (D)	31.4 (43.9)	0.84 (1.02)
29th Street at Sisson Street	C (C)	28.6 (25.9)	0.96 (0.88)

The results of the future conditions capacity analysis indicate that with the addition of traffic from the proposed development, all the intersections operate an acceptable LOS, with the exception of the intersection of 28th Street and Remington Ave, which has an LOS F in the PM peak hour, and the intersection of 28th Street and Howard Street which has a LOS E in the PM peak hour.

Site Access Operations

Site Driveway Sight Distance

A review of the proposed driveways show two new driveways on Remington Ave that will replace and consolidate existing full movement driveways, along with 2 new driveways – one 27th Street 120 feet west of Remington Ave and another on 28th Street 120 feet west of Remington Ave. In addition, 4 reverse angle parking spots are proposed on private space accessible from Fox Street. Because Fox Street is one-way northbound, vehicles will have to reverse into the angled parking. In addition, multiple driveways along Remington Ave, including the east-west alley between Fox Street and Remington Ave, will be closed.

Proposed driveways that are replacing existing driveways will have the same sight distance constraints/limitations that exist presently. The new proposed driveways along 27th and 28th Streets will have the same sight distance constraints/limitations that exist for the north-south public alleys that run between 27th and 28th.

Site Driveway Placement Vehicle Queuing

Vehicle queuing was evaluated along streets where driveways are proposed as new or to replace existing access points. 95% queues were evaluated in the future build-out condition. As shown in Figure 19 and Figure 20, respectively, the AM and PM queues do not spill back to the proposed site driveways.

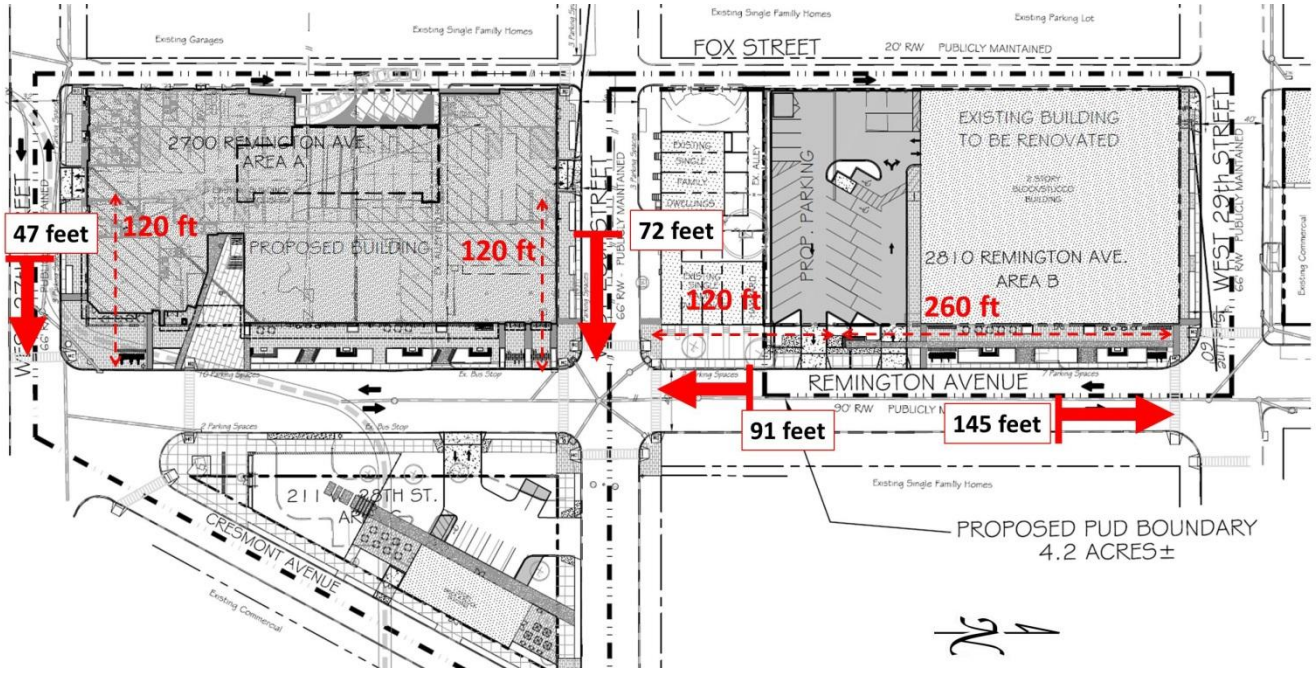


Figure 19: AM queue lengths at select intersections

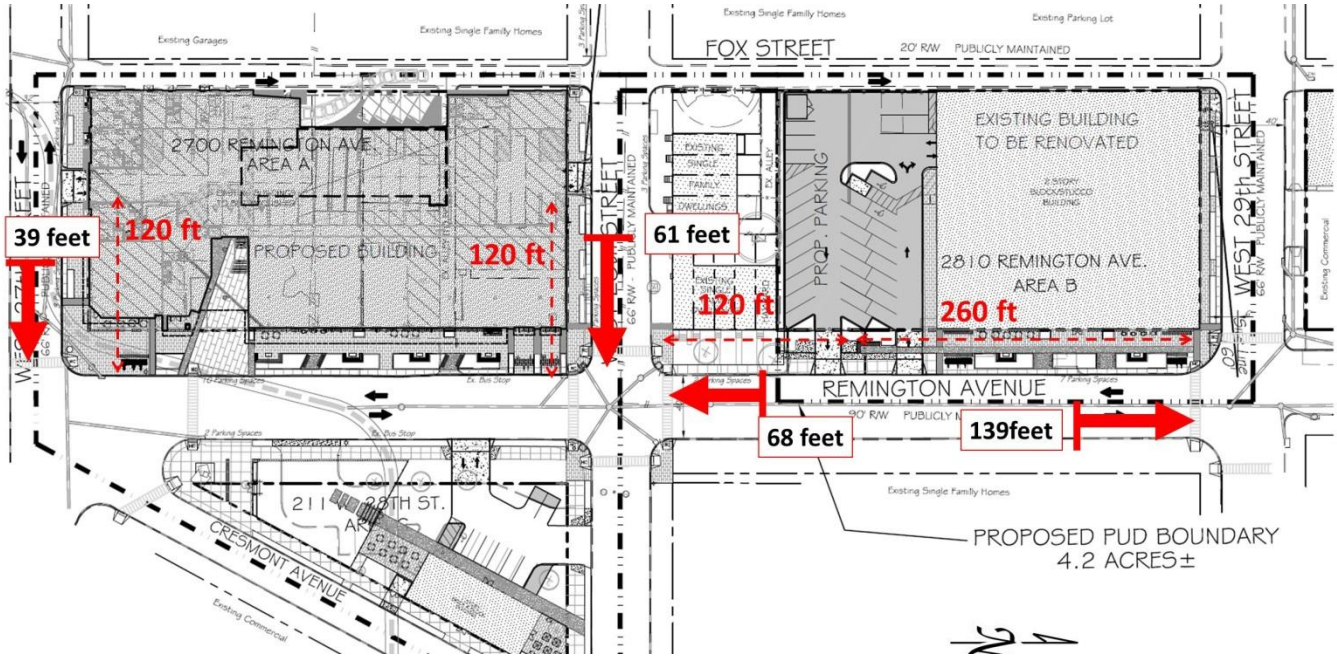


Figure 20: PM queue lengths at select intersections

V. SUMMARY

The following summary of findings is based on the analysis and observations presented in the report:

- No intersections in the study area fail in the *Existing* conditions.
- The intersection of 28th Street and Remington Ave will fail (level of service E) in the Background conditions.
- The intersection of 28th Street and Remington Avenue, and the intersection of 28th Street and Howard Street will fail (level of service F and E, respectively) in the *Future* conditions (year 2026 Full Build-out).