

2321 4TH STREET
Washington, DC

TRAFFIC IMPACT STUDY
June 5, 2012

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Board of Zoning Adjustment
District of Columbia
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EXHIBIT NO.26E

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INTRODUCTION

The following report is a Transportation Impact Study (TIS) prepared for the development of 2321 4th Street Northeast, Washington, D C. The subject property is located in the District's Ward 5 Edgewood Community. Figure 1 illustrates the general location of the site and neighborhood context

The 2321 4th Street LLC¹, proposes to develop 2321 4th Street to include 155 to 160 affordable housing units with space for building management and a maximum of 5,224 square feet of neighborhood service oriented retail. The development will provide 43 parking spaces and is planned to be complete by the third quarter of 2014. Figure 2 shows an illustration of the existing site and surrounding road network.

The residential/retail development project will be seeking relief from the Board of Zoning Adjustment ("BZA") in the following transportation-related areas:

- Reducing the number of required off-street parking spaces from 87 to 43
- Reducing the loading berth from 1 at 55 feet to 1 at 30 feet.
- Reducing the loading berth vertical clearance from 14 feet to 12 feet.

The purpose of this traffic study is to evaluate the transportation and traffic impacts associated with the development of the subject site.

Scope of Study

This TIS was conducted in accordance with the District Department of Transportation scope requirements. A scoping meeting was held on May 2, 2012 with the developer and District Department of Transportation (DDOT) to discuss study area, parameters and methodology. The following signalized intersections have been included in this report:

- 1 4th Street / Bryant Street
- 2 4th Street/ Rhode Island Center (herein Shopping Center)
3. 4th Street/ Rhode Island Avenue
- 4 5th Street/ Rhode Island Avenue
- 5 Shopping Center/ Rhode Island Avenue

Figure 3 shows the TIS study area intersections in relation to the 2321 4th Street site

¹ Comprised of H Street Investment Corporation (a wholly owned subsidiary of H Street Community Development Corporation) and E&G Group

Study Methodology

Capacity analyses were conducted for three scenarios including Existing Conditions (2012), Future 2015 No-Build and Future 2015 Build³. The Highway Capacity Manual 2000 (HCM) methodology was employed through SYNCHRO version 7.0 for all Level of Service (LOS) analysis.

³ Per DDOT Guidelines, the planning horizon year for conducting future conditions traffic analysis is defined as one year after occupancy of the project.

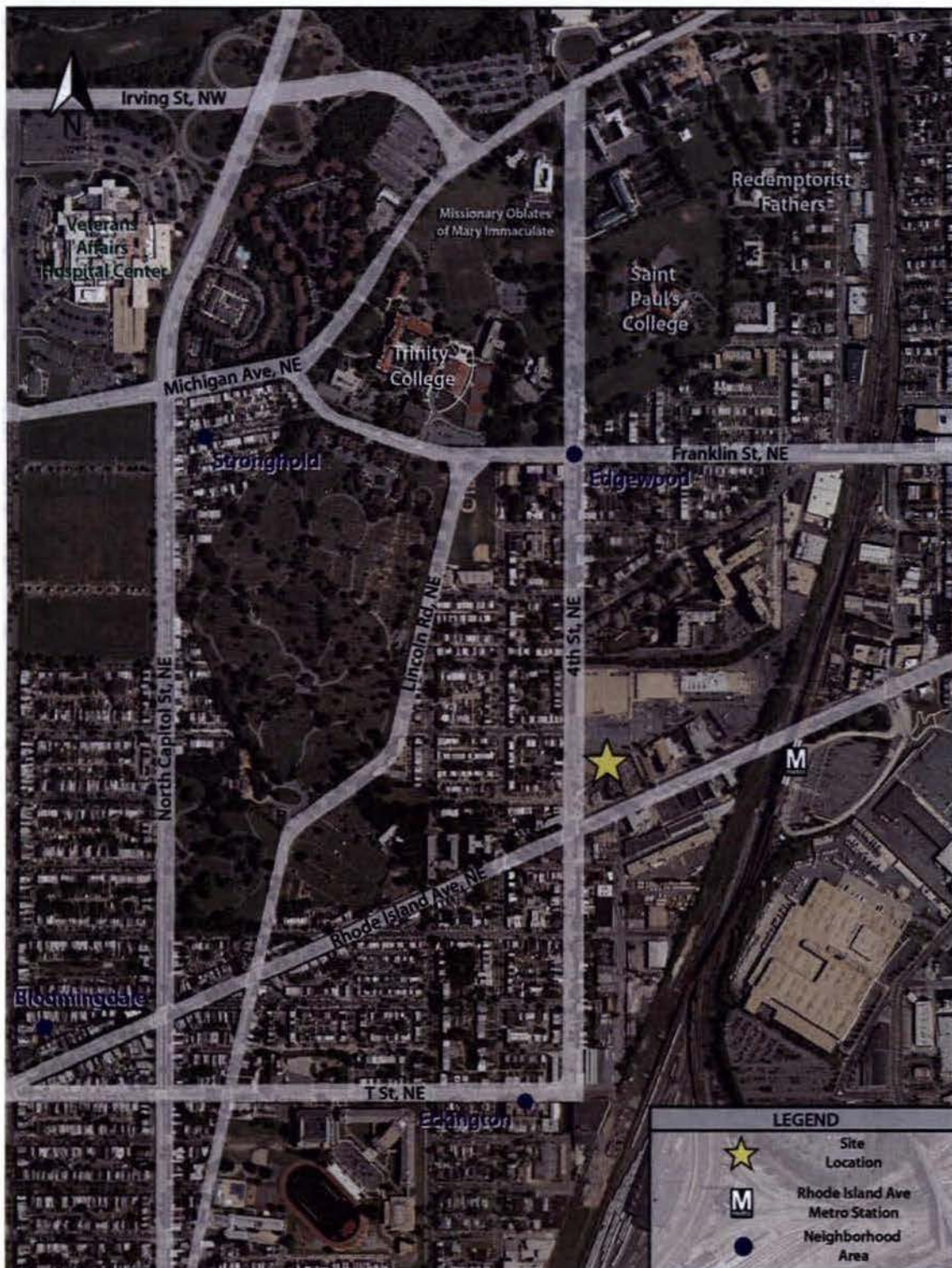


Figure 1: Site Location and Regional Context

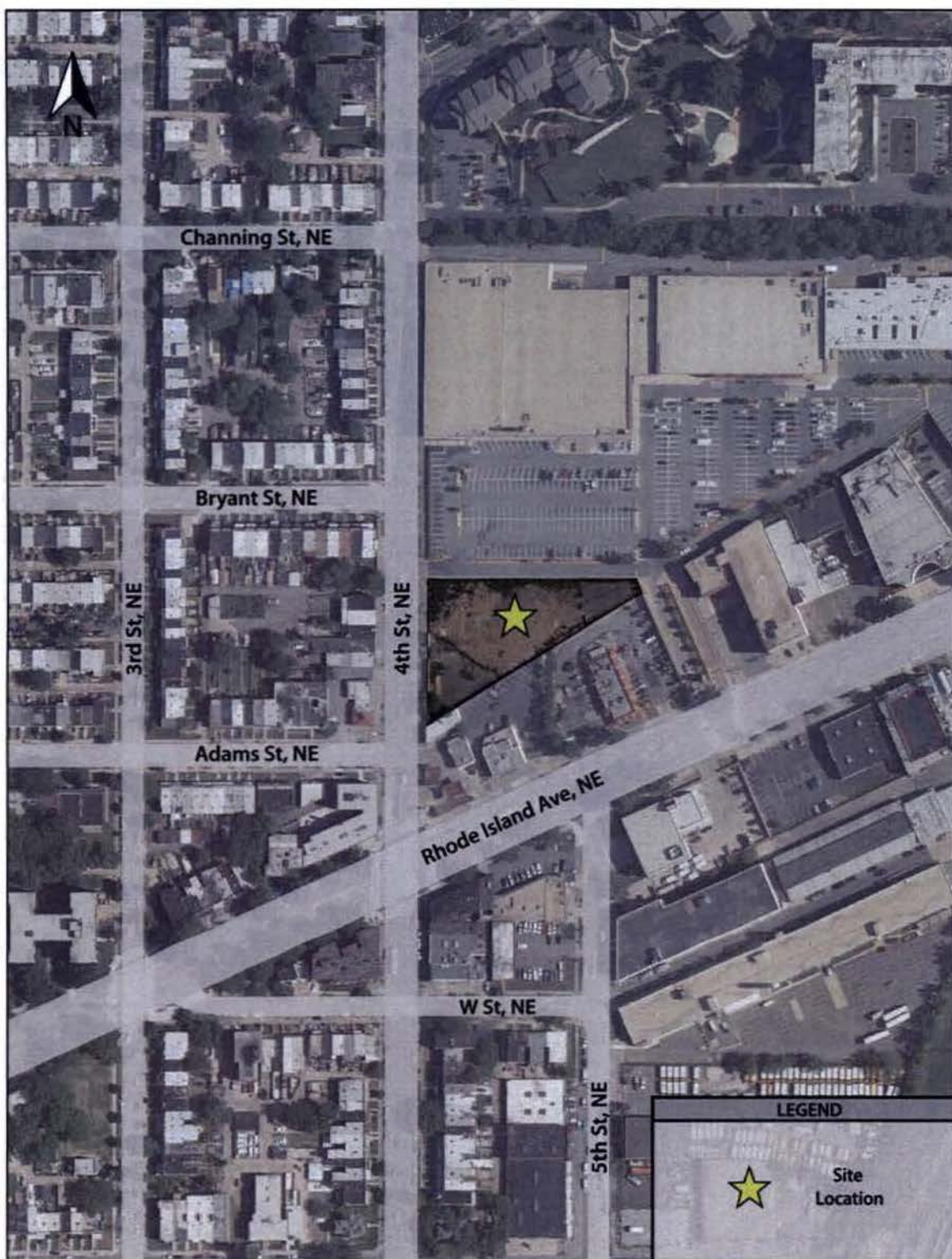


Figure 2: Existing Site and Surrounding Roadway Network



Figure 3: Study Area Intersections

EXISTING CONDITIONS

Existing Roadway Network

Regional access to 2321 4th Street is provided via Rhode Island Avenue, NE, North Capitol Street and Michigan Avenue, NE. Local access is provided by 4th Street, NE. The following section includes a description of the study area roadways

- 4th Street, NE is classified as an Urban Minor Arterial, north of Rhode Island Avenue, and transitions to a Collector south of Rhode Island Avenue⁴. The roadway serves 12,300 vehicles per day and the speed limit is 25 miles per hour. Bike lanes are provided along the northbound and southbound side of the Street between T Street, NE and Lincoln Road, NE.
- Rhode Island Avenue, NE is a Principal Arterial carrying 38,000 vehicles per day, west of 4th Street, and 35,900 vehicles per day, east of 4th Street. The arterial serves as a major east-west commuter thoroughfare extending from Prince Georges County, Maryland (to the east where it transitions into US Route 1) through the District to the merger with Connecticut Avenue, NW and M Street, NW. The typical cross section provides six travel lanes with a raised median, turn lanes and sidewalks. Curbside parking is limited and rush hour restrictions are in place along the majority of the roadway. The speed limit is 30 miles per hour.
- Bryant Street, NE is a local two-lane residential street with curb parking permitted along both sides. The speed limit is 25 miles per hour.

Figure 4 illustrates existing lane configuration and traffic control measures at each study area intersection

⁴ Per District Department of Transportation Functional Classification System

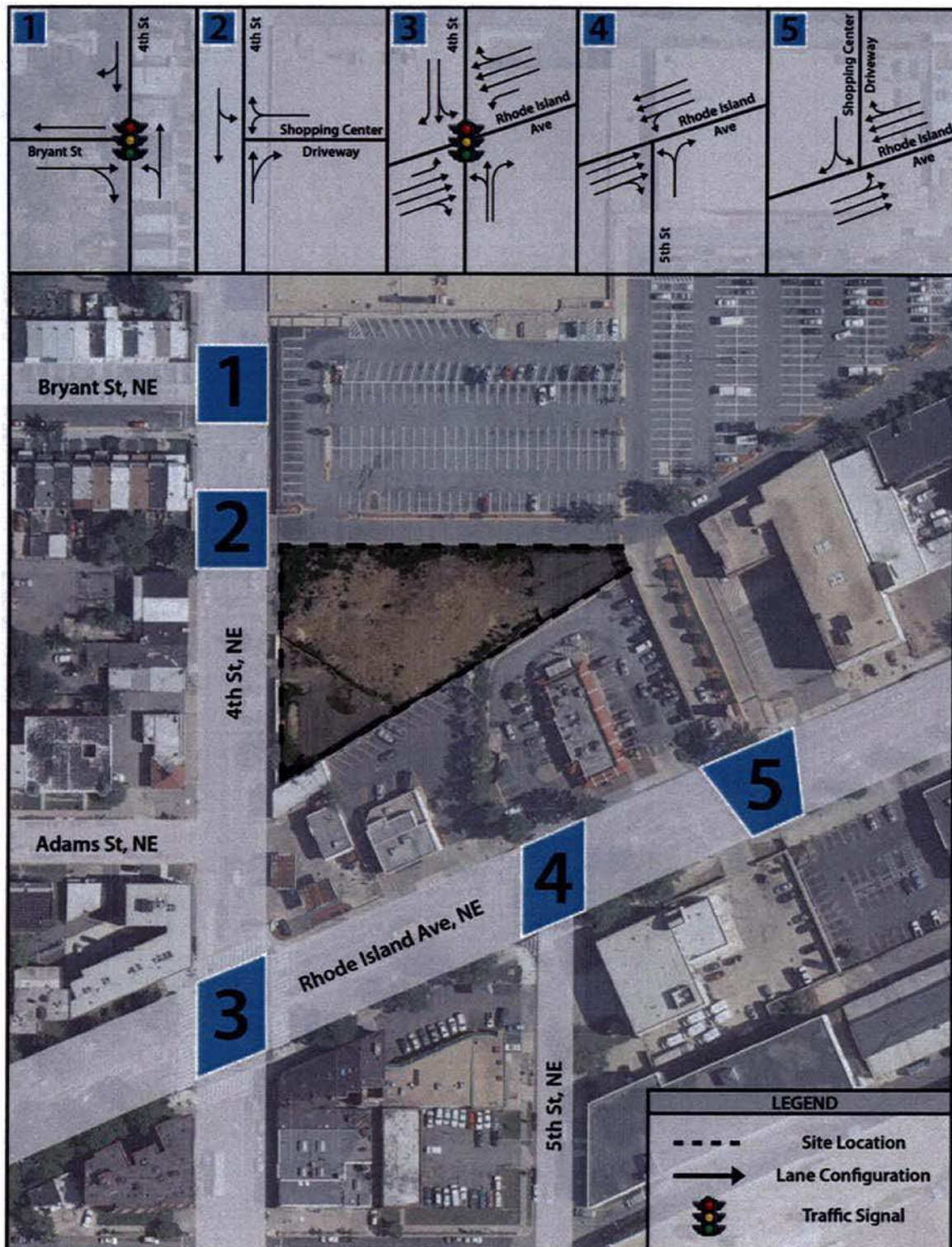


Figure 4: Lane Configuration and Traffic Control

Site Access

There is an existing ten foot curb cut (illustrated in figure 5) on the site that is positioned 112 feet south of the driveway to the Rhode Island Avenue Shopping Center. This curb cut will be relocated in the future and will serve as the site driveway to the 2321 4th Street project.

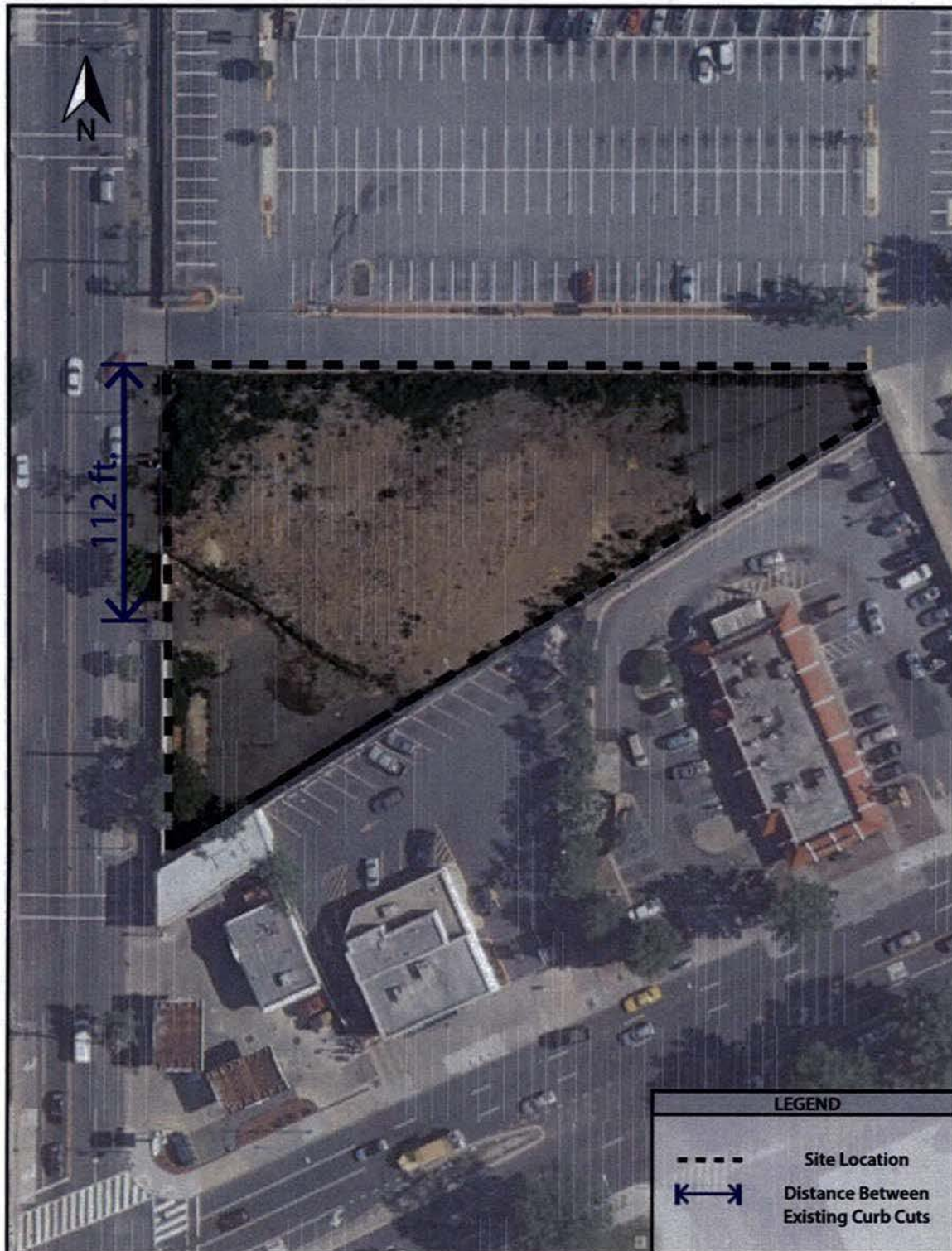


Figure 5: Existing Site Access and Curb Cut

Transit Services

The Rhode Island Avenue Metrorail station on Washington Metropolitan Area Transit Authority's (WMATA) red line is located at 919 Rhode Island Avenue, NE. The station is just 0.37 miles east of 2321 4th Street and is within a nine minute walk.

Several WMATA Metrobus routes also service the site. Metrobus routes, key destinations and service headways are shown in Table 1. Bus stops are provided along Rhode Island Ave, NE and along 4th Street, NE. Within the vicinity of the 2321 4th Street, there are two bus stops which provide shelter and seating. These locations include the stop at the northwest corner of 4th Street and Rhode Island Avenue and along the southbound approach of 4th Street at W Street, NE. WMATA bus routes and bus stop locations are illustrated in Figure 6.

Table 1 Bus Routes and Key Destinations

Route	Route Name	Key Destinations	Service Headways (Weekday Peak)
G8	Rhode Island Avenue	• Edgewood • Rhode Island Ave. Shopping Center • Shaw-Howard Univ. Station • Metro Center Station • Convention Center	12 – 32 minutes
D8	Hospital Center Line	• Veterans Affairs Medical Center • Washington Hospital Center • Union Station • Main Post Office • Children's National Medical Center	12 – 22 minutes
P6	Anacostia-Eckington	• Anacostia Station • Navy Yard • Capitol Hill • Chinatown • Metro Center Station • Edgewood • Rhode Island Ave-Brentwood Station	20 – 31 minutes

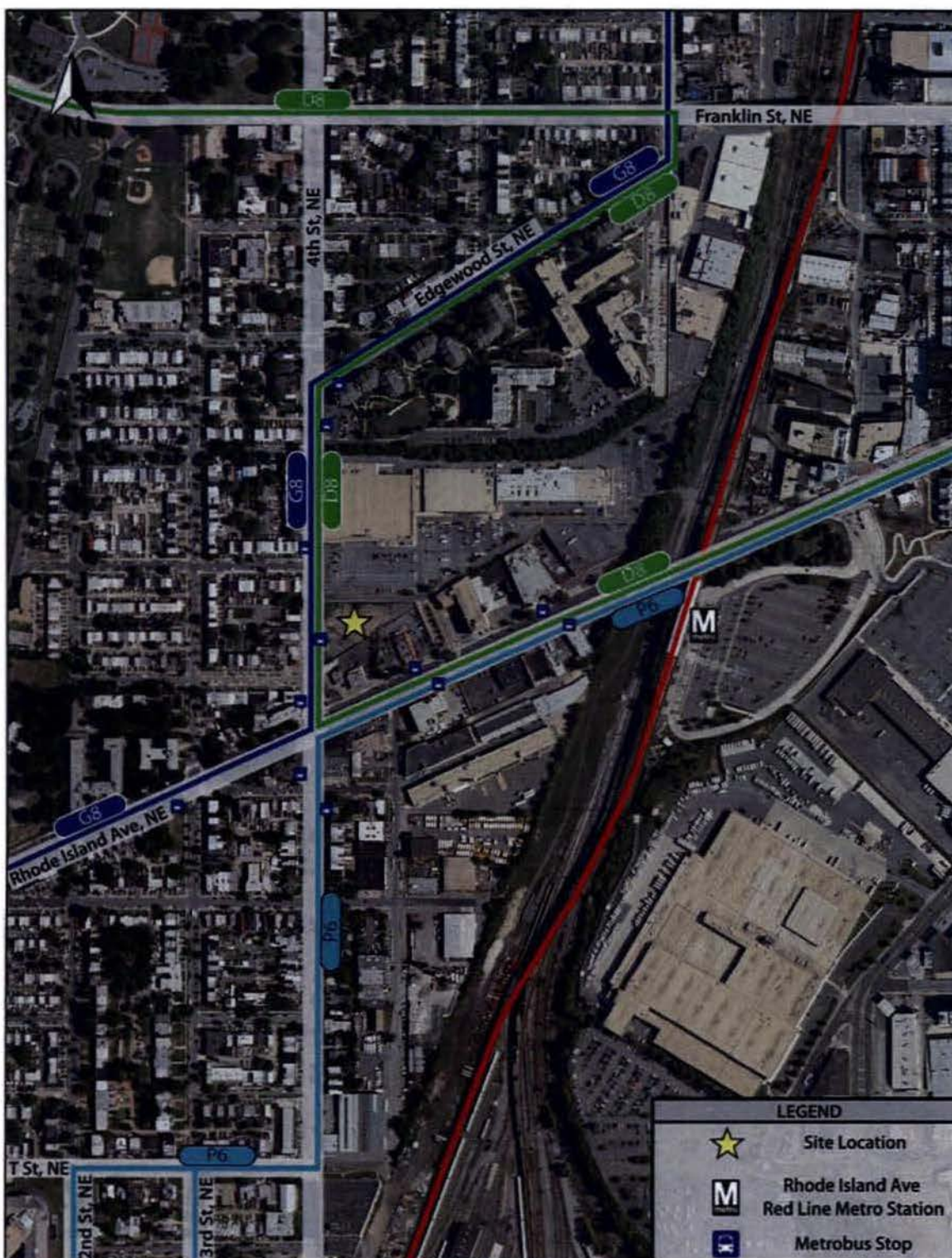


Figure 6: Bus Routes and Bus Stops

Pedestrian Conditions

Sidewalks and crosswalks provide access to the site. A summary of observations are as follows:

- Sidewalks are provided along all roadways within the study area. Approximate sidewalk widths within the vicinity of 2321 4th Street, NE are as follows:
 - 4th Street (eastside): 6-foot wide clear zone situated between a six foot tree box (adjacent to curb) and a five foot grass buffer
 - Rhode Island Avenue: 11 to 28 feet wide (dependent on location)
- Marked crosswalks are provided at the two study area intersections. High visibility ladder-style crosswalks are provided along each approach of Rhode Island Avenue, NE and 4th Street, NE.
- Pedestrian generators within close proximity to the site include the Rhode Island Avenue Metrorail Station, the Rhode Island Avenue Shopping Center and store front retail/commercial shops along Rhode Island Avenue. To access the Rhode Island Avenue Metrorail Station (from 2321 4th Street), pedestrians would walk south along 4th Street, cross Rhode Island Avenue and continue east to the Metrorail Station. Sidewalks and crosswalks are provided along this walking route.
- Pedestrian counts were conducted at the two study area intersections during the weekday AM and PM peak hours. A summary of peak hour pedestrian counts surrounding the proposed site is as follows:
 - 4th Street (at Rhode Island Avenue) – 99 AM and 193 PM
 - Rhode Island Avenue (at 4th Street) – 73 AM and 181 PM

Detailed pedestrian counts (for all study area intersections) are provided in the appendix.

Bicycle Facilities Inventory

The following designated bicycle facilities are located within close proximity to the proposed site:

- Bike Lanes along 4th Street, NE - from T Street, NE (to the south) to Lincoln Road, NE (to the north)
- On-Street Signed Bike Route on 4th Street – from Lincoln Road, NE (to the south) to Michigan Avenue NE (to the north)
- Signed Bike Routes on T Street, NE – between 2nd Street, NE and 4th Street, NE
- Metropolitan Branch Trail (with an access point off of T Street, NE)

Figure 7 illustrates the above listed bicycle facilities.

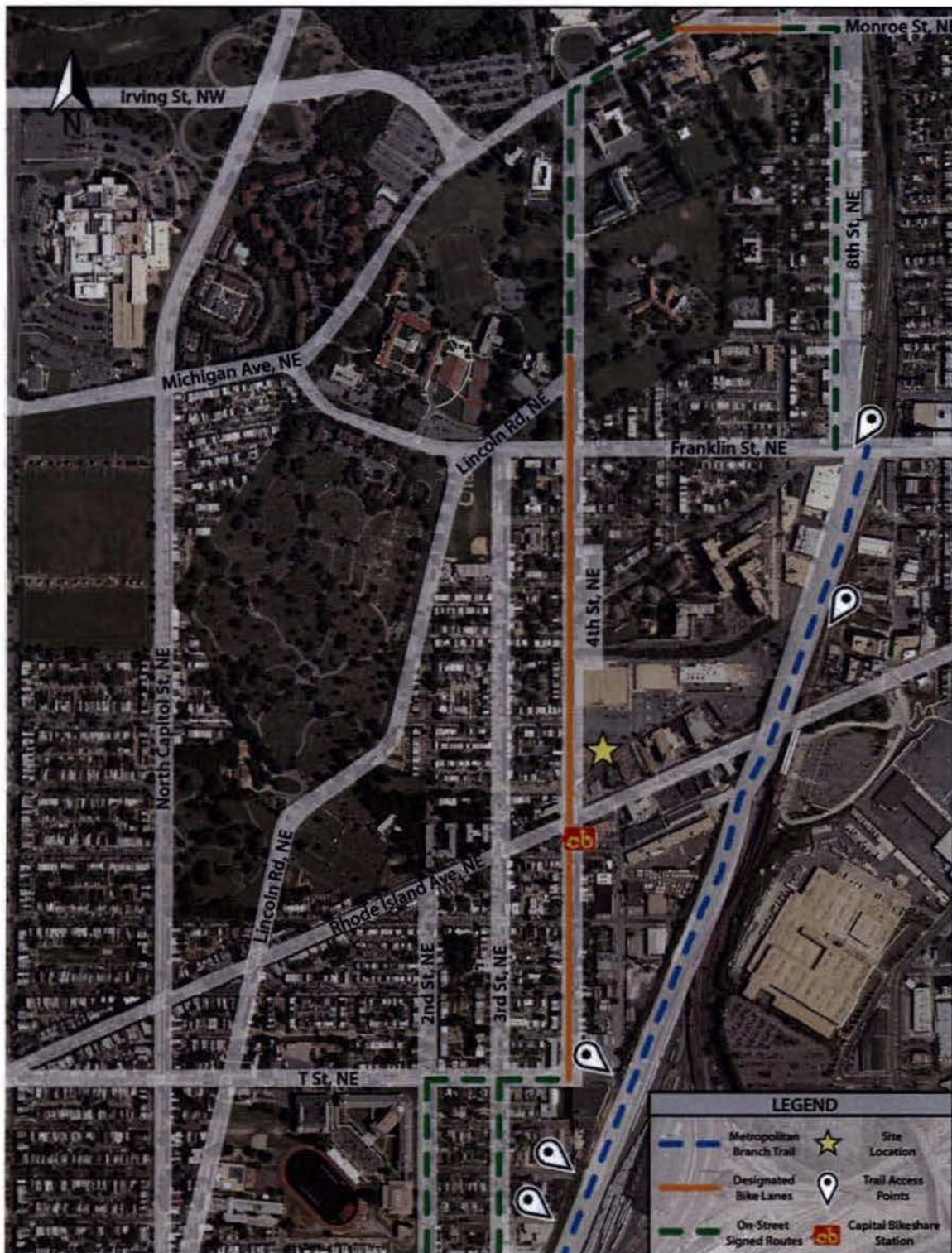


Figure 7: Bicycle Facilities

A summary of peak hour bicycle counts along intersections surrounding the proposed site are as follows.

- 4th Street (at Rhode Island Avenue) – 9 AM and 3 PM
- Rhode Island Avenue (at 4th Street) – 13 AM and 12 PM

Detailed bicycle counts (for all study area intersections) are provided in the appendix

Capital Bikeshare has a bike station located on 4th Street, NE immediately south of Rhode Island Avenue. The station stores eleven bikes. The Capital Bikeshare location is shown in Figure 7.

From 2321 4th Street, bicyclists will likely utilize existing bike lanes along 4th Street and travel south to the T Street, NE trail access to get to the Metropolitan Branch Trail.

The 2011 District of Columbia Bicycle Map rates traffic conditions for bicycling near the proposed site as poor on Rhode Island Ave, NE. Traffic conditions for bicycling along 2nd and 3rd Street, NE (and side streets such as Bryant, Adams, and Channing Street, NE) are good while conditions along Lincoln Road, NE and Edgewood Street, NE are evaluated as fair.

On-Street Parking

On-Street parking surveys were conducted to determine existing parking inventory and demand within the vicinity of the project. Parking surveys were conducted during the following three periods on a weekday in April 2012:

- Afternoon peak (2:30 PM to 3:30 PM)
- Evening peak (7:30 PM to 8:30 PM)
- Night Peak (10 PM to 11 PM)

Parking restrictions and parking control were also collected during the surveys. Figure 8 illustrates Streets included in the parking survey. A summary of parking supply and control is provided in Table 2. Table 3 summarizes occupancy and observed demand for each survey period.

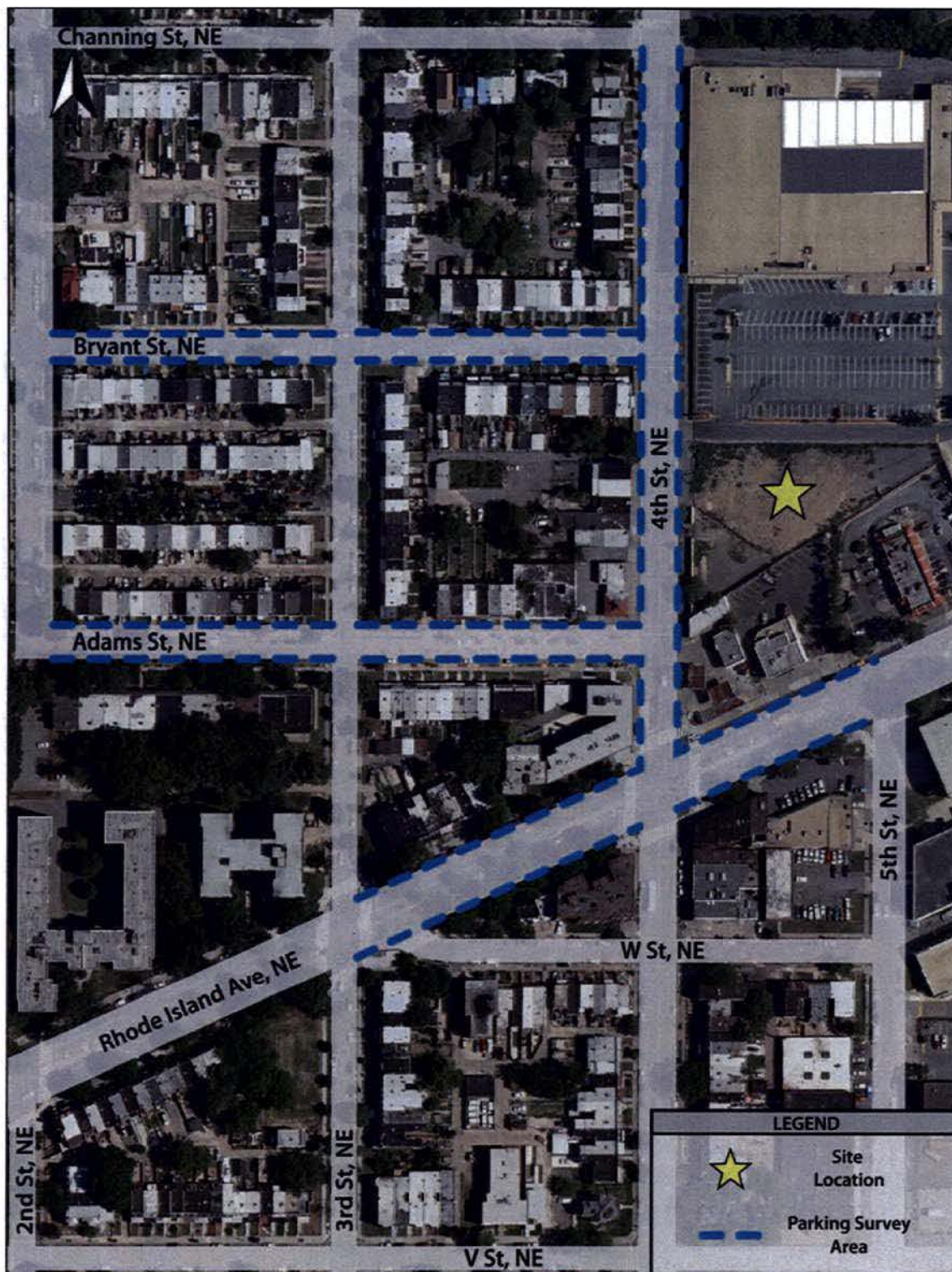


Figure 8: Existing On-Street Parking Survey Area

Table 2 On-Street parking supply and control

Street	Supply		Parking Control
4 th Street, NE (B/w Rhode Island Ave. and Bryant St.)	East-side	19	1 Hr. Parking (7AM-6:30PM M-S); No Standing or Stopping Metro Bus Zone; 2 Hr. Parking Limit (Zone 5: 7AM-8:30PM M-F)
	West-side	20	No Standing or Stopping (Metro Bus Zone); 1 Hr. Parking (7AM-6:30PM M-S); 2 Hr. Parking Limit (Zone 5: 7AM-8:30PM M-F);
	Total	39	
Adams Street, NE (b/w 2 nd St. and 4 th St.)	North-side	25	Residential Zone 5 Parking (7AM-8:30PM M-F)
	South-side	31	Residential Zone 5 Parking (7AM-8:30PM M-F)
	Total	56	
Bryant Street, NE (b/w 2 nd St. and 4 th St.)	North-side	27	Residential Zone 5 Parking (7AM-8:30PM M-F)
	South-side	29	Residential Zone 5 Parking (7AM-8:30PM M-F)
	Total	56	
Rhode Island Avenue, NE (b/w 3 rd St. and 5 th St.)	North-side	14	No Standing or Stopping (7AM-9:30AM M-F)
	South-side	14	No Standing or Stopping (7AM-9:30AM & 4PM-6:30PM M-F/S); Pay by phone or meter code 21566 for 1 Hr. Parking (9:30AM-10PM M-S)
	Total	28	

As shown in Table 2, there are at total of 56 curb spaces along Adams Street and Bryant Street (between 2nd Street and 4th Streets) NE. This parking is primarily Residential Zone 5. Along 4th Street curb parking supports a mix of users including residential and short term parking for commercial uses. There are also Metro Bus Zones along both the east-side and west-side of the 4th Street. In those locations, curb parking is prohibited. Peak hour parking restrictions are in place along Rhode Island Avenue, NE (between 3rd Street and 4th Street). During the morning peak hours (7AM to 9:30 AM), curb parking is prohibited along the north-side and the reverse is in-place during the afternoon/evening with curb parking prohibited on the south-side of the Street.

Table 3 Existing On-Street Parking Supply and Demand

Street	Weekday						
	Afternoon			Evening		Night	
	Supply	Occupied Spaces	% Occupied	Occupied Spaces	% Occupied	Occupied Spaces	% Occupied
4 th Street	39	4	10%	9	23%	6	15%
Bryant Street	56	27	48%	36	64%	39	70%
Adams Street	56	36	64%	44	79%	43	77%
Rhode Island Avenue	28	17	61%	7	25%	11	39%
Total Study Area	179	84	47%	96	46%	99	55%

Occupancy levels (shown in Table 3) indicate on-street parking was at 47% and 46% capacity during the afternoon and evening peaks, respectively. In summary 80 to 90 parking spaces were unoccupied during the survey periods. The highest level of demand was observed during the night survey period along Bryant and Adams Streets, with 70% and 77% occupied, respectively. Additionally survey conducted at night (10 PM to 11 PM) indicated 55% percent of all on-street parking spaces were occupied. Thus, there were a significant number of on-street parking spaces available during the survey periods. Parking survey worksheets are located in the appendix.

Car Sharing

There are two car-sharing stations within close proximity to 2321 4th Street. Specific locations and the number of cars provided are summarized below.

- Rhode Island Avenue Shopping Center⁵ (13 cars)
- Rhode Island Avenue Metro⁶ (4 cars)

Field Observations and Data Collection

Traffic data (turning movement counts), pedestrian counts, and bicycle counts were conducted on Thursday April 12, 2012 from 7:00 AM to 9:00 AM and from 4:00 PM to 7:00 PM. Based on data collected during these time periods, the system peak hours were determined to be 7:45 am to 8:45 am and 4:45 pm to 5:45 pm. Peak hour traffic data is shown in Figure 9.

⁵ The zip car station is located at 680 Rhode Island Avenue. Access to the zip car station is provided from the entrance to the Rhode Island Avenue Shopping Center (from Rhode Island Avenue) and the station is located near the back of the parking lot adjacent to the Mount Calvary Church.

⁶ The zip car station is located within the parking garage facility directly across from the rental office for the apartment building development.

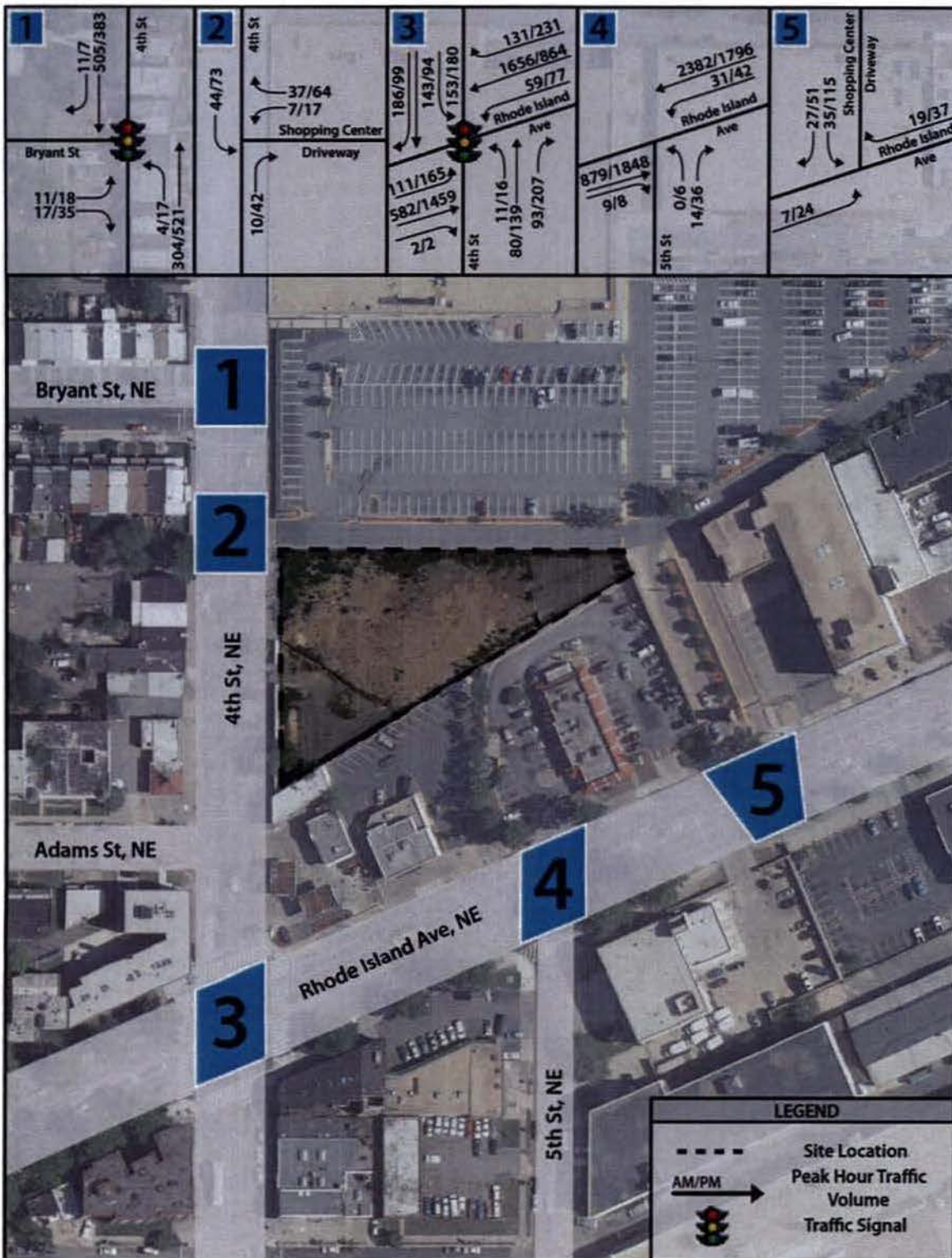


Figure 9: Existing Peak Hour Traffic

Existing Intersection Analysis

To assess existing traffic conditions, it is necessary to collect traffic data at the intersections during peak periods of traffic flow and operations (i.e. morning and evening rush hour periods). The data collected is in the form of turning movement counts for through, left and right movement at the intersection. This existing data, along with other operational parameters such as the number of lanes, heavy vehicle percentages, and information on traffic signal timing, is entered into traffic analysis software and evaluated to provide a Level of Service (LOS) at each intersection.

Level of Service (LOS) is a measure of the average control (i.e. stop sign or traffic signal) delay experienced by all motorists arriving to an intersection. There are six representative levels of service defined for intersections and they are designated using letters A through F, with LOS A representing the best operating conditions and LOS F representing the worst. LOS "E" is typically accepted by DDOT as the minimum delay threshold limit for intersections.

Level of Service is defined separately for signalized intersections and unsignalized intersections. For signalized intersections, delay is evaluated for the overall intersection; while at unsignalized intersection delay is analyzed for each movement separately (i.e. northbound, southbound, eastbound or westbound traffic). The thresholds for the intersection levels of service are shown in Table 4.

Table 4 Intersection Level of Service Threshold for Delay

Level of Service Threshold for Delay (seconds/vehicle)		
LOS	Signalized	Unsignalized
A	0-10 sec	0-10 sec
B	> 10-20 sec	> 10-15 sec
C	> 20-35 sec	> 15-25 sec
D	> 35-55 sec	> 25-35 sec
E	> 55-80 sec	> 35-50 sec
F	> 80 sec	> 50 sec

SYNCHRO 7 software was used to calculate LOS Capacity analysis for the morning and evening peak hours of a typical weekday. Tables 5 provide peak hour LOS results for the study area intersections under existing conditions.

Table 5 Existing Conditions Level of Service

Study Intersections	AM Peak Hour		PM Peak Hour	
	LOS	Delay*	LOS	Delay*
4 th Street/ Rhode Island Avenue	C	26.6	C	28.6
4 th Street/ Bryant Street	A	7.3	A	6.4
4 th Street/ Shopping Center				
5 th Street/ Rhode Island Avenue	A	3.1	A	3.1
Shopping Center / Rhode Island Avenue	A	8.3	A	6.2

**Average delay in seconds per vehicle*

As shown in Table 5, all of the study area intersections currently operate at acceptable LOS.

A queuing analysis was conducted for existing conditions using the 95th percentile queue lengths from Synchro 7 software. Table 6 provides the 95th percentile queue length at all study area intersections.

Table 6 Existing Conditions 95th Percentile Queue Lengths

Study Intersections	AM Peak Hour	PM Peak Hour	Available Storage
	Queue Length (ft)	Queue Length (ft)	Distance to nearest major intersection
4th Street/ Rhode Island Avenue			
NB	97	159	500
SB	330	342	465
EB	152	403	> 1000
WB	549	283	210
4th Street/ Bryant Street			
NB	97	151	500
SB	180	98	710
EB	31	46	350
5th Street/Rhode Island Avenue			
NB	0	63	640
EB	27	65	210
WB	59	38	135
Shopping Center/Rhode Island Avenue			
SB	54	103	N/A
EB	3	34	135
WB	308	168	> 1000
Shopping Center/4th Street			
NB	0	0	375
SB	3	6	85
WB	7	19	N/A

The results indicate that the queue extends back on Rhode Island Avenue from 4th Street to just west of the 5th Street intersection during both the AM and PM peak hours.

FUTURE BACKGROUND CONDITONS

Future Background Traffic Projections

The Future Background analysis scenario builds upon existing traffic conditions with the addition of all planned multi-modal projects, development projects and regional growth within the vicinity of the project site (expected through the year 2015 and excluding the 2321 4th Street development). This analysis scenario will serve as a baseline for understanding future conditions without the proposed project.

Multi-modal Transportation Projects

Roadway

The Rhode Island Avenue Small Area Plan was prepared for the Office of the Deputy Mayor for Planning and Economic Development in December 2010. The plan documented retail, housing and office deficiencies and potential investment opportunities and provided specific objectives for the appropriate redevelopment of under-utilized, commercial properties. The 2321 4th Street project is located within one of the four distinct sub areas outlined in the study. The study's recommendations also spanned all transportation modes including—pedestrian and bicycle, vehicle, and transit.

Planned Development Projects

Per the DC Office of Planning Zoning Map, the following projects are planned in and around Rhode Island Avenue prior to year 2015 (the year after the 2321 4th Street project is expected):

1. Rhode Island Avenue Metro is being developed by Urban Atlantic/Mid City Urban and A & R Development to include consist of a mixed-use town center with 274 apartment units (20% affordable) and approximately 70,000 square feet of space split between an office component⁷ (such as DMV or Tax Payer Services Office) and ground-floor retail.
2. Chancellors Row is 10.2 acre or 443,312 square feet property (lot 808)⁸ within the Saint Paul's College campus. The property has been developed by EYA to include a 237 unit townhome project. This project opened for occupancy in March 2012 however was not yet at 100% occupancy.

Potential traffic generation (associated with the Rhode Island Avenue Metro project) was projected using the Institute of Transportation Engineers' Trip Generation Manual, 8th Edition. Traffic associated with the

⁷ A minor modification request Zoning Commission Order No. 04-24A was submitted in May of 2008 requesting permission to designate no more than 20% of the total commercial space for office use.

⁸ The lot is bounded by 5th Street, NE and 6th Street, NE to the south, Hamlin Street NE and Jackson Street NE to the east, 4th Street NE to the west and the United States Conference of Catholic Bishops to the north.

Chancellors Row project was obtained from the background information presented in the CUA South Campus Redevelopment TIS (2008). Table 7 provides a summary of projected site trips for the project with appropriate WMATA reductions⁹.

Table 7 Planned Development Projects Projected Site Traffic

Project	AM Peak Hour			PM Peak Hour		
	IN	OUT	TOTAL	IN	OUT	TOTAL
Rhode Island Avenue Metro Project	77	92	169	73	74	147
Chancellors Row	11	56	67	53	26	79

Trip generation outlined in Table 7 was added to the existing roadway network based on established directional distribution and existing traffic data collected at study area intersections. Projected Future Background traffic including existing traffic with the addition of regional growth is shown in Figure 10.

⁹ Per the 2005 *Washington Metropolitan Area Transit Authority's (WMATA) Development Related Ridership Survey II* transit reductions can be correlated based on a specific type of land use and location to Metrorail. A summary of trip reductions applied is provided in the Appendix.

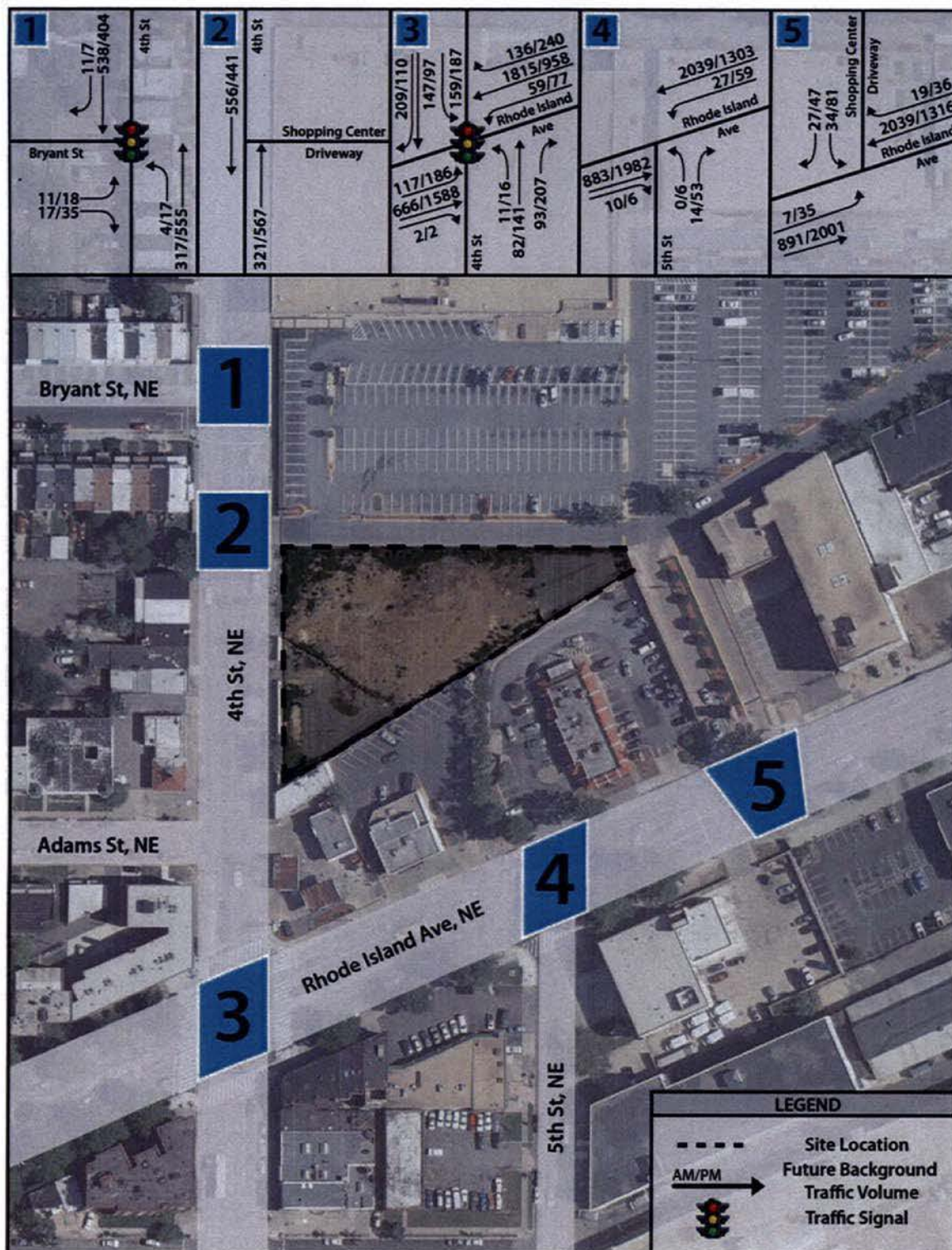


Figure 10: Future Background Peak Hour Traffic

Future Background Conditions Intersection Analysis

Table 8 provides a comparison of Existing and Future Background intersection Level of Service.

Table 8 Future Background Conditions Level of Service

Study Intersections	Existing				Future Background			
	AM Peak		PM Peak		AM Peak		PM Peak	
	LOS	Delay*	LOS	Delay*	LOS	Delay*	LOS	Delay*
4 th Street/ Rhode Island Avenue	C	26.6	C	28.6	C	29.9	C	30.3
4 th Street/ Bryant Street	A	7.3	A	6.4	A	7.4	A	6.5
4 th Street/ Shopping Center	B	11.6	C	15.3	B	11.9	C	16.2
5 th Street/ Rhode Island Avenue	A	3.1	A	3.1	A	3.3	A	3.2
Shopping Center / Rhode Island Avenue	A	8.3	A	6.2	A	8.7	A	6.3

As shown in Table 8, comparing existing conditions to future background conditions the study area intersections would continue to operate at similar LOS during both AM and PM peak hours. Under Future Background conditions, all study area intersections would operate within the acceptable threshold of LOS "D" or better (per DDOT guidelines).

A queuing analysis was conducted for future background conditions using the 95th percentile queue lengths from Synchro 7 software. Table 9 provides Future Background 95th percentile queue length at all study area intersections.

Table 9 Future Background 95th Percentile Queue Lengths

Study Intersections	AM Peak Hour	PM Peak Hour	Available Storage
	Queue Length (ft)	Queue Length (ft)	Distance to nearest major intersection
4th Street/ Rhode Island Avenue			
NB	99	161	500
SB	360	363	465
EB	162	455	> 1000
WB	554	320	210
4th Street/ Bryant Street			
NB	101	165	500
SB	197	105	710
EB	31	46	350
5th Street/Rhode Island Avenue			
NB	0	70	640
EB	27	68	210
WB	64	48	135
Shopping Center/Rhode Island Avenue			
SB	54	103	N/A
EB	3	35	135
WB	357	189	> 1000
Shopping Center/4th Street			
NB	0	0	375
SB	3	7	85
WB	7	20	N/A

The results indicate that under future background conditions the queue lengths will continue to extend back on westbound Rhode Island Avenue from 4th Street to west of the 5th Street intersection during both the AM and PM peak hours. The queue lengths increased by 5 feet in the AM and approximately 40 feet in the PM peak hour.

2321 4th STREET SITE DEVELOPMENT

Development Program

The 2321 4th Street project will include 155 to 160 apartments with 5,224 square feet of neighborhood service oriented retail. Figure 11 is an illustration of the proposed site plan.

Parking Supply

The applicant has requested a parking variance to provide 43 parking spaces instead of 87 (as required per zoning) assuming 160 residential units and 5,224 square feet of retail. This variance is being requested since the unique triangular layout of the site creates an inefficient configuration for parking spaces (on a single level). Forty spaces would support the residential component of the project and three spaces would be available for retail employees.

The proposed parking supply is projected to be adequate to serve the needs of the project. The project is located within 0.37 miles to the Rhode Island Avenue Metrorail station and is also served by numerous bus routes on Rhode Island Avenue and 4th Street. Additionally, 4th Street has bicycle lanes and the project is in close proximity to the Metropolitan Branch Trail. High levels of transit service can provide a viable alternative to owning a vehicle, which lowers the parking demand for new developments.¹¹

Additionally, it should be noted that residents of the 2321 4th Street project will not be eligible to receive a Residential Parking Permit (RPP) and will consequently not adversely impact Zone 5 residential parking spaces.

¹¹ Institute of Transportation Engineers' (ITE) Journal/December 2010

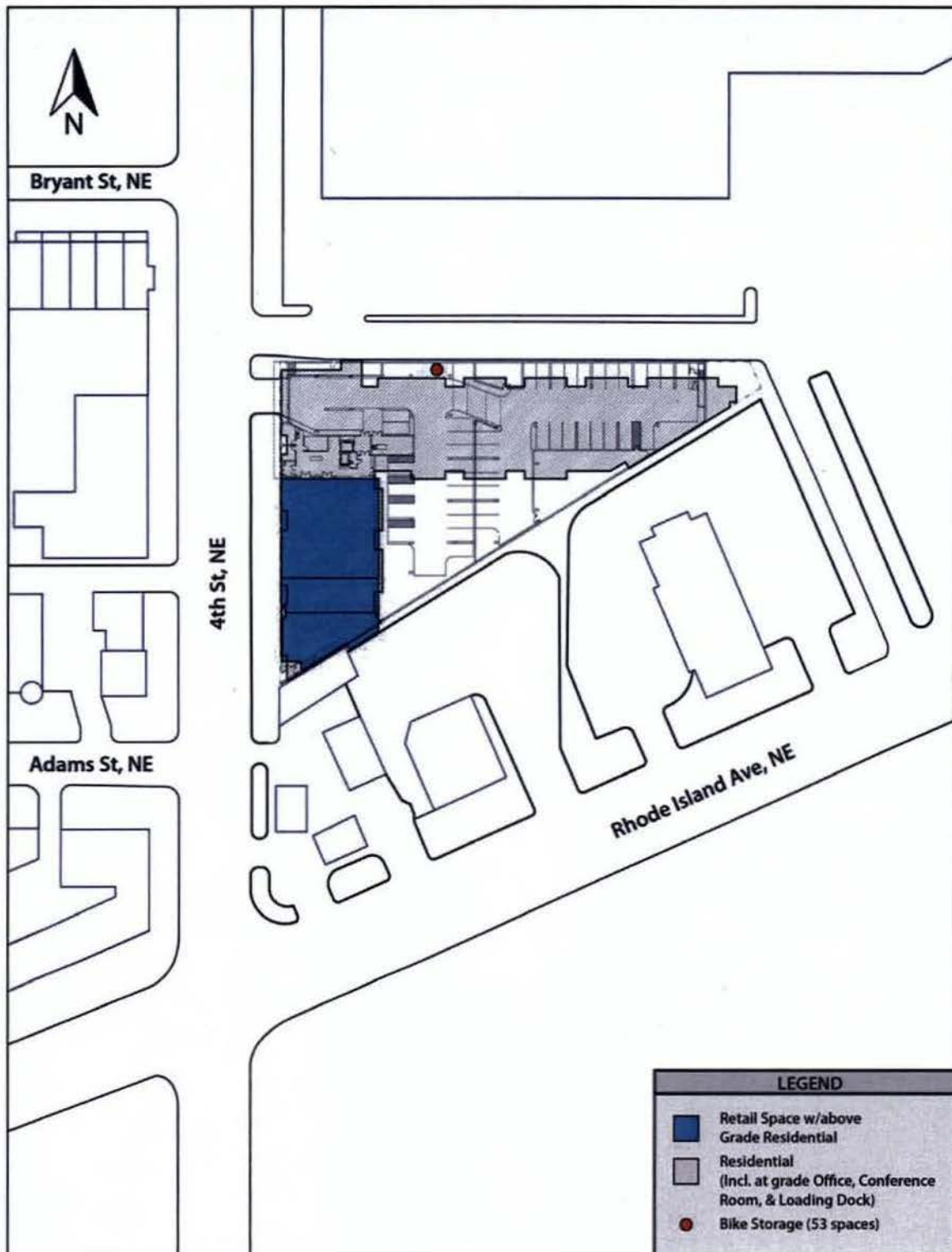


Figure 11: 2321 4th Street Site Plan

Site Access and Circulation

Site access is as follows.

- Vehicular access will be provided via the proposed site driveway along 4th Street. This driveway is 20 feet wide and would provide direct access to the at-grade parking garage with 43 parking spaces.
- The site driveway also provides access to the loading dock. The proposed enclosed loading area will provide one 30-foot loading berth and a 200 square foot loading dock.
- Pedestrian access will be provided along sidewalks on 4th Street.

Figures 12 and 13 illustrate vehicular and truck circulation.

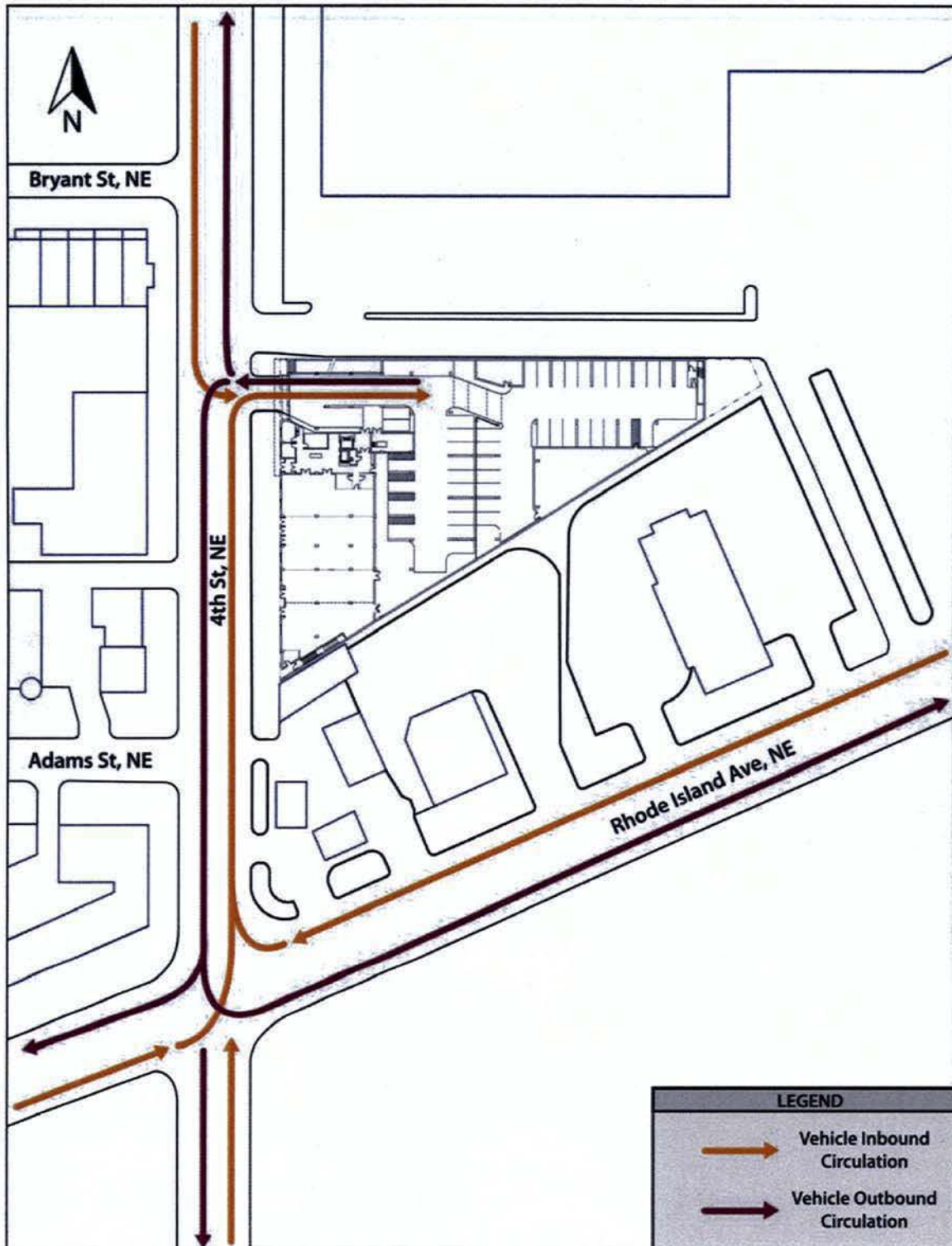


Figure 12: Vehicle Site Circulation

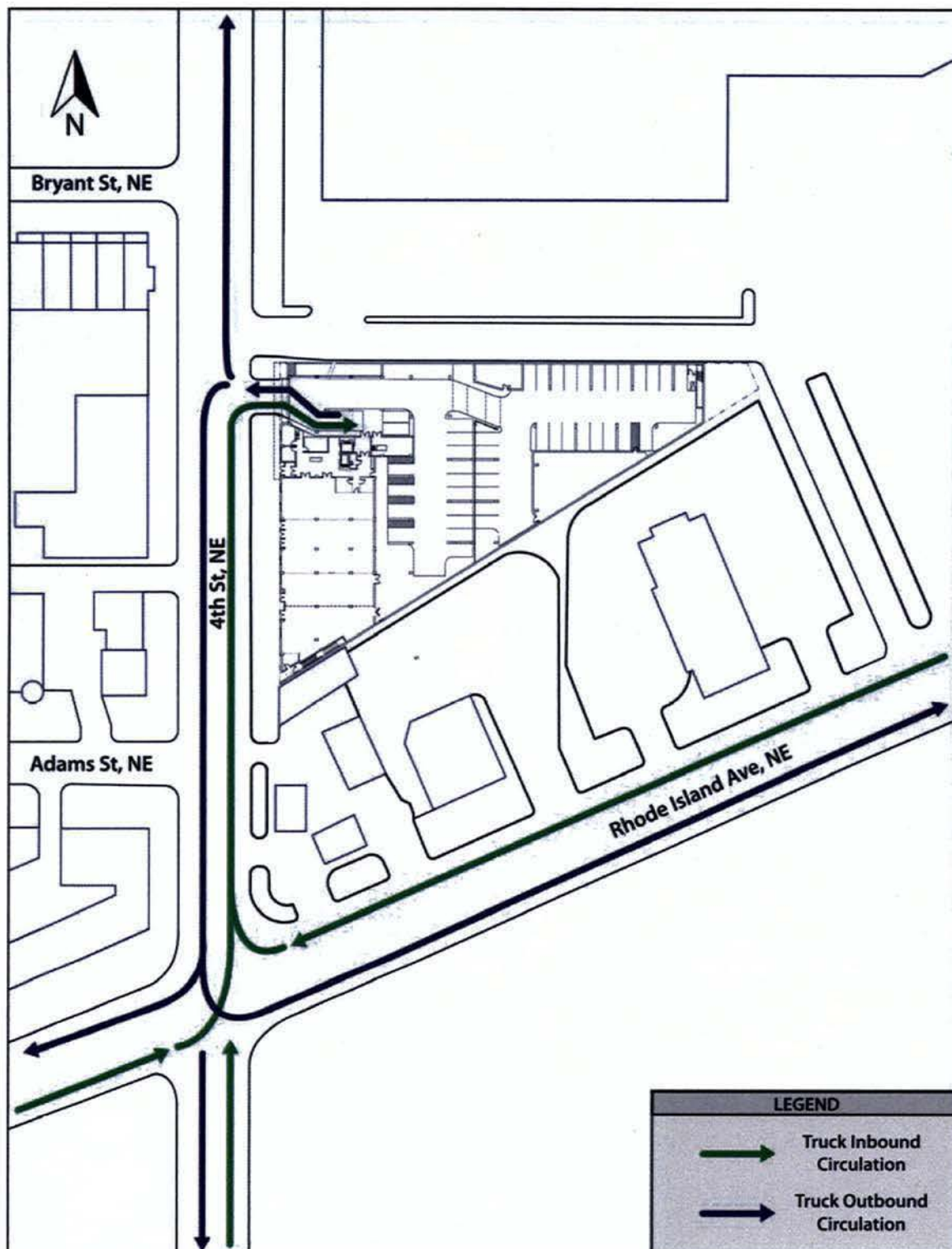


Figure 13: Truck Site Circulation

2321 4th STREET SITE DEVELOPMENT IMPACTS

Bicycle Facilities

The project will provide storage in the parking garage to accommodate 53 bicycles. The bike storage is conveniently located adjacent to the entrance to the site driveways. See Figure 10 for an illustration of the bike storage location. In addition the project will provide two inverted-u bicycle racks at grade level for four bicycle parking space in front of the building.

On-Street Parking

There are three existing curb parking spaces adjacent to the proposed 2321 4th Street development. Two Hour parking is permitted Monday through Saturday from 7:00 AM to 6:30 PM. One of the three spaces would be permanently eliminated as a result of the site driveway. The remaining two spaces would serve as a proposed commercial loading zone¹² (see Figure 19) and would continue to provide on-street parking on Weekdays from 6:30 PM to 7:00 AM and on Weekends.

Transit

There would be no impact to the existing bus stop and bus pad adjacent to the 2321 4th Street property. See figure 19 for an illustration of the existing bus stop in relation to the 2321 4th Street site plan.

¹² For short term parcel delivery and/or residential pick-up/ drop-off Monday through Friday from 7:00 AM to 6:30 PM

FUTURE TRAFFIC CONDITONS

Future Conditions Traffic Projections

Projected site trips associated with the 2321 4th Street project (shown in Table 10) were added to future background traffic projections to develop future traffic projections.

Site Trip Generation

The Institute of Transportation Engineer Manual 8th Edition was used to determine weekday peak hour trips associated with the 2321 4th Street project. The following land use codes were used to determine site trip generation:

- Land Use Code 223- Apartments
- Land Use Code 814- Specialty Retail Center

Since the 2321 4th Street project is located within 0.37 miles from the Rhode Island Avenue Metrorail Station and several Metrobus routes service the area, transit reductions were taken based on the *Washington Metropolitan Area Transit Authority's (WMATA) Development Related Ridership Survey II*¹³. Table 10 summarizes weekday trip generation for the 2321 4th Street development project with trip reductions. The following trip reduction percentages were applied:

- Residential - 47% transit and 25% walk/bike
- Retail - 28% transit and 60% walk/bike

Table 10 Future Site Trip Generation

Project	Units/SQ FT	AM Peak Hour			PM Peak Hour		
		IN	OUT	TOTAL	IN	OUT	TOTAL
Residential	160	16	36	52	38	28	66
47% All Transit Mode Reduction		-8	-17	-25	-18	-13	-31
25% Walk/Bike Reduction		-4	-9	-13	-10	-7	-17
Total Residential		4	10	14	10	8	18
Retail	5,224	17	19	6	15	19	34
28% All Transit Mode Reduction		-5	-5	-10	-4	-5	-9
60% Walk/Bike Reduction		-10	-11	-21	-9	-11	-20
Total Retail		2	3	5	2	3	5
Total Site Trips		6	13	19	12	11	23

¹³ Page C-75 Table C-34, Page C-81 Table C-39

The 2321 4th Street project would generate 19 AM and 23 PM peak hour trips. Those trips were distributed along the study area network using DC Resident to Work Census Data.

The distribution of work destinations for DC residents is as follows:

- Virginia (Fairfax, Arlington, Alexandria) – 11.3%
- Maryland
 - Prince Georges County – 5.4%
 - Montgomery County – 7.7%
- District of Columbia – 75.6%

The census data (shown above) was used as a basis to forecast probable directional distribution (shown in Figure 14) for the 2321 4th Street project. Site traffic for the project is shown in Figure 15 and total future traffic (including the 2321 4th Street project) is shown in Figure 16.



Figure 14: Site Directional Distribution

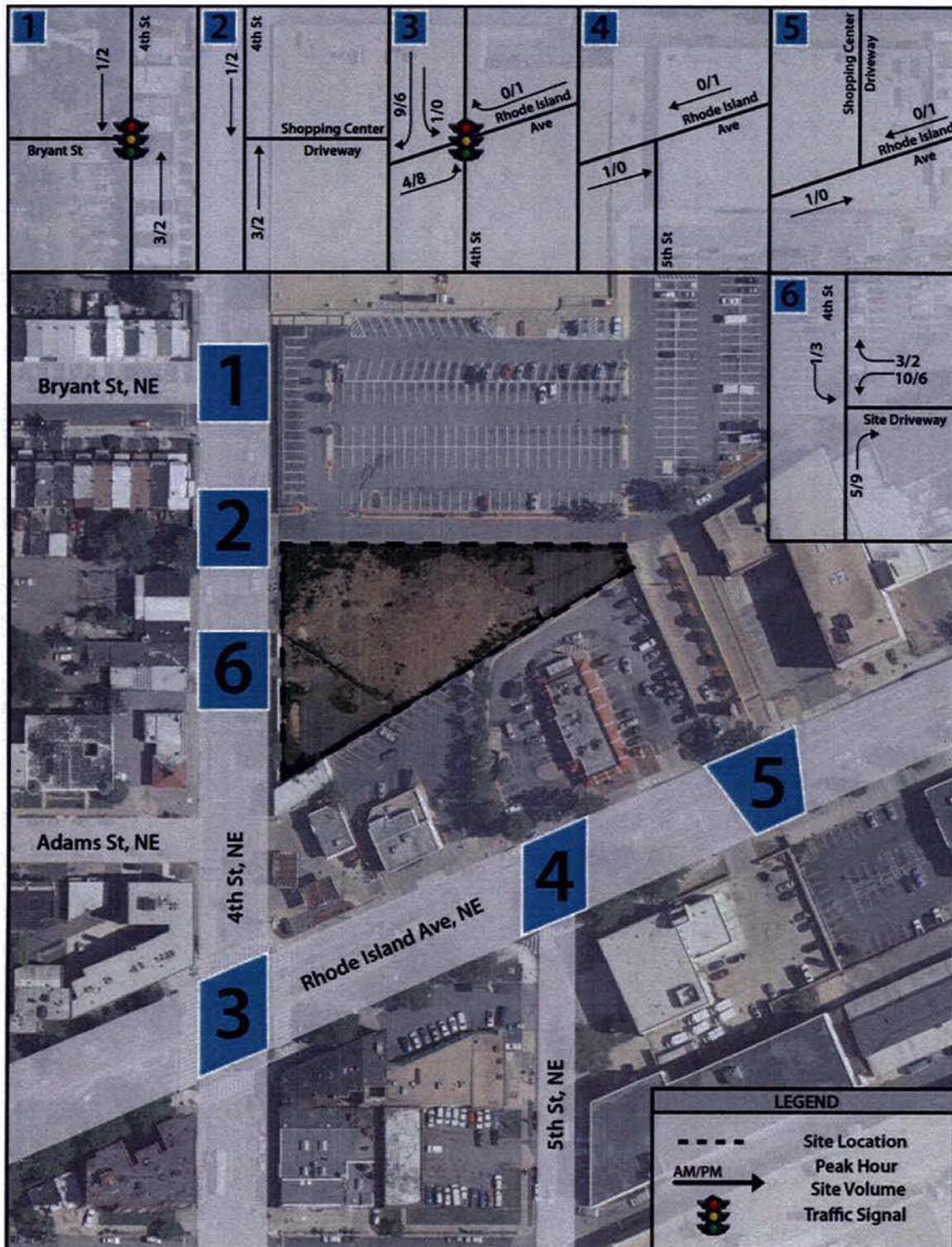


Figure 15: Future Site Traffic

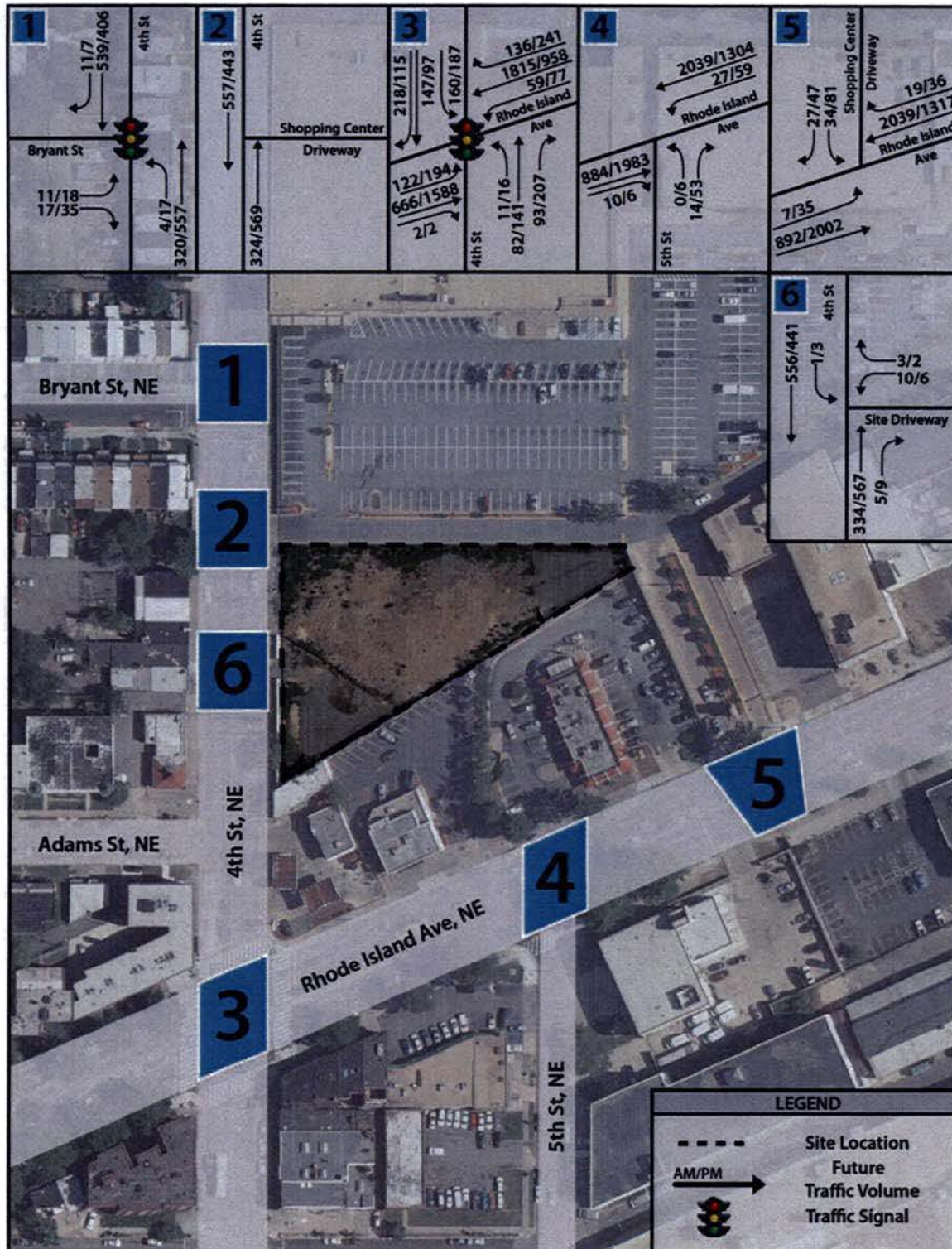


Figure 16: Future Peak Hour Traffic Volumes

Future Conditions Intersection Analysis

Table 11 provides a comparison of Future Background and Future Conditions intersection Level of Service.

Table 11 Future Conditions Level of Service

Study Intersections	Future Background				Future			
	AM Peak		PM Peak		AM Peak		PM Peak	
	LOS	Delay*	LOS	Delay*	LOS	Delay*	LOS	Delay*
4 th Street/ Rhode Island Avenue	C	29.9	C	30.3	C	30.0	C	30.7
4 th Street/ Bryant Street	A	7.3	A	6.5	A	7.4	A	6.5
4 th Street/ 2321 4 th Street Site Driveway	--	--	--	--	C	15.5	C	16.2
4 th Street/ Shopping Center	B	11.9	C	16.2	B	12.0	C	16.3
5 th Street/ Rhode Island Avenue	A	3.3	A	3.2	A	3.3	A	3.2
Shopping Center / Rhode Island Avenue	A	8.7	A	6.3	A	8.7	A	6.3

As shown in Table 11, under future conditions the study area intersections would continue to operate at acceptable LOS with the addition of the 2321 4th Street project. Intersection delay would increase by 0.2 seconds per vehicle at any one study area intersection. This increase in vehicle delay is negligible. All study area intersections would continue to operate at acceptable LOS of "D" or better per DDOT guidelines.¹⁴

The garage entrance at 2321 4th Street would operate at acceptable LOS "C" during the AM and PM peak hours.

A queuing analysis was conducted to determine the impact that the 2321 4th Street development would have using the 95th percentile queue lengths from Synchro 7 software. Table 12 provides Future Conditions 95th percentile queue length at all study area intersections.

¹⁴ The District Department of Transportation (DDOT) Design and Engineering Manual Section 45.1 states "Level of service "D" is the minimum acceptable level of service in DC."

Table 12 Future Conditions 95th Percentile Queue Lengths

Study Intersections	AM Peak Hour	PM Peak Hour	Available Storage
	Queue Length (ft)	Queue Length (ft)	Distance to nearest major intersection
4 th Street/ Rhode Island Avenue			
NB	99	161	500
SB	364	363	465
EB	178	455	> 1000
WB	554	320	210
4 th Street/ Bryant Street			
NB	102	167	500
SB	197	105	710
EB	31	46	350
5 th Street/Rhode Island Avenue			
NB	0	70	640
EB	27	68	210
WB	64	48	135
Shopping Center/Rhode Island Avenue			
SB	54	103	N/A
EB	3	35	135
WB	357	189	> 1000
Shopping Center/4 th Street			
NB	0	0	390
SB	3	7	80
WB	7	20	N/A
2321 Site Entrance/4 th Street			
NB	0	0	365
SB	0	0	120
WB	3	2	N/A

The results indicate that under future conditions the queue lengths will continue to extend back on westbound Rhode Island Avenue from 4th Street to west of the 5th Street intersection during both the AM and PM peak hours. The queue lengths throughout the study area will increase marginally with the addition of the 2321 4th Street development when compared to future background conditions.

SAFETY ASSESSMENT

Table 13 provides a summary of accident history (within a three year period)¹⁵ for the study area intersections. This data was based on statistics received from the DC Department of Transportation Traffic Accident Report and Analysis System.

Table 13 Summary of Accident History (total over a three year period)

Intersection	Total Number of Accidents	Total Number of Injuries	Total Number of Pedestrians Involved	Total Number of Bicycle/Motorcycle Involved
4 th Street/ Bryant Street	9	3	0	0
4 th Street/ Rhode Island Avenue	56	19	4	1

As shown in Table 13, the 4th Street intersections with Rhode Island Avenue experienced a higher number of accidents with 56 over three years. The Traffic Accident Report and Analysis system statistics noted the majority of the accidents were caused by one of three collision types including Left Turn, Rear End and Side Swipe. Rear End and side swipe collisions are likely attributable to high vehicle speeds/lack of driver awareness and vehicles attempting to pass another vehicle and/or change lanes. Left turn movements from both westbound and eastbound Rhode Island Avenue (onto 4th Street, NE) have a separate protected phase with a green arrow head. At 4th Street and Bryant Street, NE the majority (or 22%) of the accidents reported were Rear-end collisions.

In the future, the 2321 4th Street project will replace the existing curb cut along 4th Street with a new 20 feet wide curb cut that will provide access to the building. The applicant will coordinate with DDOT and DC Public Space Committee to install appropriate visual pedestrian safety devices, if appropriate, such as mirrors and/or signage.

¹⁵ January 1, 2008 to December 31, 2010

LOADING MANAGEMENT PLAN

The Loading Management Plan describes regulations the property manager will employ to manage trash pick-up, deliveries and other loading activities within the shared residential/commercial loading areas. The Loading Management Plan may be updated and improved by the property manager once the project is complete. The 2321 4th Street project will provide one (30 foot) loading berth with a 200 square foot loading dock. A 10 by 20 service delivery space (within the parking area) will also be provided.

The Loading Management Plan includes the following elements.

- **Delivery Vehicle Access** - Loading activities would primarily be accommodated within the loading dock accessed via 4th Street. Delivery vehicles and trash trucks would be required to approach the site from northbound 4th Street only. In order to maneuver into the loading dock, trucks would pull forward along 4th Street, SE (just north of the site driveway) and reverse back into the loading area. Figures 17 and 18 illustrate the inbound and outbound vehicle maneuvering. A 40 foot loading zone is proposed on 4th Street (See Figure 19) for short term parcel delivery and/or residential pick-up/drop-off Monday through Friday from 7:00 AM to 6:30 PM.
- **Loading Activity** - Loading associated with the retail tenants could be expected once or twice daily (dependent on the use). The property manager would be responsible for coordinating with retail tenants to try to consolidate deliveries wherever possible.
- **Delivery Vehicle Size Limits** - Commercial deliveries will be made by single unit trucks (30 foot). A 30 foot truck would also be adequate for residential move-in and deliveries. U-Haul trucks (typically used for residential move-ins) range from 10' to 26' in length and would be able to utilize the loading berth. Trucks larger than 30 feet would not be able to access the loading dock due to size limitations and height restrictions. The proposed loading area *does not* include the 55 foot loading berth required by zoning for residential use. The applicant is seeking a variance to forego the zoning requirement to accommodate 55-foot trucks.
- **Delivery Vehicle Clearance Limits** - The applicant is seeking a variance to forego the zoning requirement to provide a vertical clearance of 14 feet to instead provide 12 feet. According to information provided on-line, U-Haul trucks that support residential move-ins are typically a maximum of 11 feet in height and would be able to safely clear the loading dock door.
- **Delivery Hours** - Commercial deliveries will be restricted to the time frame between 7:00 AM and 6:30 PM Monday through Friday.
- **Residential Move-ins** - Building residents will be required to reserve a space in the loading dock with the property manager. Move-ins would be scheduled Monday through Friday between the hours of 7:00 AM and 8:00 PM.
- **Service/Delivery Facility Management** - Parcel deliveries, such as FedEx or UPS, may either occur within the service delivery spaces (within the parking area), in the loading dock or along 4th Street in the proposed commercial loading zone.

- ***Trash Removal Operations*** – All site trash (residential and retail) would be hauled to dumpster in the loading dock. Residential trash collection will occur twice weekly and commercial trash collection will occur two to five times per week depending on the type of retail use

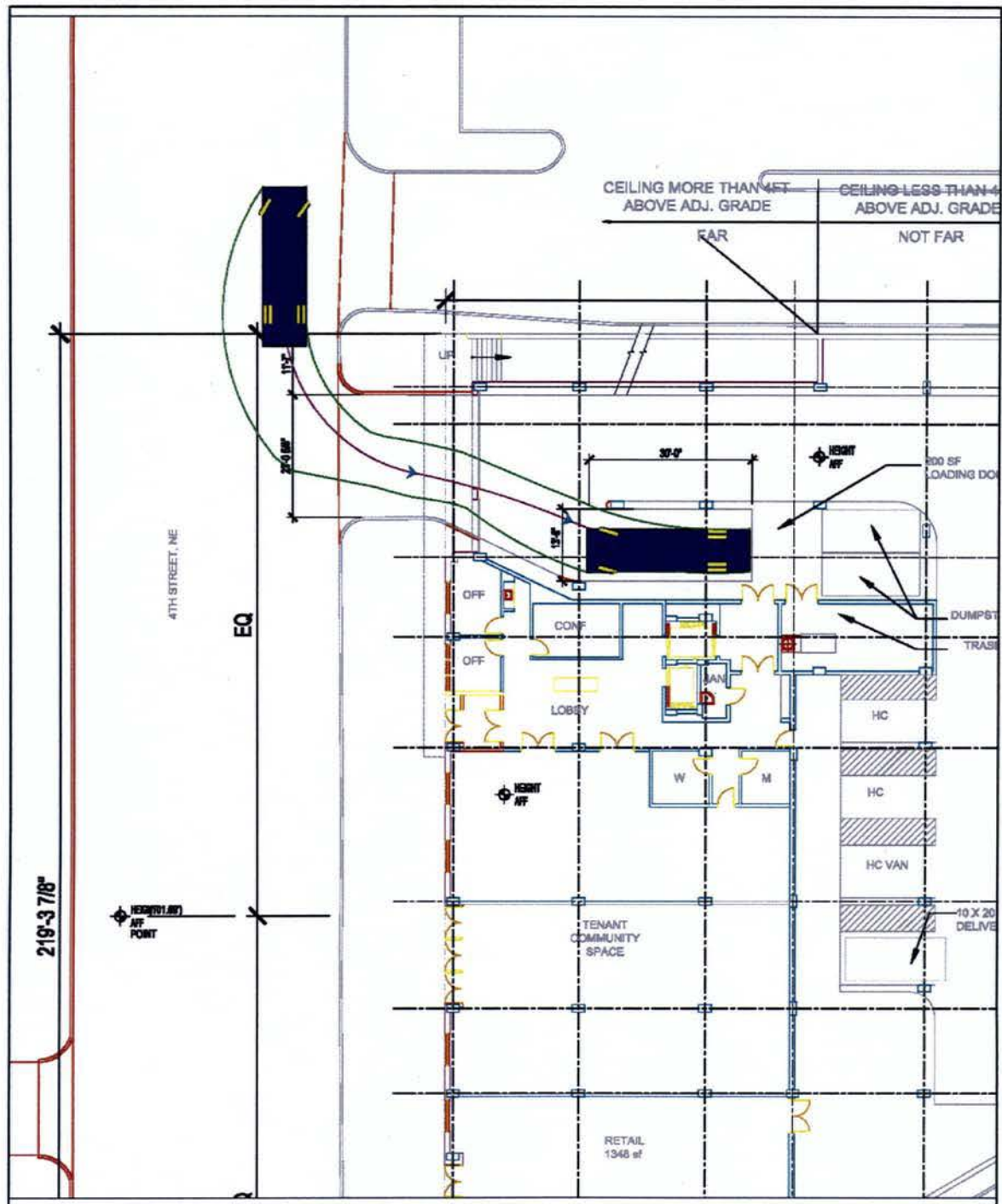


Figure 17: Inbound Truck Maneuvering Diagram

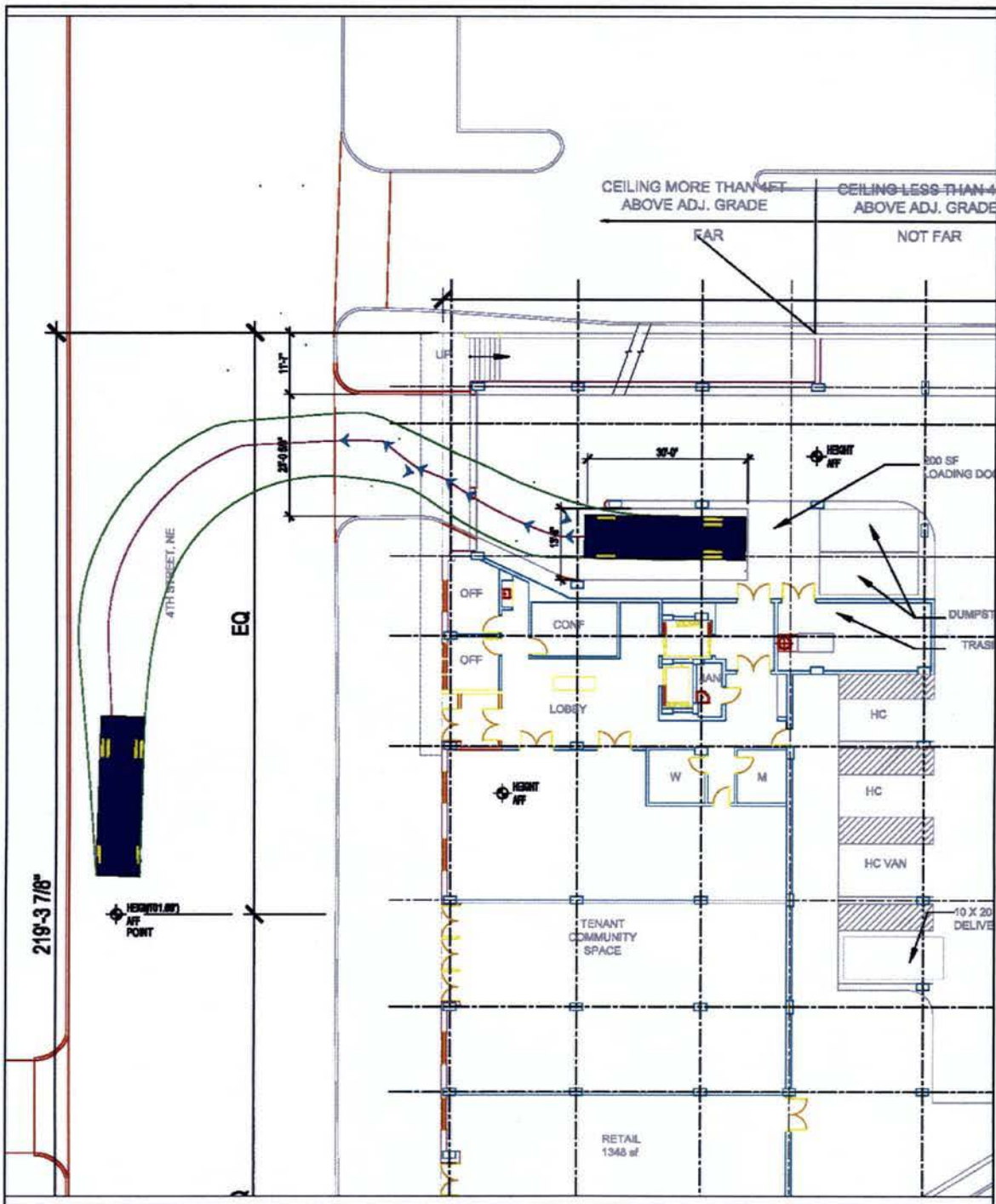


Figure 18: Outbound Truck Maneuvering Diagram

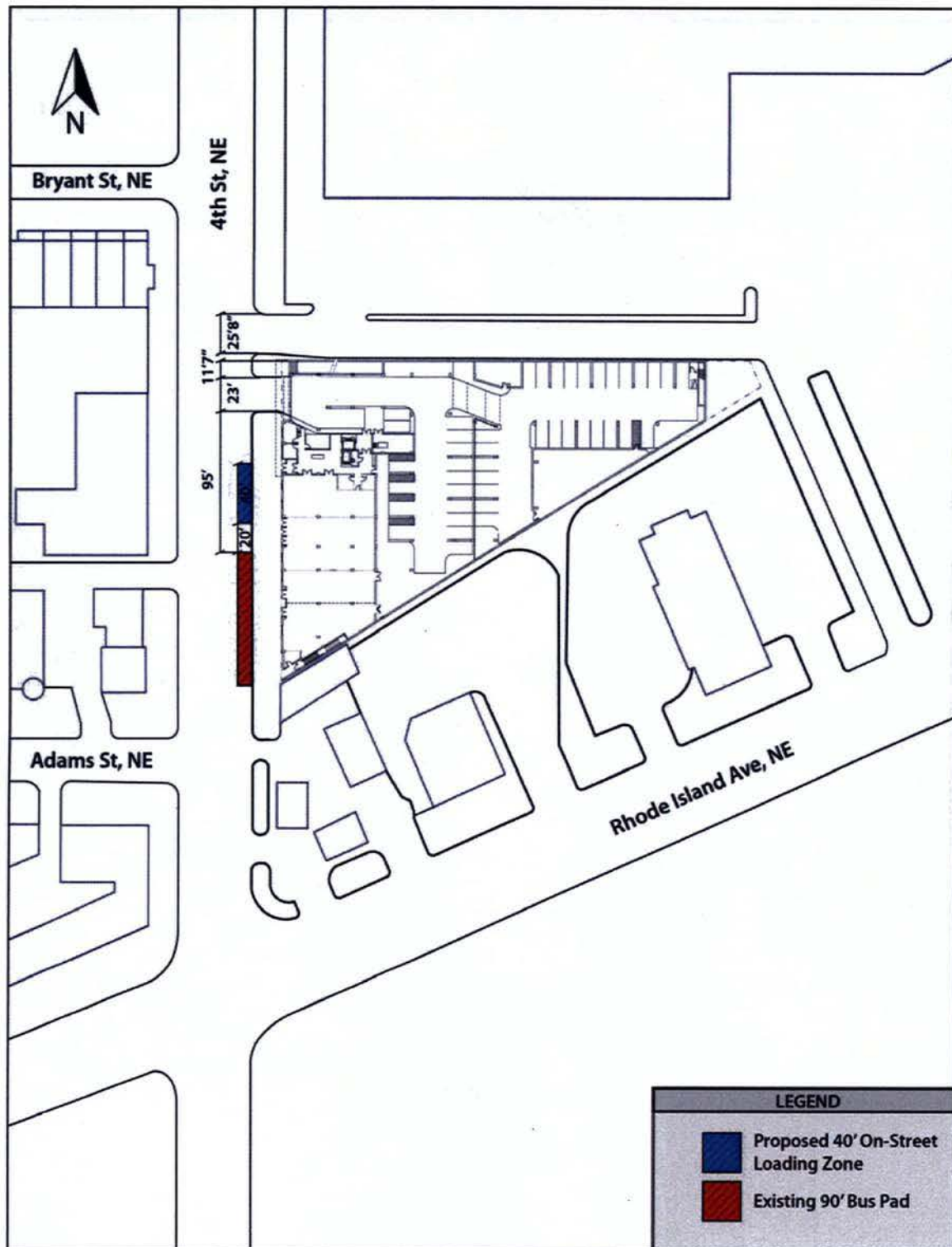


Figure 19: Proposed On-Street Loading Zone

TRANSPORTATION DEMAND MANAGEMENT

The Transportation Demand Management (TDM) Plan is an active program used to foster alternative transportation choices that are more environmentally friendly than driving alone. The applicant will actively promote and implement strategies to encourage use of green travel choices (i.e. transit, walking and biking) and thereby reduce traffic and parking demand. A list of the offered TDM measures is as follows:

DDOT Expected TDM Measures	Applicant Offerings
During construction, maintain or coordinate relocation of any existing bus stop at the developer's expense	A Maintenance of Traffic (MOT) will be required as part of the construction permitting process. The MOT will identify temporary impacts to transportation facilities such as sidewalks and bus stops. The construction manager in conjunction with the applicant will maintain or coordinate the relocation of any existing bus stops.
Comply with Zoning requirement to provide bicycle parking/storage facilities	The Applicant will provide storage in the parking garage to accommodate 53 bicycles. In addition the project will provide two bicycle racks at grade level for four bicycle parking space in front of the building.
Require all parking cost be unbundled from the cost of lease or purchases. Parking cost must be set at no less than the charges of the lowest fee garage, located within a ¼ mile.	Parking spaces will be free for residents. Residents will have assigned parking spaces. The building will be excluded from receiving a zoned residential permit for RPP parking.
Provide website links to CommuterConnections.com, goDCgo.com, Capital BikeShare and ZipCar on developer and property management websites.	As part of each tenant's initial welcome package, a document outlining website links such as CommuterConnections.com, goDCgo.com, Capital BikeShare and ZipCar will be provided. The welcome package will also include WMATA Metrorail/Metrobus and DC bicycle maps.

DDOT's *TDM in the Development Process Report* was used as a reference to guide development of this TDM plan. The applicant will provide all expected TDM measures as outlined in the TDM Recommendations Matrix based on the projected number of vehicle trips for the project (less than 50 trips).¹⁶

The Applicant has committed to the transportation demand management measures listed above.

¹⁶ Reference Table 2: TDM Recommendation Matrix; Incorporation of Transportation Demand Management into the Development Review Process Final Report and Recommendations (October 2010).

CONCLUSIONS

The primary conclusions that were presented in this study are as follows:

- The 2321 4th Street project will include 155 to 160 units with space for building management, resident services and amenities and 5,224 square feet of neighborhood service oriented retail. The project is slated for completion by the third quarter of 2014.
- The project will provide storage in the parking garage to accommodate 53 bicycles. In addition the project will provide two inverted-u bicycle racks at grade level for four bicycle parking space in front of the building.
- Site access will be provided via 4th Street. The driveway would serve as a shared vehicular/truck driveway with access to the loading dock. The project will provide one loading berth and space for one service vehicle space. Loading activities will be managed by a Loading Management Plan.
- The applicant has requested a parking variance to provide 43 parking spaces instead of 87 (as required per zoning). The 43 spaces would support the residential component of the project and include three spaces to support retail tenants/employees. Residents of the 2321 4th Street project will not be eligible to receive a Residential Parking Permit (RPP). The amount of off-street parking provided by the project is sufficient to accommodate users.
- Existing intersection analysis results indicate all of the study area intersections currently operate at acceptable Levels of Service
- The project will generate insignificant traffic increases (less than 22 peak hour trips) during the morning and evening peak hours. Thus the project will not create any adverse traffic impacts.
- Future conditions intersections analysis results (with the 2321 4th Street project) indicate all of the study area intersections would continue to at acceptable LOS. Intersection delay would increase by no more than 0.2 seconds per vehicle at any one study area intersection as a result of the project. This increase in vehicle delay is negligible.
- Future conditions queuing analysis results show that queue length increases are also negligible when compared to future background conditions.
- A Loading Management Plan has been prepared to manage trash pick-up, deliveries and other loading activities within the shared residential/commercial loading areas.

- The applicant is requesting a variance to reduce the loading berth from 1 at 55 feet to 1 at 30 feet. The size of the loading berth at 30 feet is sufficient to accommodate loading activities since the proposed apartment units are small (one to two bedrooms) and typically would not use a 50 or 55 foot truck for move-ins. In addition, U-Haul trucks (typically used for residential move-ins) range from 10' to 22' in length and would be able to utilize the proposed 30 feet loading berth.
- The applicant is also requesting a variance to reduce the loading berth vertical clearance from 14 feet to 12 feet. U-Haul trucks that support residential move-ins are typically a maximum of 11 feet in height and would be able to safely clear the loading dock door. This requested relief will have no adverse impact and is not projected to be an issue since most trucks will be 30 feet or smaller and will be able to load/un-load in the loading dock and trucks will also be able to utilize the loading zone along 4th Street.
- A Transportation Demand Management Plan is being offered by the applicant to encourage use of alternative transportation and to reduce traffic impacts.