GREENSTEIN DELORME & LUCHS, P.C.

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June15, 2023

BY IZIS

Mr. Anthony J. Hood, Chairman
D.C. Zoning Commission
One Judiciary Square
441 4th Street, N.W., Second Floor
Washington, D.C. 20001

Re: Zoning Commission Case No. 23-08
Application of The Wesley Theological Seminary of the United Methodist Church
for a First-Stage and Consolidated PUD
4500 Massachusetts Avenue, N.W.
Square 1600, Lots 6 (818 and 819), 7, 8 and 9.

Dear Chairman Hood and Members of the Commission:

On behalf of Wesley Seminary, the applicant in the above-referenced case ("Applicant"), please accept this letter and accompanying information as its pre-hearing submission in support of the applications for a first-stage and consolidated PUD in compliance with the requirements of 11-Z DCMR § 401. On May 25, 2023, the Zoning Commission ("Commission") voted to schedule a hearing on the application, based on the materials submitted by the Applicant and the positive recommendation of the Office of Planning (Exhibit 11 to the record).

1. *List of Witnesses Prepared to Testify on Behalf of the Applicant (11-Z DCMR §401.1(b) and (c))*. In addition to the presentation by Applicant's counsel, the following witnesses will appear on behalf of the Applicant:

    - Rev. David McAllister-Wilson - President, The Wesley Seminary.
    - Eric Leath - Director of Development, Landmark Properties.
    - Jack Boarman, AIA, NCARB, CID - Partner-In-Charge, BKV Group.
    - Stephen C. Karcha, Certified CM, LEED AP, GRP - Vice-President of Construction and Project Management, Advanced Project Management, Inc.
    - Brandice Elliott - Director of Planning Services, Holland & Knight.
    - Will Zeid, PE - Senior Associate, Project Manager, Grove Slade, Transportation Consultants.

Messrs. Boarman (Architecture), Karcha (Project Development, Construction Management), Zeid (Transportation Planning) and Ms. Elliot (Zoning, Comprehensive Plan, Racial Equity) will be offered as expert witnesses in their respective fields. Each person has previously been accepted as an expert witness by the Zoning Commission and/or Board of Zoning Adjustment.

A summary of the witnesses' testimony and expert resumes are included as Exhibit A to this submission, pursuant to 11-Z DCMR § 401.l(c).

2. *Additional Information Introduced by the Applicant (11-Z DCMR § 401.1(d))*.

The updated architectural plans submitted herewith include an updated plan showing the affordable units to be included in the new dorm.

3. *Reduced Plan Sheets (11-Z DCMR § 401.1(e))*. Previously submitted in the record as Exhibits G1-7.

4. *List of Maps, Plans, or Other Documents Readily Available That May be Offered into Evidence (11-Z DCMR § 401.1*. No additional materials at this time beyond materials already submitted in the record as Exhibit 3D and this Prehearing Submission.

5. *Estimated Time Required for Presentation of the Applicant's Case (11-Z DCMR § 401.l(g))*. The Applicant estimates it will require one (1) hour to present its case.

6. *Names and Addresses of Property Owners within 200 feet of the Property (11-Z DCMR § 403.l(a))*. Please see Exhibit 3C in the record.

7. *Names and Addresses of Each Person Having a Lease with the Owner for All or Part of Any Building Located on the Property (11-Z DCMR § 401.3(b))*. N/A, there are no such leases.

8. *Transportation Memorandum Prepared by the Traffic Consultant, if any (11-Z DCMR § 401.8)*. Comprehensive Transportation Review and TDM and PMP memorandum prepared by Gorove-Slade, attached as Exhibit B.

9. The Form 116 Hearing Fee Calculator with the amount due of $21,640,00 is attached. Please provide the link for online payment of the hearing fee.

We look forward to the Commission's consideration of this application at the next available hearing date.

Very truly yours,

GREENSTEIN DELORME & LUCHS, P.C.

John Patrick Brown, Jr.

Lyle M. Blanchard

Enclosures

CERTIFICATE OF SERVICE

I hereby certify that on June 15, 2023, the foregoing letter and attachments was delivered via electronic mail to the following:

Ms. Jennifer Steingasser
Mr. Joel Lawson
Mr. Stephen Cochran
D.C. Office of Planning
1100 4th Street, SW
Suite E650
Washington, D.C. 20024
Jennifer.steingasser@dc.gov
joel.lawson@dc.gov
stephen.cochran@dc.gov

Mr. Aaron Zimmerman
D.C. Department of Transportation
55 M Street, SE, Suite 400
Washington, D.C. 20003
aaron.zimmerman@dc.gov

ANC 3D
3D@anc.dc.gov

Ms. Tricia Duncan, Chair, ANC 3D
3D02@anc.dc.gov

Mr. Chuck Elkins, ANC 3D01
3D01@anc.dc.gov

ANC 3E
3E@anc.dc.gov

Mr. Jonathan Bender, Chair, ANC 3E
jonbender@gmail.com

Commissioner Ali Gianinno, ANC 3E06
3E06@anc.dc.gov

Commissioner Amy Hall, ANC 3E02
3E02@anc.dc.gov

Mr. Diego Carney, ANC 3E07
3E07@anc.dc.gov

Mr. Rohin Ghosh, ANC 3E08
3E08@anc.dc.gov

William Clarkson
Spring Valley Neighborhood Association
wclarksonv@gmail.com

Dennis Paul
Neighbors for a Livable Community
dennis.paul@verizon.net

William F. Krebs
Spring Valley-Wesley Heights Citizens Association
w_krebs@msn.com

John Patrick Brown, Jr., Esq.

BEFORE THE ZONING COMMISSION
OF THE DISTRICT OF COLUMBIA

FORM 116 – HEARING FEE CALCULATOR

Pursuant to Subtitle Z, Chapter 16, the following hearing fees shall be paid when the Zoning Commission schedules a public hearing on a petition or application. In the case of a petition or application combining two (2) or more actions on this form, the fee charged shall be the greatest of all the fees computed separately. Please show ALL computations.

A department, office, or agency of the Government of the District of Columbia is not required to pay a hearing fee where the property is owned by the agency and the property is to be occupied for a government building or use.

MAP AMENDMENT

Pursuant to Subtitle Z § 1601.1, if the Commission schedules a public hearing on a petition or application for an amendment to the Zoning Map, prior to advertisement of the hearing, the petitioner/applicant shall pay a hearing fee in accordance with the following schedule:

Petition or Application for Rezoning to any:	Unit	Fee	Quantity	Total
R-1 through R-3, R-6 through R-17, or R-19 through R-21 zone	43,560 sq. ft. or part of that area	$ 650		
RF-1 through RF-3 zone and RA-1 or RA-6	43,560 sq. ft. or part of that area	$1,625		
RA-2, RA-7, RA-8, or RC-1	43,560 sq. ft. or part of that area	$3,250		
RA-3 through RA-5, RA-9, RA-10, D-1-R, SEFC-2, SEFC-3, or CG-1 zone	43,560 sq. ft. or part of that area	$6,500		
MU-1, MU-2, MU-10 through MU-16, MU-22, MU-23, MU-29, D-2, SEFC-1, SEFC-4, CG-4 through CG-7, and ARTS-4 zone	10,000 sq. ft. or part of that area	$2,600		
MU-3 through MU-6, MU-17 through MU-19, MU-24 through MU-27, NC-1 through NC-5, NC-7, NC-9 through NC-11, NC-14, NC-16, NC-17, D-4-R, CG-2, ARTS-1, ARTS-2, RC-2 and RC-3 zone	10,000 sq. ft. or part of that area	$1,625		
MU-7 through MU-9, MU-20, MU-21, MU-28, NC-6, NC-8, NC-12, NC-13, NC-15, D-3 through D-5, D-5-R, D-6, D-6-R, D-7, D-8, CG-3, and ARTS-3 zone	10,000 sq. ft. or part of that area	$3,250		
PDR-1 through PDR-7 zone	20,000 sq. ft. or part of that area	$2,600		
TOTAL				

Notes:
- *The maximum hearing fee for rezoning to any Residence District (R, RF, RA, D-1-R, SEFC-2,SEFC-3 or CG-1) is $65,000.*
- *For an application that proposes rezoning to more than one (1) zone district or is in the alternative, the fee shall be the total of the amounts for the area devoted to each proposed district or alternative computed separately.*
- *A "part of an acre" or "part of that area" should be rounded to the next whole number.*

TEXT AMENDMENT

Pursuant to § Subtitle Z § 1601.3, if the Commission schedules a public hearing on a petition for an amendment to the text of the Zoning Regulations, prior to the advertisement of the hearing, the petitioner shall pay a hearing fee in accordance with the following schedule:

Petition	Fee	Quantity	Total
Each section proposed to be added, deleted, or amended (Maximum of $1,300)	$325.00		
TOTAL			

FORM 116 – HEARING FEE CALCULATOR – Side 2

PLANNED UNIT DEVELOPMENT (PUD) OR AIR SPACE DEVELOPMENT

Pursuant to Subtitle Z § 1601.4 if the Commission schedules a public hearing on an application for approval of a planned unit development or air space development, prior to the advertisement of the hearing, the applicant shall pay a hearing fee in accordance with the following schedule:

Application	Fee	Quantity	Total
For each 100 sq. ft. of gross floor area (GFA), or part thereof, included in the application devoted to dwelling units, and the immediate area needed to serve that dwelling unit (Maximum of $65,000.)	$7.00	2,993	$20,951.00
For each 100 sq. ft. of GFA, or part thereof, included in the application devoted to any use other than a dwelling unit and the immediate area needed to serve that dwelling unit	$13.00	53	$689.00
TOTAL			$21,640.00

Notes:
- *There is no charge for the hearing on the second-stage of a two-stage PUD application*
- *A "part thereof" should be rounded to the next whole number.*

MODIFICATION TO AN APPROVED PUD OR AIR SPACE DEVELOPMENT

Pursuant to Subtitle Z § 1601.6, if the Commission schedules a public hearing on an application for a modification to an approved planned unit development, air space development, or any other review of a specific site or building plan, prior to the advertisement of the hearing, the applicant shall pay a hearing fee in accordance with the following schedule:

Request for Modification	Fee	Total
Modification to a previously approved case	26% of original hearing fee or $1,300, whichever is greater	
TOTAL		

APPLICATION/ FEE OF PETITION

Pursuant to Subtitle Z § 1601.5, in the case of a petition or application combining two (2) or more actions on this form, the fee charged shall be the greatest of all the fees computed separately. Below, please list the total fee for each action requested and enter the fee of the greatest fee calculated.

Type of Petition/Application	Total
Map Amendment	
Text Amendment	
PUD/Air Space Development	
Modification to an approved PUD or Air Space Development	
GREATEST OF CALCULATED FEES	

CERTIFICATION

I/We certify that the information on this form is true and correct to the best of my/our knowledge, information and belief. Any person(s) using a fictitious name or address and/or knowingly making any false statement on this application/petition is in violation of D.C. Law and subject to a fine of not more than $1,000 or 180 days imprisonment or both. (D.C. Official Code § 22-2405)

Name: John Patrick Brown, Jr. **Signature:** **Date:** 6/15/2023

If you need a reasonable accommodation for a disability under the Americans with Disabilities Act (ADA) or Fair Housing Act, please complete a Form 155 - Request for Reasonable Accommodation.

DCOZ

EXHIBIT “A”

EXHIBIT A

Outline of Witness Testimony

I. David McAllister-Wilson, The Wesley Seminary

- **A.** Wesley Seminary: Past, Present and Future
- **B.** Thrive in Place to Further Education Mission
- **C.** Wesley's Contribution to City, Diversity and Equity
- **D.** Vital Role of Community Engagement with our Neighbors, ANCs, CLC

II. Eric Leath, Landmark Properties

- **A.** Introduction to Landmark Properties
- **B.** Purpose Built Student Housing
- **C.** Operation of New Dormitory
- **D.** Implementation of Inclusionary Zoning

III. Jack Boarman, BKV Group

- **A.** New Dormitory Design and Features
- **B.** Purpose Built Student Housing
- **C.** Project Revisions
- **D.** Allocation of Inclusionary Units
- **E.** Sustainability
- **F.** Landscaping

IV. Steve C. Karcha, Advanced Project Management, Inc.

- **A.** Wesley Campus
- **B.** Demolition of Buildings
- **C.** New Administration and Maintenance Building
- **D.** Green Open Space/Landscaping
- **E.** Playground
- **F.** Sidewalk and Public Space Improvements
- **G.** Construction Management with Community Participation

V. Brandice Elliott, Holland & Knight

- **A.** Standard of Review
- **B.** Racial Equity Analysis
- **C.** Consistency with IZ Requirements

VI. Will Zeid, Grove Slade

- **A.** Comprehensive Transportation Review
- **B.** Transportation Demand Management
- **C.** Performance Monitoring Plan

JACK OWEN BOARMAN, AIA, NCARB, CID

PARTNER-IN-CHARGE

Jack brings over 44 years of experience in the design of residential developments, corporate, government and academic facilities. Since founding the firm in 1978, Jack has led the firm's team design approach in the development of quality architecture across the country. He has expanded the design practice for planning, programming and design of urban redevelopment projects and historic renovations.

EDUCATION // Bachelor of Architecture with Distinction, University of Minnesota

YEARS OF EXPERIENCE // 44

REGISTRATIONS // Professional Architect: DC# 101622, MD #16180, MN #11682, IL #001017467, SD #4926, WI #6144, IA #2153, AZ #20740, NY #018772, CID# C00659, AIA Member # 30022509, NCARB #26798

PROFESSIONAL AFFILIATIONS // American Institute of Architects (AIA), Minneapolis Chapter, Minneapolis Chapter President, 1998; Minneapolis Chamber of Commerce; Minneapolis Downtown Council; Urban Land Institute; Lambda Alpha

RELEVANT EXPERIENCE

Crystal Towers, Dweck, Arlington, VA

Urban Atlantic-Walter Reed Site QRS-Wash-DC

1801 E Main-Richmond,VA- 225,000 square feet, 221 units, with 5,000 square feet of retail and 110 structured parking spaces

Piazza Terminal, Philadelphia, PA – Multifamily, Market-rate, New Construction, 937,000 SF, 13 stories, 951-unit, 513 parking spaces (5% are dedicated for green vehicles), In Progress

Broad and Washington, Philadelphia, PA – Market-rate, Mixed-use, Multifamily, In Progress

CastleRock, GMU Prince Williams Bldg C, Prince Williams County,VA - student housing, 3 Buildings Building A 197 Units, Building B 170 Units, Building C 155 Units

Brewers Hill, Greystar, Baltimore, MD – Market-rate, Multifamily, 500-unit, In Progress

Dominium-Bluffs Pkwy Senior-Canton-GA

City Club Apartments Midtown Detroit, CCA, Detroit, MI - Market-rate, 16-, 6-story structures, 357 units, 30,000 SF retail space, 250 below-grade parking

Harwood Flats, Foulger Pratt & Promark Real Estate Services, Kensington, MD – Project manager for the design and construction of a mixed use, 614-unit, development. 549,771 GSF, 28,000 SF retail

Cotton Annex, Douglas Development, Washington, DC- Adaptive reuse of the landmarked 90,000 square foot Cotton Annex, with an additional 400,000 square feet of new construction. 610 total units

Artspace Silver Spring Arts Campus, Montgomery County and Artspace, Silver Spring, MD – affordable, addition & renovation, 68 live/work artist studios, 11 townhouses

Beckert's Park, Foulger-Pratt, Washington, DC – Multifamily, Mixed Use, 5-story, 327-unit, 60,000 SF

Center City District, Landmark on Grand River / Newman Lofts, East Lansing, MI – Multifamily, Mixed-Use, Student Housing, New Construction, 2-Towers, 96-Active Adult Units, 289-Student Housing Unit

âme (Meridian Hill Hall), Jair Lynch, Washington, DC – Multifamily, Adaptive Reuse, Historic Renovation, 8-story, 206-unit, 187,586 SF, $37M estimated

The Aspen, Ellisdale, Washington, DC – Multifamily, Mixed Use, New Construction, 10-story, 133-unit, 88,310 SF housing, 5,890 SF retail, $18.7M

(Mai Place) 1400 14th Street NW, Abdo Development, Washington, DC – mixed use, corporate, new construction, 4-story, 30-unit, 46,394 SF housing, 13,866 SF retail, $11.7M

New Carrollton Mixed Use Development Phase II, Urban Atlantic, New Carrollton, MD- mixed use, 5-story, 291-unit, 327,201 SF

The District (Riverfront Landings), Pittsburgh, PA – market rate, 2 buildings, 5 stories residential, 1 story amenities, 425 total units, 648,000 SF

Morrow Park City Apartments, Village Green Companies, Pittsburgh, PA – market-rate, new construction, 213-unit, 273,093 SF, $37.3M

The Vintage, Valor Development, Washington, DC – Multifamily, Addition & Historic Renovation, 85-unit, 63,525 SF, $9.8M

Advanced Project Management, Inc.

Stephen C. Karcha, VP of Project CM

CERTIFIED CM, LEED AP, GRP

Title
Vice President
Project and Construction Management,
36 years' experience; 25 years with APM

Education
B.S. Civil Engineering Technology,
Old Dominion University
A.S. Construction Management,
Northern Virginia Community College

Designations
(CCM) Certified Construction Manager
(GRP) Accredited Green Roof Professional
(LEED AP) LEED Professional Accreditation

Professional Affiliations
Construction Management Association of America
Green Roofs for Healthy Cities
U.S. Green Building Council
American Society of Civil Engineers
International Code Council
National Fire Protection Association
Engineer-In-Training (EIT), VA

*A*s the VP of Project and Construction Management, Stephen is a key cornerstone of the APM team. His extensive experience in construction project management, general contracting, civil engineering, and zoning brings an expansive view to all areas of the development process.

Stephen's leadership encourages an open and creative exploration of ways to overcome the challenges encountered by the entire project team in preconstruction, construction, and preoccupancy phases. He fosters and guides the project team and Ownership through the healthy tensions to achieve the goals of the project and lead to a successful outcome.

Recent Programs

Arlington Partnership
For Affordable Housing
4 Projects $70.89 Million Program

The Washington National Cathedral
5 Projects $42.9 Million Program

YMCA of Metropolitan Washington
5 Projects $41.8 Million Program

Goodwin House Incorporated
13 Projects $192 Million Program

Episcopal High School
13 Projects $86 Million Program

The Madeira School
8 projects $71.1 Million Program

Wesley Theological Seminary
7 Projects $28.5 Million Program

World Wildlife Fund, Inc.
7 Projects $8.5 Million

Alexandria Housing
Development Corporation
5 Projects $264 Million Program

Gonzaga College High School
23 projects $150.3 Million Program

Flint Hill School
3 Projects $34 Million Program

Peter Lawrence of Virginia
7 Projects $51.2 Million Program

Vinson Hall Expansion
4 Projects $87.9 Million Program

Sidwell Friends School
8 Projects $113.7 Million Program

Falcons Landing
3 Projects $45 Million Program

Virginia Theological Seminary
8 Projects 36.1 Million Program

"I appreciate a lot what APM has done to get us to this point. We would not be where we are without you" - Jonathan Frederick, President and CEO AHDC

"We were privileged to have you at the table with us; your experience, attention to detail, dedication and level head were a true benefit to the team.
- Brandon Ripley | Vice President, Construction Penzance

Holland & Knight

Brandice N. Elliott

DIRECTOR OF PLANNING SERVICES

Brandice.Elliott@hklaw.com

Washington, D.C.
202.469.5572

PRACTICE
Land Use: Mid-Atlantic

Brandice N. Elliott is the director of planning services in Holland & Knight's Washington, D.C., office and a member of the firm's Land Use and Government Team. Ms. Elliott works with the firm's nationally recognized development, land use and zoning attorneys to support clients as they acquire, plan and develop real estate projects.

Ms. Elliott has more than 15 years of experience providing detailed zoning, planning and design analysis to land use projects. She also has vast knowledge of land use, zoning, urban design and environmental regulatory compliance.

Prior to joining Holland & Knight, Ms. Elliott worked in the District of Columbia Office of Planning for 10 years, where she played a key role in the management of several development projects of varying size and complexity citywide. She worked with a broad coalition of development stakeholders and district agencies to negotiate planned unit developments (PUDs), map amendments, design review projects, text amendments, variances and special exceptions in order to provide recommendations aligned with district regulations, policies and priorities, and presented the analyses to the D.C. Zoning Commission and Board of Zoning Adjustment (BZA). Ms. Elliott also assisted in long-range planning efforts, including the Comprehensive Plan update and other small-area plan initiatives.

Ms. Elliott's experience also includes serving as a planner and deputy zoning administrator for the Town of Herndon, Virginia, where she oversaw the development of several projects, contributed to comprehensive plan area studies and coordinated advisory committees. Prior to that, Ms. Elliott spent several years in Mesa, Arizona, where she served as a zoning plans examiner, planner and code compliance officer.

Credentials

Education

- Arizona State University, MUEP, Master of Urban and Environmental Planning
- Arizona State University, B.A., Psychology, *magna cum laude*

Memberships

- American Institute of Certified Planners (AICP)

BRANDICE N. ELLIOTT

PROFESSIONAL BACKGROUND

Brandice has extensive expertise in urban planning, land use, and zoning gained through over fifteen years of experience working in both public and private sectors. She is currently the Director of Planning Services at Holland & Knight LLP, Washington, DC office. Prior to that, Brandice was a Development Review Specialist with the D.C. Office of Planning (DCOP) for ten years. Her prior experience also includes serving as a Deputy Zoning Administrator, Zoning Plans Examiner, and Code Compliance Officer.

EXPERIENCE

DIRECTOR OF PLANNING SERVICES, HOLLAND & KNIGHT LLP

August 2022 - Present

- Prepares and manages developer applications for a variety of projects, including Planned Unit Developments (PUDs), zoning map amendments, zoning variances, and special exceptions.
- Assists clients with zoning entitlements and acquisition of building permits.
- Prepares testimony for zoning and land use planning to be provided to the D.C. Zoning Commission and Board of Zoning Adjustment.
- Advises clients on interpretation and application of development regulations and approval processes.
- Prepares detailed comprehensive plan, zoning, and land use analysis to advise client during property acquisition and entitlements.

DEVELOPMENT REVIEW SPECIALIST, DISTRICT OF COLUMBIA OFFICE OF PLANNING

September 2012 - August 2022

- Prepared analyses of complex project proposals to determine conformance with the Comprehensive Plan, Small Area Plans, Zoning Regulations, and other District policies.
- Provided subject matter expertise of District policies, development goals, processes, procedures, and standards as they related to the Agency.
- Regularly provided testimony to the D.C. Zoning Commission and Board of Adjustment regarding Office of Planning recommendations.
- Collaborated with Applicants and District Agencies to refine projects and reduce conflicts in the proposed design.

Projects: Managed several PUDs of varying complexity in the Florida Avenue Market Development with the goal of securing significant benefits and amenities, particularly affordable housing; Managed development proposals in Southeast Federal Center, which generally consisted of design review and text amendments that brought the Zoning Regulations in conformance with the Master Plan; and Served as subject matter expert in development of the Chevy Chase Small Area Plan.

PLANNER AND DEPUTY ZONING ADMINISTRATOR, TOWN OF HERNDON COMMUNITY DEVELOPMENT

November 2010 - September 2012

- Served as Planner and Deputy Zoning Administrator managing the Site Plan Review Process, ensuring that all requests complied with the Comprehensive Plan, Town Code, and Town policies.

- Coordinated the Pedestrian and Bicycle Advisory Committee, which provided input for the first Countywide Bicycle Transportation Plan, and presented regular updates at public information sessions and to the Town Council.
- Was the point of contact for matters concerning the Town Code and its consistency with federal Chesapeake Bay regulations.

Projects: Contributed to the first Fairfax County Bicycle Transportation Plan; Assisted with Comprehensive Plan Area Studies, including the Herndon Metrorail Study Area Plan and Downtown Herndon Area Plan.

PLANNER, TELERGY CONSULTING

September 2009 - November 2010

- Served as Planner obtaining entitlements for the development of telecommunication infrastructure.
- Coordinated public engagement, site research, city review processes, and city public hearing processes for approvals for the development of infrastructure.

CITY OF MESA, PLANNING DIVISION

PLANNER II AND CODE COMPLIANCE OFFICER (March 2010 - September 2010)

PLANNER I (December 2007 - January 2009)

ZONING PLANS EXAMINER (August 2005 - December 2007)

- Documented cases of zoning violation, provided notification to property owners, and provided assistance to correct the violation within a timely manner.
- Served as the Planner and primary contact for all requests requiring relief from the Zoning Regulations.
- Prepared analyses of project proposals to determine conformance with the Comprehensive Plan, Small Area Plans, Zoning Regulations, and other City policies.
- Provided subject matter expertise of City policies, development goals, processes, procedures, and standards as they related to the Agency.
- Regularly provided testimony to the Zoning Adjustment Hearing Officer and Board of Adjustment regarding Office of Planning recommendations.
- Collaborated with Applicants and City Agencies to refine projects and reduce conflicts in the proposal design.
- Coordinated permit reviews requiring zoning approvals and provided technical reviews of residential, commercial, and sign plans, verifying compliance with City Codes, Zoning Commission approvals, and Board of Zoning Adjustment approvals.

EDUCATION

ARIZONA STATE UNIVERSITY

MUEP, Master of Urban and Environmental Planning

ARIZONA STATE UNIVERSITY

B.A., Psychology

CERTIFICATION

American Institute of Certified Planners

William Zeid, PE

Senior Associate Project Manager

Will is a senior associate and project manager with over 12 years of experience in traffic, parking and transportation engineering and planning in the DC, Maryland and Virginia markets providing support for designing and entitling private and public development projects. He is responsible for managing projects in Washington, DC, Maryland, and Virginia. Will helped lead a public-private working group to update Montgomery County's 2022 Local Area Transportation Review (LATR) Guidelines to incorporate a cap on off-site improvement requirements.

Will has been qualified as an expert by the DC Board of Zoning Adjustment, the DC Zoning Commission, by numerous jurisdictions in Maryland and Virginia, and has been recognized as an expert witness by the Loudoun County Circuit Court.

He has experience with all types of projects including educational institutions, mixed-use developments, commercial and retail developments, office developments, and government facilities.

Will's project experience covers the full spectrum of land-use and includes:

Residential

7 New York Avenue NE BZA, Washington DC
CSX West - WC Smith, Washington, DC
Takoma Metro Multifamily Development, Washington, DC
Decoverly Dr at Crown Park AWSC, Gaithersburg, MD
Reed Street PUD, Washington, DC
3000 M Street NW – PUD, Washington, DC
3220 Prospect Street, Washington, DC
4618 14th Street NW PUD, Washington, DC
3427 Wisconsin Avenue NW Map Amend App
2229 M St NE PUD, Washington, DC
Broadlands Section 104 Residential, Loudoun County, VA

Mixed-Use Development

1250 U Street NW Redevelopment, Washington, DC
Shady Grove Innovation District, City of Rockville, MD
MRP Steuart Buzzard Point Phase 1, Washington, DC
Square 669-670, Washington, DC
Federal Plaza Shopping Center, Rockville, MD
Smithsonian Institution – Revitalization, Washington, DC
Yards Parcel Q, Washington, DC
1301 S Capitol Street, Washington, DC
5425 Wisconsin Avenue, Chevy Chase, MD
Friendship Center, Washington, DC
Olde Ashburn Center, Ashburn, VA
15930 Frederick Road - Lidl Derwood, Gaithersburg, MD

Education

Bachelor of Science,
Civil Engineering,
University of Idaho

Professional Registrations

Maryland: No. 49415
District of Columbia: No. PE921523
Indiana: No. PE12000640

Professional Associations

Maryland Society of Professional Engineers (MDSPE)
National Association of Industrial and Office Properties (NAIOP)
Urban Land Institute (ULI)

Experience

12 years total
2 years with Gorove Slade

Location

Washington, DC

Federal, State, and Municipal Government

2406 Massachusetts Avenue NW, Washington, DC

Primary and Secondary Schools

Dorothy Heights Elementary School, Washington, DC
Ft. Lincoln / Hagans Recreation Center, Washington, DC
Raymond Elementary School, Washington, DC
Aiton School, Washington, DC
Washington Latin Public Charter School, Washington, DC
Truesdell Education Campus, Washington, DC
Kenilworth Elementary School, Washington, DC

Office

WMATA Square 487 - 600 5th Street NW, Washington, DC
14 Firstfield Road Development, Gaithersburg, MD
Rockville Corporate Center, City of Rockville, MD
Redland Corporate Center, City of Rockville, MD

Other

Wesley Theological Seminary, Washington, DC
4.5 Street Alley 2-Way/1-Way Conversion
405 S Frederick Road – Wawa, Gaithersburg, MD
Glymont Gas Station, Indian Head, MD
MLK Gateway Phase II, Washington, DC
Ivy City Valet Traffic Flow Chart, Washington, DC
Broadlands 204 North Parking Study, Loudoun County, VA

EXHIBIT “B”

GOROVE **SLADE**
Transportation Planners and Engineers

TECHNICAL MEMORANDUM

To:	Sayra Molina Aaron Zimmerman	District Department of Transportation
From:	Drew Ackermann William Zeid, P.E. Erwin Andres, P.E.	
Date:	June 10, 2022	
Subject:	Wesley Campus Plan (ZC No. 22-13) Transportation Demand Management (TDM) Plan and Performance Management Plan (PMP)	

Introduction

This memorandum details the revised Transportation Demand Management (TDM) plan and a Performance Management Plan (PMP) for zoning case 22-13 - 4500 Massachusetts Avenue NW - Wesley Theological Seminary (WTS).

Transportation Demand Management (TDM) Plan

Transportation Demand Management (TDM) is the application of policies and strategies used to reduce travel demand or to redistribute demand to other times or spaces. TDM elements typically focus on reducing the demand of single-occupancy, private vehicles during peak period travel times or on shifting single-occupancy vehicular demand to off-peak periods.

The TDM plan for the proposed project is based on zoning regulations in addition to DDOT expectations for TDM programs for this type of use. As such, the applicant will implement the following TDM measures, at a minimum, applying to the Project and to the Wesley Campus Plan as a whole. The Applicant will explore other innovative TDM strategies and will coordinate the implementation of those strategies with goDCgo and DDOT's TDM Team.

- Unbundle the cost of vehicle parking from the lease for each residential unit and charge a minimum rate based on the average market rate within a quarter mile. Only monthly or by semester rates will be charged. Free parking, validation, or discounted rates will not be offered.
- Of the 350 parking spaces within the Project's garage, at least seven (7) will have electrical vehicle charging stations per DDOT's recommendation of one (1) charging station for every 50 parking spaces.
- Will work with American University to allow WTS students, faculty, and employees to use the AU shuttle to the Metrorail Station.
- Will fund and install an electronic screen displaying transit, shuttle, and bikeshare information in the lobby of the new building.
- Identify a Transportation Coordinator for the WTS campus. The Transportation Coordinator will act as a point of contact with DDOT, goDCgo, and Zoning Enforcement.
- Will provide Transportation Coordinator's contact information to goDCgo, conduct an annual commuter survey of employees on-site, and report TDM activities and data collection efforts to goDCgo once per year.
- Transportation Coordinator will develop, distribute, and market various transportation alternatives and options to the residents, including promoting transportation events (i.e., Bike to Work Day, National Walking Day, Car Free Day) on property website and in any internal building newsletters or communications.

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- Transportation Coordinator will receive TDM training from goDCgo to learn about the transportation conditions for this project and available options for implementing the TDM Plan and PMP.
- Provide residents who wish to carpool with detailed carpooling information and will be referred to other carpool matching services sponsored by the Metropolitan Washington Council of Governments (MWCOG) or other comparable service if MWCOG does not offer this in the future.
- Will meet ZR16 long-term bicycle parking requirements by providing at least 62 long-term spaces free of charge to residents. At least 50% of long-term spaces (at least 31 spaces) will be located horizontally on the floor of the bike room. At least 10% of long-term spaces (at least 6 spaces) will be served by electrical outlets for e-bikes/scooters. At least 5% of long-term spaces (at least 3 spaces) will be designed to accommodate larger cargo/tandem bikes (10 feet by 3 feet size). Each bike storage room will include a repair station.
- Will meet ZR16 short-term bicycle parking requirements by providing 12 short-term spaces via exterior bike racks on-campus.
- Provide welcome packets to all new residents that should, at a minimum, include the Metrorail pocket guide, brochures of local bus lines (Circulator and Metrobus), carpool and vanpool information, CaBi coupon or rack card, Guaranteed Ride Home (GRH) brochure, and the most recent DC Bike Map. Brochures can be ordered from DDOT's goDCgo program by emailing info@godcgo.com.
- Transportation Coordinator will subscribe to goDCgo's residential newsletter.
- Post all TDM commitments on the WTS website and resident message board, publicize availability, and allow the public to see what commitments have been promised.
- Offer a free SmarTrip card to every new resident and a complimentary Capital Bikeshare coupon good for one ride.
- Prior to issuance of any certificate of occupancy for any new building, WTS will fund and construct the following pedestrian improvements:
    - A sidewalk along the east side of University Avenue NW between Massachusetts Avenue and Rodman Street, subject to DDOT approval, with a leadwalk into campus along at least one side of the site driveway;
    - Install signage, crosswalk and ADA curb ramps on the south leg of University Avenue at the Rodman Street intersection, subject to DDOT approval.
    - Install signage, crosswalk and ADA curb ramps on the east leg of the campus driveway at the University Avenue and Sedgwick Street intersection or construct the crossing as a continuous sidewalk, subject to DDOT approval; and
    - Install wayfinding signage on the Wesley Seminary campus directing students to the gated connection to the American University campus.

Performance Monitoring Plan (PMP)

This Performance Monitoring Plan (PMP) is Wesley Theological Seminary's plan to track progress towards its Transportation Demand Management (TDM) goals. The PMP is comprised of mode split surveys of students, internal WTS data, and manual counts of vehicle and bicycle parking inventory and occupancy which will be compiled into monitoring reports submitted to DDOT. The purpose of the monitoring reports is to make data-driven decisions about which TDM measures, if any, need to be adjusted to meet TDM goals.

Beginning the first spring semester following opening of the new dorm, monitoring will be performed, and reports will be prepared and submitted to DDOT annually until the trip goal has been met for two (2) consecutive years and then every other year for the duration of the term of the Campus Plan.

As detailed in the April 29, 2022 Comprehensive Transportation Review for the currently proposed campus plan, the proposed changes are expected to result in a net increase in vehicular trips of 14 additional morning peak hour trips and 31 additional afternoon peak hour trips. **Thus, increasing the trip goal for the campus to 101 vehicle trips in either the weekday morning (AM) or weekday evening (PM) peak hours.**

WTS will be considered in compliance with the PMP if the vehicle trip goal of 101 peak hour trips is met.

The monitoring reports will include details regarding the following:

- Count of the number of morning and afternoon peak hour vehicular trips arriving at and departing from the campus;
    - Morning Peak Hour: Highest 1-hour between 6:30 AM – 9:30 AM
    - Afternoon Peak Hour: Highest 1-hour between 4:00 PM – 7:00 PM
    - **Whether the campus is compliant with the PMP goals by generating no more than 101 peak hour vehicle trips during any of these periods.**
- Survey to identify mode split, broken down by students and employees;
- Number of student, staff, and faculty parking permits issued;
- Student, staff, and faculty parking permit rates;
- Number of registered carpools;
- Number and location of any car-sharing spaces, alternative fuel vehicle parking spaces, carpool/vanpool spaces, and electric vehicle charging stations on campus;
- Inventory and occupancy of all on-site vehicular parking;
- Inventory and occupancy of long-term and short-term bicycle parking spaces; and
- Documentation of any changes to the overall transportation demand management (TDM) program from the previous year, including new or innovative policies being implemented but not explicitly required in the TDM plan agreed to during Zoning Commission approval.

This information will be collected using mode split surveys of students and employees, internal WTS data, and manual counts of vehicle and bicycle parking inventory and occupancy. Details regarding these data sources and collection techniques is provided below.

Data Collection and Mode Split Surveys

Data collection and surveys will occur on a typical weekday during the Spring semester when weather conditions are normal. A "typical" day is defined as a Tuesday, Wednesday, or Thursday when Wesley and American University classes are in session, during a week without holidays, and far enough into the school year that travel patterns are normalized.

Mode Split Surveys

WTS will conduct surveys of on-campus students and employees to determine mode splits of trips to campus, which will be included in the monitoring reports. Mode split surveys will be collected on a typical weekday when large, representative population samples can be found.

In order to have concrete, trackable year-to-year mode split data, it is recommended the phrasing of mode split survey questions include whether the respondent is a student or employee, and only ask for the travel mode the respondent used that day (not the mode they typically use according to memory). For ease of future analysis, it is recommended WTS keep the raw survey data, separated by students and employees, on file. It is recommended that the mode split survey questions be phrased as follows:

1. Are you a:
    a. WTS Student
    b. AU Student
    c. Faculty
    d. Full-time employee
    e. Part-time employee
    f. Contractor
    g. Visitor
2. What transportation mode did you use for **most of** your trip to campus **today**?
    a. Driving a car alone
    b. Driving a car with passengers
    c. As a passenger in a car
    d. Carshare (Zipcar, Free2Move)
    e. Motorcycle
    f. AU Shuttle
    g. Metrobus
    h. Metrorail
    i. Taxi
    j. Rideshare (Uber, Lyft)
    k. Bicycle (personal)
    l. Scooter (personal)
    m. Capital Bikeshare
    n. Shared dockless e-scooter/bicycle (Lime, Bird, Jump, etc.)
    o. Walk/run
    p. Other: please specify

3. What transportation mode did you use for **<u>the last part of</u>** your trip to campus **<u>today</u>**?

    a. Driving a car alone
    b. Driving a car with passengers
    c. As a passenger in a car
    d. Carshare (Zipcar, Free2Move)
    e. Motorcycle
    f. AU Shuttle
    g. Metrobus
    h. Metrorail
    i. Taxi
    j. Rideshare (Uber, Lyft)
    k. Bicycle (personal)
    l. Scooter (personal)
    m. Capital Bikeshare
    n. Shared dockless e-scooter/bicycle (Lime, Bird, Jump, etc.)
    o. Walk/run
    p. Other: please specify

Internal University Data

WTS will collect the following internal data to be included in the monitoring reports:

- Number of student, staff, and faculty parking permits issued;
- Student, staff, and faculty parking permit rates;
- Number of registered carpools; and
- Number and location of any car-sharing spaces, alternative fuel vehicle parking spaces, carpool/vanpool spaces, and electric vehicle charging stations on campus; and
- Number and location of any showers and changing facilities available on campus for bicycle commuters.

Manual Parking Occupancy Counts

WTS will conduct manual counts of the following items to be included in the monitoring reports:

- Inventory and occupancy of all on-campus vehicular parking facilities;
- Inventory and occupancy of long-term and short-term bicycle parking spaces on campus; and
- These observations will be collected at the following intervals
    - On the same day as the vehicular trip counts
    - At 7:00am, 11:00am, 3:00pm, and 7:00pm

Vehicular Trip Counts

WTS will conduct counts of vehicles arriving at and departing from the campus at all vehicular access locations during the morning and afternoon peak periods. The morning and afternoon peak hours will be used to assess compliance with the PMP.

- Morning Peak Hour: Highest 1-hour between 6:30 AM – 9:30 AM
- Afternoon Peak Hour: Highest 1-hour between 4:00 PM – 7:00 PM
- **Whether the campus is compliant with the PMP goals by generating no more than 101 peak hour vehicle trips during any of these periods.**

Comprehensive Transportation Review

Wesley Campus Plan

Washington, DC

April 29, 2022

GOROVE SLADE
Transportation Planners and Engineers

ZONING COMMISSION
District of Columbia
CASE NO.22-13
EXHIBIT NO.15A1

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Executive Summary

This report presents a Comprehensive Transportation Review (CTR) for the Wesley Campus Plan at the Wesley Theological Seminary (WTS) campus.

The purpose of this CTR is to evaluate whether the project will generate a detrimental impact to the transportation network surrounding the site. This evaluation is based on a technical comparison of the Existing Conditions, Background Conditions, and Total Future Conditions. This report concludes that **the project will not have a detrimental impact** to the surrounding transportation network assuming the proposed site design elements are implemented.

Proposed Project

The development site location is within the WTS campus, which is generally bounded by University Avenue NW to the west, Massachusetts Avenue NW to the north, and the American University (AU) campus to the east and south. The portion of the site to be redeveloped includes the Old President's House, a surface parking lot and two (2) student housing and administration buildings.

The proposed project includes replacement of the Old President's House and removing the surface parking lot and existing buildings to construct a new student housing building containing approximately 215 dwelling units, 1,535 square feet of retail spaces, and 350 below-grade parking spaces.

The proposed student housing building will be for WTS and AU students and may also house immediate families, faculty and staff and building employees. The housing building will not otherwise serve the general public.

Multimodal Overview

Trip Generation

The Wesley Campus Plan is expected to generate new trips within the surrounding transportation network across all transportation modes during the morning and afternoon peak hours. However, with the implementation of a Transportation Demand Management (TDM) plan as part of the project, the resulting new trips generated by the project will not have a detrimental impact on the transportation network. The multimodal trip generation for the proposed project is as follows:

- <u>AM Peak Hour:</u> 14 vehicles/hour, 39 transit riders/hour, four (4) bicycle trips/hour, and 19 walking trips/hour.
- <u>PM Peak Hour:</u> 33 vehicles/hour, 90 transit riders/hour, 10 bicycle trips/hour, and 45 walking trips/hour.

Transit

The site is located 1.1 miles from the Tenleytown-AU Metro station on the Red Line and is served by local bus routes.

The site is expected to generate a manageable amount of transit trips, and the existing service can accommodate these new trips.

Pedestrian

The site is surrounded by a generally adequate pedestrian network. Despite some incidences of missing sidewalks, curb ramps, and crosswalks on minor streets near the project site, there are generally adequate pedestrian facilities along primary walking routes between the site and major local destinations.

The site is expected to generate a manageable amount of pedestrian trips, and the existing pedestrian facilities can accommodate these new trips.

Bicycle

The site is proximate to several on-street bicycle facilities, including the bike lanes on New Mexico Avenue NW and Van Ness Street NW, and the on-street signed bike routes on 42nd and 43rd Streets NW. Using these facilities, bicyclists have access to several off-street bike facilities, such as the Rock Creek Trail and the Klingle Valley Trail.

Several planned and proposed bicycle projects will improve bicycle access to the site, including protected bike lanes on Massachusetts Avenue NW, Nebraska Avenue NW, and New Mexico Avenue NW.

The project will include long-term bicycle parking inside the building and short-term bicycle parking along the perimeter of the site that meets zoning requirements.

The site is expected to generate a manageable amount of bicycle trips, and the existing bicycle facilities can accommodate these new trips.

Vehicular

The site is accessible via Massachusetts Avenue NW, a principal arterial which connects the site to expressways within the District such as the Southeast Freeway (I-695), the Southwest Freeway (I-395), and the Anacostia Freeway (DC-295). These expressways connect with the Capital Beltway (I-495) and other regional Interstates.

To identify the project's impact on the transportation network, future conditions were analyzed with and without the project. Intersection analyses were performed to calculate the average delays and queues for vehicles at each of the study intersections. These average delays and queues were compared to the acceptable levels of delay and queue impacts set by DDOT standards to determine if the project will negatively impact the study area.

Further, future conditions with the proposed development were analyzed under the following two scenarios:

- Existing Access: University Avenue egress driveway remains open to site egress traffic during peak periods, consistent with existing conditions. The driveway already does not allow inbound site traffic, other than delivery vehicles.
- Proposed Access: University Avenue egress driveway closed to egress site traffic during AM and PM peak periods, except for delivery vehicles that would still be permitted to use the driveway.

The analysis concluded that one (1) intersection would meet DDOT's delay-related threshold for mitigation under the Existing Access scenario and no intersections under the Proposed Access scenario.

After exploring options for mitigating impacts at this intersection, this report recommends implementing a robust Transportation Demand Management (TDM) plan consistent with DDOT's Baseline Plan as a mitigation measure.

Safety Recommendations

A qualitative review of the crash data available through the DDOT-maintained and publicly-available "Crashes in DC" database was performed to identify study intersections, if any, in which conditions for vehicles, pedestrians, and bicyclists may be improved.

Based on a review of facilities in the area and relevant crash data, two (2) intersections were identified for further evaluation. Recommendations for these intersections, presented for DDOT's consideration and not for the Applicant to complete as part of the proposed project, are summarized below:

Massachusetts Avenue and Wesley Circle NW

Installation of the planned protected bike lanes along Massachusetts Avenue NW would improve conditions for bicyclists and pedestrians. Further, a safety audit should be performed as part of DDOT's Traffic Safety Assessment program.

Massachusetts Avenue and Glover Gate/Katzen Driveway NW

Installation of the planned protected bike lanes along Massachusetts Avenue NW would improve conditions for bicyclists and pedestrians. Further, a safety audit should be performed as part of DDOT's Traffic Safety Assessment program.

Transportation Demand Management (TDM) Plan

Per the DDOT CTR guidelines, the goal of implementing TDM measures is to reduce the number of single occupancy vehicles and vehicle ownership within the District. The promotion of various programs and existing infrastructure includes maximizing the use of transit, bicycle, and pedestrian facilities. DDOT has outlined expectations for TDM measures in the CTR guidelines, and this project is proposing to implement a TDM plan consistent with these guidelines based on the expected impact of the project, as discussed in the Project Design section of this report.

Summary

This report concludes that the Wesley Campus Plan will not have a detrimental impact on the surrounding transportation network assuming the proposed site design elements are implemented.

The project has several positive design elements that minimize potential transportation impacts, including but not limited to the following:

- The site's proximity to transit service and bicycle infrastructure;
- The site's location within a generally adequate pedestrian network along major walking routes;
- The site's loading facility design, which maintains loading activity within private property and provides loading circulation that ensures head-in/head-out truck movements are performed from the public roadway network;
- The inclusion of secure long-term bicycle parking spaces that meet zoning requirements;

- The inclusion of short-term bicycle parking spaces within the site that meet zoning requirements; and
- A TDM plan that reduces the demand of single-occupancy, private vehicles during peak period travel times and shifts single-occupancy vehicular demand to off-peak periods.

Introduction

This report is a Comprehensive Transportation Review (CTR) reviewing the transportation aspects of the Wesley Campus Plan. The site, shown in Figure 1 and Figure 2, is located at Square 1600 and Lot 0819 within the Wesley Theological Seminary (WTS) campus in the Spring Valley neighborhood of Washington, DC. The site is currently zoned RA-1.

The project site is currently improved with a surface parking lot and two (2) student housing and administration buildings. The proposed project includes removing the surface parking lot and existing buildings, replacing them with a new building containing student housing and retail space with below grade parking.

The proposed project also includes closing the existing University Avenue egress driveway to traffic during the AM and PM peak periods, except for delivery vehicles that would still be permitted to use the driveway. This is identified as the Proposed Access condition, and is presented in further detail within the report.

The proposed student housing building will be for WTS and AU students and may also house immediate families, faculty and staff and building employees. The housing building will not otherwise serve the general public.

Purpose of Study

The purpose of this report is to:

- Review the transportation elements of the proposed project and demonstrate that it conforms to DDOT's general policies of promoting non-automobile modes of travel;
- Provide information to DDOT and other agencies on how the proposed project will impact the local transportation network, accomplishing this by identifying the potential trips generated by the proposed project on all major modes of travel and where these trips will be distributed on the network;
- Determine whether the proposed project will lead to adverse impacts on the local transportation network; and
- Propose design elements and Transportation Demand Management (TDM) measures as necessary to mitigate any potential adverse impacts to the transportation network.

Project Summary

The site location is within the WTS campus, which is generally bounded by University Avenue NW to the west, Massachusetts Avenue NW to the north, and the American University (AU) campus to the east and south. The portion of the site to be redeveloped is currently occupied by a surface parking lot and two (2) student housing and administration buildings.

The proposed project includes removing the surface parking lot and existing buildings, replacing them with a new student housing building containing approximately 215 dwelling units, 1,535 square feet of retail space, and 350 below-grade parking spaces.

Pedestrian access to the project is proposed to be located at several entrances on the northern edge of the development along the WTS driveway.

Bicycle access will be provided from the WTS driveways on Massachusetts Avenue and University Avenue. The site is located approximately 0.5 miles northwest of the bike lanes on New Mexico Avenue NW and 0.5 miles southwest of the on-street signed routes on 42nd and 43rd Streets NW. The project will meet zoning requirements by providing at least 62 long-term bicycle parking spaces inside the building and at least 12 short-term bicycle parking spaces on exterior racks. The nearest Capital Bikeshare station is located 0.2 miles east of the site at Ward Circle.

Vehicular access to the proposed garage will be provided via the internal site circulation with public road access on the northern edge of the site at Massachusetts Avenue.

Loading and deliveries will occur within an internal loading area accessed from the internal site circulation drive via with public road access on the northern edge of the site at Massachusetts Avenue. The proposed loading facilities will accommodate the project's loading needs, maintain loading activity within private property, and provide loading circulation that ensures head-in/head-out truck movements are performed to and from the public roadway network.

No new curb cuts within public space are proposed as part of the project. All vehicular access will remain from existing access locations at the two-way WTS driveway entrance/exit at Massachusetts Avenue NW and the one-way WTS driveway exit at University Avenue NW. The WTS driveway exit at University

Avenue NW is one-way outbound for all vehicles except WTS food service trucks, for which two-way traffic is permitted. Under the Existing Access scenario, this arrangement will not change, and under the Proposed Access scenario, the WTS driveway exit at University Avenue NW would be closed during the AM and PM peak periods, except for delivery vehicles that would still be permitted to use the driveway.

Study Contents

This report contains nine (9) chapters as follows:

- Study Area Overview
  This chapter reviews the transportation characteristics of the area surrounding the proposed project.
- Project Design
  This chapter reviews the transportation components of the proposed project, including site access and circulation, loading and trash operations, parking, and bicycle and pedestrian facilities.
- Travel Demand Assumptions
  This chapter outlines the travel demand and projected trip generation of the proposed project.
- Traffic Operations
  This chapter provides a summary of the existing roadway facilities and an analysis of the existing and future roadway capacity in the study area. This section highlights the vehicular impacts of the project and presents mitigation measures for minimizing impacts as needed.
- Transit Facilities
  This chapter summarizes the existing and future transit service adjacent to the site and reviews how the project's transit demand will be accommodated.
- Pedestrian Facilities
  This chapter summarizes existing pedestrian access to the site, reviews walking routes to and from the proposed project, and reviews how the project's pedestrian demand will be accommodated.
- Bicycle Facilities
  This chapter summarizes existing and future bicycle access to the site and reviews how the project's bicycle demand will be accommodated.
- Safety Analysis
  This chapter summarizes the potential safety impacts of the project. This includes a qualitative review of existing and proposed safety features surrounding the site.
- Summary and Conclusions
  This chapter presents overall findings and conclusions.

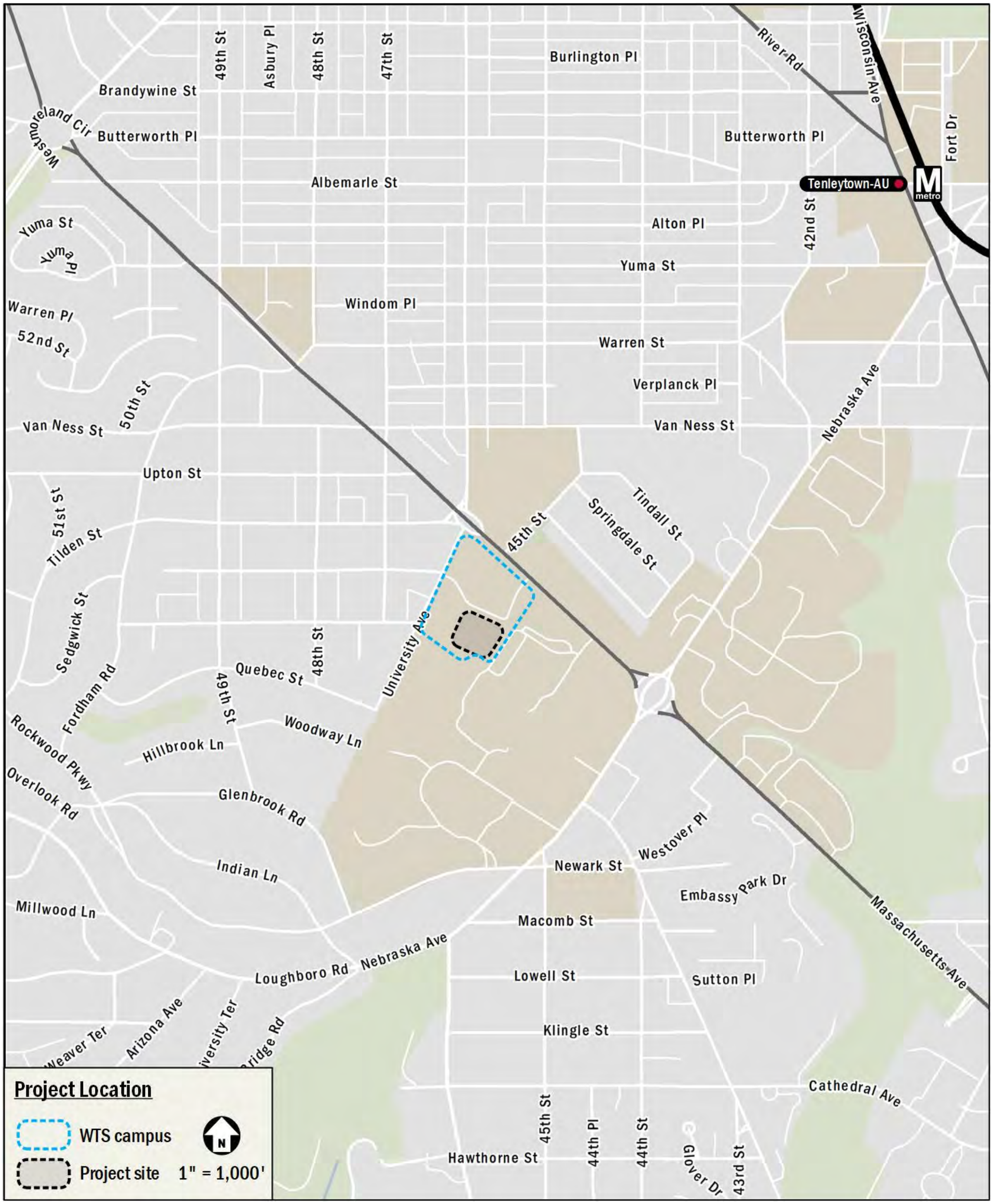


Figure 1: Site Location

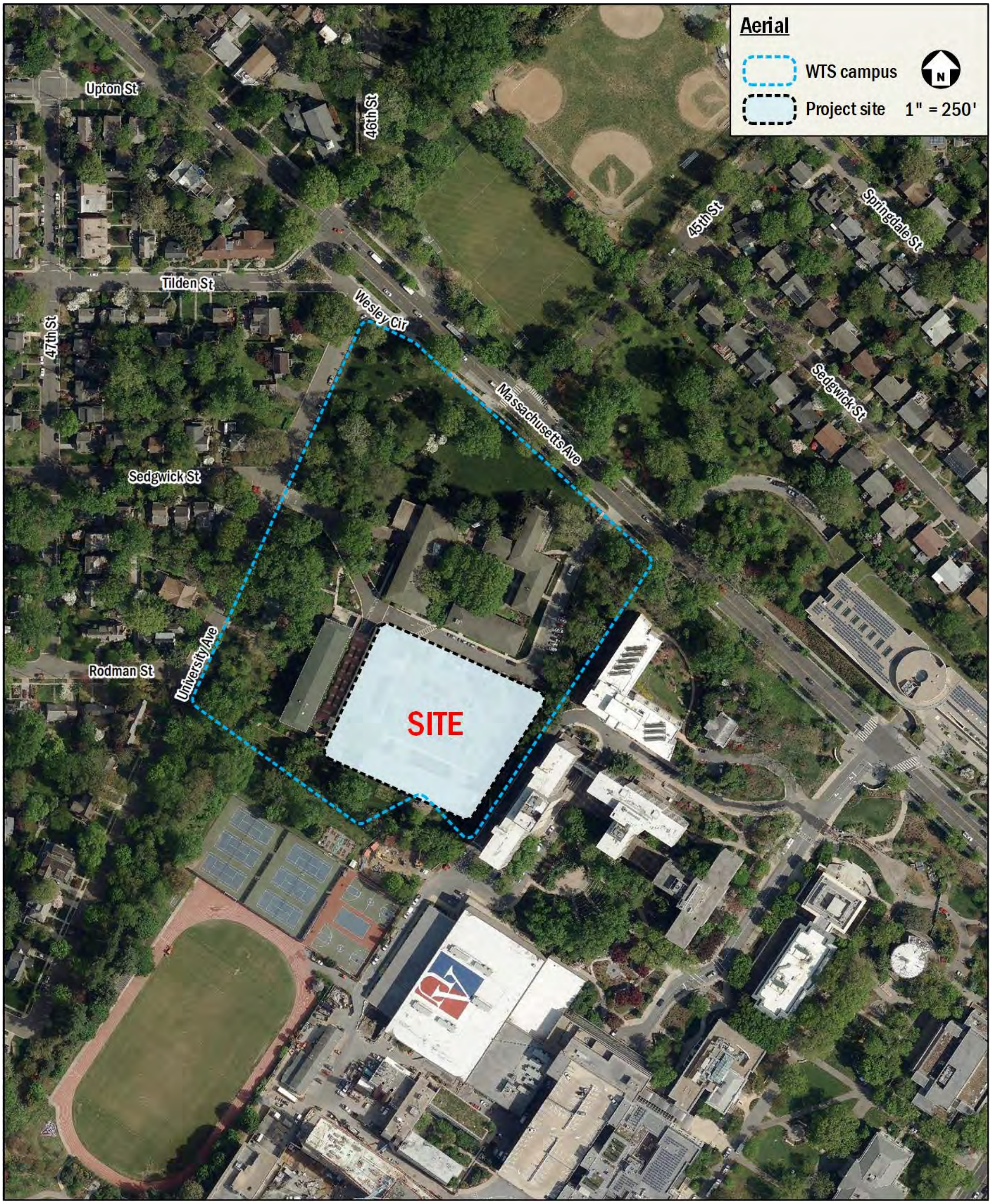


Figure 2: Site Aerial

Study Area Overview

This chapter reviews the major transportation characteristics of the study area and future local and regional projects.

This chapter concludes:

- The site is surrounded by an extensive regional and local transportation system connecting it to the rest of the District and surrounding areas;
- The site is served by bus and rail transit providing service to local and regional destinations;
- The site is accessible to several shared mobility options, including car-sharing, Capital Bikeshare, and personal mobility devices;
- There are several on-street bicycle facilities near the site, with several nearby bicycle improvements planned or proposed;
- The existing pedestrian infrastructure surrounding the site provides a mostly adequate walking environment, particularly along anticipated major walking routes; and
- There are several nearby District-wide and local planning initiatives whose goals are supported by the proposed project.

Major Transportation Features

Overview of Regional Access

As shown in Figure 4, the site has ample access to regional vehicular and transit options that connect the site to destinations within the District, Maryland, and Virginia.

The site is accessible via Massachusetts Avenue NW, a principal arterial which connects the site to expressways within the District such as the Southeast Freeway (I-695), the Southwest Freeway (I-395), and the Anacostia Freeway (DC-295). These expressways connect with the Capital Beltway (I-495) and other regional Interstates.

The site is located 1.1 miles from the Tenleytown-AU Metro station on the Red Line, which travels between the Glenmont and Shady Grove stations by way of downtown Washington, DC.

Overall, the site has ample access to regional roadways and transit options, allowing convenient travel between the site and regional destinations.

Overview of Local Access

There are a variety of major local transportation facilities near the site that serve vehicular, transit, walking, and cycling trips, as shown on Figure 5.

For vehicular trips, the site is accessible via Massachusetts Avenue NW, a principal arterial which connects the site to expressways within the District such as the Southeast Freeway (I-695), the Southwest Freeway (I-395), and the Anacostia Freeway (DC-295). These expressways connect with the Capital Beltway (I-495) and other regional Interstates.

For transit trips, Metrobus and AU Shuttle services provide service in the vicinity of the site, including connections to several neighborhoods within the District and the Tenleytown-AU Metro station. As shown in Figure 5, there are several bus routes serving the site, with multiple bus stops serving these routes located within a half-mile of the site. These bus routes connect the site to many areas of Washington, DC, including several Metro stations where transfers can be made to reach areas in the District, Virginia, and Maryland. A detailed review of all bus routes and transit stops within a half-mile walk of the site is provided in a later chapter of this report.

For bicycle trips, the site is located approximately 0.5 miles northwest of the bike lanes on New Mexico Avenue NW and 0.5 miles southwest of the on-street signed routes on 42nd and 43rd Streets NW. Using these facilities, bicyclists have access to several other regional bicycle facilities. To accommodate bicyclists, the project will provide on-site bicycle facilities as discussed in detail in the Project Design chapter. A detailed review of existing and proposed bicycle facilities and connectivity is provided in the Bicycle Facilities chapter of this report.

Anticipated pedestrian routes such as those to transit stops, schools, and community amenities, provide adequate pedestrian facilities; however, there are a few sidewalks nearby that do not meet DDOT width standards, as well as several missing curb ramps and crosswalks at minor intersections. The site area is free of major barriers to pedestrian connectivity. A detailed review of existing and future pedestrian access and infrastructure is provided in the Pedestrian Facilities chapter of this report.

Carsharing

Two (2) carsharing companies provide service in the District: Zipcar and Free2Move. Both services are private companies that provide registered users access to a variety of automobiles. Of these, Zipcar has designated spaces for their vehicles. The nearest Zipcar location to the site is located near the intersection of Massachusetts Avenue and Embassy Park Drive NW, approximately 0.7 miles southeast of the site.

Carsharing is also provided by Free2Move, which provides point-to-point carsharing. Free2Move currently has a fleet located within areas of the District and Arlington County. Free2Move vehicles may park in any non-restricted metered curbside parking space or Residential Parking Permit (RPP) location in any zone throughout the defined “Home Area”. Members do not have to pay the meters or pay stations. Free2Move does not have permanent designated spaces for their vehicles; however, availability is tracked through their website and mobile phone application, which provides an additional option for car-sharing patrons.

Bikeshare and Shared Mobility

The Capital Bikeshare program provides an additional bicycle option for residents, staff, and visitors of the proposed project. The program has placed over 500 bikeshare stations across the Washington, DC metropolitan area with over 4,500 bicycles in the fleet.

In addition to Capital Bikeshare, eight (8) electric-assist scooter (e-scooter) and electric-assist bicycle (e-bike) companies provide Personal Mobility Device (PMD) service in the District: Bird, Lime, Lyft, Razor, Skip, Spin, Helbiz, and JUMP. These PMDs are provided by private companies that give registered users access to a variety of e-scooter and e-bike options. These devices are used through each company-specific mobile phone application. Many PMDs do not have designated stations where pick-up/drop-off activities occur like with Capital Bikeshare; instead, many PMDs are parked in public space, most commonly in the “furniture zone” (the portion of sidewalk between where people walk and the curb, often where other street signs, street furniture, trees, parking meters, etc. are found). Currently, PMD pilot/demonstration programs are underway in Arlington County, the District, Fairfax County, the City of Alexandria, and Montgomery County.

Walk Score and Bike Score

Walkscore.com is a website that provides scores and rankings for walking, biking, and transit conditions within neighborhoods of the District. Based on this website, the site has a walk score of 57 (or “Somewhat Walkable”), a transit score of 42 (or “Some Transit”), and a bike score of 47 (or “Somewhat Bikeable”). Figure 3 shows the site’s location within a heat map for walkability and bikeability. The following conclusions can be made based on the data obtained from Walkscore.com:

- The site is situated in a somewhat walkable location where some errands can be accomplished on foot;
- The site is situated in an area with a moderate amount of transit; and
- The site is situated in a somewhat bikeable area with minimal bike infrastructure.

The Wesley Campus Plan will directly improve the neighborhood’s pedestrian and bike accessibility by ensuring sidewalks on the project site meet DDOT standards and by providing new short- and long-term bicycle parking facilities.

Figure 3: Walk Score and Bike Score

Future Projects

There are several District initiatives located in the vicinity of the site. These planned and proposed projects are summarized below.

Planning Documents

The following is a review of District-wide or neighborhood-level planning documents which relate to the proposed project.

MoveDC

MoveDC is the District's long-range transportation plan, which provides a framework of goals and policies that will guide transportation decisions in the District over a 25-year period. The *MoveDC* plan is oriented around the goals of safety, mobility, management and operations, enjoyable spaces, equity, project delivery, and sustainability.

Included in *MoveDC* are Mobility Priority Network maps for bicycles, surface transit, and freight. These maps do not identify specific projects or improvements, but are intended to guide future decisions about which projects will be selected and developed. In direct relation to the proposed Project, the Mobility Priority Network maps identify the following:

- Bicycle improvements along Massachusetts Avenue NW, Nebraska Avenue NW, Arizona Avenue NW, Loughboro Road NW, 49th Street NW, Albermarle Street NW, Glenbrook Road NW, and Rockwood Parkway NW.

Vision Zero Action Plan

DDOT's *Vision Zero Action Plan* is the implementation strategy of DC's Vision Zero Initiative, which commits to reaching zero fatalities and serious injuries to travelers of DC's transportation system by the year 2024. The *Action Plan* is based on DC interagency workgroups, public input, local transportation data and crash statistics, and national and international best practices. Workgroups identified the guiding themes for the *Vision Zero Action Plan* and the goals of the DC government. The *Action Plan* focuses on the following themes:

- Create Safe Streets
- Protect Vulnerable Users
- Prevent Dangerous Driving
- Be Transparent and Responsive

Strategies within each theme assign lead and supporting agencies responsible for the planning and implementation of each program. The plan also calls for partners external to District government to ensure accountability and aid in implementation.

While the *Vision Zero Action Plan* does not propose any location-specific actions that relate to the proposed project, the proposed project supports DC's overall Vision Zero goals by not creating any new curb cuts from public space, by providing new short- and long-term bicycle parking facilities, and by ensuring sidewalks along the site's perimeter meet DDOT standards and provide a safe, attractive pedestrian experience.

Sustainable DC 2.0 Plan

Sustainable DC is the District of Columbia's major planning effort to make DC the most sustainable city in the nation. It proposes a variety of sustainability goals, targets, and actions related to the built environment, transportation, and other topics.

The 2019 iteration of the plan, the *Sustainable DC 2.0 Plan*, includes the following proposed action which is supported by the proposed project.

- Expand safe, connected infrastructure for pedestrians and cyclists.
- Reduce greenhouse gas emissions and air pollution from the transportation sector.

The Wesley Campus Plan will support these actions by not creating any new curb cuts from public space, by providing new short- and long-term bicycle parking facilities, and by ensuring sidewalks along the site's perimeter meet DDOT standards and provide a safe, attractive pedestrian experience.

Capital Bikeshare Development Plan

DDOT's *Capital Bikeshare Development Plan* was originally released in 2016 to guide the continued growth of Capital Bikeshare in the District of Columbia. The most recent update of the *Development Plan* was released in 2020 and includes the following:

- A planned station at Turtle Park, 0.2 miles from the site;
- A proposed station at Quebec Street and 48th Street NW, 0.4 miles from the site; and
- A proposed station at 47th Street and Warren Street NW, 0.5 miles from the site.

Rock Creek Far West Livability Study

This is an ongoing DDOT study to evaluate the transportation network within the study area, bound by Massachusetts Avenue, Whitehaven Street, Whitehaven Parkway, Archbold Parkway, Foundry Branch Valley Park, the Potomac River, and the DC/Maryland border, to identify opportunities for a safer and more accessible multimodal network.

The study's primary objectives are to:

- Develop a comprehensive approach to traffic calming and operational improvements for all users living in and visiting the area;
- Identify specific issues that impact safety and comfort of pedestrians, bicyclists, transit users, and motorists, while also accommodating freight and delivery needs;
- Design cost-effective and measurable system improvements that benefit all users;
- Emphasize safety and access improvements around neighborhood facilities including but not limited to schools, parks, recreation centers, transit stops, and other key community facilities; and
- Enhance comfort and livability for residents and visitors to the project area.

Wesley Campus Plan (2012)

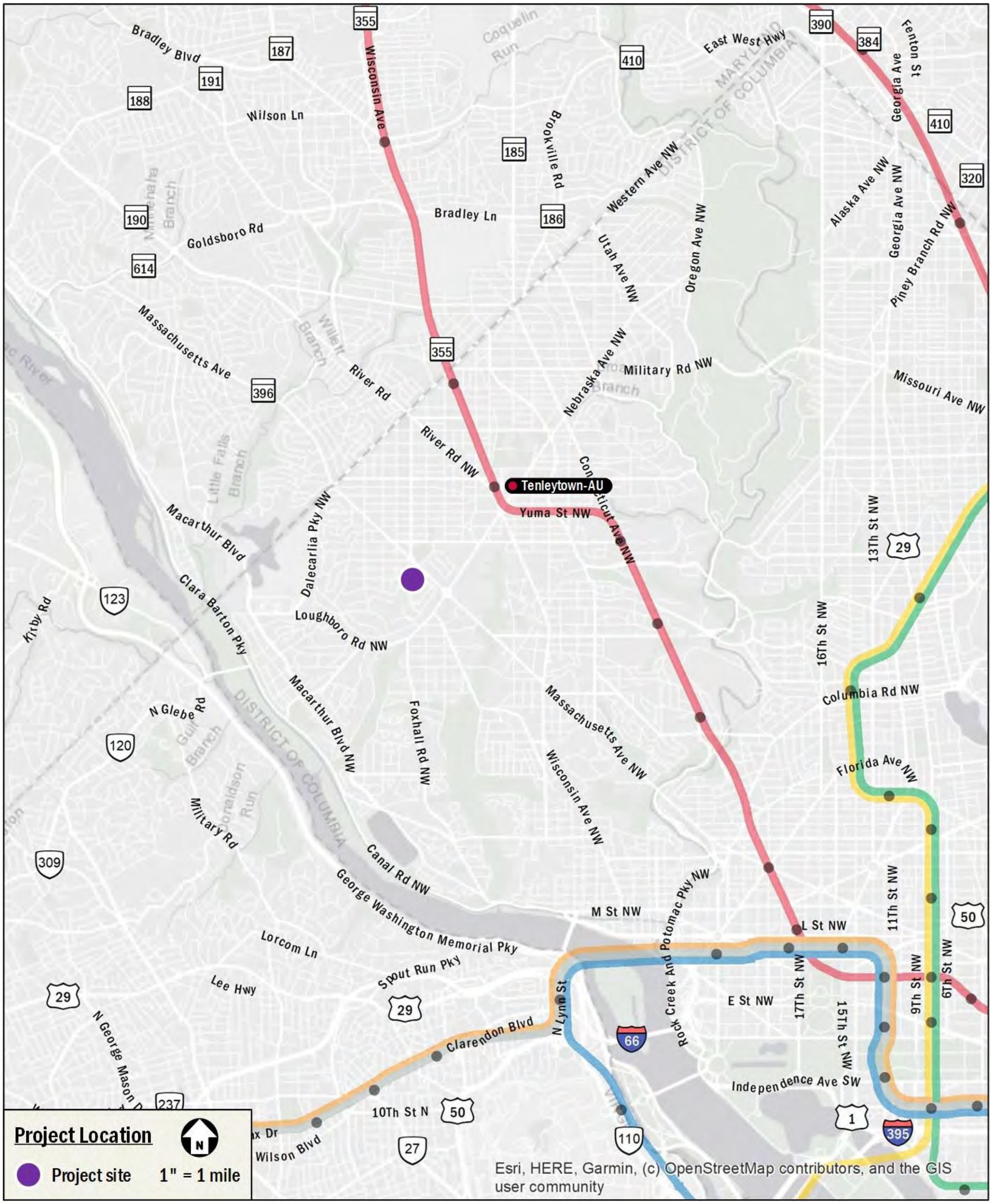
This is the currently adopted Campus Plan for Wesley Theological Seminary. It was submitted in 2012 as an amendment to the 2006 Campus Plan, and its approval was valid through June 30, 2021.

The 2012 Campus Plan amended and extended the original 2006 Campus Plan, maintaining levels of student, faculty, and staff but substantially reducing the previously approved new construction. Under the 2012 Campus Plan, existing campus facilities were maintained without demolition and several previously approved new buildings were eliminated from plans. The only addition to the campus was a new three-story, 76-bed residence hall. Additionally, the two existing residential buildings were renovated, surface parking was increased, and other campus enhancements were made.

The Seminary is currently assembling a new Campus Plan amendment consisting of a new administrative building replacing the Old President's House, as well as a new student housing building, which is the subject of this CTR.

American University Campus Plan (2021)

This is American University's recently adopted 10-year Campus Plan, encompassing the main AU campus, the Tenley Campus, and several smaller AU facilities. The Campus Plan outlines anticipated site development, vehicle parking, and Transportation Demand Management (TDM) strategies for the campus. It proposes some development on campus, an increase in the student cap from 13,600 to 14,380 students, an increase in the employee population cap from 2,900 to 3,350, and an increase of the on-site vehicle parking inventory from 2,701 to 3,000 spaces.



Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

Figure 4: Major Regional Transportation Facilities

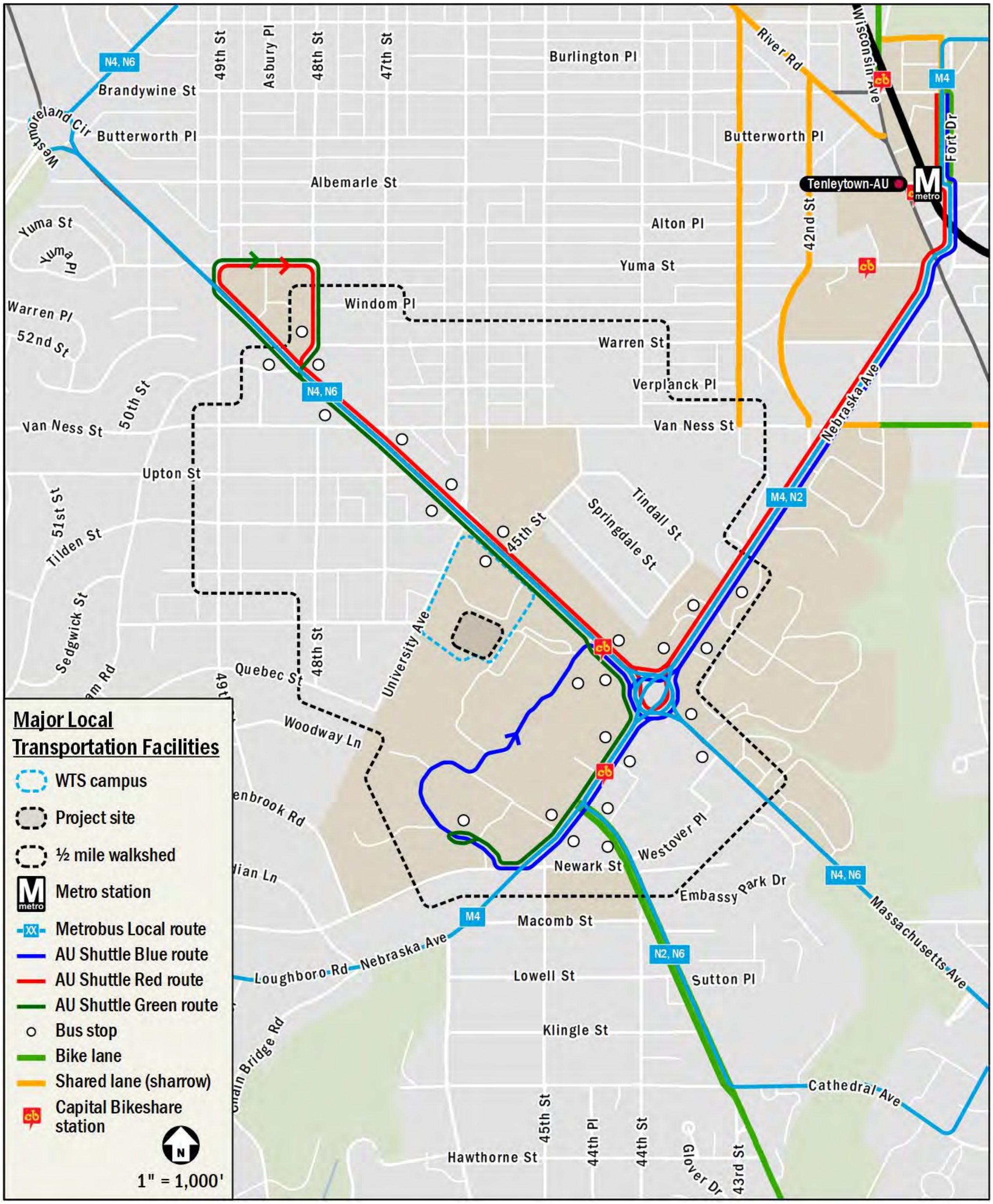


Figure 5: Major Local Transportation Facilities

Project Design

This section reviews the transportation components of the Wesley Campus Plan, including the proposed site plan and access points. It includes descriptions of the site's vehicular access, pick-up/drop-off operations, parking, and pedestrian and bicycle accommodations.

The development site located within the WTS campus, which is generally bounded by University Avenue NW to the west, Massachusetts Avenue NW to the north, and the American University (AU) campus to the east and south. The portion of the site to be redeveloped is currently occupied by a surface parking lot and two (2) student housing and administration buildings. The proposed project includes removing the surface parking lot and existing buildings, replacing them with a new student housing building containing approximately 215 dwelling units, 1,535 square feet of retail space, and 350 below-grade parking spaces.

A detailed site plan is shown on Figure 6.

Site Access and Circulation

Pedestrian Access

Pedestrian access is proposed to be provided via separate residential and retail entrances accessed from the internal driveway within WTS.

Pedestrian access to the site is shown on Figure 6.

Bicycle Access

Bicycle access is proposed to be provided via the garage ramp from the WTS driveway that will lead to a bike storage room in Level 1 of the garage. The project will meet zoning requirements by providing at least 62 long-term bicycle parking spaces inside the building and at least 12 short-term bicycle parking spaces on exterior racks within the site. The exact location of the short-term bicycle parking spaces is still to be determined.

The locations of these facilities are shown on Figure 6.

Vehicular Access

Vehicular access to the proposed garage entrance will be provided via a connection to the internal driveway within the WTS campus with public road access at University Avenue and/or Massachusetts Avenue. No new curb cuts from public space are proposed as part of this project.

Regarding vehicular access locations from public streets, there are two (2) scenarios presented in this report. In the Existing Access scenario, inbound and outbound traffic will be provided from the two-way WTS driveway entrance/exit at Massachusetts Avenue NW, and the one-way WTS driveway exit at University Avenue NW will be remain open to outbound traffic only. This is consistent with existing vehicular circulation patterns on the WTS campus.

In the Proposed Access scenario, the Massachusetts Avenue NW driveway connection will remain unchanged. However, the one-way WTS driveway exit at University Avenue NW will be closed to traffic during the AM (6:30-7:30 AM) and PM (4:00-7:00 PM) peak periods, except for delivery vehicles that would still be permitted to use the driveway.

These two scenarios are presented for reference and comparison, but the Applicant is planning to implement the Proposed Access scenario.

Figure 6 shows the location of the vehicular access points for the parking garage, pick-up/drop-off area, and loading facilities.

Pick-up/Drop-off Operations

An internal curbside pick-up/drop-off area is proposed along the WTS campus driveway adjacent to the proposed new building. The pick-up/drop-off area is shown on Figure 6.

Loading and Trash

Loading

The proposed loading facilities will accommodate all loading activity and delivery demand for the proposed project without any detrimental impact to the surrounding transportation network. DDOT standards stipulate that truck movements be accommodated without back-in movements through public space. The Wesley Campus Plan has been designed to accommodate all loading activity and associated backing maneuvers within the site. Truck turning diagrams using AutoTURN are provided in the Technical Attachments.

Loading and deliveries will occur in an internal loading area accessed from the existing WTS campus driveway. The proposed loading facilities will accommodate the project's loading needs, maintain loading activity within private property, and provide loading circulation that ensures head-in/head-out truck movements are performed from the public roadway network.

The loading area will include one (1) 30’ x 12’ loading berth and one (1) 20’ x 10’ service/delivery space, satisfying ZR16 regulations.

Truck routing to and from the site will be focused on Massachusetts Avenue NW, a designated primary truck route.

Loading access and circulation is shown on Figure 6.

Trash

Trash for the project will be accommodated using trash receptacles within the loading areas. No trash will be stored in public space.

Parking

The WTS site is currently served by 174 surface parking spaces. The proposed developed will displace 143 of the existing surface parking spaces and will include 350 parking spaces within a garage. As a result, the total parking on site will be 381 parking spaces (31 surface + 350 garage).

The net change in parking as a result of the project is therefore 207 net additional spaces.

Because the primary land use is student housing, there is no suitable parking standard from either ZR16 or DDOT’s Preferred Parking Rates to compare the proposed supply to. Per Subtitle C § 701.5, college/university land uses should provide parking as set forth in the approved Campus Plan. The 2006 Zoning Order from the approved Wesley Theological Seminary Campus Plan states that at least 200 parking spaces are to be maintained on campus.

Of the 350 garage spaces, 105 spaces will be reserved for general WTS campus use (not for residents of the new building). This number is in keeping with existing conditions; therefore, no net new parking is proposed for non-resident WTS usage.

The existing residential building being removed provides 90 beds for WTS use. The new 215 du building will provide a total of 659 beds. 90 of those beds will be for WTS use to replace the 90 beds being removed. Therefore, the new residential building will provide approximately 569 beds for non-WTS residents.

With 207 net new parking spaces and 569 net new beds, the effective parking ratio for those net new beds is 0.36 spaces per net new bed.

It should also be noted that because the proposed residential building is for WTS and AU students only, its parking supply will function primarily as long-term vehicle storage and is not expected to generate significant peak hour vehicle trips, as is typical of more traditional residential parking facilities.

The parking garage’s location and access points within the site are shown on Figure 6.

Bicycle Facilities

The Wesley Campus Plan will meet 2016 Zoning Regulations requirements for long-term and short-term bicycle parking. Per the Zoning Regulations, the project is required to provide the following bicycle facilities:

- Long-Term Bicycle Parking Spaces (62 required)
    - One (1) space per 3 dwelling units
    - One (1) space per 10,000 SF of retail space
- Short-Term Bicycle Parking Spaces (11 required)
    - One (1) space per 20 dwelling units
    - One (1) space per 3,500 SF of retail space

The project will meet or exceed zoning requirements by providing at least 62 long-term bicycle parking spaces inside the garage and at least 12 short-term bicycle parking spaces on exterior racks within the site. The exact location of the short-term bicycle parking spaces is still to be determined. The long-term bicycle spaces will adhere to Subtitle C § 805.9 of DC’s zoning requirements, as well as DDOT’s Bike Parking Guide, which stipulate that long-term spaces be located indoors in a parking garage or bike storage room, and that at least 50 percent of required long-term spaces be placed horizontally on the floor or ground, without bicycles being suspended.

Pedestrian Facilities

The Wesley Campus Plan will ensure pedestrian facilities along the site’s WTS driveway frontage meet DDOT and ADA standards. The Applicant is also coordinating with American University (AU) on options to maintain the existing pedestrian connection between the two campuses, located on the east side of the project site.

Transportation Demand Management

Transportation Demand Management (TDM) is the application of policies and strategies used to reduce travel demand or to redistribute demand to other times or spaces. TDM elements typically focus on reducing the demand of single-occupancy, private vehicles during peak period travel times or on shifting single-occupancy vehicular demand to off-peak periods.

The TDM plan for the proposed project is based on zoning regulations in addition to DDOT expectations for TDM programs for developments of this type and size. As such, the applicant proposes the following TDM measures for the project.

- Unbundle the cost of vehicle parking from the lease for each residential unit and charge a minimum rate based on the average market rate within a quarter mile. Only hourly, daily, weekly, or monthly rates will be charged. Free parking, validation, or discounted rates will not be offered.
- Identify Transportation Coordinators for the planning, construction, and operations phases of development. The Transportation Coordinators will act as points of contact with DDOT, goDCgo, and Zoning Enforcement.
- Will provide Transportation Coordinators' contact information to goDCgo, conduct an annual commuter survey of employees on-site, and report TDM activities and data collection efforts to goDCgo once per year.
- Transportation Coordinators will develop, distribute, and market various transportation alternatives and options to the residents, including promoting transportation events (i.e., Bike to Work Day, National Walking Day, Car Free Day) on property website and in any internal building newsletters or communications.
- Transportation Coordinators will receive TDM training from goDCgo to learn about the TDM conditions for this project and available options for implementing the TDM Plan.
- Provide residents who wish to carpool with detailed carpooling information and will be referred to other carpool matching services sponsored by the Metropolitan Washington Council of Governments (MWCOG) or other comparable service if MWCOG does not offer this in the future.
- Will meet ZR16 short- and long-term bicycle parking requirements by providing 62 long-term spaces and 12 short-term spaces free of charge to residents.
- Long-term bicycle storage rooms will accommodate non-traditional sized bikes including cargo, tandem, and kids' bikes.
- Provide welcome packets to all new residents that should, at a minimum, include the Metrorail pocket guide, brochures of local bus lines (Circulator and Metrobus), carpool and vanpool information, CaBi coupon or rack card, Guaranteed Ride Home (GRH) brochure, and the most recent DC Bike Map. Brochures can be ordered from DDOT's goDCgo program by emailing info@godcgo.com.
- Transportation Coordinator will subscribe to goDCgo's residential newsletter.
- Post all TDM commitments on website, publicize availability, and allow the public to see what commitments have been promised.
- Provide a FREE SmarTrip card to every new resident and a complimentary Capital Bikeshare coupon good for one ride.

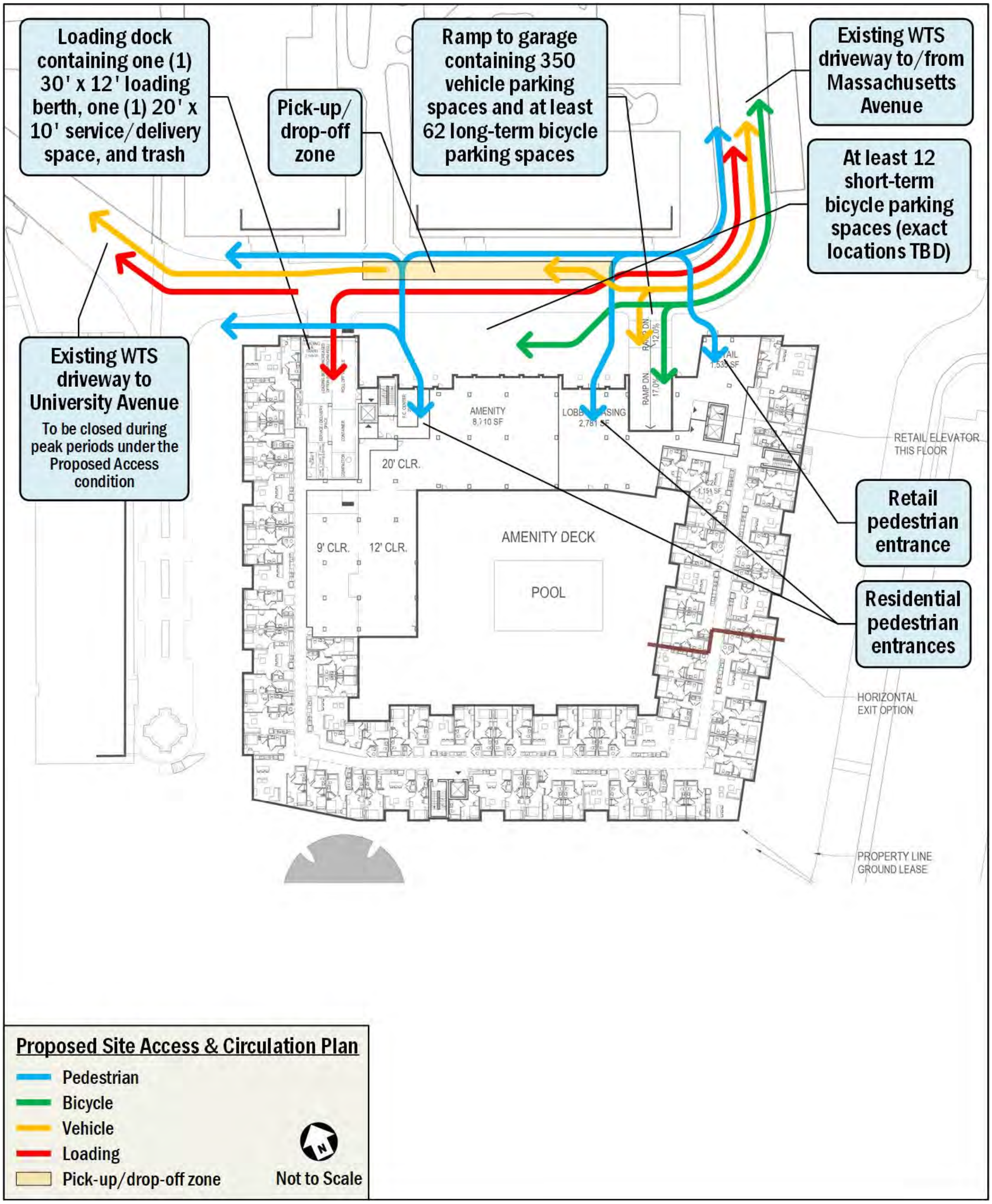


Figure 6: Proposed Site Access and Circulation Plan

Travel Demand Assumptions

This section outlines the transportation demand for the Wesley Campus Plan. It summarizes the projected trip generation of the proposed project by mode, which forms the basis for the sections that follow. These assumptions were vetted and approved by DDOT as a part of the scoping process for the study.

Traditionally, weekday peak hour trip generation is calculated based on the methodology outlined in the Institute of Transportation Engineers' (ITE) *Trip Generation*, 10th Edition. This methodology was supplemented to account for the urban nature of the project (ITE *Trip Generation* provides data for non-urban, low transit use sites) and to generate trips for multiple modes, as vetted and approved by DDOT.

Note that the trip generation shown below, the traffic forecasts presented in this report and the capacity analyses are based on the initial plan presented during the CTR scoping process that included 219 dwelling units and 690 beds. Since the plan has since been reduced to 215 dwelling units and 659 beds, these analyses represent a conservatively high estimate of the impact for the proposed project. For reference purposes, updated trip generation for the current 659-bed facility is provided in the technical attachments.

Proposed Site Trip Generation

The residential portion of the project's proposed trip generation was calculated based on ITE land use 225, *Off-Campus Student Apartment - Adjacent to Campus*, while the retail portion was calculated based on ITE land use 820, *Shopping Center.* Trips were split into different modes using assumptions derived from census data for people that currently live or work near the site, WMATA ridership survey data, and the proposed parking supply. A summary of the mode split assumptions is provided in Table 1.

Table 1: Mode Split Assumptions

Land Use	Mode			
	Drive	Transit	Bike	Walk
Residential	20%	50%	5%	25%
Retail	50%	25%	5%	20%

A summary of the multimodal trip generation for the project is provided in Table 2 for the AM and PM peak hours. The project is expected to generate 14 vehicular trips (6 in, 8 out) during the AM peak hour, and 33 vehicular trips (16 in, 17 out) during the PM peak hour. Detailed calculations are included in the Technical Attachments.

Table 2: Multimodal Trip Generation

Mode	Mode Split	Land Use	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Auto (veh/hr)	20%	Residential	5	8	13	14	16	30
	50%	Retail	1	0	1	2	1	3
		Total	**6**	**8**	**14**	**16**	**17**	**33**
Transit (ppl/hr)	50%	Residential	16	22	38	44	43	87
	25%	Retail	1	0	1	1	2	3
		Total	**17**	**22**	**39**	**45**	**45**	**90**
Bike (ppl/hr)	5%	Residential	2	2	4	4	5	9
	5%	Retail	0	0	0	0	1	1
		Total	**2**	**2**	**4**	**4**	**6**	**10**
Walk (ppl/hr)	25%	Residential	8	11	19	22	21	43
	20%	Retail	0	0	0	1	1	2
		Total	**8**	**11**	**19**	**23**	**22**	**45**

Traffic Operations

This chapter provides a summary of an analysis of the existing and future roadway capacity surrounding the site. Included is an analysis of potential vehicular impacts of the Wesley Campus Plan.

The purpose of the capacity analysis is to:

- Determine the existing capacity of the study area roadways;
- Determine the overall impact of the project on the study area roadways; and
- Discuss any potential improvements to accommodate the additional vehicular trips.

This analysis was performed by determining the traffic volumes and roadway capacity for Existing Conditions, Background (no-build) Conditions, and Total Future (build) Conditions. The scope of the capacity analysis was developed based on DDOT guidelines and agreed upon by DDOT staff.

The capacity analysis focuses on the weekday AM and PM commuter peak hours.

This chapter concludes:

- Under Existing Conditions, three (3) study intersections operate at an unacceptable level of service based on the HCM capacity analyses, and one (1) study intersection experiences queues that exceed available storage.
- Under Background Conditions, three (3) study intersections operate at an unacceptable level of service based on the HCM capacity analyses, and one (1) study intersection experiences queues that exceed available storage.
- Under Total Future Conditions with the Existing Access, three (3) study intersections operate at an unacceptable level of service based on the HCM capacity analyses, and two (2) study intersections experience queues that exceed available storage.
- Under Total Future Conditions with the Proposed Access, two (2) study intersections operate at an unacceptable level of service based on the HCM capacity analyses, and one (1) study intersection experiences queues that exceed available storage.
- Two (2) study intersections met the threshold for requiring mitigation measures as a result of the proposed development:
  - Massachusetts Avenue and Wesley Circle NW (PM)
  - Massachusetts Avenue and WTS Driveway NW (PM)
- Potential mitigation measures were identified at these intersections in the form of a robust Transportation Demand Management (TDM) plan.
- Overall, this report concludes that the proposed project will not have a detrimental impact to the surrounding vehicular network, with the implementation of all recommended site design elements and Transportation Demand Management (TDM) measures.

Study Area, Scope, & Methodology

This section outlines the vehicular trips generated in the study area along the vehicular access routes and defines the analysis assumptions.

The scope of the analysis contained within this report was discussed with and agreed upon by DDOT. The general methodology of the analysis follows national and DDOT guidelines on the preparation of transportation impact evaluations of site development. The approved scope is included in the technical attachments.

Capacity Analysis Scenarios

The vehicular capacity analyses were performed to determine whether the project will lead to adverse impacts on traffic operations. A review of potential impacts to other modes is outlined later in this report. This is accomplished by comparing three (3) future scenarios:

- Without the project (referred to as the Background Conditions);
- With the project approved and constructed with the Existing Access condition; and
- With the project approved and constructed with the Proposed Access condition; and

Specifically, the roadway capacity analysis examines the following scenarios:

- Existing Conditions (2021 Existing Conditions);
- Future Conditions without the Project (2024 Background Conditions); and
- Future Conditions with the Project and the Existing Access condition that maintains the outbound traffic flow to University Avenue during the peak periods (2024 Total Future Conditions with Existing Access).
- Future Conditions with the Project and the Proposed Access condition that restricts site traffic on University Avenue during the peak periods (2024 Total Future Conditions with Proposed Access).

Study Area

The study area of the analysis is a set of intersections where detailed capacity analyses were performed for the scenarios listed above. The set of intersections decided upon during the study scoping process with DDOT are those intersections most likely to have potential impacts or require changes to traffic operations to accommodate the project. Although it is possible that impacts will occur outside of the study area, those impacts are neither significant enough to be considered a material adverse impact nor worthy of mitigation measures.

Based on the projected future trip generation and the location of the site access points, the following intersections were selected:

1. Massachusetts Avenue & 46th Street/Tilden Street/Wesley Circle NW
2. University Avenue & Wesley Circle NW
3. Massachusetts Avenue & Wesley Circle NW
4. University Avenue & Sedgwick Street/WTS Driveway NW
5. Massachusetts Avenue & 45th Street NW
6. Massachusetts Avenue & WTS Driveway NW
7. Massachusetts Avenue & Glover Gate/Katzen Driveway NW

Figure 7 shows a map of the study area intersections.

Geometry and Operations Assumptions

The following section reviews the roadway geometry and operations assumptions made and the methodologies used in the roadway capacity analyses.

2021 Existing Geometry and Operations Assumptions

Gorove Slade made observations and confirmed the existing lane configurations and traffic controls at the intersections within the study area. Existing signal timings and offsets were obtained from DDOT.

The lane configurations and traffic controls for the Existing Conditions are shown on Figure 8.

2024 Background Geometry and Operations Assumptions

The configurations and traffic controls for the 2024 Background Conditions were based on those for the 2021 Existing Conditions with the addition of background improvements.

Following national and DDOT methodologies, a background improvement must meet the following criteria to be incorporated into the analysis:

- Be funded; and
- Have a construction completion date prior or close to the project.

Based on these criteria, there were no background improvements assumed in the analysis.

The lane configurations and traffic controls for the Background Conditions, which are the same as those of the Existing Conditions, are shown on Figure 8.

2024 Total Future Conditions Geometry and Operations Assumptions

The configurations and traffic controls for the 2024 Total Future Conditions were based on those for the 2024 Background Conditions with the addition of the proposed project.

The lane configurations and traffic controls for the Total Future Conditions, which are the same as those of the Existing and Background Conditions, are shown on Figure 8. Although there are different traffic volume assumptions for Total Future Conditions with Existing Access and with Proposed Access, the lane configurations and traffic controls are the same for both.

Traffic Volume Assumptions

The following section reviews the traffic volume assumptions and methodologies used in the roadway capacity analyses.

2021 Existing Traffic Volumes

Data collection for all intersections was not possible during fall 2021 as traffic volumes were not representative of typical conditions due to the ongoing COVID-19 emergency. To establish baseline conditions, the study analyzed 2021 traffic volumes comprised of turning movement count data collected in 2012 and February 2020 with applied growth rates based on the data collection year, as well as turning movement count data collected in September 2021 at intersections for which historical data was not available. The grown volumes from these sources were then balanced conservatively (adding volumes to the overall network) to create 2021 existing conditions. The traffic volume data sources are summarized below.

2012 WTS Campus Plan Update

Turning movement counts collected in 2012 for this project's TIA were available for the following intersections:

- University Avenue & Sedgwick Street/WTS Driveway NW; and
- Massachusetts Avenue & WTS Driveway NW.

The unadjusted peak hour traffic volumes from this source are shown in Figure 9.

2021 AU Campus Plan

Turning movement counts collected in February 2020 (prior to the COVID-19 emergency) for this project's CTR were available for the following intersections:

- Massachusetts Avenue & 46th Street/Tilden Street/Wesley Circle NW;
- Massachusetts Avenue & 45th Street NW; and
- Massachusetts Avenue & Glover Gate/Katzen Driveway NW.

The unadjusted peak hour traffic volumes from this source are shown in Figure 9.

2021 Turning Movement Counts

Turning movement counts were collected on Wednesday, September 22, 2021 for the following intersections for which historical turning movement count data was not available:

- University Avenue & Wesley Circle NW; and
- Massachusetts Avenue & Wesley Circle NW.

The unadjusted peak hour traffic volumes from this source are shown in Figure 9.

Volumes Generated by Regional Traffic Growth through 2021

Traffic growth was applied to the 2012 and 2020 volumes based on their respective data collection year to establish 2021 existing volumes. These background growth volumes are shown in Figure 10.

The applied growth rates for 2012/2020 through 2021 are based on historic AADT data and are shown on Table 3. Detailed growth rate assumptions are provided in the Technical Attachments.

The 2021 Existing peak hour traffic volumes are shown in Figure 11.

2024 Background Traffic Volumes (without the Project)

The traffic projections for the 2024 Background Conditions consist of the 2021 Existing volumes with the following additions:

- The addition of traffic generated by developments expected to be completed prior to the project (known as background developments); and
- The addition of inherent growth on the roadway (representing regional traffic growth).

Volumes Generated by Background Developments

Following national and DDOT methodologies, a background development must meet the following criteria to be incorporated into the analysis:

- Be located in the study area, defined as having an origin or destination point within the cluster of study area intersections;
- Have entitlements; and
- Have a construction completion date prior or close to the future analysis year of 2024.

Based on these criteria, and as discussed with and agreed upon by DDOT, there are no developments meeting the above criteria; therefore there are no background developments included in this analysis.

Volumes Generated by Regional Traffic Growth

While background developments represent local traffic changes, regional traffic growth is typically accounted for using growth rates. The growth rates used in this analysis are based on MWCOG's currently adopted regional transportation model, comparing the difference between the year 2021 and 2024 model scenarios. The growth rates observed in this model served as a basis for analysis assumptions, and a conservative 0.10 percent annual growth rate was applied to roadways where negative growth was observed. The applied growth rates are shown in Table 3. The traffic volumes generated by the inherent growth along the network between 2021 and 2024 are shown on Figure 12.

The existing peak hour volumes presented in Figure 11 were combined with the background growth peak hour volumes shown in Figure 12 to establish the 2024 Background traffic volumes. The traffic volumes for the 2024 Background Conditions are shown in Figure 13.

2024 Total Future with Existing Access Traffic Volumes (Site Access Consistent with Existing Conditions)

The 2024 Total Future with Existing Access traffic volumes consist of the following:

- Existing volumes, shown on Figure 11;
- Inherent growth on study area roadways, shown on Figure 12;
- Site-generated volumes under existing vehicular access conditions, shown on Figure 19.

Site-Generated Volumes (Existing Access Conditions)

Trip distribution for the site-generated trips under existing vehicular access conditions was determined based on:

- Census Transportation Planning Products (CTPP) Traffic Analysis Zone (TAZ) data;
- Existing and future travel patterns in the study area; and
- Inbound and outbound site travel patterns as determined by vehicular access with existing access conditions (maintaining the existing WTS campus circulation with the University Avenue driveway exit consistent with existing conditions).

Based on this review and the site access locations, the site-generated trips were distributed through the study area intersections. Trip distribution assumptions and specific routings were analyzed for inbound and outbound trips. Inbound and outbound distribution assumptions for the project are provided in Figure 14 and Figure 15, respectively. Detailed distributions at each study intersection are shown in Figure 17.

Site-generated peak hour volumes under existing vehicular access conditions are shown in Figure 19.

The traffic volumes for the 2024 Total Future with Existing Access Conditions are shown on Figure 21.

2024 Total Future with Proposed Access Traffic Volumes (University Avenue Site Egress Closed During Peak Periods)

The 2024 Total Future with Proposed Access traffic volumes consist of the following:

- Existing volumes, shown on Figure 11;
- Inherent growth on study area roadways, shown on Figure 12;
- Site-generated volumes under proposed access conditions with the University Avenue site egress closed (access for delivery vehicles maintained) during the AM and PM peak periods, shown on Figure 20.

Site-Generated Volumes (Proposed Access Conditions)

Trip distribution for the site-generated trips under proposed vehicular access conditions was determined based on:

- Census Transportation Planning Products (CTPP) Traffic Analysis Zone (TAZ) data;
- Existing and future travel patterns in the study area; and
- Inbound and outbound site travel patterns as determined by vehicular access with proposed access conditions (with the University Avenue driveway resitricted during the AM and PM peak periods – delivery vehicle access maintained).
    - All exiting site traffic rerouted to the right turn egress movement onto Massachusetts Avenue.

Based on this review and the site access locations, the site-generated trips were distributed through the study area intersections. Trip distribution assumptions and specific routings were analyzed for inbound and outbound trips. Inbound and outbound distribution assumptions for the project are provided in Figure 14 and Figure 16, respectively. Detailed distributions at each study intersection are shown in Figure 18.

Site-generated peak hour volumes under proposed vehicular access conditions are shown in Figure 20.

The traffic volumes for the 2024 Total Future with Proposed Access Conditions are shown on Figure 22.

Table 3: Applied Annual and Total Growth Rates

Roadway	Dir.	Proposed Annual Growth Rate Between 2020 and 2021 [1]		Proposed Total Growth Between 2020 and 2021		Proposed Annual Growth Rate Between 2021 and 2024 [2]		Proposed Total Growth Between 2021 and 2024	
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
Massachusetts Ave NW	EB	0.10%	0.10%	0.10%	0.10%	0.30%	0.10%	0.90%	0.30%
	WB	2.00%	0.50%	2.00%	0.50%	0.10%	0.30%	0.30%	0.90%
Sedgewick St NW	EB	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.30%	0.30%
	WB	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.30%	0.30%
46th St NW	NB	2.00%	0.10%	2.00%	0.10%	0.10%	0.10%	0.30%	0.30%
	SB	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.30%	0.30%
University Ave NW [3]	NB	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.30%	0.30%
	SB	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.30%	0.30%
45th St NW	NB	0.50%	0.50%	0.50%	0.50%	0.10%	0.10%	0.30%	0.30%
	SB	2.00%	0.10%	2.00%	0.10%	0.90%	0.10%	2.72%	0.30%
Campus Dr NW	NB	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.30%	0.30%
	SB	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.30%	0.30%

[1] These rates were applied to volumes recorded in February 2020 that were used to establish 2021 existing conditions. Rates are based on MWCOG's currently adopted regional transportation model for this time period.

[2] These rates were applied to volumes grown from 2021 existing conditions. Rates are based on MWCOG's currently adopted regional transportation model for this time period.

[3] Study intersection #3 (University Ave & Sedgwick St/WTS Exit NW) only had available traffic counts from 2012, not February 2020 like the other study intersections. Therefore, to establish 2021 Existing Conditions, annual growth rates of 0.10% were applied to the northbound and southbound volumes of University Ave NW at this intersection for every year between 2012 and 2021, totaling 0.90% for each direction.

Vehicular Analysis Results

Intersection Capacity Analysis

Intersection capacity analyses were performed for the four (4) scenarios outlined previously at the intersections contained within the study area during the AM and PM peak hours. *Synchro* version 10 was used to analyze the study intersections based on the Highway Capacity Manual (HCM) 2000 methodology.

Further analyses were also performed at the WTS driveway intersection with Massachusetts Avenue using the SimTraffic modeling software to account for gaps in through traffic that would be provided by the upstream traffic signal to the east and the pedestrian signal to the west. The results of these simulations indicate that the WTS driveway on Massachusetts Avenue operates with LOS C or better during all scenarios studied. The simulation runs were based on 15-minute seeds with 60-minute run times, and the results shown were taken as the average of five (5) model runs.

The results of the capacity analyses are expressed in level of service (LOS) and delay (seconds per vehicle) for each approach. A LOS grade is a letter grade based on the average delay (in seconds) experienced by motorists traveling through an intersection. LOS results range from “A” being the best to “F” being the worst. LOS D is typically used as the acceptable LOS threshold in the District; although LOS E or F is sometimes accepted in urbanized areas if vehicular improvements would be a detriment to safety or non-auto modes of transportation.

The LOS capacity analyses were based on: (1) the intersection peak hour traffic volumes; (2) the lane use and traffic controls; and (3) the HCM methodologies (using *Synchro* software). The average delay of each approach and LOS is shown for all intersections in addition to the overall average delay and intersection LOS grade. Detailed LOS descriptions and the analysis worksheets are contained in the Technical Attachments.

Table 4 shows the results of the capacity analyses, including LOS and average delay per vehicle (in seconds) for the 2021 Existing, 2024 Background, 2024 Total Future with Existing Access, and 2024 Total Future with Proposed Access scenarios. Table 5 shows a comparison of the volume to capacity (v/c) ratios, while Table 6 shows a comparison of queuing results.

Intersection Capacity Under Existing Conditions

As shown in Table 4, two (2) of the study intersections operate at unacceptable conditions or have one or more approaches operating at unacceptable levels during Existing Conditions:

- Massachusetts Ave & 46th St/Tilden St/Wesley Cir NW
  - Southwestbound (PM)
- Massachusetts Ave & Wesley Cir NW
  - Northbound (PM)

Intersection Capacity Under Background Conditions

As shown in Table 4, two (2) of the study intersections operate at unacceptable conditions or have one or more approaches operating at unacceptable levels during Background Conditions:

- Massachusetts Ave & 46th St/Tilden St/Wesley Cir NW
  - Southwestbound (PM)
- Massachusetts Ave & Wesley Cir NW
  - Northbound (PM)

Intersection Capacity Under Future with Existing Access Conditions

As shown in Table 4, two (2) of the study intersections operate at unacceptable conditions or have one or more approaches operating at unacceptable levels during Total Future with Existing Access Conditions:

- Massachusetts Ave & 46th St/Tilden St/Wesley Cir NW
  - Southwestbound (PM)
- Massachusetts Ave & Wesley Cir NW
  - Northbound (PM)

Intersection Capacity Under Future with Proposed Access Conditions

As shown in Table 4, one (1) of the study intersections operates at unacceptable conditions or have one or more approaches operating at unacceptable levels during Total Future with Proposed Access Conditions:

- Massachusetts Ave & 46th St/Tilden St/Wesley Cir NW
  - Southwestbound (PM)

Queuing Analysis

In addition to the capacity analyses presented above, a queuing analysis was performed at each of the study intersections. The queuing analysis was performed using *Synchro* software. The 50th percentile and 95th percentile maximum queue lengths are shown for each lane group at the study area’s signalized intersections. The 50th percentile maximum queue is the maximum back of queue on a typical cycle. The 95th percentile queue is the maximum back of queue with 95th percentile traffic volumes. For unsignalized intersections, the 95th percentile queue is reported for each lane group (including free-flowing left turns and stop-controlled movements) based on the HCM calculations.

Table 6 shows the queuing results for the study intersections, including 50th and 95th percentile queues for the 2021 Existing, 2024 Background, 2024 Total Future with Existing Access, and 2024 Total Future with Proposed Access scenarios.

Queuing Under Existing Conditions

As shown in Table 6, one (1) of the study intersections has one or more lane group that exceeds the given storage length during Existing Conditions:

- Massachusetts Ave & Glover Gate/Katzen Dwy NW
  - Northeastbound left/thru (PM)
  - Southwestbound left/thru/right (AM, PM)

Queuing Under Background Conditions

As shown in Table 6, one (1) of the study intersections has one or more lane group that exceeds the given storage length during Background Conditions:

- Massachusetts Ave & Glover Gate/Katzen Dwy NW
  - Northeastbound left/thru (PM)
  - Southwestbound left/thru/right (AM, PM)

Queuing Under Future with Existing Access Conditions

As shown in Table 6, two (2) of the study intersections have one or more lane group that exceeds the given storage length during Total Future with Existing Access Conditions:

- Massachusetts Ave & Wesley Cir NW
  - Northbound left/right (PM)
- Massachusetts Ave & Glover Gate/Katzen Dwy NW
  - Northeastbound left/thru (PM)
  - Southwestbound left/thru/right (AM, PM)

Queuing Under Future with Proposed Access Conditions

As shown in Table 6, one (1) of the study intersections has one or more lane group that exceeds the given storage length during Total Future with Proposed Access Conditions:

- Massachusetts Ave & Glover Gate/Katzen Dwy NW
  - Northeastbound left/thru (PM)
  - Southwestbound left/thru/right (AM, PM)

Mitigation Measures

Based on DDOT standards, the project is considered to have an impact at an intersection within the study area if any of the following conditions are met:

- The capacity analyses show a LOS E or F at an intersection or along an approach in Future conditions with the project where one does not exist in Background Conditions;
- There is an increase in delay at any approach or overall intersection operating under LOS E or F of greater than five (5) percent when compared to Background Conditions;
- A 95th percentile queue exceeds storage along an approach in Future Conditions with the project where it does not in Background Conditions; or
- There is an increase in the 95th percentile queue by more than 150 feet along an approach in that exceeds storage in Background Conditions.

Based on these criteria, there are impacts at one intersection under Total Future with Existing Access and no impacts under Total Future with Proposed Access. These impacts are detailed below.

Massachusetts Avenue and Wesley Circle NW (Total Future with Existing Access Conditions)

Northbound Approach

The northbound[1] approach of Wesley Circle NW is projected to increase delay by more than 5 percent during Total Future with Existing Access Conditions when compared to Background Conditions during the afternoon peak hour.

This condition cannot be mitigated through either geometric or traffic signal modifications because there can only be one lane merging onto Massachusetts Avenue NW, and because the intersection is unsignalized. Rather, mitigation is proposed to be

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[1] This approach is coded in *Synchro* as northbound to differentiate it from the other approaches, but it is actually the eastbound approach of Wesley Circle NW as it merges onto southeastbound Massachusetts Avenue NW.

addressed through a robust Transportation Demand Management (TDM) plan consistent with DDOT’s Baseline Plan.

Massachusetts Avenue and WTS Driveway NW (Total Future with Existing Access Conditions and Total Future with Proposed Access Conditions)

Northbound Approach

With the removal of WTS outbound traffic (delivery vehicle access maintained) from University Avenue during the peak periods evaluated as part of Total Future with Proposed Access Conditions, the northbound[2] approach of Wesley Circle NW would realize a reduction in delay and would no longer exceed adequacy standards.

Under Total Future with Proposed Access Conditions, the project would not have any vehicular impacts within the study area that would warrant mitigation per the DDOT CTR guidelines.

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[2] This approach is coded in *Synchro* as northbound to differentiate it from the other approaches, but it is actually the eastbound approach of Wesley Circle NW as it merges onto southeastbound Massachusetts Avenue NW.

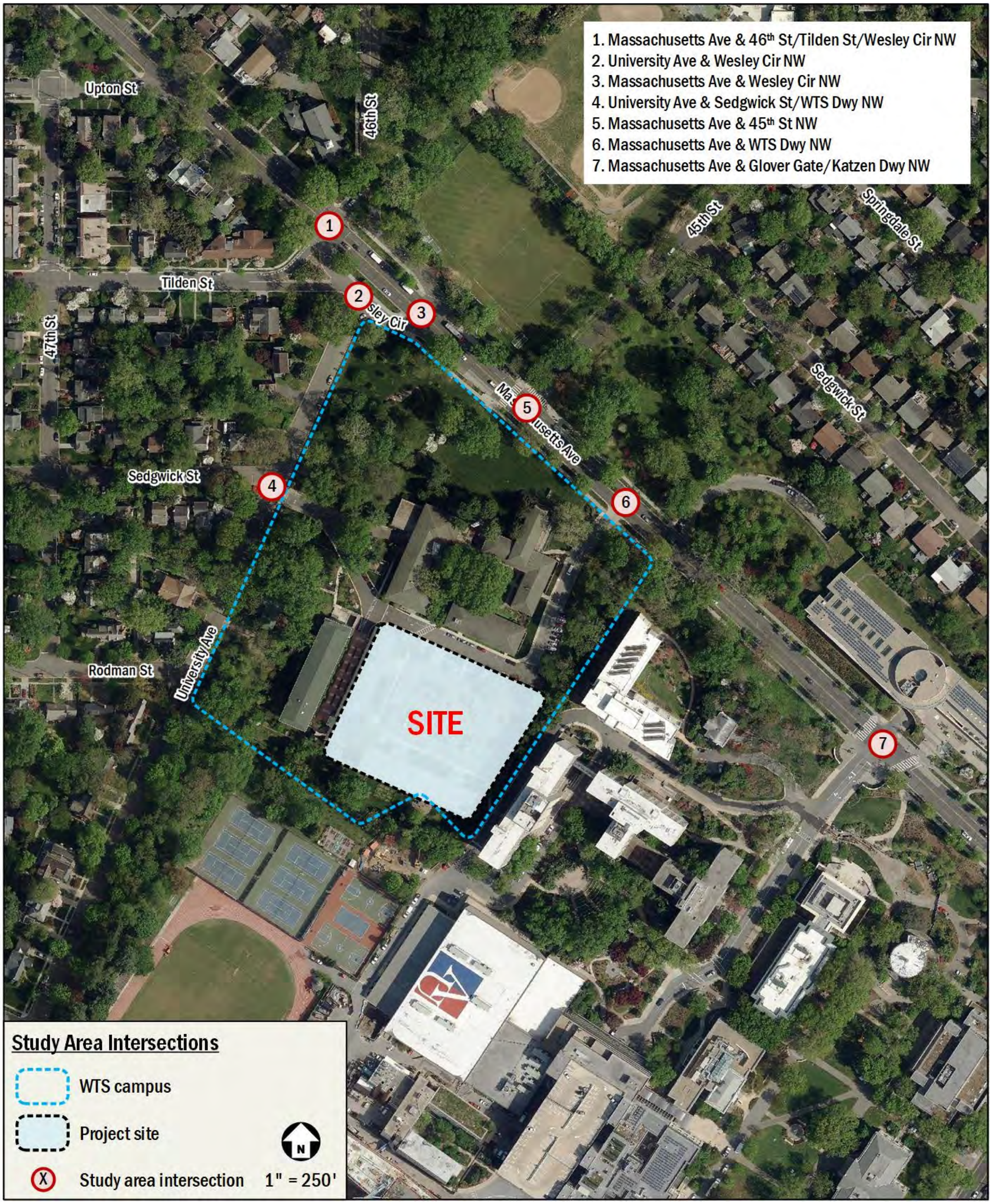

Figure 7: Study Area Intersections

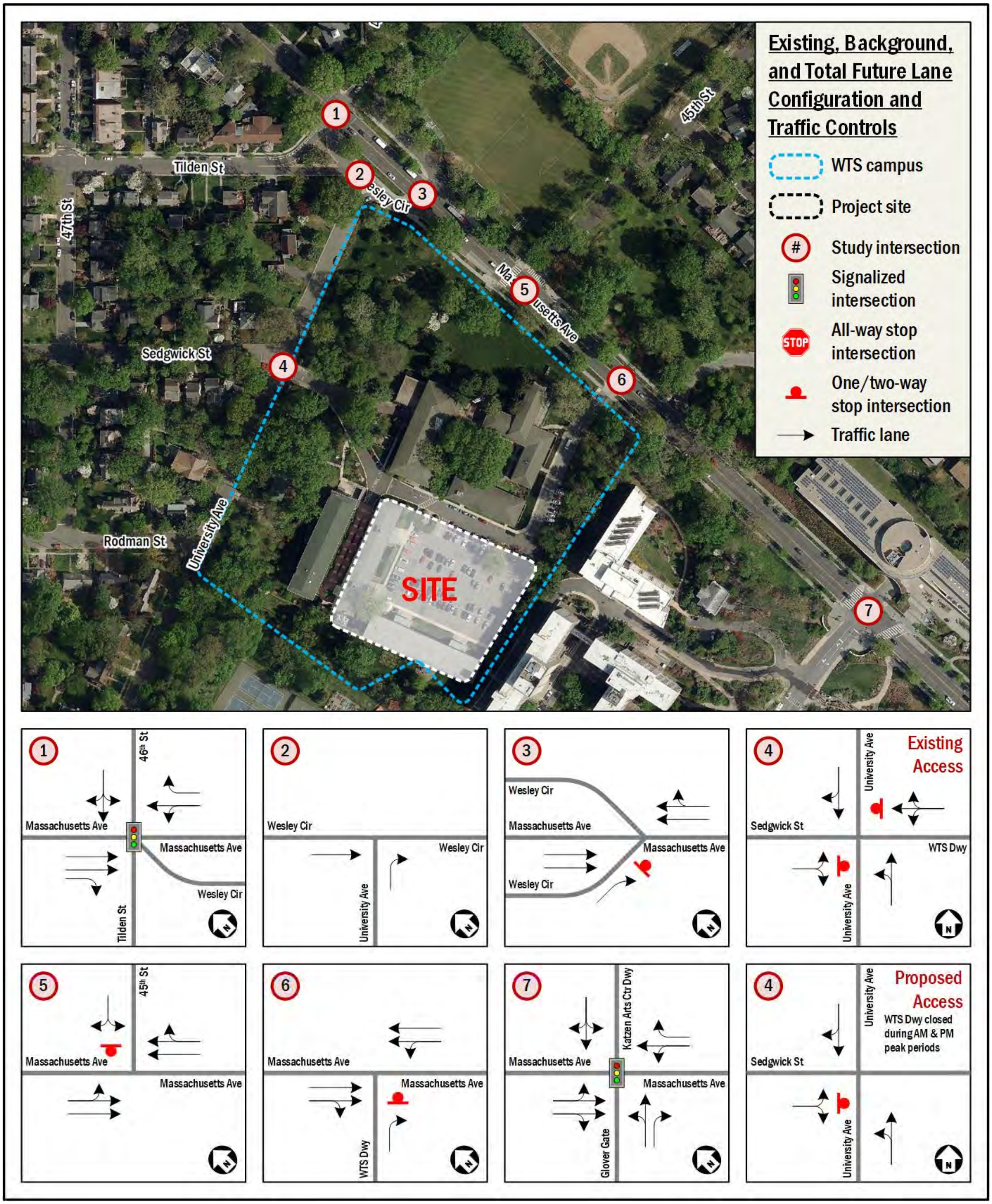

Figure 8: Existing, Background, and Total Future Lane Configurations and Traffic Controls

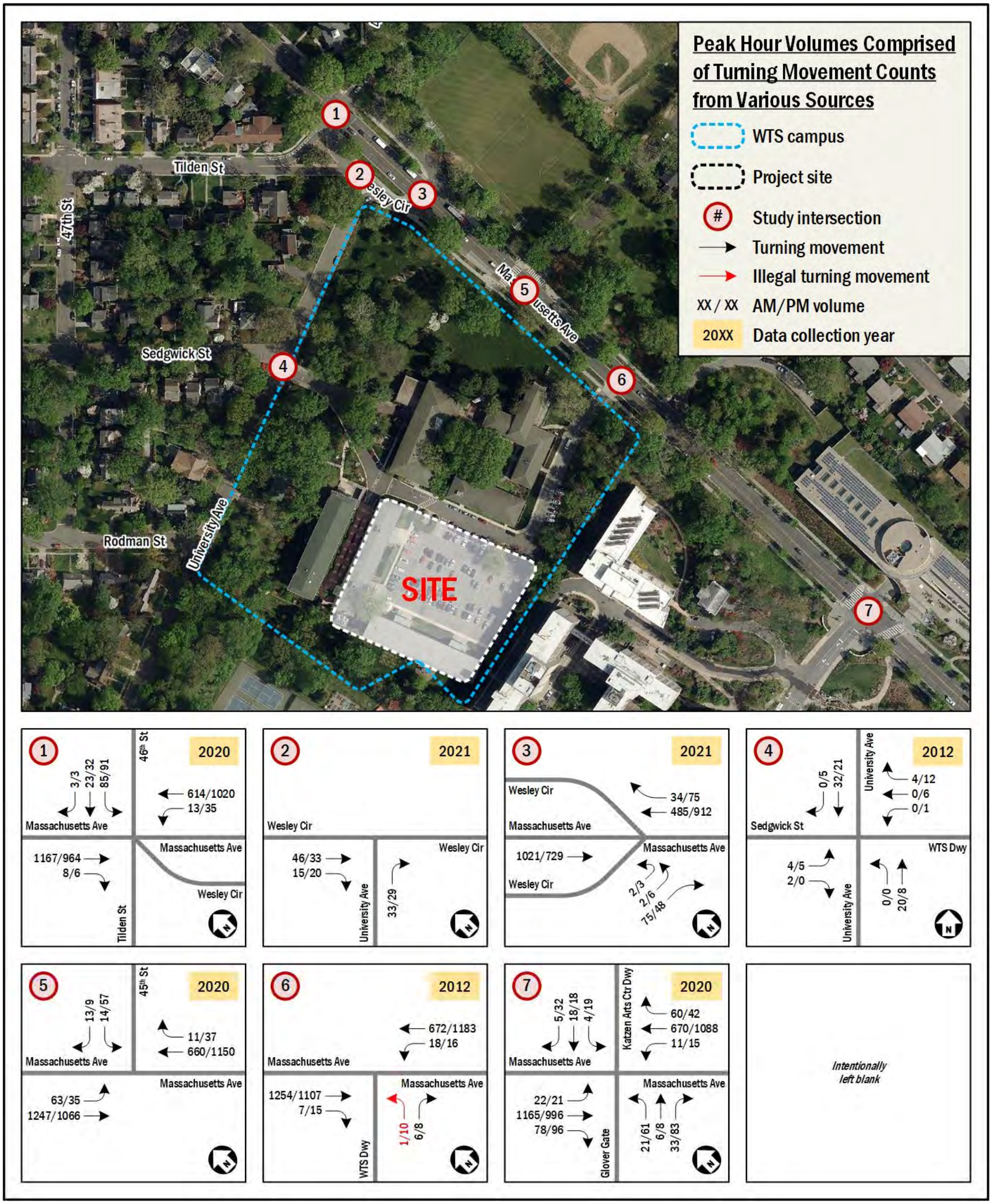

Figure 9: Peak Hour Volumes Comprised of Turning Movement Counts from Various Sources

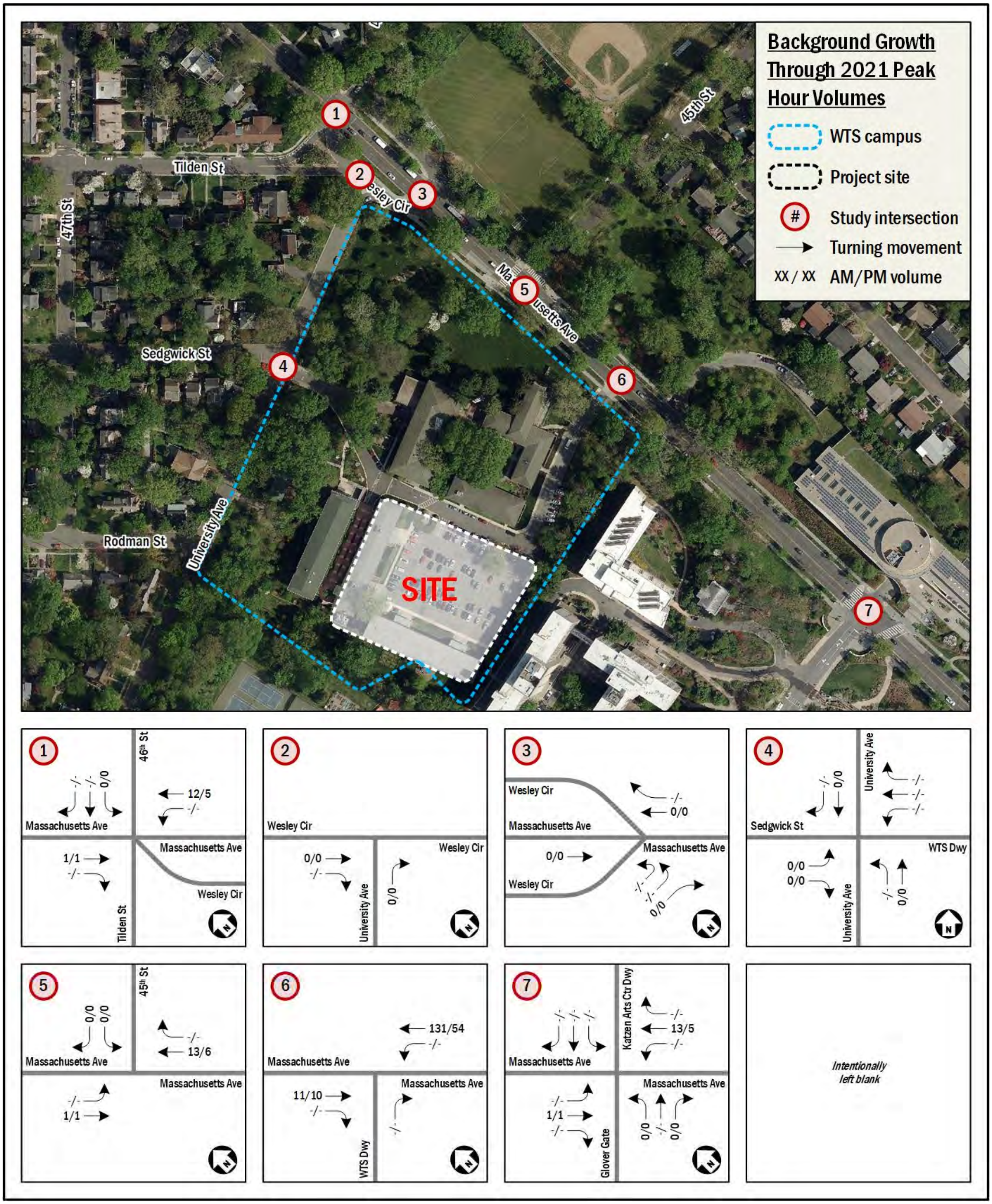

Figure 10: Background Growth Applied to 2012 & 2020 Peak Hour Volumes to Establish Existing 2021 Peak Hour Volumes

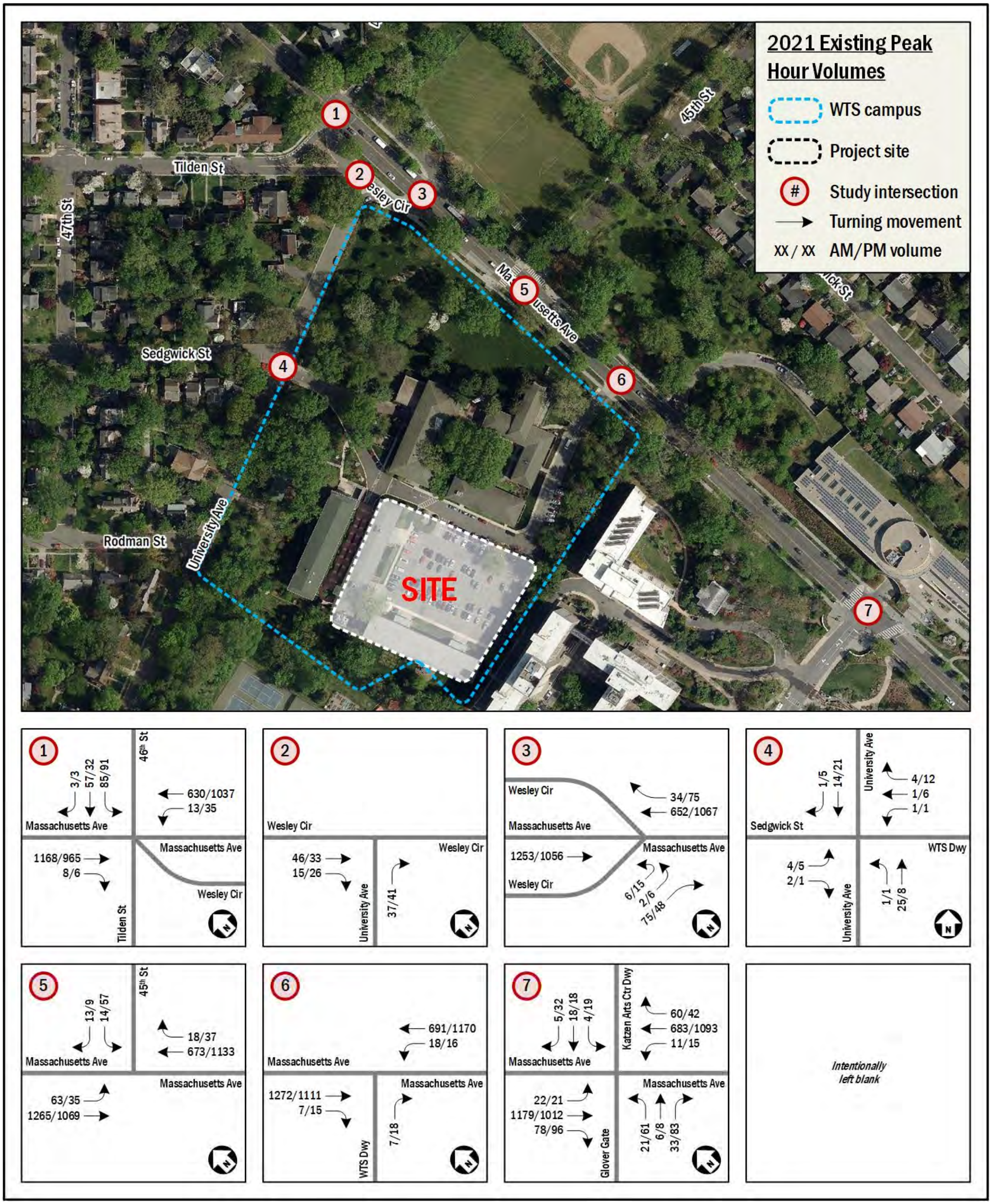

Figure 11: 2021 Existing Peak Hour Volumes

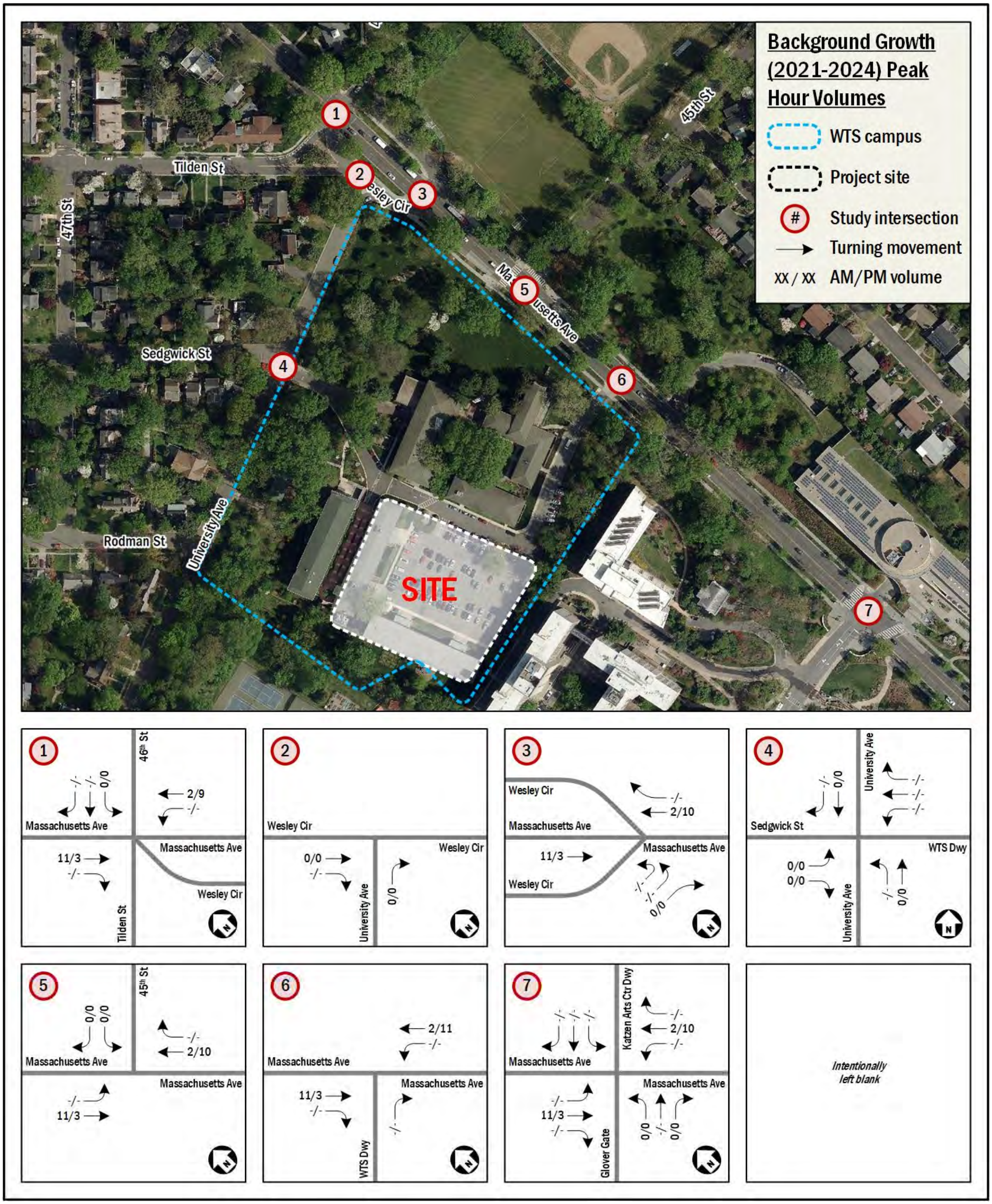

Figure 12: Background Growth Peak Hour Volumes

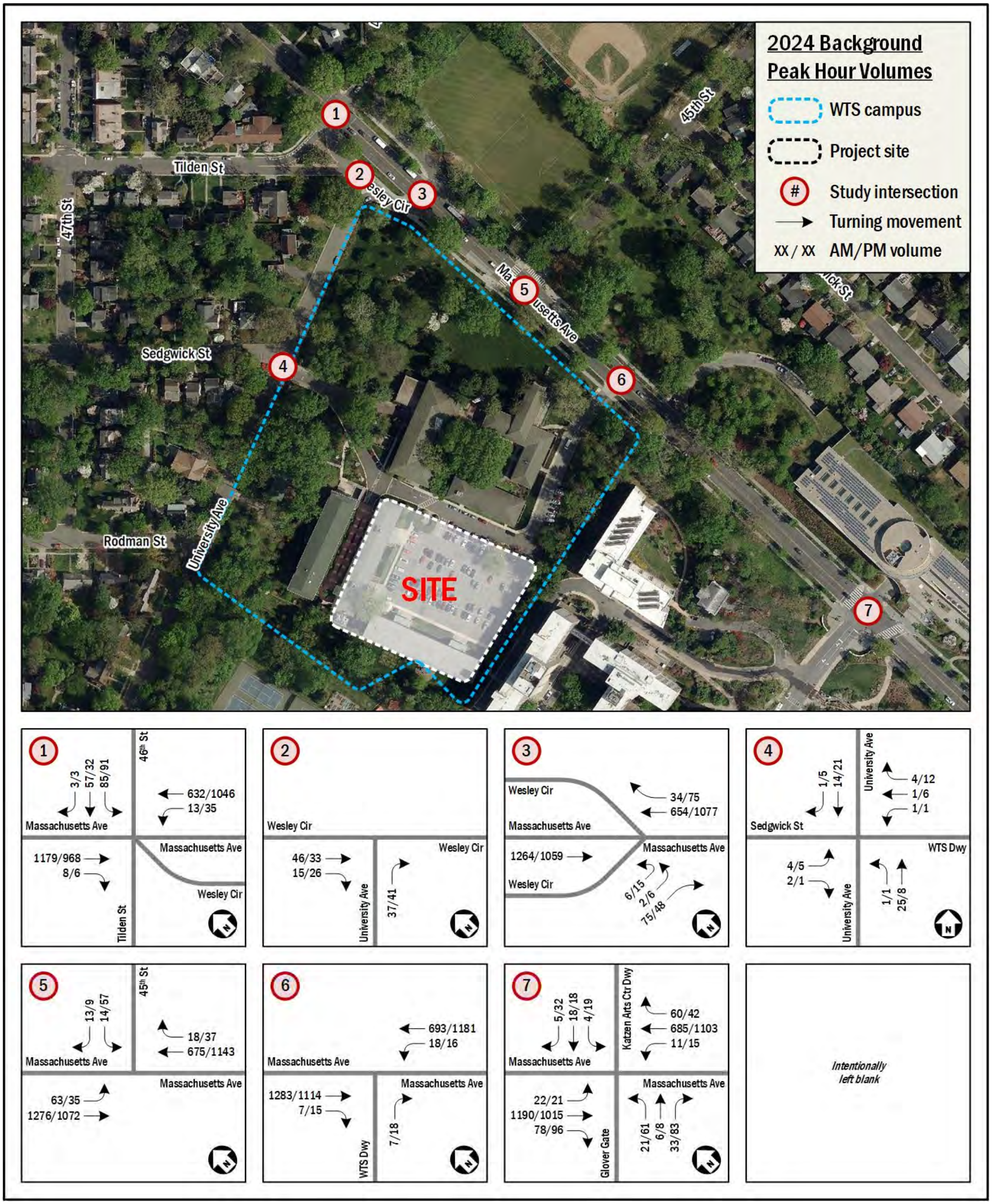

Figure 13: 2024 Background Peak Hour Volumes

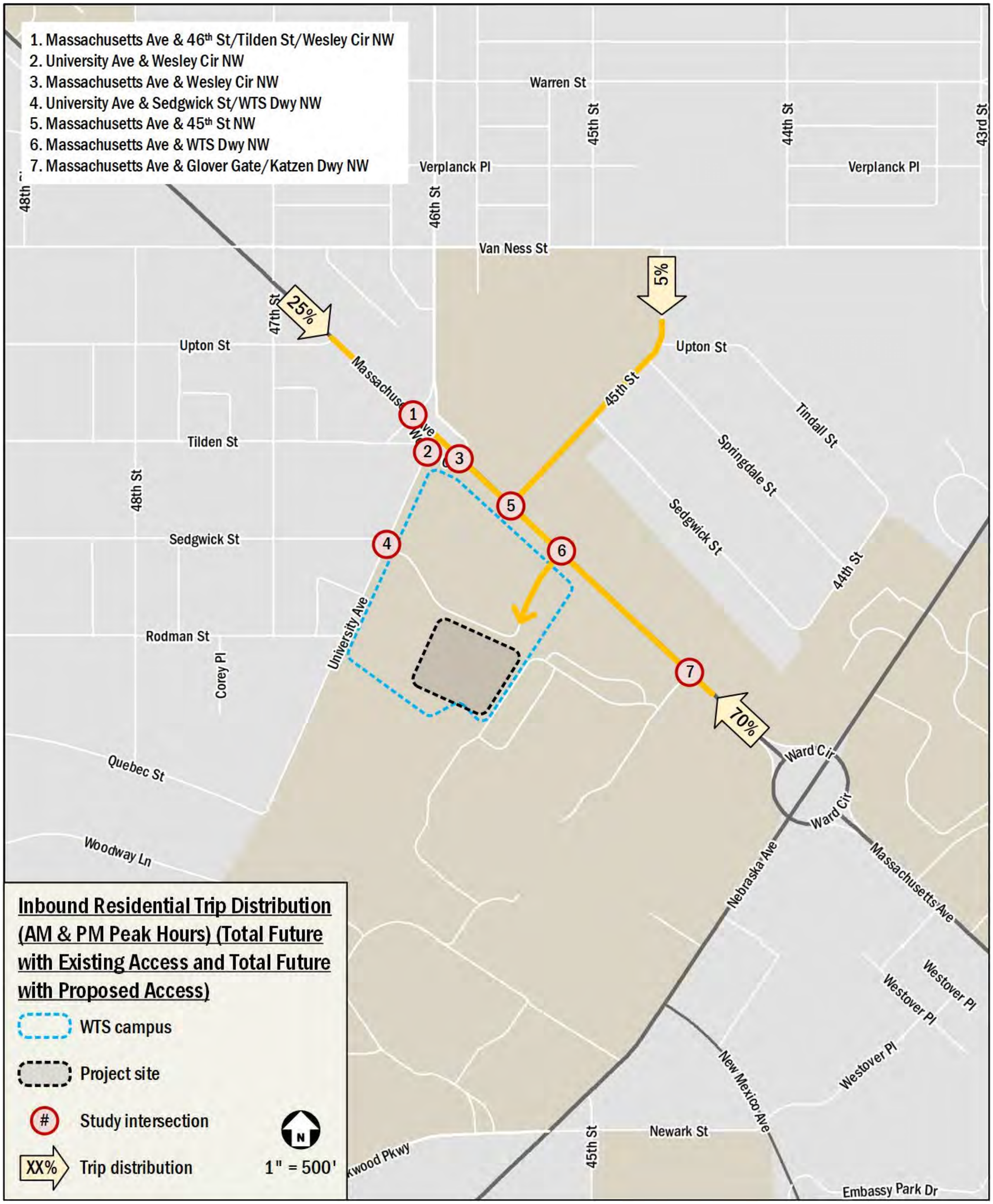

Figure 14: Inbound Trip Distribution (Total Future with Existing Access and Total Future with Proposed Access)

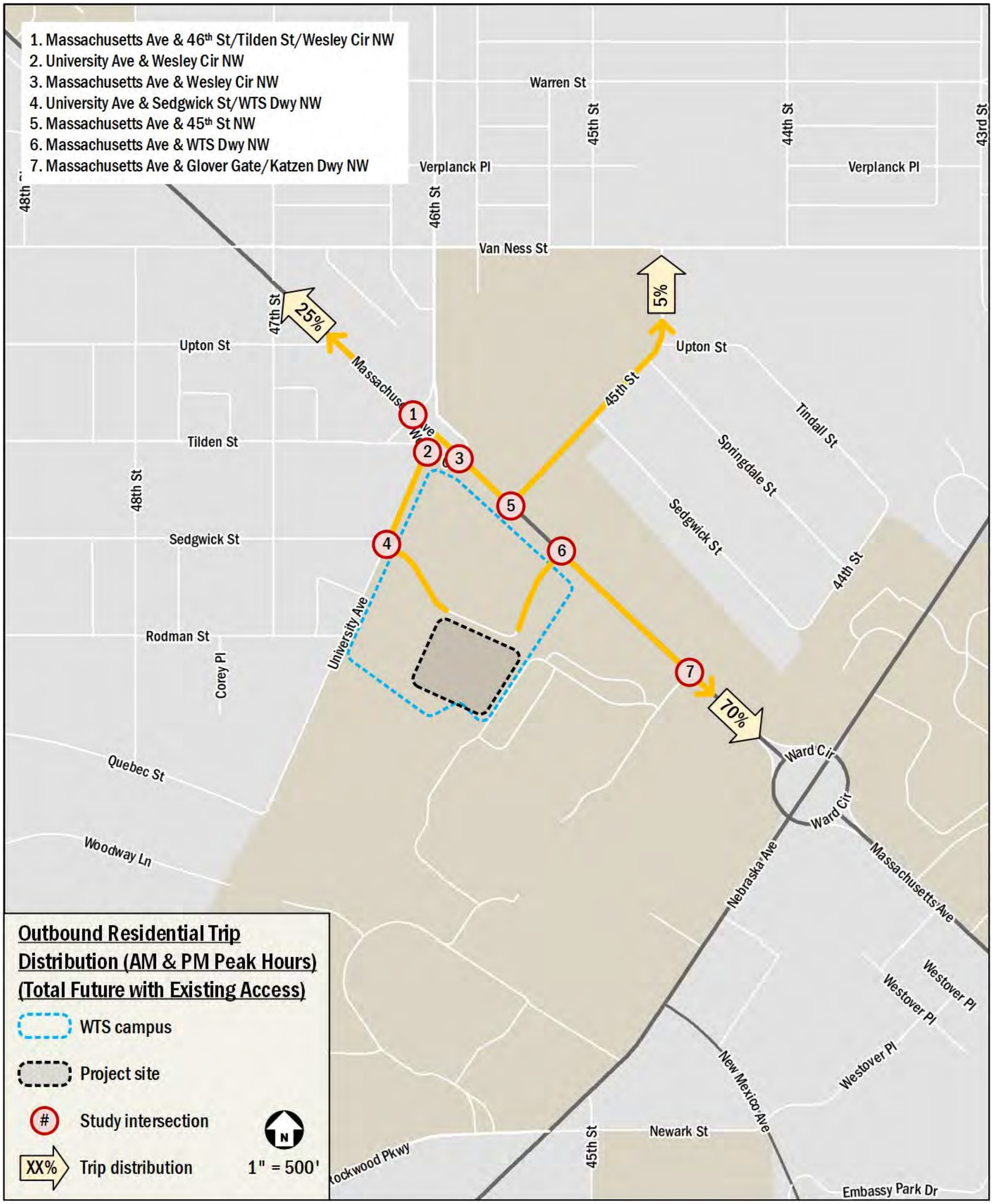

Figure 15: Outbound Trip Distribution (Total Future with Existing Access: w/ University Ave Driveway Exit During Peak Periods)

Figure 16: Outbound Trip Distribution (Total Future with Proposed Access: w/ University Ave Driveway Exit Restricted During Peak Periods – Delivery Vehicle Access Maintained)

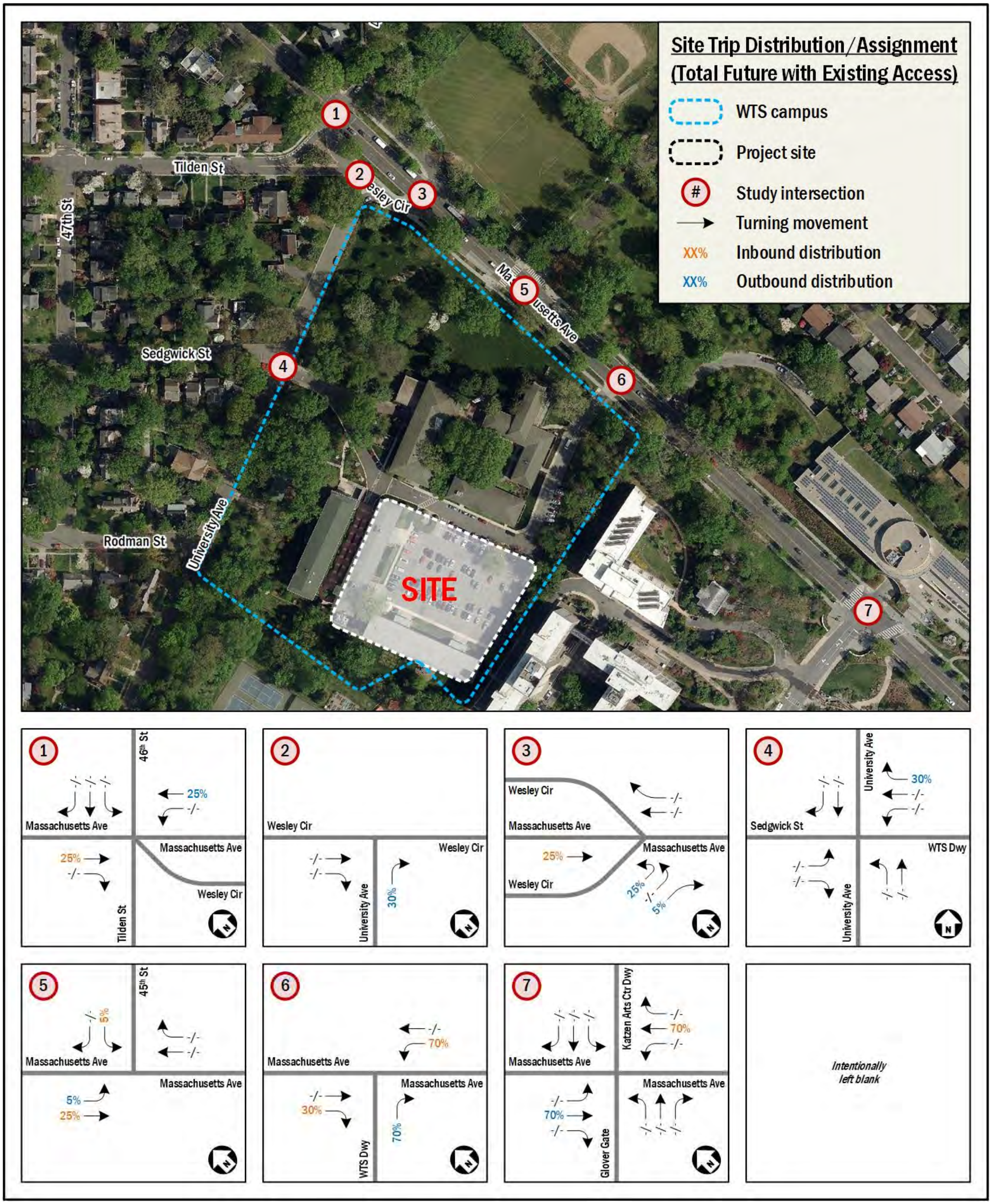

Figure 17: Trip Distribution at Study Intersections (Total Future with Existing Access: w/ University Ave Driveway Exit During Peak Periods)

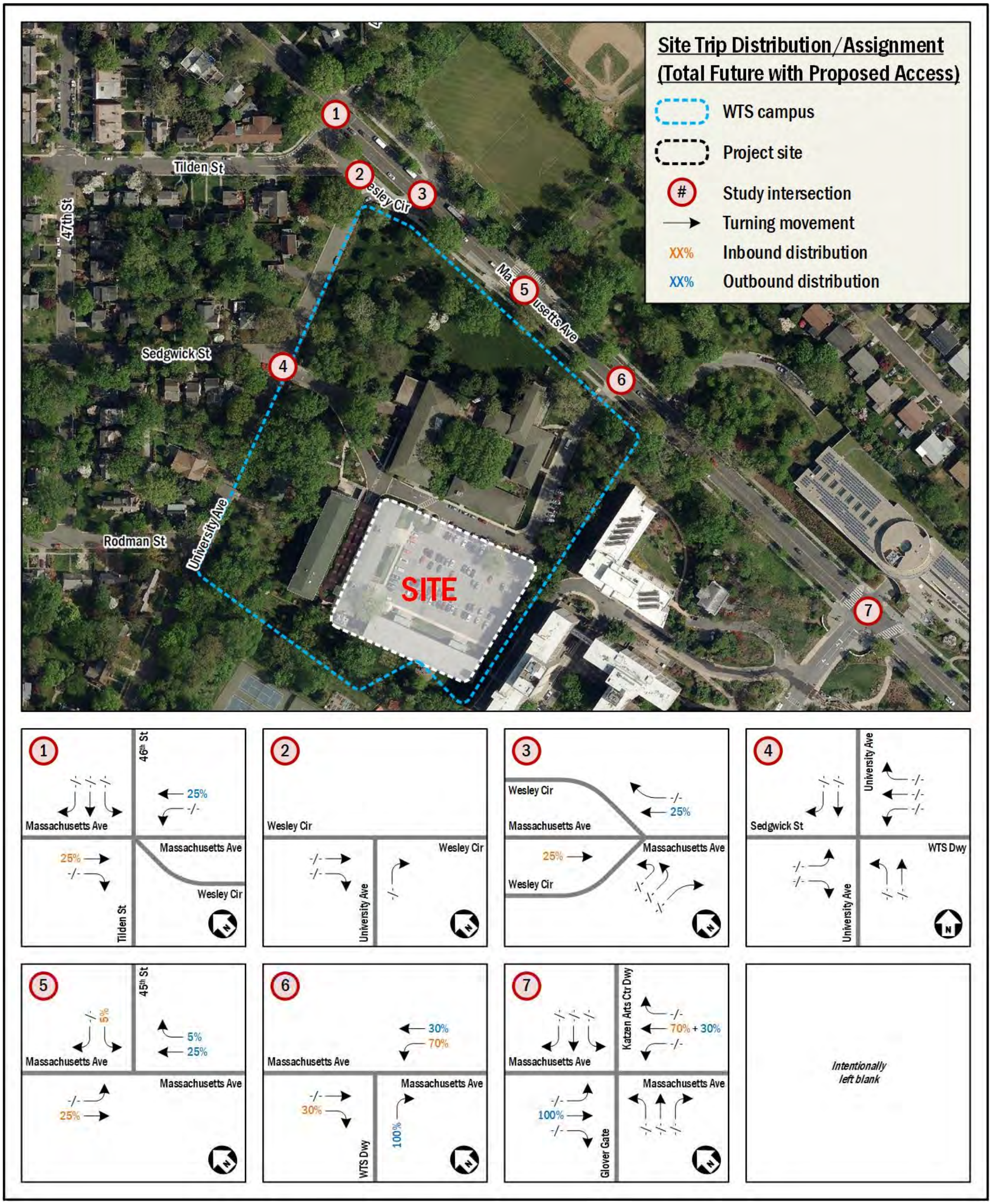

Figure 18: Trip Distribution at Study Intersections (Total Future with Proposed Access: w/ University Ave Driveway Exit Restricted During Peak Periods – Delivery Vehicle Access Maintained)

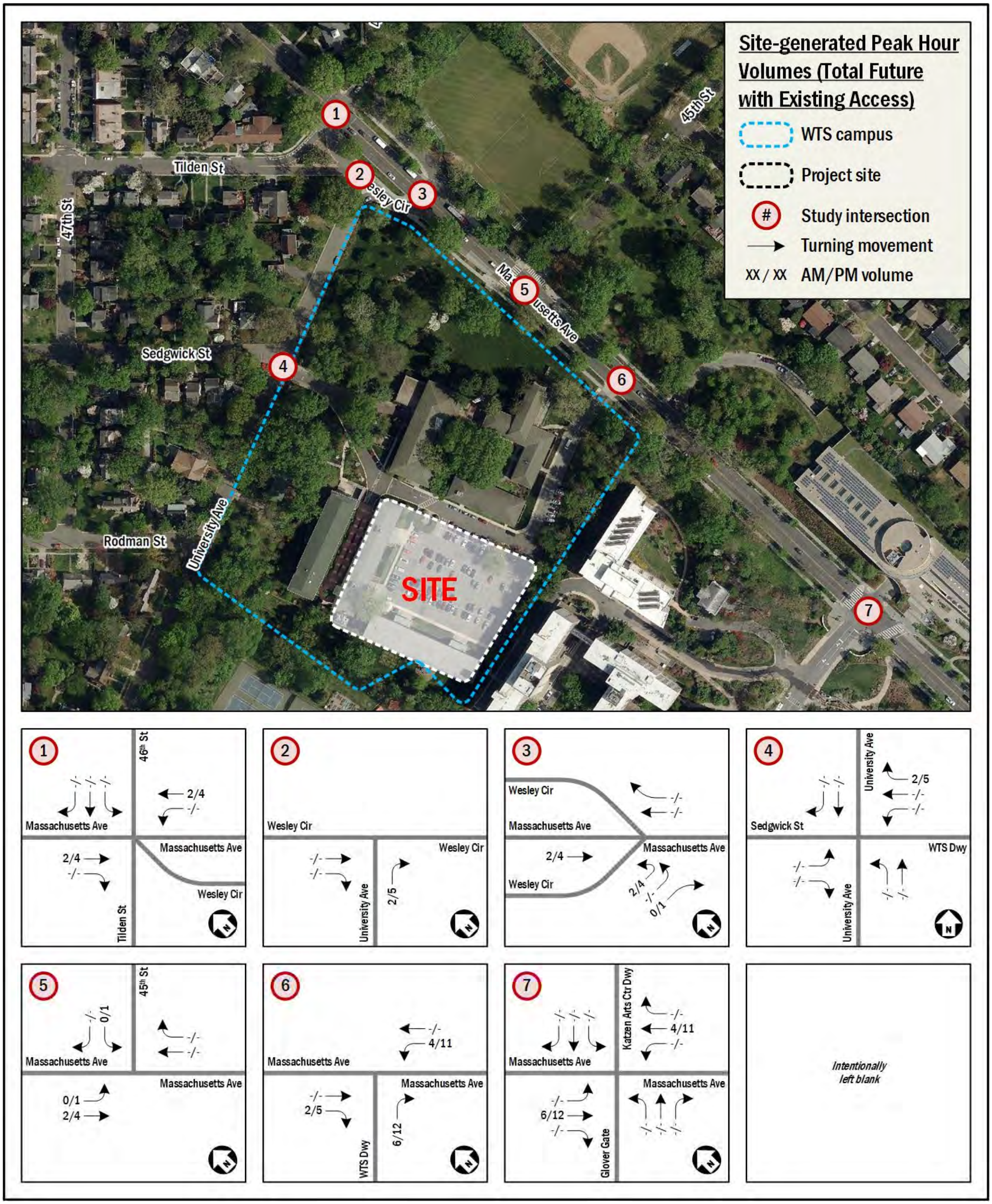

Figure 19: Site-generated Peak Hour Volumes (Total Future with Existing Access: w/ University Ave Driveway Exit During Peak Periods)

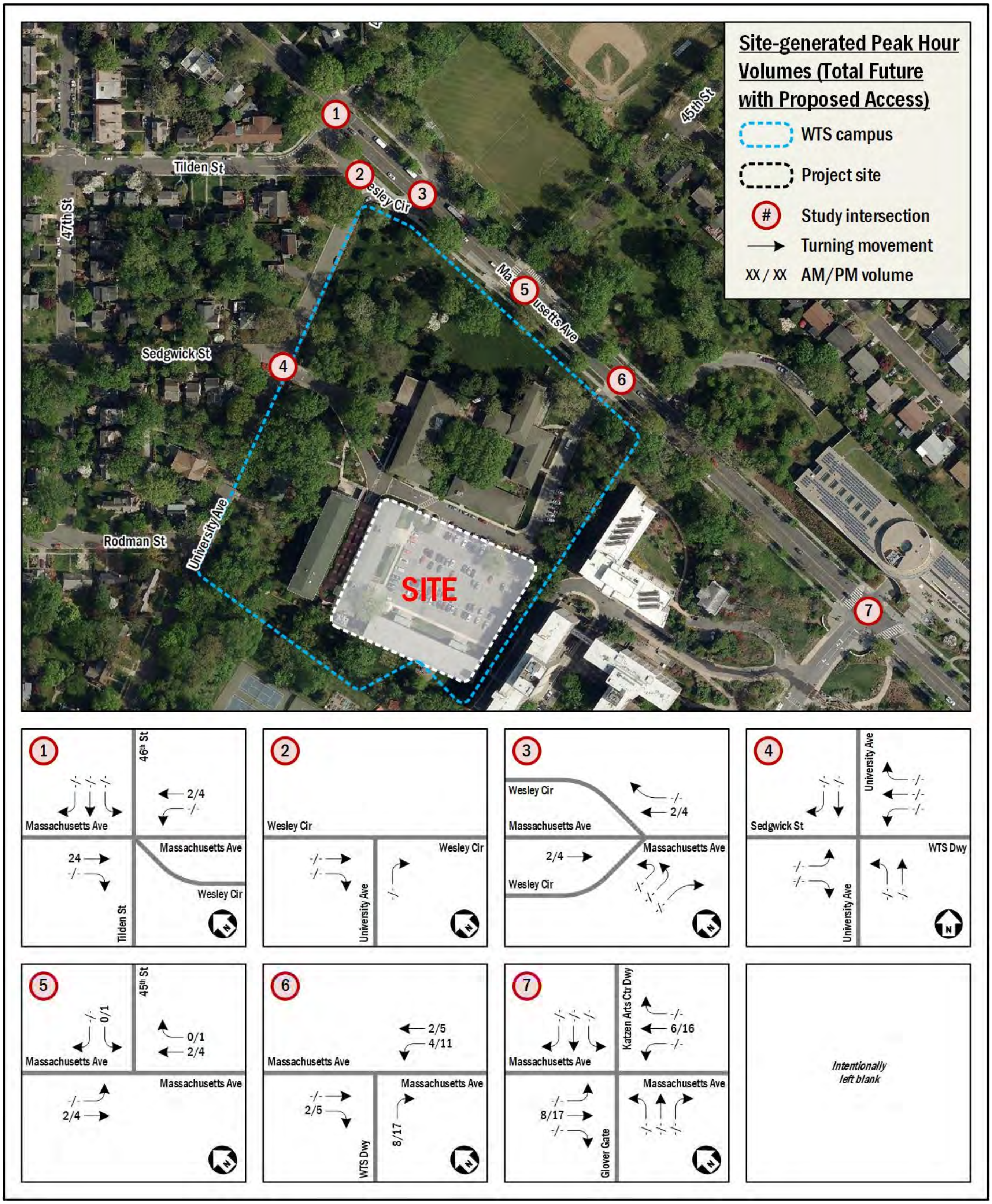

Figure 20: Site-generated Peak Hour Volumes (Total Future with Proposed Access: w/ University Ave Driveway Exit Restricted During Peak Periods – Delivery Vehicle Access Maintained)

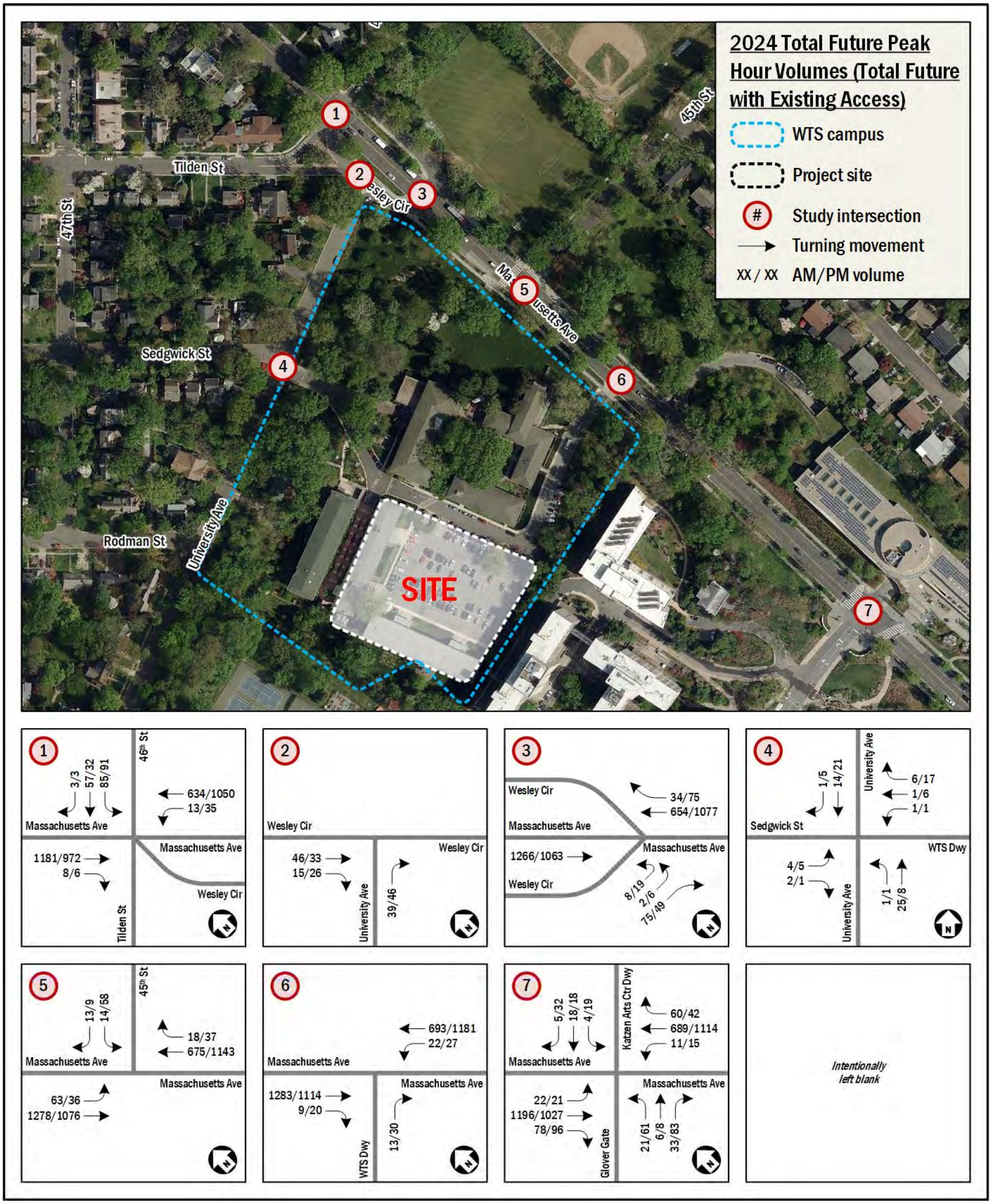

Figure 21: 2024 Total Future Peak Hour Volumes (Total Future with Existing Access: w/ University Ave Driveway Exit During Peak Periods)

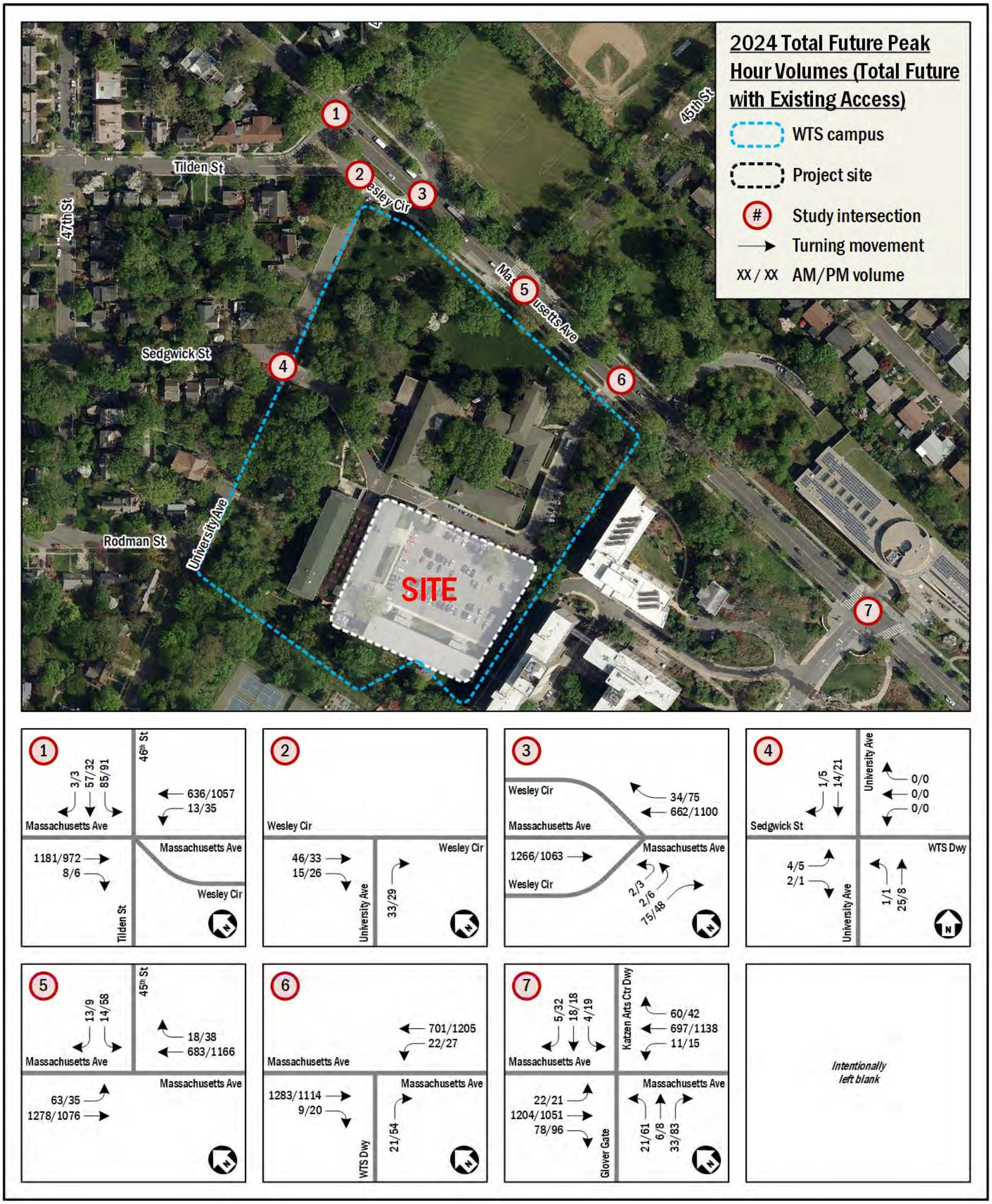

Figure 22: 2024 Total Future Peak Hour Volumes (Total Future with Proposed Access: w/ University Ave Driveway Exit Restricted During Peak Periods – Delivery Vehicle Access Maintained)

Table 4: LOS Comparison

	Intersection and Approach	Existing (2021)				Background (2024)				Future with Existing Access (2024) (w/ Existing Access Scenario)				Future with Proposed Access (2024) (University Dr Restricted During Peak Hours)			
		AM Peak		*PM Peak*		*AM Peak*		*PM Peak*		*AM Peak*		*PM Peak*		*AM Peak*		*PM Peak*	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1.	**Massachusetts Ave & 46th St/Tilden St/Wesley Cir NW**																
	Overall	**11.2**	**B**	**8.6**	**A**	**11.2**	**B**	**8.6**	**A**	**11.2**	**B**	**8.6**	**A**	**11.2**	**B**	**8.5**	**A**
	Southeastbound	10.9	B	6.7	A	11.0	B	6.7	A	11.1	B	6.8	A	11.1	B	6.8	A
	Northwestbound	2.6	A	4.0	A	2.6	A	4.0	A	2.6	A	4.0	A	2.5	A	4.0	A
	Northeastbound	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
	Southwestbound	51.4	D	61.8	E	51.4	D	61.8	E	51.4	D	61.8	E	51.4	D	61.8	E
2.	**University Ave & Wesley Cir NW**																
	Eastbound	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0		0.0	
	Northbound	8.7	A	8.7	A	8.7	A	8.7	A	8.7	A	8.7	A	8.7	A	8.7	A
3.	**Massachusetts Ave & Wesley Cir NW**																
	Northbound (Eastbound)	14.1	B	41.3	E	14.2	B	42.2	E	15.2	C	47.9	E	12.3	B	27.8	D
	Southeastbound	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
	Northwestbound	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
4.	**University Ave & Sedgwick St/WTS Dwy NW**																
	Eastbound	8.7	A	8.8	A	8.7	A	8.8	A	8.7	A	8.9	A	8.7	A	8.7	A
	Westbound	8.7	A	8.7	A	8.7	A	8.7	A	8.6	A	8.7	A	0.0	A	0.0	A
	Northbound	0.3	A	0.7	A	0.3	A	0.7	A	0.3	A	0.7	A	0.3	A	0.7	A
	Southbound	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
5.	**Massachusetts Ave & 45th St NW**																
	Overall	**0.5**	**A**	**0.4**	**A**	**0.5**	**A**	**0.4**	**A**	**0.5**	**A**	**0.4**	**A**	**0.5**	**A**	**0.4**	**A**
	Southeastbound	0.7	A	0.5	A	0.7	A	0.5	A	0.7	A	0.5	A	0.7	A	0.5	A
	Northwestbound	0.1	A	0.3	A	0.1	A	0.3	A	0.1	A	0.3	A	0.1	A	0.3	A
	Southwestbound	0.0	A	0.1	A	0.0	A	0.1	A	0.0	A	0.1	A	0.0	A	0.1	A
6.	**Massachusetts Ave & WTS Dwy NW**																
	Northbound	14.8	B	380.1	F	14.9	B	385.5	F	15.1	C	611.8	F	15.3	C	1116.9	F
	Southeastbound	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
	Northwestbound	1.3	A	46.8	D	1.3	A	48.0	D	1.6	A	103.2	F	1.6	A	103.1	A
	<u>SimTraffic</u>																
	Northbound	--	--	31.4	C	--	--	29.9	C	--	--	32.5	C	--	--	28.3	C
	Southeastbound	--	--	1.3	A	--	--	1.1	A	--	--	1.2	A	--	--	1.2	A
	Northwestbound	--	--	4.8	A	--	--	5.1	A	--	--	6.3	A	--	--	6.7	A
7.	**Massachusetts Ave & Glover Gate/Katzen Dwy NW**																
	Overall	**12.7**	**B**	**13.7**	**B**	**12.9**	**B**	**13.7**	**B**	**12.9**	**B**	**13.8**	**B**	**13.1**	**B**	**14.0**	**B**
	Southeastbound	11.9	B	10.5	B	12.1	B	10.5	B	12.2	B	10.6	B	12.3	B	10.9	B
	Northwestbound	10.0	B	10.6	B	10.1	B	10.7	B	10.1	B	10.8	B	10.3	B	11.0	B
	Northeastbound	48.8	D	47.1	D	48.8	D	47.1	D	48.8	D	47.1	D	48.8	D	47.1	D
	Southwestbound	47.4	D	45.4	D	47.4	D	45.4	D	47.4	D	45.4	D	47.4	D	45.4	D

Table 5: v/c Comparison

	Intersection and Movement	Existing (2021)		Background (2024)		Future with Existing Access (2024) (w/ Existing Access Scenario)		Future with Proposed Access (2024) (University Dr Restricted During Peak Hours)	
		AM Peak	*PM Peak*	*AM Peak*	*PM Peak*	*AM Peak*	*PM Peak*	*AM Peak*	*PM Peak*
		v/c	v/c	v/c	v/c	v/c	v/c	v/c	v/c
1.	**Massachusetts Ave & 46th St/Tilden St/Wesley Cir NW**								
	Southeastbound Thru	0.62	0.49	0.62	0.49	0.63	0.49	0.63	0.49
	Southeastbound Right	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Northwestbound Thru	0.37	0.55	0.37	0.55	0.37	0.56	0.38	0.56
	Southwestbound Thru	0.57	0.64	0.57	0.64	0.57	0.64	0.57	0.64
2.	**University Ave & Wesley Cir NW**								
	Eastbound TR	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
	Northbound Right	0.04	0.05	0.04	0.05	0.04	0.05	0.04	0.03
3.	**Massachusetts Ave & Wesley Cir NW**								
	Northbound (Eastbound) LTR	0.18	0.43	0.18	0.43	0.20	0.49	0.14	0.28
	Southeastbound Thru	0.38	0.32	0.38	0.32	0.38	0.33	0.38	0.33
	Northwestbound TR	0.26	0.44	0.26	0.44	0.26	0.44	0.27	0.45
4.	**University Ave & Sedgwick St/WTS Dwy NW**								
	Eastbound LR	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Westbound LTR	0.01	0.02	0.01	0.02	0.01	0.03	0.01	0.00
	Northbound LT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Southbound TR	0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.02
5.	**Massachusetts Ave & 45th St NW**								
	Southeastbound LT	0.54	0.45	0.54	0.45	0.54	0.46	0.54	0.45
	Northwestbound TR	0.23	0.38	0.23	0.39	0.23	0.39	0.23	0.39
	Southwestbound LR	0.02	0.05	0.02	0.05	0.02	0.05	0.02	0.05
6.	**Massachusetts Ave & WTS Dwy NW**								
	Northbound Right	0.02	0.87	0.02	0.88	0.04	1.47	0.06	2.67
	Southeastbound Thru	0.55	--	0.56	--	0.56	--	0.56	--
	Southeastbound TR	0.28	0.74	0.28	0.74	0.28	0.74	0.29	0.74
	Northwestbound LT	0.04	0.52	0.04	0.53	0.05	0.89	0.05	0.89
	Northwestbound Thru	--	0.51	--	0.51	--	0.51	--	0.53
7.	**Massachusetts Ave & Glover Gate/Katzen Dwy NW**								
	Southeastbound LTR	0.70	0.69	0.70	0.69	0.71	0.70	0.71	0.71
	Northwestbound LT	0.66	--	0.67	--	0.67	--	0.68	--
	Northwestbound Right	0.08	--	0.08	--	0.08	--	0.08	--
	Northwestbound LTR	--	0.62	--	0.63	--	0.63	--	0.65
	Northeastbound LT	0.25	0.41	0.25	0.41	0.25	0.41	0.25	0.41
	Northeastbound Right	0.24	0.45	0.24	0.45	0.24	0.45	0.24	0.45
	Southwestbound LTR	0.15	0.33	0.15	0.33	0.15	0.33	0.15	0.33

Table 6: 50^{th} & 95^{th} Percentile Queuing Comparison (in feet)

	Intersection and Lane Group	Storage Length (ft)	Existing (2021)				Background (2024)				Future with Existing Access (2024) (w/ Existing Access Scenario)				Future with Proposed Access (2024) (University Dr Restricted During Peak Hours)			
			AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
			50th	95th	50th	95th	50th	95th	50th	95th	50th	95th	50th	95th	50th	95th	50th	95th
1.	**Massachusetts Ave & 46th St/Tilden St/Wesley Cir NW**																	
	Southeastbound Thru	310	237	299	138	176	242	303	140	177	242	305	141	178	242	305	141	178
	Southeastbound Right	310	2	6	1	4	2	6	1	4	2	6	1	4	2	6	1	4
	Northwestbound Thru	170	18	24	71	84	17	24	72	84	18	24	72	84	17	22	71	83
	Southwestbound Thru	540	106	179	95	#175	106	179	95	#175	106	179	95	#175	106	179	95	#175
2.	**University Ave & Wesley Cir NW**																	
	Eastbound TR	510	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0
	Northbound Right	330	--	3	--	4	--	3	--	4	--	3	--	4	--	3	--	2
3.	**Massachusetts Ave & Wesley Cir NW**																	
	Northbound (Eastbound) LTR	50	--	16	--	48	--	16	--	49	--	18	--	58	--	12	--	27
	Southeastbound Thru	170	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0
	Northwestbound TR	160	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0
4.	**University Ave & Sedgwick St/WTS Dwy NW**																	
	Eastbound LR	340	--	0	--	1	--	0	--	1	--	0	--	1	--	0	--	1
	Westbound LTR	100	--	0	--	2	--	0	--	2	--	1	--	2	--	0	--	0
	Northbound LT	320	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0
	Southbound TR	320	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0
5.	**Massachusetts Ave & 45th St NW**																	
	Southeastbound LT	200	18	3	6	0	18	4	6	0	18	3	7	0	18	4	7	0
	Northwestbound TR	200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Southwestbound LR	380	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.	**Massachusetts Ave & WTS Dwy NW**																	
	Northbound Right	290	--	2	--	64	--	2	--	64	--	3	--	106	--	5	--	191
	Southeastbound Thru	200	--	0	--	--	--	0	--	--	--	0	--	--	--	0	--	--
	Southeastbound TR	200	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0
	Northwestbound LT	80	--	3	--	44	--	3	--	44	--	4	--	78	--	4	--	78
	Northwestbound Thru	80	--	--	--	0	--	--	--	0	--	--	--	0	--	--	--	0
7.	**Massachusetts Ave & Glover Gate/Katzen Dwy NW**																	
	Southeastbound LTR	420	286	394	210	242	295	400	210	242	298	401	213	245	303	404	219	251
	Northwestbound LT	480	250	370	--	--	253	376	--	--	255	380	--	--	262	389	--	--
	Northwestbound Right	480	0	10	--	--	0	10	--	--	0	10	--	--	0	10	--	--
	Northwestbound LTR	480	--	--	230	291	--	--	233	295	--	--	237	300	--	--	247	312
	Northeastbound LT	100	21	52	52	102	21	52	52	102	21	52	52	102	21	52	52	102
	Northeastbound Right	100	0	12	0	52	0	12	0	52	0	12	0	52	0	12	0	52
	Southwestbound LTR	40	17	46	28	74	17	46	28	74	17	46	28	74	17	46	28	74

Transit Facilities

This chapter discusses the existing and proposed transit facilities near the site and evaluates the overall transit impacts of the site.

This chapter concludes that:

- The project site is well-served by existing transit;
- The project site is approximately 1.1 miles from the Tenleytown-AU Metro station;
- The project site is served by two (2) Metrobus routes and three (3) AU shuttle routes; and
- The project is expected to generate a manageable amount of transit trips that existing transit service is capable of handling.

Existing Transit Service

The study area is served by Metrorail and the Metrobus and American University (AU) shuttle systems. Combined, these transit services provide local and regional transit connections and link the site with residential, employment, commercial, and cultural destinations throughout the region. Figure 23 identifies the transit routes, stations, and stops in the study area.

The site is located 1.1 miles from the Tenleytown-AU Metro station on the Red Line, which travels between the Glenmont and Shady Grove stations by way of downtown Washington, DC.

The site is also served by three (3) AU shuttle routes, which WTS students can ride for free, and two (2) Metrobus routes. These bus routes connect the site to many areas of the region, as well as several Metro stations. Table 7 shows a summary of the bus route information for the routes that serve the site, including service hours, headway, and distance to the nearest bus stop.

Table 8 shows WMATA’s recommended amenities for each type of bus stop. Table 9 shows a detailed inventory of the amenities appearing at each bus stop within the transit study area.

Proposed Transit Service

There are no known planned or proposed transit improvements in the project study area.

Site-Generated Transit Impacts

The proposed development is projected to generate 39 transit trips (17 inbound, 22 outbound) during the AM peak hour and 90 transit trips (45 inbound, 45 outbound) during the PM peak hour.

It is expected that existing transit service can accommodate these new site-generated trips.

Table 7: Local Bus Route Information

Route Number	Route Name	Service Hours at Stop Closest to Site			Headway (minutes)	Walking Distance to Nearest Stop
		Weekdays	Saturdays	Sundays		
M4	Nebraska Avenue Line	6:14am-9:14pm	-	-	11 - 36	0.3 mi (6 min)
N2,4,6	Massachusetts Avenue Line	5:44am-12:07am	5:40am-11:59pm	6:22am-11:14pm	4 - 45	0.1 mi (2 min)
-	AU Shuttle Blue Route	6:00am-12:15am	7:00am-12:15am	8:00am-12:15am	15 - 30	0.2 mi (4 min)
-	AU Shuttle Green Route	7:55am-9:40pm	-	-	85 - 97	0.3 mi (6 min)
-	AU Shuttle Red Express Route	7:00am-11:05pm	8:45am-4:30pm	-	15 - 30	0.2 mi (5 min)

Table 8: WMATA Recommended Bus Stop Amenities

Amenity	Basic Stop		Enhanced Stop	Transit Center Stop
	< 50 daily boardings	≥ 50 daily boardings		
Bus stop flag	●	●	●	●
Route map and schedule	●	●	●	●
5’ x 8’ landing pad	●	●	●	●
40’/60’ x 8’ landing pad			●	●
4’ sidewalk	●	●	●	●
Bench		●	●	●
Shelter		●	●	●
Lighting (on shelter or within 30’ if overhead)	Recommended for stops with early morning and evening service		●	●
Dynamic information signage	Contingent on presence of shelter			
Trash and recycling receptacles	Recommended where surrounding uses may generate trash			

Source: 2019 WMATA *Bus Stop Amenity Reference Guide*

Table 9: Bus Stop Inventory

Location	Stop ID	Routes Served	Amenities								
			Bus stop flag	Route map & schedule	Landing pad	Sidewalk	Bench	Shelter	Dynamic info sign	Lighting	Trash Recp.
Massachusetts Ave & Fordham Rd (EB)	1002411	N4, N6	●	●	●	●	●	●		●	●
Massachusetts Ave & 48th St (WB)	1002407	N4, N6	●		●	●					●
Massachusetts Ave & Van Ness St (EB)	1002388	N4, N6	●	●	●	●				●	●
Massachusetts Ave & Van Ness St (WB)	1002387	N4, N6	●	●	●	●				●	
Massachusetts Ave & 46th St (WB)	1002341	N4, N6	●	●		●				●	
Massachusetts Ave & Tilden St (EB)	1002339	N4, N6	●		●	●				●	
Massachusetts Ave & 45th St (EB)	1002310	N4, N6	●	●	●	●	●	●		●	●
Massachusetts Ave & 45th St (WB)	1002323	N4, N6	●	●	●	●				●	●
Massachusetts Ave & Ward Cir (WB) / *Katzen Arts Center*	1002283 / *114*	N4, N6 / *Red Express, Green*	●	●	●	●				●	●
Massachusetts Ave & Ward Cir (EB) / *Massachusetts Ave NW*	1002275 / *115*	N4, N6 / *Red Express, Green*	●	●	●	●	●	●		●	
Nebraska Ave & Ward Cir (SB) / *Kerwin Hall*	1003092 / *109*	M4, N2 / *Blue, Green*	●	●	●	●				●	
Nebraska Ave & N Drwy Amer Univ (NB) / *East Campus*	1002227 / *112*	M4, N2, N6 / *Green*	●	●		●	●	●		●	
New Mexico Ave & Nebraska Ave (EB)	1002205	N2, N6	●	●		●				●	●
New Mexico Ave & Nebraska Ave (WB)	1002201	N2	●	●	●	●				●	●
Nebraska Ave & New Mexico Ave (SB)	1002204	M4	●		●	●				●	
Nebraska Ave & New Mexico Ave (NB)	1002197	M4	●		●	●				●	
Massachusetts Ave & Westover Pl (EB)	1002229	N4, N6	●	●	●	●				●	
Massachusetts Ave & Ward Cir (WB)	1002258	N4, N6	●	●	●	●					●
Nebraska Ave & Ward Cir (SB) / *Nebraska Hall - Inbound*	1003710 / *108*	M4, N2 / *Red Express, Blue*	●	●	●	●				●	
Nebraska Ave & Ward Cir (NB) / *Nebraska Hall - Outbound*	1002284 / *102*	M4, N2 / *Red Express, Blue*	●	●	●	●	●	●		●	●
Nebraska Ave & #3700 (SB)	1002292	M4, N2	●	●	●	●				●	
Nebraska Ave & Naval Sec Ctr (NB)	1002304	M4, N2	●	●	●	●	●	●		●	●
Spring Valley Building	*111*	*Red Express, Green*	●		●	●	●	●		●	●
Kogod	*101*	*Blue*			●	●	●	●		●	●
Letts Anderson	*100*	*Blue, Green*			●	●	●	●		●	●

AU Shuttle routes, stop locations, and stop ID's noted in italics.

Bus stop amenities based on 2019 WMATA *Bus Stop Amenity Reference Guide*. Not all amenities are recommended for all bus stop types. This graphic reflects how many amenities a bus stop has, not whether it has every recommended amenity for its type.

Only bus routes and stops within ½ mile of the site are shown.

Figure 23: Existing Transit Facilities

Pedestrian Facilities

This chapter summarizes existing pedestrian access to the site and reviews the impacts of the site on the pedestrian network.

The following conclusions are reached within this chapter:

- Despite some incidences of missing sidewalks, curb ramps, and crosswalks on minor streets near the project site, there are generally adequate pedestrian facilities along primary walking routes between the site and major local destinations;
- The area surrounding the site is free of major barriers to pedestrian connectivity;
- The project is expected to generate pedestrian trips to and from nearby destinations, and the pedestrian facilities surrounding the project can accommodate these new trips; and
- While sidewalks are provided along the Massachusetts Avenue driveway, no sidewalks are provided along the University Avenue site driveway or along University Avenue between the driveway and Wesley Circle.

Pedestrian Study Area

Pedestrian facilities within a quarter-mile of the site were evaluated. There are several streets within the study area that do not have sidewalks, particularly in the residential areas immediately west and northeast of the site. There are also some sidewalks nearby that do not meet minimum width requirements, in addition to having missing or non-compliant crosswalks and curb ramps. Despite these shortcomings, there are generally adequate pedestrian facilities along Massachusetts Avenue NW, which is a primary walking route to major local destinations.

Figure 24 shows suggested pedestrian pathways to nearby destinations, including walking time and distances.

Existing Pedestrian Infrastructure

A detailed inventory of the existing pedestrian facilities within the study area is shown on Figure 25. Sidewalks, crosswalks, and curb ramps are evaluated based on the guidelines set forth by DDOT's *Design and Engineering Manual (2019)* in addition to Americans with Disabilities Act (ADA) standards. These facilities are shown within their respective land use types based on DC's Zoning Regulations of 2016, which determine which of DDOT's sidewalk width requirements apply. These sidewalk width requirements are shown in Table 10.

Table 10: DDOT Sidewalk Width Requirements

Street Type	Curb Walk	Tree/Fur-nishing Zone	Sidewalk Unobstructed Clear Width	Total Minimum Sidewalk Width
Low to Moderate Density Residential	None	4 - 6 feet	6 feet	10 feet
High Density Residential or Light Commercial	1 foot	4 - 8 feet	8 feet	13 feet
Central DC and Commercial Areas	1 - 2 feet	4 - 10 feet	10 feet	16 feet

Source: DDOT *Design and Engineering Manual*

Sidewalks

As shown on Figure 25, the pedestrian study area includes streets within the "Low to Moderate Density Residential" and "High Density Residential or Light Commercial" categories of sidewalk width requirements. There are several streets within the study area that do not have sidewalks, particularly in the residential areas immediately west and northeast of the site. There are also some sidewalks nearby that do not meet minimum width requirements. In some cases, as along the south side of Massachusetts Avenue NW, the sidewalk meets the width requirement of a lower intensity land use, but not its applicable land use. In other cases, as on the American University campus, the sidewalk is not accompanied by a tree/furnishing zone.

Curb ramps

ADA standards require that all curb ramps be provided wherever an accessible route crosses a curb and must have a detectable warning. Additionally, curb ramps shared between two crosswalks are not desired but where they are present, a 48" clear space is required outside active vehicle traffic lanes and within marked crossings. As shown on Figure 25, there are some intersections near the project site that are missing a curb ramp and/or crosswalk on one or more leg.

Crosswalks

DDOT's *Design and Engineering Manual (2019)* requires crosswalks at all intersections or mid-block locations controlled by vehicular and/or pedestrian traffic signals or all-way stop signs. Additionally, high-visibility crosswalks are required at all uncontrolled crosswalks and all crosswalks (including signalized or stop-controlled crosswalks) leading to a block with a school, within a designated school zone area, along a designated school walking route, on blocks adjacent to a Metro station, in areas with moderate to high pedestrian volumes, and in locations with high frequencies of conflicts with pedestrians and turning vehicles.

As shown on Figure 25, there are several instances near the site where crosswalks are not present, or a crosswalk is present but not a high-visibility type at a location where it is required.

Proposed Pedestrian Infrastructure

The Wesley Campus Plan will provide a new sidewalk and streetscape along the buildings northern side to connect to provide links to adjacent pedestrian infrastructure within the campus.

The Applicant is also coordinating with American University (AU) on options to maintain the existing pedestrian connection between the two campuses, located on the east side of the project site.

Site-Generated Pedestrian Impacts

The proposed development is projected to generate 19 pedestrian trips (8 inbound, 11 outbound) during the AM peak hour and 45 pedestrian trips (23 inbound, 22 outbound) during the PM peak hour.

The origins and destinations of these pedestrian trips are likely to be:

- Retail and restaurant locations; and
- Neighborhood destinations such as libraries and parks.

In addition to these trips, the transit trips generated by the site will also generate pedestrian demand between the site and nearby bus stops. It is expected that existing pedestrian facilities can accommodate these new site-generated trips.

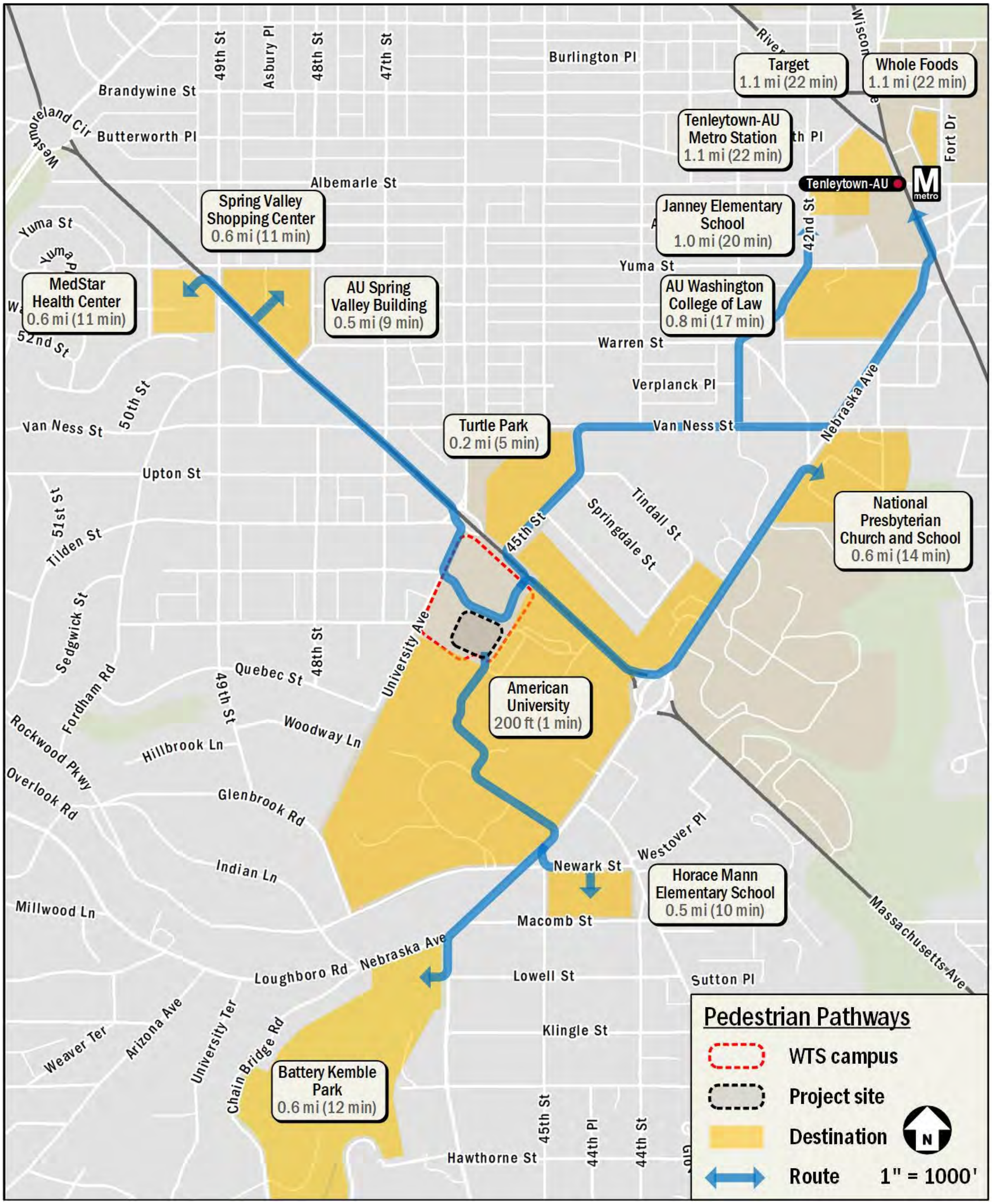

Figure 24: Existing Pedestrian Pathways

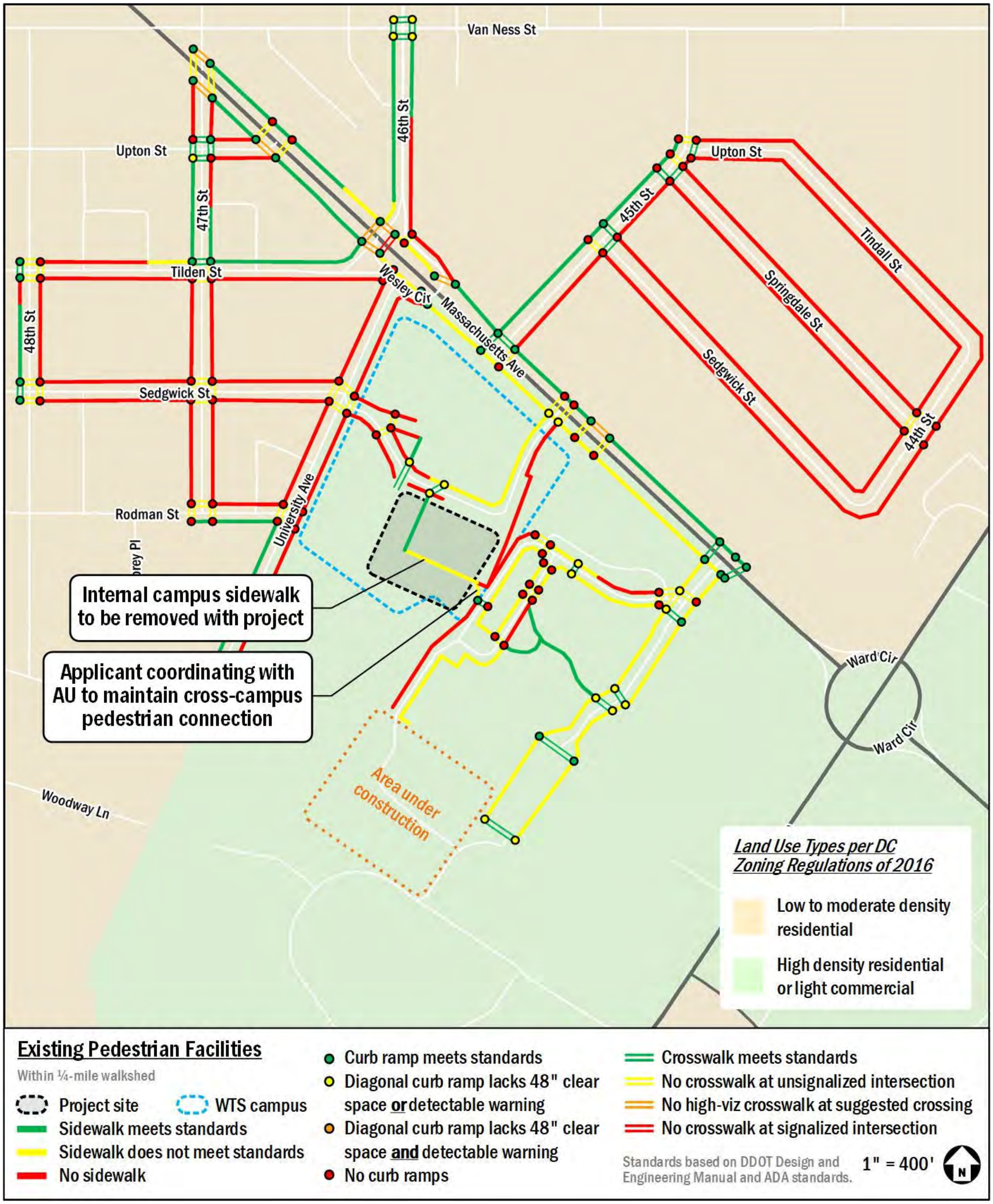

Figure 25: Existing Pedestrian Facilities

Bicycle Facilities

This chapter summarizes existing bicycle access to the site and reviews the impacts of the site on the bicycle network.

The following conclusions are reached within this chapter:

- The site is proximate to several on-street bicycle facilities;
- Several planned and proposed bicycle projects will improve bicycle access to the site;
- The project is expected to generate a manageable number of bicycle trips; therefore, site-generated bicycle trips can be accommodated on existing infrastructure; and
- The project will include short- and long-term bicycle parking that meets zoning requirements.

Existing Bicycle Facilities

The site is located approximately 0.5 miles northwest of the bike lanes on New Mexico Avenue NW, 0.7 miles southwest of the bike lanes on Van Ness Street NW, and 0.5 miles southwest of the on-street signed bike routes on 42nd and 43rd Streets NW. Using these facilities, bicyclists have access to several off-street bike facilities, such as the Rock Creek Trail and the Klingle Valley Trail.

Existing bicycle facilities are shown on Figure 26.

Capital Bikeshare

In addition to personal bicycles, the Capital Bikeshare program provides an additional cycling options for residents, employees, and visitors of the proposed project. The program has placed over 500 bikeshare stations across the Washington, DC metropolitan area with over 4,500 bicycles in the fleet. The following Capital Bikeshare stations are within a quarter-mile of the site:

- A 14-dock station at Ward Circle / American University, 0.2 miles east of the site; and
- A 19-dock station at American University East Campus, 0.4 miles southeast of the site.

Figure 26 illustrates these and other Capital Bikeshare locations in the area.

Shared Mobility

Shared mobility service in the District is provided by eight (8) electric-assist scooter (e-scooter) and electric-assist bicycle (e-bike) companies including Bird, Lime, Lyft, Razor, Skip, Spin, Helbiz, and Jump. These Personal Mobility Devices (PMDs) are provided by private companies that give registered users access to a variety of e-scooter and e-bike options. These devices are used through each company-specific mobile phone application. Many PMDs do not have designated stations where pick-up/drop-off activities occur like with Capital Bikeshare; instead, many PMDs are parked in public space, most commonly in the “furniture zone” (the portion of sidewalk between where people walk and the curb, often where other street signs, street furniture, trees, parking meters, etc. are located). Currently, PMD pilot/demonstration programs are underway in Arlington County, the District, Fairfax County, the City of Alexandria, and Montgomery County.

Planned Bicycle Facilities

There are several bicycle improvements near the site that are planned and scheduled to open in the near future. These are shown on Figure 27.

DDOT Bikeways Expansion

DDOT’s “20 by 22” initiative is a plan to build 20 miles of new protected bike lanes in the District by 2022. The plan identifies the following street segments in the project site area to receive protected bike lanes:

- Massachusetts Avenue NW from the Maryland border to Ward Circle;
- Nebraska Avenue NW from Ward Circle to Warren Street; and
- New Mexico Avenue NW from Nebraska Avenue to Reservoir Road.

Proposed Bicycle Facilities

Several bicycle improvements are proposed near the site but are not yet funded or planned. These are shown on Figure 27.

MoveDC Bicycle Element

The bicycle element of *MoveDC*, the District’s multimodal long-range transportation plan, includes the following bicycle improvements near the development that are proposed but not yet funded or planned:

- Bicycle improvements along Massachusetts Avenue NW, Nebraska Avenue NW, Arizona Avenue NW, Loughboro Road NW, 49th Street NW, Albermarle Street NW, Glenbrook Road NW, and Rockwood Parkway NW.

Capital Bikeshare Development Plan

DDOT's Capital Bikeshare Development Plan was originally released in 2016 to guide the continued growth of Capital Bikeshare in the District of Columbia. The most recent update of the Development Plan was released in 2020 and includes the following:

- A planned station at Turtle Park, 0.2 miles from the site;
- A proposed station at Quebec Street and 48th Street NW, 0.4 miles from the site; and
- A proposed station at 47th Street and Warren Street NW, 0.5 miles from the site.

Site-Generated Bicycle Impacts

This section summarizes the impacts of the project on bicycling conditions surrounding the project site.

On-site Bicycle Infrastructure

The project will meet zoning requirements by providing at least 62 long-term bicycle parking spaces inside the building and at least 12 short-term bicycle parking spaces.

Bicycle Trip Generation

The proposed project is projected to generate four (4) bicycle trips (2 inbound, 2 outbound) during the AM peak hour and 10 bicycle trip (4 inbound, 6 outbound) during the PM peak hour.

It is expected that existing bicycle facilities can accommodate these new site-generated trips.

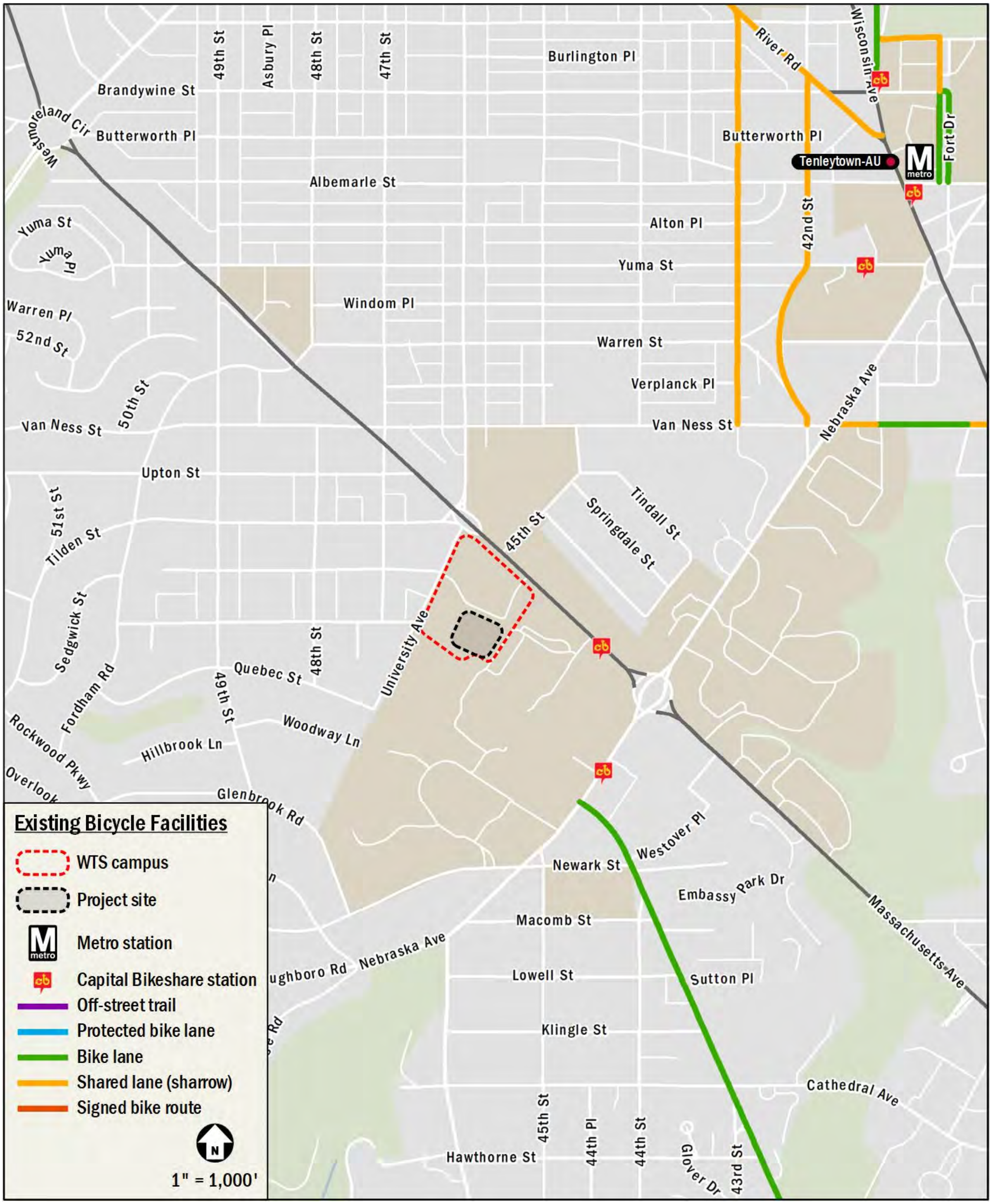

Figure 26: Existing Bicycle Facilities

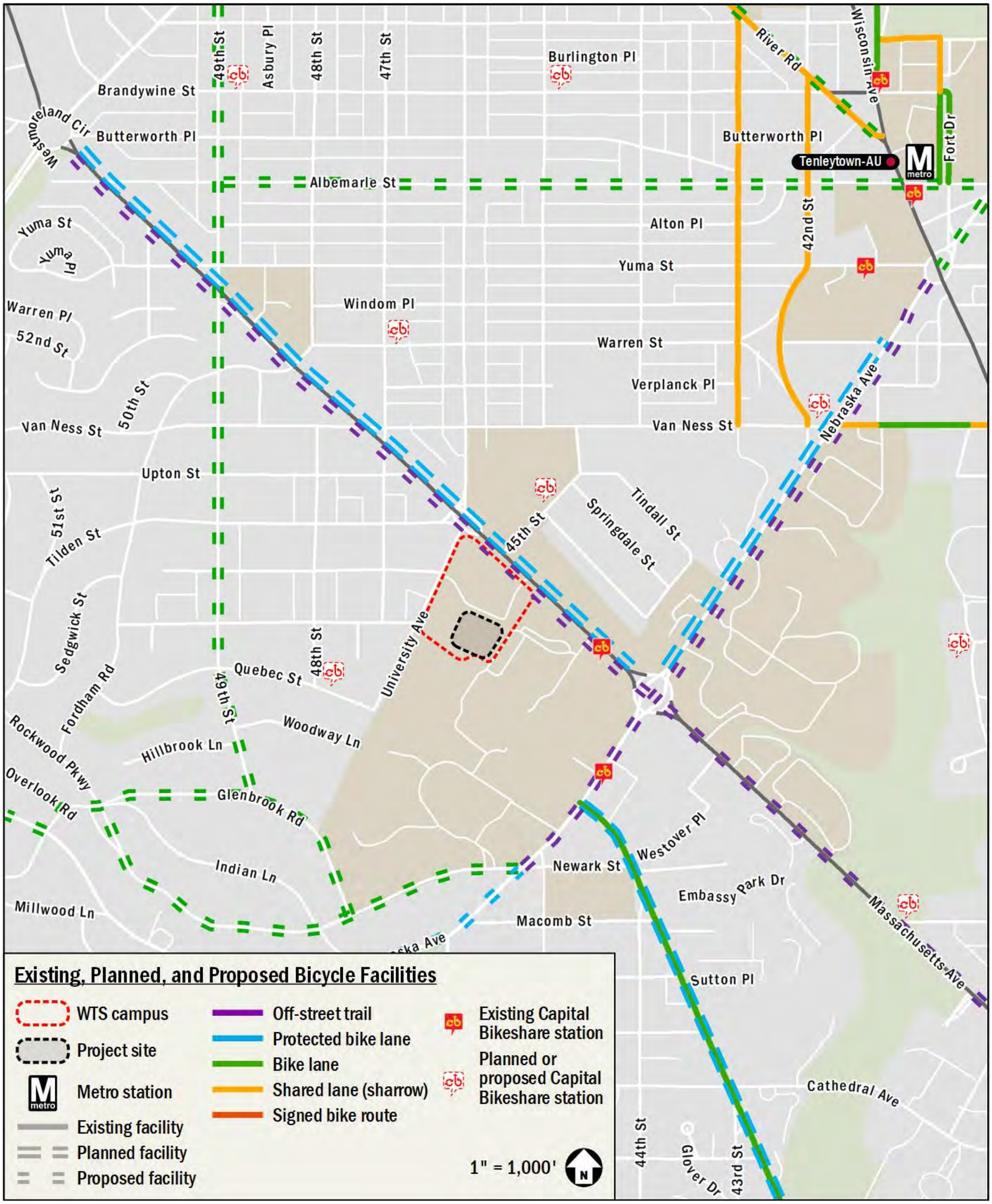

Figure 27: Existing, Planned, and Proposed Bicycle Facilities

Safety Analysis

This chapter qualitatively reviews any vehicle, pedestrian, or bicycle conflicts at the study area intersections or street links within the study area. This review notes any intersections within the study area that have been identified by DDOT as high crash locations and makes recommendations to improve safety conditions. These recommendations are presented for DDOT's consideration, not for the Applicant to complete as part of the proposed project. It should be noted that a new pedestrian HAWK signal has recently been installed to provide signalized pedestrian crossing of Massachusetts Avenue at 45th Street.

Summary of Safety Analysis

A safety analysis was performed to determine if there are any intersections that pose obvious conflicts with vehicles, pedestrians, or bicyclists. This was determined based on data included in DDOT's most recent *Traffic Safety Statistics Report* (2016-2018), *Vision Zero Action Plan*, and Open Data DC Vision Zero Safety data.

Based on available data, no intersections in the study area were identified by DDOT as hazardous/high crash intersections. However, a qualitative review of the crash data available through the DDOT-maintained and publicly-available "Crashes in DC" database was performed to identify study intersections in which conditions for vehicles, pedestrians, and bicyclists can be improved.

Based on a review of facilities in the area and crash data, two (2) intersections were identified for further evaluation. The following section details the potential conflicts at the identified study area intersections.

Potential Impacts

This section reviews the intersections identified to pose potential conflicts to vehicles, pedestrians, or bicyclists.

Massachusetts Avenue and Wesley Circle NW

While this intersection was not identified in DDOT's *Traffic Safety Statistics Report* (2016-2018) as having comparatively high rates of crash frequency, the DDOT-maintained "Crashes in DC" database shows a moderate number of crashes at this intersection since 2016, as shown on Figure 28, including one (1) pedestrian-involved crash, as shown on Figure 29.

This intersection operates as a four-legged, unsignalized intersection. Crosswalks are currently provided at every location where there is a traffic signal and/or stop sign, which excludes the through lanes of Massachusetts Avenue NW. However, the crosswalks at this intersection are not high-visibility although they are in an area with moderate to high pedestrian volumes. Curb ramps that include detectable warnings per ADA standards are provided on every corner.

As shown in Figure 27, protected bike lanes are proposed along Massachusetts Avenue NW that would likely improve conditions for both bicyclists and pedestrians at this intersection. Protected bike lanes could improve conditions for bicyclists by providing physical separation from vehicular traffic, and could improve conditions for pedestrians by reducing the distance across vehicle lanes pedestrians needed to cross.

This report recommends that DDOT perform a safety audit at this intersection as part of its Traffic Safety Assessment program to further evaluate the extent of safety issues and determine if any action is needed.

Massachusetts Avenue and Glover Gate/Katzen Driveway NW

While this intersection was not identified in DDOT's *Traffic Safety Statistics Report* (2016-2018) as having comparatively high rates of crash frequency, the DDOT-maintained "Crashes in DC" database shows a moderate number of crashes at this intersection since 2016, as shown on Figure 28, including two (2) pedestrian-involved crashes and one (1) bicycle-involved crash, as shown on Figure 29 and Figure 30.

This intersection operates as a four-legged, signalized intersection. Crosswalks are currently provided at every leg of the intersection. Curb ramps that include detectable warnings per ADA standards are provided on every corner.

As shown in Figure 27, protected bike lanes are proposed along Massachusetts Avenue NW that would likely improve conditions for both bicyclists and pedestrians at this intersection. Protected bike lanes could improve conditions for bicyclists by providing physical separation from vehicular traffic, and could improve conditions for pedestrians by reducing the distance across vehicle lanes pedestrians needed to cross.

This report recommends that DDOT perform a safety audit at this intersection as part of its Traffic Safety Assessment program to further evaluate the extent of safety issues and determine if any action is needed.

Figure 28: Total Crashes (2016 to present)

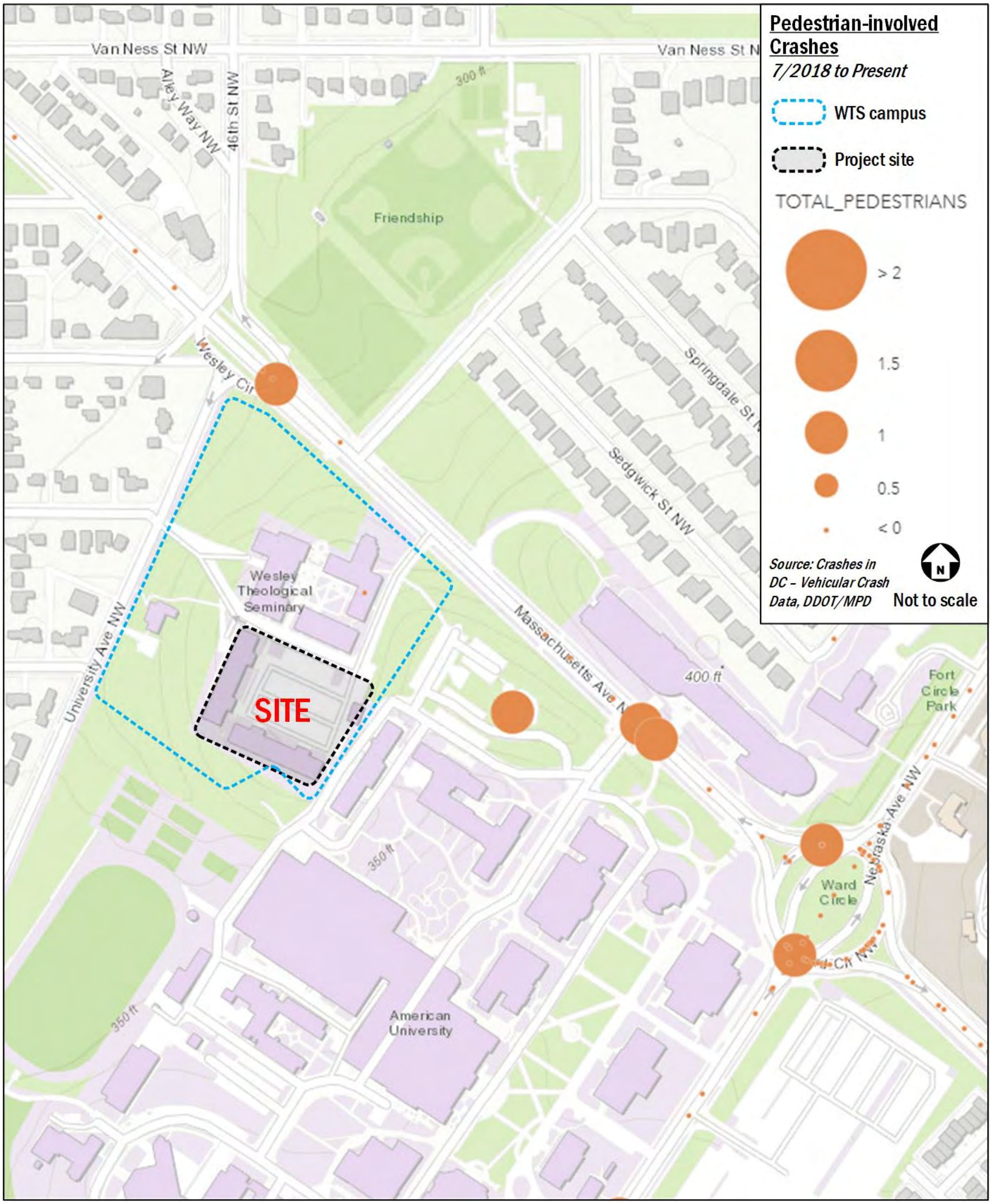

Figure 29: Pedestrian-involved Crashes (2018 to present)

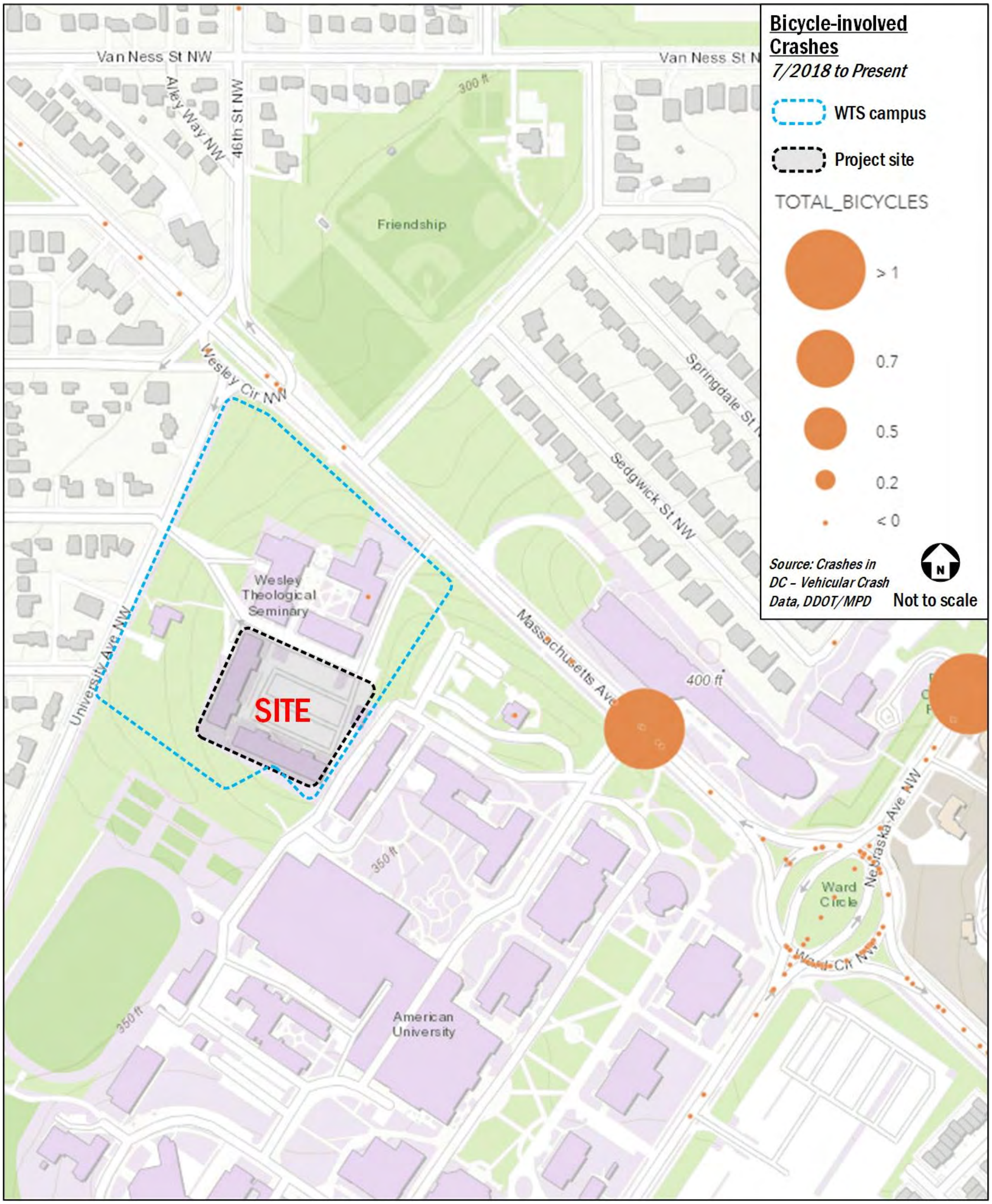

Figure 30: Bicycle-involved Crashes (2018 to present)

Summary and Conclusions

This report has evaluated whether the Wesley Campus Plan will generate a detrimental impact to the transportation network surrounding the site. This evaluation is based on a technical comparison of the Existing Conditions, Background Conditions, and Total Future Conditions. This report concludes that **the project will not have a detrimental impact** to the surrounding transportation network assuming the proposed site design elements are implemented.

Proposed Project

The development site location is within the WTS campus, which is generally bounded by University Avenue NW to the west, Massachusetts Avenue NW to the north, and the American University (AU) campus to the east and south. The portion of the site to be redeveloped is currently occupied by a surface parking lot and two (2) student housing and administration buildings.

The proposed project includes removing the surface parking lot and existing buildings, replacing them with a new student housing building containing approximately 215 dwelling units, 1,535 square feet of retail spaces, and 350 below-grade parking spaces.

The proposed student housing building will be for WTS and AU students and may also house immediate families, faculty and staff and building employees. The housing building will not otherwise serve the general public.

Multimodal Overview

Trip Generation

The Wesley Campus Plan is expected to generate new trips within the surrounding transportation network across all transportation modes during the morning and afternoon peak hours. However, with the implementation of a Transportation Demand Management (TDM) plan as part of the project, the resulting new trips generated by the project will not have a detrimental impact on the transportation network. The multimodal trip generation for the proposed project is as follows:

- AM Peak Hour: 14 vehicles/hour, 39 transit riders/hour, four (4) bicycle trips/hour, and 19 walking trips/hour.
- PM Peak Hour: 33 vehicles/hour, 90 transit riders/hour, 10 bicycle trips/hour, and 45 walking trips/hour.

Transit

The site is located 1.1 miles from the Tenleytown-AU Metro station on the Red Line and is served by local bus routes.

The site is expected to generate a manageable amount of transit trips, and the existing service can accommodate these new trips.

Pedestrian

The site is surrounded by a generally adequate pedestrian network. Despite some incidences of missing sidewalks, curb ramps, and crosswalks on minor streets near the project site, there are generally adequate pedestrian facilities along primary walking routes between the site and major local destinations.

The site is expected to generate a manageable amount of pedestrian trips, and the existing pedestrian facilities can accommodate these new trips.

Bicycle

The site is proximate to several on-street bicycle facilities, including the bike lanes on New Mexico Avenue NW and Van Ness Street NW, and the on-street signed bike routes on 42nd and 43rd Streets NW. Using these facilities, bicyclists have access to several off-street bike facilities, such as the Rock Creek Trail and the Klingle Valley Trail.

Several planned and proposed bicycle projects will improve bicycle access to the site, including protected bike lanes on Massachusetts Avenue NW, Nebraska Avenue NW, and New Mexico Avenue NW.

The project will include long-term bicycle parking inside the building and short-term bicycle parking along the perimeter of the site that meets zoning requirements.

The site is expected to generate a manageable amount of bicycle trips, and the existing bicycle facilities can accommodate these new trips.

Vehicular

The site is accessible via Massachusetts Avenue NW, a principal arterial which connects the site to expressways within the District such as the Southeast Freeway (I-695), the Southwest Freeway (I-395), and the Anacostia Freeway (DC-295). These expressways connect with the Capital Beltway (I-495) and other regional Interstates.

To identify the project's impact on the transportation network, future conditions were analyzed with and without the project. Intersection analyses were performed to calculate the average delays and queues for vehicles at each of the study intersections. These average delays and queues were compared to the acceptable levels of delay and queue impacts set by DDOT standards to determine if the project will negatively impact the study area.

Further, future conditions with the proposed development were analyzed under the following two scenarios:

- Existing Access: University Avenue egress driveway remains open outbound site traffic during peak periods, consistent with existing conditions.
- Proposed Access: University Avenue egress driveway restricted during AM and PM peak periods, except for delivery vehicles that would still be permitted to use the driveway.

The analysis concluded that one (1) intersection would meet DDOT's delay-related threshold for mitigation under the Existing Access scenario and no intersections under Proposed Access scenario.

After exploring options for mitigating impacts at this intersection, this report recommends implementing a robust Transportation Demand Management (TDM) plan consistent with DDOT's Baseline Plan as a mitigation measure.

Safety Recommendations

A qualitative review of the crash data available through the DDOT-maintained and publicly-available "Crashes in DC" database was performed to identify study intersections, if any, in which conditions for vehicles, pedestrians, and bicyclists may be improved.

Based on a review of facilities in the area and relevant crash data, two (2) intersections were identified for further evaluation. Recommendations for these intersections, presented for DDOT's consideration and not for the Applicant to complete as part of the proposed project, are summarized below:

Massachusetts Avenue and Wesley Circle NW

Installation of the planned protected bike lanes along Massachusetts Avenue NW would improve conditions for bicyclists and pedestrians. Further, a safety audit should be performed as part of DDOT's Traffic Safety Assessment program.

Massachusetts Avenue and Glover Gate/Katzen Driveway NW

Installation of the planned protected bike lanes along Massachusetts Avenue NW would improve conditions for bicyclists and pedestrians. Further, a safety audit should be performed as part of DDOT's Traffic Safety Assessment program.

Transportation Demand Management (TDM) Plan

Per the DDOT CTR guidelines, the goal of implementing TDM measures is to reduce the number of single occupancy vehicles and vehicle ownership within the District. The promotion of various programs and existing infrastructure includes maximizing the use of transit, bicycle, and pedestrian facilities. DDOT has outlined expectations for TDM measures in the CTR guidelines, and this project is proposing to implement a TDM plan consistent with these guidelines based on the expected impact of the project, as discussed in the Project Design section of this report.

Summary

This report concludes that the Wesley Campus Plan will not have a detrimental impact on the surrounding transportation network assuming the proposed site design elements are implemented.

The project has several positive design elements that minimize potential transportation impacts, including but not limited to the following:

- The site's proximity to transit service and bicycle infrastructure;
- The site's location within a generally adequate pedestrian network along major walking routes;
- The site's loading facility design, which maintains loading activity within private property and provides loading circulation that ensures head-in/head-out truck movements are performed from the public roadway network;
- The inclusion of secure long-term bicycle parking spaces that meet zoning requirements;
- The inclusion of short-term bicycle parking spaces within the site that meet zoning requirements; and
- A TDM plan that reduces the demand of single-occupancy, private vehicles during peak period travel times and shifts single-occupancy vehicular demand to off-peak periods.

Transportation Technical Attachments

Wesley Campus Plan

Washington, DC

April 29, 2022

GOROVE SLADE
Transportation Planners and Engineers

CONTENTS

(Note: Click on heading to navigate directly to each section of the Technical Attachments)

A. Truck Maneuvering Diagrams

Appendix A - Truck Maneuvering Diagrams

GOROVE SLADE
Transportation Planners and Engineers

Landmark Housing at Wesley Theological Seminary: Loading Analysis

Bohler DC
November 19, 2021
Sheet 1 of 7

NW, Washington, DC

N

SCALE: 1" = 60'

P:\2997-001 Landmark Housing at Wesley Seminary (7301-2811)\CAD\Landmark Housing at WTS AT 11.18.2021.dwg - 11/19/2021 9:55 AM

ZONING COMMISSION
District of Columbia
CASE NO.22-13
EXHIBIT NO.15A2

BEFORE THE ZONING COMMISSION
OF THE DISTRICT OF COLUMBIA

FORM 116 – HEARING FEE CALCULATOR

Pursuant to Subtitle Z, Chapter 16, the following hearing fees shall be paid when the Zoning Commission schedules a public hearing on a petition or application. In the case of a petition or application combining two (2) or more actions on this form, the fee charged shall be the greatest of all the fees computed separately. Please show ALL computations.

A department, office, or agency of the Government of the District of Columbia is not required to pay a hearing fee where the property is owned by the agency and the property is to be occupied for a government building or use.

MAP AMENDMENT

Pursuant to Subtitle Z § 1601.1, if the Commission schedules a public hearing on a petition or application for an amendment to the Zoning Map, prior to advertisement of the hearing, the petitioner/applicant shall pay a hearing fee in accordance with the following schedule:

Petition or Application for Rezoning to any:	Unit	Fee	Quantity	Total
R-1 through R-3, R-6 through R-17, or R-19 through R-21 zone	43,560 sq. ft. or part of that area	$ 650		
RF-1 through RF-3 zone and RA-1 or RA-6	43,560 sq. ft. or part of that area	$1,625		
RA-2, RA-7, RA-8, or RC-1	43,560 sq. ft. or part of that area	$3,250		
RA-3 through RA-5, RA-9, RA-10, D-1-R, SEFC-2, SEFC-3, or CG-1 zone	43,560 sq. ft. or part of that area	$6,500		
MU-1, MU-2, MU-10 through MU-16, MU-22, MU-23, MU-29, D-2, SEFC-1, SEFC-4, CG-4 through CG-7, and ARTS-4 zone	10,000 sq. ft. or part of that area	$2,600		
MU-3 through MU-6, MU-17 through MU-19, MU-24 through MU-27, NC-1 through NC-5, NC-7, NC-9 through NC-11, NC-14, NC-16, NC-17, D-4-R, CG-2, ARTS-1, ARTS-2, RC-2 and RC-3 zone	10,000 sq. ft. or part of that area	$1,625		
MU-7 through MU-9, MU-20, MU-21, MU-28, NC-6, NC-8, NC-12, NC-13, NC-15, D-3 through D-5, D-5-R, D-6, D-6-R, D-7, D-8, CG-3, and ARTS-3 zone	10,000 sq. ft. or part of that area	$3,250		
PDR-1 through PDR-7 zone	20,000 sq. ft. or part of that area	$2,600		
TOTAL				

Notes:
- *The maximum hearing fee for rezoning to any Residence District (R, RF, RA, D-1-R, SEFC-2,SEFC-3 or CG-1) is $65,000.*
- *For an application that proposes rezoning to more than one (1) zone district or is in the alternative, the fee shall be the total of the amounts for the area devoted to each proposed district or alternative computed separately.*
- *A "part of an acre" or "part of that area" should be rounded to the next whole number.*

TEXT AMENDMENT

Pursuant to § Subtitle Z § 1601.3, if the Commission schedules a public hearing on a petition for an amendment to the text of the Zoning Regulations, prior to the advertisement of the hearing, the petitioner shall pay a hearing fee in accordance with the following schedule:

Petition	Fee	Quantity	Total
Each section proposed to be added, deleted, or amended (Maximum of $1,300)	$325.00		
TOTAL			

FORM 116 – HEARING FEE CALCULATOR – Side 2

PLANNED UNIT DEVELOPMENT (PUD) OR AIR SPACE DEVELOPMENT

Pursuant to Subtitle Z § 1601.4 if the Commission schedules a public hearing on an application for approval of a planned unit development or air space development, prior to the advertisement of the hearing, the applicant shall pay a hearing fee in accordance with the following schedule:

Application	Fee	Quantity	Total
For each 100 sq. ft. of gross floor area (GFA), or part thereof, included in the application devoted to dwelling units, and the immediate area needed to serve that dwelling unit (Maximum of $65,000.)	$7.00	2,993	$20,951.00
For each 100 sq. ft. of GFA, or part thereof, included in the application devoted to any use other than a dwelling unit and the immediate area needed to serve that dwelling unit	$13.00	53	$689.00
TOTAL			$21,640.00

Notes:
- *There is no charge for the hearing on the second-stage of a two-stage PUD application*
- *A "part thereof" should be rounded to the next whole number.*

MODIFICATION TO AN APPROVED PUD OR AIR SPACE DEVELOPMENT

Pursuant to Subtitle Z § 1601.6, if the Commission schedules a public hearing on an application for a modification to an approved planned unit development, air space development, or any other review of a specific site or building plan, prior to the advertisement of the hearing, the applicant shall pay a hearing fee in accordance with the following schedule:

Request for Modification	Fee	Total
Modification to a previously approved case	26% of original hearing fee or $1,300, whichever is greater	
TOTAL		

APPLICATION/ FEE OF PETITION

Pursuant to Subtitle Z § 1601.5, in the case of a petition or application combining two (2) or more actions on this form, the fee charged shall be the <u>greatest</u> of all the fees computed separately. Below, please list the total fee for each action requested and enter the fee of the <u>greatest</u> fee calculated.

Type of Petition/Application	Total
Map Amendment	
Text Amendment	
PUD/Air Space Development	
Modification to an approved PUD or Air Space Development	
GREATEST OF CALCULATED FEES	

CERTIFICATION

I/We certify that the information on this form is true and correct to the best of my/our knowledge, information and belief. Any person(s) using a fictitious name or address and/or knowingly making any false statement on this application/petition is in violation of D.C. Law and subject to a fine of not more than $1,000 or 180 days imprisonment or both. (D.C. Official Code § 22-2405)

Name: John Patrick Brown, Jr.
Signature:
Date: 6/15/2023

If you need a reasonable accommodation for a disability under the Americans with Disabilities Act (ADA) or Fair Housing Act, please complete a Form 155 - Request for Reasonable Accommodation.

EXHIBIT “A”

EXHIBIT A

Outline of Witness Testimony

I. David McAllister-Wilson, The Wesley Seminary

- **A.** Wesley Seminary: Past, Present and Future
- **B.** Thrive in Place to Further Education Mission
- **C.** Wesley's Contribution to City, Diversity and Equity
- **D.** Vital Role of Community Engagement with our Neighbors, ANCs, CLC

II. Eric Leath, Landmark Properties

- **A.** Introduction to Landmark Properties
- **B.** Purpose Built Student Housing
- **C.** Operation of New Dormitory
- **D.** Implementation of Inclusionary Zoning

III. Jack Boarman, BKV Group

- **A.** New Dormitory Design and Features
- **B.** Purpose Built Student Housing
- **C.** Project Revisions
- **D.** Allocation of Inclusionary Units
- **E.** Sustainability
- **F.** Landscaping

IV. Steve C. Karcha, Advanced Project Management, Inc.

- **A.** Wesley Campus
- **B.** Demolition of Buildings
- **C.** New Administration and Maintenance Building
- **D.** Green Open Space/Landscaping
- **E.** Playground
- **F.** Sidewalk and Public Space Improvements
- **G.** Construction Management with Community Participation

V. Brandice Elliott, Holland & Knight

- **A.** Standard of Review
- **B.** Racial Equity Analysis
- **C.** Consistency with IZ Requirements

VI. Will Zeid, Grove Slade

- **A.** Comprehensive Transportation Review
- **B.** Transportation Demand Management
- **C.** Performance Monitoring Plan

JACK OWEN BOARMAN, AIA, NCARB, CID

PARTNER-IN-CHARGE

Jack brings over 44 years of experience in the design of residential developments, corporate, government and academic facilities. Since founding the firm in 1978, Jack has led the firm's team design approach in the development of quality architecture across the country. He has expanded the design practice for planning, programming and design of urban redevelopment projects and historic renovations.

EDUCATION // Bachelor of Architecture with Distinction, University of Minnesota

YEARS OF EXPERIENCE // 44

REGISTRATIONS // Professional Architect: DC# 101622, MD #16180, MN #11682, IL #001017467, SD #4926, WI #6144, IA #2153, AZ #20740, NY #018772, CID# C00659, AIA Member # 30022509, NCARB #26798

PROFESSIONAL AFFILIATIONS // American Institute of Architects (AIA), Minneapolis Chapter, Minneapolis Chapter President, 1998; Minneapolis Chamber of Commerce; Minneapolis Downtown Council; Urban Land Institute; Lambda Alpha

RELEVANT EXPERIENCE

Crystal Towers, Dweck, Arlington, VA

Urban Atlantic-Walter Reed Site QRS-Wash-DC

1801 E Main-Richmond,VA- 225,000 square feet, 221 units, with 5,000 square feet of retail and 110 structured parking spaces

Piazza Terminal, Philadelphia, PA – Multifamily, Market-rate, New Construction, 937,000 SF, 13 stories, 951-unit, 513 parking spaces (5% are dedicated for green vehicles), In Progress

Broad and Washington, Philadelphia, PA – Market-rate, Mixed-use, Multifamily, In Progress

CastleRock, GMU Prince Williams Bldg C, Prince Williams County,VA - student housing, 3 Buildings Building A 197 Units, Building B 170 Units, Building C 155 Units

Brewers Hill, Greystar, Baltimore, MD – Market-rate, Multifamily, 500-unit, In Progress

Dominium-Bluffs Pkwy Senior-Canton-GA

City Club Apartments Midtown Detroit, CCA, Detroit, MI - Market-rate, 16-, 6-story structures, 357 units, 30,000 SF retail space, 250 below-grade parking

Harwood Flats, Foulger Pratt & Promark Real Estate Services, Kensington, MD – Project manager for the design and construction of a mixed use, 614-unit, development. 549,771 GSF, 28,000 SF retail

Cotton Annex, Douglas Development, Washington, DC- Adaptive reuse of the landmarked 90,000 square foot Cotton Annex, with an additional 400,000 square feet of new construction. 610 total units

Artspace Silver Spring Arts Campus, Montgomery County and Artspace, Silver Spring, MD – affordable, addition & renovation, 68 live/work artist studios, 11 townhouses

Beckert's Park, Foulger-Pratt, Washington, DC – Multifamily, Mixed Use, 5-story, 327-unit, 60,000 SF

Center City District, Landmark on Grand River / Newman Lofts, East Lansing, MI – Multifamily, Mixed-Use, Student Housing, New Construction, 2-Towers, 96-Active Adult Units, 289-Student Housing Unit

âme (Meridian Hill Hall), Jair Lynch, Washington, DC – Multifamily, Adaptive Reuse, Historic Renovation, 8-story, 206-unit, 187,586 SF, $37M estimated

The Aspen, Ellisdale, Washington, DC – Multifamily, Mixed Use, New Construction, 10-story, 133-unit, 88,310 SF housing, 5,890 SF retail, $18.7M

(Mai Place) 1400 14th Street NW, Abdo Development, Washington, DC – mixed use, corporate, new construction, 4-story, 30-unit, 46,394 SF housing, 13,866 SF retail, $11.7M

New Carrollton Mixed Use Development Phase II, Urban Atlantic, New Carrollton, MD- mixed use, 5-story, 291-unit, 327,201 SF

The District (Riverfront Landings), Pittsburgh, PA – market rate, 2 buildings, 5 stories residential, 1 story amenities, 425 total units, 648,000 SF

Morrow Park City Apartments, Village Green Companies, Pittsburgh, PA – market-rate, new construction, 213-unit, 273,093 SF, $37.3M

The Vintage, Valor Development, Washington, DC – Multifamily, Addition & Historic Renovation, 85-unit, 63,525 SF, $9.8M

Advanced Project Management, Inc.

Stephen C. Karcha, VP of Project CM

CERTIFIED CM, LEED AP, GRP

Title
Vice President
Project and Construction Management,
36 years' experience; 25 years with APM

Education
B.S. Civil Engineering Technology,
Old Dominion University
A.S. Construction Management,
Northern Virginia Community College

Designations
(CCM) Certified Construction Manager
(GRP) Accredited Green Roof Professional
(LEED AP) LEED Professional Accreditation

Professional Affiliations
Construction Management Association of America
Green Roofs for Healthy Cities
U.S. Green Building Council
American Society of Civil Engineers
International Code Council
National Fire Protection Association
Engineer-In-Training (EIT), VA

*A*s the VP of Project and Construction Management, Stephen is a key cornerstone of the APM team. His extensive experience in construction project management, general contracting, civil engineering, and zoning brings an expansive view to all areas of the development process.

Stephen's leadership encourages an open and creative exploration of ways to overcome the challenges encountered by the entire project team in preconstruction, construction, and preoccupancy phases. He fosters and guides the project team and Ownership through the healthy tensions to achieve the goals of the project and lead to a successful outcome.

Recent Programs

Arlington Partnership
For Affordable Housing
4 Projects $70.89 Million Program

The Washington National Cathedral
5 Projects $42.9 Million Program

YMCA of Metropolitan Washington
5 Projects $41.8 Million Program

Goodwin House Incorporated
13 Projects $192 Million Program

Episcopal High School
13 Projects $86 Million Program

The Madeira School
8 projects $71.1 Million Program

Wesley Theological Seminary
7 Projects $28.5 Million Program

World Wildlife Fund, Inc.
7 Projects $8.5 Million

Alexandria Housing
Development Corporation
5 Projects $264 Million Program

Gonzaga College High School
23 projects $150.3 Million Program

Flint Hill School
3 Projects $34 Million Program

Peter Lawrence of Virginia
7 Projects $51.2 Million Program

Vinson Hall Expansion
4 Projects $87.9 Million Program

Sidwell Friends School
8 Projects $113.7 Million Program

Falcons Landing
3 Projects $45 Million Program

Virginia Theological Seminary
8 Projects 36.1 Million Program

"I appreciate a lot what APM has done to get us to this point. We would not be where we are without you" - Jonathan Frederick, President and CEO AHDC

APM

"We were privileged to have you at the table with us; your experience, attention to detail, dedication and level head were a true benefit to the team.
- Brandon Ripley | Vice President, Construction Penzance

Holland & Knight

Brandice N. Elliott

DIRECTOR OF PLANNING SERVICES

Brandice.Elliott@hklaw.com

Washington, D.C.
202.469.5572

PRACTICE
Land Use: Mid-Atlantic

Brandice N. Elliott is the director of planning services in Holland & Knight's Washington, D.C., office and a member of the firm's Land Use and Government Team. Ms. Elliott works with the firm's nationally recognized development, land use and zoning attorneys to support clients as they acquire, plan and develop real estate projects.

Ms. Elliott has more than 15 years of experience providing detailed zoning, planning and design analysis to land use projects. She also has vast knowledge of land use, zoning, urban design and environmental regulatory compliance.

Prior to joining Holland & Knight, Ms. Elliott worked in the District of Columbia Office of Planning for 10 years, where she played a key role in the management of several development projects of varying size and complexity citywide. She worked with a broad coalition of development stakeholders and district agencies to negotiate planned unit developments (PUDs), map amendments, design review projects, text amendments, variances and special exceptions in order to provide recommendations aligned with district regulations, policies and priorities, and presented the analyses to the D.C. Zoning Commission and Board of Zoning Adjustment (BZA). Ms. Elliott also assisted in long-range planning efforts, including the Comprehensive Plan update and other small-area plan initiatives.

Ms. Elliott's experience also includes serving as a planner and deputy zoning administrator for the Town of Herndon, Virginia, where she oversaw the development of several projects, contributed to comprehensive plan area studies and coordinated advisory committees. Prior to that, Ms. Elliott spent several years in Mesa, Arizona, where she served as a zoning plans examiner, planner and code compliance officer.

Credentials

Education

- Arizona State University, MUEP, Master of Urban and Environmental Planning
- Arizona State University, B.A., Psychology, *magna cum laude*

Memberships

- American Institute of Certified Planners (AICP)

BRANDICE N. ELLIOTT

PROFESSIONAL BACKGROUND

Brandice has extensive expertise in urban planning, land use, and zoning gained through over fifteen years of experience working in both public and private sectors. She is currently the Director of Planning Services at Holland & Knight LLP, Washington, DC office. Prior to that, Brandice was a Development Review Specialist with the D.C. Office of Planning (DCOP) for ten years. Her prior experience also includes serving as a Deputy Zoning Administrator, Zoning Plans Examiner, and Code Compliance Officer.

EXPERIENCE

DIRECTOR OF PLANNING SERVICES, HOLLAND & KNIGHT LLP

August 2022 - Present

- Prepares and manages developer applications for a variety of projects, including Planned Unit Developments (PUDs), zoning map amendments, zoning variances, and special exceptions.
- Assists clients with zoning entitlements and acquisition of building permits.
- Prepares testimony for zoning and land use planning to be provided to the D.C. Zoning Commission and Board of Zoning Adjustment.
- Advises clients on interpretation and application of development regulations and approval processes.
- Prepares detailed comprehensive plan, zoning, and land use analysis to advise client during property acquisition and entitlements.

DEVELOPMENT REVIEW SPECIALIST, DISTRICT OF COLUMBIA OFFICE OF PLANNING

September 2012 - August 2022

- Prepared analyses of complex project proposals to determine conformance with the Comprehensive Plan, Small Area Plans, Zoning Regulations, and other District policies.
- Provided subject matter expertise of District policies, development goals, processes, procedures, and standards as they related to the Agency.
- Regularly provided testimony to the D.C. Zoning Commission and Board of Adjustment regarding Office of Planning recommendations.
- Collaborated with Applicants and District Agencies to refine projects and reduce conflicts in the proposed design.

Projects: Managed several PUDs of varying complexity in the Florida Avenue Market Development with the goal of securing significant benefits and amenities, particularly affordable housing; Managed development proposals in Southeast Federal Center, which generally consisted of design review and text amendments that brought the Zoning Regulations in conformance with the Master Plan; and Served as subject matter expert in development of the Chevy Chase Small Area Plan.

PLANNER AND DEPUTY ZONING ADMINISTRATOR, TOWN OF HERNDON COMMUNITY DEVELOPMENT

November 2010 - September 2012

- Served as Planner and Deputy Zoning Administrator managing the Site Plan Review Process, ensuring that all requests complied with the Comprehensive Plan, Town Code, and Town policies.

- Coordinated the Pedestrian and Bicycle Advisory Committee, which provided input for the first Countywide Bicycle Transportation Plan, and presented regular updates at public information sessions and to the Town Council.
- Was the point of contact for matters concerning the Town Code and its consistency with federal Chesapeake Bay regulations.

Projects: Contributed to the first Fairfax County Bicycle Transportation Plan; Assisted with Comprehensive Plan Area Studies, including the Herndon Metrorail Study Area Plan and Downtown Herndon Area Plan.

PLANNER, TELERGY CONSULTING

September 2009 - November 2010

- Served as Planner obtaining entitlements for the development of telecommunication infrastructure.
- Coordinated public engagement, site research, city review processes, and city public hearing processes for approvals for the development of infrastructure.

CITY OF MESA, PLANNING DIVISION

PLANNER II AND CODE COMPLIANCE OFFICER (March 2010 - September 2010)

PLANNER I (December 2007 - January 2009)

ZONING PLANS EXAMINER (August 2005 - December 2007)

- Documented cases of zoning violation, provided notification to property owners, and provided assistance to correct the violation within a timely manner.
- Served as the Planner and primary contact for all requests requiring relief from the Zoning Regulations.
- Prepared analyses of project proposals to determine conformance with the Comprehensive Plan, Small Area Plans, Zoning Regulations, and other City policies.
- Provided subject matter expertise of City policies, development goals, processes, procedures, and standards as they related to the Agency.
- Regularly provided testimony to the Zoning Adjustment Hearing Officer and Board of Adjustment regarding Office of Planning recommendations.
- Collaborated with Applicants and City Agencies to refine projects and reduce conflicts in the proposal design.
- Coordinated permit reviews requiring zoning approvals and provided technical reviews of residential, commercial, and sign plans, verifying compliance with City Codes, Zoning Commission approvals, and Board of Zoning Adjustment approvals.

EDUCATION

ARIZONA STATE UNIVERSITY

MUEP, Master of Urban and Environmental Planning

ARIZONA STATE UNIVERSITY

B.A., Psychology

CERTIFICATION

American Institute of Certified Planners

William Zeid, PE

Senior Associate Project Manager

Will is a senior associate and project manager with over 12 years of experience in traffic, parking and transportation engineering and planning in the DC, Maryland and Virginia markets providing support for designing and entitling private and public development projects. He is responsible for managing projects in Washington, DC, Maryland, and Virginia. Will helped lead a public-private working group to update Montgomery County's 2022 Local Area Transportation Review (LATR) Guidelines to incorporate a cap on off-site improvement requirements.

Will has been qualified as an expert by the DC Board of Zoning Adjustment, the DC Zoning Commission, by numerous jurisdictions in Maryland and Virginia, and has been recognized as an expert witness by the Loudoun County Circuit Court.

He has experience with all types of projects including educational institutions, mixed-use developments, commercial and retail developments, office developments, and government facilities.

Will's project experience covers the full spectrum of land-use and includes:

Residential

7 New York Avenue NE BZA, Washington DC
CSX West - WC Smith, Washington, DC
Takoma Metro Multifamily Development, Washington, DC
Decoverly Dr at Crown Park AWSC, Gaithersburg, MD
Reed Street PUD, Washington, DC
3000 M Street NW – PUD, Washington, DC
3220 Prospect Street, Washington, DC
4618 14th Street NW PUD, Washington, DC
3427 Wisconsin Avenue NW Map Amend App
2229 M St NE PUD, Washington, DC
Broadlands Section 104 Residential, Loudoun County, VA

Mixed-Use Development

1250 U Street NW Redevelopment, Washington, DC
Shady Grove Innovation District, City of Rockville, MD
MRP Steuart Buzzard Point Phase 1, Washington, DC
Square 669-670, Washington, DC
Federal Plaza Shopping Center, Rockville, MD
Smithsonian Institution – Revitalization, Washington, DC
Yards Parcel Q, Washington, DC
1301 S Capitol Street, Washington, DC
5425 Wisconsin Avenue, Chevy Chase, MD
Friendship Center, Washington, DC
Olde Ashburn Center, Ashburn, VA
15930 Frederick Road - Lidl Derwood, Gaithersburg, MD

Education

Bachelor of Science,
Civil Engineering,
University of Idaho

Professional Registrations

Maryland: No. 49415
District of Columbia: No. PE921523
Indiana: No. PE12000640

Professional Associations

Maryland Society of Professional Engineers (MDSPE)
National Association of Industrial and Office Properties (NAIOP)
Urban Land Institute (ULI)

Experience

12 years total
2 years with Gorove Slade

Location

Washington, DC

Federal, State, and Municipal Government

2406 Massachusetts Avenue NW, Washington, DC

Primary and Secondary Schools

Dorothy Heights Elementary School, Washington, DC
Ft. Lincoln / Hagans Recreation Center, Washington, DC
Raymond Elementary School, Washington, DC
Aiton School, Washington, DC
Washington Latin Public Charter School, Washington, DC
Truesdell Education Campus, Washington, DC
Kenilworth Elementary School, Washington, DC

Office

WMATA Square 487 - 600 5th Street NW, Washington, DC
14 Firstfield Road Development, Gaithersburg, MD
Rockville Corporate Center, City of Rockville, MD
Redland Corporate Center, City of Rockville, MD

Other

Wesley Theological Seminary, Washington, DC
4.5 Street Alley 2-Way/1-Way Conversion
405 S Frederick Road – Wawa, Gaithersburg, MD
Glymont Gas Station, Indian Head, MD
MLK Gateway Phase II, Washington, DC
Ivy City Valet Traffic Flow Chart, Washington, DC
Broadlands 204 North Parking Study, Loudoun County, VA

EXHIBIT “B”

GOROVE SLADE
Transportation Planners and Engineers

TECHNICAL MEMORANDUM

To:	Sayra Molina Aaron Zimmerman	District Department of Transportation
From:	Drew Ackermann William Zeid, P.E. Erwin Andres, P.E.	
Date:	June 10, 2022	
Subject:	Wesley Campus Plan (ZC No. 22-13) Transportation Demand Management (TDM) Plan and Performance Management Plan (PMP)	

Introduction

This memorandum details the revised Transportation Demand Management (TDM) plan and a Performance Management Plan (PMP) for zoning case 22-13 - 4500 Massachusetts Avenue NW - Wesley Theological Seminary (WTS).

Transportation Demand Management (TDM) Plan

Transportation Demand Management (TDM) is the application of policies and strategies used to reduce travel demand or to redistribute demand to other times or spaces. TDM elements typically focus on reducing the demand of single-occupancy, private vehicles during peak period travel times or on shifting single-occupancy vehicular demand to off-peak periods.

The TDM plan for the proposed project is based on zoning regulations in addition to DDOT expectations for TDM programs for this type of use. As such, the applicant will implement the following TDM measures, at a minimum, applying to the Project and to the Wesley Campus Plan as a whole. The Applicant will explore other innovative TDM strategies and will coordinate the implementation of those strategies with goDCgo and DDOT's TDM Team.

- Unbundle the cost of vehicle parking from the lease for each residential unit and charge a minimum rate based on the average market rate within a quarter mile. Only monthly or by semester rates will be charged. Free parking, validation, or discounted rates will not be offered.
- Of the 350 parking spaces within the Project's garage, at least seven (7) will have electrical vehicle charging stations per DDOT's recommendation of one (1) charging station for every 50 parking spaces.
- Will work with American University to allow WTS students, faculty, and employees to use the AU shuttle to the Metrorail Station.
- Will fund and install an electronic screen displaying transit, shuttle, and bikeshare information in the lobby of the new building.
- Identify a Transportation Coordinator for the WTS campus. The Transportation Coordinator will act as a point of contact with DDOT, goDCgo, and Zoning Enforcement.
- Will provide Transportation Coordinator's contact information to goDCgo, conduct an annual commuter survey of employees on-site, and report TDM activities and data collection efforts to goDCgo once per year.
- Transportation Coordinator will develop, distribute, and market various transportation alternatives and options to the residents, including promoting transportation events (i.e., Bike to Work Day, National Walking Day, Car Free Day) on property website and in any internal building newsletters or communications.

ZONING COMMISSION
District of Columbia
CASE NO.22-13
EXHIBIT NO.34

- Transportation Coordinator will receive TDM training from goDCgo to learn about the transportation conditions for this project and available options for implementing the TDM Plan and PMP.
- Provide residents who wish to carpool with detailed carpooling information and will be referred to other carpool matching services sponsored by the Metropolitan Washington Council of Governments (MWCOG) or other comparable service if MWCOG does not offer this in the future.
- Will meet ZR16 long-term bicycle parking requirements by providing at least 62 long-term spaces free of charge to residents. At least 50% of long-term spaces (at least 31 spaces) will be located horizontally on the floor of the bike room. At least 10% of long-term spaces (at least 6 spaces) will be served by electrical outlets for e-bikes/scooters. At least 5% of long-term spaces (at least 3 spaces) will be designed to accommodate larger cargo/tandem bikes (10 feet by 3 feet size). Each bike storage room will include a repair station.
- Will meet ZR16 short-term bicycle parking requirements by providing 12 short-term spaces via exterior bike racks on-campus.
- Provide welcome packets to all new residents that should, at a minimum, include the Metrorail pocket guide, brochures of local bus lines (Circulator and Metrobus), carpool and vanpool information, CaBi coupon or rack card, Guaranteed Ride Home (GRH) brochure, and the most recent DC Bike Map. Brochures can be ordered from DDOT's goDCgo program by emailing info@godcgo.com.
- Transportation Coordinator will subscribe to goDCgo's residential newsletter.
- Post all TDM commitments on the WTS website and resident message board, publicize availability, and allow the public to see what commitments have been promised.
- Offer a free SmarTrip card to every new resident and a complimentary Capital Bikeshare coupon good for one ride.
- Prior to issuance of any certificate of occupancy for any new building, WTS will fund and construct the following pedestrian improvements:
    - A sidewalk along the east side of University Avenue NW between Massachusetts Avenue and Rodman Street, subject to DDOT approval, with a leadwalk into campus along at least one side of the site driveway;
    - Install signage, crosswalk and ADA curb ramps on the south leg of University Avenue at the Rodman Street intersection, subject to DDOT approval.
    - Install signage, crosswalk and ADA curb ramps on the east leg of the campus driveway at the University Avenue and Sedgwick Street intersection or construct the crossing as a continuous sidewalk, subject to DDOT approval; and
    - Install wayfinding signage on the Wesley Seminary campus directing students to the gated connection to the American University campus.

Performance Monitoring Plan (PMP)

This Performance Monitoring Plan (PMP) is Wesley Theological Seminary's plan to track progress towards its Transportation Demand Management (TDM) goals. The PMP is comprised of mode split surveys of students, internal WTS data, and manual counts of vehicle and bicycle parking inventory and occupancy which will be compiled into monitoring reports submitted to DDOT. The purpose of the monitoring reports is to make data-driven decisions about which TDM measures, if any, need to be adjusted to meet TDM goals.

Beginning the first spring semester following opening of the new dorm, monitoring will be performed, and reports will be prepared and submitted to DDOT annually until the trip goal has been met for two (2) consecutive years and then every other year for the duration of the term of the Campus Plan.

As detailed in the April 29, 2022 Comprehensive Transportation Review for the currently proposed campus plan, the proposed changes are expected to result in a net increase in vehicular trips of 14 additional morning peak hour trips and 31 additional afternoon peak hour trips. **Thus, increasing the trip goal for the campus to 101 vehicle trips in either the weekday morning (AM) or weekday evening (PM) peak hours.**

WTS will be considered in compliance with the PMP if the vehicle trip goal of 101 peak hour trips is met.

The monitoring reports will include details regarding the following:

- Count of the number of morning and afternoon peak hour vehicular trips arriving at and departing from the campus;
    - Morning Peak Hour: Highest 1-hour between 6:30 AM – 9:30 AM
    - Afternoon Peak Hour: Highest 1-hour between 4:00 PM – 7:00 PM
    - **Whether the campus is compliant with the PMP goals by generating no more than 101 peak hour vehicle trips during any of these periods.**
- Survey to identify mode split, broken down by students and employees;
- Number of student, staff, and faculty parking permits issued;
- Student, staff, and faculty parking permit rates;
- Number of registered carpools;
- Number and location of any car-sharing spaces, alternative fuel vehicle parking spaces, carpool/vanpool spaces, and electric vehicle charging stations on campus;
- Inventory and occupancy of all on-site vehicular parking;
- Inventory and occupancy of long-term and short-term bicycle parking spaces; and
- Documentation of any changes to the overall transportation demand management (TDM) program from the previous year, including new or innovative policies being implemented but not explicitly required in the TDM plan agreed to during Zoning Commission approval.

This information will be collected using mode split surveys of students and employees, internal WTS data, and manual counts of vehicle and bicycle parking inventory and occupancy. Details regarding these data sources and collection techniques is provided below.

Data Collection and Mode Split Surveys

Data collection and surveys will occur on a typical weekday during the Spring semester when weather conditions are normal. A "typical" day is defined as a Tuesday, Wednesday, or Thursday when Wesley and American University classes are in session, during a week without holidays, and far enough into the school year that travel patterns are normalized.

Mode Split Surveys

WTS will conduct surveys of on-campus students and employees to determine mode splits of trips to campus, which will be included in the monitoring reports. Mode split surveys will be collected on a typical weekday when large, representative population samples can be found.

In order to have concrete, trackable year-to-year mode split data, it is recommended the phrasing of mode split survey questions include whether the respondent is a student or employee, and only ask for the travel mode the respondent used that day (not the mode they typically use according to memory). For ease of future analysis, it is recommended WTS keep the raw survey data, separated by students and employees, on file. It is recommended that the mode split survey questions be phrased as follows:

1. Are you a:
    a. WTS Student
    b. AU Student
    c. Faculty
    d. Full-time employee
    e. Part-time employee
    f. Contractor
    g. Visitor
2. What transportation mode did you use for **most of** your trip to campus **today**?
    a. Driving a car alone
    b. Driving a car with passengers
    c. As a passenger in a car
    d. Carshare (Zipcar, Free2Move)
    e. Motorcycle
    f. AU Shuttle
    g. Metrobus
    h. Metrorail
    i. Taxi
    j. Rideshare (Uber, Lyft)
    k. Bicycle (personal)
    l. Scooter (personal)
    m. Capital Bikeshare
    n. Shared dockless e-scooter/bicycle (Lime, Bird, Jump, etc.)
    o. Walk/run
    p. Other: please specify

3. What transportation mode did you use for **<u>the last part of</u>** your trip to campus **<u>today</u>**?
    a. Driving a car alone
    b. Driving a car with passengers
    c. As a passenger in a car
    d. Carshare (Zipcar, Free2Move)
    e. Motorcycle
    f. AU Shuttle
    g. Metrobus
    h. Metrorail
    i. Taxi
    j. Rideshare (Uber, Lyft)
    k. Bicycle (personal)
    l. Scooter (personal)
    m. Capital Bikeshare
    n. Shared dockless e-scooter/bicycle (Lime, Bird, Jump, etc.)
    o. Walk/run
    p. Other: please specify

Internal University Data

WTS will collect the following internal data to be included in the monitoring reports:

- Number of student, staff, and faculty parking permits issued;
- Student, staff, and faculty parking permit rates;
- Number of registered carpools; and
- Number and location of any car-sharing spaces, alternative fuel vehicle parking spaces, carpool/vanpool spaces, and electric vehicle charging stations on campus; and
- Number and location of any showers and changing facilities available on campus for bicycle commuters.

Manual Parking Occupancy Counts

WTS will conduct manual counts of the following items to be included in the monitoring reports:

- Inventory and occupancy of all on-campus vehicular parking facilities;
- Inventory and occupancy of long-term and short-term bicycle parking spaces on campus; and
- These observations will be collected at the following intervals
    - On the same day as the vehicular trip counts
    - At 7:00am, 11:00am, 3:00pm, and 7:00pm

Vehicular Trip Counts

WTS will conduct counts of vehicles arriving at and departing from the campus at all vehicular access locations during the morning and afternoon peak periods. The morning and afternoon peak hours will be used to assess compliance with the PMP.

- Morning Peak Hour: Highest 1-hour between 6:30 AM – 9:30 AM
- Afternoon Peak Hour: Highest 1-hour between 4:00 PM – 7:00 PM
- **Whether the campus is compliant with the PMP goals by generating no more than 101 peak hour vehicle trips during any of these periods.**

Comprehensive Transportation Review

Wesley Campus Plan

Washington, DC

April 29, 2022

GOROVE SLADE
Transportation Planners and Engineers

ZONING COMMISSION
District of Columbia
CASE NO.22-13
EXHIBIT NO.15A1

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Executive Summary

This report presents a Comprehensive Transportation Review (CTR) for the Wesley Campus Plan at the Wesley Theological Seminary (WTS) campus.

The purpose of this CTR is to evaluate whether the project will generate a detrimental impact to the transportation network surrounding the site. This evaluation is based on a technical comparison of the Existing Conditions, Background Conditions, and Total Future Conditions. This report concludes that **the project will not have a detrimental impact** to the surrounding transportation network assuming the proposed site design elements are implemented.

Proposed Project

The development site location is within the WTS campus, which is generally bounded by University Avenue NW to the west, Massachusetts Avenue NW to the north, and the American University (AU) campus to the east and south. The portion of the site to be redeveloped includes the Old President's House, a surface parking lot and two (2) student housing and administration buildings.

The proposed project includes replacement of the Old President's House and removing the surface parking lot and existing buildings to construct a new student housing building containing approximately 215 dwelling units, 1,535 square feet of retail spaces, and 350 below-grade parking spaces.

The proposed student housing building will be for WTS and AU students and may also house immediate families, faculty and staff and building employees. The housing building will not otherwise serve the general public.

Multimodal Overview

Trip Generation

The Wesley Campus Plan is expected to generate new trips within the surrounding transportation network across all transportation modes during the morning and afternoon peak hours. However, with the implementation of a Transportation Demand Management (TDM) plan as part of the project, the resulting new trips generated by the project will not have a detrimental impact on the transportation network. The multimodal trip generation for the proposed project is as follows:

- <u>AM Peak Hour:</u> 14 vehicles/hour, 39 transit riders/hour, four (4) bicycle trips/hour, and 19 walking trips/hour.
- <u>PM Peak Hour:</u> 33 vehicles/hour, 90 transit riders/hour, 10 bicycle trips/hour, and 45 walking trips/hour.

Transit

The site is located 1.1 miles from the Tenleytown-AU Metro station on the Red Line and is served by local bus routes.

The site is expected to generate a manageable amount of transit trips, and the existing service can accommodate these new trips.

Pedestrian

The site is surrounded by a generally adequate pedestrian network. Despite some incidences of missing sidewalks, curb ramps, and crosswalks on minor streets near the project site, there are generally adequate pedestrian facilities along primary walking routes between the site and major local destinations.

The site is expected to generate a manageable amount of pedestrian trips, and the existing pedestrian facilities can accommodate these new trips.

Bicycle

The site is proximate to several on-street bicycle facilities, including the bike lanes on New Mexico Avenue NW and Van Ness Street NW, and the on-street signed bike routes on 42nd and 43rd Streets NW. Using these facilities, bicyclists have access to several off-street bike facilities, such as the Rock Creek Trail and the Klingle Valley Trail.

Several planned and proposed bicycle projects will improve bicycle access to the site, including protected bike lanes on Massachusetts Avenue NW, Nebraska Avenue NW, and New Mexico Avenue NW.

The project will include long-term bicycle parking inside the building and short-term bicycle parking along the perimeter of the site that meets zoning requirements.

The site is expected to generate a manageable amount of bicycle trips, and the existing bicycle facilities can accommodate these new trips.

Vehicular

The site is accessible via Massachusetts Avenue NW, a principal arterial which connects the site to expressways within the District such as the Southeast Freeway (I-695), the Southwest Freeway (I-395), and the Anacostia Freeway (DC-295). These expressways connect with the Capital Beltway (I-495) and other regional Interstates.

To identify the project's impact on the transportation network, future conditions were analyzed with and without the project. Intersection analyses were performed to calculate the average delays and queues for vehicles at each of the study intersections. These average delays and queues were compared to the acceptable levels of delay and queue impacts set by DDOT standards to determine if the project will negatively impact the study area.

Further, future conditions with the proposed development were analyzed under the following two scenarios:

- Existing Access: University Avenue egress driveway remains open to site egress traffic during peak periods, consistent with existing conditions. The driveway already does not allow inbound site traffic, other than delivery vehicles.
- Proposed Access: University Avenue egress driveway closed to egress site traffic during AM and PM peak periods, except for delivery vehicles that would still be permitted to use the driveway.

The analysis concluded that one (1) intersection would meet DDOT's delay-related threshold for mitigation under the Existing Access scenario and no intersections under the Proposed Access scenario.

After exploring options for mitigating impacts at this intersection, this report recommends implementing a robust Transportation Demand Management (TDM) plan consistent with DDOT's Baseline Plan as a mitigation measure.

Safety Recommendations

A qualitative review of the crash data available through the DDOT-maintained and publicly-available "Crashes in DC" database was performed to identify study intersections, if any, in which conditions for vehicles, pedestrians, and bicyclists may be improved.

Based on a review of facilities in the area and relevant crash data, two (2) intersections were identified for further evaluation. Recommendations for these intersections, presented for DDOT's consideration and not for the Applicant to complete as part of the proposed project, are summarized below:

Massachusetts Avenue and Wesley Circle NW

Installation of the planned protected bike lanes along Massachusetts Avenue NW would improve conditions for bicyclists and pedestrians. Further, a safety audit should be performed as part of DDOT's Traffic Safety Assessment program.

Massachusetts Avenue and Glover Gate/Katzen Driveway NW

Installation of the planned protected bike lanes along Massachusetts Avenue NW would improve conditions for bicyclists and pedestrians. Further, a safety audit should be performed as part of DDOT's Traffic Safety Assessment program.

Transportation Demand Management (TDM) Plan

Per the DDOT CTR guidelines, the goal of implementing TDM measures is to reduce the number of single occupancy vehicles and vehicle ownership within the District. The promotion of various programs and existing infrastructure includes maximizing the use of transit, bicycle, and pedestrian facilities. DDOT has outlined expectations for TDM measures in the CTR guidelines, and this project is proposing to implement a TDM plan consistent with these guidelines based on the expected impact of the project, as discussed in the Project Design section of this report.

Summary

This report concludes that the Wesley Campus Plan will not have a detrimental impact on the surrounding transportation network assuming the proposed site design elements are implemented.

The project has several positive design elements that minimize potential transportation impacts, including but not limited to the following:

- The site's proximity to transit service and bicycle infrastructure;
- The site's location within a generally adequate pedestrian network along major walking routes;
- The site's loading facility design, which maintains loading activity within private property and provides loading circulation that ensures head-in/head-out truck movements are performed from the public roadway network;
- The inclusion of secure long-term bicycle parking spaces that meet zoning requirements;

- The inclusion of short-term bicycle parking spaces within the site that meet zoning requirements; and
- A TDM plan that reduces the demand of single-occupancy, private vehicles during peak period travel times and shifts single-occupancy vehicular demand to off-peak periods.

Introduction

This report is a Comprehensive Transportation Review (CTR) reviewing the transportation aspects of the Wesley Campus Plan. The site, shown in Figure 1 and Figure 2, is located at Square 1600 and Lot 0819 within the Wesley Theological Seminary (WTS) campus in the Spring Valley neighborhood of Washington, DC. The site is currently zoned RA-1.

The project site is currently improved with a surface parking lot and two (2) student housing and administration buildings. The proposed project includes removing the surface parking lot and existing buildings, replacing them with a new building containing student housing and retail space with below grade parking.

The proposed project also includes closing the existing University Avenue egress driveway to traffic during the AM and PM peak periods, except for delivery vehicles that would still be permitted to use the driveway. This is identified as the Proposed Access condition, and is presented in further detail within the report.

The proposed student housing building will be for WTS and AU students and may also house immediate families, faculty and staff and building employees. The housing building will not otherwise serve the general public.

Purpose of Study

The purpose of this report is to:

- Review the transportation elements of the proposed project and demonstrate that it conforms to DDOT's general policies of promoting non-automobile modes of travel;
- Provide information to DDOT and other agencies on how the proposed project will impact the local transportation network, accomplishing this by identifying the potential trips generated by the proposed project on all major modes of travel and where these trips will be distributed on the network;
- Determine whether the proposed project will lead to adverse impacts on the local transportation network; and
- Propose design elements and Transportation Demand Management (TDM) measures as necessary to mitigate any potential adverse impacts to the transportation network.

Project Summary

The site location is within the WTS campus, which is generally bounded by University Avenue NW to the west, Massachusetts Avenue NW to the north, and the American University (AU) campus to the east and south. The portion of the site to be redeveloped is currently occupied by a surface parking lot and two (2) student housing and administration buildings.

The proposed project includes removing the surface parking lot and existing buildings, replacing them with a new student housing building containing approximately 215 dwelling units, 1,535 square feet of retail space, and 350 below-grade parking spaces.

Pedestrian access to the project is proposed to be located at several entrances on the northern edge of the development along the WTS driveway.

Bicycle access will be provided from the WTS driveways on Massachusetts Avenue and University Avenue. The site is located approximately 0.5 miles northwest of the bike lanes on New Mexico Avenue NW and 0.5 miles southwest of the on-street signed routes on 42nd and 43rd Streets NW. The project will meet zoning requirements by providing at least 62 long-term bicycle parking spaces inside the building and at least 12 short-term bicycle parking spaces on exterior racks. The nearest Capital Bikeshare station is located 0.2 miles east of the site at Ward Circle.

Vehicular access to the proposed garage will be provided via the internal site circulation with public road access on the northern edge of the site at Massachusetts Avenue.

Loading and deliveries will occur within an internal loading area accessed from the internal site circulation drive via with public road access on the northern edge of the site at Massachusetts Avenue. The proposed loading facilities will accommodate the project's loading needs, maintain loading activity within private property, and provide loading circulation that ensures head-in/head-out truck movements are performed to and from the public roadway network.

No new curb cuts within public space are proposed as part of the project. All vehicular access will remain from existing access locations at the two-way WTS driveway entrance/exit at Massachusetts Avenue NW and the one-way WTS driveway exit at University Avenue NW. The WTS driveway exit at University

Avenue NW is one-way outbound for all vehicles except WTS food service trucks, for which two-way traffic is permitted. Under the Existing Access scenario, this arrangement will not change, and under the Proposed Access scenario, the WTS driveway exit at University Avenue NW would be closed during the AM and PM peak periods, except for delivery vehicles that would still be permitted to use the driveway.

Study Contents

This report contains nine (9) chapters as follows:

- Study Area Overview
  This chapter reviews the transportation characteristics of the area surrounding the proposed project.
- Project Design
  This chapter reviews the transportation components of the proposed project, including site access and circulation, loading and trash operations, parking, and bicycle and pedestrian facilities.
- Travel Demand Assumptions
  This chapter outlines the travel demand and projected trip generation of the proposed project.
- Traffic Operations
  This chapter provides a summary of the existing roadway facilities and an analysis of the existing and future roadway capacity in the study area. This section highlights the vehicular impacts of the project and presents mitigation measures for minimizing impacts as needed.
- Transit Facilities
  This chapter summarizes the existing and future transit service adjacent to the site and reviews how the project's transit demand will be accommodated.
- Pedestrian Facilities
  This chapter summarizes existing pedestrian access to the site, reviews walking routes to and from the proposed project, and reviews how the project's pedestrian demand will be accommodated.
- Bicycle Facilities
  This chapter summarizes existing and future bicycle access to the site and reviews how the project's bicycle demand will be accommodated.
- Safety Analysis
  This chapter summarizes the potential safety impacts of the project. This includes a qualitative review of existing and proposed safety features surrounding the site.
- Summary and Conclusions
  This chapter presents overall findings and conclusions.

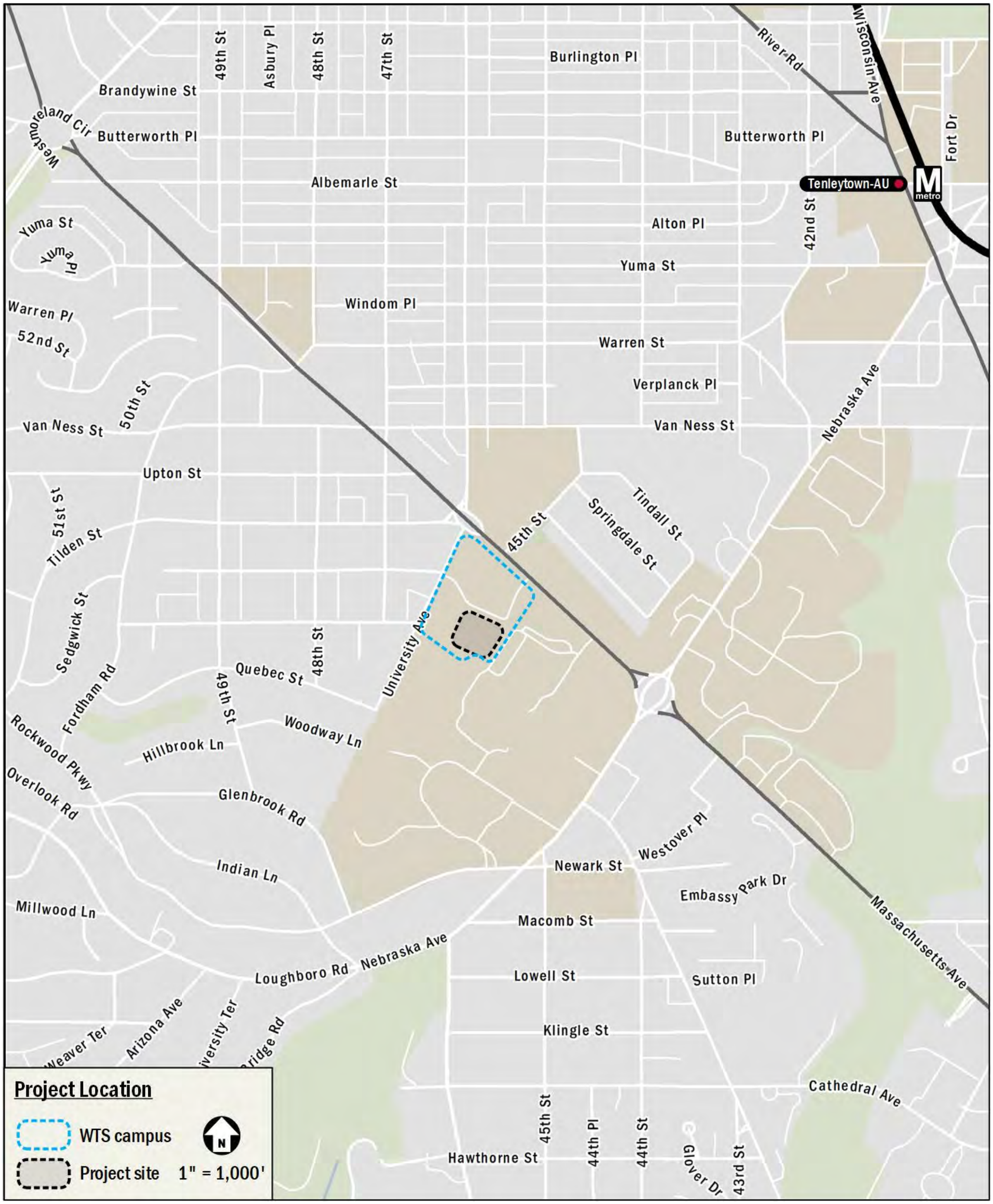


Figure 1: Site Location

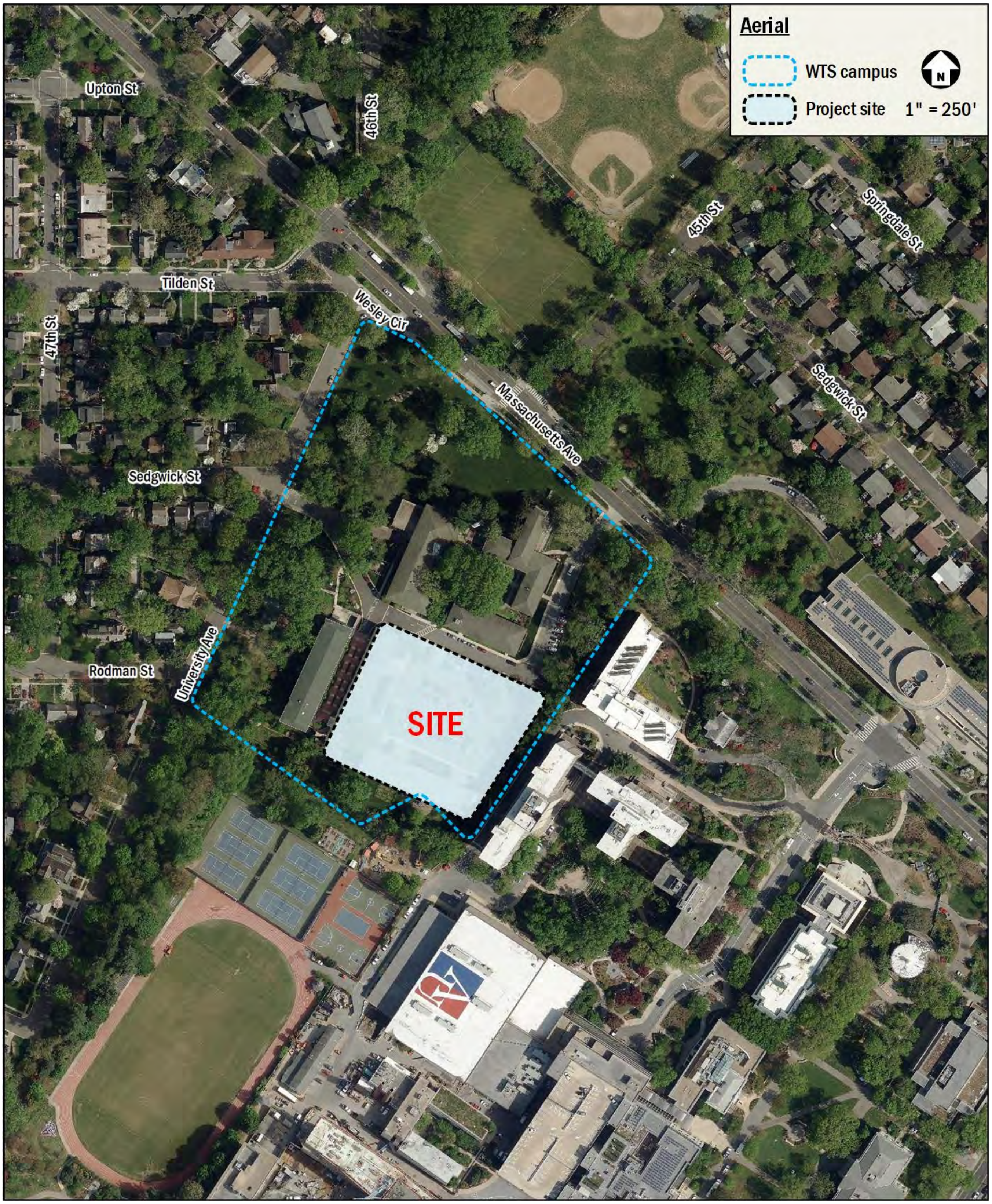


Figure 2: Site Aerial

Study Area Overview

This chapter reviews the major transportation characteristics of the study area and future local and regional projects.

This chapter concludes:

- The site is surrounded by an extensive regional and local transportation system connecting it to the rest of the District and surrounding areas;
- The site is served by bus and rail transit providing service to local and regional destinations;
- The site is accessible to several shared mobility options, including car-sharing, Capital Bikeshare, and personal mobility devices;
- There are several on-street bicycle facilities near the site, with several nearby bicycle improvements planned or proposed;
- The existing pedestrian infrastructure surrounding the site provides a mostly adequate walking environment, particularly along anticipated major walking routes; and
- There are several nearby District-wide and local planning initiatives whose goals are supported by the proposed project.

Major Transportation Features

Overview of Regional Access

As shown in Figure 4, the site has ample access to regional vehicular and transit options that connect the site to destinations within the District, Maryland, and Virginia.

The site is accessible via Massachusetts Avenue NW, a principal arterial which connects the site to expressways within the District such as the Southeast Freeway (I-695), the Southwest Freeway (I-395), and the Anacostia Freeway (DC-295). These expressways connect with the Capital Beltway (I-495) and other regional Interstates.

The site is located 1.1 miles from the Tenleytown-AU Metro station on the Red Line, which travels between the Glenmont and Shady Grove stations by way of downtown Washington, DC.

Overall, the site has ample access to regional roadways and transit options, allowing convenient travel between the site and regional destinations.

Overview of Local Access

There are a variety of major local transportation facilities near the site that serve vehicular, transit, walking, and cycling trips, as shown on Figure 5.

For vehicular trips, the site is accessible via Massachusetts Avenue NW, a principal arterial which connects the site to expressways within the District such as the Southeast Freeway (I-695), the Southwest Freeway (I-395), and the Anacostia Freeway (DC-295). These expressways connect with the Capital Beltway (I-495) and other regional Interstates.

For transit trips, Metrobus and AU Shuttle services provide service in the vicinity of the site, including connections to several neighborhoods within the District and the Tenleytown-AU Metro station. As shown in Figure 5, there are several bus routes serving the site, with multiple bus stops serving these routes located within a half-mile of the site. These bus routes connect the site to many areas of Washington, DC, including several Metro stations where transfers can be made to reach areas in the District, Virginia, and Maryland. A detailed review of all bus routes and transit stops within a half-mile walk of the site is provided in a later chapter of this report.

For bicycle trips, the site is located approximately 0.5 miles northwest of the bike lanes on New Mexico Avenue NW and 0.5 miles southwest of the on-street signed routes on 42nd and 43rd Streets NW. Using these facilities, bicyclists have access to several other regional bicycle facilities. To accommodate bicyclists, the project will provide on-site bicycle facilities as discussed in detail in the Project Design chapter. A detailed review of existing and proposed bicycle facilities and connectivity is provided in the Bicycle Facilities chapter of this report.

Anticipated pedestrian routes such as those to transit stops, schools, and community amenities, provide adequate pedestrian facilities; however, there are a few sidewalks nearby that do not meet DDOT width standards, as well as several missing curb ramps and crosswalks at minor intersections. The site area is free of major barriers to pedestrian connectivity. A detailed review of existing and future pedestrian access and infrastructure is provided in the Pedestrian Facilities chapter of this report.

Carsharing

Two (2) carsharing companies provide service in the District: Zipcar and Free2Move. Both services are private companies that provide registered users access to a variety of automobiles. Of these, Zipcar has designated spaces for their vehicles. The nearest Zipcar location to the site is located near the intersection of Massachusetts Avenue and Embassy Park Drive NW, approximately 0.7 miles southeast of the site.

Carsharing is also provided by Free2Move, which provides point-to-point carsharing. Free2Move currently has a fleet located within areas of the District and Arlington County. Free2Move vehicles may park in any non-restricted metered curbside parking space or Residential Parking Permit (RPP) location in any zone throughout the defined “Home Area”. Members do not have to pay the meters or pay stations. Free2Move does not have permanent designated spaces for their vehicles; however, availability is tracked through their website and mobile phone application, which provides an additional option for car-sharing patrons.

Bikeshare and Shared Mobility

The Capital Bikeshare program provides an additional bicycle option for residents, staff, and visitors of the proposed project. The program has placed over 500 bikeshare stations across the Washington, DC metropolitan area with over 4,500 bicycles in the fleet.

In addition to Capital Bikeshare, eight (8) electric-assist scooter (e-scooter) and electric-assist bicycle (e-bike) companies provide Personal Mobility Device (PMD) service in the District: Bird, Lime, Lyft, Razor, Skip, Spin, Helbiz, and JUMP. These PMDs are provided by private companies that give registered users access to a variety of e-scooter and e-bike options. These devices are used through each company-specific mobile phone application. Many PMDs do not have designated stations where pick-up/drop-off activities occur like with Capital Bikeshare; instead, many PMDs are parked in public space, most commonly in the “furniture zone” (the portion of sidewalk between where people walk and the curb, often where other street signs, street furniture, trees, parking meters, etc. are found). Currently, PMD pilot/demonstration programs are underway in Arlington County, the District, Fairfax County, the City of Alexandria, and Montgomery County.

Walk Score and Bike Score

Walkscore.com is a website that provides scores and rankings for walking, biking, and transit conditions within neighborhoods of the District. Based on this website, the site has a walk score of 57 (or “Somewhat Walkable”), a transit score of 42 (or “Some Transit”), and a bike score of 47 (or “Somewhat Bikeable”). Figure 3 shows the site’s location within a heat map for walkability and bikeability. The following conclusions can be made based on the data obtained from Walkscore.com:

- The site is situated in a somewhat walkable location where some errands can be accomplished on foot;
- The site is situated in an area with a moderate amount of transit; and
- The site is situated in a somewhat bikeable area with minimal bike infrastructure.

The Wesley Campus Plan will directly improve the neighborhood’s pedestrian and bike accessibility by ensuring sidewalks on the project site meet DDOT standards and by providing new short- and long-term bicycle parking facilities.

Figure 3: Walk Score and Bike Score

Future Projects

There are several District initiatives located in the vicinity of the site. These planned and proposed projects are summarized below.

Planning Documents

The following is a review of District-wide or neighborhood-level planning documents which relate to the proposed project.

MoveDC

MoveDC is the District's long-range transportation plan, which provides a framework of goals and policies that will guide transportation decisions in the District over a 25-year period. The *MoveDC* plan is oriented around the goals of safety, mobility, management and operations, enjoyable spaces, equity, project delivery, and sustainability.

Included in *MoveDC* are Mobility Priority Network maps for bicycles, surface transit, and freight. These maps do not identify specific projects or improvements, but are intended to guide future decisions about which projects will be selected and developed. In direct relation to the proposed Project, the Mobility Priority Network maps identify the following:

- Bicycle improvements along Massachusetts Avenue NW, Nebraska Avenue NW, Arizona Avenue NW, Loughboro Road NW, 49th Street NW, Albermarle Street NW, Glenbrook Road NW, and Rockwood Parkway NW.

Vision Zero Action Plan

DDOT's *Vision Zero Action Plan* is the implementation strategy of DC's Vision Zero Initiative, which commits to reaching zero fatalities and serious injuries to travelers of DC's transportation system by the year 2024. The *Action Plan* is based on DC interagency workgroups, public input, local transportation data and crash statistics, and national and international best practices. Workgroups identified the guiding themes for the *Vision Zero Action Plan* and the goals of the DC government. The *Action Plan* focuses on the following themes:

- Create Safe Streets
- Protect Vulnerable Users
- Prevent Dangerous Driving
- Be Transparent and Responsive

Strategies within each theme assign lead and supporting agencies responsible for the planning and implementation of each program. The plan also calls for partners external to District government to ensure accountability and aid in implementation.

While the *Vision Zero Action Plan* does not propose any location-specific actions that relate to the proposed project, the proposed project supports DC's overall Vision Zero goals by not creating any new curb cuts from public space, by providing new short- and long-term bicycle parking facilities, and by ensuring sidewalks along the site's perimeter meet DDOT standards and provide a safe, attractive pedestrian experience.

Sustainable DC 2.0 Plan

Sustainable DC is the District of Columbia's major planning effort to make DC the most sustainable city in the nation. It proposes a variety of sustainability goals, targets, and actions related to the built environment, transportation, and other topics.

The 2019 iteration of the plan, the *Sustainable DC 2.0 Plan*, includes the following proposed action which is supported by the proposed project.

- Expand safe, connected infrastructure for pedestrians and cyclists.
- Reduce greenhouse gas emissions and air pollution from the transportation sector.

The Wesley Campus Plan will support these actions by not creating any new curb cuts from public space, by providing new short- and long-term bicycle parking facilities, and by ensuring sidewalks along the site's perimeter meet DDOT standards and provide a safe, attractive pedestrian experience.

Capital Bikeshare Development Plan

DDOT's *Capital Bikeshare Development Plan* was originally released in 2016 to guide the continued growth of Capital Bikeshare in the District of Columbia. The most recent update of the *Development Plan* was released in 2020 and includes the following:

- A planned station at Turtle Park, 0.2 miles from the site;
- A proposed station at Quebec Street and 48th Street NW, 0.4 miles from the site; and
- A proposed station at 47th Street and Warren Street NW, 0.5 miles from the site.

Rock Creek Far West Livability Study

This is an ongoing DDOT study to evaluate the transportation network within the study area, bound by Massachusetts Avenue, Whitehaven Street, Whitehaven Parkway, Archbold Parkway, Foundry Branch Valley Park, the Potomac River, and the DC/Maryland border, to identify opportunities for a safer and more accessible multimodal network.

The study's primary objectives are to:

- Develop a comprehensive approach to traffic calming and operational improvements for all users living in and visiting the area;
- Identify specific issues that impact safety and comfort of pedestrians, bicyclists, transit users, and motorists, while also accommodating freight and delivery needs;
- Design cost-effective and measurable system improvements that benefit all users;
- Emphasize safety and access improvements around neighborhood facilities including but not limited to schools, parks, recreation centers, transit stops, and other key community facilities; and
- Enhance comfort and livability for residents and visitors to the project area.

Wesley Campus Plan (2012)

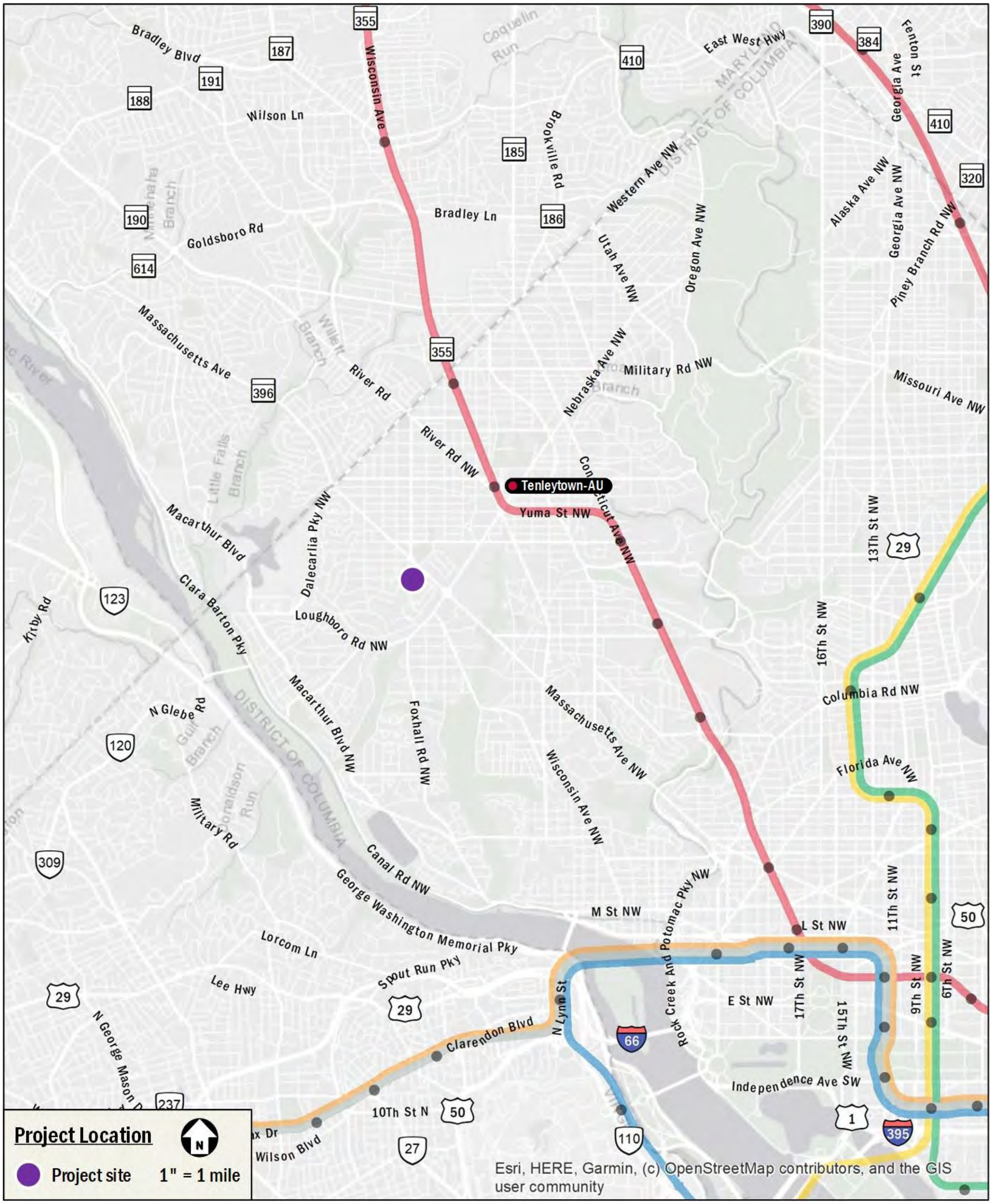
This is the currently adopted Campus Plan for Wesley Theological Seminary. It was submitted in 2012 as an amendment to the 2006 Campus Plan, and its approval was valid through June 30, 2021.

The 2012 Campus Plan amended and extended the original 2006 Campus Plan, maintaining levels of student, faculty, and staff but substantially reducing the previously approved new construction. Under the 2012 Campus Plan, existing campus facilities were maintained without demolition and several previously approved new buildings were eliminated from plans. The only addition to the campus was a new three-story, 76-bed residence hall. Additionally, the two existing residential buildings were renovated, surface parking was increased, and other campus enhancements were made.

The Seminary is currently assembling a new Campus Plan amendment consisting of a new administrative building replacing the Old President's House, as well as a new student housing building, which is the subject of this CTR.

American University Campus Plan (2021)

This is American University's recently adopted 10-year Campus Plan, encompassing the main AU campus, the Tenley Campus, and several smaller AU facilities. The Campus Plan outlines anticipated site development, vehicle parking, and Transportation Demand Management (TDM) strategies for the campus. It proposes some development on campus, an increase in the student cap from 13,600 to 14,380 students, an increase in the employee population cap from 2,900 to 3,350, and an increase of the on-site vehicle parking inventory from 2,701 to 3,000 spaces.



Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

Figure 4: Major Regional Transportation Facilities

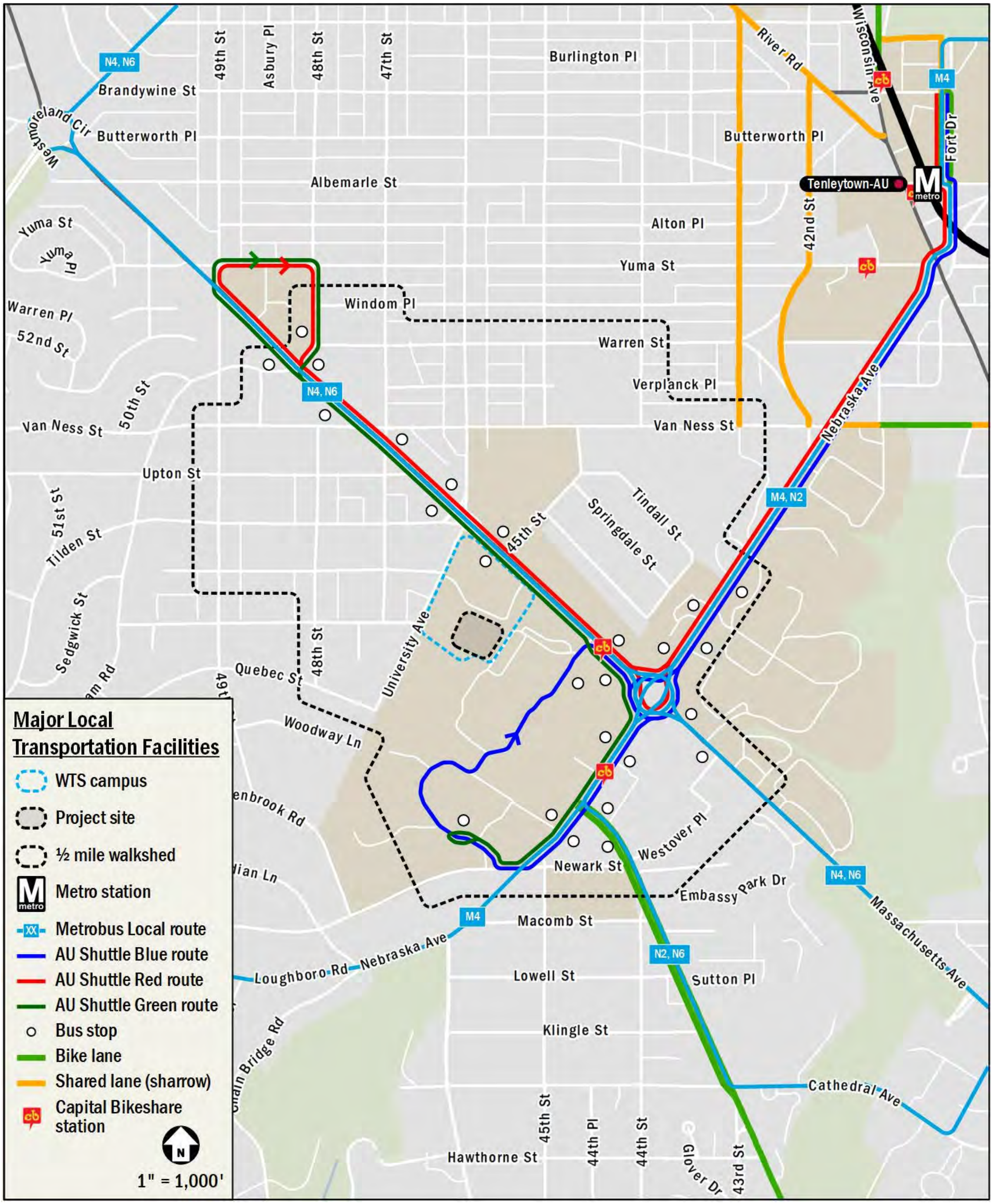


Figure 5: Major Local Transportation Facilities

Project Design

This section reviews the transportation components of the Wesley Campus Plan, including the proposed site plan and access points. It includes descriptions of the site's vehicular access, pick-up/drop-off operations, parking, and pedestrian and bicycle accommodations.

The development site located within the WTS campus, which is generally bounded by University Avenue NW to the west, Massachusetts Avenue NW to the north, and the American University (AU) campus to the east and south. The portion of the site to be redeveloped is currently occupied by a surface parking lot and two (2) student housing and administration buildings. The proposed project includes removing the surface parking lot and existing buildings, replacing them with a new student housing building containing approximately 215 dwelling units, 1,535 square feet of retail space, and 350 below-grade parking spaces.

A detailed site plan is shown on Figure 6.

Site Access and Circulation

Pedestrian Access

Pedestrian access is proposed to be provided via separate residential and retail entrances accessed from the internal driveway within WTS.

Pedestrian access to the site is shown on Figure 6.

Bicycle Access

Bicycle access is proposed to be provided via the garage ramp from the WTS driveway that will lead to a bike storage room in Level 1 of the garage. The project will meet zoning requirements by providing at least 62 long-term bicycle parking spaces inside the building and at least 12 short-term bicycle parking spaces on exterior racks within the site. The exact location of the short-term bicycle parking spaces is still to be determined.

The locations of these facilities are shown on Figure 6.

Vehicular Access

Vehicular access to the proposed garage entrance will be provided via a connection to the internal driveway within the WTS campus with public road access at University Avenue and/or Massachusetts Avenue. No new curb cuts from public space are proposed as part of this project.

Regarding vehicular access locations from public streets, there are two (2) scenarios presented in this report. In the Existing Access scenario, inbound and outbound traffic will be provided from the two-way WTS driveway entrance/exit at Massachusetts Avenue NW, and the one-way WTS driveway exit at University Avenue NW will be remain open to outbound traffic only. This is consistent with existing vehicular circulation patterns on the WTS campus.

In the Proposed Access scenario, the Massachusetts Avenue NW driveway connection will remain unchanged. However, the one-way WTS driveway exit at University Avenue NW will be closed to traffic during the AM (6:30-7:30 AM) and PM (4:00-7:00 PM) peak periods, except for delivery vehicles that would still be permitted to use the driveway.

These two scenarios are presented for reference and comparison, but the Applicant is planning to implement the Proposed Access scenario.

Figure 6 shows the location of the vehicular access points for the parking garage, pick-up/drop-off area, and loading facilities.

Pick-up/Drop-off Operations

An internal curbside pick-up/drop-off area is proposed along the WTS campus driveway adjacent to the proposed new building. The pick-up/drop-off area is shown on Figure 6.

Loading and Trash

Loading

The proposed loading facilities will accommodate all loading activity and delivery demand for the proposed project without any detrimental impact to the surrounding transportation network. DDOT standards stipulate that truck movements be accommodated without back-in movements through public space. The Wesley Campus Plan has been designed to accommodate all loading activity and associated backing maneuvers within the site. Truck turning diagrams using AutoTURN are provided in the Technical Attachments.

Loading and deliveries will occur in an internal loading area accessed from the existing WTS campus driveway. The proposed loading facilities will accommodate the project's loading needs, maintain loading activity within private property, and provide loading circulation that ensures head-in/head-out truck movements are performed from the public roadway network.

The loading area will include one (1) 30’ x 12’ loading berth and one (1) 20’ x 10’ service/delivery space, satisfying ZR16 regulations.

Truck routing to and from the site will be focused on Massachusetts Avenue NW, a designated primary truck route.

Loading access and circulation is shown on Figure 6.

Trash

Trash for the project will be accommodated using trash receptacles within the loading areas. No trash will be stored in public space.

Parking

The WTS site is currently served by 174 surface parking spaces. The proposed developed will displace 143 of the existing surface parking spaces and will include 350 parking spaces within a garage. As a result, the total parking on site will be 381 parking spaces (31 surface + 350 garage).

The net change in parking as a result of the project is therefore 207 net additional spaces.

Because the primary land use is student housing, there is no suitable parking standard from either ZR16 or DDOT’s Preferred Parking Rates to compare the proposed supply to. Per Subtitle C § 701.5, college/university land uses should provide parking as set forth in the approved Campus Plan. The 2006 Zoning Order from the approved Wesley Theological Seminary Campus Plan states that at least 200 parking spaces are to be maintained on campus.

Of the 350 garage spaces, 105 spaces will be reserved for general WTS campus use (not for residents of the new building). This number is in keeping with existing conditions; therefore, no net new parking is proposed for non-resident WTS usage.

The existing residential building being removed provides 90 beds for WTS use. The new 215 du building will provide a total of 659 beds. 90 of those beds will be for WTS use to replace the 90 beds being removed. Therefore, the new residential building will provide approximately 569 beds for non-WTS residents.

With 207 net new parking spaces and 569 net new beds, the effective parking ratio for those net new beds is 0.36 spaces per net new bed.

It should also be noted that because the proposed residential building is for WTS and AU students only, its parking supply will function primarily as long-term vehicle storage and is not expected to generate significant peak hour vehicle trips, as is typical of more traditional residential parking facilities.

The parking garage’s location and access points within the site are shown on Figure 6.

Bicycle Facilities

The Wesley Campus Plan will meet 2016 Zoning Regulations requirements for long-term and short-term bicycle parking. Per the Zoning Regulations, the project is required to provide the following bicycle facilities:

- Long-Term Bicycle Parking Spaces (62 required)
    - One (1) space per 3 dwelling units
    - One (1) space per 10,000 SF of retail space
- Short-Term Bicycle Parking Spaces (11 required)
    - One (1) space per 20 dwelling units
    - One (1) space per 3,500 SF of retail space

The project will meet or exceed zoning requirements by providing at least 62 long-term bicycle parking spaces inside the garage and at least 12 short-term bicycle parking spaces on exterior racks within the site. The exact location of the short-term bicycle parking spaces is still to be determined. The long-term bicycle spaces will adhere to Subtitle C § 805.9 of DC’s zoning requirements, as well as DDOT’s Bike Parking Guide, which stipulate that long-term spaces be located indoors in a parking garage or bike storage room, and that at least 50 percent of required long-term spaces be placed horizontally on the floor or ground, without bicycles being suspended.

Pedestrian Facilities

The Wesley Campus Plan will ensure pedestrian facilities along the site’s WTS driveway frontage meet DDOT and ADA standards. The Applicant is also coordinating with American University (AU) on options to maintain the existing pedestrian connection between the two campuses, located on the east side of the project site.

Transportation Demand Management

Transportation Demand Management (TDM) is the application of policies and strategies used to reduce travel demand or to redistribute demand to other times or spaces. TDM elements typically focus on reducing the demand of single-occupancy, private vehicles during peak period travel times or on shifting single-occupancy vehicular demand to off-peak periods.

The TDM plan for the proposed project is based on zoning regulations in addition to DDOT expectations for TDM programs for developments of this type and size. As such, the applicant proposes the following TDM measures for the project.

- Unbundle the cost of vehicle parking from the lease for each residential unit and charge a minimum rate based on the average market rate within a quarter mile. Only hourly, daily, weekly, or monthly rates will be charged. Free parking, validation, or discounted rates will not be offered.
- Identify Transportation Coordinators for the planning, construction, and operations phases of development. The Transportation Coordinators will act as points of contact with DDOT, goDCgo, and Zoning Enforcement.
- Will provide Transportation Coordinators' contact information to goDCgo, conduct an annual commuter survey of employees on-site, and report TDM activities and data collection efforts to goDCgo once per year.
- Transportation Coordinators will develop, distribute, and market various transportation alternatives and options to the residents, including promoting transportation events (i.e., Bike to Work Day, National Walking Day, Car Free Day) on property website and in any internal building newsletters or communications.
- Transportation Coordinators will receive TDM training from goDCgo to learn about the TDM conditions for this project and available options for implementing the TDM Plan.
- Provide residents who wish to carpool with detailed carpooling information and will be referred to other carpool matching services sponsored by the Metropolitan Washington Council of Governments (MWCOG) or other comparable service if MWCOG does not offer this in the future.
- Will meet ZR16 short- and long-term bicycle parking requirements by providing 62 long-term spaces and 12 short-term spaces free of charge to residents.
- Long-term bicycle storage rooms will accommodate non-traditional sized bikes including cargo, tandem, and kids' bikes.
- Provide welcome packets to all new residents that should, at a minimum, include the Metrorail pocket guide, brochures of local bus lines (Circulator and Metrobus), carpool and vanpool information, CaBi coupon or rack card, Guaranteed Ride Home (GRH) brochure, and the most recent DC Bike Map. Brochures can be ordered from DDOT's goDCgo program by emailing info@godcgo.com.
- Transportation Coordinator will subscribe to goDCgo's residential newsletter.
- Post all TDM commitments on website, publicize availability, and allow the public to see what commitments have been promised.
- Provide a FREE SmarTrip card to every new resident and a complimentary Capital Bikeshare coupon good for one ride.

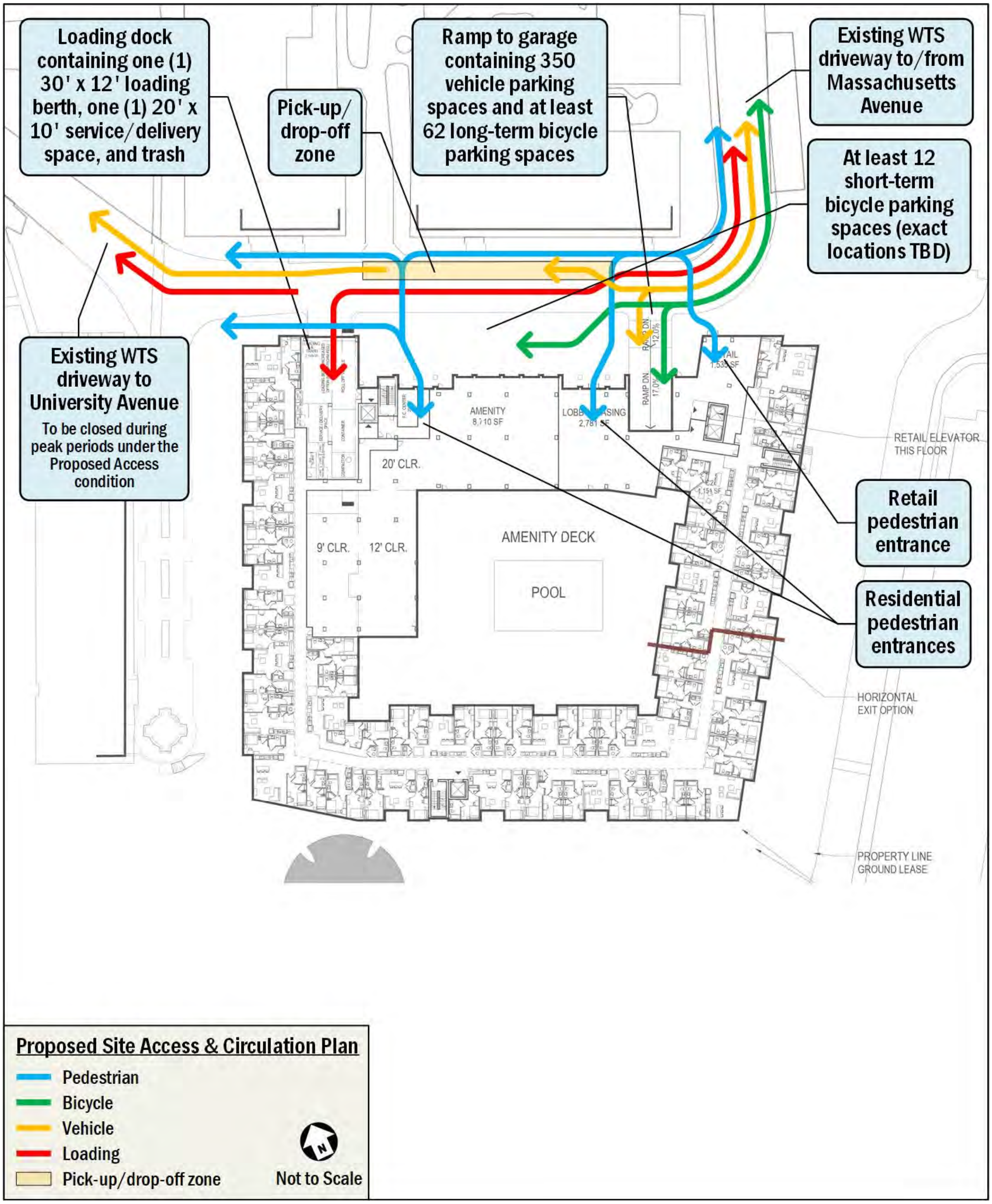


Figure 6: Proposed Site Access and Circulation Plan

Travel Demand Assumptions

This section outlines the transportation demand for the Wesley Campus Plan. It summarizes the projected trip generation of the proposed project by mode, which forms the basis for the sections that follow. These assumptions were vetted and approved by DDOT as a part of the scoping process for the study.

Traditionally, weekday peak hour trip generation is calculated based on the methodology outlined in the Institute of Transportation Engineers' (ITE) *Trip Generation*, 10th Edition. This methodology was supplemented to account for the urban nature of the project (ITE *Trip Generation* provides data for non-urban, low transit use sites) and to generate trips for multiple modes, as vetted and approved by DDOT.

Note that the trip generation shown below, the traffic forecasts presented in this report and the capacity analyses are based on the initial plan presented during the CTR scoping process that included 219 dwelling units and 690 beds. Since the plan has since been reduced to 215 dwelling units and 659 beds, these analyses represent a conservatively high estimate of the impact for the proposed project. For reference purposes, updated trip generation for the current 659-bed facility is provided in the technical attachments.

Proposed Site Trip Generation

The residential portion of the project's proposed trip generation was calculated based on ITE land use 225, *Off-Campus Student Apartment - Adjacent to Campus*, while the retail portion was calculated based on ITE land use 820, *Shopping Center.* Trips were split into different modes using assumptions derived from census data for people that currently live or work near the site, WMATA ridership survey data, and the proposed parking supply. A summary of the mode split assumptions is provided in Table 1.

Table 1: Mode Split Assumptions

Land Use	Mode			
	Drive	Transit	Bike	Walk
Residential	20%	50%	5%	25%
Retail	50%	25%	5%	20%

A summary of the multimodal trip generation for the project is provided in Table 2 for the AM and PM peak hours. The project is expected to generate 14 vehicular trips (6 in, 8 out) during the AM peak hour, and 33 vehicular trips (16 in, 17 out) during the PM peak hour. Detailed calculations are included in the Technical Attachments.

Table 2: Multimodal Trip Generation

Mode	Mode Split	Land Use	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Auto (veh/hr)	20%	Residential	5	8	13	14	16	30
	50%	Retail	1	0	1	2	1	3
		Total	**6**	**8**	**14**	**16**	**17**	**33**
Transit (ppl/hr)	50%	Residential	16	22	38	44	43	87
	25%	Retail	1	0	1	1	2	3
		Total	**17**	**22**	**39**	**45**	**45**	**90**
Bike (ppl/hr)	5%	Residential	2	2	4	4	5	9
	5%	Retail	0	0	0	0	1	1
		Total	**2**	**2**	**4**	**4**	**6**	**10**
Walk (ppl/hr)	25%	Residential	8	11	19	22	21	43
	20%	Retail	0	0	0	1	1	2
		Total	**8**	**11**	**19**	**23**	**22**	**45**

Traffic Operations

This chapter provides a summary of an analysis of the existing and future roadway capacity surrounding the site. Included is an analysis of potential vehicular impacts of the Wesley Campus Plan.

The purpose of the capacity analysis is to:

- Determine the existing capacity of the study area roadways;
- Determine the overall impact of the project on the study area roadways; and
- Discuss any potential improvements to accommodate the additional vehicular trips.

This analysis was performed by determining the traffic volumes and roadway capacity for Existing Conditions, Background (no-build) Conditions, and Total Future (build) Conditions. The scope of the capacity analysis was developed based on DDOT guidelines and agreed upon by DDOT staff.

The capacity analysis focuses on the weekday AM and PM commuter peak hours.

This chapter concludes:

- Under Existing Conditions, three (3) study intersections operate at an unacceptable level of service based on the HCM capacity analyses, and one (1) study intersection experiences queues that exceed available storage.
- Under Background Conditions, three (3) study intersections operate at an unacceptable level of service based on the HCM capacity analyses, and one (1) study intersection experiences queues that exceed available storage.
- Under Total Future Conditions with the Existing Access, three (3) study intersections operate at an unacceptable level of service based on the HCM capacity analyses, and two (2) study intersections experience queues that exceed available storage.
- Under Total Future Conditions with the Proposed Access, two (2) study intersections operate at an unacceptable level of service based on the HCM capacity analyses, and one (1) study intersection experiences queues that exceed available storage.
- Two (2) study intersections met the threshold for requiring mitigation measures as a result of the proposed development:
    - Massachusetts Avenue and Wesley Circle NW (PM)
    - Massachusetts Avenue and WTS Driveway NW (PM)
- Potential mitigation measures were identified at these intersections in the form of a robust Transportation Demand Management (TDM) plan.
- Overall, this report concludes that the proposed project will not have a detrimental impact to the surrounding vehicular network, with the implementation of all recommended site design elements and Transportation Demand Management (TDM) measures.

Study Area, Scope, & Methodology

This section outlines the vehicular trips generated in the study area along the vehicular access routes and defines the analysis assumptions.

The scope of the analysis contained within this report was discussed with and agreed upon by DDOT. The general methodology of the analysis follows national and DDOT guidelines on the preparation of transportation impact evaluations of site development. The approved scope is included in the technical attachments.

Capacity Analysis Scenarios

The vehicular capacity analyses were performed to determine whether the project will lead to adverse impacts on traffic operations. A review of potential impacts to other modes is outlined later in this report. This is accomplished by comparing three (3) future scenarios:

- Without the project (referred to as the Background Conditions);
- With the project approved and constructed with the Existing Access condition; and
- With the project approved and constructed with the Proposed Access condition; and

Specifically, the roadway capacity analysis examines the following scenarios:

- Existing Conditions (2021 Existing Conditions);
- Future Conditions without the Project (2024 Background Conditions); and
- Future Conditions with the Project and the Existing Access condition that maintains the outbound traffic flow to University Avenue during the peak periods (2024 Total Future Conditions with Existing Access).
- Future Conditions with the Project and the Proposed Access condition that restricts site traffic on University Avenue during the peak periods (2024 Total Future Conditions with Proposed Access).

Study Area

The study area of the analysis is a set of intersections where detailed capacity analyses were performed for the scenarios listed above. The set of intersections decided upon during the study scoping process with DDOT are those intersections most likely to have potential impacts or require changes to traffic operations to accommodate the project. Although it is possible that impacts will occur outside of the study area, those impacts are neither significant enough to be considered a material adverse impact nor worthy of mitigation measures.

Based on the projected future trip generation and the location of the site access points, the following intersections were selected:

1. Massachusetts Avenue & 46th Street/Tilden Street/Wesley Circle NW
2. University Avenue & Wesley Circle NW
3. Massachusetts Avenue & Wesley Circle NW
4. University Avenue & Sedgwick Street/WTS Driveway NW
5. Massachusetts Avenue & 45th Street NW
6. Massachusetts Avenue & WTS Driveway NW
7. Massachusetts Avenue & Glover Gate/Katzen Driveway NW

Figure 7 shows a map of the study area intersections.

Geometry and Operations Assumptions

The following section reviews the roadway geometry and operations assumptions made and the methodologies used in the roadway capacity analyses.

2021 Existing Geometry and Operations Assumptions

Gorove Slade made observations and confirmed the existing lane configurations and traffic controls at the intersections within the study area. Existing signal timings and offsets were obtained from DDOT.

The lane configurations and traffic controls for the Existing Conditions are shown on Figure 8.

2024 Background Geometry and Operations Assumptions

The configurations and traffic controls for the 2024 Background Conditions were based on those for the 2021 Existing Conditions with the addition of background improvements.

Following national and DDOT methodologies, a background improvement must meet the following criteria to be incorporated into the analysis:

- Be funded; and
- Have a construction completion date prior or close to the project.

Based on these criteria, there were no background improvements assumed in the analysis.

The lane configurations and traffic controls for the Background Conditions, which are the same as those of the Existing Conditions, are shown on Figure 8.

2024 Total Future Conditions Geometry and Operations Assumptions

The configurations and traffic controls for the 2024 Total Future Conditions were based on those for the 2024 Background Conditions with the addition of the proposed project.

The lane configurations and traffic controls for the Total Future Conditions, which are the same as those of the Existing and Background Conditions, are shown on Figure 8. Although there are different traffic volume assumptions for Total Future Conditions with Existing Access and with Proposed Access, the lane configurations and traffic controls are the same for both.

Traffic Volume Assumptions

The following section reviews the traffic volume assumptions and methodologies used in the roadway capacity analyses.

2021 Existing Traffic Volumes

Data collection for all intersections was not possible during fall 2021 as traffic volumes were not representative of typical conditions due to the ongoing COVID-19 emergency. To establish baseline conditions, the study analyzed 2021 traffic volumes comprised of turning movement count data collected in 2012 and February 2020 with applied growth rates based on the data collection year, as well as turning movement count data collected in September 2021 at intersections for which historical data was not available. The grown volumes from these sources were then balanced conservatively (adding volumes to the overall network) to create 2021 existing conditions. The traffic volume data sources are summarized below.

2012 WTS Campus Plan Update

Turning movement counts collected in 2012 for this project’s TIA were available for the following intersections:

- University Avenue & Sedgwick Street/WTS Driveway NW; and
- Massachusetts Avenue & WTS Driveway NW.

The unadjusted peak hour traffic volumes from this source are shown in Figure 9.

2021 AU Campus Plan

Turning movement counts collected in February 2020 (prior to the COVID-19 emergency) for this project’s CTR were available for the following intersections:

- Massachusetts Avenue & 46th Street/Tilden Street/Wesley Circle NW;
- Massachusetts Avenue & 45th Street NW; and
- Massachusetts Avenue & Glover Gate/Katzen Driveway NW.

The unadjusted peak hour traffic volumes from this source are shown in Figure 9.

2021 Turning Movement Counts

Turning movement counts were collected on Wednesday, September 22, 2021 for the following intersections for which historical turning movement count data was not available:

- University Avenue & Wesley Circle NW; and
- Massachusetts Avenue & Wesley Circle NW.

The unadjusted peak hour traffic volumes from this source are shown in Figure 9.

Volumes Generated by Regional Traffic Growth through 2021

Traffic growth was applied to the 2012 and 2020 volumes based on their respective data collection year to establish 2021 existing volumes. These background growth volumes are shown in Figure 10.

The applied growth rates for 2012/2020 through 2021 are based on historic AADT data and are shown on Table 3. Detailed growth rate assumptions are provided in the Technical Attachments.

The 2021 Existing peak hour traffic volumes are shown in Figure 11.

2024 Background Traffic Volumes (without the Project)

The traffic projections for the 2024 Background Conditions consist of the 2021 Existing volumes with the following additions:

- The addition of traffic generated by developments expected to be completed prior to the project (known as background developments); and
- The addition of inherent growth on the roadway (representing regional traffic growth).

Volumes Generated by Background Developments

Following national and DDOT methodologies, a background development must meet the following criteria to be incorporated into the analysis:

- Be located in the study area, defined as having an origin or destination point within the cluster of study area intersections;
- Have entitlements; and
- Have a construction completion date prior or close to the future analysis year of 2024.

Based on these criteria, and as discussed with and agreed upon by DDOT, there are no developments meeting the above criteria; therefore there are no background developments included in this analysis.

Volumes Generated by Regional Traffic Growth

While background developments represent local traffic changes, regional traffic growth is typically accounted for using growth rates. The growth rates used in this analysis are based on MWCOG's currently adopted regional transportation model, comparing the difference between the year 2021 and 2024 model scenarios. The growth rates observed in this model served as a basis for analysis assumptions, and a conservative 0.10 percent annual growth rate was applied to roadways where negative growth was observed. The applied growth rates are shown in Table 3. The traffic volumes generated by the inherent growth along the network between 2021 and 2024 are shown on Figure 12.

The existing peak hour volumes presented in Figure 11 were combined with the background growth peak hour volumes shown in Figure 12 to establish the 2024 Background traffic volumes. The traffic volumes for the 2024 Background Conditions are shown in Figure 13.

2024 Total Future with Existing Access Traffic Volumes (Site Access Consistent with Existing Conditions)

The 2024 Total Future with Existing Access traffic volumes consist of the following:

- Existing volumes, shown on Figure 11;
- Inherent growth on study area roadways, shown on Figure 12;
- Site-generated volumes under existing vehicular access conditions, shown on Figure 19.

<u>Site-Generated Volumes (Existing Access Conditions)</u>

Trip distribution for the site-generated trips under existing vehicular access conditions was determined based on:

- Census Transportation Planning Products (CTPP) Traffic Analysis Zone (TAZ) data;
- Existing and future travel patterns in the study area; and
- Inbound and outbound site travel patterns as determined by vehicular access with existing access conditions (maintaining the existing WTS campus circulation with the University Avenue driveway exit consistent with existing conditions).

Based on this review and the site access locations, the site-generated trips were distributed through the study area intersections. Trip distribution assumptions and specific routings were analyzed for inbound and outbound trips. Inbound and outbound distribution assumptions for the project are provided in Figure 14 and Figure 15, respectively. Detailed distributions at each study intersection are shown in Figure 17.

Site-generated peak hour volumes under existing vehicular access conditions are shown in Figure 19.

The traffic volumes for the 2024 Total Future with Existing Access Conditions are shown on Figure 21.

2024 Total Future with Proposed Access Traffic Volumes (University Avenue Site Egress Closed During Peak Periods)

The 2024 Total Future with Proposed Access traffic volumes consist of the following:

- Existing volumes, shown on Figure 11;
- Inherent growth on study area roadways, shown on Figure 12;
- Site-generated volumes under proposed access conditions with the University Avenue site egress closed (access for delivery vehicles maintained) during the AM and PM peak periods, shown on Figure 20.

<u>Site-Generated Volumes (Proposed Access Conditions)</u>

Trip distribution for the site-generated trips under proposed vehicular access conditions was determined based on:

- Census Transportation Planning Products (CTPP) Traffic Analysis Zone (TAZ) data;
- Existing and future travel patterns in the study area; and
- Inbound and outbound site travel patterns as determined by vehicular access with proposed access conditions (with the University Avenue driveway resitricted during the AM and PM peak periods – delivery vehicle access maintained).
  - All exiting site traffic rerouted to the right turn egress movement onto Massachusetts Avenue.

Based on this review and the site access locations, the site-generated trips were distributed through the study area intersections. Trip distribution assumptions and specific routings were analyzed for inbound and outbound trips. Inbound and outbound distribution assumptions for the project are provided in Figure 14 and Figure 16, respectively. Detailed distributions at each study intersection are shown in Figure 18.

Site-generated peak hour volumes under proposed vehicular access conditions are shown in Figure 20.

The traffic volumes for the 2024 Total Future with Proposed Access Conditions are shown on Figure 22.

Table 3: Applied Annual and Total Growth Rates

Roadway	Dir.	Proposed Annual Growth Rate Between 2020 and 2021 [1]		Proposed Total Growth Between 2020 and 2021		Proposed Annual Growth Rate Between 2021 and 2024 [2]		Proposed Total Growth Between 2021 and 2024	
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
Massachusetts Ave NW	EB	0.10%	0.10%	0.10%	0.10%	0.30%	0.10%	0.90%	0.30%
	WB	2.00%	0.50%	2.00%	0.50%	0.10%	0.30%	0.30%	0.90%
Sedgewick St NW	EB	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.30%	0.30%
	WB	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.30%	0.30%
46th St NW	NB	2.00%	0.10%	2.00%	0.10%	0.10%	0.10%	0.30%	0.30%
	SB	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.30%	0.30%
University Ave NW [3]	NB	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.30%	0.30%
	SB	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.30%	0.30%
45th St NW	NB	0.50%	0.50%	0.50%	0.50%	0.10%	0.10%	0.30%	0.30%
	SB	2.00%	0.10%	2.00%	0.10%	0.90%	0.10%	2.72%	0.30%
Campus Dr NW	NB	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.30%	0.30%
	SB	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.30%	0.30%

[1] These rates were applied to volumes recorded in February 2020 that were used to establish 2021 existing conditions. Rates are based on MWCOG's currently adopted regional transportation model for this time period.

[2] These rates were applied to volumes grown from 2021 existing conditions. Rates are based on MWCOG's currently adopted regional transportation model for this time period.

[3] Study intersection #3 (University Ave & Sedgwick St/WTS Exit NW) only had available traffic counts from 2012, not February 2020 like the other study intersections. Therefore, to establish 2021 Existing Conditions, annual growth rates of 0.10% were applied to the northbound and southbound volumes of University Ave NW at this intersection for every year between 2012 and 2021, totaling 0.90% for each direction.

Vehicular Analysis Results

Intersection Capacity Analysis

Intersection capacity analyses were performed for the four (4) scenarios outlined previously at the intersections contained within the study area during the AM and PM peak hours. *Synchro* version 10 was used to analyze the study intersections based on the Highway Capacity Manual (HCM) 2000 methodology.

Further analyses were also performed at the WTS driveway intersection with Massachusetts Avenue using the SimTraffic modeling software to account for gaps in through traffic that would be provided by the upstream traffic signal to the east and the pedestrian signal to the west. The results of these simulations indicate that the WTS driveway on Massachusetts Avenue operates with LOS C or better during all scenarios studied. The simulation runs were based on 15-minute seeds with 60-minute run times, and the results shown were taken as the average of five (5) model runs.

The results of the capacity analyses are expressed in level of service (LOS) and delay (seconds per vehicle) for each approach. A LOS grade is a letter grade based on the average delay (in seconds) experienced by motorists traveling through an intersection. LOS results range from “A” being the best to “F” being the worst. LOS D is typically used as the acceptable LOS threshold in the District; although LOS E or F is sometimes accepted in urbanized areas if vehicular improvements would be a detriment to safety or non-auto modes of transportation.

The LOS capacity analyses were based on: (1) the intersection peak hour traffic volumes; (2) the lane use and traffic controls; and (3) the HCM methodologies (using *Synchro* software). The average delay of each approach and LOS is shown for all intersections in addition to the overall average delay and intersection LOS grade. Detailed LOS descriptions and the analysis worksheets are contained in the Technical Attachments.

Table 4 shows the results of the capacity analyses, including LOS and average delay per vehicle (in seconds) for the 2021 Existing, 2024 Background, 2024 Total Future with Existing Access, and 2024 Total Future with Proposed Access scenarios. Table 5 shows a comparison of the volume to capacity (v/c) ratios, while Table 6 shows a comparison of queuing results.

Intersection Capacity Under Existing Conditions

As shown in Table 4, two (2) of the study intersections operate at unacceptable conditions or have one or more approaches operating at unacceptable levels during Existing Conditions:

- Massachusetts Ave & 46th St/Tilden St/Wesley Cir NW
    - Southwestbound (PM)
- Massachusetts Ave & Wesley Cir NW
    - Northbound (PM)

Intersection Capacity Under Background Conditions

As shown in Table 4, two (2) of the study intersections operate at unacceptable conditions or have one or more approaches operating at unacceptable levels during Background Conditions:

- Massachusetts Ave & 46th St/Tilden St/Wesley Cir NW
    - Southwestbound (PM)
- Massachusetts Ave & Wesley Cir NW
    - Northbound (PM)

Intersection Capacity Under Future with Existing Access Conditions

As shown in Table 4, two (2) of the study intersections operate at unacceptable conditions or have one or more approaches operating at unacceptable levels during Total Future with Existing Access Conditions:

- Massachusetts Ave & 46th St/Tilden St/Wesley Cir NW
    - Southwestbound (PM)
- Massachusetts Ave & Wesley Cir NW
    - Northbound (PM)

Intersection Capacity Under Future with Proposed Access Conditions

As shown in Table 4, one (1) of the study intersections operates at unacceptable conditions or have one or more approaches operating at unacceptable levels during Total Future with Proposed Access Conditions:

- Massachusetts Ave & 46th St/Tilden St/Wesley Cir NW
    - Southwestbound (PM)

Queuing Analysis

In addition to the capacity analyses presented above, a queuing analysis was performed at each of the study intersections. The queuing analysis was performed using *Synchro* software. The 50th percentile and 95th percentile maximum queue lengths are shown for each lane group at the study area’s signalized intersections. The 50th percentile maximum queue is the maximum back of queue on a typical cycle. The 95th percentile queue is the maximum back of queue with 95th percentile traffic volumes. For unsignalized intersections, the 95th percentile queue is reported for each lane group (including free-flowing left turns and stop-controlled movements) based on the HCM calculations.

Table 6 shows the queuing results for the study intersections, including 50th and 95th percentile queues for the 2021 Existing, 2024 Background, 2024 Total Future with Existing Access, and 2024 Total Future with Proposed Access scenarios.

Queuing Under Existing Conditions

As shown in Table 6, one (1) of the study intersections has one or more lane group that exceeds the given storage length during Existing Conditions:

- Massachusetts Ave & Glover Gate/Katzen Dwy NW
  - Northeastbound left/thru (PM)
  - Southwestbound left/thru/right (AM, PM)

Queuing Under Background Conditions

As shown in Table 6, one (1) of the study intersections has one or more lane group that exceeds the given storage length during Background Conditions:

- Massachusetts Ave & Glover Gate/Katzen Dwy NW
  - Northeastbound left/thru (PM)
  - Southwestbound left/thru/right (AM, PM)

Queuing Under Future with Existing Access Conditions

As shown in Table 6, two (2) of the study intersections have one or more lane group that exceeds the given storage length during Total Future with Existing Access Conditions:

- Massachusetts Ave & Wesley Cir NW
  - Northbound left/right (PM)
- Massachusetts Ave & Glover Gate/Katzen Dwy NW
  - Northeastbound left/thru (PM)
  - Southwestbound left/thru/right (AM, PM)

Queuing Under Future with Proposed Access Conditions

As shown in Table 6, one (1) of the study intersections has one or more lane group that exceeds the given storage length during Total Future with Proposed Access Conditions:

- Massachusetts Ave & Glover Gate/Katzen Dwy NW
  - Northeastbound left/thru (PM)
  - Southwestbound left/thru/right (AM, PM)

Mitigation Measures

Based on DDOT standards, the project is considered to have an impact at an intersection within the study area if any of the following conditions are met:

- The capacity analyses show a LOS E or F at an intersection or along an approach in Future conditions with the project where one does not exist in Background Conditions;
- There is an increase in delay at any approach or overall intersection operating under LOS E or F of greater than five (5) percent when compared to Background Conditions;
- A 95th percentile queue exceeds storage along an approach in Future Conditions with the project where it does not in Background Conditions; or
- There is an increase in the 95th percentile queue by more than 150 feet along an approach in that exceeds storage in Background Conditions.

Based on these criteria, there are impacts at one intersection under Total Future with Existing Access and no impacts under Total Future with Proposed Access. These impacts are detailed below.

Massachusetts Avenue and Wesley Circle NW (Total Future with Existing Access Conditions)

Northbound Approach

The northbound[1] approach of Wesley Circle NW is projected to increase delay by more than 5 percent during Total Future with Existing Access Conditions when compared to Background Conditions during the afternoon peak hour.

This condition cannot be mitigated through either geometric or traffic signal modifications because there can only be one lane merging onto Massachusetts Avenue NW, and because the intersection is unsignalized. Rather, mitigation is proposed to be

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[1] This approach is coded in *Synchro* as northbound to differentiate it from the other approaches, but it is actually the eastbound approach of Wesley Circle NW as it merges onto southeastbound Massachusetts Avenue NW.

addressed through a robust Transportation Demand Management (TDM) plan consistent with DDOT's Baseline Plan.

Massachusetts Avenue and WTS Driveway NW (Total Future with Existing Access Conditions and Total Future with Proposed Access Conditions)

Northbound Approach

With the removal of WTS outbound traffic (delivery vehicle access maintained) from University Avenue during the peak periods evaluated as part of Total Future with Proposed Access Conditions, the northbound[2] approach of Wesley Circle NW would realize a reduction in delay and would no longer exceed adequacy standards.

Under Total Future with Proposed Access Conditions, the project would not have any vehicular impacts within the study area that would warrant mitigation per the DDOT CTR guidelines.

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[2] This approach is coded in *Synchro* as northbound to differentiate it from the other approaches, but it is actually the eastbound approach of Wesley Circle NW as it merges onto southeastbound Massachusetts Avenue NW.

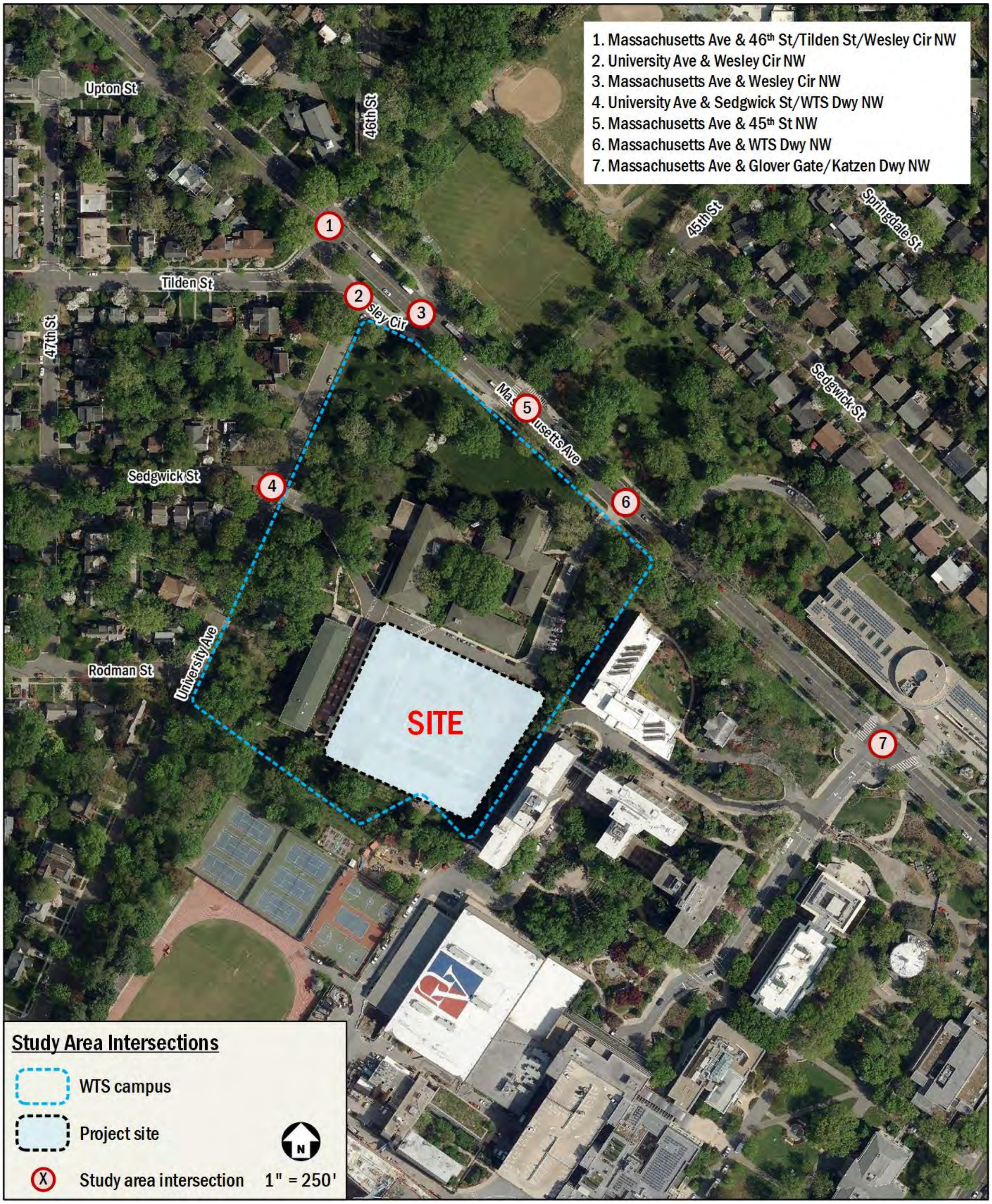

Figure 7: Study Area Intersections

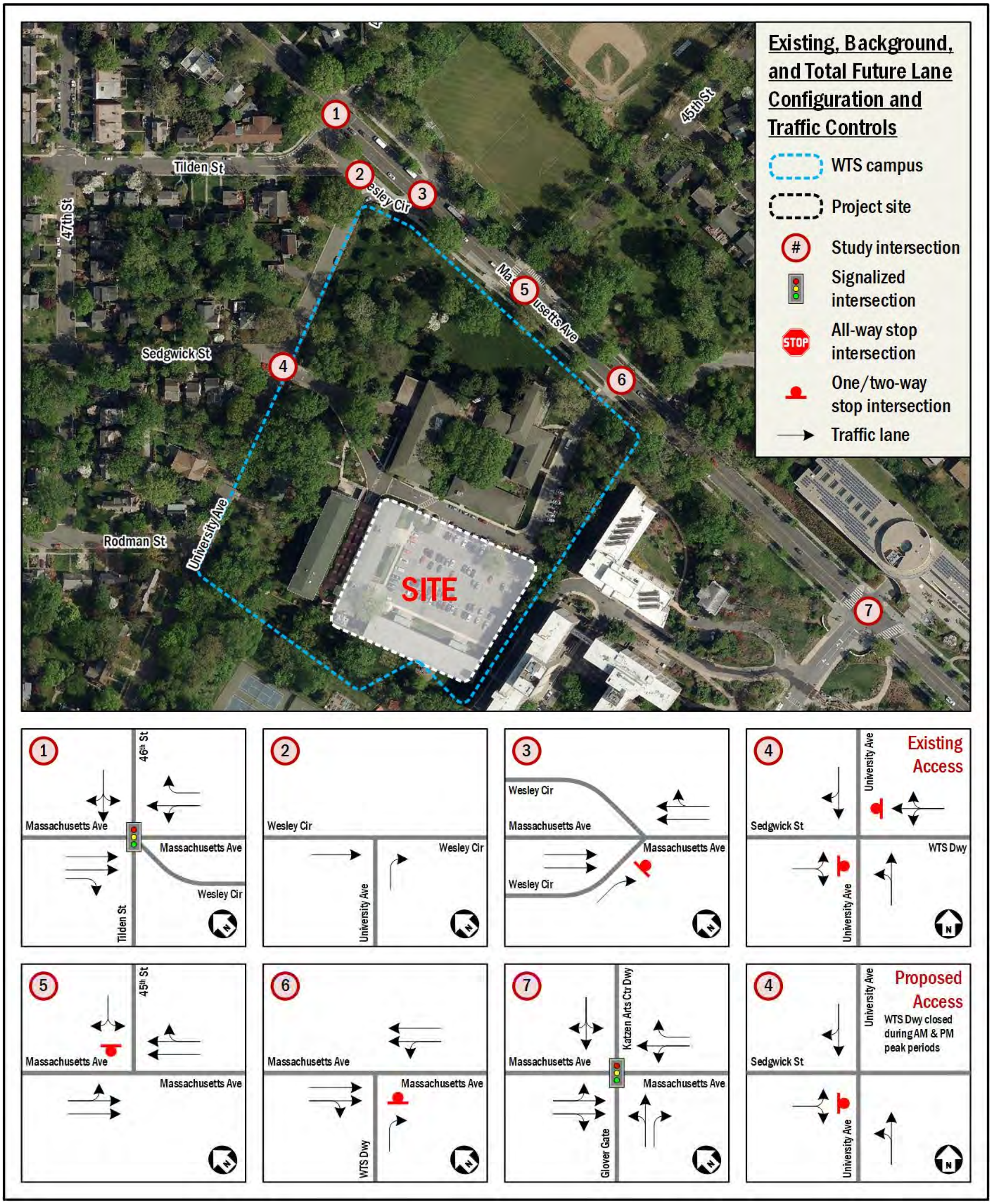

Figure 8: Existing, Background, and Total Future Lane Configurations and Traffic Controls

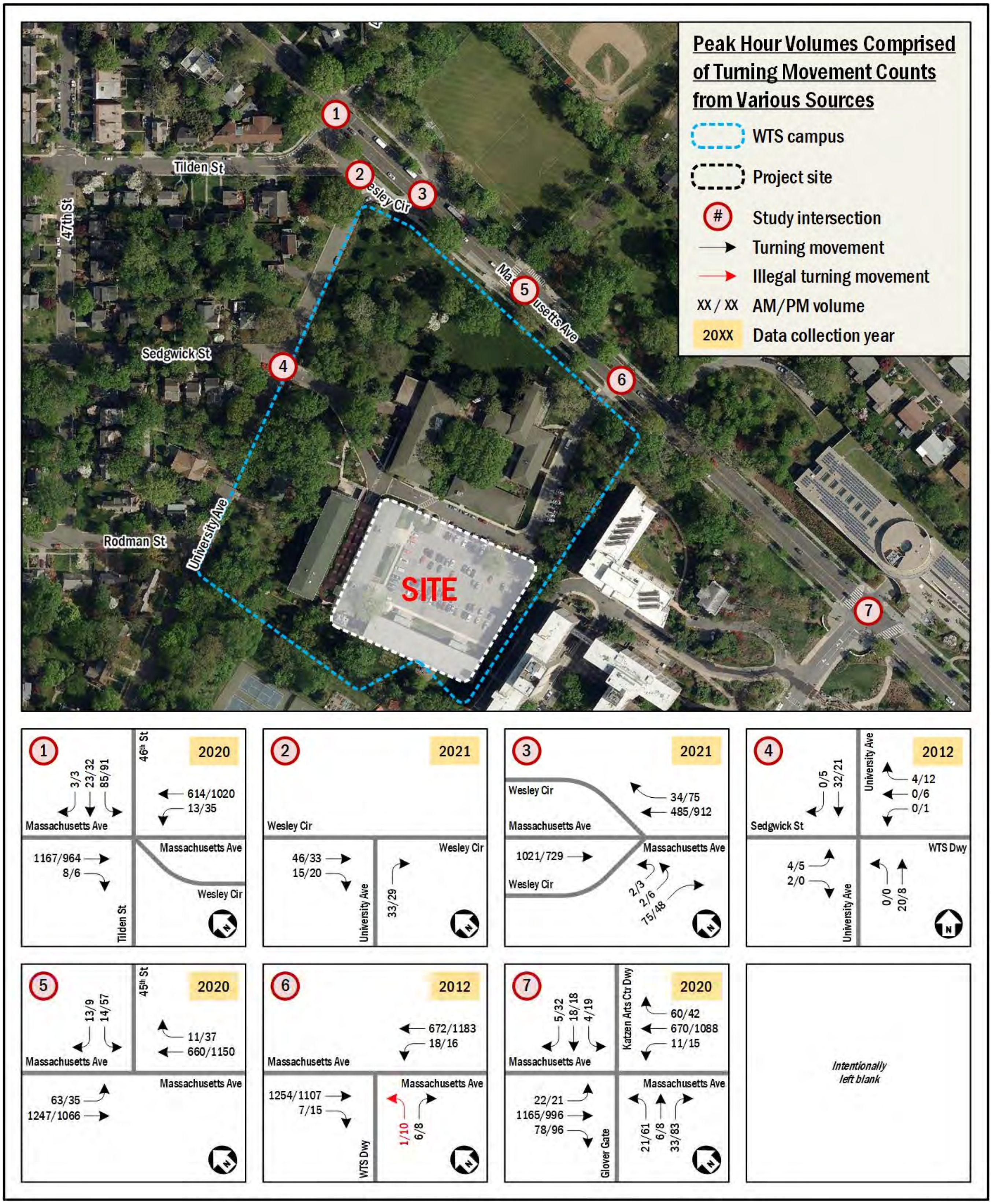

Figure 9: Peak Hour Volumes Comprised of Turning Movement Counts from Various Sources

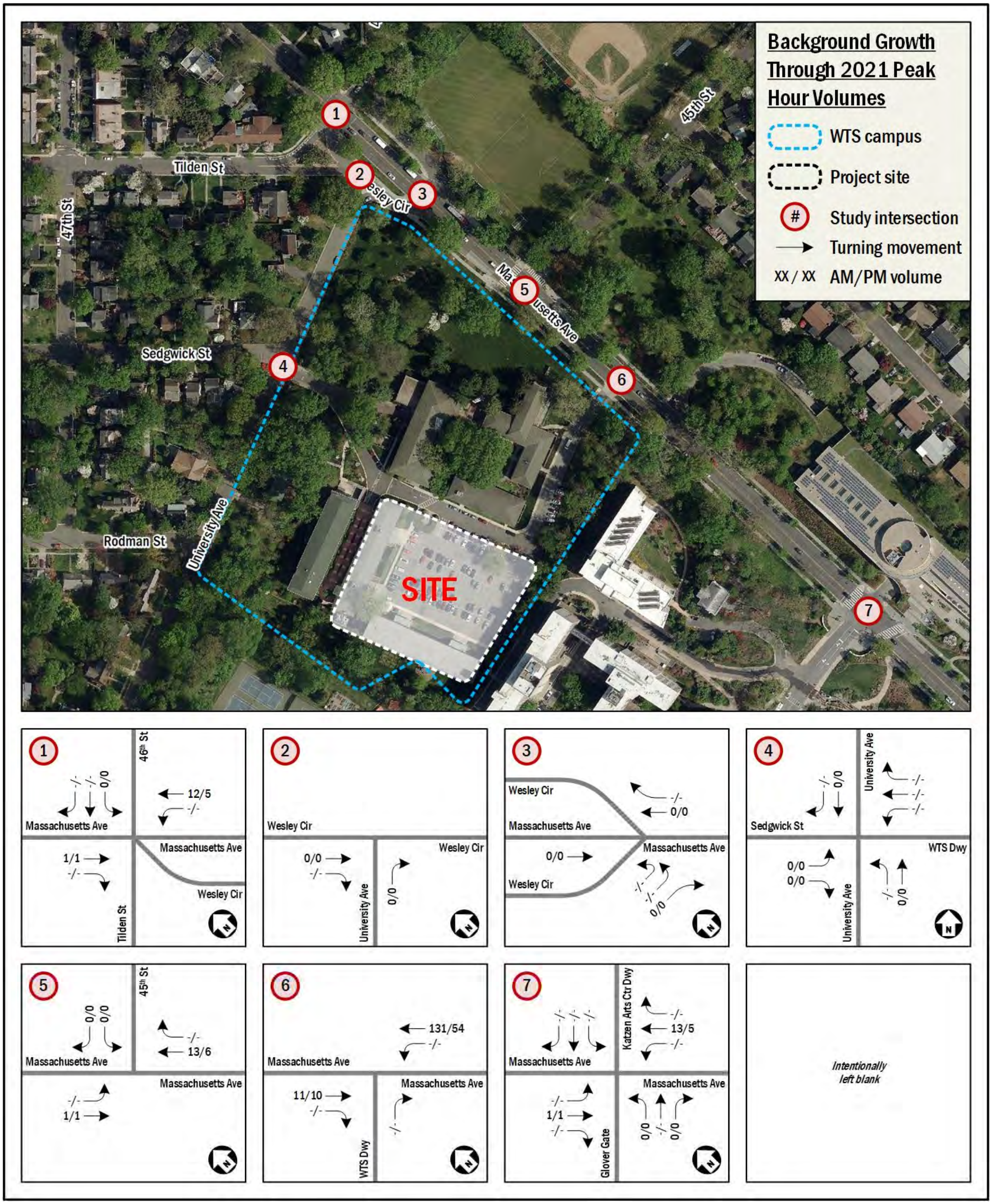

Figure 10: Background Growth Applied to 2012 & 2020 Peak Hour Volumes to Establish Existing 2021 Peak Hour Volumes

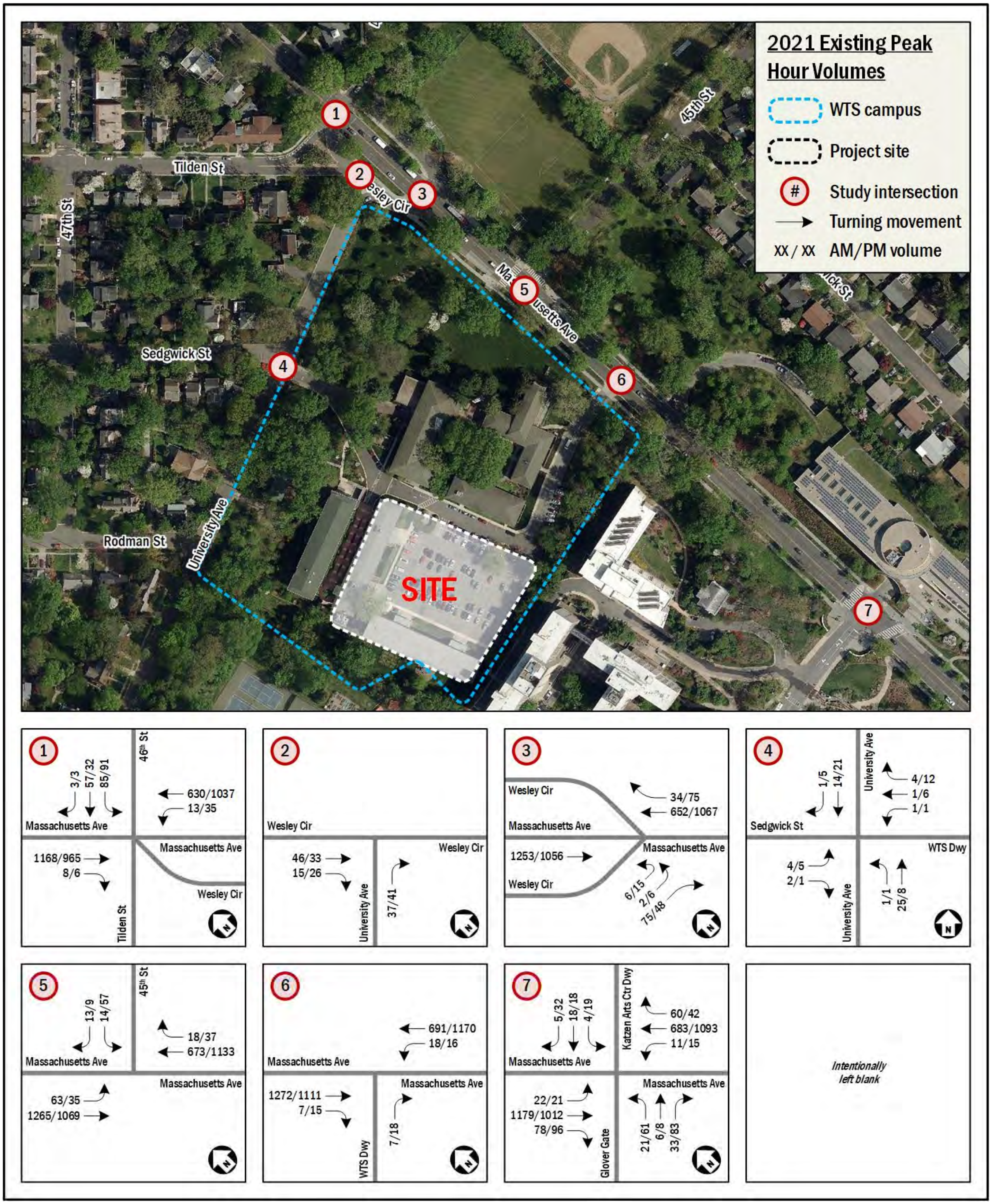

Figure 11: 2021 Existing Peak Hour Volumes

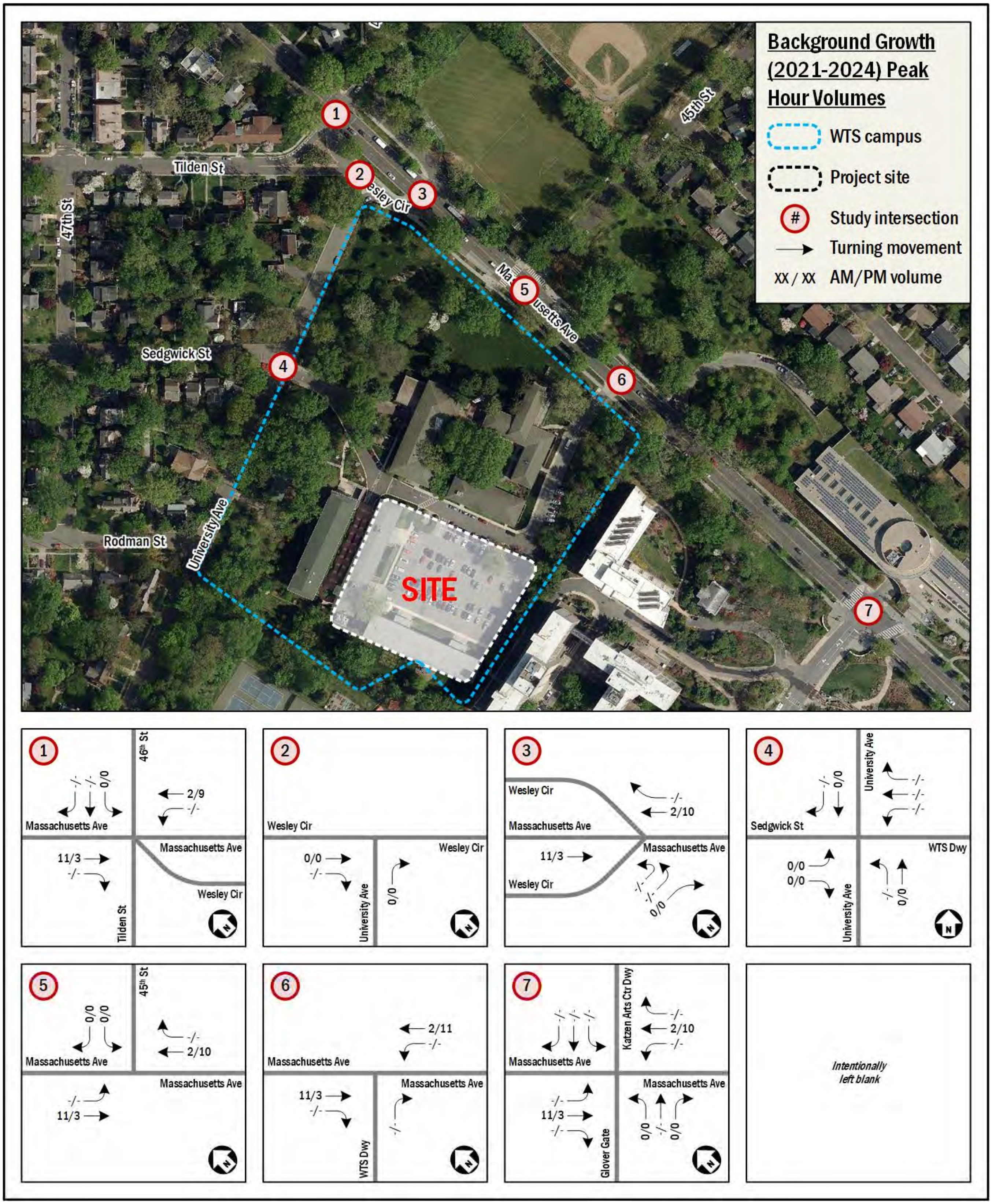

Figure 12: Background Growth Peak Hour Volumes

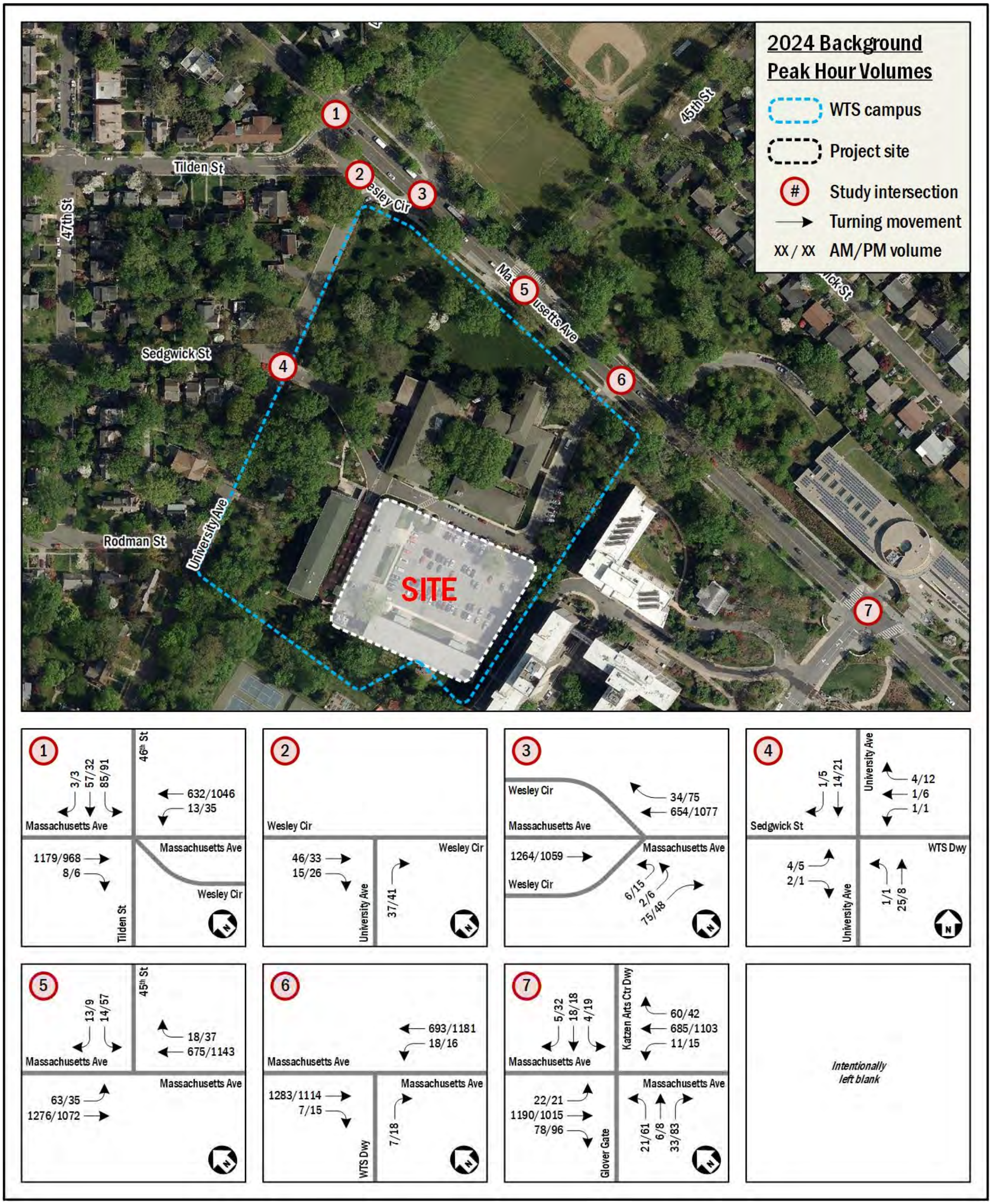

Figure 13: 2024 Background Peak Hour Volumes

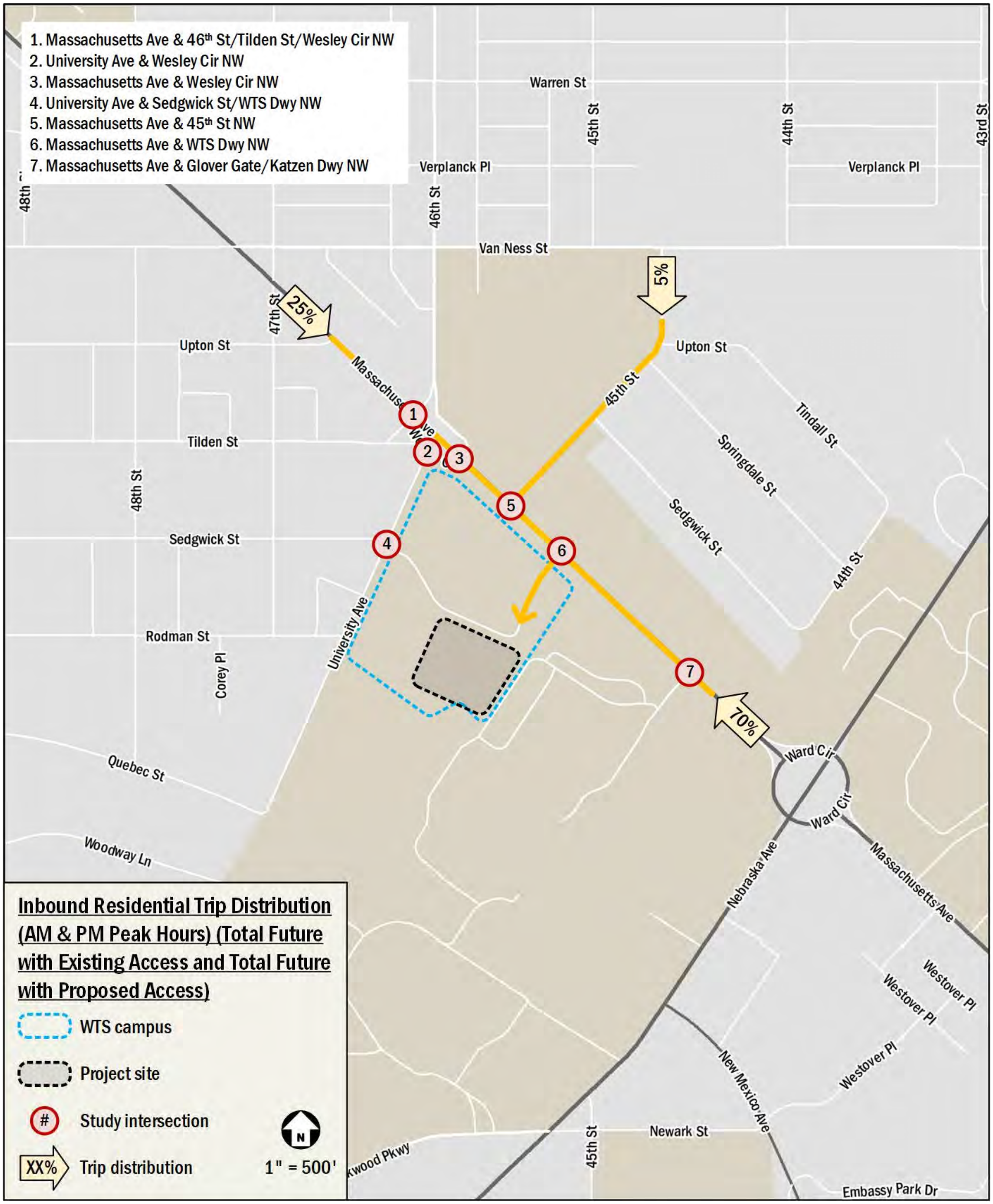

Figure 14: Inbound Trip Distribution (Total Future with Existing Access and Total Future with Proposed Access)

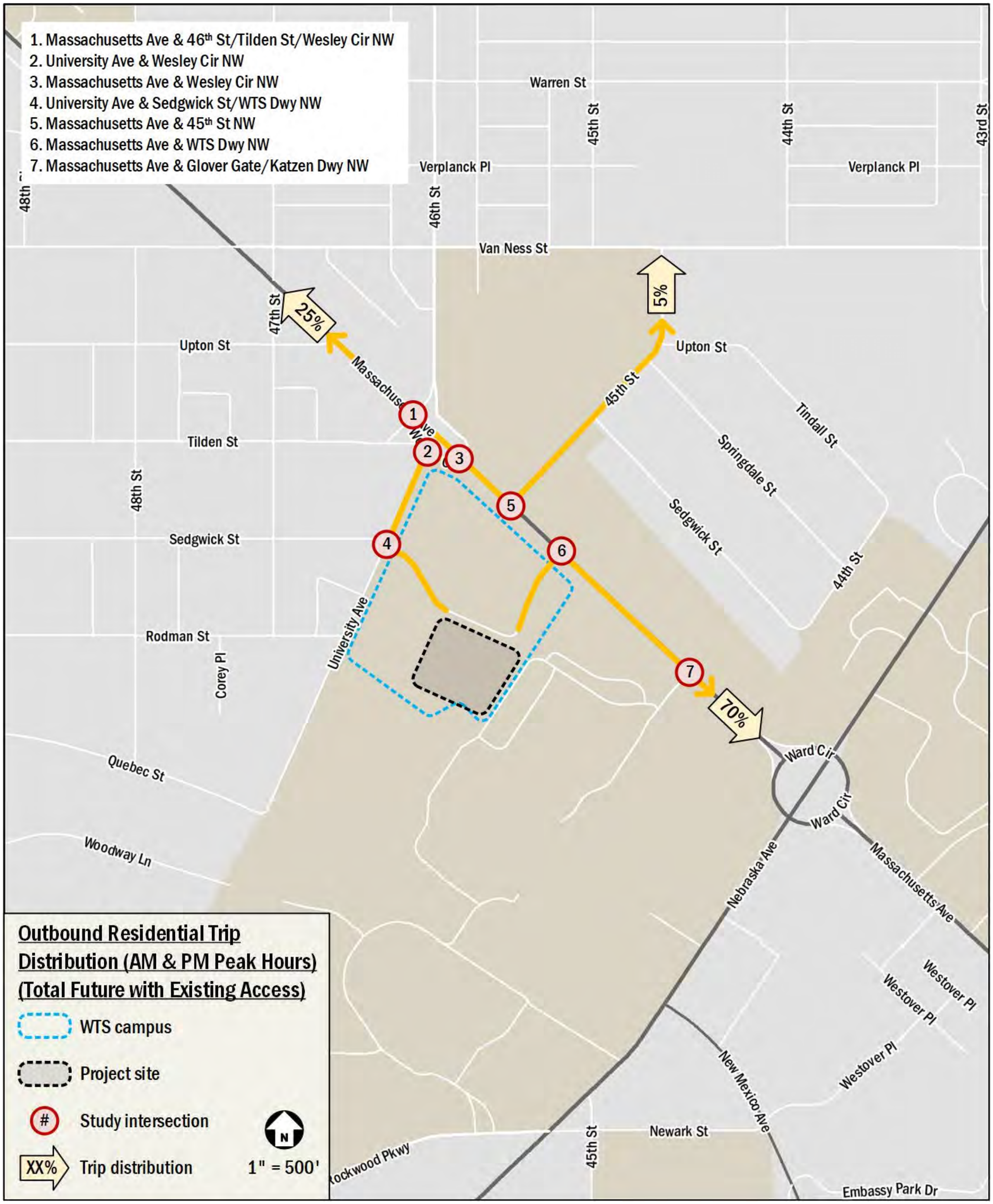

Figure 15: Outbound Trip Distribution (Total Future with Existing Access: w/ University Ave Driveway Exit During Peak Periods)

Figure 16: Outbound Trip Distribution (Total Future with Proposed Access: w/ University Ave Driveway Exit Restricted During Peak Periods – Delivery Vehicle Access Maintained)

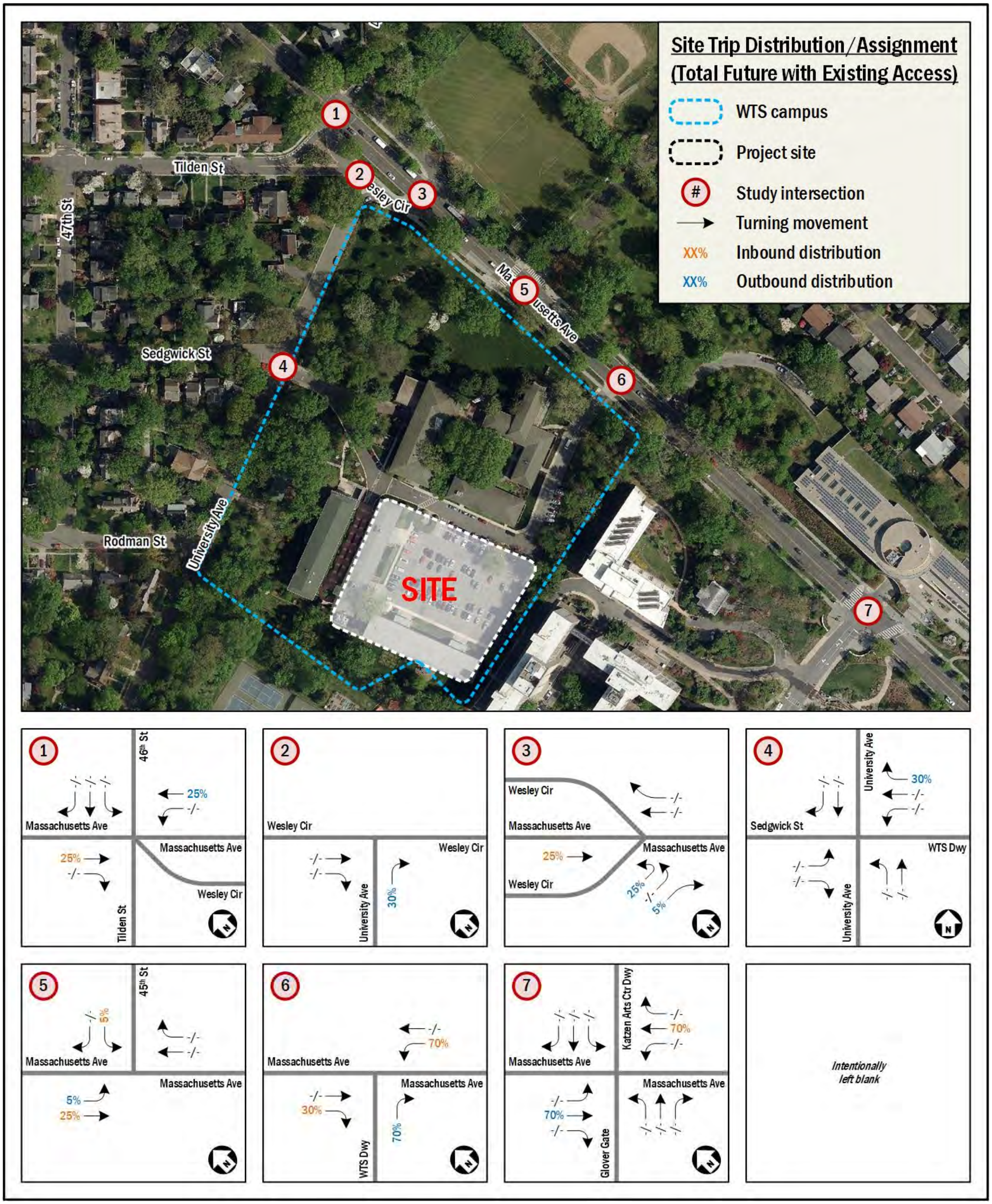

Figure 17: Trip Distribution at Study Intersections (Total Future with Existing Access: w/ University Ave Driveway Exit During Peak Periods)

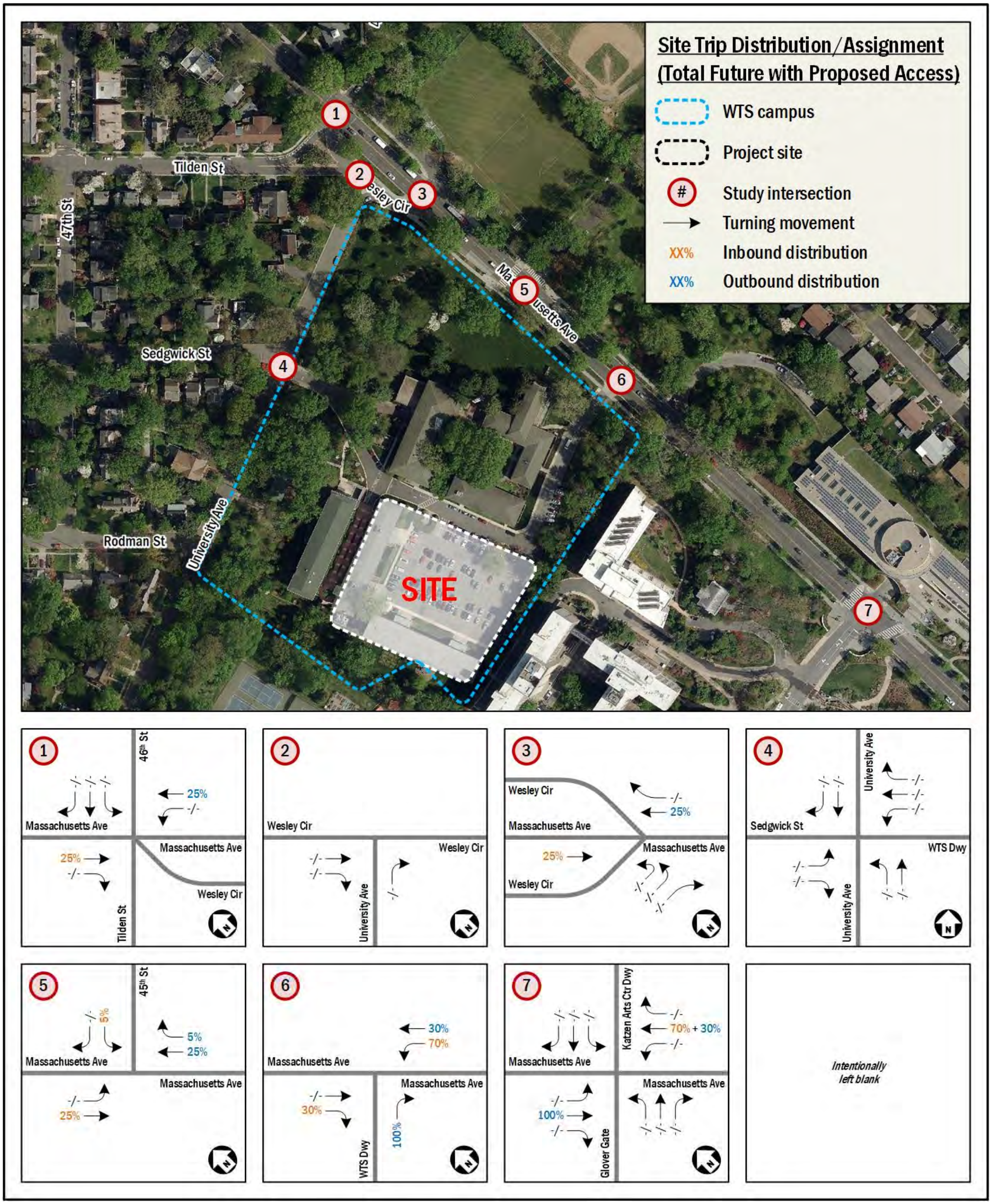

Figure 18: Trip Distribution at Study Intersections (Total Future with Proposed Access: w/ University Ave Driveway Exit Restricted During Peak Periods – Delivery Vehicle Access Maintained)

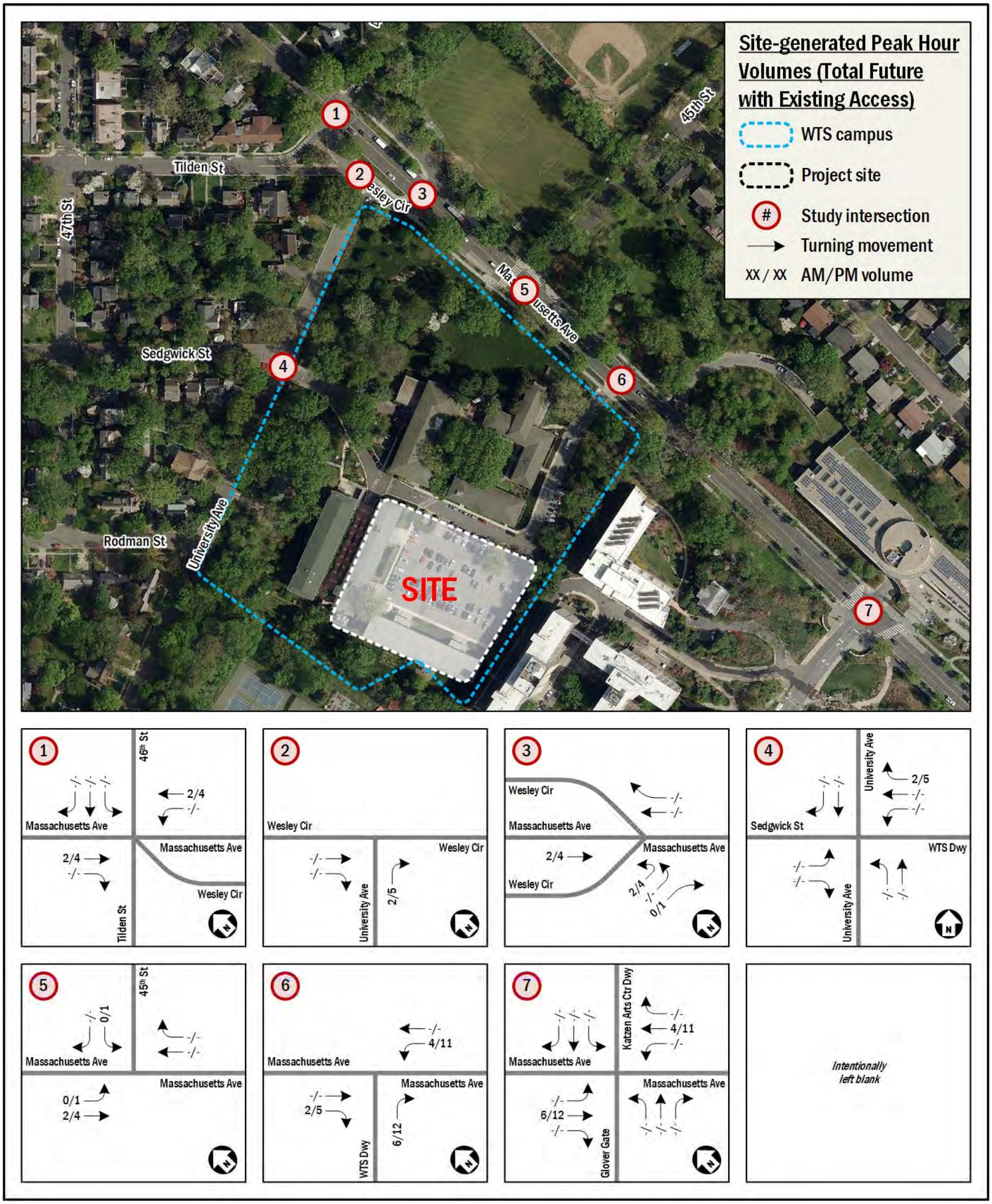

Figure 19: Site-generated Peak Hour Volumes (Total Future with Existing Access: w/ University Ave Driveway Exit During Peak Periods)

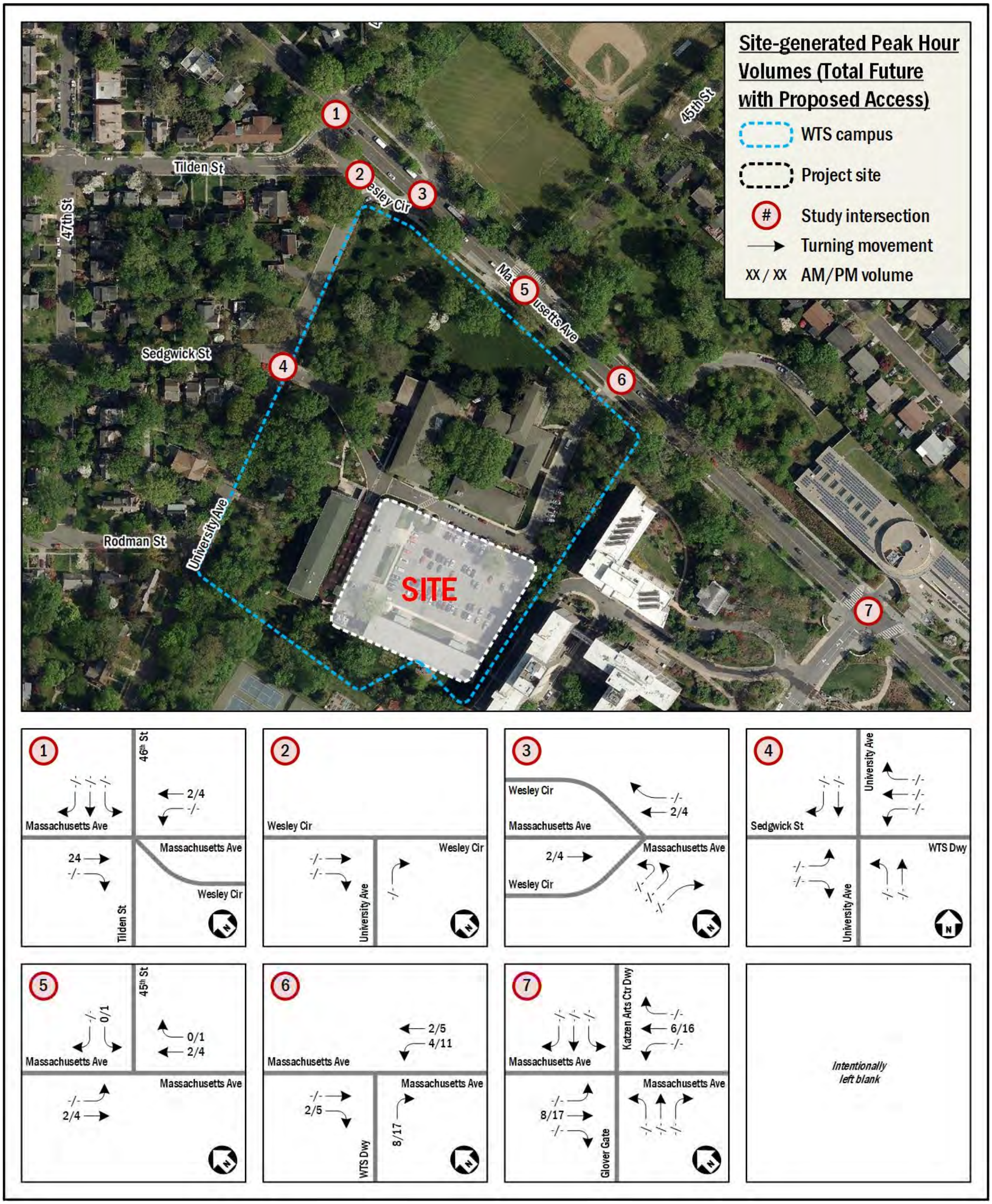

Figure 20: Site-generated Peak Hour Volumes (Total Future with Proposed Access: w/ University Ave Driveway Exit Restricted During Peak Periods – Delivery Vehicle Access Maintained)

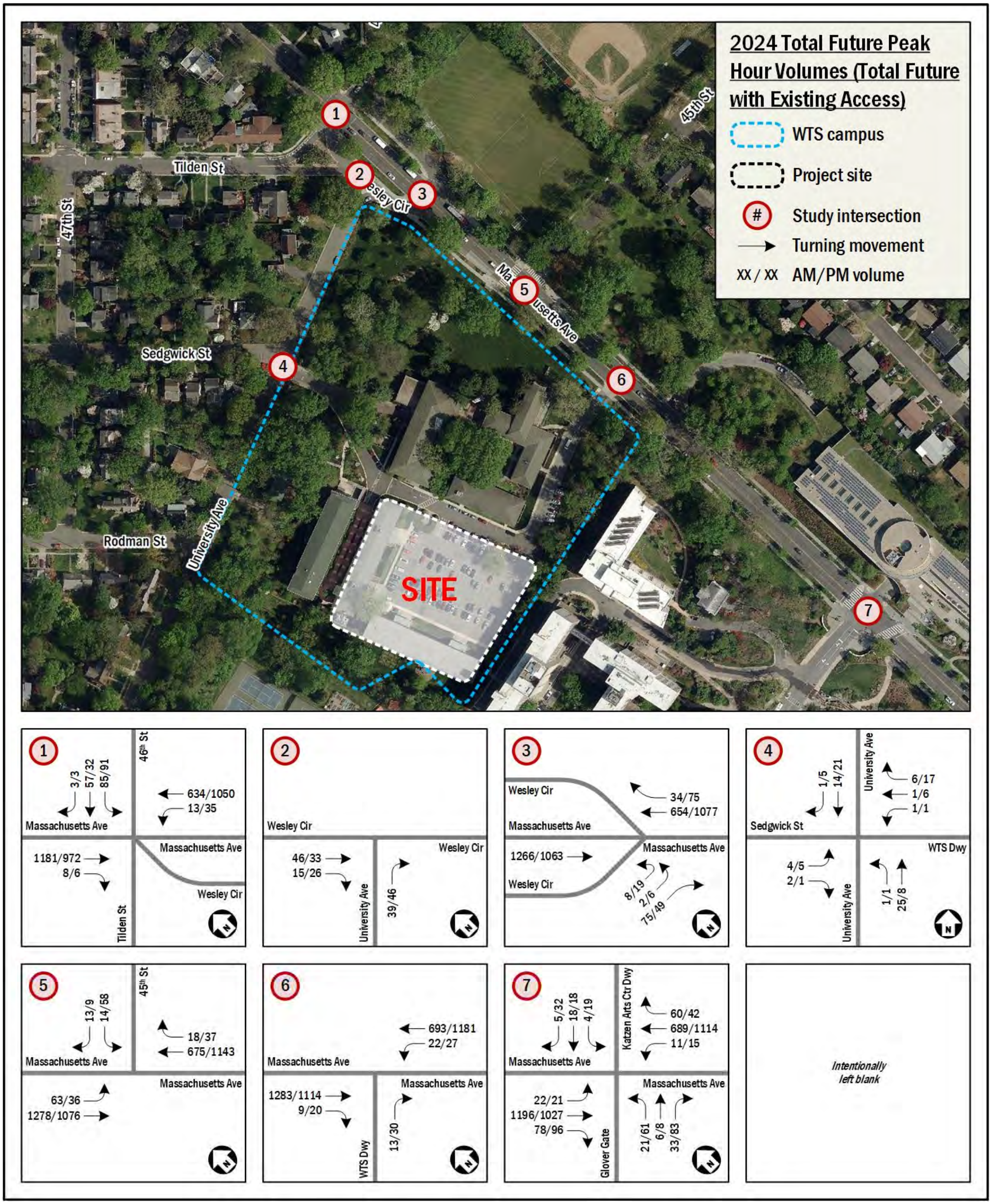

Figure 21: 2024 Total Future Peak Hour Volumes (Total Future with Existing Access: w/ University Ave Driveway Exit During Peak Periods)

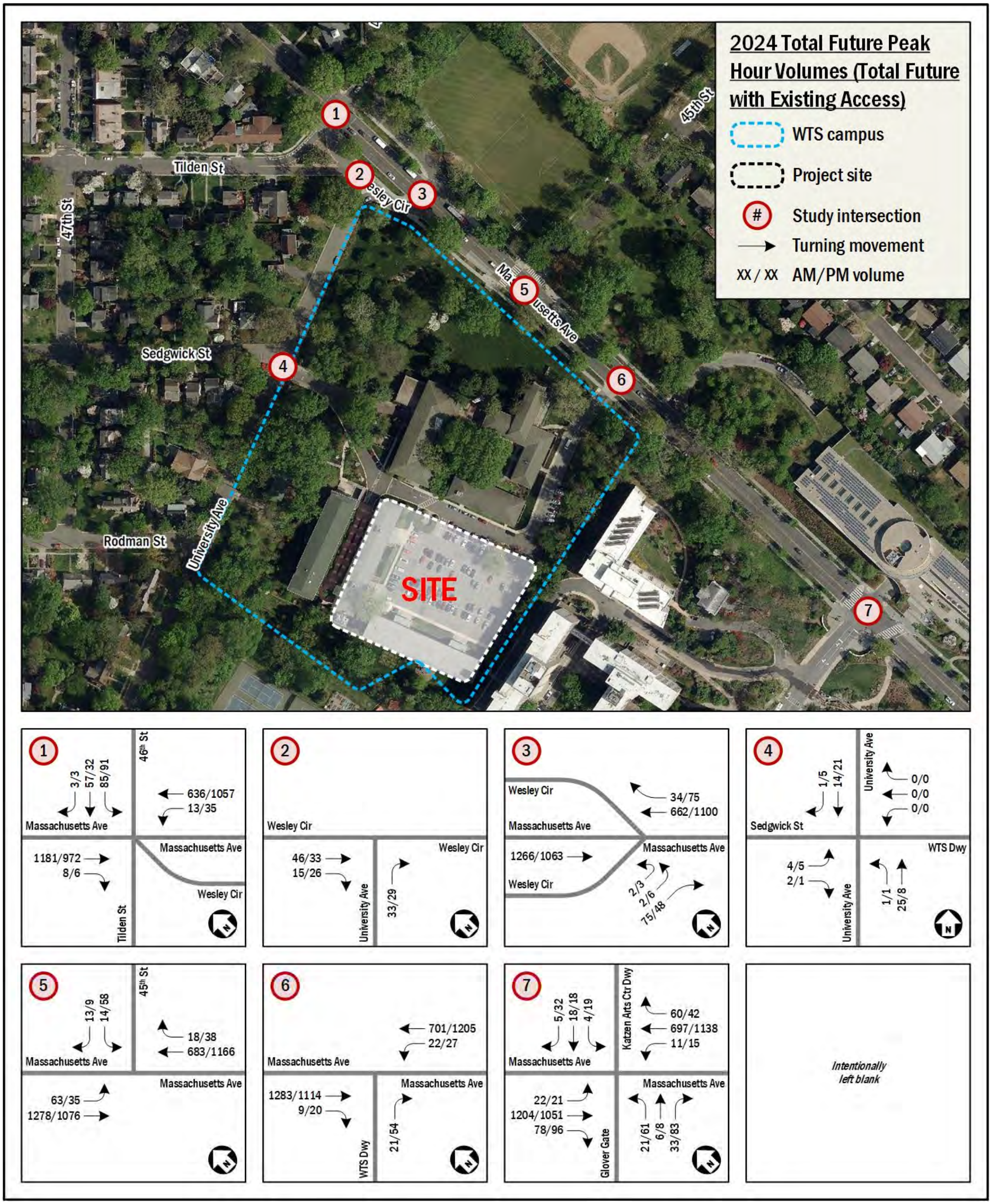

Figure 22: 2024 Total Future Peak Hour Volumes (Total Future with Proposed Access: w/ University Ave Driveway Exit Restricted During Peak Periods – Delivery Vehicle Access Maintained)

Table 4: LOS Comparison

	Intersection and Approach	Existing (2021)				Background (2024)				Future with Existing Access (2024) (w/ Existing Access Scenario)				Future with Proposed Access (2024) (University Dr Restricted During Peak Hours)			
		AM Peak		*PM Peak*		*AM Peak*		*PM Peak*		*AM Peak*		*PM Peak*		*AM Peak*		*PM Peak*	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1.	**Massachusetts Ave & 46th St/Tilden St/Wesley Cir NW**																
	Overall	**11.2**	**B**	**8.6**	**A**	**11.2**	**B**	**8.6**	**A**	**11.2**	**B**	**8.6**	**A**	**11.2**	**B**	**8.5**	**A**
	Southeastbound	10.9	B	6.7	A	11.0	B	6.7	A	11.1	B	6.8	A	11.1	B	6.8	A
	Northwestbound	2.6	A	4.0	A	2.6	A	4.0	A	2.6	A	4.0	A	2.5	A	4.0	A
	Northeastbound	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
	Southwestbound	51.4	D	61.8	E	51.4	D	61.8	E	51.4	D	61.8	E	51.4	D	61.8	E
2.	**University Ave & Wesley Cir NW**																
	Eastbound	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0		0.0	
	Northbound	8.7	A	8.7	A	8.7	A	8.7	A	8.7	A	8.7	A	8.7	A	8.7	A
3.	**Massachusetts Ave & Wesley Cir NW**																
	Northbound (Eastbound)	14.1	B	41.3	E	14.2	B	42.2	E	15.2	C	47.9	E	12.3	B	27.8	D
	Southeastbound	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
	Northwestbound	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
4.	**University Ave & Sedgwick St/WTS Dwy NW**																
	Eastbound	8.7	A	8.8	A	8.7	A	8.8	A	8.7	A	8.9	A	8.7	A	8.7	A
	Westbound	8.7	A	8.7	A	8.7	A	8.7	A	8.6	A	8.7	A	0.0	A	0.0	A
	Northbound	0.3	A	0.7	A	0.3	A	0.7	A	0.3	A	0.7	A	0.3	A	0.7	A
	Southbound	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
5.	**Massachusetts Ave & 45th St NW**																
	Overall	**0.5**	**A**	**0.4**	**A**	**0.5**	**A**	**0.4**	**A**	**0.5**	**A**	**0.4**	**A**	**0.5**	**A**	**0.4**	**A**
	Southeastbound	0.7	A	0.5	A	0.7	A	0.5	A	0.7	A	0.5	A	0.7	A	0.5	A
	Northwestbound	0.1	A	0.3	A	0.1	A	0.3	A	0.1	A	0.3	A	0.1	A	0.3	A
	Southwestbound	0.0	A	0.1	A	0.0	A	0.1	A	0.0	A	0.1	A	0.0	A	0.1	A
6.	**Massachusetts Ave & WTS Dwy NW**																
	Northbound	14.8	B	380.1	F	14.9	B	385.5	F	15.1	C	611.8	F	15.3	C	1116.9	F
	Southeastbound	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
	Northwestbound	1.3	A	46.8	D	1.3	A	48.0	D	1.6	A	103.2	F	1.6	A	103.1	A
	SimTraffic																
	Northbound	--	--	31.4	C	--	--	29.9	C	--	--	32.5	C	--	--	28.3	C
	Southeastbound	--	--	1.3	A	--	--	1.1	A	--	--	1.2	A	--	--	1.2	A
	Northwestbound	--	--	4.8	A	--	--	5.1	A	--	--	6.3	A	--	--	6.7	A
7.	**Massachusetts Ave & Glover Gate/Katzen Dwy NW**																
	Overall	**12.7**	**B**	**13.7**	**B**	**12.9**	**B**	**13.7**	**B**	**12.9**	**B**	**13.8**	**B**	**13.1**	**B**	**14.0**	**B**
	Southeastbound	11.9	B	10.5	B	12.1	B	10.5	B	12.2	B	10.6	B	12.3	B	10.9	B
	Northwestbound	10.0	B	10.6	B	10.1	B	10.7	B	10.1	B	10.8	B	10.3	B	11.0	B
	Northeastbound	48.8	D	47.1	D	48.8	D	47.1	D	48.8	D	47.1	D	48.8	D	47.1	D
	Southwestbound	47.4	D	45.4	D	47.4	D	45.4	D	47.4	D	45.4	D	47.4	D	45.4	D

Table 5: v/c Comparison

	Intersection and Movement	Existing (2021)		Background (2024)		Future with Existing Access (2024) (w/ Existing Access Scenario)		Future with Proposed Access (2024) (University Dr Restricted During Peak Hours)	
		AM Peak	*PM Peak*	*AM Peak*	*PM Peak*	*AM Peak*	*PM Peak*	*AM Peak*	*PM Peak*
		v/c	v/c	v/c	v/c	v/c	v/c	v/c	v/c
1.	**Massachusetts Ave & 46th St/Tilden St/Wesley Cir NW**								
	Southeastbound Thru	0.62	0.49	0.62	0.49	0.63	0.49	0.63	0.49
	Southeastbound Right	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Northwestbound Thru	0.37	0.55	0.37	0.55	0.37	0.56	0.38	0.56
	Southwestbound Thru	0.57	0.64	0.57	0.64	0.57	0.64	0.57	0.64
2.	**University Ave & Wesley Cir NW**								
	Eastbound TR	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
	Northbound Right	0.04	0.05	0.04	0.05	0.04	0.05	0.04	0.03
3.	**Massachusetts Ave & Wesley Cir NW**								
	Northbound (Eastbound) LTR	0.18	0.43	0.18	0.43	0.20	0.49	0.14	0.28
	Southeastbound Thru	0.38	0.32	0.38	0.32	0.38	0.33	0.38	0.33
	Northwestbound TR	0.26	0.44	0.26	0.44	0.26	0.44	0.27	0.45
4.	**University Ave & Sedgwick St/WTS Dwy NW**								
	Eastbound LR	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Westbound LTR	0.01	0.02	0.01	0.02	0.01	0.03	0.01	0.00
	Northbound LT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Southbound TR	0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.02
5.	**Massachusetts Ave & 45th St NW**								
	Southeastbound LT	0.54	0.45	0.54	0.45	0.54	0.46	0.54	0.45
	Northwestbound TR	0.23	0.38	0.23	0.39	0.23	0.39	0.23	0.39
	Southwestbound LR	0.02	0.05	0.02	0.05	0.02	0.05	0.02	0.05
6.	**Massachusetts Ave & WTS Dwy NW**								
	Northbound Right	0.02	0.87	0.02	0.88	0.04	1.47	0.06	2.67
	Southeastbound Thru	0.55	--	0.56	--	0.56	--	0.56	--
	Southeastbound TR	0.28	0.74	0.28	0.74	0.28	0.74	0.29	0.74
	Northwestbound LT	0.04	0.52	0.04	0.53	0.05	0.89	0.05	0.89
	Northwestbound Thru	--	0.51	--	0.51	--	0.51	--	0.53
7.	**Massachusetts Ave & Glover Gate/Katzen Dwy NW**								
	Southeastbound LTR	0.70	0.69	0.70	0.69	0.71	0.70	0.71	0.71
	Northwestbound LT	0.66	--	0.67	--	0.67	--	0.68	--
	Northwestbound Right	0.08	--	0.08	--	0.08	--	0.08	--
	Northwestbound LTR	--	0.62	--	0.63	--	0.63	--	0.65
	Northeastbound LT	0.25	0.41	0.25	0.41	0.25	0.41	0.25	0.41
	Northeastbound Right	0.24	0.45	0.24	0.45	0.24	0.45	0.24	0.45
	Southwestbound LTR	0.15	0.33	0.15	0.33	0.15	0.33	0.15	0.33

Table 6: 50th & 95th Percentile Queuing Comparison (in feet)

Intersection and Lane Group	Storage Length (ft)	Existing (2021)				Background (2024)				Future with Existing Access (2024) (w/ Existing Access Scenario)				Future with Proposed Access (2024) (University Dr Restricted During Peak Hours)			
		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
		50th	95th	50th	95th	50th	95th	50th	95th	50th	95th	50th	95th	50th	95th	50th	95th
1. Massachusetts Ave & 46th St/Tilden St/Wesley Cir NW																	
Southeastbound Thru	310	237	299	138	176	242	303	140	177	242	305	141	178	242	305	141	178
Southeastbound Right	310	2	6	1	4	2	6	1	4	2	6	1	4	2	6	1	4
Northwestbound Thru	170	18	24	71	84	17	24	72	84	18	24	72	84	17	22	71	83
Southwestbound Thru	540	106	179	95	#175	106	179	95	#175	106	179	95	#175	106	179	95	#175
2. University Ave & Wesley Cir NW																	
Eastbound TR	510	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0
Northbound Right	330	--	3	--	4	--	3	--	4	--	3	--	4	--	3	--	2
3. Massachusetts Ave & Wesley Cir NW																	
Northbound (Eastbound) LTR	50	--	16	--	48	--	16	--	49	--	18	--	58	--	12	--	27
Southeastbound Thru	170	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0
Northwestbound TR	160	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0
4. University Ave & Sedgwick St/WTS Dwy NW																	
Eastbound LR	340	--	0	--	1	--	0	--	1	--	0	--	1	--	0	--	1
Westbound LTR	100	--	0	--	2	--	0	--	2	--	1	--	2	--	0	--	0
Northbound LT	320	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0
Southbound TR	320	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0
5. Massachusetts Ave & 45th St NW																	
Southeastbound LT	200	18	3	6	0	18	4	6	0	18	3	7	0	18	4	7	0
Northwestbound TR	200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Southwestbound LR	380	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6. Massachusetts Ave & WTS Dwy NW																	
Northbound Right	290	--	2	--	64	--	2	--	64	--	3	--	106	--	5	--	191
Southeastbound Thru	200	--	0	--	--	--	0	--	--	--	0	--	--	--	0	--	--
Southeastbound TR	200	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0
Northwestbound LT	80	--	3	--	44	--	3	--	44	--	4	--	78	--	4	--	78
Northwestbound Thru	80	--	--	--	0	--	--	--	0	--	--	--	0	--	--	--	0
7. Massachusetts Ave & Glover Gate/Katzen Dwy NW																	
Southeastbound LTR	420	286	394	210	242	295	400	210	242	298	401	213	245	303	404	219	251
Northwestbound LT	480	250	370	--	--	253	376	--	--	255	380	--	--	262	389	--	--
Northwestbound Right	480	0	10	--	--	0	10	--	--	0	10	--	--	0	10	--	--
Northwestbound LTR	480	--	--	230	291	--	--	233	295	--	--	237	300	--	--	247	312
Northeastbound LT	100	21	52	52	102	21	52	52	102	21	52	52	102	21	52	52	102
Northeastbound Right	100	0	12	0	52	0	12	0	52	0	12	0	52	0	12	0	52
Southwestbound LTR	40	17	46	28	74	17	46	28	74	17	46	28	74	17	46	28	74

Transit Facilities

This chapter discusses the existing and proposed transit facilities near the site and evaluates the overall transit impacts of the site.

This chapter concludes that:

- The project site is well-served by existing transit;
- The project site is approximately 1.1 miles from the Tenleytown-AU Metro station;
- The project site is served by two (2) Metrobus routes and three (3) AU shuttle routes; and
- The project is expected to generate a manageable amount of transit trips that existing transit service is capable of handling.

Existing Transit Service

The study area is served by Metrorail and the Metrobus and American University (AU) shuttle systems. Combined, these transit services provide local and regional transit connections and link the site with residential, employment, commercial, and cultural destinations throughout the region. Figure 23 identifies the transit routes, stations, and stops in the study area.

The site is located 1.1 miles from the Tenleytown-AU Metro station on the Red Line, which travels between the Glenmont and Shady Grove stations by way of downtown Washington, DC.

The site is also served by three (3) AU shuttle routes, which WTS students can ride for free, and two (2) Metrobus routes. These bus routes connect the site to many areas of the region, as well as several Metro stations. Table 7 shows a summary of the bus route information for the routes that serve the site, including service hours, headway, and distance to the nearest bus stop.

Table 8 shows WMATA’s recommended amenities for each type of bus stop. Table 9 shows a detailed inventory of the amenities appearing at each bus stop within the transit study area.

Proposed Transit Service

There are no known planned or proposed transit improvements in the project study area.

Site-Generated Transit Impacts

The proposed development is projected to generate 39 transit trips (17 inbound, 22 outbound) during the AM peak hour and 90 transit trips (45 inbound, 45 outbound) during the PM peak hour.

It is expected that existing transit service can accommodate these new site-generated trips.

Table 7: Local Bus Route Information

Route Number	Route Name	Service Hours at Stop Closest to Site			Headway (minutes)	Walking Distance to Nearest Stop
		Weekdays	Saturdays	Sundays		
M4	Nebraska Avenue Line	6:14am-9:14pm	-	-	11 - 36	0.3 mi (6 min)
N2,4,6	Massachusetts Avenue Line	5:44am-12:07am	5:40am-11:59pm	6:22am-11:14pm	4 - 45	0.1 mi (2 min)
-	AU Shuttle Blue Route	6:00am-12:15am	7:00am-12:15am	8:00am-12:15am	15 - 30	0.2 mi (4 min)
-	AU Shuttle Green Route	7:55am-9:40pm	-	-	85 - 97	0.3 mi (6 min)
-	AU Shuttle Red Express Route	7:00am-11:05pm	8:45am-4:30pm	-	15 - 30	0.2 mi (5 min)

Table 8: WMATA Recommended Bus Stop Amenities

Amenity	Basic Stop		Enhanced Stop	Transit Center Stop
	< 50 daily boardings	≥ 50 daily boardings		
Bus stop flag	●	●	●	●
Route map and schedule	●	●	●	●
5' x 8' landing pad	●	●	●	●
40'/60' x 8' landing pad			●	●
4' sidewalk	●	●	●	●
Bench		●	●	●
Shelter		●	●	●
Lighting (on shelter or within 30' if overhead)	Recommended for stops with early morning and evening service		●	●
Dynamic information signage	Contingent on presence of shelter			
Trash and recycling receptacles	Recommended where surrounding uses may generate trash			

Source: 2019 WMATA *Bus Stop Amenity Reference Guide*

Table 9: Bus Stop Inventory

Location	Stop ID	Routes Served	Amenities								
			Bus stop flag	Route map & sched-ule	Land-ing pad	Side-walk	Bench	Shel-ter	Dy-namic info sign	Light-ing	Trash Recp.
Massachusetts Ave & Fordham Rd (EB)	1002411	N4, N6	●	●	●	●	●	●		●	●
Massachusetts Ave & 48th St (WB)	1002407	N4, N6	●		●	●					●
Massachusetts Ave & Van Ness St (EB)	1002388	N4, N6	●	●	●	●				●	●
Massachusetts Ave & Van Ness St (WB)	1002387	N4, N6	●	●	●	●				●	
Massachusetts Ave & 46th St (WB)	1002341	N4, N6	●	●		●				●	
Massachusetts Ave & Tilden St (EB)	1002339	N4, N6	●		●	●				●	
Massachusetts Ave & 45th St (EB)	1002310	N4, N6	●	●	●	●	●	●		●	●
Massachusetts Ave & 45th St (WB)	1002323	N4, N6	●	●	●	●				●	●
Massachusetts Ave & Ward Cir (WB) / *Katzen Arts Center*	1002283 / *114*	N4, N6 / *Red Express, Green*	●	●	●	●				●	●
Massachusetts Ave & Ward Cir (EB) / *Massachusetts Ave NW*	1002275 / *115*	N4, N6 / *Red Express, Green*	●	●	●	●	●	●		●	
Nebraska Ave & Ward Cir (SB) / *Kerwin Hall*	1003092 / *109*	M4, N2 / *Blue, Green*	●	●	●	●				●	
Nebraska Ave & N Drwy Amer Univ (NB) / *East Campus*	1002227 / *112*	M4, N2, N6 / *Green*	●	●		●	●	●		●	
New Mexico Ave & Nebraska Ave (EB)	1002205	N2, N6	●	●		●				●	●
New Mexico Ave & Nebraska Ave (WB)	1002201	N2	●	●	●	●				●	●
Nebraska Ave & New Mexico Ave (SB)	1002204	M4	●		●	●				●	
Nebraska Ave & New Mexico Ave (NB)	1002197	M4	●		●	●				●	
Massachusetts Ave & Westover Pl (EB)	1002229	N4, N6	●	●	●	●				●	
Massachusetts Ave & Ward Cir (WB)	1002258	N4, N6	●	●	●	●					●
Nebraska Ave & Ward Cir (SB) / *Nebraska Hall - Inbound*	1003710 / *108*	M4, N2 / *Red Express, Blue*	●	●	●	●				●	
Nebraska Ave & Ward Cir (NB) / *Nebraska Hall - Outbound*	1002284 / *102*	M4, N2 / *Red Express, Blue*	●	●	●	●	●	●		●	●
Nebraska Ave & #3700 (SB)	1002292	M4, N2	●	●	●	●				●	
Nebraska Ave & Naval Sec Ctr (NB)	1002304	M4, N2	●	●	●	●	●	●		●	●
Spring Valley Building	*111*	*Red Express, Green*	●		●	●	●	●		●	●
Kogod	*101*	*Blue*			●	●	●	●		●	●
Letts Anderson	*100*	*Blue, Green*			●	●	●	●		●	●

AU Shuttle routes, stop locations, and stop ID's noted in italics.

Figure 23: Existing Transit Facilities

Pedestrian Facilities

This chapter summarizes existing pedestrian access to the site and reviews the impacts of the site on the pedestrian network.

The following conclusions are reached within this chapter:

- Despite some incidences of missing sidewalks, curb ramps, and crosswalks on minor streets near the project site, there are generally adequate pedestrian facilities along primary walking routes between the site and major local destinations;
- The area surrounding the site is free of major barriers to pedestrian connectivity;
- The project is expected to generate pedestrian trips to and from nearby destinations, and the pedestrian facilities surrounding the project can accommodate these new trips; and
- While sidewalks are provided along the Massachusetts Avenue driveway, no sidewalks are provided along the University Avenue site driveway or along University Avenue between the driveway and Wesley Circle.

Pedestrian Study Area

Pedestrian facilities within a quarter-mile of the site were evaluated. There are several streets within the study area that do not have sidewalks, particularly in the residential areas immediately west and northeast of the site. There are also some sidewalks nearby that do not meet minimum width requirements, in addition to having missing or non-compliant crosswalks and curb ramps. Despite these shortcomings, there are generally adequate pedestrian facilities along Massachusetts Avenue NW, which is a primary walking route to major local destinations.

Figure 24 shows suggested pedestrian pathways to nearby destinations, including walking time and distances.

Existing Pedestrian Infrastructure

A detailed inventory of the existing pedestrian facilities within the study area is shown on Figure 25. Sidewalks, crosswalks, and curb ramps are evaluated based on the guidelines set forth by DDOT's *Design and Engineering Manual (2019)* in addition to Americans with Disabilities Act (ADA) standards. These facilities are shown within their respective land use types based on DC's Zoning Regulations of 2016, which determine which of DDOT's sidewalk width requirements apply. These sidewalk width requirements are shown in Table 10.

Table 10: DDOT Sidewalk Width Requirements

Street Type	Curb Walk	Tree/Fur-nishing Zone	Sidewalk Unobstructed Clear Width	Total Minimum Sidewalk Width
Low to Moderate Density Residential	None	4 - 6 feet	6 feet	10 feet
High Density Residential or Light Commercial	1 foot	4 - 8 feet	8 feet	13 feet
Central DC and Commercial Areas	1 - 2 feet	4 - 10 feet	10 feet	16 feet

Source: DDOT *Design and Engineering Manual*

Sidewalks

As shown on Figure 25, the pedestrian study area includes streets within the "Low to Moderate Density Residential" and "High Density Residential or Light Commercial" categories of sidewalk width requirements. There are several streets within the study area that do not have sidewalks, particularly in the residential areas immediately west and northeast of the site. There are also some sidewalks nearby that do not meet minimum width requirements. In some cases, as along the south side of Massachusetts Avenue NW, the sidewalk meets the width requirement of a lower intensity land use, but not its applicable land use. In other cases, as on the American University campus, the sidewalk is not accompanied by a tree/furnishing zone.

Curb ramps

ADA standards require that all curb ramps be provided wherever an accessible route crosses a curb and must have a detectable warning. Additionally, curb ramps shared between two crosswalks are not desired but where they are present, a 48" clear space is required outside active vehicle traffic lanes and within marked crossings. As shown on Figure 25, there are some intersections near the project site that are missing a curb ramp and/or crosswalk on one or more leg.

Crosswalks

DDOT's *Design and Engineering Manual (2019)* requires crosswalks at all intersections or mid-block locations controlled by vehicular and/or pedestrian traffic signals or all-way stop signs. Additionally, high-visibility crosswalks are required at all uncontrolled crosswalks and all crosswalks (including signalized or stop-controlled crosswalks) leading to a block with a school, within a designated school zone area, along a designated school walking route, on blocks adjacent to a Metro station, in areas with moderate to high pedestrian volumes, and in locations with high frequencies of conflicts with pedestrians and turning vehicles.

As shown on Figure 25, there are several instances near the site where crosswalks are not present, or a crosswalk is present but not a high-visibility type at a location where it is required.

Proposed Pedestrian Infrastructure

The Wesley Campus Plan will provide a new sidewalk and streetscape along the buildings northern side to connect to provide links to adjacent pedestrian infrastructure within the campus.

The Applicant is also coordinating with American University (AU) on options to maintain the existing pedestrian connection between the two campuses, located on the east side of the project site.

Site-Generated Pedestrian Impacts

The proposed development is projected to generate 19 pedestrian trips (8 inbound, 11 outbound) during the AM peak hour and 45 pedestrian trips (23 inbound, 22 outbound) during the PM peak hour.

The origins and destinations of these pedestrian trips are likely to be:

- Retail and restaurant locations; and
- Neighborhood destinations such as libraries and parks.

In addition to these trips, the transit trips generated by the site will also generate pedestrian demand between the site and nearby bus stops. It is expected that existing pedestrian facilities can accommodate these new site-generated trips.

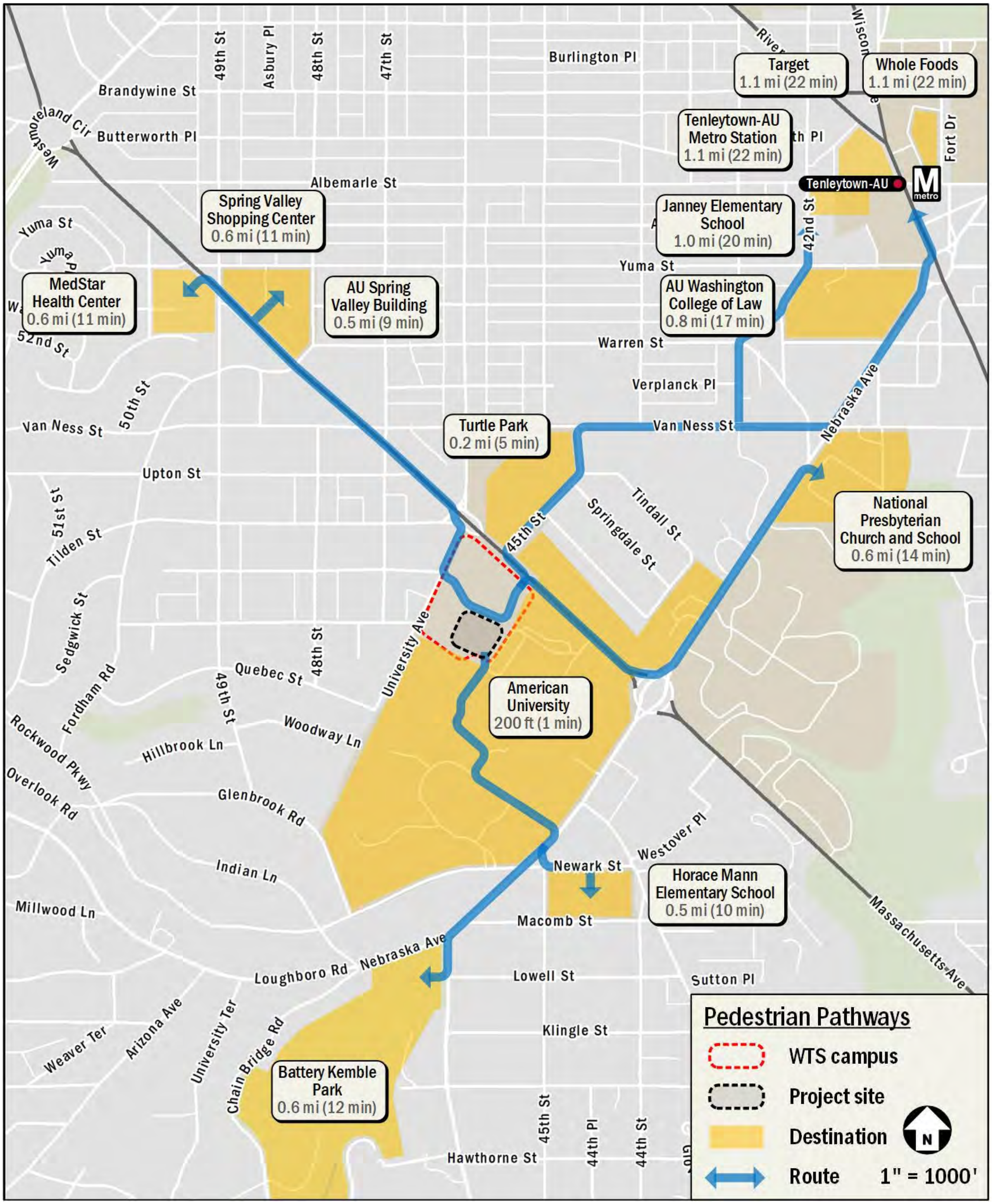

Figure 24: Existing Pedestrian Pathways

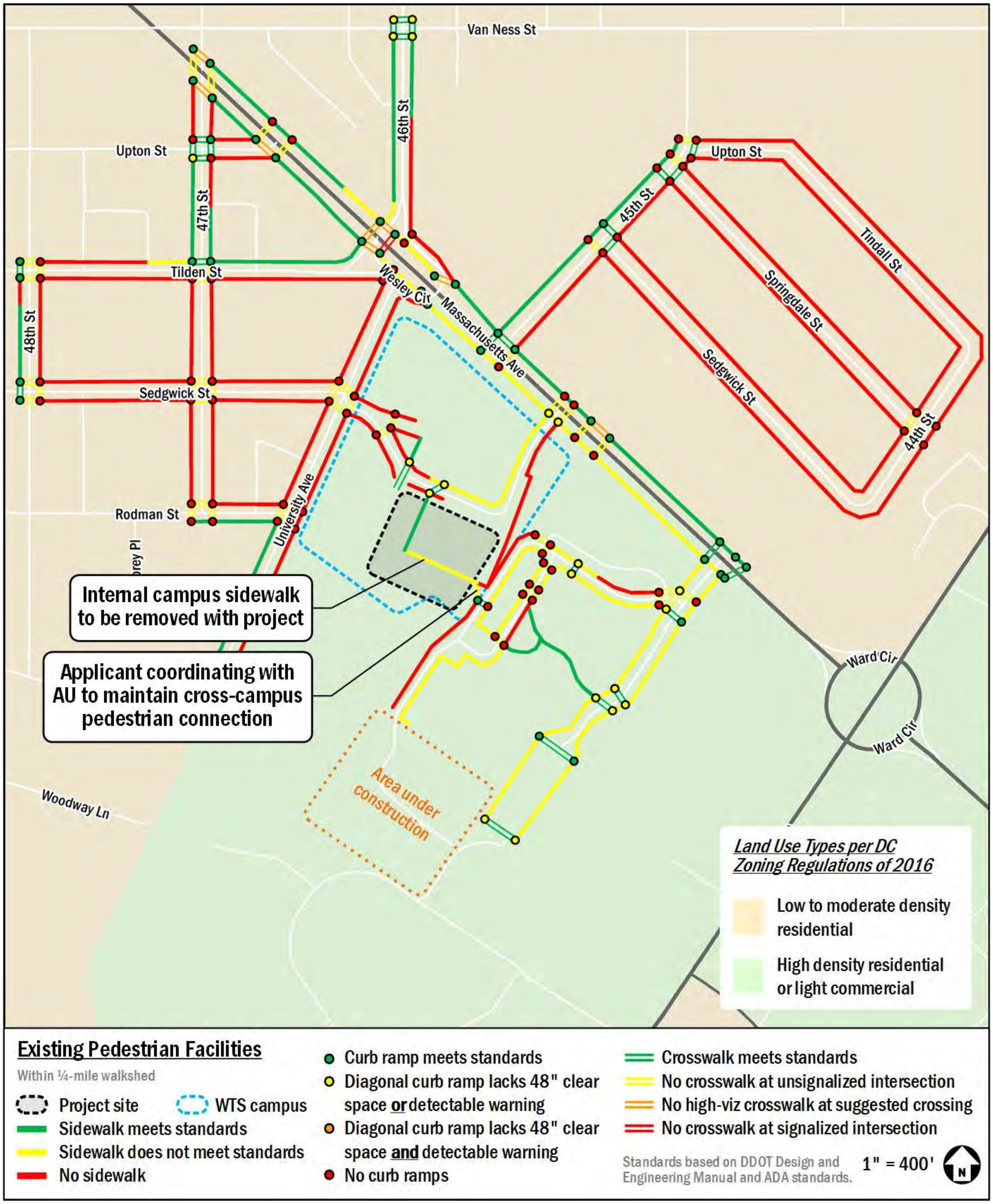

Figure 25: Existing Pedestrian Facilities

Bicycle Facilities

This chapter summarizes existing bicycle access to the site and reviews the impacts of the site on the bicycle network.

The following conclusions are reached within this chapter:

- The site is proximate to several on-street bicycle facilities;
- Several planned and proposed bicycle projects will improve bicycle access to the site;
- The project is expected to generate a manageable number of bicycle trips; therefore, site-generated bicycle trips can be accommodated on existing infrastructure; and
- The project will include short- and long-term bicycle parking that meets zoning requirements.

Existing Bicycle Facilities

The site is located approximately 0.5 miles northwest of the bike lanes on New Mexico Avenue NW, 0.7 miles southwest of the bike lanes on Van Ness Street NW, and 0.5 miles southwest of the on-street signed bike routes on 42nd and 43rd Streets NW. Using these facilities, bicyclists have access to several off-street bike facilities, such as the Rock Creek Trail and the Klingle Valley Trail.

Existing bicycle facilities are shown on Figure 26.

Capital Bikeshare

In addition to personal bicycles, the Capital Bikeshare program provides an additional cycling options for residents, employees, and visitors of the proposed project. The program has placed over 500 bikeshare stations across the Washington, DC metropolitan area with over 4,500 bicycles in the fleet. The following Capital Bikeshare stations are within a quarter-mile of the site:

- A 14-dock station at Ward Circle / American University, 0.2 miles east of the site; and
- A 19-dock station at American University East Campus, 0.4 miles southeast of the site.

Figure 26 illustrates these and other Capital Bikeshare locations in the area.

Shared Mobility

Shared mobility service in the District is provided by eight (8) electric-assist scooter (e-scooter) and electric-assist bicycle (e-bike) companies including Bird, Lime, Lyft, Razor, Skip, Spin, Helbiz, and Jump. These Personal Mobility Devices (PMDs) are provided by private companies that give registered users access to a variety of e-scooter and e-bike options. These devices are used through each company-specific mobile phone application. Many PMDs do not have designated stations where pick-up/drop-off activities occur like with Capital Bikeshare; instead, many PMDs are parked in public space, most commonly in the “furniture zone” (the portion of sidewalk between where people walk and the curb, often where other street signs, street furniture, trees, parking meters, etc. are located). Currently, PMD pilot/demonstration programs are underway in Arlington County, the District, Fairfax County, the City of Alexandria, and Montgomery County.

Planned Bicycle Facilities

There are several bicycle improvements near the site that are planned and scheduled to open in the near future. These are shown on Figure 27.

DDOT Bikeways Expansion

DDOT’s “20 by 22” initiative is a plan to build 20 miles of new protected bike lanes in the District by 2022. The plan identifies the following street segments in the project site area to receive protected bike lanes:

- Massachusetts Avenue NW from the Maryland border to Ward Circle;
- Nebraska Avenue NW from Ward Circle to Warren Street; and
- New Mexico Avenue NW from Nebraska Avenue to Reservoir Road.

Proposed Bicycle Facilities

Several bicycle improvements are proposed near the site but are not yet funded or planned. These are shown on Figure 27.

MoveDC Bicycle Element

The bicycle element of *MoveDC*, the District’s multimodal long-range transportation plan, includes the following bicycle improvements near the development that are proposed but not yet funded or planned:

- Bicycle improvements along Massachusetts Avenue NW, Nebraska Avenue NW, Arizona Avenue NW, Loughboro Road NW, 49th Street NW, Albermarle Street NW, Glenbrook Road NW, and Rockwood Parkway NW.

Capital Bikeshare Development Plan

DDOT's Capital Bikeshare Development Plan was originally released in 2016 to guide the continued growth of Capital Bikeshare in the District of Columbia. The most recent update of the Development Plan was released in 2020 and includes the following:

- A planned station at Turtle Park, 0.2 miles from the site;
- A proposed station at Quebec Street and 48th Street NW, 0.4 miles from the site; and
- A proposed station at 47th Street and Warren Street NW, 0.5 miles from the site.

Site-Generated Bicycle Impacts

This section summarizes the impacts of the project on bicycling conditions surrounding the project site.

On-site Bicycle Infrastructure

The project will meet zoning requirements by providing at least 62 long-term bicycle parking spaces inside the building and at least 12 short-term bicycle parking spaces.

Bicycle Trip Generation

The proposed project is projected to generate four (4) bicycle trips (2 inbound, 2 outbound) during the AM peak hour and 10 bicycle trip (4 inbound, 6 outbound) during the PM peak hour.

It is expected that existing bicycle facilities can accommodate these new site-generated trips.

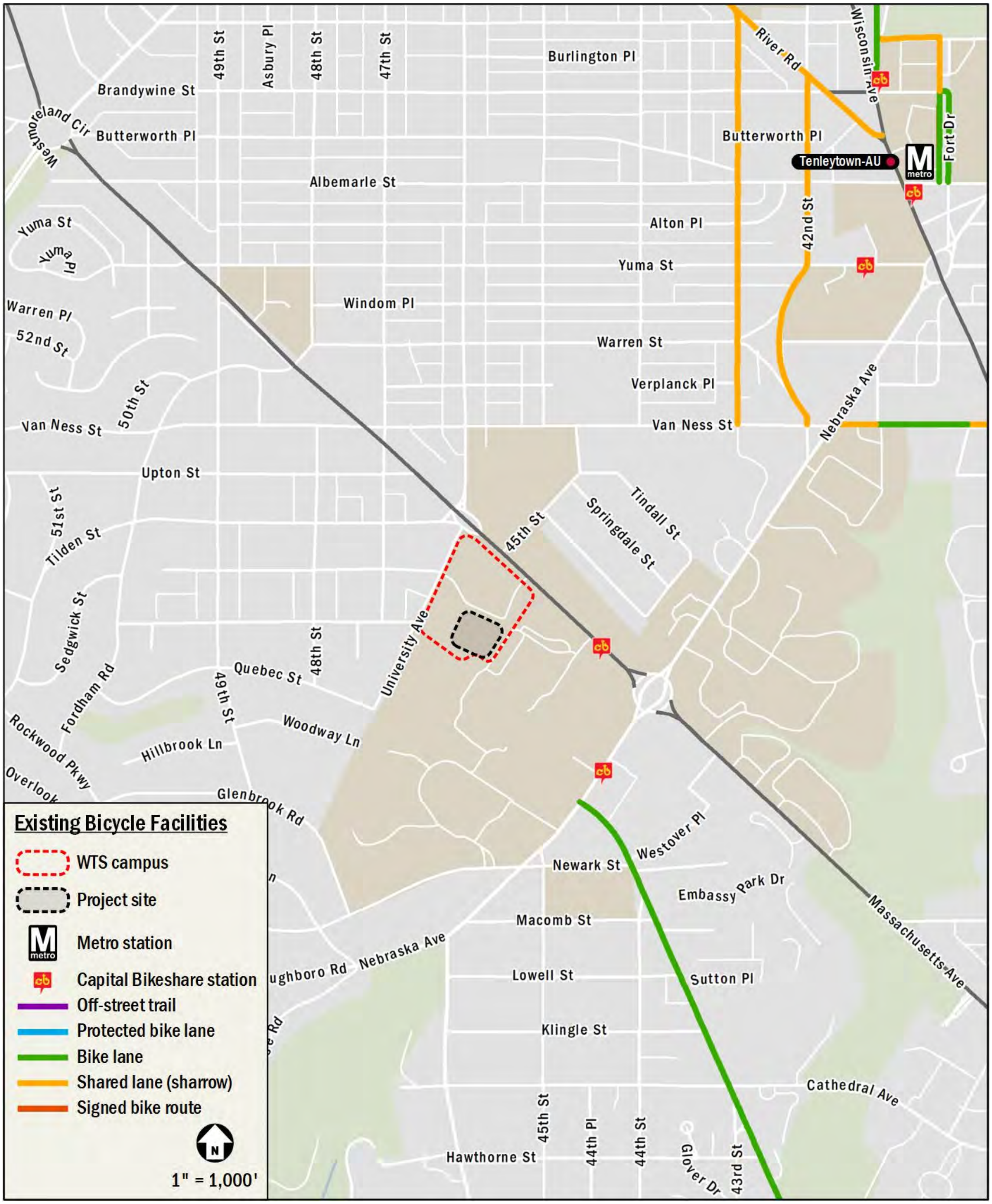

Figure 26: Existing Bicycle Facilities

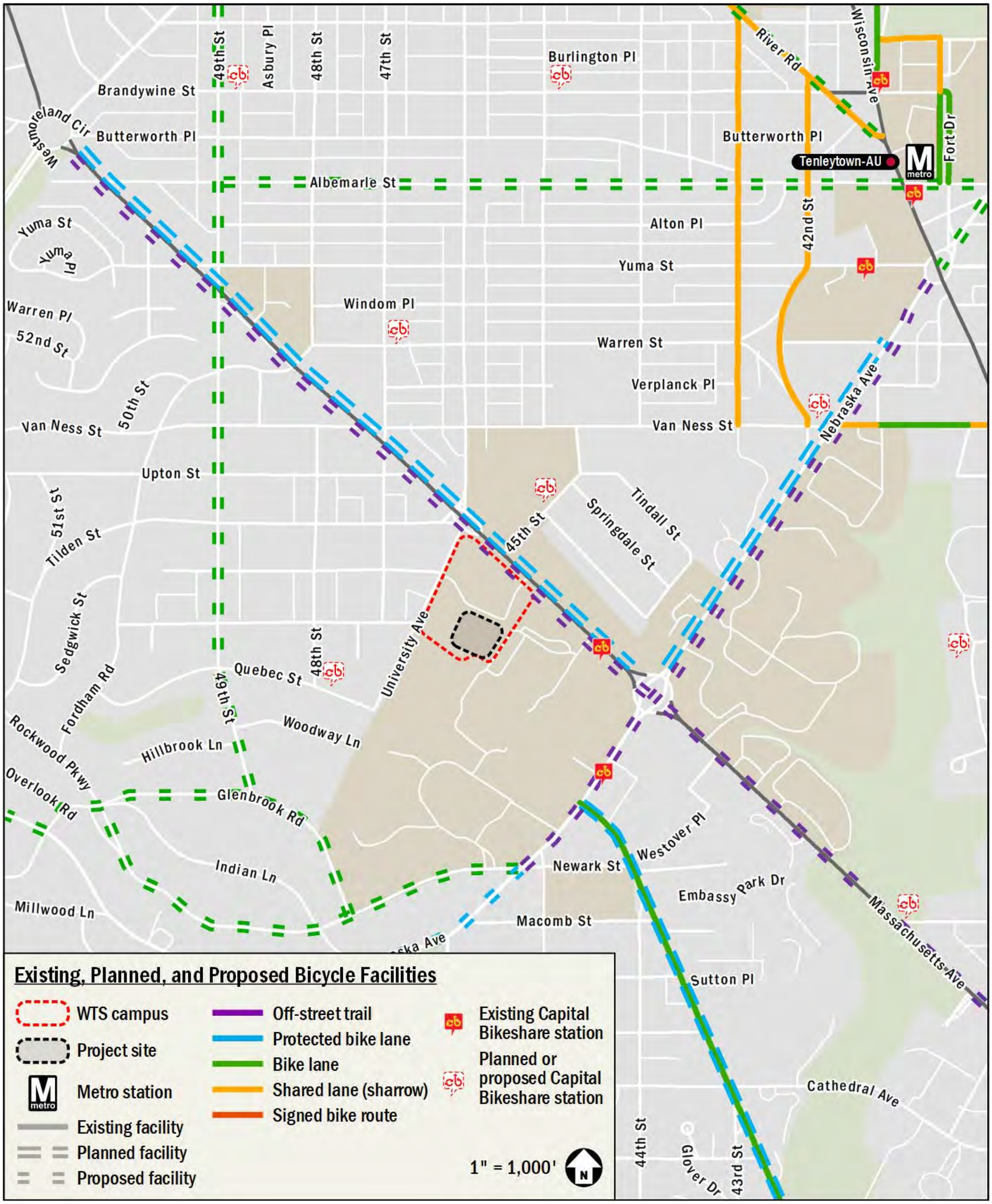

Figure 27: Existing, Planned, and Proposed Bicycle Facilities

Safety Analysis

This chapter qualitatively reviews any vehicle, pedestrian, or bicycle conflicts at the study area intersections or street links within the study area. This review notes any intersections within the study area that have been identified by DDOT as high crash locations and makes recommendations to improve safety conditions. These recommendations are presented for DDOT's consideration, not for the Applicant to complete as part of the proposed project. It should be noted that a new pedestrian HAWK signal has recently been installed to provide signalized pedestrian crossing of Massachusetts Avenue at 45th Street.

Summary of Safety Analysis

A safety analysis was performed to determine if there are any intersections that pose obvious conflicts with vehicles, pedestrians, or bicyclists. This was determined based on data included in DDOT's most recent *Traffic Safety Statistics Report* (2016-2018), *Vision Zero Action Plan*, and Open Data DC Vision Zero Safety data.

Based on available data, no intersections in the study area were identified by DDOT as hazardous/high crash intersections. However, a qualitative review of the crash data available through the DDOT-maintained and publicly-available "Crashes in DC" database was performed to identify study intersections in which conditions for vehicles, pedestrians, and bicyclists can be improved.

Based on a review of facilities in the area and crash data, two (2) intersections were identified for further evaluation. The following section details the potential conflicts at the identified study area intersections.

Potential Impacts

This section reviews the intersections identified to pose potential conflicts to vehicles, pedestrians, or bicyclists.

Massachusetts Avenue and Wesley Circle NW

While this intersection was not identified in DDOT's *Traffic Safety Statistics Report* (2016-2018) as having comparatively high rates of crash frequency, the DDOT-maintained "Crashes in DC" database shows a moderate number of crashes at this intersection since 2016, as shown on Figure 28, including one (1) pedestrian-involved crash, as shown on Figure 29.

This intersection operates as a four-legged, unsignalized intersection. Crosswalks are currently provided at every location where there is a traffic signal and/or stop sign, which excludes the through lanes of Massachusetts Avenue NW. However, the crosswalks at this intersection are not high-visibility although they are in an area with moderate to high pedestrian volumes. Curb ramps that include detectable warnings per ADA standards are provided on every corner.

As shown in Figure 27, protected bike lanes are proposed along Massachusetts Avenue NW that would likely improve conditions for both bicyclists and pedestrians at this intersection. Protected bike lanes could improve conditions for bicyclists by providing physical separation from vehicular traffic, and could improve conditions for pedestrians by reducing the distance across vehicle lanes pedestrians needed to cross.

This report recommends that DDOT perform a safety audit at this intersection as part of its Traffic Safety Assessment program to further evaluate the extent of safety issues and determine if any action is needed.

Massachusetts Avenue and Glover Gate/Katzen Driveway NW

While this intersection was not identified in DDOT's *Traffic Safety Statistics Report* (2016-2018) as having comparatively high rates of crash frequency, the DDOT-maintained "Crashes in DC" database shows a moderate number of crashes at this intersection since 2016, as shown on Figure 28, including two (2) pedestrian-involved crashes and one (1) bicycle-involved crash, as shown on Figure 29 and Figure 30.

This intersection operates as a four-legged, signalized intersection. Crosswalks are currently provided at every leg of the intersection. Curb ramps that include detectable warnings per ADA standards are provided on every corner.

As shown in Figure 27, protected bike lanes are proposed along Massachusetts Avenue NW that would likely improve conditions for both bicyclists and pedestrians at this intersection. Protected bike lanes could improve conditions for bicyclists by providing physical separation from vehicular traffic, and could improve conditions for pedestrians by reducing the distance across vehicle lanes pedestrians needed to cross.

This report recommends that DDOT perform a safety audit at this intersection as part of its Traffic Safety Assessment program to further evaluate the extent of safety issues and determine if any action is needed.

Figure 28: Total Crashes (2016 to present)

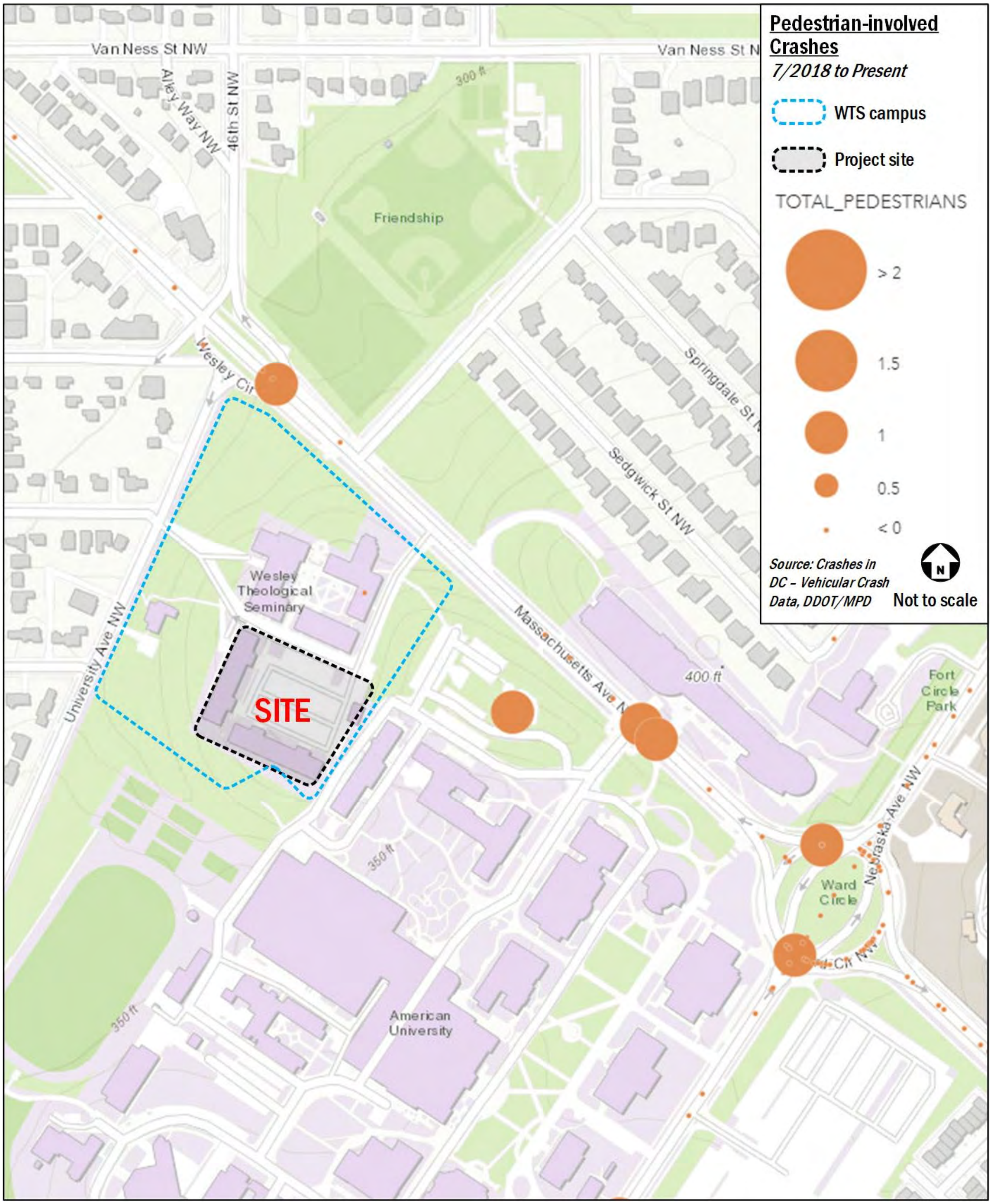

Figure 29: Pedestrian-involved Crashes (2018 to present)

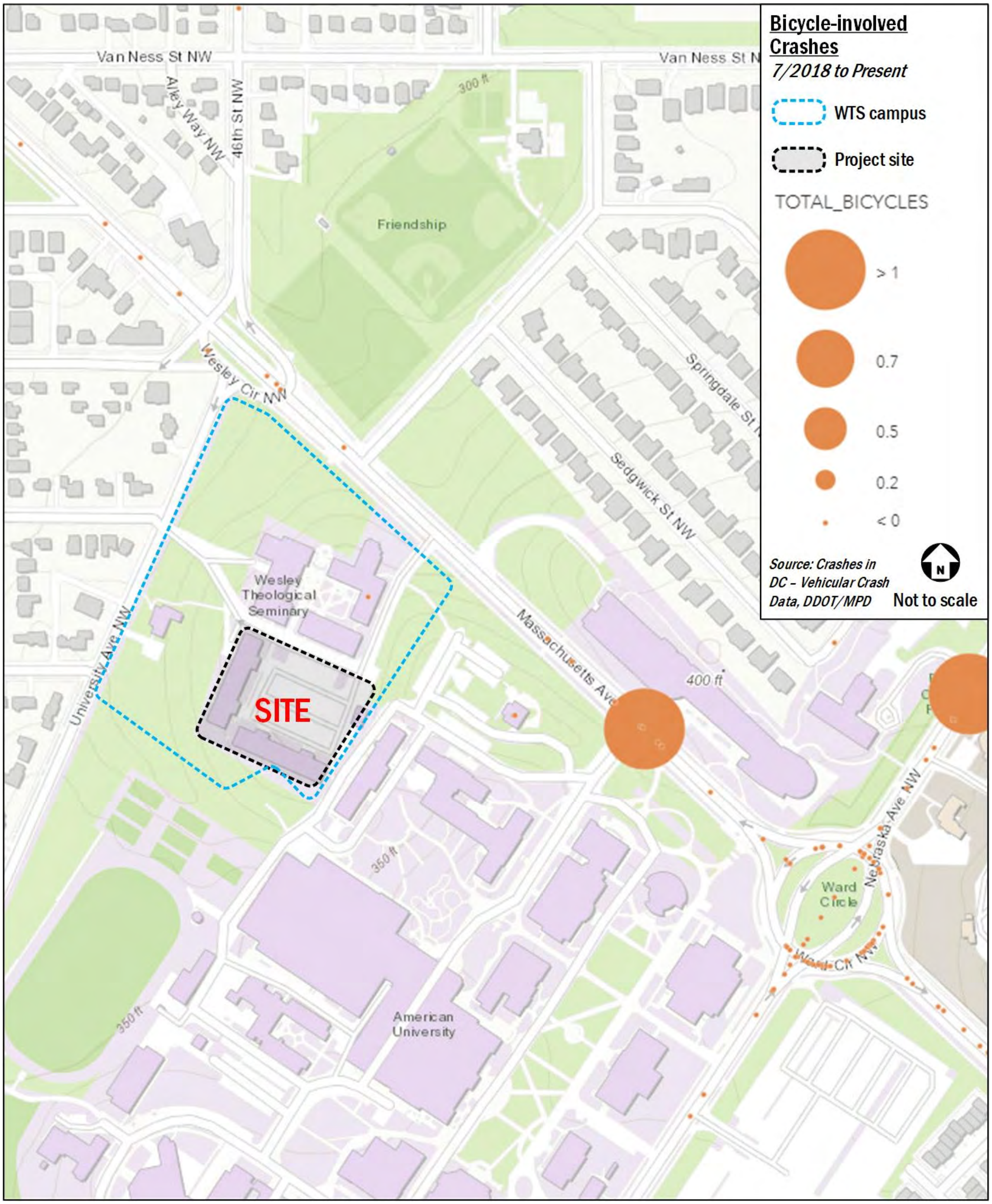

Figure 30: Bicycle-involved Crashes (2018 to present)

Summary and Conclusions

This report has evaluated whether the Wesley Campus Plan will generate a detrimental impact to the transportation network surrounding the site. This evaluation is based on a technical comparison of the Existing Conditions, Background Conditions, and Total Future Conditions. This report concludes that **the project will not have a detrimental impact** to the surrounding transportation network assuming the proposed site design elements are implemented.

Proposed Project

The development site location is within the WTS campus, which is generally bounded by University Avenue NW to the west, Massachusetts Avenue NW to the north, and the American University (AU) campus to the east and south. The portion of the site to be redeveloped is currently occupied by a surface parking lot and two (2) student housing and administration buildings.

The proposed project includes removing the surface parking lot and existing buildings, replacing them with a new student housing building containing approximately 215 dwelling units, 1,535 square feet of retail spaces, and 350 below-grade parking spaces.

The proposed student housing building will be for WTS and AU students and may also house immediate families, faculty and staff and building employees. The housing building will not otherwise serve the general public.

Multimodal Overview

Trip Generation

The Wesley Campus Plan is expected to generate new trips within the surrounding transportation network across all transportation modes during the morning and afternoon peak hours. However, with the implementation of a Transportation Demand Management (TDM) plan as part of the project, the resulting new trips generated by the project will not have a detrimental impact on the transportation network. The multimodal trip generation for the proposed project is as follows:

- <u>AM Peak Hour:</u> 14 vehicles/hour, 39 transit riders/hour, four (4) bicycle trips/hour, and 19 walking trips/hour.
- <u>PM Peak Hour:</u> 33 vehicles/hour, 90 transit riders/hour, 10 bicycle trips/hour, and 45 walking trips/hour.

Transit

The site is located 1.1 miles from the Tenleytown-AU Metro station on the Red Line and is served by local bus routes.

The site is expected to generate a manageable amount of transit trips, and the existing service can accommodate these new trips.

Pedestrian

The site is surrounded by a generally adequate pedestrian network. Despite some incidences of missing sidewalks, curb ramps, and crosswalks on minor streets near the project site, there are generally adequate pedestrian facilities along primary walking routes between the site and major local destinations.

The site is expected to generate a manageable amount of pedestrian trips, and the existing pedestrian facilities can accommodate these new trips.

Bicycle

The site is proximate to several on-street bicycle facilities, including the bike lanes on New Mexico Avenue NW and Van Ness Street NW, and the on-street signed bike routes on 42nd and 43rd Streets NW. Using these facilities, bicyclists have access to several off-street bike facilities, such as the Rock Creek Trail and the Klingle Valley Trail.

Several planned and proposed bicycle projects will improve bicycle access to the site, including protected bike lanes on Massachusetts Avenue NW, Nebraska Avenue NW, and New Mexico Avenue NW.

The project will include long-term bicycle parking inside the building and short-term bicycle parking along the perimeter of the site that meets zoning requirements.

The site is expected to generate a manageable amount of bicycle trips, and the existing bicycle facilities can accommodate these new trips.

Vehicular

The site is accessible via Massachusetts Avenue NW, a principal arterial which connects the site to expressways within the District such as the Southeast Freeway (I-695), the Southwest Freeway (I-395), and the Anacostia Freeway (DC-295). These expressways connect with the Capital Beltway (I-495) and other regional Interstates.

To identify the project’s impact on the transportation network, future conditions were analyzed with and without the project. Intersection analyses were performed to calculate the average delays and queues for vehicles at each of the study intersections. These average delays and queues were compared to the acceptable levels of delay and queue impacts set by DDOT standards to determine if the project will negatively impact the study area.

Further, future conditions with the proposed development were analyzed under the following two scenarios:

- Existing Access: University Avenue egress driveway remains open outbound site traffic during peak periods, consistent with existing conditions.
- Proposed Access: University Avenue egress driveway restricted during AM and PM peak periods, except for delivery vehicles that would still be permitted to use the driveway.

The analysis concluded that one (1) intersection would meet DDOT’s delay-related threshold for mitigation under the Existing Access scenario and no intersections under Proposed Access scenario.

After exploring options for mitigating impacts at this intersection, this report recommends implementing a robust Transportation Demand Management (TDM) plan consistent with DDOT’s Baseline Plan as a mitigation measure.

Safety Recommendations

A qualitative review of the crash data available through the DDOT-maintained and publicly-available “Crashes in DC” database was performed to identify study intersections, if any, in which conditions for vehicles, pedestrians, and bicyclists may be improved.

Based on a review of facilities in the area and relevant crash data, two (2) intersections were identified for further evaluation. Recommendations for these intersections, presented for DDOT’s consideration and not for the Applicant to complete as part of the proposed project, are summarized below:

Massachusetts Avenue and Wesley Circle NW

Installation of the planned protected bike lanes along Massachusetts Avenue NW would improve conditions for bicyclists and pedestrians. Further, a safety audit should be performed as part of DDOT’s Traffic Safety Assessment program.

Massachusetts Avenue and Glover Gate/Katzen Driveway NW

Installation of the planned protected bike lanes along Massachusetts Avenue NW would improve conditions for bicyclists and pedestrians. Further, a safety audit should be performed as part of DDOT’s Traffic Safety Assessment program.

Transportation Demand Management (TDM) Plan

Per the DDOT CTR guidelines, the goal of implementing TDM measures is to reduce the number of single occupancy vehicles and vehicle ownership within the District. The promotion of various programs and existing infrastructure includes maximizing the use of transit, bicycle, and pedestrian facilities. DDOT has outlined expectations for TDM measures in the CTR guidelines, and this project is proposing to implement a TDM plan consistent with these guidelines based on the expected impact of the project, as discussed in the Project Design section of this report.

Summary

This report concludes that the Wesley Campus Plan will not have a detrimental impact on the surrounding transportation network assuming the proposed site design elements are implemented.

The project has several positive design elements that minimize potential transportation impacts, including but not limited to the following:

- The site’s proximity to transit service and bicycle infrastructure;
- The site’s location within a generally adequate pedestrian network along major walking routes;
- The site’s loading facility design, which maintains loading activity within private property and provides loading circulation that ensures head-in/head-out truck movements are performed from the public roadway network;
- The inclusion of secure long-term bicycle parking spaces that meet zoning requirements;
- The inclusion of short-term bicycle parking spaces within the site that meet zoning requirements; and
- A TDM plan that reduces the demand of single-occupancy, private vehicles during peak period travel times and shifts single-occupancy vehicular demand to off-peak periods.

Transportation Technical Attachments

Wesley Campus Plan

Washington, DC

April 29, 2022

GOROVE SLADE
Transportation Planners and Engineers

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(Note: Click on heading to navigate directly to each section of the Technical Attachments)

A. Truck Maneuvering Diagrams

SU-30 INBOUND

SU-30 OUTBOUND

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Landmark Housing at Wesley Theological Seminary: Loading Analysis

Bohler DC
November 19, 2021
Sheet 1 of 7

NW, Washington, DC

SCALE: 1" = 60'

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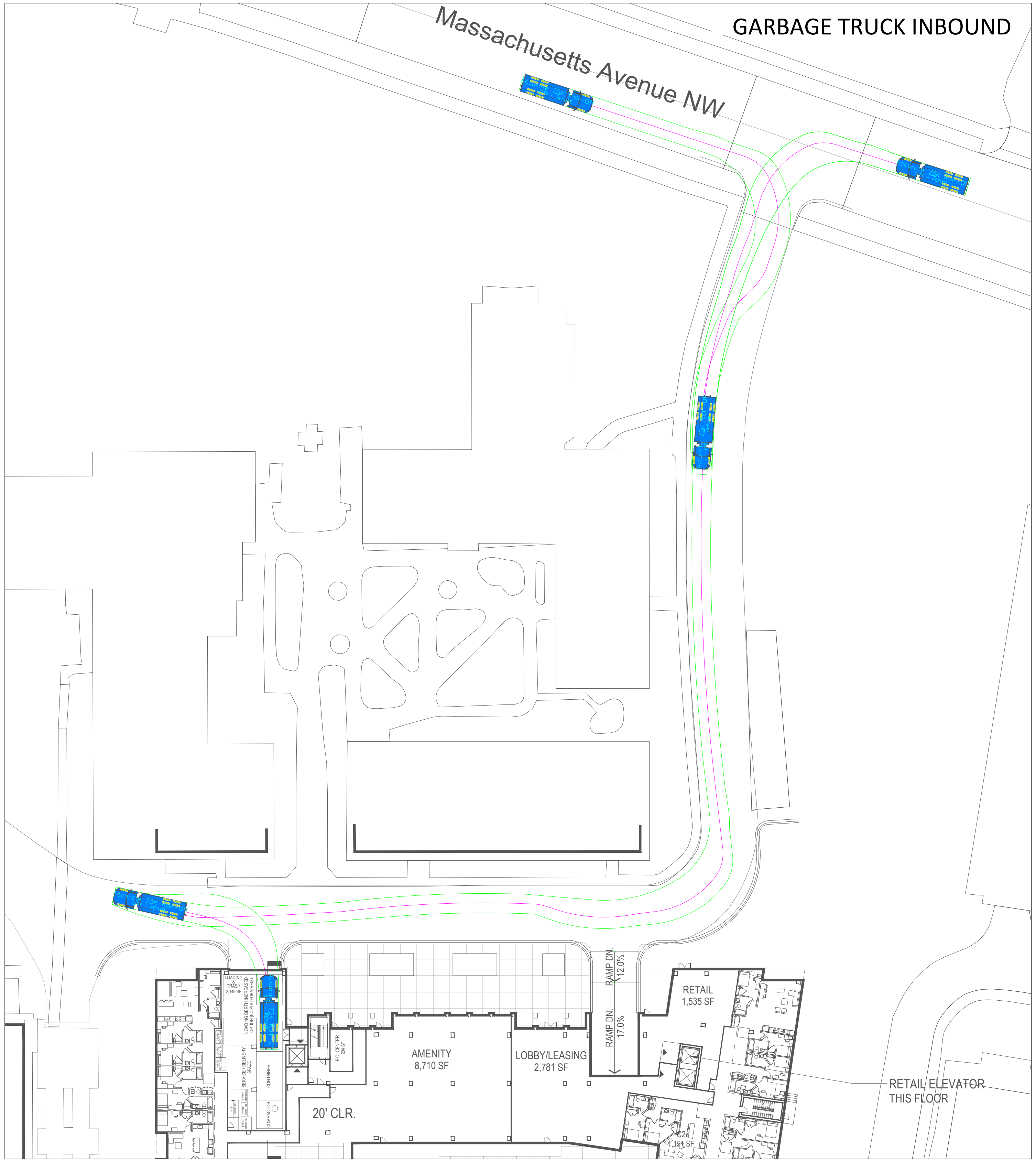
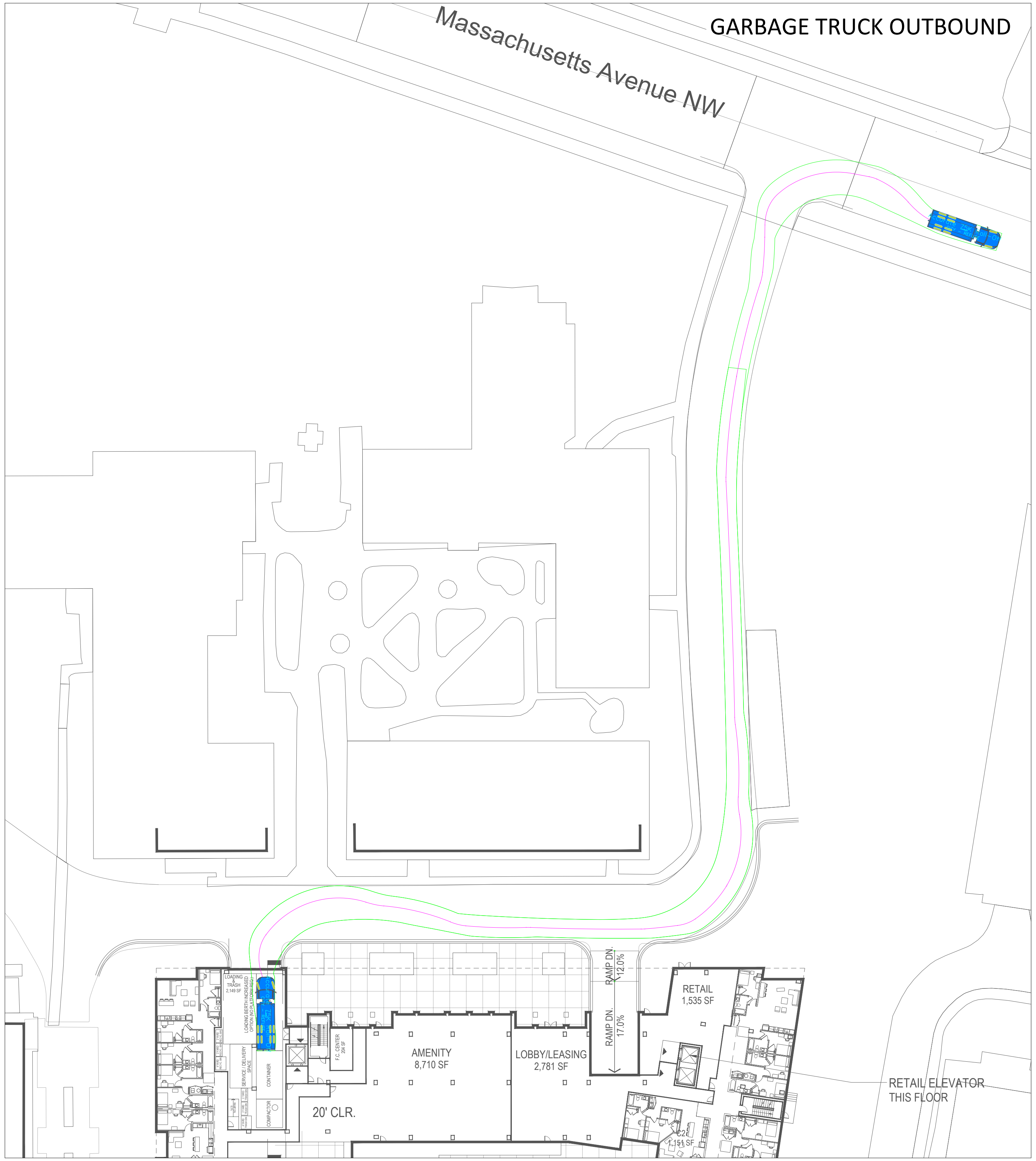
ZONING COMMISSION
District of Columbia
CASE NO.22-13
EXHIBIT NO.15A2


GARBAGE TRUCK INBOUND


GARBAGE TRUCK OUTBOUND

GOROVE SLADE
Transportation Planners and Engineers

Landmark Housing at Wesley Theological Seminary: Loading Analysis

Bohler DC
November 19, 2021
Sheet 2 of 7

NW, Washington, DC

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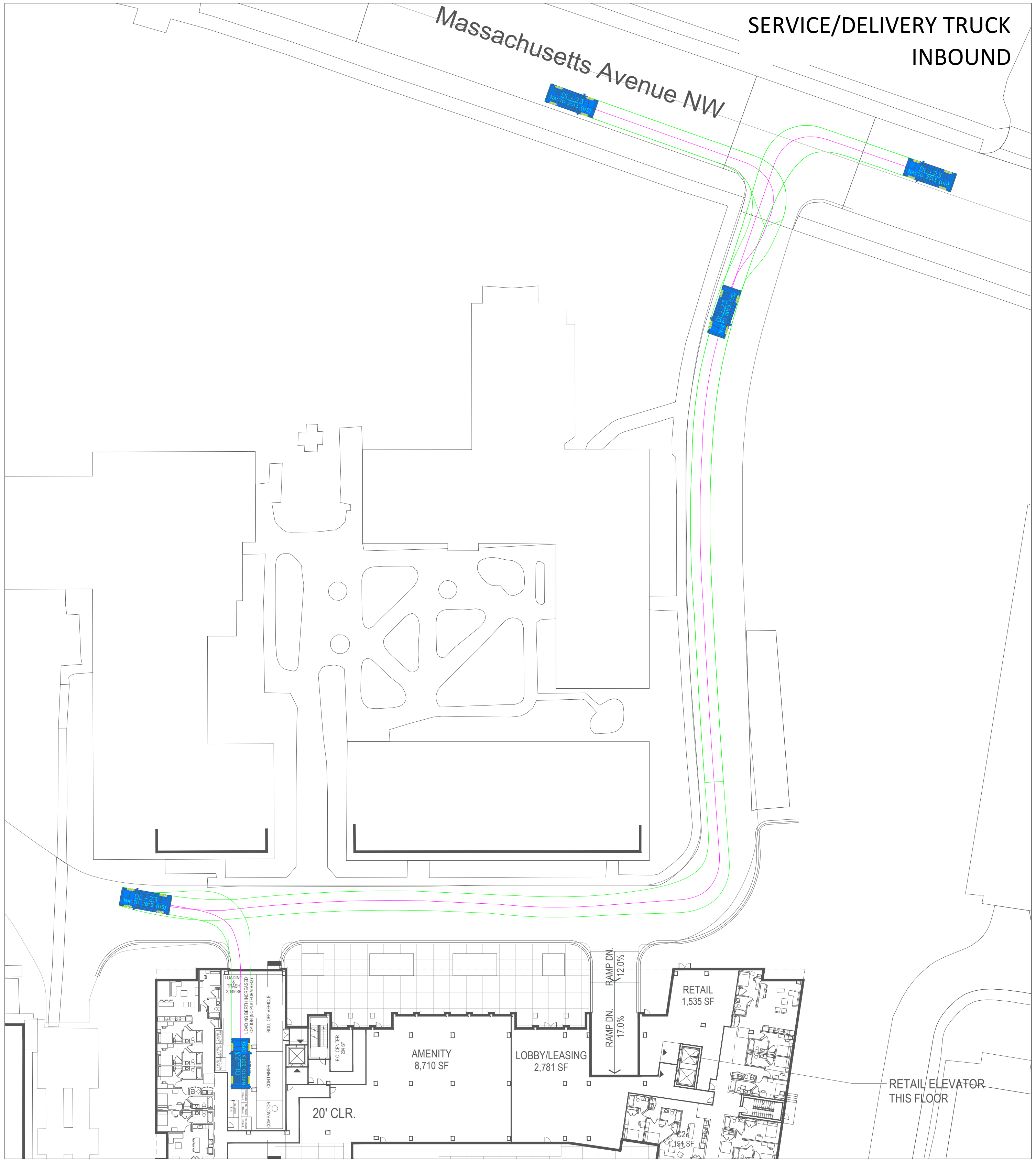
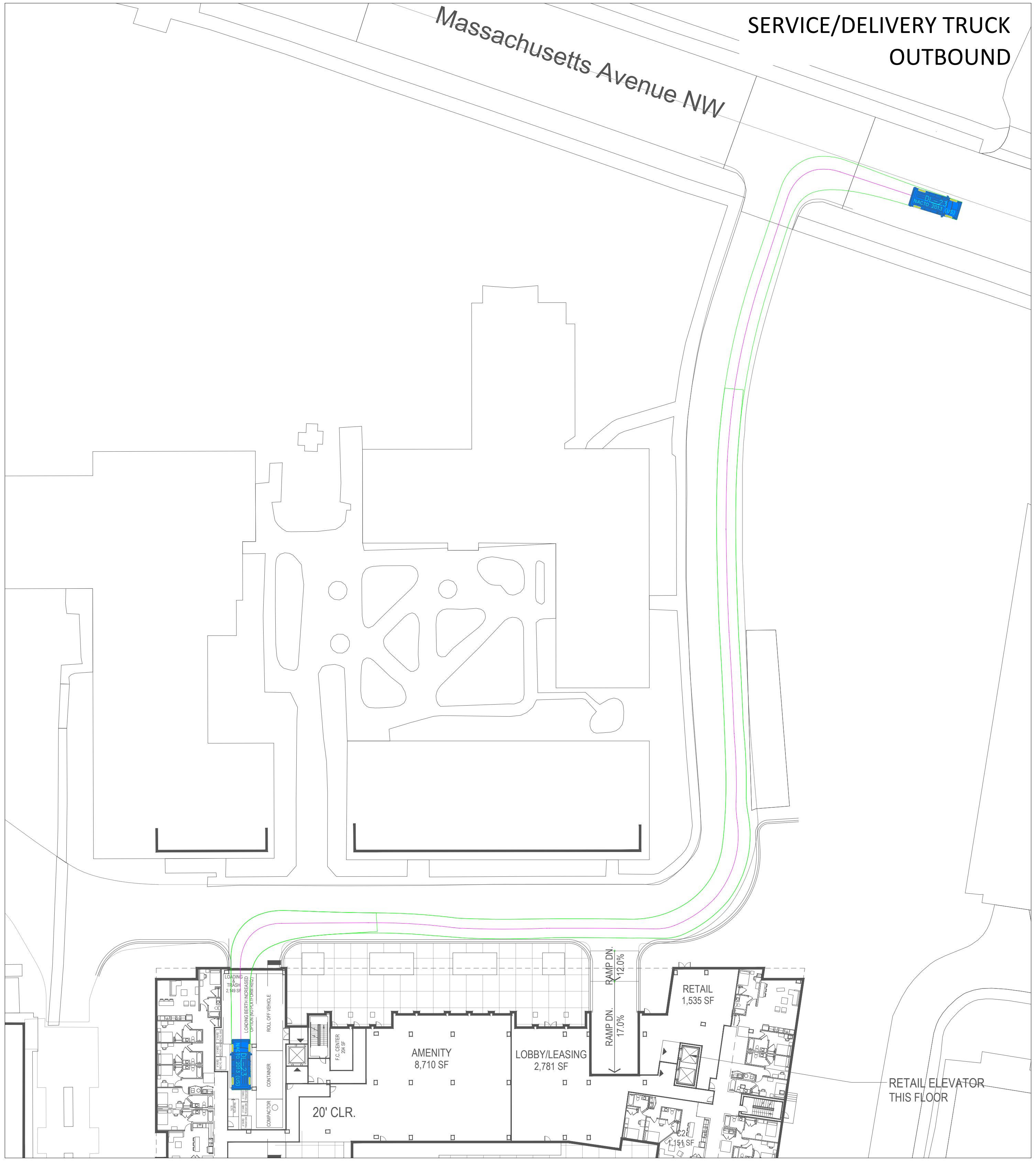
SCALE: 1" = 60'



SERVICE/DELIVERY TRUCK
INBOUND



SERVICE/DELIVERY TRUCK
OUTBOUND

GOROVE **SLADE**
Transportation Planners and Engineers

Landmark Housing at Wesley Theological Seminary: **Loading Analysis**
Bohler DC
November 19, 2021
Sheet 3 of 7

NW, Washington, DC

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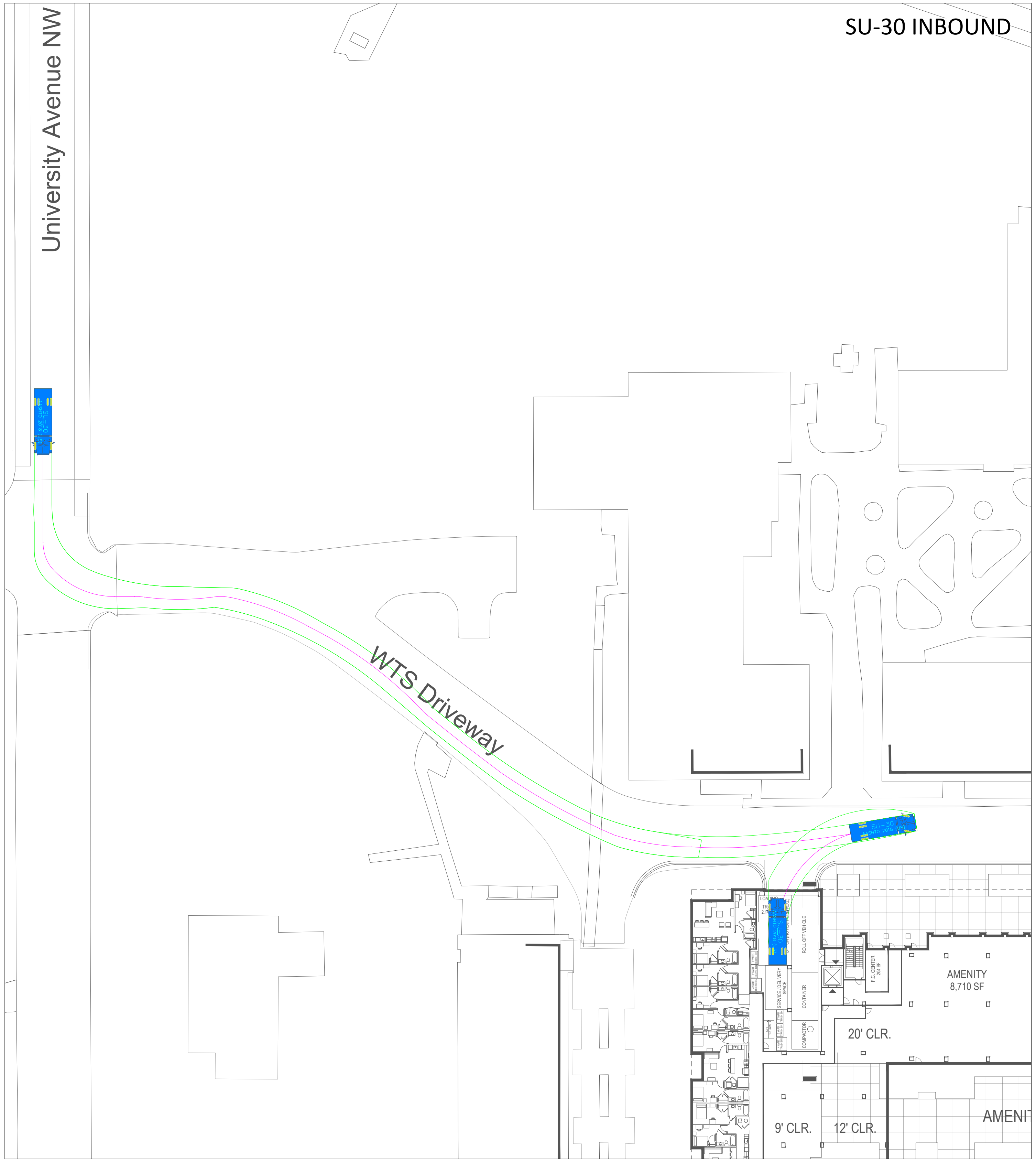

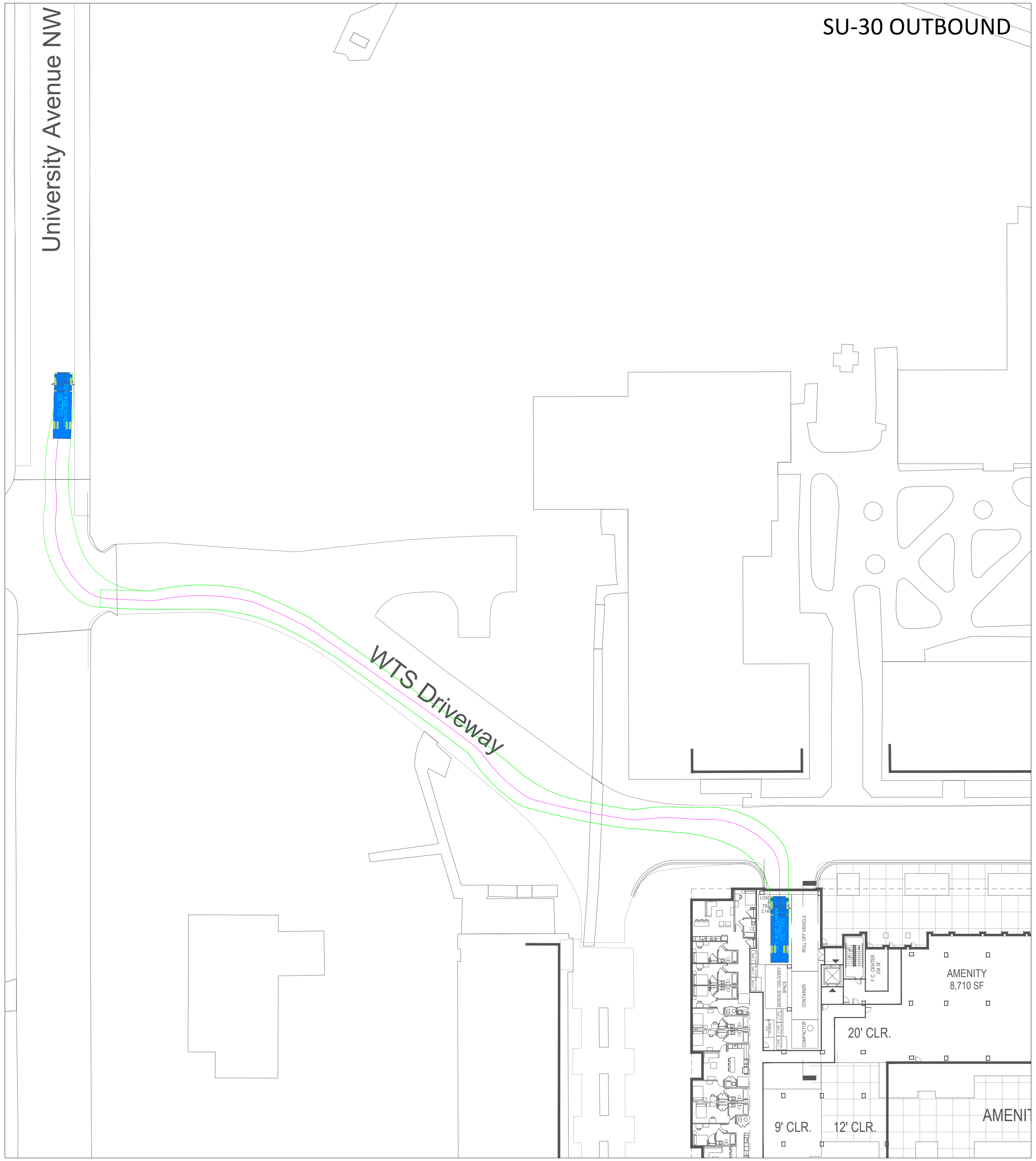

GOROVE **SLADE**
Transportation Planners and Engineers

Landmark Housing at Wesley Theological Seminary: Loading Analysis

Bohler DC
November 19, 2021
Sheet 4 of 7

NW, Washington, DC

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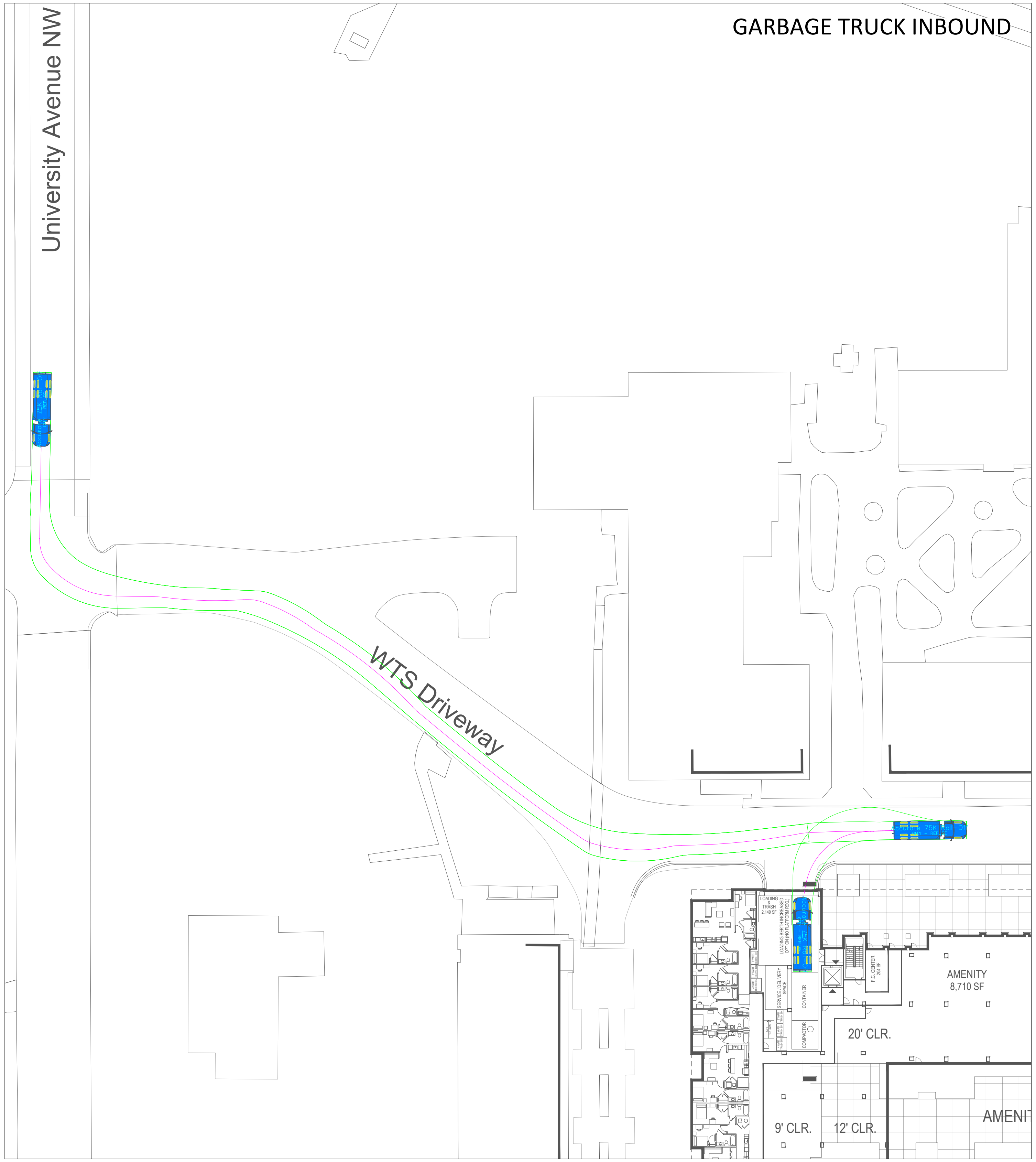
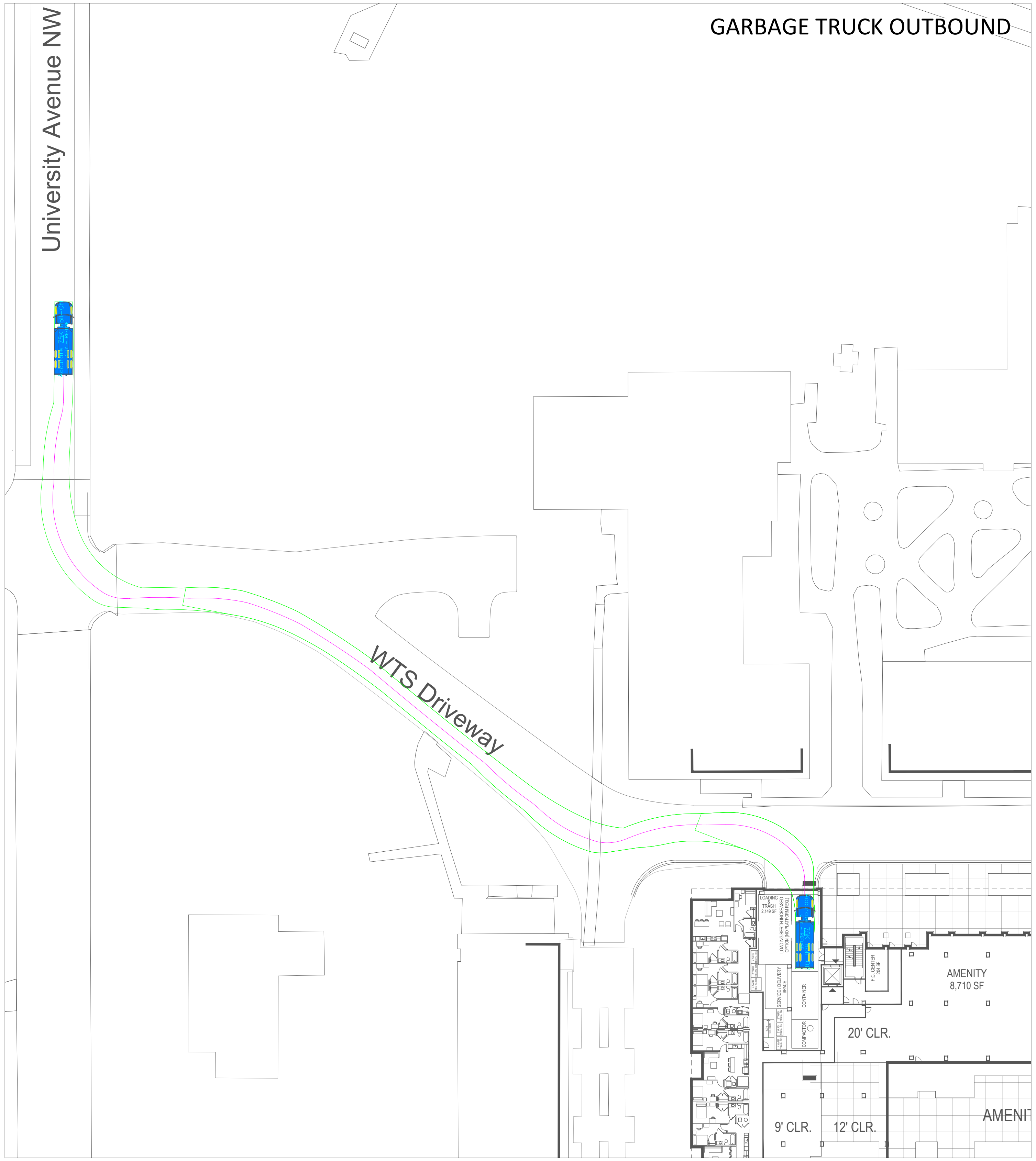

GARBAGE TRUCK INBOUND


GARBAGE TRUCK OUTBOUND

GOROVE SLADE
Transportation Planners and Engineers

Landmark Housing at Wesley Theological Seminary: Loading Analysis

Bohler DC
November 19, 2021
Sheet 5 of 7

NW, Washington, DC

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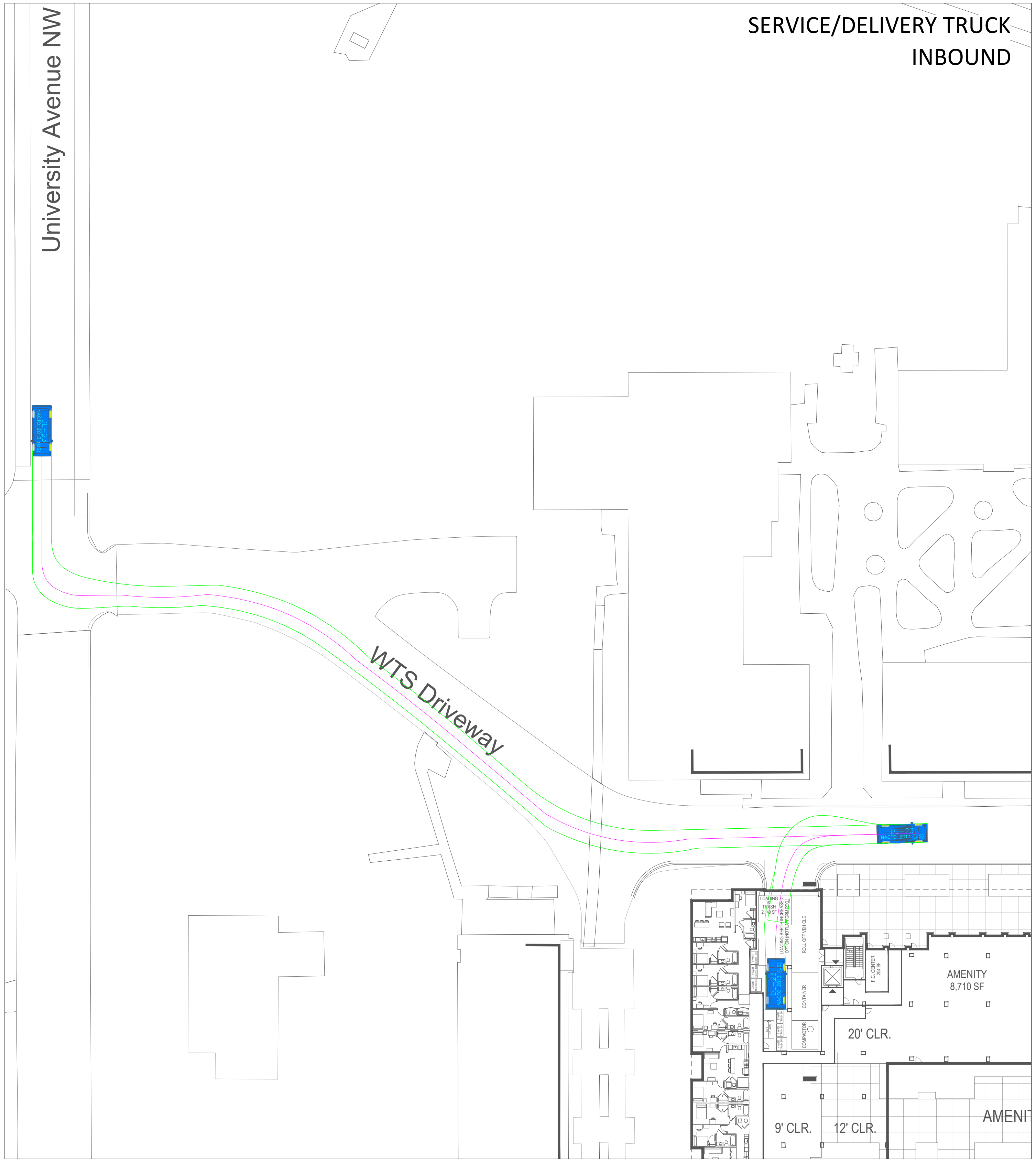
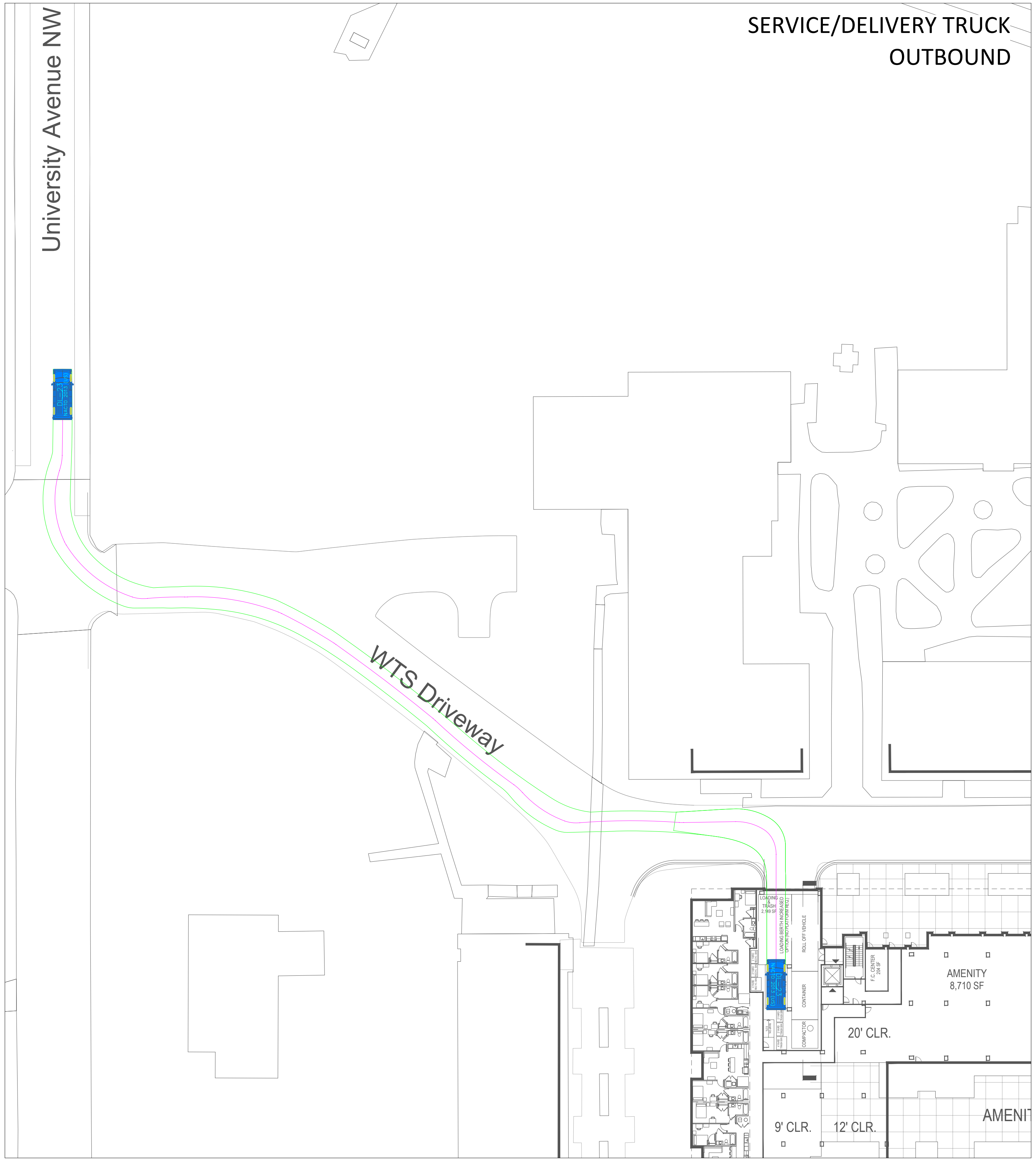


SERVICE/DELIVERY TRUCK
INBOUND



SERVICE/DELIVERY TRUCK
OUTBOUND

GOROVE **SLADE**
Transportation Planners and Engineers

Landmark Housing at Wesley Theological Seminary: Loading Analysis

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NW, Washington, DC

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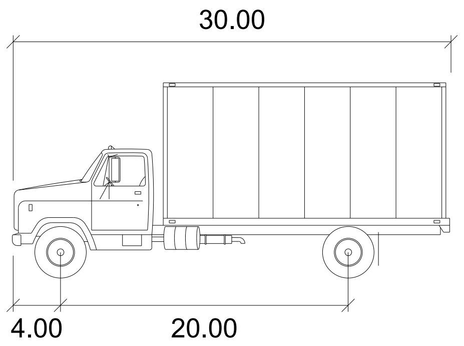
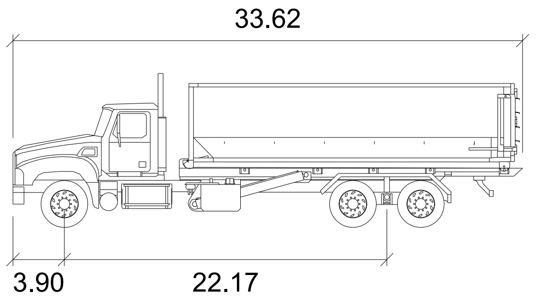


SU-30

feet

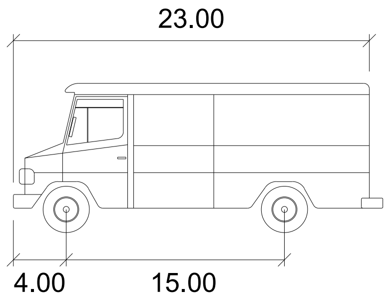
Width : 8.00
Track : 8.00
Lock to Lock Time : 6.0
Steering Angle : 31.8



Accurate 75K Roll-Off

feet

Width : 8.17
Track : 8.02
Lock to Lock Time : 6.0
Steering Angle : 32.7



DL-23

feet

Width : 8.50
Track : 8.50
Lock to Lock Time : 6.0
Steering Angle : 40.4

GOROVE **SLADE**
Transportation Planners and Engineers

Landmark Housing at Wesley Theological Seminary: Loading Analysis Vehicle Profiles

Bohler DC
November 19, 2021
Sheet 7 of 7

NW, Washington, DC

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N.T.S.

B. Detailed Trip Generation and Mode Split Information

Mode Split Assumptions

Residential Component

Pertinent Mode Split data from other sources:

	Mode							
Information Source	SOV	Carpool	Rideshare	Transit	Bike	Walk	Telecommute	Other
CTPP - TAZ Residents (TAZ 10094)	17%	8%	---	22%	2%	30%	18%	3%
State of the Commute 2016 (of District residents)	35%	4%	---	42%	16%		3%	
AU 2021 Campus Plan - student commute to campus	14%	2%	4%	50%	28%		---	2%
WMATA Ridership Survey Table 9 (average for *Friendship Heights Station Area*)	55%		---	35%	10%		---	

Mode Split assumed in TIS:

	Mode				
Land Use	Drive	Transit	Bike	Walk	Telecommute/Other
Residential Mode Split	20%	50%	5%	25%	---

Notes: Mode split based primarily on census data and mode split for AU students commuting to campus, adjusted for the project site being located on campus.

Retail Component

Pertinent Mode Split data from other sources:

	Mode							
Information Source	SOV	Carpool	Rideshare	Transit	Bike	Walk	Telecommute	Other
CTPP - TAZ Workers (TAZ 10094)	40%	7%	---	22%	2%	22%	6%	1%
State of the Commute 2019 (of DC Workers)	32%	6%	---	53%	7%		---	
WMATA Ridership Survey Table 15 (Average Among Retail Sites)	36%			37%	27%		---	

Mode Split assumed in TIS:

	Mode				
Land Use	Drive	Transit	Bike	Walk	Telecommute/Other
Retail	50%	25%	5%	20%	---

Residential Trip Generation

600 net new bedrooms

Step 1: Base trip generation using ITEs' *Trip Generation*

Land Use	Land Use Code	Quantity (x)	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	Total
Apartments	225	600 br	27 veh/hr	38 veh/hr	65 veh/hr	74 veh/hr	73 veh/hr	147 veh/hr	1872 veh
Calculation Details:			*41%*	*59%*	*=0.1X+5.31*	*50%*	*50%*	*=0.24X+2.9*	*=3.03X+54.26*

Step 2: Convert to people per hour, before applying mode splits

Land Use	People/Car (from 2017 NHTS, Table 16)	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	Total
Apartments	1.18 ppl/veh	32 ppl/hr	45 ppl/hr	77 ppl/hr	87 ppl/hr	86 ppl/hr	173 ppl/hr	2209 ppl

Step 3: Split between modes, per assumed Mode Splits

Land Use	Mode	Split	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	Total
Apartments	Auto	20%	6 ppl/hr	9 ppl/hr	15 ppl/hr	17 ppl/hr	18 ppl/hr	35 ppl/hr	442 ppl
Apartments	Transit	50%	16 ppl/hr	23 ppl/hr	39 ppl/hr	44 ppl/hr	43 ppl/hr	87 ppl/hr	1105 ppl
Apartments	Bike	5%	2 ppl/hr	2 ppl/hr	4 ppl/hr	4 ppl/hr	5 ppl/hr	9 ppl/hr	110 ppl
Apartments	Walk	25%	8 ppl/hr	11 ppl/hr	19 ppl/hr	22 ppl/hr	21 ppl/hr	43 ppl/hr	552 ppl

Step 4: Convert auto trips back to vehicles/hour

Land Use	People/Car (from 2017 NHTS, Table 16)	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	Total
Apartments	1.18 ppl/veh	5 veh/hr	8 veh/hr	13 veh/hr	14 veh/hr	16 veh/hr	30 veh/hr	375 veh

Trip Gen Summary for Residential

Mode	AM Peak Hour			PM Peak Hour			Daily
	In	Out	Total	In	Out	Total	Total
Auto	5 veh/hr	8 veh/hr	13 veh/hr	14 veh/hr	16 veh/hr	30 veh/hr	375 veh
Transit	16 ppl/hr	23 ppl/hr	39 ppl/hr	44 ppl/hr	43 ppl/hr	87 ppl/hr	1105 ppl
Bike	2 ppl/hr	2 ppl/hr	4 ppl/hr	4 ppl/hr	5 ppl/hr	9 ppl/hr	110 ppl
Walk	8 ppl/hr	11 ppl/hr	19 ppl/hr	22 ppl/hr	21 ppl/hr	43 ppl/hr	552 ppl

Retail Trip Generation

1,535 sf

Step 1: Base trip generation using ITEs' *Trip Generation*

Land Use	Land Use Code	Quantity (x)	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	Total
Retail	820	1,535 sf	1 veh/hr	0 veh/hr	1 veh/hr	3 veh/hr	3 veh/hr	6 veh/hr	58 veh
Calculation Details:			*62%*	*38%*	*=0.94(X/1000)*	*48%*	*52%*	*=3.81(X/1000)*	*=37.75(X/1000)*

Step 2: Convert to people per hour, before applying mode splits

Land Use	People/Car (from 2017 NHTS, Table 16)	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	Total
Retail	1.82 ppl/veh	2 ppl/hr	0 ppl/hr	2 ppl/hr	5 ppl/hr	6 ppl/hr	11 ppl/hr	106 ppl

Step 3: Split between modes, per assumed Mode Splits

Land Use	Mode	Split	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	Total
Retail	Auto	50%	1 ppl/hr	0 ppl/hr	1 ppl/hr	3 ppl/hr	3 ppl/hr	6 ppl/hr	53 ppl
Retail	Transit	25%	1 ppl/hr	0 ppl/hr	1 ppl/hr	1 ppl/hr	2 ppl/hr	3 ppl/hr	27 ppl
Retail	Bike	5%	0 ppl/hr	0 ppl/hr	0 ppl/hr	0 ppl/hr	1 ppl/hr	1 ppl/hr	5 ppl
Retail	Walk	20%	0 ppl/hr	0 ppl/hr	0 ppl/hr	1 ppl/hr	1 ppl/hr	2 ppl/hr	21 ppl

Step 4: Convert auto trips back to vehicles/hour

Land Use	People/Car (from 2017 NHTS, Table 16)	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	Total
Retail	1.82 ppl/veh	1 veh/hr	0 veh/hr	1 veh/hr	2 veh/hr	1 veh/hr	3 veh/hr	29 veh

Trip Gen Summary for Retail

Mode	AM Peak Hour			PM Peak Hour			Daily
	In	Out	Total	In	Out	Total	Total
Auto	1 veh/hr	0 veh/hr	1 veh/hr	2 veh/hr	1 veh/hr	3 veh/hr	29 veh
Transit	1 ppl/hr	0 ppl/hr	1 ppl/hr	1 ppl/hr	2 ppl/hr	3 ppl/hr	27 ppl
Bike	0 ppl/hr	0 ppl/hr	0 ppl/hr	0 ppl/hr	1 ppl/hr	1 ppl/hr	5 ppl
Walk	0 ppl/hr	0 ppl/hr	0 ppl/hr	1 ppl/hr	1 ppl/hr	2 ppl/hr	21 ppl

Multimodal Trip Generation Summary

690 beds
600 net new beds
1,535 SF retail

Mode	Mode Split	Land Use	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Auto (veh/hr)	20%	Residential	5	8	13	14	16	30
	50%	Retail	1	0	1	2	1	3
		Total	**6**	**8**	**14**	**16**	**17**	**33**
Transit (ppl/hr)	50%	Residential	16	23	39	44	43	87
	25%	Retail	1	0	1	1	2	3
		Total	**17**	**23**	**40**	**45**	**45**	**90**
Bike (ppl/hr)	5%	Residential	2	2	4	4	5	9
	5%	Retail	0	0	0	0	1	1
		Total	**2**	**2**	**4**	**4**	**6**	**10**
Walk (ppl/hr)	25%	Residential	8	11	19	22	21	43
	20%	Retail	0	0	0	1	1	2
		Total	**8**	**11**	**19**	**23**	**22**	**45**

Residential Trip Generation

569 net new bedrooms

Step 1: Base trip generation using ITEs' *Trip Generation*

Land Use	Land Use Code	Quantity (x)	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	Total
Apartments	225	569 br	25 veh/hr	37 veh/hr	62 veh/hr	70 veh/hr	69 veh/hr	139 veh/hr	1778 veh
		Calculation Details:	*41%*	*59%*	*=0.1X+5.31*	*50%*	*50%*	*=0.24X+2.9*	*=3.03X+54.26*

Step 2: Convert to people per hour, before applying mode splits

Land Use	People/Car (from 2017 NHTS, Table 16)	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	Total
Apartments	1.18 ppl/veh	30 ppl/hr	43 ppl/hr	73 ppl/hr	83 ppl/hr	81 ppl/hr	164 ppl/hr	2098 ppl

Step 3: Split between modes, per assumed Mode Splits

Land Use	Mode	Split	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	Total
Apartments	Auto	20%	6 ppl/hr	9 ppl/hr	15 ppl/hr	17 ppl/hr	16 ppl/hr	33 ppl/hr	420 ppl
Apartments	Transit	50%	15 ppl/hr	22 ppl/hr	37 ppl/hr	42 ppl/hr	40 ppl/hr	82 ppl/hr	1049 ppl
Apartments	Bike	5%	2 ppl/hr	2 ppl/hr	4 ppl/hr	4 ppl/hr	4 ppl/hr	8 ppl/hr	105 ppl
Apartments	Walk	25%	8 ppl/hr	10 ppl/hr	18 ppl/hr	21 ppl/hr	20 ppl/hr	41 ppl/hr	525 ppl

Step 4: Convert auto trips back to vehicles/hour

Land Use	People/Car (from 2017 NHTS, Table 16)	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	Total
Apartments	1.18 ppl/veh	5 veh/hr	8 veh/hr	13 veh/hr	14 veh/hr	14 veh/hr	28 veh/hr	356 veh

Trip Gen Summary for Residential

Mode	AM Peak Hour			PM Peak Hour			Daily
	In	Out	Total	In	Out	Total	Total
Auto	5 veh/hr	8 veh/hr	13 veh/hr	14 veh/hr	14 veh/hr	28 veh/hr	356 veh
Transit	15 ppl/hr	22 ppl/hr	37 ppl/hr	42 ppl/hr	40 ppl/hr	82 ppl/hr	1049 ppl
Bike	2 ppl/hr	2 ppl/hr	4 ppl/hr	4 ppl/hr	4 ppl/hr	8 ppl/hr	105 ppl
Walk	8 ppl/hr	10 ppl/hr	18 ppl/hr	21 ppl/hr	20 ppl/hr	41 ppl/hr	525 ppl

Multimodal Trip Generation Summary

659 beds
569 net new beds
1,535 SF retail

Mode	Mode Split	Land Use	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Auto (veh/hr)	20%	Residential	5	8	13	14	14	28
	50%	Retail	1	0	1	2	1	3
		Total	**6**	**8**	**14**	**16**	**15**	**31**
Transit (ppl/hr)	50%	Residential	15	22	37	42	40	82
	25%	Retail	1	0	1	1	2	3
		Total	**16**	**22**	**38**	**43**	**42**	**85**
Bike (ppl/hr)	5%	Residential	2	2	4	4	4	8
	5%	Retail	0	0	0	0	1	1
		Total	**2**	**2**	**4**	**4**	**5**	**9**
Walk (ppl/hr)	25%	Residential	8	10	18	21	20	41
	20%	Retail	0	0	0	1	1	2
		Total	**8**	**10**	**18**	**22**	**21**	**43**

C. Scoping Information

District Department of Transportation (DDOT)
Comprehensive Transportation Review (CTR) Scoping Form

The purpose of the Comprehensive Transportation Review (CTR) study is to evaluate potential impacts to the transportation network that can be expected to result from an approved action by the Zoning Commission (ZC), Board of Zoning Adjustment (BZA), Public Space Committee (PSC), a Federal or District agency, or an operational change to the transportation network. The Scoping Form accompanies the *Guidance for Comprehensive Transportation Review* and provides the Applicant an opportunity to propose a scope of work to evaluate the potential transportation impacts of the project.

Directions: The CTR Scoping Form contains study elements that an Applicant is expected to complete to determine the scope of the analysis. An Applicant should fill out this *Scoping Form* with a proposed scope of analysis commensurate with the requested action and submit to DDOT for review and concurrence. Accordingly, not all elements and figures identified in the *Scoping Form* are required for every action, and there may be situations where additional analyses and figures may be necessary. Once a completed Scoping Form is submitted, DDOT will provide feedback on the initial parameters of an appropriate analysis scope. DDOT's turnaround times are four (4) weeks for CTRs with a Traffic Impact Analysis (TIA) and three (3) weeks for all other lower tier studies. After the *Scoping Form* has been finalized and agreed to by DDOT, the Applicant is required to expand upon the elements outlined in this Form within the study.

Scoping Information
Date(s) Scoping Form Submitted to DDOT: June 15, 2021 (Responses to DDOT comments submitted August 12, 2021)
DDOT Case Manager: Aaron Zimmerman / Ted Van Houten
Date(s) Scoping Form Comments Returned to Applicant: July 28, 2021
Date Scoping Form Finalized:

Project Overview	Proposed Development Program
Project Name: Landmark Housing at Wesley Theological Seminary	**Use(s):** Residential (student)
Case Type & No. (ZC, BZA, PSC, etc.): ZC	**Residential (dwelling units):** 690 beds, including 90 replacement beds (600 net new beds)
ANC/SMD: 3D02	**Retail (square feet):** 1,535
Applicant/Developer Name: LCD Acquisitions, LLC 315 Oconee Street, Athens, GA 30601 Attn: Eric Leath, Eric.Leath@LandmarkProperties.com	**Office (square feet):** N/A
Transportation Consultant and Contact Info: Gorove/Slade Associates, Inc. 1140 Connecticut Avenue NW, Suite 600, Washington, DC 20036 Erwin Andres, 202-540-1925, ena@goroveslade.com Katie Wagner, 202-540-1927, klw@goroveslade.com	**Hotel (rooms):** N/A

Land Use Counsel and Contact Info: Greenstein DeLorme & Luchs, P.C. 801 17th Street NW, Suite 1000, Washington, D.C. 20006 Attn: John Patrick Brown, Jr., Esq., jpb@gdllaw.com	**Other:** 690 beds, including 90 replacement beds (600 net new beds)
Site Street Address: 4500 Massachusetts Ave NW, Washington, DC 20016	**# of Vehicle Parking Spaces:** 360
Site Square & Block: Square 1600, Lot 0819	**# of Carshare spaces:** 0
Current Zoning and/or Overlay District: RA-1	**# of Electric Vehicle Stations:** 0
Estimated Date of Hearing: N/A	**# of Bicycle Parking Spaces (long- and short-term)**
Small Area Plan (if applicable): N/A	**Long-term:** 62 required; 62 proposed
Livability Study (if applicable): N/A	**Short-term:** 11 required; 12 proposed
Within ½ Mile of Metrorail or ¼ mile of Streetcar/Circulator/Priority Bus?: No	**Loading Berths/Spaces:** Required: One (1) loading berth and one (1) service/delivery space Proposed: One (1) 30' x 12' loading berth and one (1) 20' x 10' service/delivery space

Documents to be Submitted to DDOT: *Any action requiring a CTR or some other evaluation of on-site or off-site transportation facilities must submit one of the following documents to DDOT. It must be appropriately scoped for the specific action proposed and document all relevant site operations and transportation analyses.*

☒ **CTR Study** (100 or person total person trips, or 25 or more peak hour vehicle trips in peak direction, or as deemed necessary by DDOT)

☐ **Transportation Statement** (limited scope based on specifics of project or if Low Impact Development Exemption from CTR and TIA is requested)

☐ **Standalone TIA** (project proposes a change to roadway capacity, operations, or directionality, has a site access challenge, or as deemed necessary by DDOT)

☐ **Other, specify:** ____

☐ Include one (1) hard copy of final report, PDF of report w/appendices, traffic analysis files, and traffic counts in DDOT-required spreadsheet format (total size of all digital files under 15 MB, if possible)

Existing Site and Description of Action: *Describe the type(s) of regulatory approval(s) being requested and any background information on the project relevant to the requested action such as the existing uses, amount of vehicle parking, and other notable proposed changes on-site.*

The site location is within the Wesley Theological Seminary (WTS) campus, which is generally bounded by University Avenue NW to the west, Massachusetts Avenue NW to the north, and the American University (AU) campus to the east and south. The portion of the site to be redeveloped is currently occupied by a surface parking lot. The proposed project includes removal of surface parking & an existing residence building and construction of a new student housing building with below grade parking, to include:

- Student Housing
  - Removal of 90-bed residence building
  - Construction of new building with 219 student housing units
    - 690 beds, including 90 replacement beds (600 net new beds)
- Vehicular parking
  - Removal of 143 of 174 surface parking spaces
  - Construction of 360 spaces in a new underground garage (217 net new spaces),
- Bicycle parking
  - 11 or more short-term spaces
  - 62 or more long-term spaces

Prior Related Action(s), Conditions, and Commitments: *Note any prior approvals by ZC, BZA, or PSC (Campus Master Plan, First Stage PUD, student/faculty cap, etc.) for the site and list all relevant conditions and proffers still in effect from the previous approval and status of completion. Attach a copy of the Decision section from the previous Zoning Order if still in effect.*

Pursuant to the Z.C. Order No. 05-40, effective January 16, 2007, the Commission approved a campus plan authorizing a total campus buildout of 245,000 square feet with student enrollment, employee, and student housing population caps.

Pursuant to the Original Order, effective June 14, 2012, the Commission approved a new campus plan (the "Wesley Campus Plan") instead of the application's initial request to modify the campus plan approved by Z.C. Order No. 05-40, with several conditions including:

- Condition No. 1 established the validity of the Original Order to December 31, 2025; and
- Condition No. 5 required that Wesley provide at least 172 student beds.

Pursuant to Z.C. Order No. 05-40B, effective August 17, 2016, the Commission approved a modification to the Original Order to revise:

- Condition No. 1 to extend the validity of the Original Order to December 31, 2019;
- Condition No. 5 to permit Wesley to house up to 55 non-Wesley graduate students in Straughn Hall provided no Wesley students were denied housing; and
- Condition No. 10 to clarify transportation management and community meeting requirements.

Pursuant to Z.C. Order No. 05-40C, effective August 18, 2017, the Commission approved a Minor Modification to the Original Order, as modified by Z.C. Order No. 05-40B, to revise Condition No. 5 to:

- Expand Wesley's ability to house non-Wesley graduate students to two other campus buildings – up to 6 non-Wesley graduate students at Carroll Hall and up to 26 non-Wesley graduate students at the New Residential Building;
- Extend the time period for housing all non-Wesley graduate students to December 31, 2019; and
- Prohibit Wesley from selling or leasing any part of its campus to American University.

On October 21, 2019, the Z.C. approved Wesley's Modification of Consequence to modify Conditions No. 1 and 5 of Z.C. Order No. 05-40A, as modified by Z.C. Order Nos. 05-40B and 05-40C, to read as follows:

1. Approval of the Campus Plan shall be valid until December 31, 2020.

5. The Applicant shall provide a maximum of 172 beds during the term of the Campus Plan. In the event any of the student housing in Straughn Hall ("Straughn Housing"), Carroll Hall ("Carroll Housing"), or the New Residential Building ("New Housing") is not needed to house Wesley students:

a) Applicant may allow the Straughn Housing to be leased and occupied by not more than fifty-five (55) non-Wesley graduate students through December 31, 2020;
b) Applicant may allow the Carroll Housing to be leased and occupied by not more than six (6) non-Wesley graduate students through December 31, 2020;
c) Applicant may allow the New Housing to be leased and occupied by not more than twenty-six (26) non-Wesley graduate students through December 31, 2020;
d) No Wesley students shall be denied housing to allow for housing of non-Wesley graduate students; and e. Applicant will not sell or lease any part of the Wesley Campus to the American University for university use during the term of the current Wesley Campus Plan ending on December 31, 2020.

Note: The Wesley Campus Plan ends on June 30, 2021, not December 31, 2020.

The current application is part of a Campus Plan amendment consisting of a new administrative building replacing the Old President's House, as well as a new student housing building, which is the subject of this CTR.

Section 1: SITE DESIGN

DDOT reviews the site plan to evaluate consistency with DDOT's standards, policies, and approach to access as documented in the most recent Design and Engineering Manual (DEM). If the proposal for use of public space is found to be inconsistent with the agency approach, DDOT will note this regardless of its relevance to the action. It is DDOT's position that issues regarding public space be addressed at the earliest possible opportunity to ensure the highest quality project design and to minimize project delays and the need to re-design a site in the future.

CATEGORY & GUIDELINES	CONSULTANT PROPOSAL	DDOT COMMENTS
Site Access Show site access points for all modes. Include proposed curb cut locations, curb cuts to be closed, access controls (e.g., right-in/out, signalized), sight distances and sight triangles from access points and new intersections, driveway widths and spacing, on- and off-site parking locations, inter-parcel connections, public/private status of driveways, alleys, and streets, and whether easements, dedications, or closures are proposed. *Access must be located off an adjacent existing or "paper" alley, otherwise off the lower volume street. Note any deviations from curb cut policies (DEM 31.5) w/justification and if Conceptual Approval by the Public Space Committee (PSC) has/is being sought. Subtitle I § 600-603 of ZR16 further restricts where curb cuts can be located.* *DDOT will not support curb cut design relief*	Pedestrian access to the project is proposed to be located at an entrance on the northern edge of the development along the WTS driveway. Bicycle access will be provided from the WTS driveway. The site is located approximately 0.5 miles northwest of the bike lanes on New Mexico Avenue NW and 0.5 miles southwest of the on-street signed route on 43rd Street NW. Vehicular access to the proposed garage will be via a driveway on the northern edge of the site, accessed from the WTS driveway. Loading and deliveries will occur in an internal loading area accessed from a curb cut on the WTS driveway. No new curb cuts from public space are proposed as part of this project. All vehicular access will remain from existing access locations at the two-way WTS driveway entrance/exit at Massachusetts Avenue NW and the one-way WTS driveway exit at University Avenue NW. The WTS driveway exit at University Avenue NW is one-way outbound for all vehicles except WTS food service trucks, for which two-way traffic is permitted. This arrangement is not expected to change because of the project. ☒ *Scoping Graphic: Project Location Map* ☒ *Scoping Graphic: Site Circulation Plan* ☒ *Scoping Graphic: Plat for Site's Square and Lot from Office of the Surveyor (if official plat not available, provide plans from SURDOCs)*	Acknowledged GS Response: Noted.

<table>
<tr>
<td>unless there is a clear hardship preventing a project from meeting all DDOT standards and other alternatives have been explored.
All proposed private streets connecting to a public street must be built to DDOT standards and have a public access easement. Design of driveways and drive aisles on private property must comply with Subtitle C § 711 of ZR16.</td>
<td></td>
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<tr>
<td>Loading
Discuss and show the quantity and sizes of loading berths/delivery spaces, trash storage locations, on- and off-site loading locations, turnaround design, nearby commercial loading zones, and anticipated demand, operations, and routing of delivery and trash vehicles. Identify the sizes of trucks anticipated to serve the site and design vehicles to be used in truck turning diagrams. Provide truck turning diagrams in the body of the report not the appendix.
DDOT requires head-in and head-out truck movements through public space (DEM 31.5) and that direct internal pedestrian connections be provided between retail bays and loading facilities. Note any proposed deviations or requested relief from ZR16 or DDOT standards with justification. If any relief is being sought</td>
<td>Loading and deliveries will occur in an internal loading area accessed from a curb cut on the WTS driveway. The loading area will include one (1) 30’ x 12’ loading berth and one (1) 20’ x 10’ service/delivery space.
The proposed loading facilities meet ZR16 regulations, as shown below.
<table>
<tr><th rowspan="2">Land Use</th><th rowspan="2">Size</th><th colspan="2">ZR16 required loading</th><th colspan="2">Proposed loading</th></tr>
<tr><th>Berths</th><th>Service/delivery spaces</th><th>Berths</th><th>Service/delivery spaces</th></tr>
<tr><td>Retail</td><td>1,535 sf</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>Residential</td><td>219 du</td><td>1</td><td>1</td><td>1</td><td>1</td></tr>
<tr><td>Total</td><td></td><td>1</td><td>1</td><td>1</td><td>1</td></tr>
</table>
All loading vehicle maneuvers will occur within the internal loading area, outside of public space. The proposed loading arrangement will accommodate head-in/head-out maneuvers from Massachusetts Avenue NW and University Avenue NW. Truck turning diagrams will be provided in the CTR.
☒ Scoping Graphic: Location of loading area w/ internal building routing
☐ Scoping Graphic: Truck Turning Diagrams (to/from the site, alley, truck routes)</td>
<td>Acknowledged
GS Response: Noted.</td>
</tr>
</table>

<table>
<tr>
<td><i>then a Loading Management Plan (LMP) is required. A template LMP is provided in Appendix E.</i></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vehicle Parking
Identify all off-street parking locations (on- and off-site) and justify the amount of on-site vehicle parking, including a comparison to the number of spaces required by ZR16 and any previous approvals. Provide parking calculations and parking ratios by land use, including any eligible ZR16 vehicle parking reductions (i.e., within ¼ mile of Priority Bus Route, within ½ mile of Metrorail Station, providing carshare spaces, located within a D zone, etc.).
<i>Review the DDOT Preferred Parking Rates (Table 2). If the total parking provision proposed exceeds the amount calculated using ratios in that table then the number of spaces should be reduced or substantial TDM / non-auto improvements be provided. If parking provision is significantly out of line with appropriate parking ratios, one way or the other, then mode split and trip generations estimates will be adjusted.</i>
<i>Confirm whether ZR16 TDM Mitigations will be required, per Subtitle C § 707.3, for providing more than double the amount of required vehicle</i></td>
<td>The project proposes 360 parking spaces within a garage. The existing use of the site is a 174-space parking lot, from which 143 spaces will be removed; therefore, 217 net new parking spaces are proposed. Because the primary land use is student housing, there is no suitable parking standard from either ZR16 or DDOT’s Preferred Parking Rates to compare it to. Per Subtitle C § 701.5, college/university land uses should provide parking as set forth in the approved Campus Plan. The 2006 Zoning Order from the approved Wesley Theological Seminary Campus Plan states that at least 200 parking spaces are to be maintained on campus.
<table>
<tr><th>Parking Space Description</th><th>Quantity</th></tr>
<tr><td>Minimum spaces required per previous Campus Plan</td><td>200</td></tr>
<tr><td>Existing on-campus spaces</td><td>174</td></tr>
<tr><td>Existing on-campus spaces lost to Project construction</td><td>143</td></tr>
<tr><td>Existing on-campus spaces to remain</td><td>31</td></tr>
<tr><td>Proposed new spaces in Project garage</td><td>360</td></tr>
<tr><td>Net new spaces resulting from Project</td><td>217</td></tr>
<tr><td>Total on-campus spaces after Project</td><td>391</td></tr>
</table>
☒ <i>Scoping Table: Parking Calculations with Comparison to ZR16 and DDOT’s Preferred Vehicle Parking (Table 2)</i>
☐ <i>Scoping Graphic: Off-Street Parking Locations (both on- and off-site)</i></td>
<td>DDOT finds the proposed amount of parking to be excessive. The Applicant is proposing 360 new parking spaces, while the 2006 Zoning Order from the approved Wesley Theological Seminary Campus Plan states that at least 200 parking spaces are to be maintained on campus. Please justify why 160 extra spaces are needed.
New parking facilities built in the District must charge market rate parking and the employer/institution cannot offer free/subsidized parking for that facility to employees. This is per the new Transportation Benefits Equity Amendment Act of 2020.
Please include more information about how the parking spaces will be used and if the number of parking spaces can be further reduced.
GS Response: As noted in the table, there are 143 existing parking spaces serving the Seminary that will be removed and replaced within the new garage. Therefore, of the 360 total garage spaces, only 217 will be net new spaces to serve the 600 net new beds, resulting in an effective parking ratio of 0.36 spaces per net new bed.
Within the proposed 360-space garage, 105 spaces will be reserved for general WTS use (i.e. not for residents of the proposed building). This number is in keeping with existing conditions; therefore, no net new parking is proposed for non-resident WTS usage.</td>
</tr>
</table>

parking. Coordinate with the Zoning Administrator as early in the process as possible for an official determination.

A TDM Plan is required for BZA parking reduction cases, per Subtitle C § 703.4. If relief is being requested from 5 or more spaces, then a Parking Occupancy Study is required (see Multi-Modal section).

Bicycle Parking

Identify the locations of proposed bicycle parking and justify the amount of long- and short-term spaces proposed. Provide a calculation of the number of spaces required by ZR16.

Long-term bicycle parking spaces must be easily accessible from building lobby or located in the parking garage level closest to the ground floor. Lockers and showers must be included with non-residential long-term bicycle storage rooms, per Subtitle C § 806. Provide calculations for required lockers and showers.

Short-term bicycle parking must be accommodated by installing inverted U-racks along the perimeter of the site in the 'furniture zone' of public space, near the site entrance(s).

ZR16 requires 62 long-term and 11 short-term bicycle parking spaces for the project. The proposed quantities and locations of bicycle parking are still being determined, but the project will meet or exceed zoning requirements for bicycle parking. The location and quantities of bicycle parking facilities will be noted in the CTR if that data is available.

Showers and changing facilities are not required for this project.

Land Use	Size	ZR16 bicycle parking rates		ZR16 required bicycle parking spaces *		Proposed bicycle parking spaces	
		Long-term	Short-term	Long-term	Short-term	Long-term	Short-term
Retail	1,535 sf	1 per 10,000 sf	1 per 3,500 sf	0	0	0	0
Residential	219 du	1 per 3 du's	1 per 20 du's	62	11	62	11
Total				**62**	**11**	**62**	**11**

* Note: Rate applied at 50% after first 50 spaces per ZR16 11C802.2

☒ *Scoping Graphic: Locations of internal bicycle parking spaces, routing to these spaces, and related support facilities including locker rooms, showers, storage areas, and service repair rooms*

Page 2 of the scoping form lists 12 short term bicycle parking spaces to be provided, but the calculations here list 11 spaces to be provided. Please clarify

Ensure short- and long-term bicycle parking spaces abide by the design and spacing guidelines outlined in the DDOT Bike Parking Guide (attached) with close attention paid to long-term bike parking requirements (e.g., at least 50% of long-term spaces must allow for bikes to be placed horizontally on the floor or ground without being suspended)

GS Response: Page 2 has been corrected to show 11 short-term spaces. Short- and long-term bicycle parking spaces will adhere to DDOT's Bike Parking Guide.

Streetscape and Public Realm

The Applicant will work with DDOT to ensure the design of the public realm meets current standards. A preliminary public space concept will be provided in the CTR.

Acknowledged

GS Response: Noted.

Provide a conceptual layout of the streetscape and public realm including at minimum: curb cuts, vaults, sidewalk widths, street trees, grade changes, building projections, short-term bicycle parking, and any existing bus stops. Also provide the permit tracking numbers and PSC hearing date, if known, for any approved public space designs. *DDOT expects new developments to rehabilitate the streetscape between the curb and property line and meet all public space design standards. Streetscape must meet ADA requirements and ensure nothing impedes accessible curb access or pedestrian circulation.* *Note any non-compliant public space elements requiring a DCRA code modification or PSC approval.* *A summary of public space best practices is provided in Section 1.5. DDOT standards are documented in the DEM, Public Realm Design Manual, and corridor Streetscape Guidelines (if applicable).*	☐ *Scoping Graphic: Preliminary Public Space Concept*	
Sustainable Transportation Elements Identify all sustainable transportation elements, such as electric vehicle (EV) charging stations and carshare spaces proposed to be included	Sustainable transportation elements for this development will be discussed in the CTR.	Acknowledged GS Response: Noted.

in the project. Electrical conduit should be installed in parking garage so that additional EV stations can be provided later. *DDOT recommends 1 per 50 vehicle spaces be served by an EV station. DDOT encourages providing car share spaces on-site to reduce the ZR16 parking requirement and support non-car ownership lifestyles.*		
Heritage, Special, and Street Trees Heritage Trees are defined as having a circumference of 100 inches or more and are typically located on private property. They are protected by the District's Tree Canopy Protection Amendment Act of 2016 and must be preserved if deemed non-hazardous by Urban Forestry Division (UFD). Special Trees are between 44 inches and 99.99 inches in circumference and may be removed with a permit. *Note whether there are existing Heritage Trees on-site or in adjacent public space. The presence of Heritage Trees will impact site design since they may not be cut down. Work w/the UFD Ward Arborist to determine if there are Heritage or Special Trees on-site that must be preserved and if Tree Preservation or*	The applicant will work with UFD to determine if there are any Heritage or Special Trees on-site. A screenshot from UFD's street tree website is included in the attachments. ☒ *Scoping Graphic: Street Tree Inventory Study Area*	Please coordinate with DDOT arborists and address any tree-related issues as early as possible. There are Special and Heritage Trees within and directly adjacent to the parking lot that must be considered. Apply for a Special Tree permit to remove trees 44" – 99.99" circumference within and/or directly adjacent to the limits of disturbance. It appears there are 2 Special Trees within the parking lot that will need to be removed, but if more trees exist in this area please show them on an ESC or Demo Plan for UFD to assess. Refer to the following link for Special Tree removals – DDOT Urban Forestry - Tree Permitting (arcgis.com) A Heritage Tree is shown to remain on the southwest side of the site. Confirm size and health of this tree. Non-Hazardous Heritage Trees cannot be damaged or cut down and the only options are to protect in place or relocate. If there are any trees 44" circumference and greater in size to remain, the following shall apply: • Show the Critical Root Zone and the Structural Root Zone of each tree • Critical Root Zone (CRZ) = 1.5 foot radius from the base of the tree's trunk for each 1 inch of the tree's diameter • Structural Root Zone (SRZ) = 0.5 foot radius from the base of the tree's trunk for each 1 inch of the tree's diameter • Measurements are taken at 4.5 feet above grade (also referred to as the diameter at breast height). If a tree is on a slope, multi-stemmed and/or splits below 4.5 feet, please refer to the following link for measuring DBH - http://www.phytosphere.com/treeord/measuringdbh.htm • Contact DDOT arborists Sam Doan (samuel.doan@dc.gov) and Yasha Magarik (yasha.magarik@dc.gov) to discuss the scope of work and determine the type of tree protection measures needed. Protection measures are based on the extent of impact(s) to the critical and structural root zones

<table>
<tr>
<td>Relocation Plans are required.
Conduct an inventory of existing and missing street trees within a 3-block radius of the site (design standards are in DEM 37.5). Identify any opportunities for UFD or the Applicant (as part of the mitigations package) to install missing treeboxes and street trees.</td>
<td></td>
<td>• Refer to the following link for DDOT Urban Forestry's Tree Preservation Policies - https://ddot-urban-forestry-dcgis.hub.arcgis.com/pages/tree-preservation
• Revise documents to include tree protection measures (Basic or Advanced) recommended by UFD as well as a copy of the tracking number, invoice or issued permit for any trees to be removed
GS Response: Noted; the Applicant will coordinate with DDOT UFD on any tree-related issues.</td>
</tr>
</table>

Section 2: TRAVEL ASSUMPTIONS

<table>
<tr>
<th>CATEGORY & GUIDELINES</th>
<th>CONSULTANT PROPOSAL</th>
<th>DDOT COMMENTS</th>
</tr>
<tr>
<td>Mode Split
Provide mode split assumptions with sources and justification. Sources of data could include the most recent Census Transportation Planning Products (CTPP) the 2005 WMATA Development-Related Ridership Survey, or previous planning studies and CTRs. Note that the walking mode share will account for internal trip synergies for mixed use developments.
Adjustments to mode split assumptions may be made, as appropriate, if the number of vehicle parking spaces proposed is significantly lower or higher than expected for the context of the neighborhood.
The agreed upon mode split assumptions may not be revised between scoping and CTR</td>
<td>Mode split assumptions are based on CTTP census data, AU students' commute to campus mode splits, and the settings of the sites surveyed for the ITE Land Use 225 data. The mode split assumptions for the project are as follows:
<table>
<tr><th rowspan="2">Land Use</th><th colspan="4">Mode</th></tr>
<tr><th>Drive</th><th>Transit</th><th>Bike</th><th>Walk</th></tr>
<tr><td>Residential</td><td>20%</td><td>50%</td><td>5%</td><td>25%</td></tr>
<tr><td>Retail</td><td>50%</td><td>25%</td><td>5%</td><td>20%</td></tr>
</table>
☒ Scoping Table: Mode Split Assumptions</td>
<td>Acknowledged
GS Response: Noted.</td>
</tr>
</table>

submission without DDOT concurrence.

Trip Generation

Provide site-generated person trip generation estimates, utilizing the most recent version of ITE *Trip Generation Manual* or another agreed upon methodology such as manual doorway or driveway counts at similar facilities. Estimates must be provided by mode, type of trip, land use, and development phase during weekday AM and PM commuter peaks, Saturday mid-day peak, and daily totals. CTR must also include existing site trip generation based on observed counts. Modes include transit, bicycle, walk, and automobile.

DDOT TripsDC tool will be used to determine trip generation estimates for residential-over-retail projects (see Section 2.2.4 for parameters).

Auto occupancy rates by travel purpose published in the 2017 National Household Travel Survey should be used when calculating person trips based on suburban vehicle trip data in Trip Generation Manual (see Table 3).

Adjustments to trip generation may be made, as appropriate, if the number of vehicle parking spaces proposed is significantly lower or higher than expected for

Multi-modal trip generation was calculated using ITE *Trip Generation* 10th Edition rates for Land Use 225 (Off-Campus Student Apartment) using the "adjacent to campus" setting.

The ITE trip generation for the proposed project is shown below and included in the attachments.

Mode	Mode Split	Land Use	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Auto (veh/hr)	20%	Residential	5	8	13	15	15	30
	50%	Retail	1	0	1	2	1	3
		Total	**6**	**8**	**14**	**17**	**16**	**33**
Transit (ppl/hr)	50%	Residential	16	23	39	45	44	89
	25%	Retail	1	0	1	1	2	3
		Total	**17**	**23**	**40**	**46**	**46**	**92**
Bike (ppl/hr)	5%	Residential	2	2	4	4	5	9
	5%	Retail	0	0	0	0	1	1
		Total	**2**	**2**	**4**	**4**	**6**	**10**
Walk (ppl/hr)	25%	Residential	8	11	19	22	22	44
	20%	Retail	0	0	0	1	1	2
		Total	**8**	**11**	**19**	**23**	**23**	**46**

The above trip generation is only for the proposed residential (600 beds) and retail (1,535 SF) components of the Landmark Housing project. The project's parking facility will also serve general campus trips outside of residents and staff of the Landmark Housing project itself. These existing vehicular campus trips, which were established previously with turning movement counts at the site driveways, are presented below alongside the Landmark Housing project-generated trips.

Mode	Land Use	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Auto (veh/hr)	Proposed Residential	5	8	13	15	15	30
	Proposed Retail	1	0	1	2	1	3
	Net New Trip Generation	**6**	**8**	**14**	**17**	**16**	**33**
	Existing Campus	25	11	36	31	37	68
	Total Campus Trip Generation	**31**	**19**	**50**	**48**	**53**	**101**

☒ *Scoping Table: Multi-Modal Trip Gen Summary (w/mode split and applicable reductions, as appropriate)*

Acknowledged

GS Response: Noted.

the context of the neighborhood. *Pass-by rates in the District are minimal and should only apply to major retail-dominant destinations, grocery stores, and gas stations. An adjusted pass-by/diverted trips methodology should be developed if development is not located on a road classified as arterial or higher.* *The agreed upon trip generation methodology may not be revised between scoping and CTR submission without DDOT concurrence. Consult the DDOT Case Manager if site plan, development program, land uses, or density changes significantly.*		

Section 3: MULTI-MODAL NETWORK EVALUATION

A CTR study is required if the project generates at least 100 peak hour person trips or 25 vehicle trips in the peak direction (highest of inbound or outbound) in any study period. Existing site traffic, pass-by, TDM, internal capture or other reductions may not be taken in the calculation to determine if the project meets these thresholds. However, they may be taken in the TIA, as appropriate, if a study is triggered. Analyses in the Multi-Modal Network Evaluation section are required in all CTRs, unless otherwise specified. A Transportation Statement may only require some of the following sections depending on the specifics of the project and zoning action.

The requirement for a CTR may be waived if site is within ½ mile from Metrorail or ¼ mile from Priority Transit, the total vehicle parking supply below level expected within ¼ mile of Metrorail Station (see Table 2), maximum 100 parking spaces, an Enhanced TDM Plan is implemented, site access and loading design are acceptable, there is a complete pedestrian network in the vicinity of the site, and meets all ZR16 bike parking and locker/shower requirements. Additional criteria may be found in the Low Impact Development Exemption section of *Guidance for CTR*.

CATEGORY & GUIDELINES	CONSULTANT PROPOSAL	DDOT COMMENTS
Strategic Planning Elements Identify relevant planning efforts and demonstrate how the proposed action is consistent with District-	The CTR will consider the suggested studies included in the column to the left in addition to the following studies located near the development: • Sustainable DC Plan • Rock Creek Far West Livability Study • Wesley Campus Plan (2012) • American University 2021 Campus Plan CTR	Acknowledged GS Response: Noted.

wide planning documents, as well as localized studies. Note in scoping form any recommendations from these documents relevant to the development proposal. The evaluation will consider at least the following high level/District-wide documents: ● MoveDC and its relevant modal elements ● DDOT Livability Study (relevant to the project) ● OP Small Area Plans (relevant to the project) ● DC Highway Plan (shown on official plat) ● District of Columbia Comprehensive Plan ● Vision Zero Action Plan ● Capital Bikeshare Development Plan ● Washington Metropolitan Area Transit Authority's (WMATA) Metrorail and Metrobus Plans ● DDOT Corridor studies (e.g., Transit Development Plan, Streetscape Design Plans and Guidelines) *Details on additional relevant plans and studies may be provided by the DDOT Case Manager.*		

Pedestrian Network Evaluate the condition of the existing pedestrian network and forecast the project's impact. Evaluation must include, at a minimum, critical walking routes, sidewalk widths, network completeness, whether facilities meet DDOT and ADA standards, and whether pedestrian signal timings are adequate (within vehicle study area). *Study area will include, at a minimum, all roadway segments and multi-use trails within a ¼ mile radius from the site, with a focus on connectivity to Metrorail, transit stops, schools, and major activity centers.*	The study will review pedestrian walking routes to and from the site along with an assessment of facilities along these walking routes and on all pedestrian facilities within ¼ mile of the site following section 3.2 of DDOT's CTR guidelines, plus additional walking routes to major destinations. The assessment will evaluate whether facilities meet DDOT and ADA standards. ☒ *Scoping Graphic: Pedestrian Study Area w/Walking Routes to Transit, Schools, Activity Centers*	University Avenue NW adjacent to campus does not have a sidewalk on either side. DDOT would like the Applicant to fill in this sidewalk gap as part of this development. GS Response: The Applicant acknowledges DDOT's request for a sidewalk at this location and will continue to consider it as part of the forthcoming CTR.
Bicycle Network Evaluate the condition of the existing bicycle network and forecast the project's impact, including to Capital Bikeshare (CaBi). Evaluation must include, at a minimum, bicycle network completeness, types of facilities, and adequacy of CaBi locations and availability. Bikeshare station demand data can be obtained from the *CaBi Tracker* website. *Study area will include, at a minimum, all roadway segments and multi-use trails within a ½ mile radius from the site, with a focus on connectivity to Metrorail, transit stops, schools,*	The bicycle study area focuses on the routes that cyclists will take to and from major bicycle facilities. We will also highlight the internal bicycle circulation and facilities. A review of existing and planned bicycle facilities serving the site within a ½ mile will be included with an assessment of connections between the site and major facilities, including a qualitative review of how cyclists going to and from the site will access major facilities (paths, bike lanes, etc.). The review of bicycle facilities will follow DDOT's CTR guidelines found in section 3.3.1. ☒ *Scoping Graphic: Bicycle Study Area w/Bicycling Routes to Transit, Schools, Activity Centers*	Acknowledged GS Response: Noted.

major activity centers, and other bicycle trails or facilities. *Note where bike lanes conflict with access to the site or on-street loading movements associated with the project.* *If a CaBi station is currently located along the site frontage, the Applicant must assume the station will stay in place after the development has been constructed and must be designed in the public space plans. If it is not physically possible to stay in place, then DDOT expects the Applicant to demonstrate this hardship, propose a viable alternative location, and fund the station relocation. The minimum size of a new CaBi station is 19 docks with 12 bikes.*		
Transit Network Evaluate, at a minimum, existing transit stop locations, adjacent bus routes and Metro headways, planned transit improvements, and an assessment of existing transit stop conditions (e.g., ADA compliance, bus shelters, benches, wayfinding, etc.). For Metrorail stations, refer to the 2009 *WMATA Station Site and Access Planning Manual*, as well as various station capacity studies. *Study area is 1.0 mile for Metrorail stations and ½ mile for Streetcar,*	The study will discuss transit routes and schedules, including headway and span of service for Metrorail stations within one (1) mile of the site and for WMATA bus stops within ½ mile of the site. The study will evaluate the sufficiency of the identified services and access to those services from a qualitative standpoint. Additionally, transit stop locations will be evaluated. Any planned transit improvements will be included in the report. This study will not include a quantitative study of boarding and alighting volumes at specific transit stops. All transit network evaluations will follow guidance as outlined in section 3.4 of DDOT's CTR guidelines. ☒ *Scoping Graphic: Transit Study Area with Adjacent Routes and Stations* ☒ *Scoping Graphic: Screenshots from DDOT transit maps showing where the site falls within buffers from Metrorail and Priority Transit*	Acknowledged GS Response: Noted.

Circulator, and WMATA buses. *All existing bus stops and shelters must be accommodated during construction, assumed to be returned to the original location after construction, and designed into the public space plans. If a bus stop and/or shelter must be moved then the Applicant will fund the relocation and obtain approval from DDOT and WMATA for the new location. Applicant must fund the electrification of all new or relocated shelters.*		
Safety Analysis Qualitatively evaluate safety conditions at intersections and along blocks within the vehicle study area. *Perform a review of DDOT Vision Action Plan. Note whether any study intersections have been identified by DDOT as high crash locations, if any safety studies have been previously conducted, and discuss the recommendations. Depending on the results of the TIA, DDOT may require improvements to nearby intersections previously identified as having known safety issues.*	A qualitative evaluation of safety conditions within the proposed study area will be included in the CTR following the guidance set forth in section 3.6 of DDOT's CTR guidelines.	Acknowledged GS Response: Noted.
Curbside Management Propose a curbside management plan that is consistent with current DDOT policies and practices. The curbside	No changes to curbside management are proposed as part of this project.	Acknowledged GS Response: Noted.

management plan must delineate existing and proposed on-street parking designations/restrictions, including but not limited to pick-up/drop-off zones, commercial loading zones, multi-space meters, RPP, and net change in number of on-street spaces as a result of the proposal. *Note that the preliminary curbside management plan will not be approved by DDOT during the zoning process. Applicant must submit a more detailed signage and marking plan via TOPS for formal review and approval by DDOT-PGTD during public space permitting. DDOT expects the Applicant to fund the installation of multi-space meters on blocks where meters are required.*	☐ *Scoping Graphic: Existing Curbside Designations (min. 2 block radius of site)*	
Pick-Up and Drop-Off Plan This plan is required for all schools and daycares with 20 or more students. It may also be required for churches, hotels, or any other use expected to have significant pick-up and drop-off operations, as necessary. The plan will identify pick-up and drop-off locations and demonstrate adequate circulation so that the flow of bicycles and vehicles is not impeded and queueing does not occur through the pedestrian realm.	A pick-up/drop-off plan is not necessary. The intensity of the development program is not expected to have significant pick-up and drop-off operations.	Acknowledged GS Response: Noted.

DDOT will require this plan for schools and daycares currently in operation even if the relief requested from the BZA is not related to a student cap increase.		
On-Street Parking Occupancy Study This analysis is required if BZA relief from 5 or more on-site vehicle parking spaces is being requested. It may also be required as part of a ZC or permitting case if DDOT has concerns about site-generated vehicles parking in adjacent residential neighborhoods. *Vehicle parking occupancy counts will be collected hourly during periods of peak demand. These are typically the weekday evening period (6-10 PM) for residential developments, weekday morning period (7-9 AM) if within ¼ mile of Metrorail, and weekend peak periods if there is a commercial component. Parking availability must be assessed a maximum of 2 blocks in each direction from the site, unless otherwise agreed upon. Also include inventory of off-street parking garages in vicinity of site.*	Zoning relief for parking is not being sought, therefore this section is not applicable. ☐ *Scoping Graphic: Study Area/Block Faces*	Acknowledged GS Response: Noted.
Parking Garage Queueing Analysis If site contains 150 or more vehicle parking	The proposed garage does have access to a public street; therefore this section is not applicable.	Acknowledged GS Response: Noted.

spaces and direct access to a public street, evaluate on-site vehicle queueing demand and provide analysis demonstrating parking entrance and ramps can properly process vehicles without queuing onto public streets. Provide proposed parking supply, queuing analysis, and physical controls to parking area, if applicable.		
Motorcoaches Propose methodology for data collection and analysis. Describe and show the parking locations, anticipated demand, existing areas on- and off-site for loading and unloading (and desired loading times restrictions, if any), and potential routes to and from designated truck routes. If on-street motorcoach parking is proposed, a plan for installation of signage and meters is required, subjection to DDOT-PGTD approval. This section is typically only required for uses that generate significant tourist activity (hotels, museums, cruises, etc.).	No motorcoach activity is anticipated at the site.	Acknowledged GS Response: Noted.

Section 4: TRAFFIC IMPACT ANALYSIS (TIA)

The TIA component of a CTR is required when a development generates 25 or more peak hour vehicle trips in the peak direction (higher of either inbound or outbound vehicles in any study peak period), after mode split is applied. Existing site traffic, pass-by, TDM, internal capture or other reductions may not be applied when calculating whether a TIA is required. Applicable reductions may be used in the multi-modal trip generation summary and assignment of trips within the TIA, as appropriate. A standalone TIA may also be required if the project proposes a change to roadway capacity, operations, or directionality; has a site access challenge; or as otherwise deemed necessary by DDOT.

CATEGORY & GUIDELINES	CONSULTANT PROPOSAL	DDOT COMMENTS

TIA Study Area and Data Collection Identify study intersections commensurate with the impact of the proposed project and the travel demand it will generate. Study area must include all major signalized and unsignalized intersections, intersections expected to realize large numbers of new traffic, and intersections that may experience changing traffic patterns. Additional guidance on selecting study intersections is provided in DEM 38.3.2. *Turning Movement Counts (TMC) will be collected in 15-minute increments during the weekday morning (6:30 AM to 9:30 AM) and evening (4:00 PM to 7:00 PM) peak periods on Tuesdays through Thursdays during non-holiday weeks, while schools and Congress are in session, the Fed govt is not in a shutdown, and weather is not an issue, unless otherwise agreed upon. Saturday mid-day peak period (generally 11:00 AM to 1:00 PM) will be studied if development program is retail-heavy. TMCs will include vehicles, pedestrians, bicyclists, and % truck traffic. TMCs will be collected at all existing site driveways and reported as existing*	We propose the following study intersections: 1. Massachusetts Ave & 46th St/Tilden St/Wesley Cir NW 2. University Ave & Wesley Cir NW 3. University Ave & Sedgwick St/WTS Exit NW 4. Massachusetts Ave & 45th St NW 5. Massachusetts Ave & WTS Entrance NW 6. Massachusetts Ave & Campus Dr NW 7. Massachusetts Ave & Wesley Cir NW As data collection in Spring 2021 is not representative of typical travel patterns due to the COVID-19 emergency, volumes at proposed study intersections are available from several sources, outlined below. Historical turning movement counts are available at the following intersections: • Massachusetts Ave & 46th St/Tilden St/Wesley Cir NW (2012 and Feb. 2020) • University Ave & Sedgwick St/WTS Exit NW (2012) • Massachusetts Ave & 45th St NW (Feb. 2020) • Massachusetts Ave & WTS Entrance NW (2012 and Feb. 2020) • Massachusetts Ave & Campus Dr NW (Feb. 2020) We propose comparing the volumes from the above-mentioned sources and growing them according to historical DDOT traffic volume data based on their respective years of collection to establish baseline 2021 conditions. The CTR will include detailed calculations and rationales explaining how we established these baseline conditions. ☒ *Scoping Graphic: Study Intersections* ☒ *Provide hard copies of TMCs in CTR appendix and electronic copies in DDOT-required spreadsheet format at time of submission.*	Please include the stop-controlled intersection at Wesley Circle and Massachusetts Avenue NW in the study area. GS Response: Noted; we will include the requested intersection in the study area.

conditions in trip generation summary. *Previously collected TMCs may be used if they are less than 2 years old at the time of study submission. DDOT may require counts be refreshed once TMCs reach 3 years old or if a major transportation or land use change occurs. A growth rate will be applied to TMCs older than 12 months to create present year Existing Conditions.*		
TIA Study Scenarios Propose an appropriate set of scenarios to analyze. Note the anticipated build-out year and project phasing. Analysis scenarios to be considered: • Existing Conditions (Current Year) • Background Conditions (No-Build) • Total Future Conditions (With Development) • Total Future Conditions (With Development and Mitigation) • Additional Scenarios For Each Phase, as necessary • Total Future Conditions (+5 Years), as required • Long Range +20 Years Planning Scenario, as required	We propose to include the following scenarios following section 4.3 of DDOT's CTR guidelines: • Existing Conditions (2021 Existing Conditions) • 2024 Future Conditions without the project (2024 Background Conditions) • 2024 Future Conditions with the project (2024 Total Future Conditions) o *2024 Mitigated Future Conditions with the project (2024 Mitigated Total Future Conditions), as necessary*	Acknowledged GS Response: Noted.

TIA Methodology Propose an appropriate methodology for the capacity analysis including the type of software program to be used. Per DEM 38.3.5.1, HCM methodology will be used to determine Level of Service (LOS), v/c, and vehicle queue lengths. LOS must be reported by intersection approach and v/c by lane group. DDOT prefers Synchro 9 or newer software for capacity and queueing analyses. SimTraffic (10 simulations averaged) should be used to further evaluate an observed queueing issue and determine a solution, as necessary. *DDOT's required standard Synchro and SimTraffic inputs/settings are provided in Appendix H.* *Merge/weave/diverge analysis is required if any of the study intersections include a highway, freeway, or Interstate ramp (DEM 38.3.5.3). HCS software should be used for this analysis.*	Capacity analyses will be performed using Highway Capacity Manual (HCM) methodologies using an industry recognized software package. We propose performing the analysis in Synchro 10 and reporting the results in delay and LOS using HCM 2000 methodologies. We propose to analyze the weekday morning and afternoon commuter peak hours, using the system peaks at all study area intersections. Synchro files will be obtained from DDOT for use in the vehicular capacity analysis. Signal timings for the study area intersections will be obtained from DDOT. Field visits will be performed to update existing geometric information into the Synchro models, and update Synchro files with current traffic signal timing plans. We will apply this methodology to the following analysis scenarios: • Existing Conditions (2021 Existing Conditions) • 2024 Future Conditions <u>without</u> the project (2024 Background Conditions) • 2024 Future Conditions <u>with</u> the project (2024 Total Future Conditions) o *2024 Mitigated Future Conditions <u>with</u> the project (2024 Mitigated Total Future Conditions), as necessary* The capacity analysis results will show the average delay, v/c, and the resulting LOS for each approach and for the overall intersection (where available), as well as the queuing results obtained from Synchro 10 for the average and 95th percentile queue for each lane group. • We will highlight all LOS E or LOS F conditions per intersection and approach. • We will propose mitigation measures at intersections or approaches that degrade to an LOS E or F as a result of the development, or intersections or approaches operating under LOS E or F under background conditions that observe an increase in delay of greater than 5 percent, when compared to background scenario. • We will highlight all locations where the 95th percentile queue length exceeds the length of storage. We will note where the proposed project causes the 95th percentile queue length to exceed the available capacity of a lane group when it does not in the background scenario. • We will propose mitigation measures at intersections where the proposed project causes any 95th percentile queue lengths that exceed the available capacity to experience an increase in length of greater than 150 feet along any lane group. An assessment of feasibility given the existing ROW at each location will be given for each mitigation measure. ☒ *Will provide copies of Synchro, SimTraffic, and other analysis software printouts in study appendix and electronic copies of analysis files at time of CTR submission.*	Acknowledged GS Response: Noted.
Transportation Network Improvements List and map all roadway, transit, bicycle, and pedestrian projects funded by DDOT or WMATA, or proffered by others, in the vicinity of the study area and expected to open for public use prior to the	There are no proposed improvements to the transportation network that will be assumed in background and total future conditions. ☐ *Scoping Graphic: Locations of background transportation network improvements*	Acknowledged GS Response: Noted.

proposal's anticipated build-out year. Review the STIP, CLRP, and proffers/commitments for other nearby developments.		
Local Traffic Growth List and map developments to be analyzed as local background growth. This will include known matter-of-right and zoning-approved developments within ¼ mile of site and others more than ¼ mile from site if their traffic is distributed through study intersections. Document the portions of developments anticipated to open by the projected build-out year.	There are no known matter-of-right or zoning-approved developments that meet the criteria outlined to the left. Therefore, no background developments are proposed for this analysis. ☐ *Scoping Graphic: Background development projects near study area* ☐ *Scoping Table: Completion amounts/portions occupied of background developments*	Acknowledged GS Response: Noted.
Regional Traffic Growth Propose a methodology to account for growth in regional travel demand passing through the study area. An appropriate methodology could include reviewing historic AADT traffic counts, MWCOG model growth rates, data from other planning studies, or recently conducted nearby CTRs. These sources should only be used as a guide. *Generally, maximum annually compounding growth rates of 0.5% in peak direction and 2.0% in non-peak direction are acceptable. Growth rates based should be based*	We propose to examine volumes contained in the MWCOG regional model, as well as historical DDOT AADTs (where available), to develop an average annual growth rate for study area roadways following section 4.6.2 of DDOT's CTR guidelines. A summary of COG model volumes and trends for the study area are attached to this scoping form. This methodology accounts for all future projects and developments in the COG model and allows for district growth rates by direction and time of day. We based growth rates between 2020 (data collection) and 2021 (existing conditions) on the differences between the year 2019 and 2021 COG model scenarios. We based growth rates between 2021 (existing conditions) and 2024 (project completion) on the differences between the year 2021 and 2025 COG model scenarios. Where the COG model showed negative or minimal growth, we assumed a conservative 0.1% per year minimum growth. Maximum growth rates of 0.5% in the peak direction and 2.0% in the non-peak direction were used. Proposed growth rates for each roadway for the 2020-2021 period and the 2021-2024 period are shown below.	Acknowledged GS Response: Noted.

on DDOT historical data from 10+ years, if available. Adjustments to the rates may be necessary depending on the amount of traffic assumed from local background developments or if there were recent changes to the transportation network.

Roadway	Dir.	Proposed Annual Growth Rate Between 2020 and 2021 [1]		Proposed Total Growth Between 2020 and 2021		Proposed Annual Growth Rate Between 2021 and 2024 [2]		Proposed Total Growth Between 2021 and 2024	
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
Massachusetts Ave NW	EB	0.10%	0.10%	0.10%	0.10%	0.30%	0.10%	0.90%	0.30%
	WB	2.00%	0.50%	2.00%	0.50%	0.10%	0.30%	0.30%	0.90%
Tilden St NW	EB	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.30%	0.30%
	WB	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.30%	0.30%
46th St NW	NB	2.00%	0.10%	2.00%	0.10%	0.10%	0.10%	0.30%	0.30%
	SB	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.30%	0.30%
University Ave NW [3]	NB	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.30%	0.30%
	SB	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.30%	0.30%
45th St NW	NB	0.50%	0.50%	0.50%	0.50%	0.10%	0.10%	0.30%	0.30%
	SB	2.00%	0.10%	2.00%	0.10%	0.90%	0.10%	2.72%	0.30%
Campus Dr NW	NB	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.30%	0.30%
	SB	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.30%	0.30%

[1] These rates were applied to volumes recorded in February 2020 that were used to establish 2021 existing conditions. Rates are based on MWCOG's currently adopted regional transportation model for this time period.

[2] These rates were applied to volumes grown from 2021 existing conditions. Rates are based on MWCOG's currently adopted regional transportation model for this time period.

[3] Study intersection #3 (University Ave & Sedgwick St/WTS Exit NW) only has available traffic counts from 2012, not February 2020 like the other study intersections. Therefore, to establish 2021 Existing Conditions, annual growth rates of 0.10% will be applied to the northbound and southbound volumes of University Ave NW at this intersection for every year between 2012 and 2021, totaling 0.90% for each direction.

☒ *Scoping Table: Projected regional growth assumptions (dependent on methodology), show growth rates by facility, direction, and time of day*

☐ *Scoping Graphic: Projected regional growth assumptions (dependent on methodology), show growth rates by facility, direction, and time of day*

Trip Distribution Provide sources and justification for proposed percentage distribution of site-generated trips. Additionally, document proposed pass-by distributions and the re-routing of existing or future vehicles based on any changes to the transportation network. *Percentage distributions must be shown turning at intersections throughout the transportation network and at site driveways and garage entrances to ensure appropriate routing assumptions.* *The agreed upon trip distribution methodology may not be revised between scoping and CTR submission without concurrence by DDOT Case Manager.* *Given the District's urban context and grid network, a small portion of trips (up to 5% of trips through an intersection) may be re-routed from their original routes to an alternate route due to traffic congestion.*	Trip distribution for the site was determined based on CTPP TAZ flow data. Attached to this scoping form are figures depicting the CTPP TAZ flow data for residents of the project TAZ commuting by vehicle to other TAZs. Since the retail component of the project produces an inconsequential amount of vehicle trips (1 in the AM peak hour and 3 in the PM peak hour), a distribution analysis is only provided for the residential component. The resulting proposed trip distributions are illustrated on an attached graphic. ☒ *Scoping Graphic(s): Percentage Distribution by Land Use, Direction, Time of Day*	Acknowledged GS Response: Noted.

Section 5: MITIGATION

The completed CTR must detail all proposed mitigations. The purpose of discussing mitigation at the scoping stage is to highlight DDOT's Significant Impact Policy, DDOT's approach to mitigation, and to give the Applicant an opportunity to gain initial feedback on potential mitigations that may ultimately be proposed. Any mitigation strategies discussed and included in the *Scoping Form* are considered non-binding until formally evaluated in the study and committed to as part of a related action.

CATEGORY & GUIDELINES	CONSULTANT PROPOSAL	DDOT COMMENTS
DDOT Significant Impact Policy Vehicle Parking Supply DDOT considers a high parking provision as an 'impact' that needs to be mitigated since it is a permanent site feature that encourages additional driving and yield vehicle trips in the future that were not contemplated in the study. Appropriate mitigations include reducing vehicle parking, implementing substantive TDM strategies, off-site non-automotive network upgrades, and making monetary contributions to DDOT for non-auto improvements. See Table 2 to determine if a site is over-parked based on land use and distance to transit. Capacity Impacts at Intersections All site-generated vehicular impacts to the transportation network during study peak hours must be mitigated, per DEM 38.3.5, if any of the following occur: • Degradation of an approach or intersection to LOS	☒ *The Applicant acknowledges DDOT's Significant Impact Policy.* ☒ *The study will comply with all other policies in the Guidance for Comprehensive Transportation Review and the Category & Guidelines column of this Scoping Form not explicitly documented in the Consultant Proposal or DDOT Comments columns.* ☒ *The study will include all the required graphics, tables, and deliverables for the relevant sections determined during scoping, as shown in Table 1 of Guidance for Comprehensive Transportation Review.*	Acknowledged GS Response: Noted.

E or F or intersection v/c ratio increases to 1.0 or greater from Background to Total Future Conditions. ● If an approach or intersection exceeds LOS E or F or movement/lane group exceeds 1.0 v/c ratio under Background Conditions then an increase in delay or v/c ratio by 5% or more under Total Future Conditions. ● If 95th percentile vehicle queuing length exceeds available capacity of approach or turn lane under Total Future Conditions. ● If 95th percentile queue length of an approach or turn lane increases by 150 feet or more from Background to Total Future Conditions.		
DDOT Approach to Mitigation DDOT's approach to mitigation is to first establish optimal site design and operations to support efficient site circulation. When these efforts alone cannot properly mitigate an action's impact, reducing on-site vehicle parking, implementing TDM measures, making upgrades to the pedestrian, bicycle, and transit networks to encourage use of non-	☒ *The Applicant acknowledges DDOT's approach to mitigation that prioritizes (in order of DDOT preference) optimal site design, reducing vehicle parking, implementing more TDM strategies, making non-automotive network improvements, and making a monetary contribution to DDOT for non-auto improvements before considering options that increase roadway capacity or alter roadway operations.*	Acknowledged GS Response: Noted.

automotive modes, or monetary contribution to DDOT for non-auto improvements must be proposed. Only when these options are exhausted will DDOT consider capacity-increasing changes to the roadway network because such changes often have detrimental impacts on non-automotive travel and are often contrary to the District's multi-modal transportation goals.		
Transportation Demand Management (TDM) A TDM Plan is typically required to offset site-generated impacts to the transportation network or in situations where a site provides more parking than DDOT determines is practical for the use and surrounding context. TDM strategies are also an integral part of the District's transportation options. As such, a Baseline TDM plan is required in all CTRs regardless of impacts to the network. An Enhanced Plan or greater is required if the site is over-parked per Table 2 or there are roadway impact identified. Sample TDM plans by land use and tier can be found in Appendix C. *Document all existing TDM strategies being implemented on-site (even outside of a formal*	☒ *The Applicant will include at least a Baseline TDM Plan. The TDM plan will increase to Enhanced Plan or beyond depending on the parking ratio and other impacts identified in the study.*	Acknowledged GS Response: Noted.

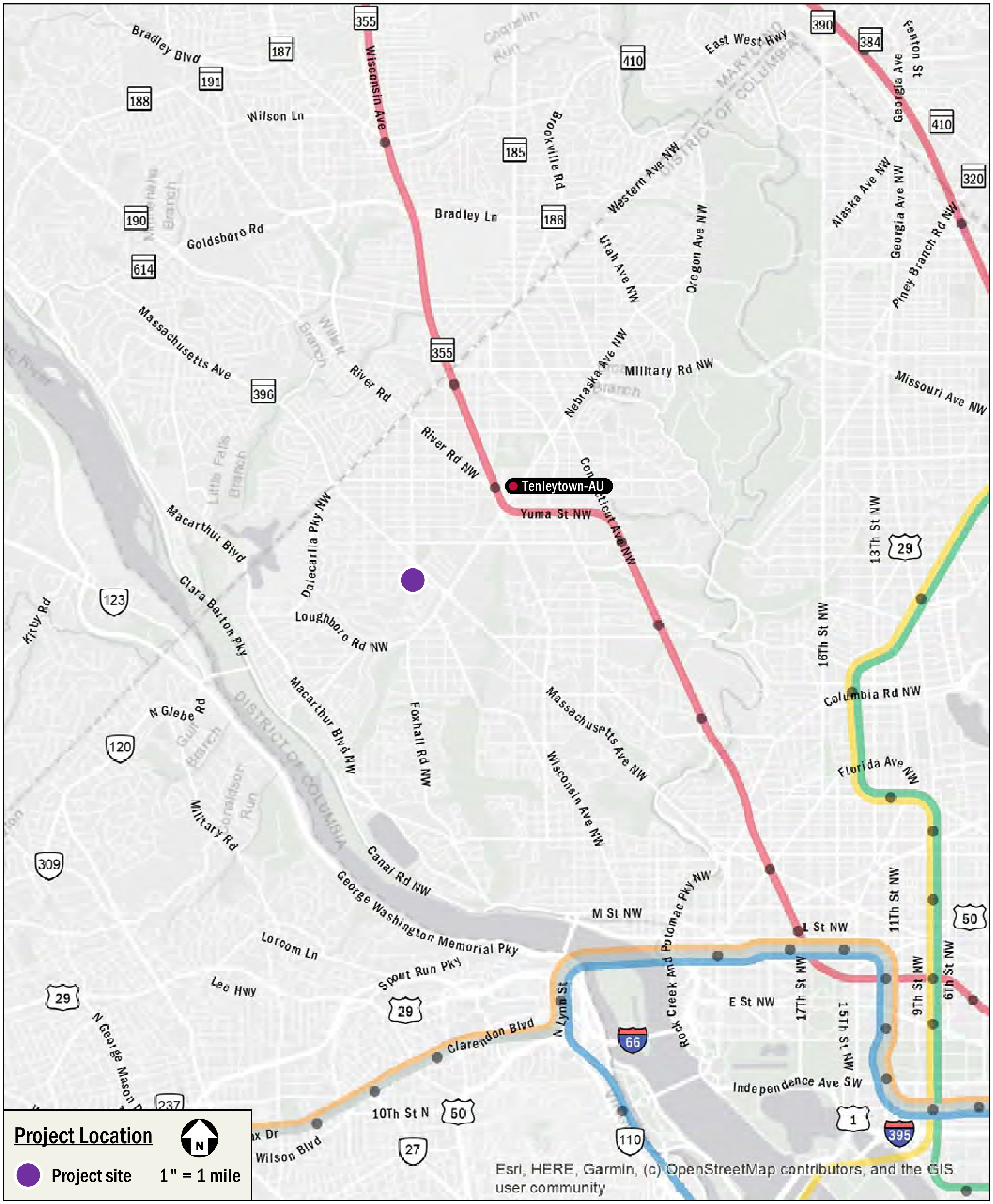
TDM Plan) and those being proposed and committed to by the Applicant. Elements of the TDM Plan included in CTR must be broken down by land use and user (i.e., employee, faculty, resident, visitor, etc.).		
Performance Monitoring Plan (PMP) DDOT may require a PMP in situations where anticipated vehicle trips are large in magnitude, unpredictable, or necessitate a vehicle trip cap. Typically, this is required for schools expected to have a significant amount of single occupancy vehicle trips or very large developments. The monitoring plan will establish thresholds for new trips a project can generate, define post-completion evaluation criteria and methodology, determine the frequency of reporting, and establish potential remediating measures (e.g., adjust trip caps or implement additional TDM strategies). *Document any existing performance monitoring Plans in effect and any proposed changes.*	Noted.	Acknowledged GS Response: Noted.

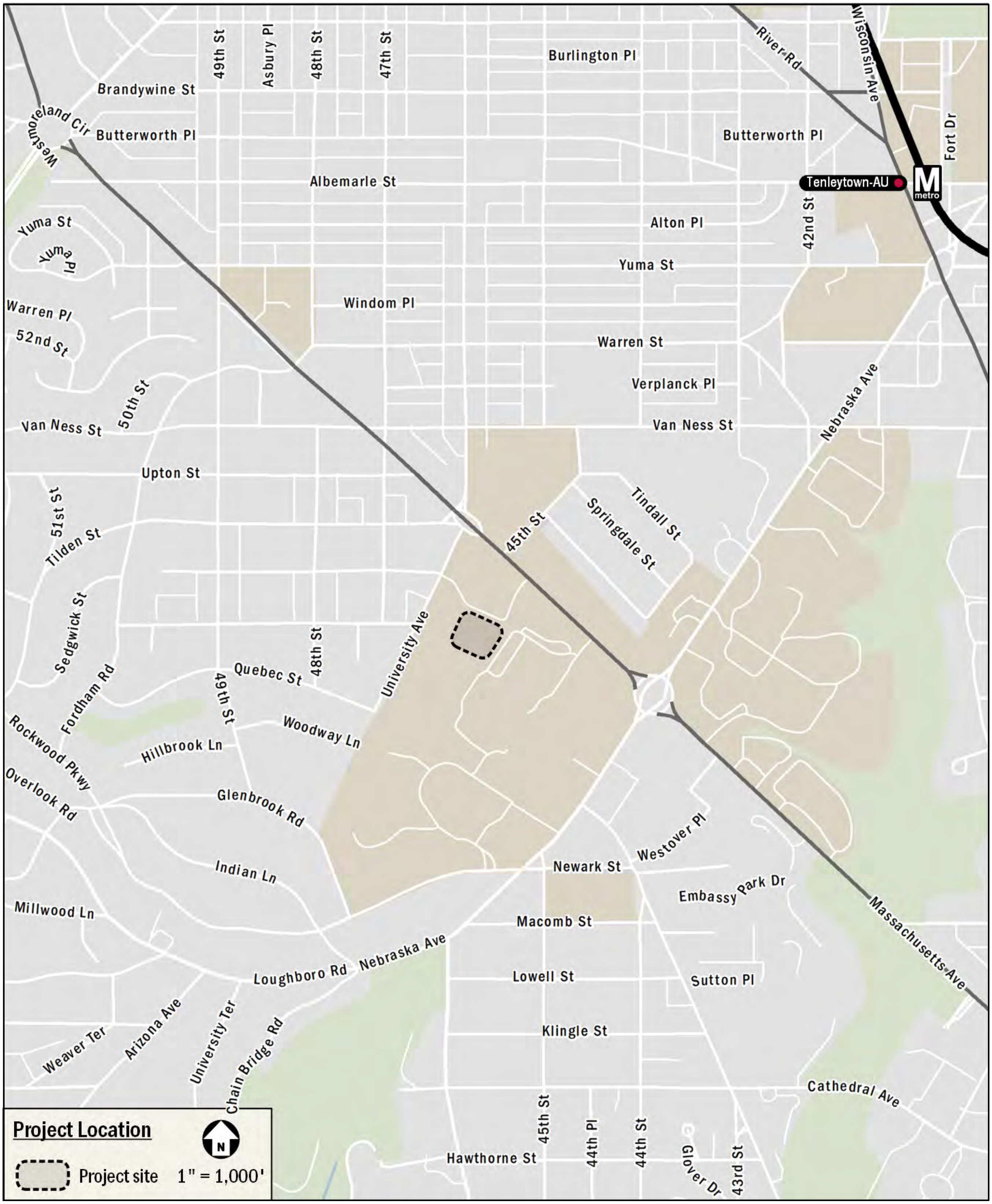
Roadway Operational and Geometric Changes Describe all proposed roadway operational and geometric changes in CTR with supporting analysis and warrants in the study appendix. Detail must be provided on any ROW implications of proposed mitigations. All proposed changes in traffic control must be conducted following the procedures outlined in the *Manual of Uniform Traffic Control Devices* (MUTCD). *Note any preliminary ideas being considered.*	There are no proposed roadway operational or geometric changes; therefore this section is not applicable.	Acknowledged GS Response: Noted.

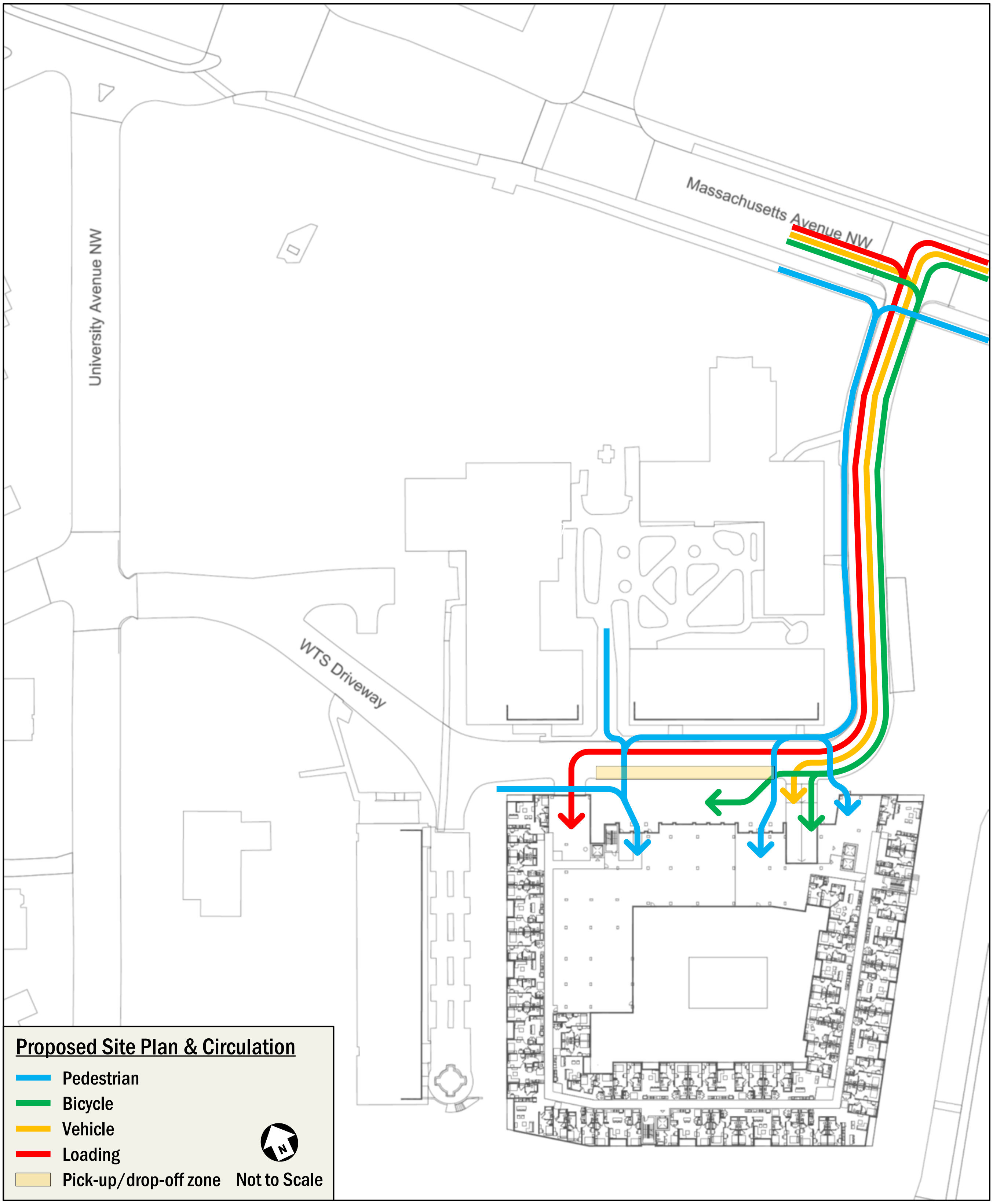
Section 6: ADDITIONAL TOPICS FOR DISCUSSION DURING SCOPING

CATEGORY & GUIDELINES	CONSULTANT PROPOSAL	DDOT COMMENTS
ANC Discussions and Feedback Provide an update on the status of Community Benefits Agreement, any ANC concerns, or other concerns expressed by the community.	Some University Avenue NW residents oppose the sidewalk recommended in the Rock Creek West Livability Study. DDOT is aware of this.	Acknowledged GS Response: Noted.
Miscellaneous Items for Discussion These items could include relevant on-going discussions with other agencies and stakeholders or seeking direction other types of analyses to be included	N/A	Acknowledged GS Response: Noted.

(i.e., traffic calming proposal, TOPP, TMP).		


Project Location
N
● Project site
1" = 1 mile
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Tenleytown-AU
Wisconsin Ave
Bradley Blvd
Wilson Ln
Bradley Ln
Brookville Rd
Goldsboro Rd
Massachusetts Ave
River Rd
River Rd NW
Yuma St NW
Connecticut Ave NW
Western Ave NW
Utah Ave NW
Oregon Ave NW
Nebraska Ave NW
Military Rd NW
Alaska Ave NW
Georgia Ave NW
Georgia Ave
Fenton St
Piney Branch Rd NW
Missouri Ave NW
East West Hwy
Macarthur Blvd
Dalecarlia Pky NW
Loughboro Rd NW
Clara Barton Pky
Kirby Rd
N Glebe Rd
Macarthur Blvd NW
Foxhall Rd NW
Massachusetts Ave NW
Wisconsin Ave NW
Military Rd
Canal Rd NW
George Washington Memorial Pky
Lorcom Ln
Lee Hwy
Spout Run Pky
Clarendon Blvd
N Lynn St
N George Mason Dr
Wilson Blvd
10Th St N
M St NW
Rock Creek And Potomac Pky NW
E St NW
17Th St NW
15Th St NW
16Th St NW
13Th St NW
11Th St NW
9Th St NW
6Th St NW
L St NW
Columbia Rd NW
Florida Ave NW
Independence Ave SW
DISTRICT OF COLUMBIA
MARYLAND
355
187
191
188
190
614
396
185
186
410
390
384
320
123
120
309
29
50
27
110
66
1
395
237


49th St
Asbury Pl
48th St
47th St
Burlington Pl
River Rd
Wisconsin Ave
Brandywine St
Westmoreland Cir
Butterworth Pl
Butterworth Pl
Fort Dr
Albemarle St
Tenleytown-AU
M
metro
Alton Pl
42nd St
Yuma St
Yuma Pl
Yuma St
Windom Pl
Warren Pl
52nd St
Warren St
Verplanck Pl
50th St
Van Ness St
Van Ness St
Nebraska Ave
Upton St
51st St
Tilden St
Tindall St
Springdale St
45th St
Sedgwick St
University Ave
48th St
Quebec St
49th St
Fordham Rd
Woodway Ln
Rockwood Pkwy
Hillbrook Ln
Overlook Rd
Glenbrook Rd
Westover Pl
Newark St
Indian Ln
Embassy Park Dr
Massachusetts Ave
Millwood Ln
Macomb St
Nebraska Ave
Loughboro Rd
Lowell St
Sutton Pl
Klingle St
Weaver Ter
Arizona Ave
University Ter
Chain Bridge Rd
Cathedral Ave
Project Location
N
Project site
1" = 1,000'
Hawthorne St
45th St
44th Pl
44th St
Glover Dr
43rd St


Massachusetts Avenue NW
University Avenue NW
WTS Driveway
Proposed Site Plan & Circulation
Pedestrian
Bicycle
Vehicle
Loading
Pick-up/drop-off zone
N
Not to Scale

(Page 1 of 1)

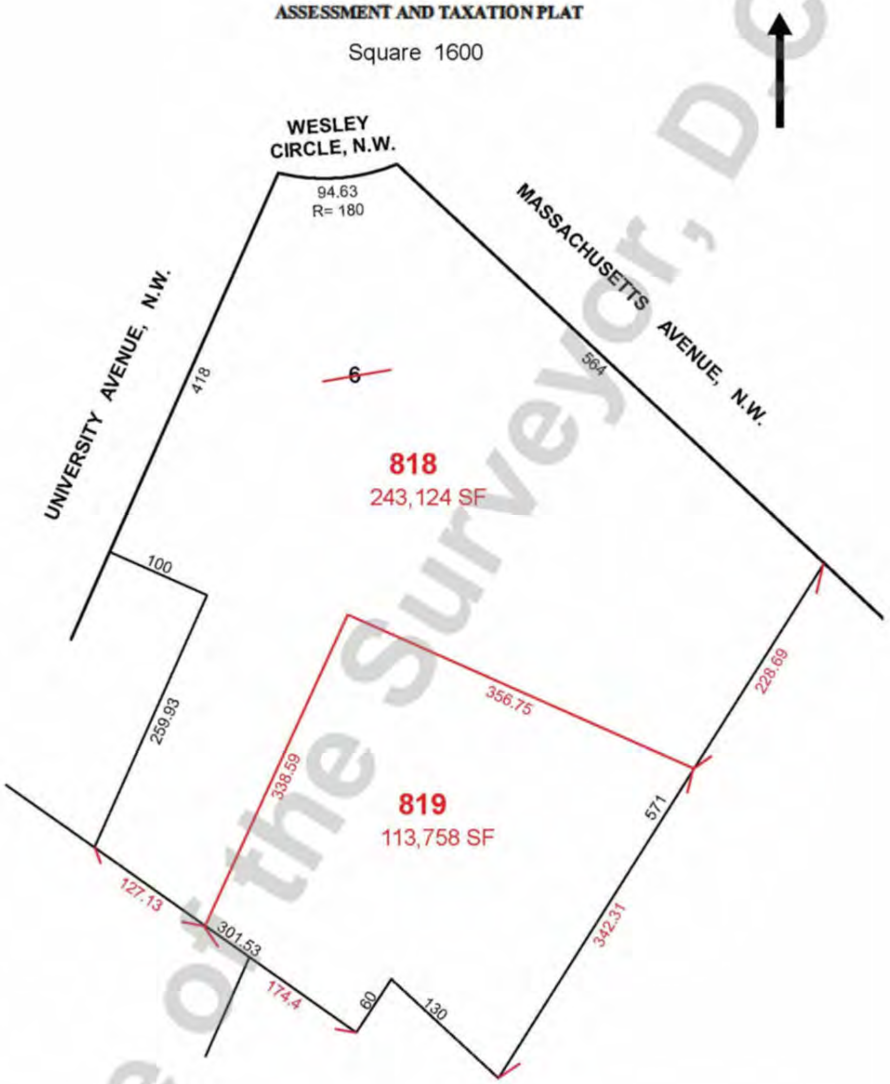
OFFICE OF TAX AND REVENUE
ASSESSMENT DIVISION

3887-M

★★★

ASSESSMENT AND TAXATION PLAT

Square 1600



David Smith — A073383 — 4/9/20

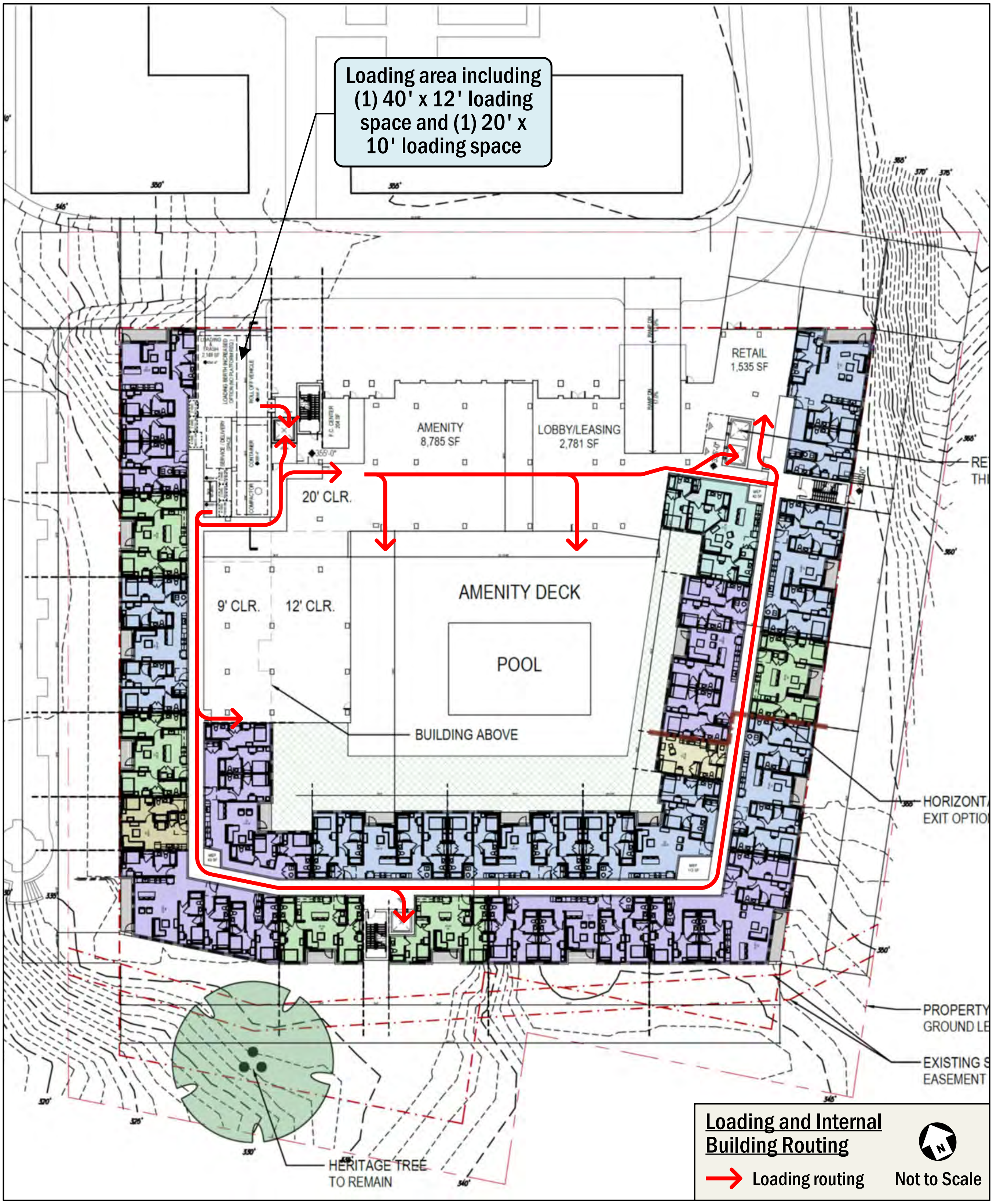
Draftsman — Reference — Date

Scale, 1 inch 110 ft

The Office of Surveyor of the District of Columbia shall admit this plat to record under the provisions of Chapter 7 of Title 47, District of Columbia Code, Designation of Real Property for Assessment and Taxation, and for other purposes.

Quincy Loney
for Chief Assessor, Office of Tax and Revenue

FP-120 (Rev. 5/98)
3-93451

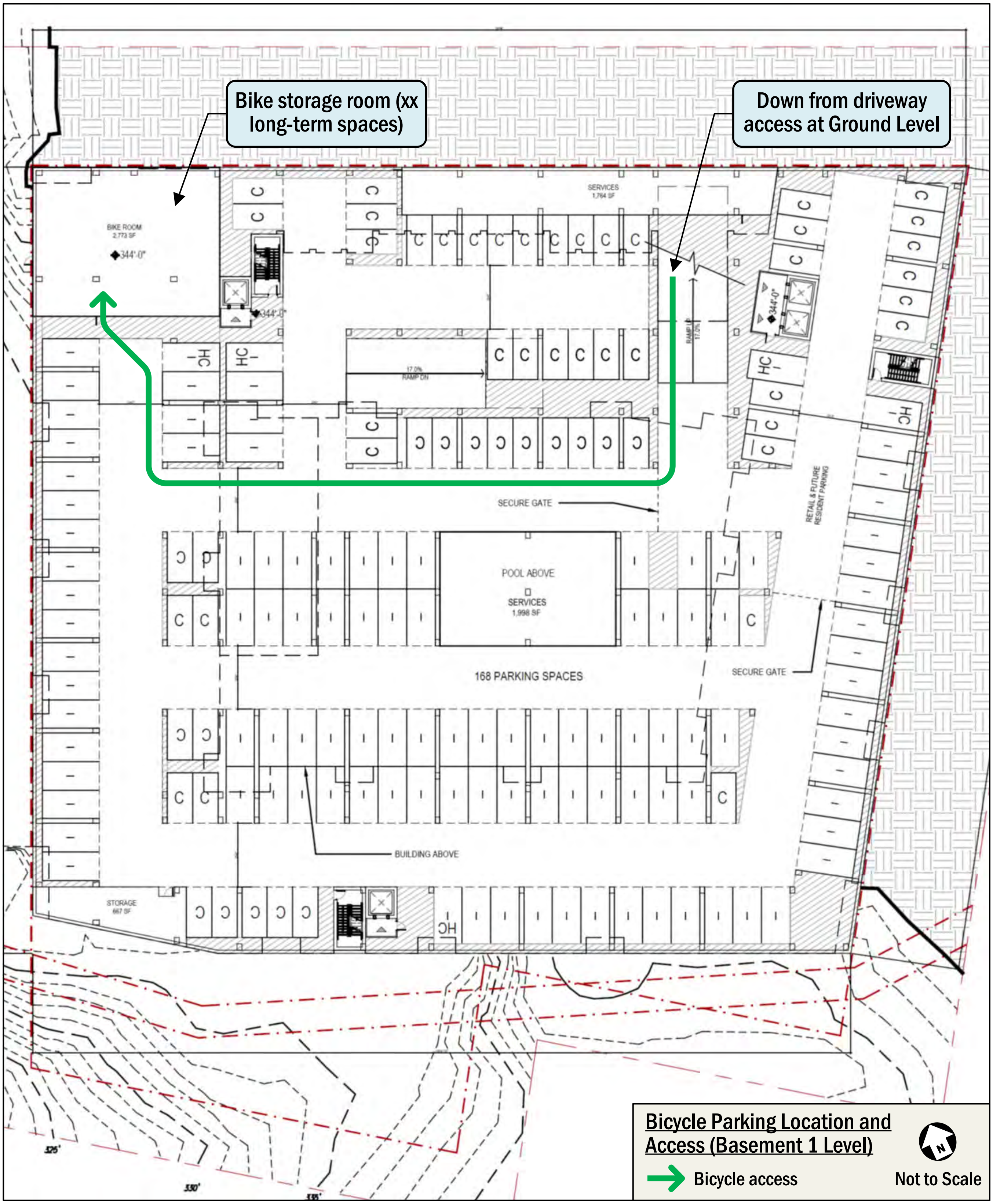


Loading area including (1) 40' x 12' loading space and (1) 20' x 10' loading space

Loading and Internal Building Routing

→ Loading routing

Not to Scale

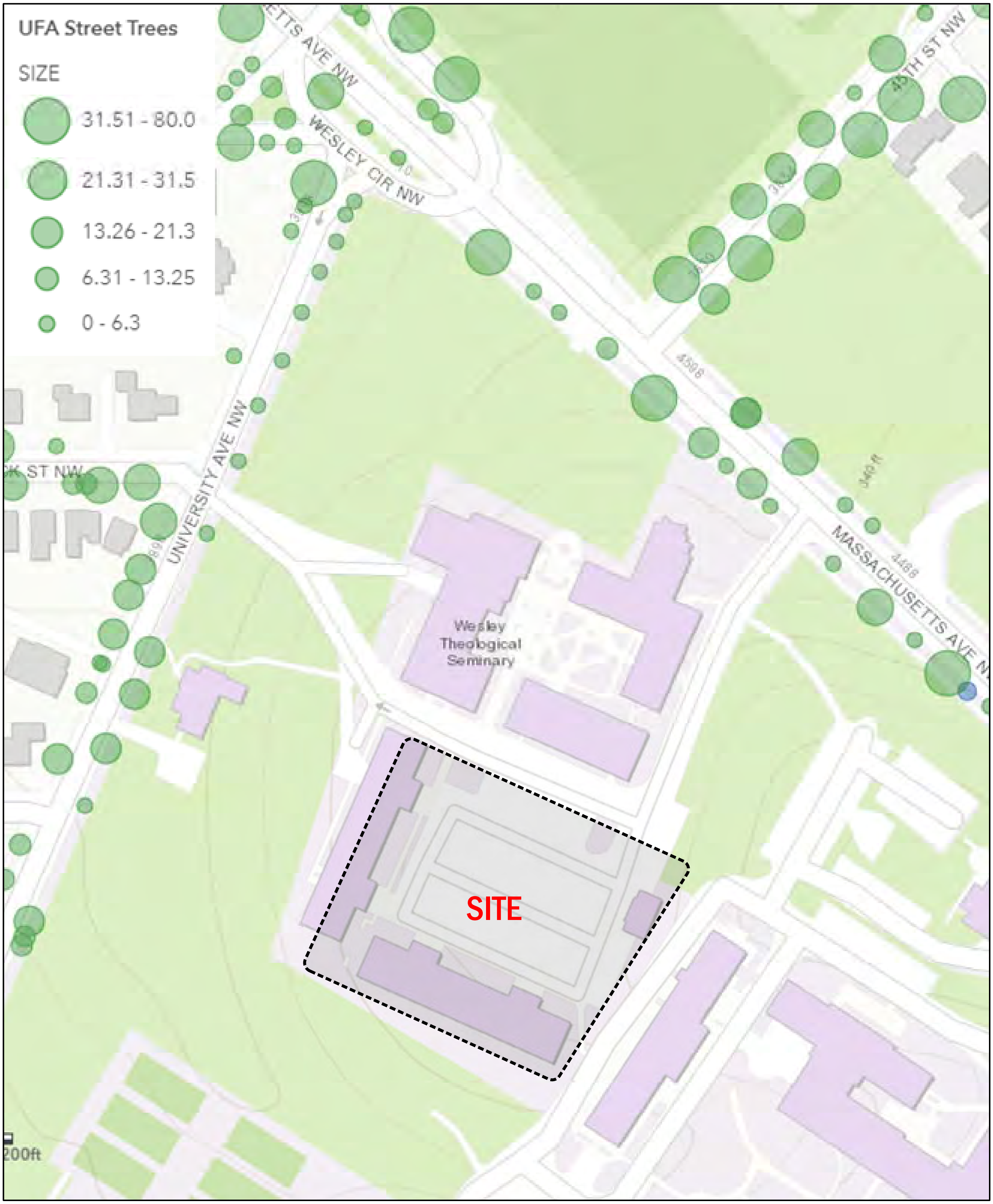


Bike storage room (xx long-term spaces)

Down from driveway access at Ground Level

Bicycle Parking Location and Access (Basement 1 Level)

🟩 Bicycle access


UFA Street Trees
SIZE
31.51 - 80.0
21.31 - 31.5
13.26 - 21.3
6.31 - 13.25
0 - 6.3
ETTS AVE NW
WESLEY CIR NW
45TH ST NW
UNIVERSITY AVE NW
CK ST NW
MASSACHUSETTS AVE NW
Wesley Theological Seminary
SITE
200ft

Mode Split Assumptions

Residential Component

Pertinent Mode Split data from other sources:

	Mode							
Information Source	SOV	Carpool	Rideshare	Transit	Bike	Walk	Telecommute	Other
CTPP - TAZ Residents (TAZ 10094)	17%	8%	---	22%	2%	30%	18%	3%
State of the Commute 2016 (of District residents)	35%	4%	---	42%	16%		3%	
AU 2021 Campus Plan - student commute to campus	14%	2%	4%	50%	28%		---	2%
WMATA Ridership Survey Table 9 (average for *Friendship Heights Station Area*)	55%		---	35%	10%		---	

Mode Split assumed in TIS:

	Mode				
Land Use	Drive	Transit	Bike	Walk	Telecommute/Other
Residential Mode Split	20%	50%	5%	25%	---

Notes: Mode split based primarily on census data and mode split for AU students commuting to campus, adjusted for the project site being located on campus.

Retail Component

Pertinent Mode Split data from other sources:

	Mode							
Information Source	SOV	Carpool	Rideshare	Transit	Bike	Walk	Telecommute	Other
CTPP - TAZ Workers (TAZ 10094)	40%	7%	---	22%	2%	22%	6%	1%
State of the Commute 2019 (of DC Workers)	32%	6%	---	53%	7%		---	
WMATA Ridership Survey Table 15 (Average Among Retail Sites)	36%			37%	27%		---	

Mode Split assumed in TIS:

	Mode				
Land Use	Drive	Transit	Bike	Walk	Telecommute/Other
Retail	50%	25%	5%	20%	---

Residential Trip Generation (ITE Land Use 225 fitted curve used for AM trips)

600 net new bedrooms

Step 1: Base trip generation using ITEs' *Trip Generation*

Land Use	Land Use Code	Quantity (x)	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	Total
Apartments	225	600 br	27 veh/hr	38 veh/hr	65 veh/hr	74 veh/hr	73 veh/hr	147 veh/hr	1872 veh
		Calculation Details:	*41%*	*59%*	*=0.1X+5.31*	*50%*	*50%*	*=0.24X+2.9*	*=3.03X+54.26*

Step 2: Convert to people per hour, before applying mode splits

Land Use	People/Car (from 2017 NHTS, Table 16)	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	Total
Apartments	1.18 ppl/veh	32 ppl/hr	45 ppl/hr	77 ppl/hr	87 ppl/hr	86 ppl/hr	173 ppl/hr	2209 ppl

Step 3: Split between modes, per assumed Mode Splits

Land Use	Mode	Split	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	Total
Apartments	Auto	20%	6 ppl/hr	9 ppl/hr	15 ppl/hr	17 ppl/hr	18 ppl/hr	35 ppl/hr	442 ppl
Apartments	Transit	50%	16 ppl/hr	23 ppl/hr	39 ppl/hr	44 ppl/hr	43 ppl/hr	87 ppl/hr	1105 ppl
Apartments	Bike	5%	2 ppl/hr	2 ppl/hr	4 ppl/hr	4 ppl/hr	5 ppl/hr	9 ppl/hr	110 ppl
Apartments	Walk	25%	8 ppl/hr	11 ppl/hr	19 ppl/hr	22 ppl/hr	21 ppl/hr	43 ppl/hr	552 ppl

Step 4: Convert auto trips back to vehicles/hour

Land Use	People/Car (from 2017 NHTS, Table 16)	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	Total
Apartments	1.18 ppl/veh	5 veh/hr	8 veh/hr	13 veh/hr	14 veh/hr	16 veh/hr	30 veh/hr	375 veh

Trip Gen Summary for Residential

Mode	AM Peak Hour			PM Peak Hour			Daily
	In	Out	Total	In	Out	Total	Total
Auto	5 veh/hr	8 veh/hr	13 veh/hr	14 veh/hr	16 veh/hr	30 veh/hr	375 veh
Transit	16 ppl/hr	23 ppl/hr	39 ppl/hr	44 ppl/hr	43 ppl/hr	87 ppl/hr	1105 ppl
Bike	2 ppl/hr	2 ppl/hr	4 ppl/hr	4 ppl/hr	5 ppl/hr	9 ppl/hr	110 ppl
Walk	8 ppl/hr	11 ppl/hr	19 ppl/hr	22 ppl/hr	21 ppl/hr	43 ppl/hr	552 ppl

Residential Trip Generation (ITE Land Use 225 average rate used for PM trips)

600 net new bedrooms

Step 1: Base trip generation using ITEs' *Trip Generation*

Land Use	Land Use Code	Quantity (x)	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	Total
Apartments	225	600 br	30 veh/hr	42 veh/hr	72 veh/hr	75 veh/hr	75 veh/hr	150 veh/hr	1890 veh
		Calculation Details:	*41%*	*59%*	*=0.12X*	*50%*	*50%*	*=0.25X*	*=3.15X*

Step 2: Convert to people per hour, before applying mode splits

Land Use	People/Car (from 2017 NHTS, Table 16)	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	Total
Apartments	1.18 ppl/veh	35 ppl/hr	50 ppl/hr	85 ppl/hr	89 ppl/hr	88 ppl/hr	177 ppl/hr	2230 ppl

Step 3: Split between modes, per assumed Mode Splits

Land Use	Mode	Split	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	Total
Apartments	Auto	20%	7 ppl/hr	10 ppl/hr	17 ppl/hr	18 ppl/hr	17 ppl/hr	35 ppl/hr	446 ppl
Apartments	Transit	50%	18 ppl/hr	25 ppl/hr	43 ppl/hr	45 ppl/hr	44 ppl/hr	89 ppl/hr	1115 ppl
Apartments	Bike	5%	2 ppl/hr	2 ppl/hr	4 ppl/hr	4 ppl/hr	5 ppl/hr	9 ppl/hr	112 ppl
Apartments	Walk	25%	9 ppl/hr	12 ppl/hr	21 ppl/hr	22 ppl/hr	22 ppl/hr	44 ppl/hr	558 ppl

Step 4: Convert auto trips back to vehicles/hour

Land Use	People/Car (from 2017 NHTS, Table 16)	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	Total
Apartments	1.18 ppl/veh	6 veh/hr	8 veh/hr	14 veh/hr	15 veh/hr	15 veh/hr	30 veh/hr	378 veh

Trip Gen Summary for Residential

Mode	AM Peak Hour			PM Peak Hour			Daily
	In	Out	Total	In	Out	Total	Total
Auto	6 veh/hr	8 veh/hr	14 veh/hr	15 veh/hr	15 veh/hr	30 veh/hr	378 veh
Transit	18 ppl/hr	25 ppl/hr	43 ppl/hr	45 ppl/hr	44 ppl/hr	89 ppl/hr	1115 ppl
Bike	2 ppl/hr	2 ppl/hr	4 ppl/hr	4 ppl/hr	5 ppl/hr	9 ppl/hr	112 ppl
Walk	9 ppl/hr	12 ppl/hr	21 ppl/hr	22 ppl/hr	22 ppl/hr	44 ppl/hr	558 ppl

Retail Trip Generation

1,535 sf

Step 1: Base trip generation using ITEs' *Trip Generation*

Land Use	Land Use Code	Quantity (x)	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	Total
Retail	820	1,535 sf	1 veh/hr	0 veh/hr	1 veh/hr	3 veh/hr	3 veh/hr	6 veh/hr	58 veh
		Calculation Details:	*62%*	*38%*	*=0.94(X/1000)*	*48%*	*52%*	*=3.81(X/1000)*	*=37.75(X/1000)*

Step 2: Convert to people per hour, before applying mode splits

Land Use	People/Car	AM Peak Hour			PM Peak Hour			Daily
	(from 2017 NHTS, Table 16)	In	Out	Total	In	Out	Total	Total
Retail	1.82 ppl/veh	2 ppl/hr	0 ppl/hr	2 ppl/hr	5 ppl/hr	6 ppl/hr	11 ppl/hr	106 ppl

Step 3: Split between modes, per assumed Mode Splits

Land Use	Mode	Split	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	Total
Retail	Auto	50%	1 ppl/hr	0 ppl/hr	1 ppl/hr	3 ppl/hr	3 ppl/hr	6 ppl/hr	53 ppl
Retail	Transit	25%	1 ppl/hr	0 ppl/hr	1 ppl/hr	1 ppl/hr	2 ppl/hr	3 ppl/hr	27 ppl
Retail	Bike	5%	0 ppl/hr	0 ppl/hr	0 ppl/hr	0 ppl/hr	1 ppl/hr	1 ppl/hr	5 ppl
Retail	Walk	20%	0 ppl/hr	0 ppl/hr	0 ppl/hr	1 ppl/hr	1 ppl/hr	2 ppl/hr	21 ppl

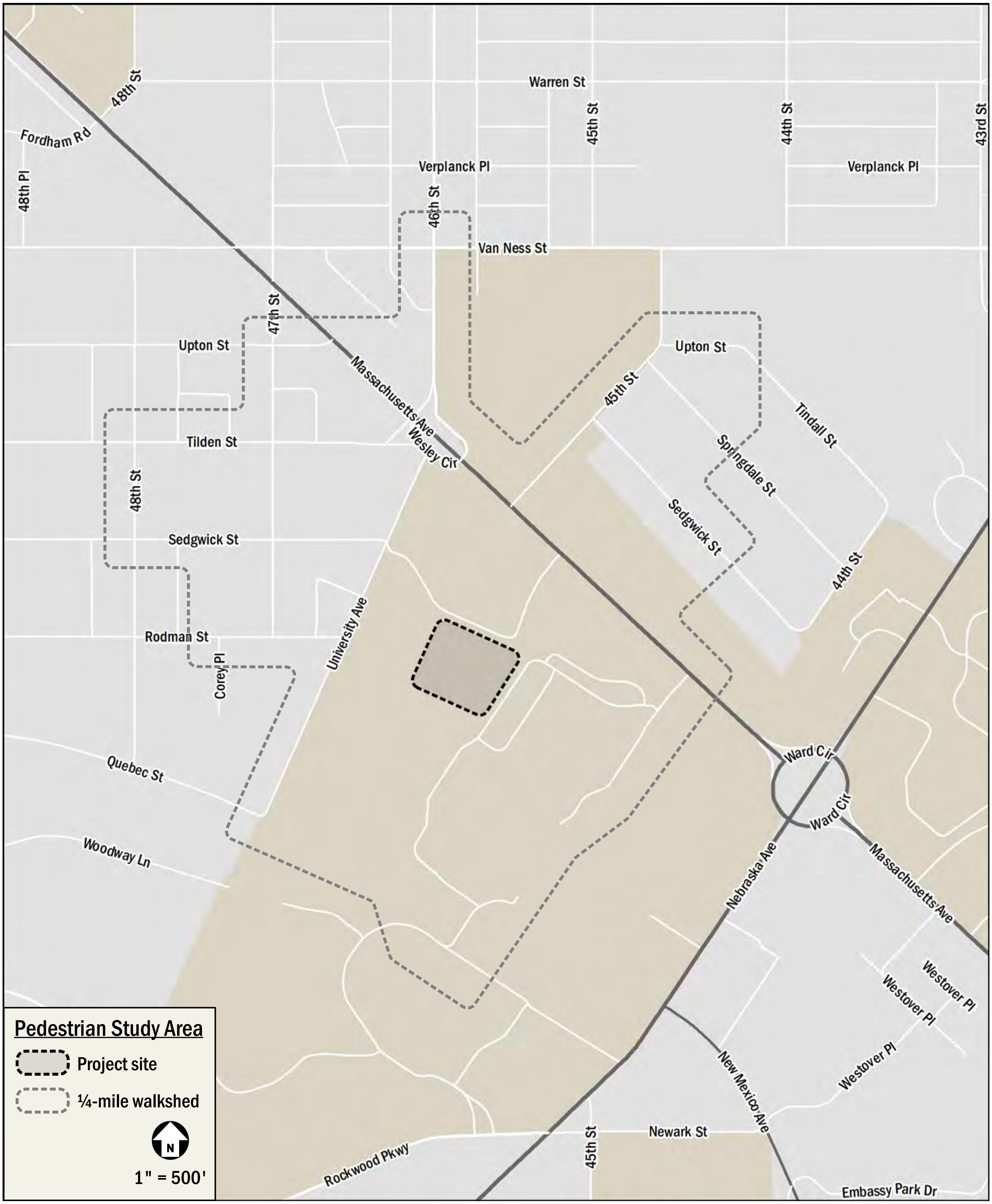
Step 4: Convert auto trips back to vehicles/hour

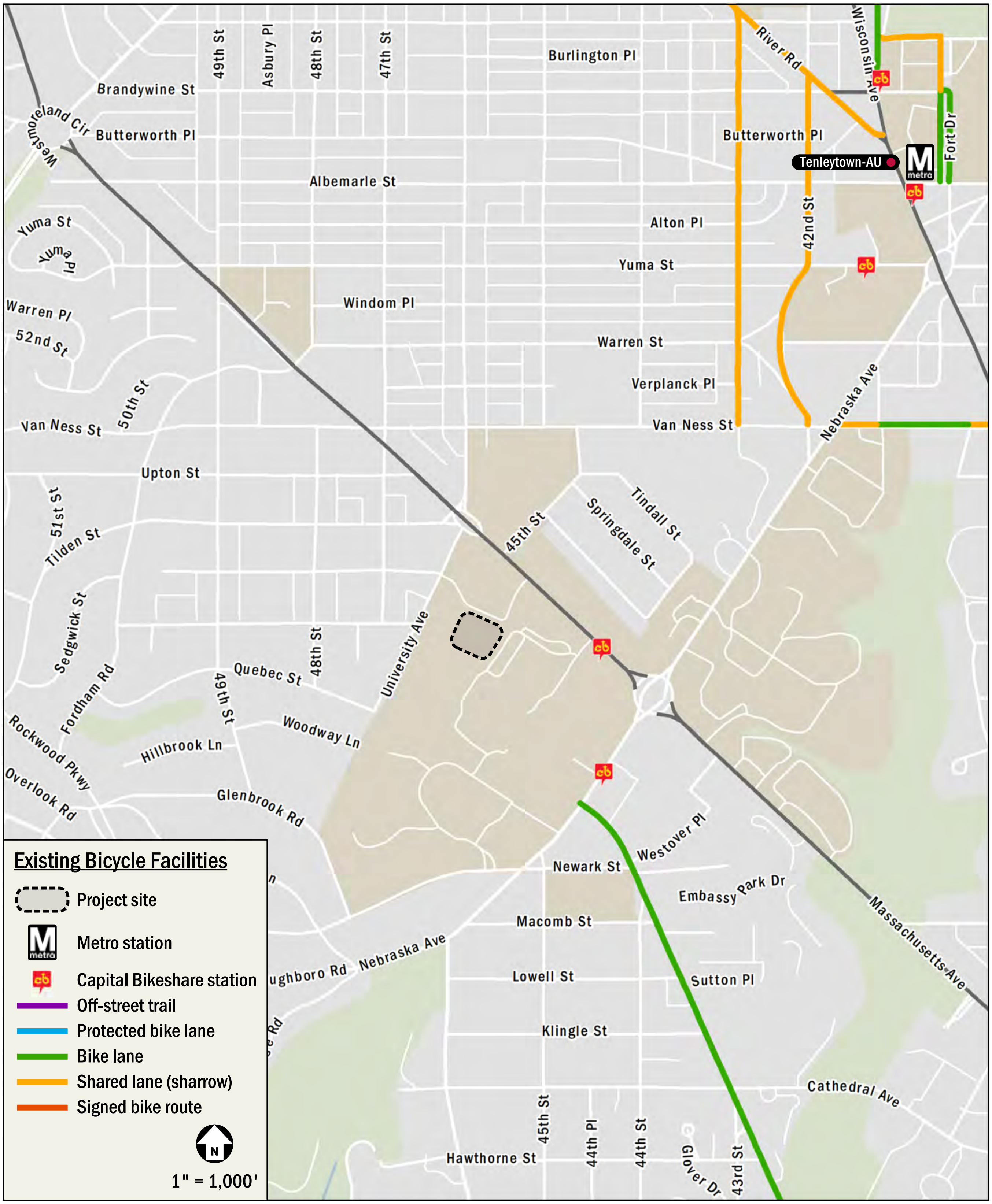
Land Use	People/Car	AM Peak Hour			PM Peak Hour			Daily
	(from 2017 NHTS, Table 16)	In	Out	Total	In	Out	Total	Total
Retail	1.82 ppl/veh	1 veh/hr	0 veh/hr	1 veh/hr	2 veh/hr	1 veh/hr	3 veh/hr	29 veh

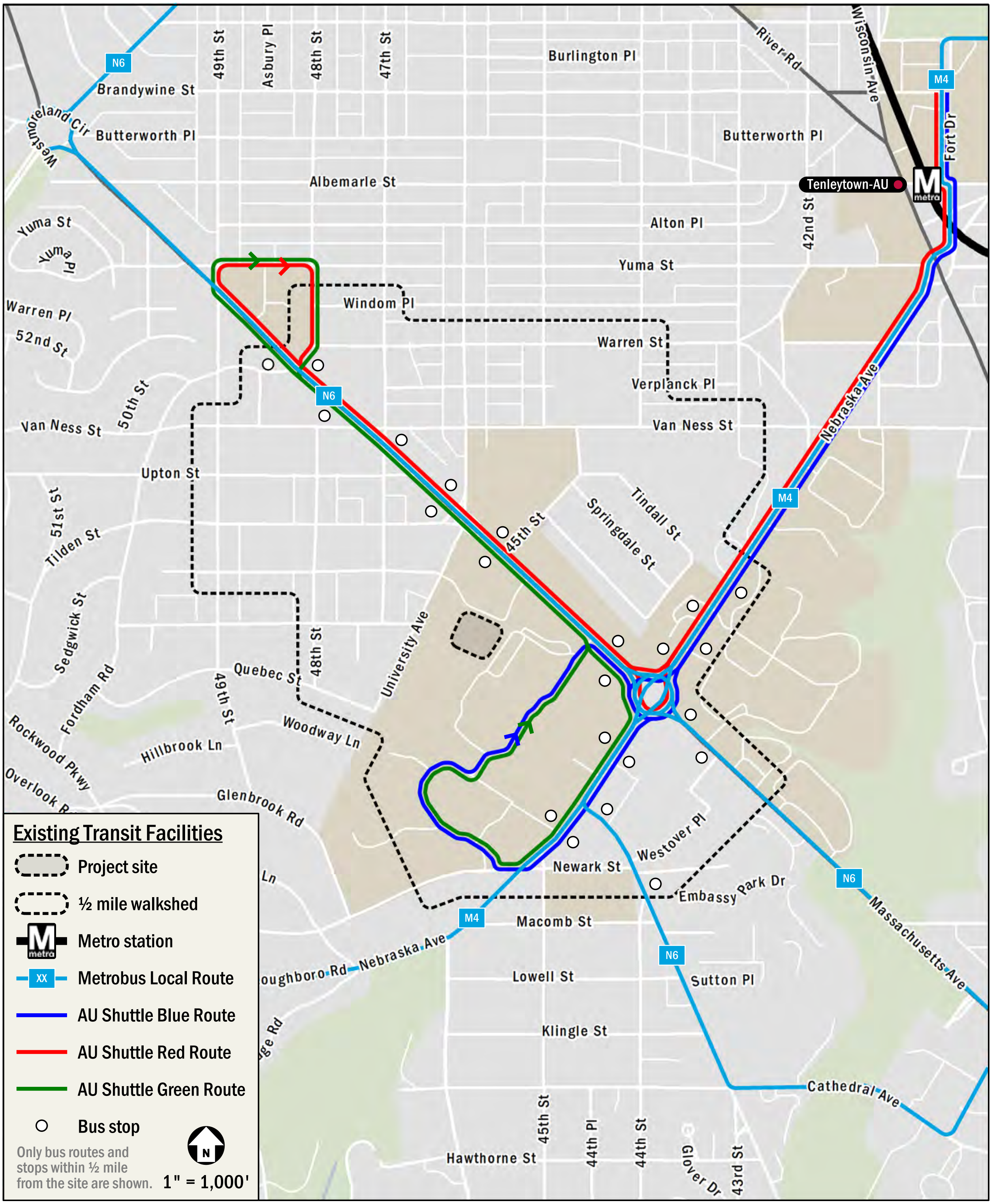
Trip Gen Summary for Retail

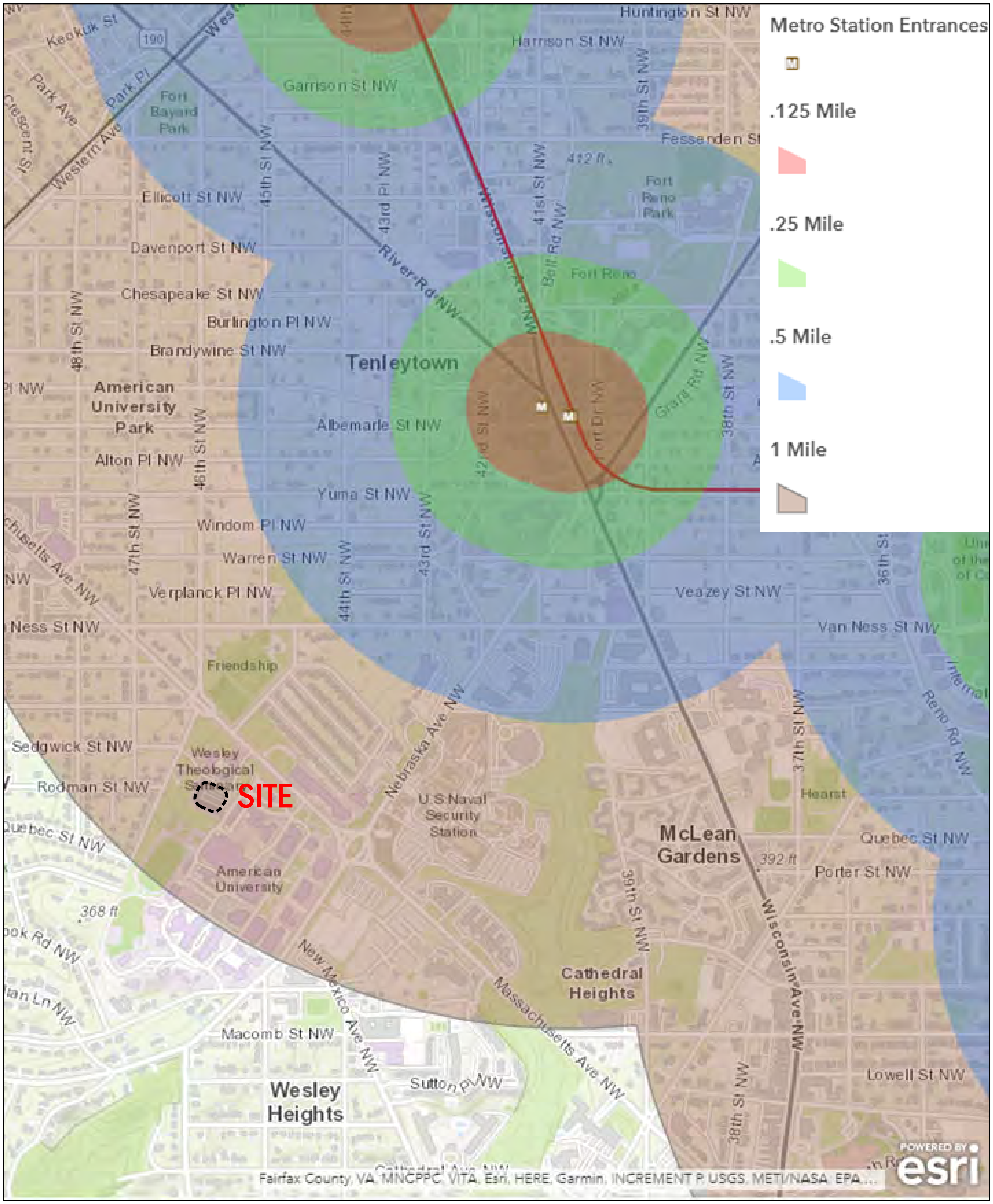
Mode	AM Peak Hour			PM Peak Hour			Daily
	In	Out	Total	In	Out	Total	Total
Auto	1 veh/hr	0 veh/hr	1 veh/hr	2 veh/hr	1 veh/hr	3 veh/hr	29 veh
Transit	1 ppl/hr	0 ppl/hr	1 ppl/hr	1 ppl/hr	2 ppl/hr	3 ppl/hr	27 ppl
Bike	0 ppl/hr	0 ppl/hr	0 ppl/hr	0 ppl/hr	1 ppl/hr	1 ppl/hr	5 ppl
Walk	0 ppl/hr	0 ppl/hr	0 ppl/hr	1 ppl/hr	1 ppl/hr	2 ppl/hr	21 ppl

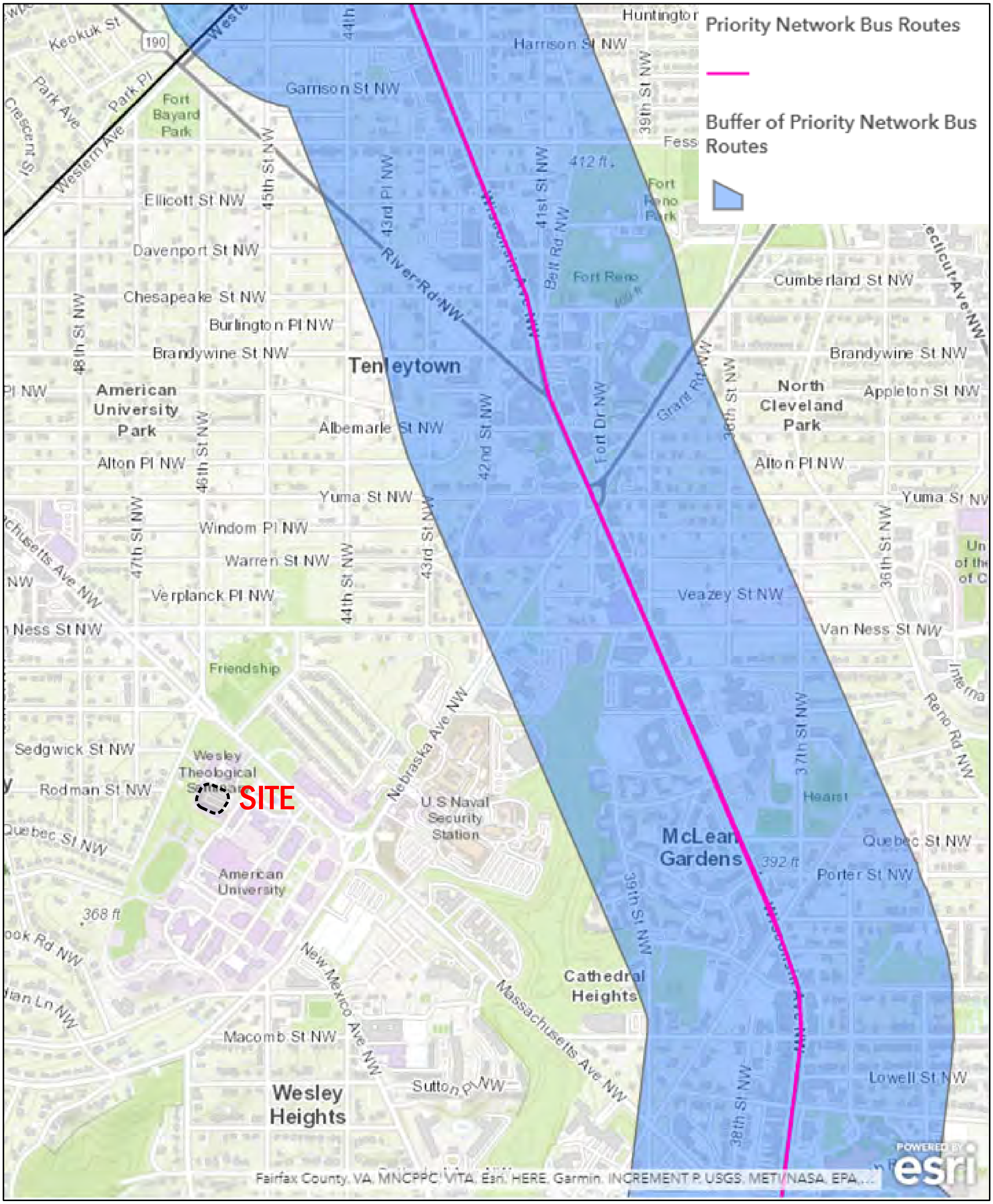
Mode	Mode Split	Land Use	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Auto (veh/hr)	20%	Residential	5	8	13	15	15	30
	50%	Retail	1	0	1	2	1	3
		Total	**6**	**8**	**14**	**17**	**16**	**33**
Transit (ppl/hr)	50%	Residential	16	23	39	45	44	89
	25%	Retail	1	0	1	1	2	3
		Total	**17**	**23**	**40**	**46**	**46**	**92**
Bike (ppl/hr)	5%	Residential	2	2	4	4	5	9
	5%	Retail	0	0	0	0	1	1
		Total	**2**	**2**	**4**	**4**	**6**	**10**
Walk (ppl/hr)	25%	Residential	8	11	19	22	22	44
	20%	Retail	0	0	0	1	1	2
		Total	**8**	**11**	**19**	**23**	**23**	**46**


48th St
Warren St
45th St
44th St
43rd St
Fordham Rd
48th Pl
Verplanck Pl
Verplanck Pl
46th St
Van Ness St
47th St
Upton St
Upton St
Massachusetts Ave
45th St
Tindall St
Tilden St
Wesley Cir
Springdale St
48th St
Sedgwick St
Sedgwick St
44th St
University Ave
Rodman St
Corey Pl
Quebec St
Ward Cir
Ward Cir
Woodway Ln
Nebraska Ave
Massachusetts Ave
Westover Pl
Westover Pl
Westover Pl
New Mexico Ave
Newark St
45th St
Rockwood Pkwy
Embassy Park Dr
Pedestrian Study Area
Project site
¼-mile walkshed
N
1" = 500'


Existing Bicycle Facilities
Project site
Metro station
Capital Bikeshare station
Off-street trail
Protected bike lane
Bike lane
Shared lane (sharrow)
Signed bike route
N
1" = 1,000'
Tenleytown-AU
Burlington Pl
49th St
Asbury Pl
48th St
47th St
River Rd
Wisconsin Ave
Fort Dr
Brandywine St
Westmoreland Cir
Butterworth Pl
Butterworth Pl
Albemarle St
Alton Pl
42nd St
Yuma St
Yuma Pl
Yuma St
Windom Pl
Warren Pl
52nd St
Warren St
Verplanck Pl
50th St
Van Ness St
Van Ness St
Nebraska Ave
Upton St
51st St
Tilden St
45th St
Springdale St
Tindall St
Sedgwick St
University Ave
48th St
Quebec St
49th St
Fordham Rd
Woodway Ln
Rockwood Pkwy
Hillbrook Ln
Overlook Rd
Glenbrook Rd
Westover Pl
Newark St
Embassy Park Dr
Macomb St
Massachusetts Ave
Loughboro Rd
Nebraska Ave
Lowell St
Sutton Pl
Klingle St
Cathedral Ave
Hawthorne St
45th St
44th Pl
44th St
Glover Dr
43rd St


Existing Transit Facilities
Project site
½ mile walkshed
Metro station
XX
Metrobus Local Route
AU Shuttle Blue Route
AU Shuttle Red Route
AU Shuttle Green Route
Bus stop
Only bus routes and stops within ½ mile from the site are shown.
N
1" = 1,000'
Tenleytown-AU
metro
N6
M4
Burlington Pl
Butterworth Pl
Brandywine St
Albemarle St
Alton Pl
Yuma St
Yuma Pl
Windom Pl
Warren St
Warren Pl
52nd St
Verplanck Pl
Van Ness St
50th St
Upton St
51st St
Tilden St
Sedgwick St
Fordham Rd
Rockwood Pkwy
Overlook R
Hillbrook Ln
Glenbrook Rd
Quebec St
Woodway Ln
University Ave
45th St
Springdale St
Tindall St
Nebraska Ave
Newark St
Westover Pl
Embassy Park Dr
Macomb St
Lowell St
Klingle St
Sutton Pl
Cathedral Ave
Massachusetts Ave
Hawthorne St
44th Pl
44th St
Glover Dr
43rd St
42nd St
Loughboro Rd
River Rd
Wisconsin Ave
Fort Dr
Westmoreland Cir
49th St
Asbury Pl
48th St
47th St
Ln
ge Rd


Metro Station Entrances
.125 Mile
.25 Mile
.5 Mile
1 Mile
SITE
Tenleytown
American University Park
Fort Bayard Park
Fort Reno Park
Wesley Theological Seminary
American University
U.S. Naval Security Station
McLean Gardens
Cathedral Heights
Wesley Heights
Friendship
Hearst
Huntington St NW
Harrison St NW
Garrison St NW
Fessenden St
Ellicott St NW
Davenport St NW
Chesapeake St NW
Burlington Pl NW
Brandywine St NW
Albemarle St NW
Alton Pl NW
Yuma St NW
Windom Pl NW
Warren St NW
Verplanck Pl NW
Veazey St NW
Van Ness St NW
Ness St NW
Sedgwick St NW
Rodman St NW
Quebec St NW
Porter St NW
Macomb St NW
Sutton Pl NW
Lowell St NW
River Rd NW
Wisconsin Ave NW
Nebraska Ave NW
New Mexico Ave NW
Massachusetts Ave NW
Western Ave
Reno Rd NW
Belt Rd NW
Grant Rd NW
48th St NW
47th St NW
46th St NW
45th St NW
44th St NW
43rd Pl NW
43rd St NW
42nd St NW
41st St NW
39th St NW
38th St NW
37th St NW
36th St
412 ft
392 ft
368 ft
Fairfax County, VA, MNCPPC, VITA, Esri, HERE, Garmin, INCREMENT P, USGS, METI/NASA, EPA...
POWERED BY esri


Priority Network Bus Routes
Buffer of Priority Network Bus Routes
SITE
Tenleytown
American University Park
North Cleveland Park
McLean Gardens
Cathedral Heights
Wesley Heights
Wesley Theological Seminary
American University
U.S. Naval Security Station
Friendship
Fort Bayard Park
Fort Reno Park
Fort Reno
Hearst
412 ft
392 ft
368 ft
190
Keokuk St
Park Ave
Park Pl
Crescent St
Western Ave
Garrison St NW
Harrison St NW
Ellicott St NW
Davenport St NW
Chesapeake St NW
Burlington Pl NW
Brandywine St NW
Albemarle St NW
Alton Pl NW
Yuma St NW
Windom Pl NW
Warren St NW
Verplanck Pl NW
Veazey St NW
Van Ness St NW
Sedgwick St NW
Rodman St NW
Quebec St NW
Porter St NW
Macomb St NW
Sutton Pl NW
Lowell St NW
Cumberland St NW
Appleton St NW
River Rd NW
Wisconsin Ave NW
Belt Rd NW
Fort Dr NW
Grant Rd NW
Nebraska Ave NW
New Mexico Ave NW
Massachusetts Ave NW
Connecticut Ave NW
Reno Rd NW
36th St NW
37th St NW
38th St NW
39th St NW
41st St NW
42nd St NW
43rd Pl NW
43rd St NW
44th St NW
45th St NW
46th St NW
47th St NW
48th St NW
Fairfax County, VA, MNCPPC, VITA, Esri, HERE, Garmin, INCREMENT P, USGS, METI/NASA, EPA, ...
POWERED BY esri

1. Massachusetts Ave & 46th St/Tilden St/Wesley Cir NW
2. University Ave & Wesley Cir NW
3. University Ave & Sedgwick St/WTS Exit NW
4. Massachusetts Ave & 45th St NW
5. Massachusetts Ave & WTS Entrance NW
6. Massachusetts Ave & Campus Dr NW
7. Massachusetts Ave & Wesley Cir NW

Proposed Study Intersections

Project site

Proposed study intersection

Traffic counts available from:

2021 AU Campus Plan (Feb 2020)

O.R. George (2012)

Neither

Both

N

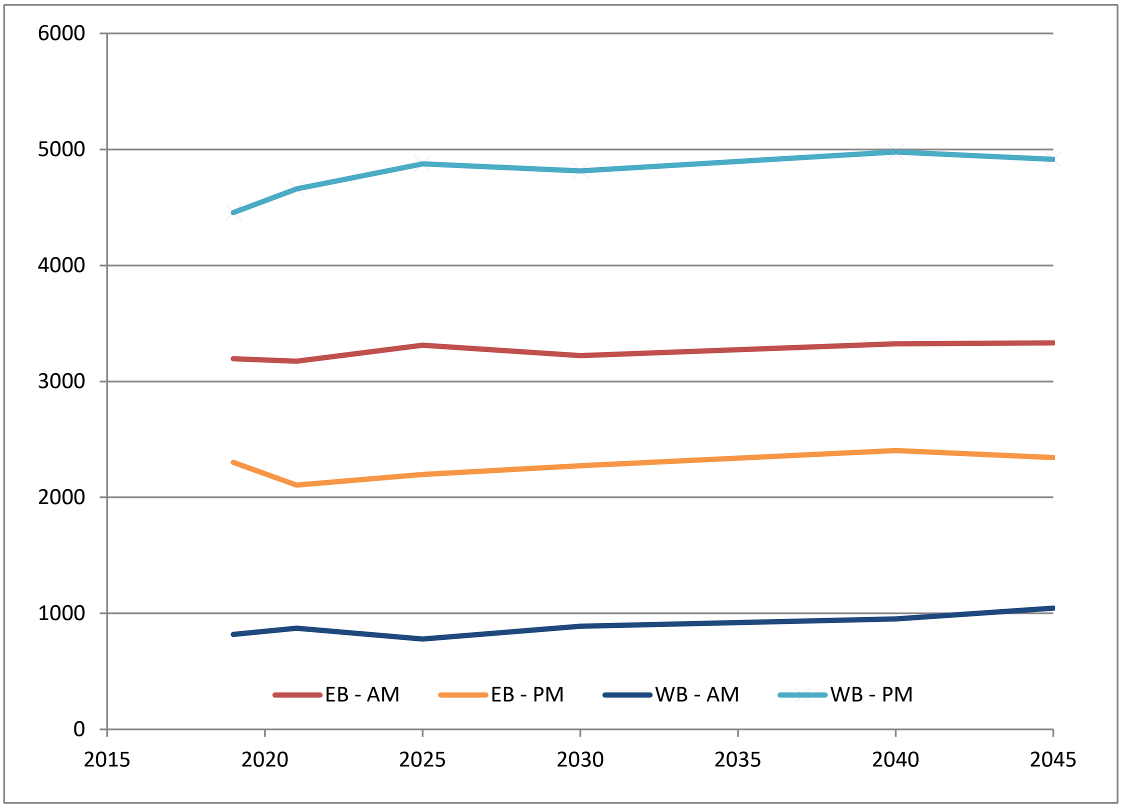
1" = 250'

Growth Rate Information & Assumptions

Massachusetts Ave NW west of Wesley Cir

MWCOG Model Volumes (v2.3.78)

Direction/Period	2019	2021	2025	2030	2040	2045
EB - AM	3195	3174	3312	3221	3323	3332
EB - PM	2303	2106	2198	2274	2404	2344
WB - AM	819	871	779	890	952	1045
WB - PM	4455	4660	4875	4815	4978	4914



Growth Rate Information & Assumptions

Massachusetts Ave NW west of Wesley Cir

Historical DDOT AADTs in thousands

Location	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Massachusetts Ave NW west of Wesley Cir	17.5	16.9	17	18.6	18.7	19	19.2	19.7	19.9	20.4

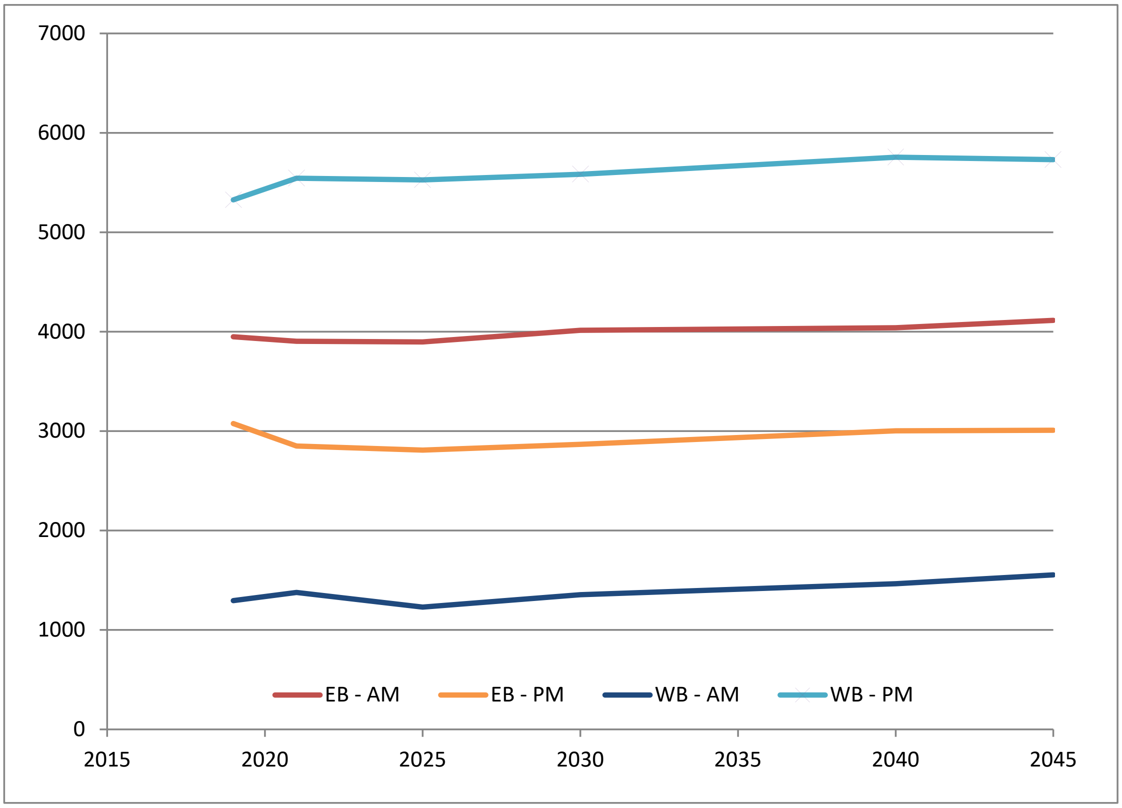
Growth per year since:	**2009**	**2012**	**2015**
	1.5%	1.3%	1.5%

Growth Rate Information & Assumptions

Massachusetts Ave NW btwn Wesley Cir and 45th St

MWCOG Model Volumes (v2.3.78)

Direction/Period	2019	2021	2025	2030	2040	2045
EB - AM	3949	3904	3897	4015	4039	4114
EB - PM	3076	2851	2809	2867	3002	3008
WB - AM	1294	1378	1230	1354	1464	1554
WB - PM	5326	5544	5528	5582	5755	5731



Growth Rate Information & Assumptions

Massachusetts Ave NW btwn Wesley Cir and 45th St

Historical DDOT AADTs in thousands

Location	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Massachusetts Ave NW btwn Wesley Cir and	22.9	22.1	22.2	22	22.1	19.7	20	20.8	20.9	21.0

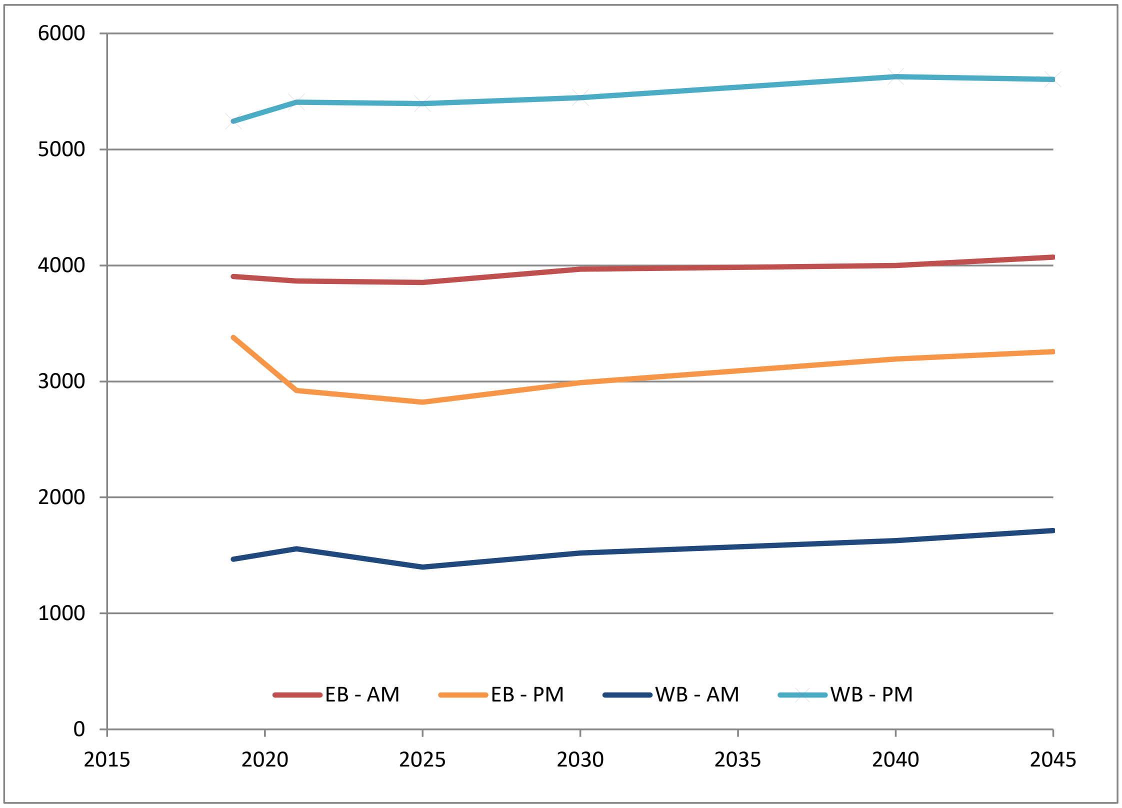
Growth per year since:	**2009**	**2012**	**2015**
	-0.9%	-0.7%	1.2%

Growth Rate Information & Assumptions

Massachusetts Ave NW east of 45th St

MWCOG Model Volumes (v2.3.78)

Direction/Period	2019	2021	2025	2030	2040	2045
EB - AM	3905	3865	3853	3968	3998	4071
EB - PM	3379	2921	2821	2988	3192	3256
WB - AM	1467	1556	1399	1521	1627	1714
WB - PM	5243	5408	5394	5446	5627	5603



Growth Rate Information & Assumptions

Massachusetts Ave NW east of 45th St

Historical DDOT AADTs in thousands

Location	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Massachusetts Ave NW east of 45th St	22.9	22.1	22.2	22	22.1	19.7	20	20.8	20.9	21.0

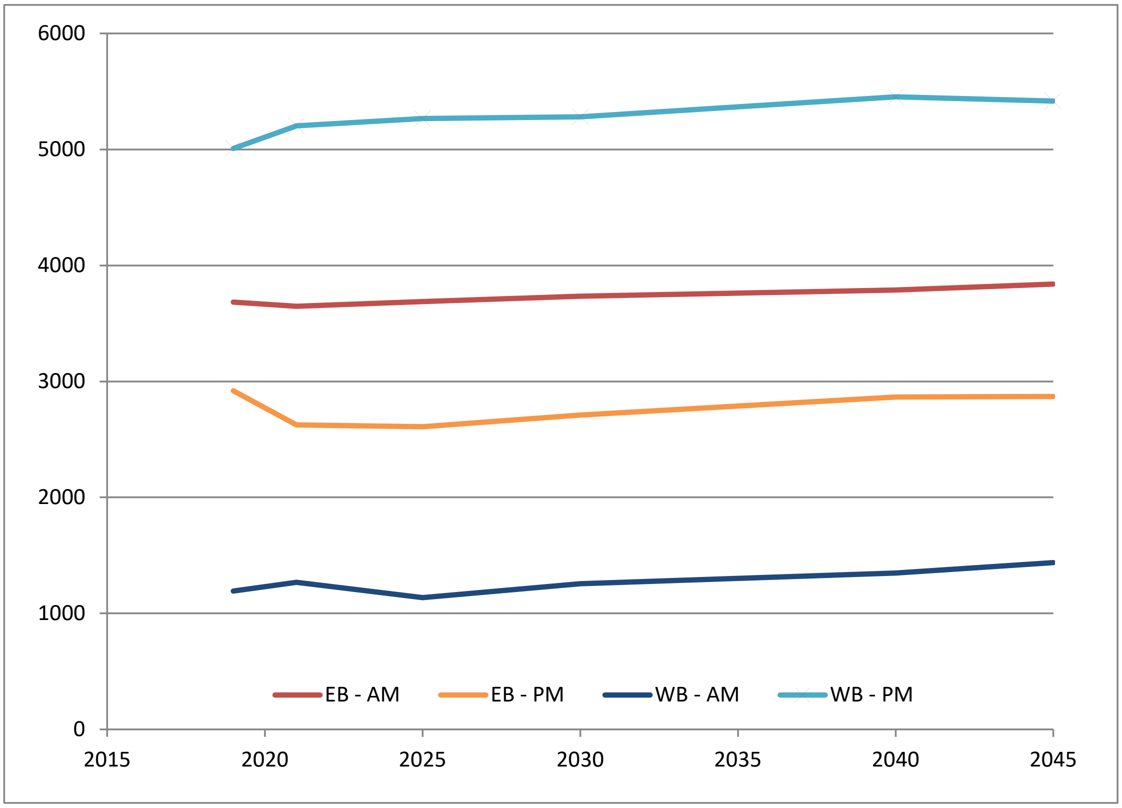
Growth per year since:	**2009**	**2012**	**2015**
	-0.9%	-0.7%	1.2%

Growth Rate Information & Assumptions

Massachusetts Ave NW aggregate

MWCOG Model Volumes (v2.3.78)

Direction/Period	2019	2021	2025	2030	2040	2045
EB - AM	3683	3648	3687	3735	3787	3839
EB - PM	2919	2626	2609	2710	2866	2869
WB - AM	1193	1268	1136	1255	1348	1438
WB - PM	5008	5204	5266	5281	5453	5416



Year of data collection:	2020
Project completion date:	2021

Direction/Period	Growth per year between 2020 & 2021
EB - AM	-0.48%
EB - PM	-5.16%
WB - AM	3.09%
WB - PM	1.94%

Growth Rate Information & Assumptions

Massachusetts Ave NW aggregate

Historical DDOT AADTs in thousands

Location	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Massachusetts Ave NW aggregate	21.1	20.4	20.5	20.9	21.0	19.5	19.7	20.4	20.6	20.8

Growth per year since:	**2009**	**2012**	**2015**
	-0.1%	0.0%	1.3%

Proposed Growth Rates for Use in Study:

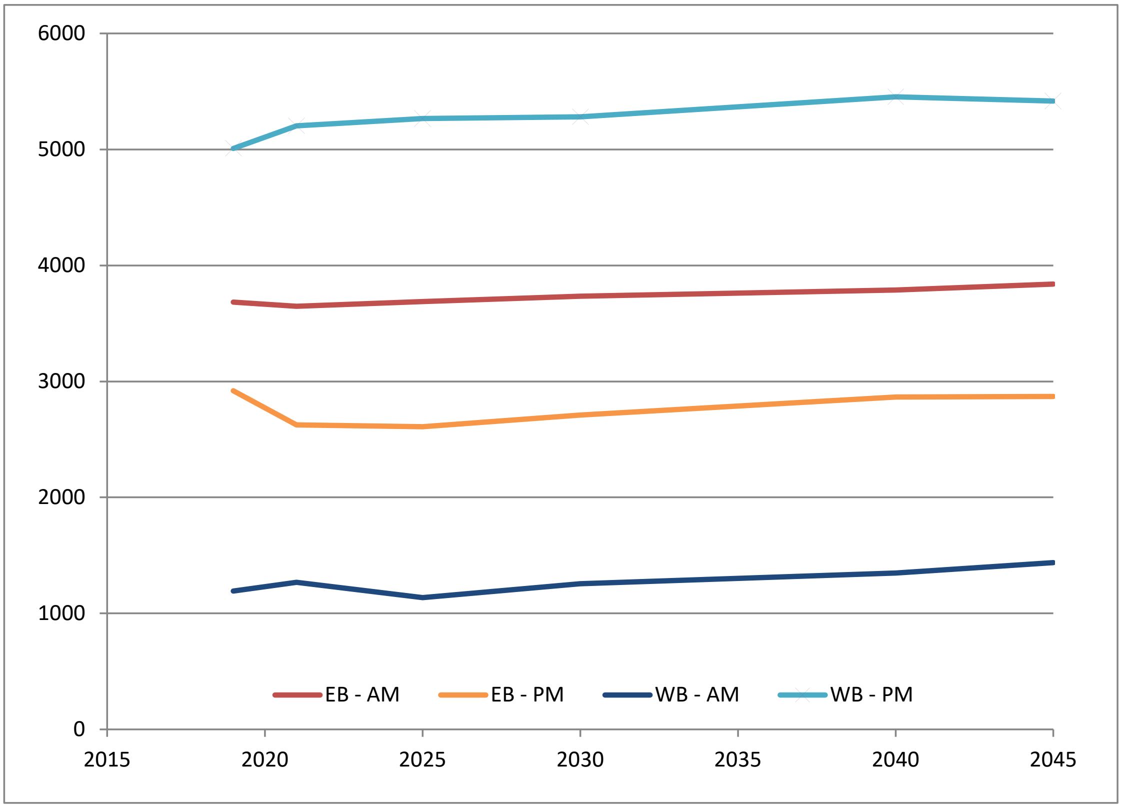
Direction/Period	**Per year btwn 2020 & 2021**	**Total btwn 2020 & 2021**
EB - AM	0.10%	0.10%
EB - PM	0.10%	0.10%
WB - AM	2.00%	2.00%
WB - PM	0.50%	0.50%

Growth Rate Information & Assumptions

Massachusetts Ave NW aggregate

MWCOG Model Volumes (v2.3.78)

Direction/Period	**2019**	**2021**	**2025**	**2030**	**2040**	**2045**
EB - AM	3683	3648	3687	3735	3787	3839
EB - PM	2919	2626	2609	2710	2866	2869
WB - AM	1193	1268	1136	1255	1348	1438
WB - PM	5008	5204	5266	5281	5453	5416



Year of data collection:	2021
Project completion date:	2024

Direction/Period	**Growth per year between 2021 & 2024**
EB - AM	0.27%
EB - PM	-0.16%
WB - AM	-2.72%
WB - PM	0.29%

Growth Rate Information & Assumptions

Massachusetts Ave NW aggregate

Historical DDOT AADTs in thousands

Location	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Massachusetts Ave NW aggregate	21.1	20.4	20.5	20.9	21.0	19.5	19.7	20.4	20.6	20.8

Growth per year since:	2009	2012	2015
	-0.1%	0.0%	1.3%

Proposed Growth Rates for Use in Study:

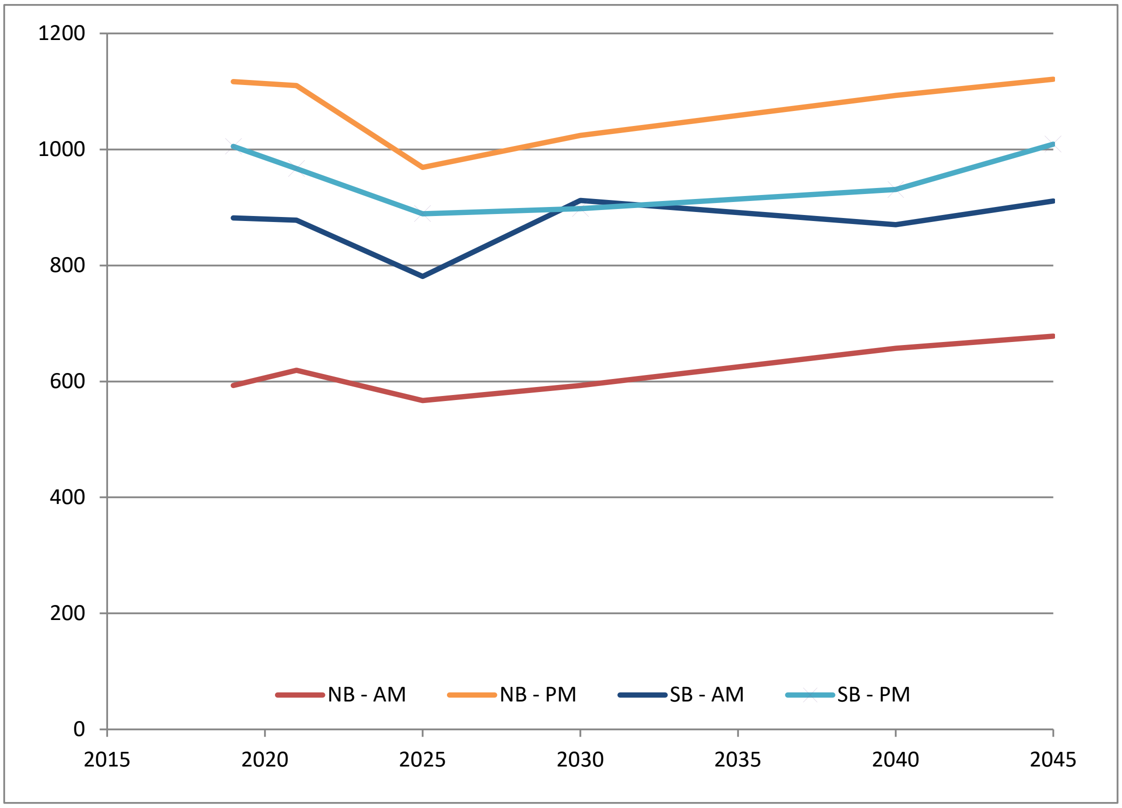
Direction/Period	Per year btwn 2021 & 2024	Total btwn 2021 & 2024
EB - AM	0.30%	0.90%
EB - PM	0.10%	0.30%
WB - AM	0.10%	0.30%
WB - PM	0.30%	0.90%

Growth Rate Information & Assumptions

46th St NW

MWCOG Model Volumes (v2.3.78)

Direction/Period	**2019**	**2021**	**2025**	**2030**	**2040**	**2045**
NB - AM	593	619	567	593	657	678
NB - PM	1117	1110	969	1024	1093	1121
SB - AM	882	878	781	912	870	911
SB - PM	1005	967	889	898	931	1009



Year of data collection:	2020
Project completion date:	2021

Direction/Period	**Growth per year between 2020 & 2021**
NB - AM	2.17%
NB - PM	-0.31%
SB - AM	-0.23%
SB - PM	-1.91%

Growth Rate Information & Assumptions

46th St NW

Historical DDOT AADTs in thousands

Location	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
46th St NW	2.3	2.2	2.2	2.2	2.2	2.6	2.7	2.8	2.8	2.8

Growth per year since:	2009	2012	2015
	2.0%	3.5%	0.9%

Proposed Growth Rates for Use in Study:

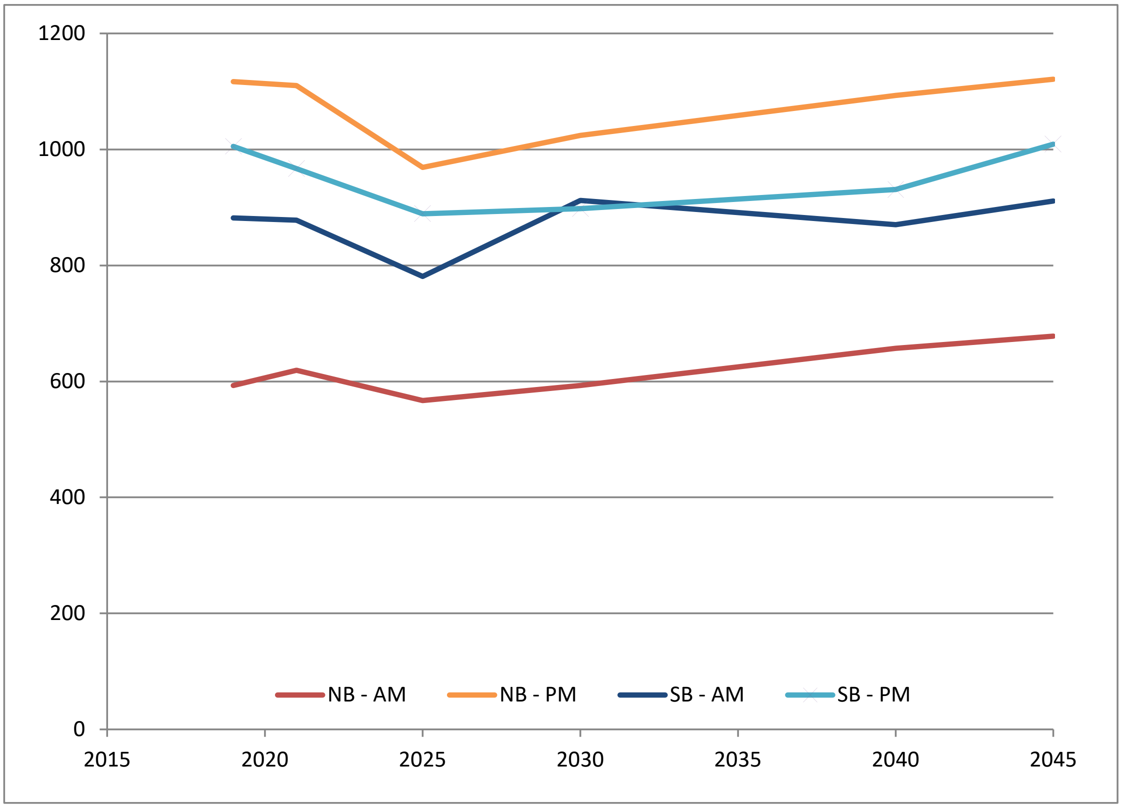
Direction/Period	Per year btwn 2020 & 2021	Total btwn 2020 & 2021
NB - AM	2.00%	2.00%
NB - PM	0.10%	0.10%
SB - AM	0.10%	0.10%
SB - PM	0.10%	0.10%

Growth Rate Information & Assumptions

46th St NW

MWCOG Model Volumes (v2.3.78)

Direction/Period	**2019**	**2021**	**2025**	**2030**	**2040**	**2045**
NB - AM	593	619	567	593	657	678
NB - PM	1117	1110	969	1024	1093	1121
SB - AM	882	878	781	912	870	911
SB - PM	1005	967	889	898	931	1009



Year of data collection:	2021
Project completion date:	2024

Direction/Period	**Growth per year between 2021 & 2024**
NB - AM	-2.17%
NB - PM	-3.34%
SB - AM	-2.88%
SB - PM	-2.08%

Growth Rate Information & Assumptions

46th St NW

Historical DDOT AADTs in thousands

Location	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
46th St NW	2.3	2.2	2.2	2.2	2.2	2.6	2.7	2.8	2.8	2.8

Growth per year since:	**2009**	**2012**	**2015**
	2.0%	3.5%	0.9%

Proposed Growth Rates for Use in Study:

Direction/Period	**Per year btwn 2021 & 2024**	**Total btwn 2021 & 2024**
NB - AM	0.10%	0.30%
NB - PM	0.10%	0.30%
SB - AM	0.10%	0.30%
SB - PM	0.10%	0.30%

Growth Rate Information & Assumptions

45th St NW

MWCOG Model Volumes (v2.3.78)

Direction/Period	2019	2021	2025	2030	2040	2045
NB - AM	241	245	241	243	234	233
NB - PM	57	60	59	54	48	47
SB - AM	25	28	29	28	30	30
SB - PM	443	265	206	311	366	423

Year of data collection: 2020
Project completion date: 2021

Direction/Period	Growth per year between 2020 & 2021
NB - AM	0.83%
NB - PM	2.60%
SB - AM	5.83%
SB - PM	-22.66%

Growth Rate Information & Assumptions

45th St NW

Historical DDOT AADTs in thousands

Location	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
45th St NW										

Growth per year since:	2009	2012	2015

Proposed Growth Rates for Use in Study:

Direction/Period	Per year btwn 2020 & 2021	Total btwn 2020 & 2021
NB - AM	0.50%	0.50%
NB - PM	0.50%	0.50%
SB - AM	2.00%	2.00%
SB - PM	0.10%	0.10%

Growth Rate Information & Assumptions

45th St NW

MWCOG Model Volumes (v2.3.78)

Direction/Period	2019	2021	2025	2030	2040	2045
NB - AM	241	245	241	243	234	233
NB - PM	57	60	59	54	48	47
SB - AM	25	28	29	28	30	30
SB - PM	443	265	206	311	366	423

Year of data collection:	2021
Project completion date:	2024

Direction/Period	Growth per year between 2021 & 2024
NB - AM	-0.41%
NB - PM	-0.42%
SB - AM	0.88%
SB - PM	-6.10%

Growth Rate Information & Assumptions

45th St NW

Historical DDOT AADTs in thousands

Location	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
45th St NW										

Growth per year since:	2009	2012	2015

Proposed Growth Rates for Use in Study:

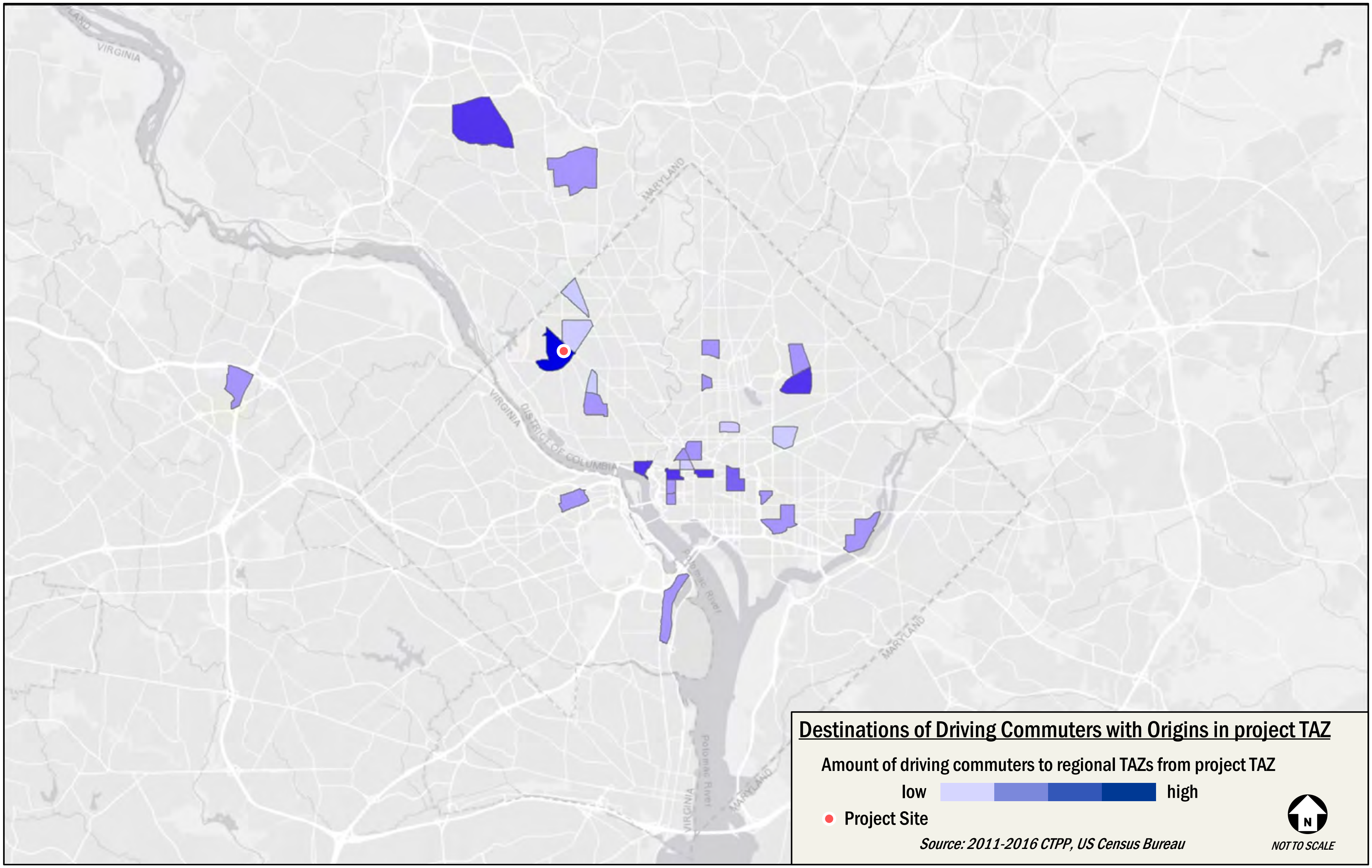
Direction/Period	Per year btwn 2021 & 2024	Total btwn 2021 & 2024
NB - AM	0.10%	0.30%
NB - PM	0.10%	0.30%
SB - AM	0.90%	2.72%
SB - PM	0.10%	0.30%

Roadway	Dir.	Proposed Annual Growth Rate Between 2020 and 2021 [1]		Proposed Total Growth Between 2020 and 2021		Proposed Annual Growth Rate Between 2021 and 2024 [2]		Proposed Total Growth Between 2021 and 2024	
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
Massachusetts Ave NW	EB	0.10%	0.10%	0.10%	0.10%	0.30%	0.10%	0.90%	0.30%
	WB	2.00%	0.50%	2.00%	0.50%	0.10%	0.30%	0.30%	0.90%
Tilden St NW	EB	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.30%	0.30%
	WB	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.30%	0.30%
46th St NW	NB	2.00%	0.10%	2.00%	0.10%	0.10%	0.10%	0.30%	0.30%
	SB	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.30%	0.30%
University Ave NW [3]	NB	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.30%	0.30%
	SB	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.30%	0.30%
45th St NW	NB	0.50%	0.50%	0.50%	0.50%	0.10%	0.10%	0.30%	0.30%
	SB	2.00%	0.10%	2.00%	0.10%	0.90%	0.10%	2.72%	0.30%
Campus Dr NW	NB	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.30%	0.30%
	SB	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.30%	0.30%

[1] These rates were applied to volumes recorded in February 2020 that were used to establish 2021 existing conditions. Rates are based on MWCOG's currently adopted regional transportation model for this time period.

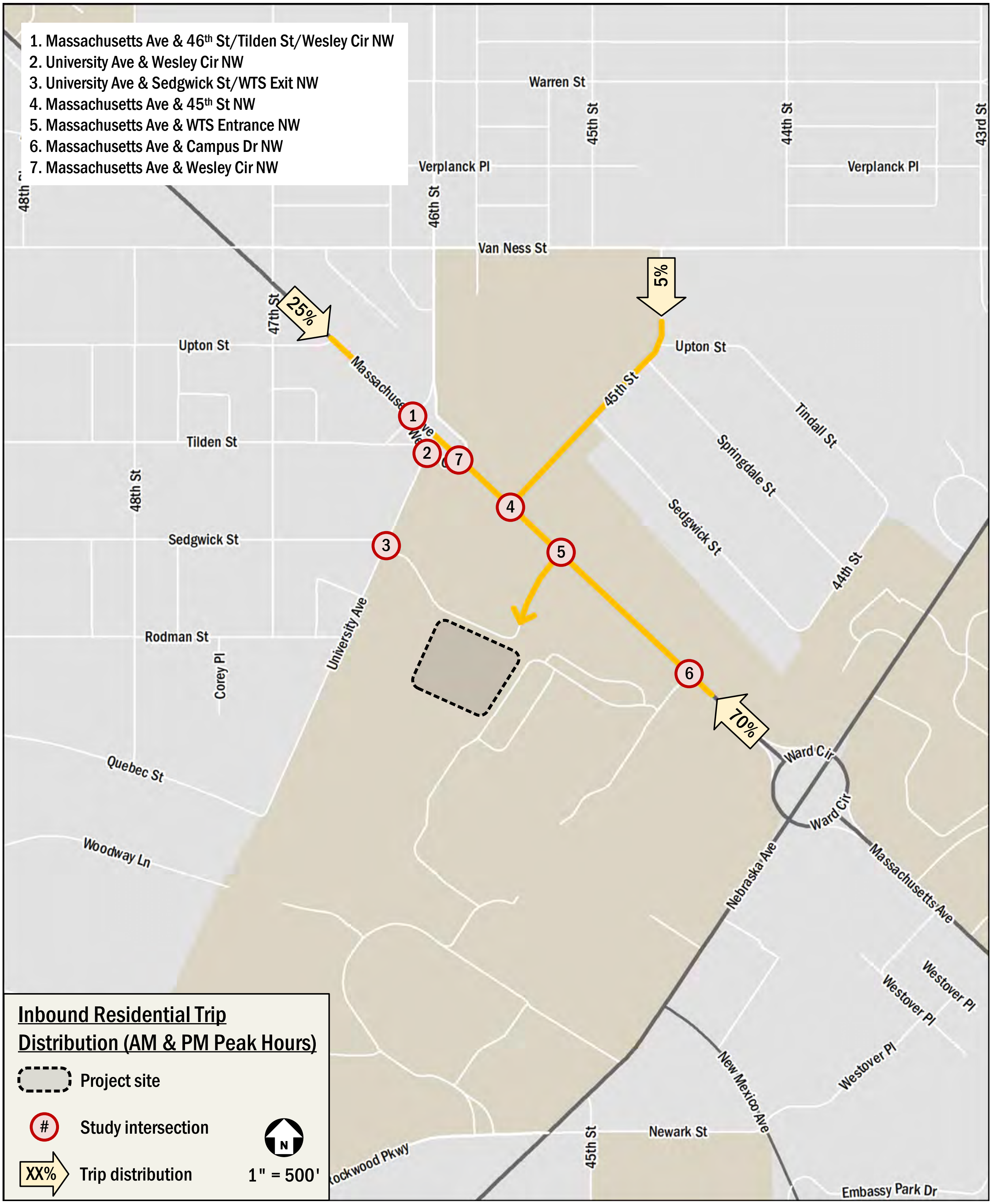
[2] These rates were applied to volumes grown from 2021 existing conditions. Rates are based on MWCOG's currently adopted regional transportation model for this time period.

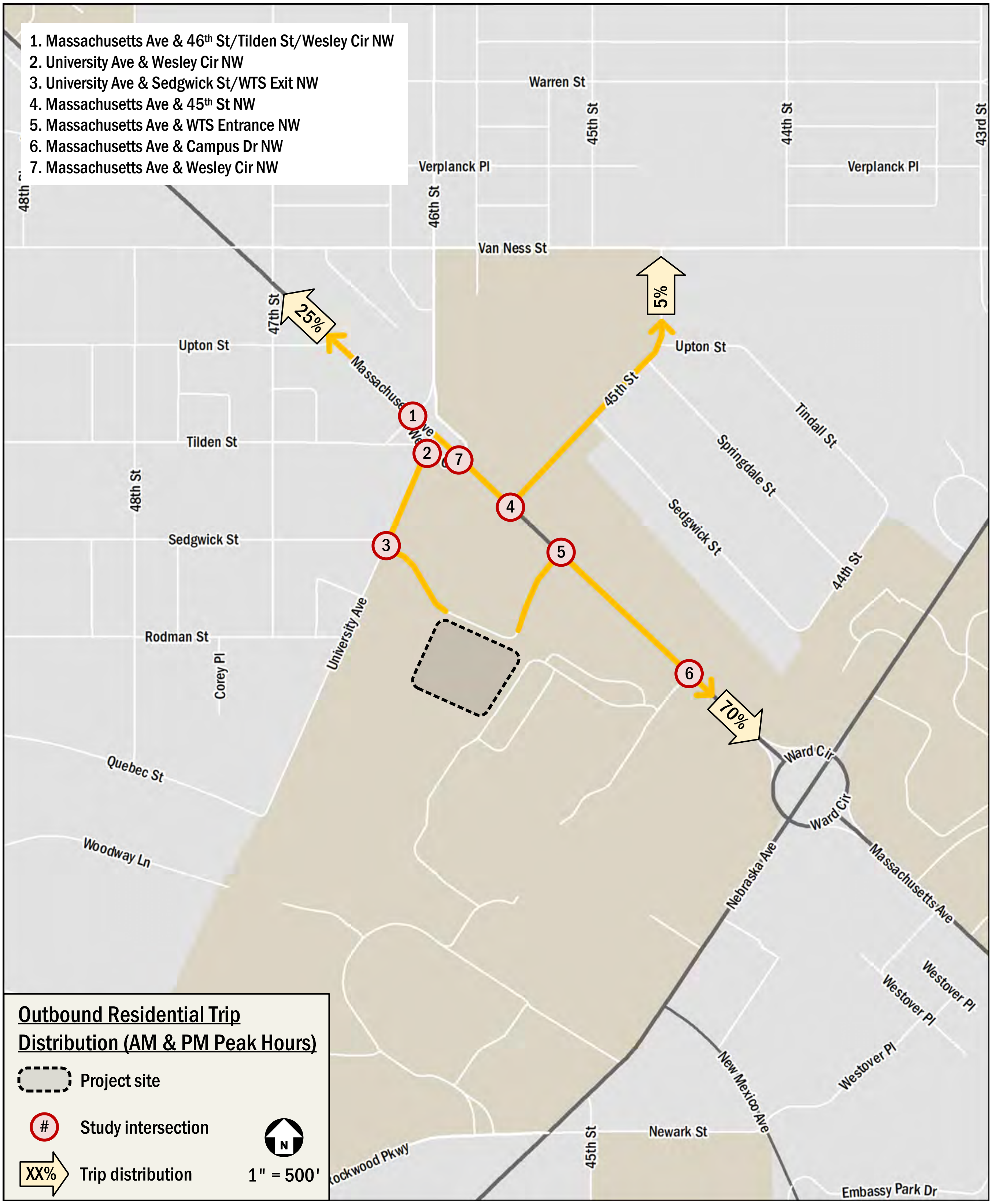
[3] Study intersection #3 (University Ave & Sedgwick St/WTS Exit NW) only has available traffic counts from 2012, not February 2020 like the other study intersections. Therefore, to establish 2021 Existing Conditions, annual growth rates of 0.10% will be applied to the northbound and southbound volumes of University Ave NW at this intersection for every year between 2012 and 2021, totaling 0.90% for each direction.



Destinations of Driving Commuters with Origins in project TAZ

Source: 2011-2016 CTPP, US Census Bureau


1. Massachusetts Ave & 46th St/Tilden St/Wesley Cir NW
2. University Ave & Wesley Cir NW
3. University Ave & Sedgwick St/WTS Exit NW
4. Massachusetts Ave & 45th St NW
5. Massachusetts Ave & WTS Entrance NW
6. Massachusetts Ave & Campus Dr NW
7. Massachusetts Ave & Wesley Cir NW
Inbound Residential Trip Distribution (AM & PM Peak Hours)
Project site
Study intersection
Trip distribution
XX%
1" = 500'
N
25%
5%
70%
Warren St
Verplanck Pl
Van Ness St
Upton St
Tilden St
Sedgwick St
Rodman St
Quebec St
Woodway Ln
Corey Pl
University Ave
Massachusetts Ave
Springdale St
Tindall St
Ward Cir
Nebraska Ave
New Mexico Ave
Westover Pl
Newark St
Embassy Park Dr
Rockwood Pkwy
48th St
47th St
46th St
45th St
44th St
43rd St


1. Massachusetts Ave & 46th St/Tilden St/Wesley Cir NW
2. University Ave & Wesley Cir NW
3. University Ave & Sedgwick St/WTS Exit NW
4. Massachusetts Ave & 45th St NW
5. Massachusetts Ave & WTS Entrance NW
6. Massachusetts Ave & Campus Dr NW
7. Massachusetts Ave & Wesley Cir NW
Warren St
45th St
44th St
43rd St
Verplanck Pl
Verplanck Pl
48th St
46th St
Van Ness St
25%
5%
47th St
Upton St
Upton St
45th St
Tindall St
Springdale St
Sedgwick St
44th St
Tilden St
48th St
Sedgwick St
Rodman St
Corey Pl
University Ave
70%
Ward Cir
Ward Cir
Quebec St
Woodway Ln
Nebraska Ave
Massachusetts Ave
Westover Pl
Westover Pl
Westover Pl
New Mexico Ave
Newark St
45th St
Embassy Park Dr
Rockwood Pkwy
1
2
3
4
5
6
7
Outbound Residential Trip Distribution (AM & PM Peak Hours)
Project site
#
Study intersection
XX%
Trip distribution
N
1" = 500'

D. Vehicle Level of Service Definitions

A. LEVEL OF SERVICE DEFINITIONS

All capacity analyses are based on the procedures specified by the Transportation Research Board, Special Report 209: Highway Capacity Manual (HCM), 2000. Levels of service (LOS) range from A to F. A brief description of each level of service for signalized and unsignalized intersections is provided below.

SIGNALIZED INTERSECTIONS

Level of service is based upon the traffic volume present in each lane on the roadway, the capacity of each lane at the intersection and the delay associated with each directional movement. The levels of service for signalized intersections are defined below:

- **LOS A** describes operations with very low average delay per vehicle, i.e., less than 10.0 seconds. This occurs when progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop. Short signal cycle lengths may also contribute to low delay.

- **LOS B** describes operations with average delay in the range of 10.1 to 20.0 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.

- **LOS C** describes operations with delay in the range of 20.1 to 35.0 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level although many still pass through the intersection without stopping. This is generally considered the lower end of the range of the acceptable level of service in rural areas.

- **LOS D** describes operations with delay in the range of 35.1 to 55.0 seconds per vehicle. At LOS D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, and/or high traffic volumes as compared to the roadway capacity. Many vehicles are required to stop and the number of vehicles that do not have to stop declines. Individual signal cycle failures, where all waiting vehicles do not clear the intersection during a single green time, are noticeable. This is generally considered the lower end of the range of the acceptable level of service in urban areas.

- **LOS E** describes operations with delay in the range of 55.1 to 80.0 seconds per vehicle. These higher delay values generally indicate poor progression, long cycle lengths, and high traffic volumes. Individual cycle failures are frequent occurrences. LOS E has been set as the limit of acceptable conditions.

- **LOS F** describes operations with average delay in excess of 80.0 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with over-saturation, i.e., when traffic arrives at a flow rate that exceeds the capacity of the intersection. It may also occur at high volumes with many individual cycle failures. Poor progression and long cycle lengths may also contribute to such delays.

UNSIGNALIZED INTERSECTIONS

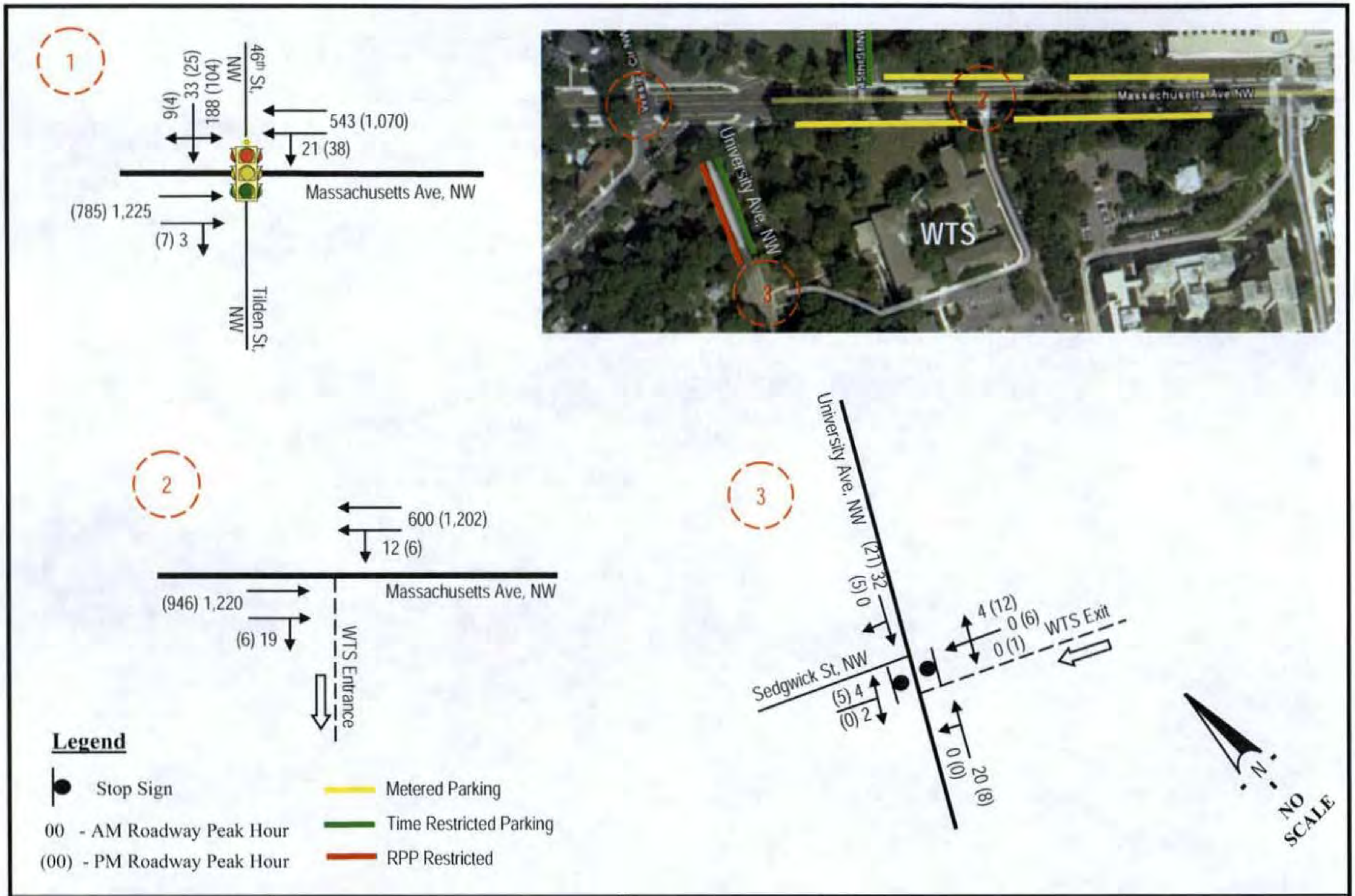
At an unsignalized intersection, the major street through traffic and right turns are assumed to operate unimpeded and therefore receive no level of service rating. The level of service for the minor street and the major street left turn traffic is dependent on the volume and capacity of the available lanes, and, the number and frequency of acceptable gaps in the major street traffic to make a conflicting turn.

The level of service grade is provided for each conflicting movement at an unsignalized intersection and is based on the total average delay experienced by each vehicle. The delay includes the time it takes a vehicle to move from the back of a queue through the intersection.

The unsignalized intersection level of service analysis does not account for variations in driver behavior or the effects of nearby traffic signals. Therefore, the results from this analysis usually indicate worse levels of service than may be experienced in the field. The unsignalized intersection level of service descriptions are provided below:

- **LOS A** describes operations where there is very little to no conflicting traffic for a minor side street movement, i.e., an average total delay of less than 10.0 seconds per vehicle.
- **LOS B** describes operations with average total delay in the range of 10.1 to 15.0 seconds per vehicle.
- **LOS C** describes operations with average total delay in the range of 15.1 to 25.0 second per vehicle.
- **LOS D** describes operations with average total delay in the range of 25.1 to 35.0 seconds per vehicle.
- **LOS E** describes operations with average total delay in the range of 35.1 to 50.0 seconds per vehicle.
- **LOS F** describes operations with average total delay of 50 seconds per vehicle. LOS F exists when there are insufficient gaps of suitable size to allow a side street demand to cross safely through or enter a major street traffic stream. This level of service is generally evident from extremely long total delays experienced by side street traffic and by queuing on the minor approaches. It is important to note that LOS F may not always result in long queues but may result in adjustments to normal driver behavior.

E. 2012 Turning Movement Counts



O. R. GEORGE & ASSOCIATES, INC.

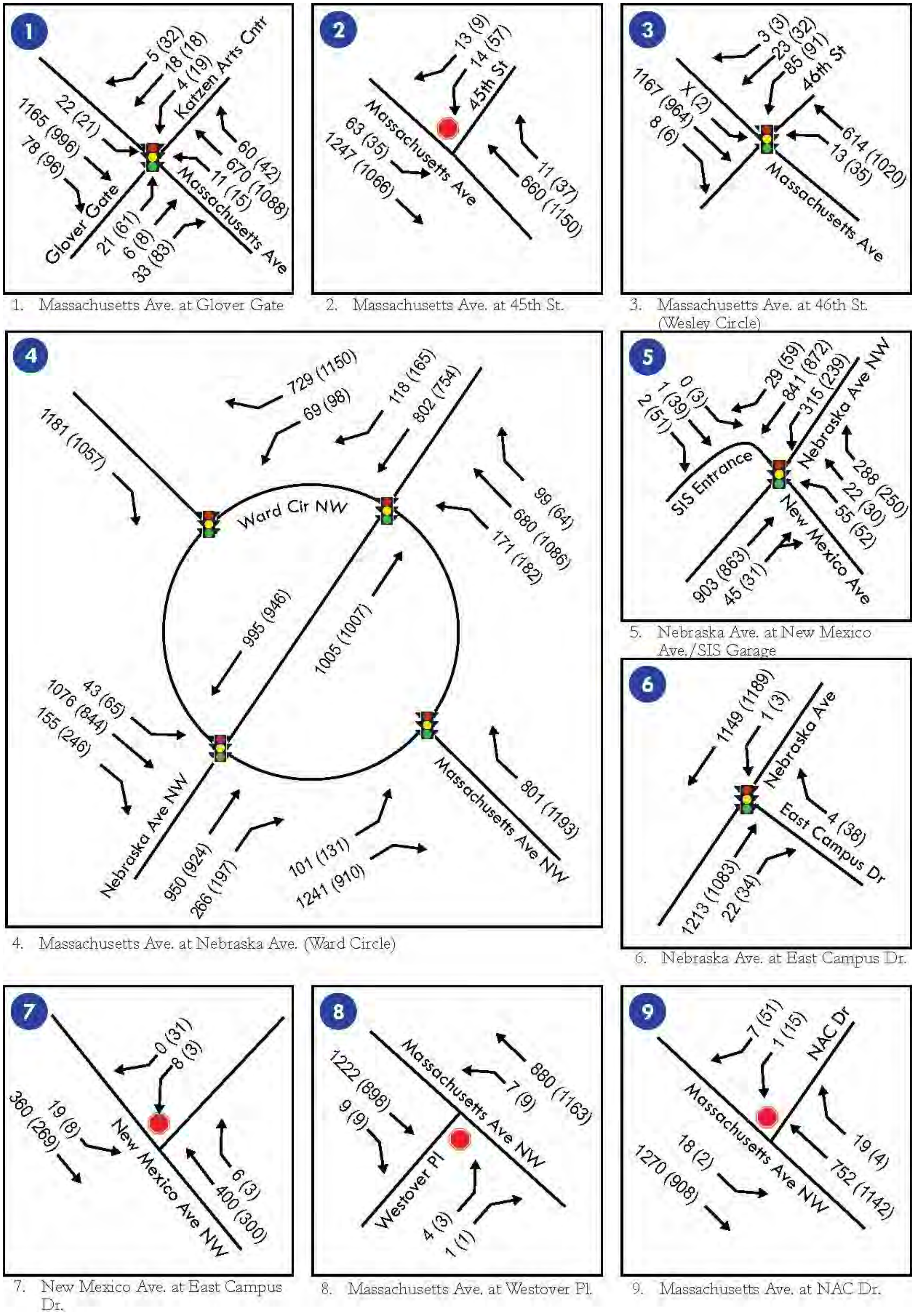
Traffic Engineers - Transportation Planners

Exhibit 3: Existing Lane Configuration and Peak Hour Volumes

Wesley Theological Seminary Campus Plan Amendment and
Further Processing Application, Northwest, Washington, D.C.

F. February 2020 Turning Movement Counts

Figure 5-1 Existing Intersection Peak Hour Traffic Volumes



1. Massachusetts Ave. at Glover Gate

2. Massachusetts Ave. at 45th St.

3. Massachusetts Ave. at 46th St. (Wesley Circle)

4. Massachusetts Ave. at Nebraska Ave. (Ward Circle)

5. Nebraska Ave. at New Mexico Ave./SIS Garage

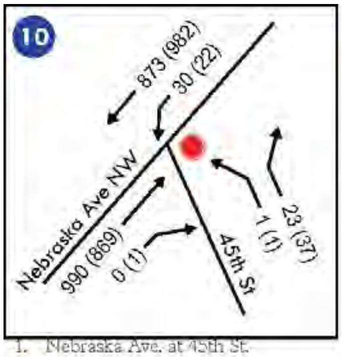
6. Nebraska Ave. at East Campus Dr.

7. New Mexico Ave. at East Campus Dr.

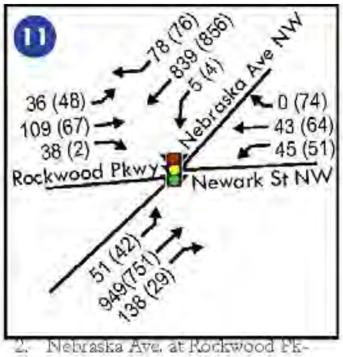
8. Massachusetts Ave. at Westover Pl.

9. Massachusetts Ave. at NAC Dr.

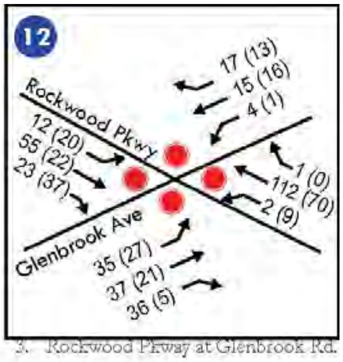
Figure 5-2 Existing Intersection Peak Hour Traffic Volumes



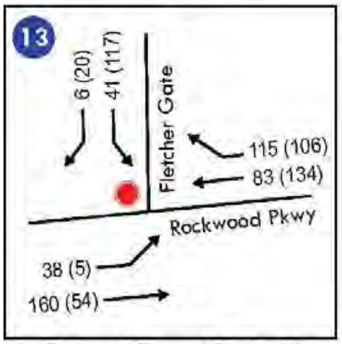
1. Nebraska Ave. at 45th St.



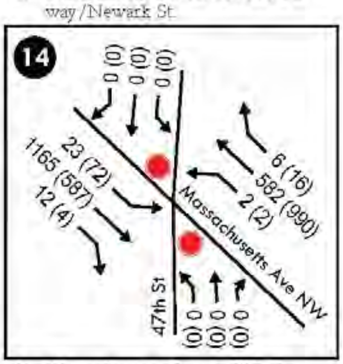
2. Nebraska Ave. at Rockwood Pkway/Newark St.



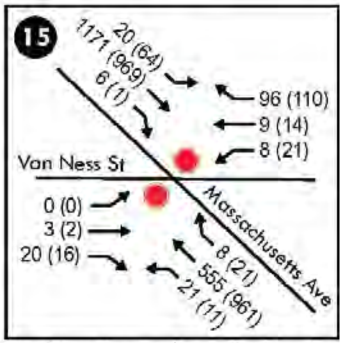
3. Rockwood Pkway at Glenbrook Rd.



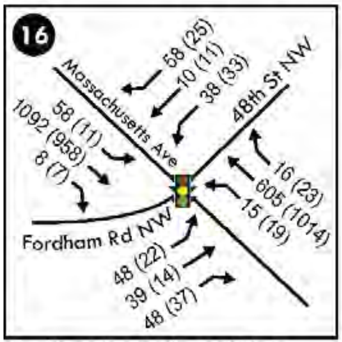
4. Rockwood Pkway at Fletcher Gate



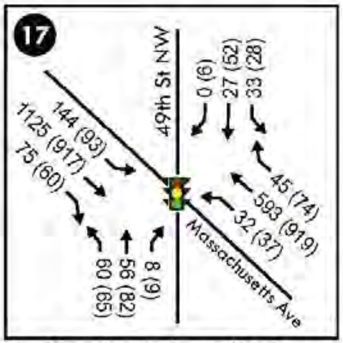
5. Massachusetts Ave. at 47th St.



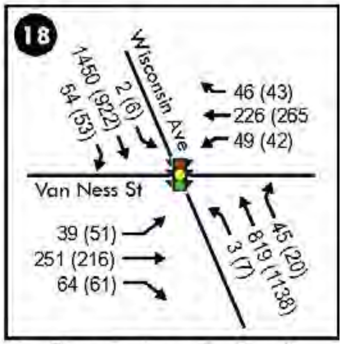
6. Massachusetts Ave. at Van Ness St.



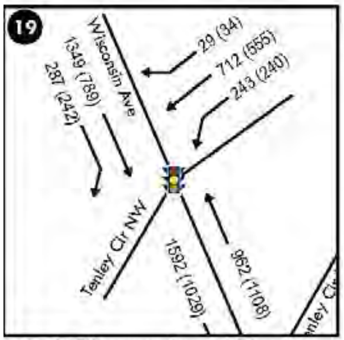
7. Massachusetts Ave. at 48th St.



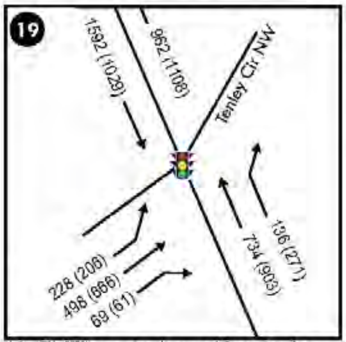
8. Massachusetts Ave. at 49th St.



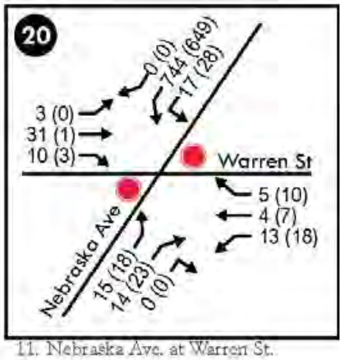
9. Wisconsin Ave. at Van Ness St.



10. (A) Wisconsin Ave. at Nebraska Ave. (Tenley Circle) North

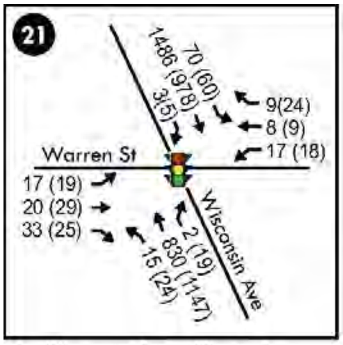


19. (B) Wisconsin Ave. at Neraska Ave. (Tenley Circle) South

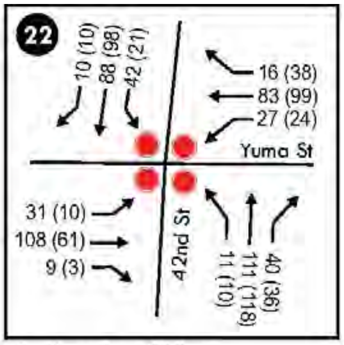


11. Nebraska Ave. at Warren St.

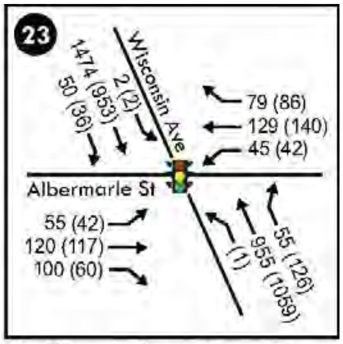
Figure 5-3 Existing Intersection Peak Hour Traffic Volumes



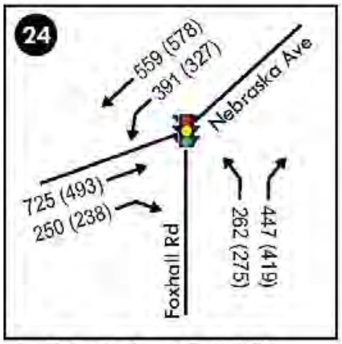
1. Wisconsin Ave. at Warren St.



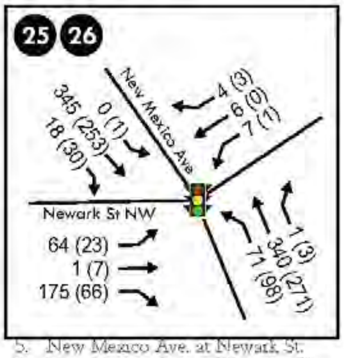
2. Yuma St. at 42nd st.



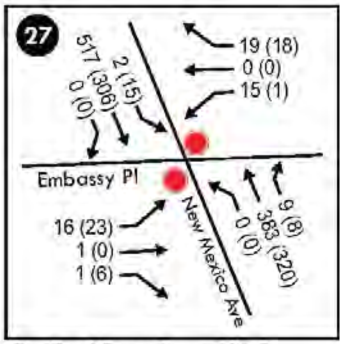
3. Wisconsin Ave. at Albemarle St.



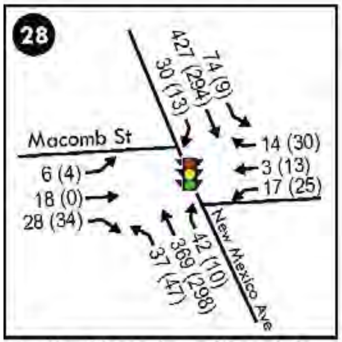
4. Nebraska Ave. at Foxhall Rd.



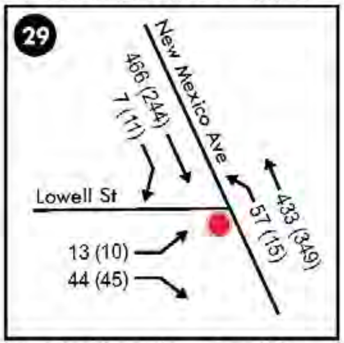
5. New Mexico Ave. at Newark St.
6. New Mexico Ave. at Westover Pl.



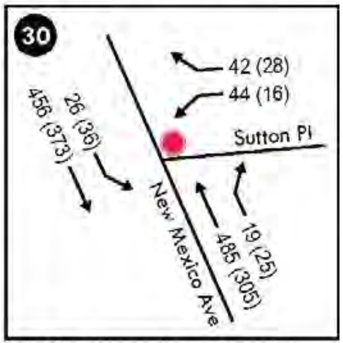
7. New Mexico Ave. at 44th St.



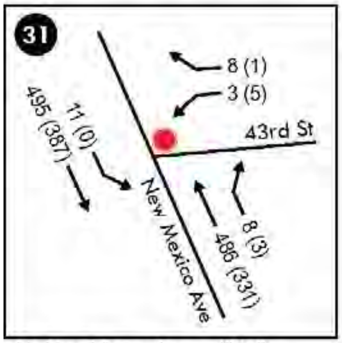
8. New Mexico Ave. at Macomb St.



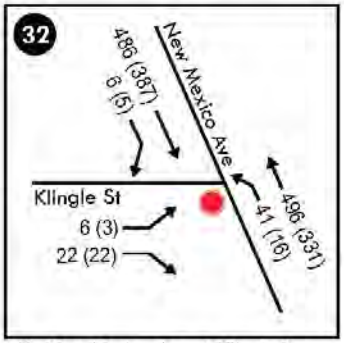
9. New Mexico Ave. at Lowell St.



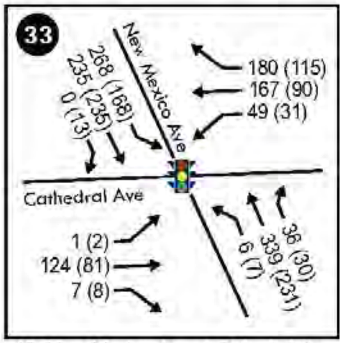
10. New Mexico Ave. at Sutton Pl.



11. New Mexico Ave. at 43th St.

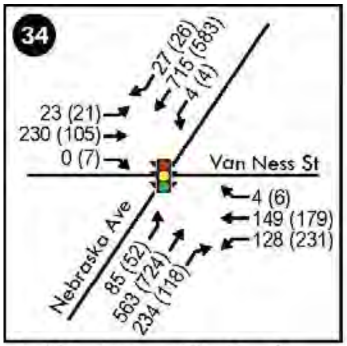


12. New Mexico Ave. at Klingle St.

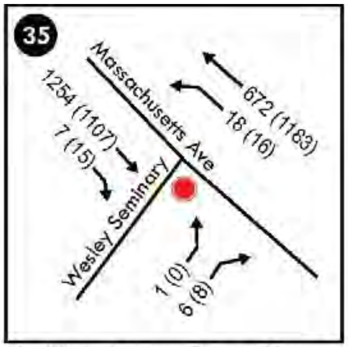


13. New Mexico Ave. at Cathedral Ave.

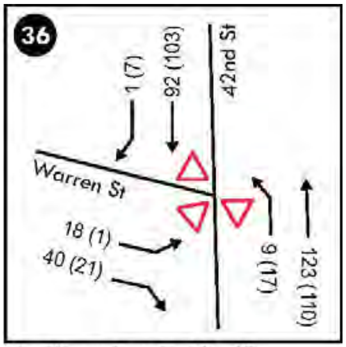
Figure 5-4 Existing Intersection Peak Hour Traffic Volumes



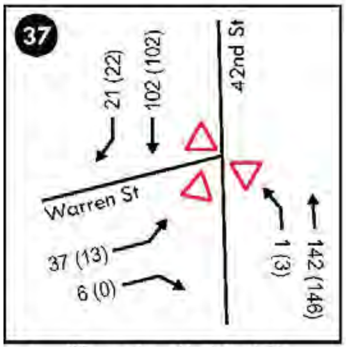
1. Nebraska Ave. at Van Ness St.



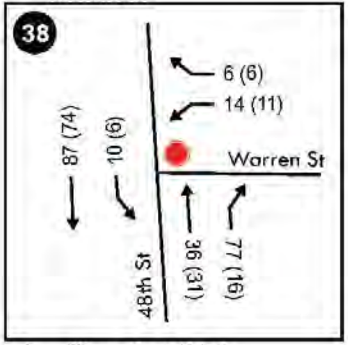
2. Wesley Seminary Drive at Massachusetts Ave.



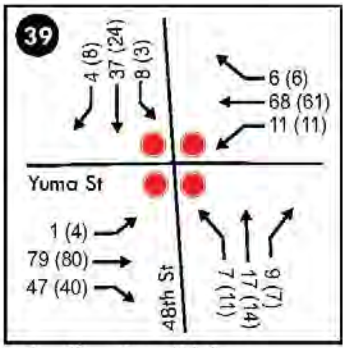
3. Warren St at 42nd St - SB



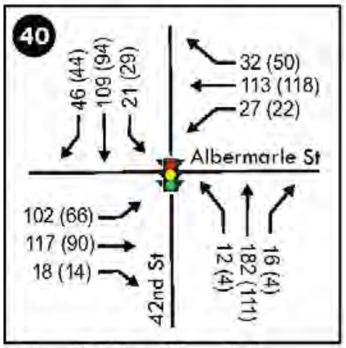
4. Warren St at 42nd St - NB



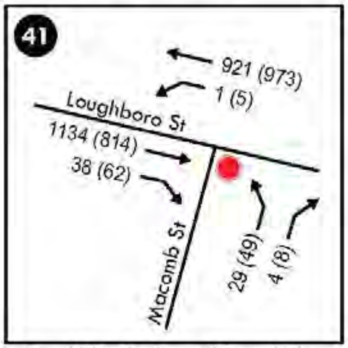
5. Warren St at 48th St.



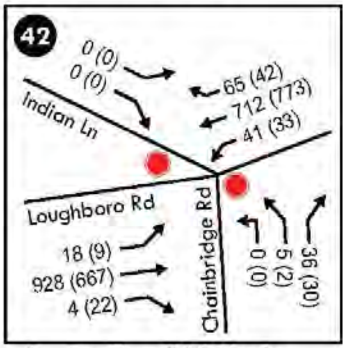
6. Yuma St. at 48th St.



7. 42nd St. at Albermarle St.



8. Nebraska Ave. at Macomb St.



9. Loughboro Rd./Nebraska Ave. at Indian Ln./Chain bridge Rd.

G. 2021 Turning Movement Counts

Gorove/Slade Associates - Multimodal Turning Movement Count Report

Project Name : Landmark Housing at Wesley Theolog
Project # : 2997-001
Location Washington DC
Data Source: Gorove/Slade Associates, Inc.

Analysis Period: STUDY_PERIOD 06:30 AM to 09:30 AM
Date of Counts: Wednesday, September 22, 2021
Weather: Cloudy

Volumes Displayed as: 1. Intersection Peak (vehicle)
Intersection Peak Hour (all vehicles): 07:30 AM to 08:30 AM
System Peak Hour (all vehicles): 07:30 AM to 08:30 AM
User-Defined Peak Hour: 07:30 AM to 08:30 AM

Intersection: **1. Wesley Circle NW & /University Avenue**

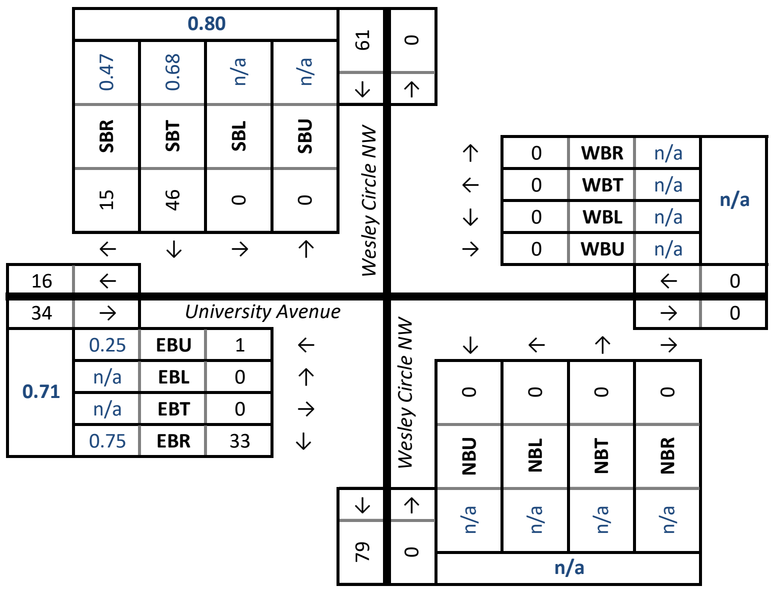
ALL VEHICLES ***Direction:***	Southbound					Westbound					Northbound					Eastbound				
Roadway:	**Wesley Circle NW**										**Wesley Circle NW**					**University Avenue**				
Movement:	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds
06:30 AM to 06:45 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
06:45 AM to 07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
07:00 AM to 07:15 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
07:15 AM to 07:30 AM	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
07:30 AM to 07:45 AM	0	0	13	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0
07:45 AM to 08:00 AM	0	0	10	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0
08:00 AM to 08:15 AM	0	0	17	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	11	0
08:15 AM to 08:30 AM	0	0	6	8	1	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0
08:30 AM to 08:45 AM	0	0	6	3	1	0	0	0	0	0	0	0	0	0	1	0	0	0	4	0
08:45 AM to 09:00 AM	0	0	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2
09:00 AM to 09:15 AM	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0
09:15 AM to 09:30 AM	0	0	13	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1
09:30 AM to 09:45 AM																				
09:45 AM to 10:00 AM																				
10:00 AM to 10:15 AM																				
10:15 AM to 10:30 AM																				
10:30 AM to 10:45 AM																				
10:45 AM to 11:00 AM																				
11:00 AM to 11:15 AM																				
11:15 AM to 11:30 AM																				
INT. PEAK HR (ALL VEH)	61				1	0				0	0				0	34				0
07:30 AM to 08:30 AM	0	0	46	15		0	0	0	0		0	0	0	0		1	0	0	33	
Peak Hour Overall	U	Left	Thru	Right	**SB**	U	Left	Thru	Right	**WB**	U	Left	Thru	Right	**NB**	U	Left	Thru	Right	**EB**
Factor (PHF) **0.77**	n/a	n/a	0.68	0.47	**0.80**	n/a	n/a	n/a	n/a	**n/a**	n/a	n/a	n/a	n/a	**n/a**	0.25	n/a	n/a	0.75	**0.71**

HEAVY VEHICLES (FHWA 4+) ***Direction:***	Southbound					Westbound					Northbound					Eastbound				
Roadway:	**Wesley Circle NW**										**Wesley Circle NW**					**University Avenue**				
Movement:	U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right	
06:30 AM to 06:45 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
06:45 AM to 07:00 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
07:00 AM to 07:15 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
07:15 AM to 07:30 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
07:30 AM to 07:45 AM	0	0	1	0		0	0	0	0		0	0	0	0		0	0	0	0	
07:45 AM to 08:00 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
08:00 AM to 08:15 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
08:15 AM to 08:30 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
08:30 AM to 08:45 AM	0	0	1	1		0	0	0	0		0	0	0	0		0	0	0	0	
08:45 AM to 09:00 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
09:00 AM to 09:15 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	2	
09:15 AM to 09:30 AM	0	0	2	0		0	0	0	0		0	0	0	0		0	0	0	0	
09:30 AM to 09:45 AM																				
09:45 AM to 10:00 AM																				
10:00 AM to 10:15 AM																				
10:15 AM to 10:30 AM																				
10:30 AM to 10:45 AM																				
10:45 AM to 11:00 AM																				
11:00 AM to 11:15 AM																				
11:15 AM to 11:30 AM																				
INT. PEAK HR (ALL VEH)	1					0					0					0				
07:30 AM to 08:30 AM	0	0	1	0		0	0	0	0		0	0	0	0		0	0	0	0	
Heavy Vehicle % (PHV):	0.0%	0.0%	2.2%	0.0%	**1.6%**	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	0.0%	0.0%	**0.0%**
INT. PEAK HR (HV ONLY)	4					0					0					2				
08:30 AM to 09:30 AM	0	0	3	1		0	0	0	0		0	0	0	0		0	0	0	2	
Heavy Vehicle % (PHV):	0.0%	0.0%	10.0%	14.3%	**10.8%**	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	0.0%	14.3%	**14.3%**

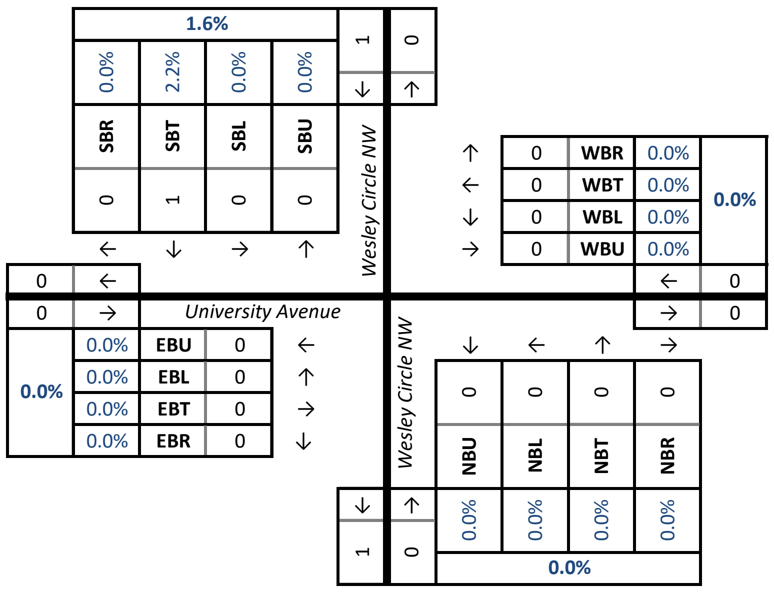
BICYCLES ***Direction:***	Southbound					Westbound					Northbound					Eastbound				
Roadway:	**Wesley Circle NW**										**Wesley Circle NW**					**University Avenue**				
Movement:	U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right	
06:30 AM to 06:45 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
06:45 AM to 07:00 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
07:00 AM to 07:15 AM	0	0	1	0		0	0	0	0		0	0	0	0		0	0	0	0	
07:15 AM to 07:30 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
07:30 AM to 07:45 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
07:45 AM to 08:00 AM	0	0	1	0		0	0	0	0		0	0	0	0		0	0	0	0	
08:00 AM to 08:15 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
08:15 AM to 08:30 AM	0	0	1	0		0	0	0	0		0	0	0	0		0	0	0	0	
08:30 AM to 08:45 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
08:45 AM to 09:00 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
09:00 AM to 09:15 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
09:15 AM to 09:30 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
09:30 AM to 09:45 AM																				
09:45 AM to 10:00 AM																				
10:00 AM to 10:15 AM																				
10:15 AM to 10:30 AM																				
10:30 AM to 10:45 AM																				
10:45 AM to 11:00 AM																				
11:00 AM to 11:15 AM																				
11:15 AM to 11:30 AM																				
INT. PEAK HR (ALL VEH)	2					0					0					0				
07:30 AM to 08:30 AM	0	0	2	0		0	0	0	0		0	0	0	0		0	0	0	0	
INT. PEAK HR (BIKES)	2					0					0					0				
07:00 AM to 08:00 AM	0	0	2	0		0	0	0	0		0	0	0	0		0	0	0	0	

DATA COLLECTION NOTES :

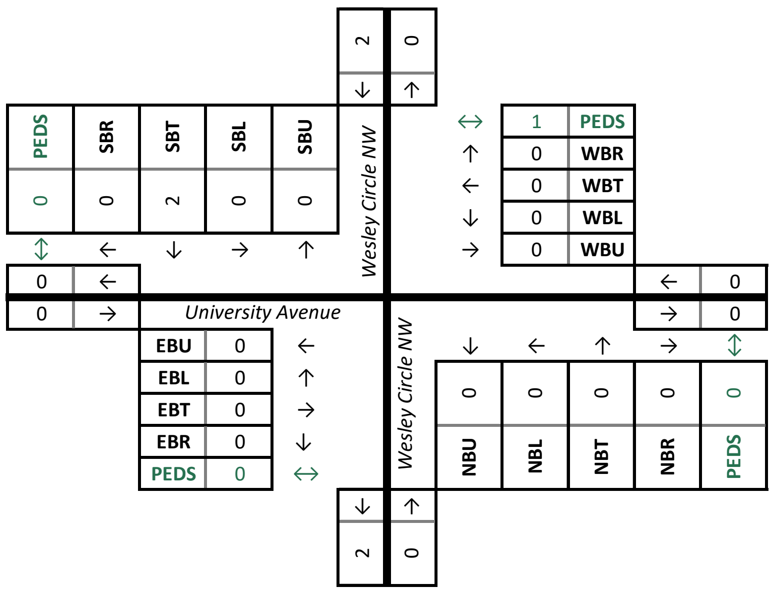
VEHICLE PEAK HOUR VOLS AND PHF: Intersection Peak (vehicle)



HEAVY VEH PEAK HOUR VOLS AND PHV: Intersection Peak (vehicle)



PED AND BIKE PEAK HOUR VOLUMES: Intersection Peak (vehicle)



Gorove/Slade Associates - Multimodal Turning Movement Count Report

Project Name : Landmark Housing at Wesley Theolo
Project # : 2997-001
Location Washington DC
Data Source: Gorove/Slade Associates, Inc.

Analysis Period: STUDY_PERIOD 06:30 AM to 09:30 AM
Date of Counts: Wednesday, September 22, 2021
Weather: Cloudy

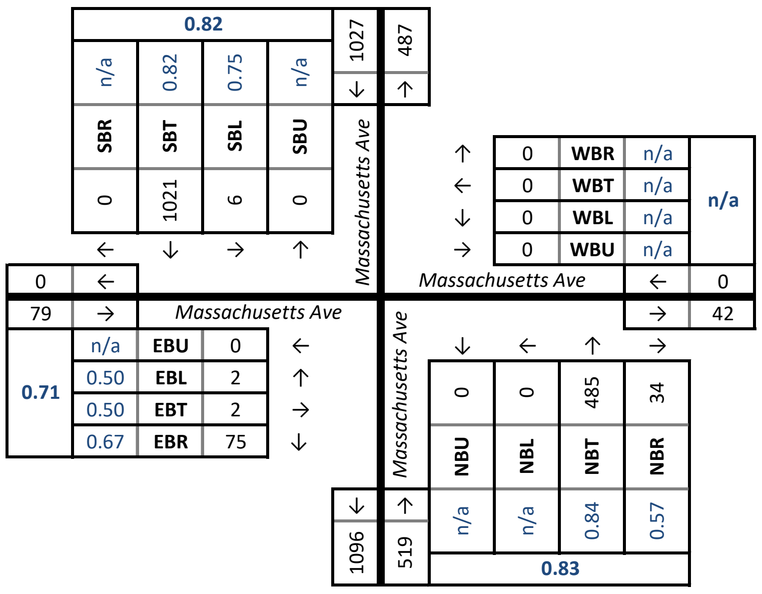
Volumes Displayed as: 1. Intersection Peak (vehicle)
Intersection Peak Hour (all vehicles): 07:30 AM to 08:30 AM
System Peak Hour (all vehicles): 07:30 AM to 08:30 AM
User-Defined Peak Hour: 07:30 AM to 08:30 AM

Intersection: 1. **Massachusetts Ave & Massachusetts Ave**

ALL VEHICLES

Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	**Massachusetts Ave**					**Massachusetts Ave**					**Massachusetts Ave**					**Massachusetts Ave**				
Movement:	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds
06:30 AM to 06:45 AM	0	0	51	0	0	0	0	0	0	4	0	0	39	1	0	0	0	0	1	1
06:45 AM to 07:00 AM	0	0	78	0	0	0	0	0	0	2	0	0	36	3	0	0	0	0	2	2
07:00 AM to 07:15 AM	0	0	82	0	0	0	0	0	0	3	0	0	56	3	0	0	0	0	2	1
07:15 AM to 07:30 AM	0	0	175	0	0	0	0	0	0	1	0	0	73	5	0	0	0	1	2	5
07:30 AM to 07:45 AM	0	1	311	0	0	0	0	0	0	3	0	0	91	5	0	0	0	0	17	0
07:45 AM to 08:00 AM	0	2	246	0	0	0	0	0	0	0	0	0	118	3	0	0	1	1	17	1
08:00 AM to 08:15 AM	0	1	254	0	0	0	0	0	0	0	0	0	145	11	0	0	0	0	28	2
08:15 AM to 08:30 AM	0	2	210	0	0	0	0	0	0	5	0	0	131	15	0	0	1	1	13	1
08:30 AM to 08:45 AM	0	0	243	0	0	0	0	0	0	8	0	0	125	10	2	0	0	1	9	3
08:45 AM to 09:00 AM	0	1	211	0	0	0	0	0	0	6	0	0	119	10	0	0	0	0	5	5
09:00 AM to 09:15 AM	0	0	169	0	0	0	0	0	0	7	0	0	112	9	0	0	0	0	13	2
09:15 AM to 09:30 AM	0	0	155	0	0	0	0	0	0	3	0	0	89	6	0	0	1	0	15	1
09:30 AM to 09:45 AM																				
09:45 AM to 10:00 AM																				
10:00 AM to 10:15 AM																				
10:15 AM to 10:30 AM																				
10:30 AM to 10:45 AM																				
10:45 AM to 11:00 AM																				
11:00 AM to 11:15 AM																				
11:15 AM to 11:30 AM																				
INT. PEAK HR (ALL VEH)	1027				0	0				8	519				0	79				4
07:30 AM to 08:30 AM	0	6	1021	0		0	0	0	0		0	0	485	34		0	2	2	75	
Peak Hour Overall	U	Left	Thru	Right	**SB**	U	Left	Thru	Right	**WB**	U	Left	Thru	Right	**NB**	U	Left	Thru	Right	**EB**
Factor (PHF) **0.93**	n/a	0.75	0.82	n/a	**0.82**	n/a	n/a	n/a	n/a	**n/a**	n/a	n/a	0.84	0.57	**0.83**	n/a	0.50	0.50	0.67	**0.71**

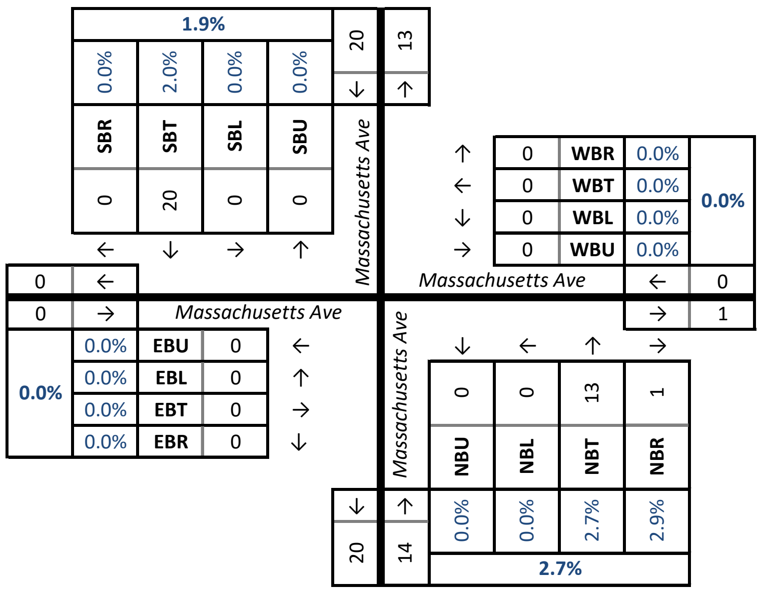
VEHICLE PEAK HOUR VOLS AND PHF: Intersection Peak (vehicle)



HEAVY VEHICLES (FHWA 4+)

Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	**Massachusetts Ave**					**Massachusetts Ave**					**Massachusetts Ave**					**Massachusetts Ave**				
Movement:	U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right	
06:30 AM to 06:45 AM	0	0	2	0		0	0	0	0		0	0	2	0		0	0	0	0	
06:45 AM to 07:00 AM	0	0	4	0		0	0	0	0		0	0	1	0		0	0	0	0	
07:00 AM to 07:15 AM	0	0	5	0		0	0	0	0		0	0	5	0		0	0	0	0	
07:15 AM to 07:30 AM	0	0	2	0		0	0	0	0		0	0	2	2		0	0	0	0	
07:30 AM to 07:45 AM	0	0	4	0		0	0	0	0		0	0	3	0		0	0	0	0	
07:45 AM to 08:00 AM	0	0	4	0		0	0	0	0		0	0	3	0		0	0	0	0	
08:00 AM to 08:15 AM	0	0	6	0		0	0	0	0		0	0	3	0		0	0	0	0	
08:15 AM to 08:30 AM	0	0	6	0		0	0	0	0		0	0	4	1		0	0	0	0	
08:30 AM to 08:45 AM	0	0	10	0		0	0	0	0		0	0	4	0		0	0	0	1	
08:45 AM to 09:00 AM	0	0	3	0		0	0	0	0		0	0	3	0		0	0	0	0	
09:00 AM to 09:15 AM	0	0	2	0		0	0	0	0		0	0	3	0		0	0	0	2	
09:15 AM to 09:30 AM	0	0	7	0		0	0	0	0		0	0	7	0		0	0	0	3	
09:30 AM to 09:45 AM																				
09:45 AM to 10:00 AM																				
10:00 AM to 10:15 AM																				
10:15 AM to 10:30 AM																				
10:30 AM to 10:45 AM																				
10:45 AM to 11:00 AM																				
11:00 AM to 11:15 AM																				
11:15 AM to 11:30 AM																				
INT. PEAK HR (ALL VEH)	20					0					14					0				
07:30 AM to 08:30 AM	0	0	20	0		0	0	0	0		0	0	13	1		0	0	0	0	
Heavy Vehicle % (PHV):	0.0%	0.0%	2.0%	0.0%	**1.9%**	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	2.7%	2.9%	**2.7%**	0.0%	0.0%	0.0%	0.0%	**0.0%**
INT. PEAK HR (HV ONLY)	22					0					17					6				
08:30 AM to 09:30 AM	0	0	22	0		0	0	0	0		0	0	17	0		0	0	0	6	
Heavy Vehicle % (PHV):	0.0%	0.0%	2.8%	0.0%	**2.8%**	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	3.8%	0.0%	**3.5%**	0.0%	0.0%	0.0%	14.3%	**13.6%**

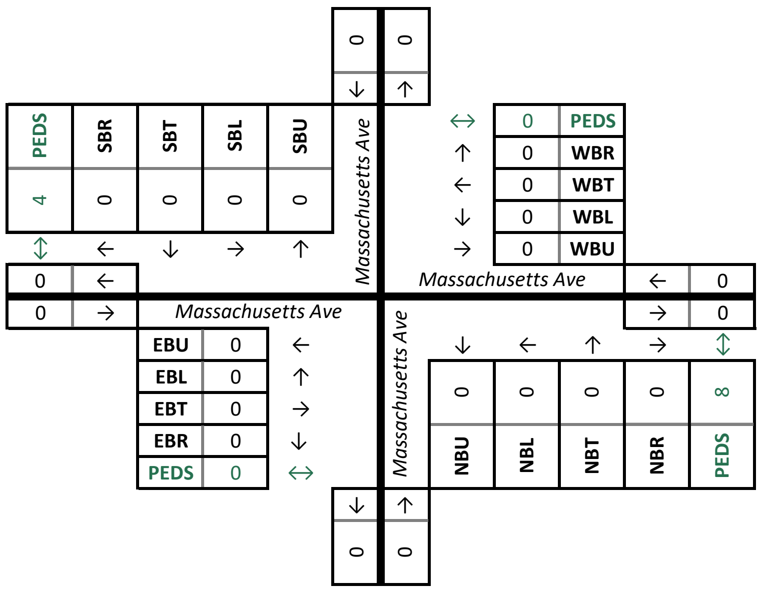
HEAVY VEH PEAK HOUR VOLS AND PHV: Intersection Peak (vehicle)



BICYCLES

Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	**Massachusetts Ave**					**Massachusetts Ave**					**Massachusetts Ave**					**Massachusetts Ave**				
Movement:	U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right	
06:30 AM to 06:45 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
06:45 AM to 07:00 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
07:00 AM to 07:15 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	1	
07:15 AM to 07:30 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
07:30 AM to 07:45 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
07:45 AM to 08:00 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
08:00 AM to 08:15 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
08:15 AM to 08:30 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
08:30 AM to 08:45 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
08:45 AM to 09:00 AM	0	0	2	0		0	0	0	0		0	0	0	0		0	0	0	0	
09:00 AM to 09:15 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
09:15 AM to 09:30 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
09:30 AM to 09:45 AM																				
09:45 AM to 10:00 AM																				
10:00 AM to 10:15 AM																				
10:15 AM to 10:30 AM																				
10:30 AM to 10:45 AM																				
10:45 AM to 11:00 AM																				
11:00 AM to 11:15 AM																				
11:15 AM to 11:30 AM																				
INT. PEAK HR (ALL VEH)	0					0					0					0				
07:30 AM to 08:30 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
INT. PEAK HR (BIKES)	2					0					0					0				
08:00 AM to 09:00 AM	0	0	2	0		0	0	0	0		0	0	0	0		0	0	0	0	

PED AND BIKE PEAK HOUR VOLUMES: Intersection Peak (vehicle)



DATA COLLECTION NOTES :

Gorove/Slade Associates - Multimodal Turning Movement Count Report

Project Name : Landmark Housing at Wesley Theolo
Project # : 2997-001
Location Washington DC
Data Source: Gorove/Slade Associates, Inc.

Analysis Period: STUDY_PERIOD 04:00 PM to 07:00 PM
Date of Counts: Wednesday, September 22, 2021
Weather: Cloudy

Volumes Displayed as: 1. Intersection Peak (vehicle)
Intersection Peak Hour (all vehicles): 04:00 PM to 05:00 PM
System Peak Hour (all vehicles): 04:45 PM to 05:45 PM
User-Defined Peak Hour: 05:00 PM to 06:00 PM

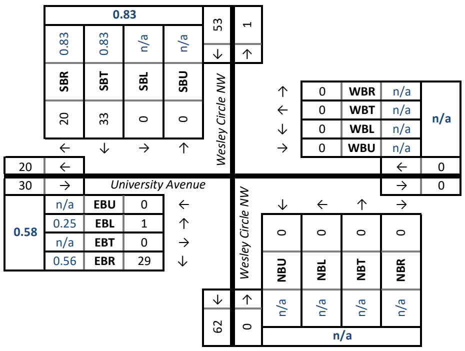
Intersection:	**1. Wesley Circle NW & /University Avenue**																			
ALL VEHICLES ***Direction:***	Southbound					Westbound					Northbound					Eastbound				
Roadway:	**Wesley Circle NW**										**Wesley Circle NW**					**University Avenue**				
Movement:	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds
04:00 PM to 04:15 PM	0	0	8	5	1	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0
04:15 PM to 04:30 PM	0	0	6	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0
04:30 PM to 04:45 PM	0	0	9	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	1
04:45 PM to 05:00 PM	0	0	10	6	1	0	0	0	0	0	0	0	0	0	0	0	0	0	9	1
05:00 PM to 05:15 PM	0	0	9	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0
05:15 PM to 05:30 PM	0	0	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	2
05:30 PM to 05:45 PM	0	0	7	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0
05:45 PM to 06:00 PM	0	0	5	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
06:00 PM to 06:15 PM	0	0	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	1
06:15 PM to 06:30 PM	0	0	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
06:30 PM to 06:45 PM	0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0
06:45 PM to 07:00 PM	0	0	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1
07:00 PM to 07:15 PM																				
07:15 PM to 07:30 PM																				
07:30 PM to 07:45 PM																				
07:45 PM to 08:00 PM																				
08:00 PM to 08:15 PM																				
08:15 PM to 08:30 PM																				
08:30 PM to 08:45 PM																				
08:45 PM to 09:00 PM																				
INT. PEAK HR (ALL VEH)	53				3	0				0	0				0	30				2
04:00 PM to 05:00 PM	0	0	33	20		0	0	0	0		0	0	0	0		0	1	0	29	
Peak Hour Overall	U	Left	Thru	Right	**SB**	U	Left	Thru	Right	**WB**	U	Left	Thru	Right	**NB**	U	Left	Thru	Right	**EB**
Factor (PHF) **0.74**	n/a	n/a	0.83	0.83	**0.83**	n/a	n/a	n/a	n/a	**n/a**	n/a	n/a	n/a	n/a	**n/a**	n/a	0.25	n/a	0.56	**0.58**

HEAVY VEHICLES (FHWA 4+) ***Direction:***	Southbound					Westbound					Northbound					Eastbound				
Roadway:	**Wesley Circle NW**										**Wesley Circle NW**					**University Avenue**				
Movement:	U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right	
04:00 PM to 04:15 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
04:15 PM to 04:30 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
04:30 PM to 04:45 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	1	
04:45 PM to 05:00 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
05:00 PM to 05:15 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
05:15 PM to 05:30 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
05:30 PM to 05:45 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
05:45 PM to 06:00 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
06:00 PM to 06:15 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
06:15 PM to 06:30 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
06:30 PM to 06:45 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
06:45 PM to 07:00 PM	0	0	0	1		0	0	0	0		0	0	0	0		0	0	0	0	
07:00 PM to 07:15 PM																				
07:15 PM to 07:30 PM																				
07:30 PM to 07:45 PM																				
07:45 PM to 08:00 PM																				
08:00 PM to 08:15 PM																				
08:15 PM to 08:30 PM																				
08:30 PM to 08:45 PM																				
08:45 PM to 09:00 PM																				
INT. PEAK HR (ALL VEH)	0					0					0					1				
04:00 PM to 05:00 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	1	
Heavy Vehicle % (PHV):	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	0.0%	3.4%	**3.3%**
INT. PEAK HR (HV ONLY)	0					0					0					1				
04:00 PM to 05:00 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	1	
Heavy Vehicle % (PHV):	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	0.0%	3.4%	**3.3%**

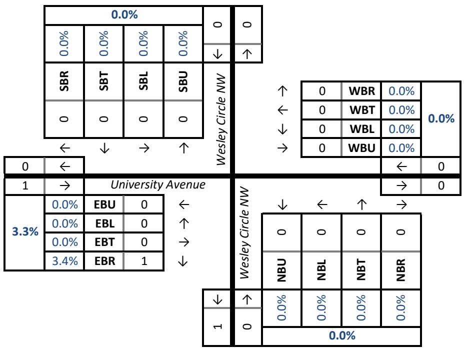
BICYCLES ***Direction:***	Southbound					Westbound					Northbound					Eastbound				
Roadway:	**Wesley Circle NW**										**Wesley Circle NW**					**University Avenue**				
Movement:	U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right	
04:00 PM to 04:15 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
04:15 PM to 04:30 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
04:30 PM to 04:45 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
04:45 PM to 05:00 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
05:00 PM to 05:15 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
05:15 PM to 05:30 PM	0	0	0	0		0	0	0	0		0	0	1	0		0	0	0	0	
05:30 PM to 05:45 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
05:45 PM to 06:00 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
06:00 PM to 06:15 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
06:15 PM to 06:30 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
06:30 PM to 06:45 PM	0	0	1	0		0	0	0	0		0	0	0	0		0	0	0	0	
06:45 PM to 07:00 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
07:00 PM to 07:15 PM																				
07:15 PM to 07:30 PM																				
07:30 PM to 07:45 PM																				
07:45 PM to 08:00 PM																				
08:00 PM to 08:15 PM																				
08:15 PM to 08:30 PM																				
08:30 PM to 08:45 PM																				
08:45 PM to 09:00 PM																				
INT. PEAK HR (ALL VEH)	0					0					0					0				
04:00 PM to 05:00 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
INT. PEAK HR (BIKES)	0					0					1					0				
04:30 PM to 05:30 PM	0	0	0	0		0	0	0	0		0	0	1	0		0	0	0	0	

DATA COLLECTION NOTES :

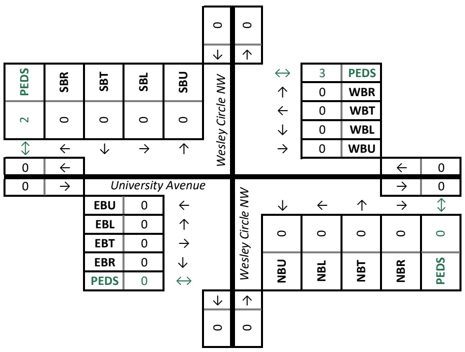
VEHICLE PEAK HOUR VOLS AND PHF: Intersection Peak (vehicle)



HEAVY VEH PEAK HOUR VOLS AND PHV: Intersection Peak (vehicle)



PED AND BIKE PEAK HOUR VOLUMES: Intersection Peak (vehicle)



Gorove/Slade Associates - Multimodal Turning Movement Count Report

Project Name : Landmark Housing at Wesley Theolo
Project # : 2997-001
Location Washington DC
Data Source: Gorove/Slade Associates, Inc.

Analysis Period: STUDY_PERIOD 04:00 PM to 07:00 PM
Date of Counts: Wednesday, September 22, 2021
Weather: Cloudy

Volumes Displayed as: 1. Intersection Peak (vehicle)
Intersection Peak Hour (all vehicles): 04:45 PM to 05:45 PM
System Peak Hour (all vehicles): 04:45 PM to 05:45 PM
User-Defined Peak Hour: 05:00 PM to 06:00 PM

Intersection: 1. Massachusetts Ave & Massachusetts Ave

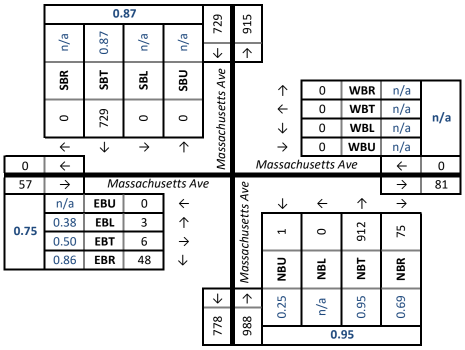
ALL VEHICLES	Southbound					Westbound					Northbound					Eastbound				
Roadway:	**Massachusetts Ave**					**Massachusetts Ave**					**Massachusetts Ave**					**Massachusetts Ave**				
Movement:	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds
04:00 PM to 04:15 PM	0	0	138	0	0	0	0	0	0	2	0	0	208	15	0	0	0	0	10	5
04:15 PM to 04:30 PM	0	1	133	0	0	0	0	0	0	3	0	0	177	16	0	0	5	0	6	1
04:30 PM to 04:45 PM	0	0	130	0	0	0	0	0	0	2	0	0	221	11	0	0	5	1	16	4
04:45 PM to 05:00 PM	0	0	168	0	0	0	0	0	0	2	0	0	207	15	0	0	2	3	14	5
05:00 PM to 05:15 PM	0	0	188	0	0	0	0	0	0	10	0	0	241	15	0	0	0	2	12	6
05:15 PM to 05:30 PM	0	0	210	0	0	0	0	0	0	4	0	0	232	27	0	0	0	0	11	7
05:30 PM to 05:45 PM	0	0	163	0	0	0	0	0	0	3	1	0	232	18	0	0	1	1	11	3
05:45 PM to 06:00 PM	0	0	174	0	0	0	0	0	0	1	0	0	207	12	0	0	2	0	5	4
06:00 PM to 06:15 PM	0	0	155	0	0	0	0	0	0	0	0	0	206	20	0	0	0	0	6	2
06:15 PM to 06:30 PM	0	0	180	0	0	0	0	0	0	0	0	0	183	12	0	0	1	3	5	0
06:30 PM to 06:45 PM	0	0	152	0	0	0	0	0	0	2	0	0	141	7	0	0	1	1	6	4
06:45 PM to 07:00 PM	0	0	132	0	0	0	0	0	0	3	0	0	151	9	0	0	1	0	7	0
07:00 PM to 07:15 PM																				
07:15 PM to 07:30 PM																				
07:30 PM to 07:45 PM																				
07:45 PM to 08:00 PM																				
08:00 PM to 08:15 PM																				
08:15 PM to 08:30 PM																				
08:30 PM to 08:45 PM																				
08:45 PM to 09:00 PM																				
INT. PEAK HR (ALL VEH)	729				0	0				19	988				0	57				21
04:45 PM to 05:45 PM	0	0	729	0		0	0	0	0		1	0	912	75		0	3	6	48	
Peak Hour Overall	U	Left	Thru	Right	**SB**	U	Left	Thru	Right	**WB**	U	Left	Thru	Right	**NB**	U	Left	Thru	Right	**EB**
Factor (PHF) **0.92**	n/a	n/a	0.87	n/a	**0.87**	n/a	n/a	n/a	n/a	**n/a**	0.25	n/a	0.95	0.69	**0.95**	n/a	0.38	0.50	0.86	**0.75**

HEAVY VEHICLES (FHWA 4+)	Southbound					Westbound					Northbound					Eastbound				
Roadway:	**Massachusetts Ave**					**Massachusetts Ave**					**Massachusetts Ave**					**Massachusetts Ave**				
Movement:	U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right	
04:00 PM to 04:15 PM	0	0	6	0		0	0	0	0		0	0	2	0		0	0	0	0	
04:15 PM to 04:30 PM	0	0	2	0		0	0	0	0		0	0	2	0		0	0	0	0	
04:30 PM to 04:45 PM	0	0	4	0		0	0	0	0		0	0	7	0		0	0	0	1	
04:45 PM to 05:00 PM	0	0	6	0		0	0	0	0		0	0	4	0		0	0	0	0	
05:00 PM to 05:15 PM	0	0	1	0		0	0	0	0		0	0	3	0		0	0	0	0	
05:15 PM to 05:30 PM	0	0	7	0		0	0	0	0		0	0	1	1		0	0	0	0	
05:30 PM to 05:45 PM	0	0	3	0		0	0	0	0		0	0	7	0		0	0	0	0	
05:45 PM to 06:00 PM	0	0	1	0		0	0	0	0		0	0	4	0		0	0	0	0	
06:00 PM to 06:15 PM	0	0	1	0		0	0	0	0		0	0	4	0		0	0	0	0	
06:15 PM to 06:30 PM	0	0	4	0		0	0	0	0		0	0	3	0		0	0	0	0	
06:30 PM to 06:45 PM	0	0	3	0		0	0	0	0		0	0	2	0		0	0	0	0	
06:45 PM to 07:00 PM	0	0	6	0		0	0	0	0		0	0	5	0		0	0	0	0	
07:00 PM to 07:15 PM																				
07:15 PM to 07:30 PM																				
07:30 PM to 07:45 PM																				
07:45 PM to 08:00 PM																				
08:00 PM to 08:15 PM																				
08:15 PM to 08:30 PM																				
08:30 PM to 08:45 PM																				
08:45 PM to 09:00 PM																				
INT. PEAK HR (ALL VEH)	17					0					16					0				
04:45 PM to 05:45 PM	0	0	17	0		0	0	0	0		0	0	15	1		0	0	0	0	
Heavy Vehicle % (PHV):	0.0%	0.0%	2.3%	0.0%	**2.3%**	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	1.6%	1.3%	**1.6%**	0.0%	0.0%	0.0%	0.0%	**0.0%**
INT. PEAK HR (HV ONLY)	18					0					16					1				
04:30 PM to 05:30 PM	0	0	18	0		0	0	0	0		0	0	15	1		0	0	0	1	
Heavy Vehicle % (PHV):	0.0%	0.0%	2.6%	0.0%	**2.6%**	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	1.7%	1.5%	**1.7%**	0.0%	0.0%	0.0%	1.9%	**1.5%**

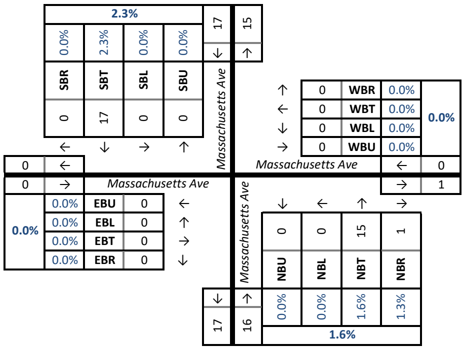
BICYCLES	Southbound					Westbound					Northbound					Eastbound				
Roadway:	**Massachusetts Ave**					**Massachusetts Ave**					**Massachusetts Ave**					**Massachusetts Ave**				
Movement:	U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right	
04:00 PM to 04:15 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
04:15 PM to 04:30 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
04:30 PM to 04:45 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
04:45 PM to 05:00 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
05:00 PM to 05:15 PM	0	0	0	0		0	0	0	0		0	0	1	0		0	0	0	0	
05:15 PM to 05:30 PM	0	0	1	0		0	0	0	0		0	0	0	0		0	0	0	0	
05:30 PM to 05:45 PM	0	0	1	0		0	0	0	0		0	0	0	0		0	0	0	0	
05:45 PM to 06:00 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
06:00 PM to 06:15 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
06:15 PM to 06:30 PM	0	0	0	0		0	0	0	0		0	0	1	0		0	0	0	0	
06:30 PM to 06:45 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
06:45 PM to 07:00 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
07:00 PM to 07:15 PM																				
07:15 PM to 07:30 PM																				
07:30 PM to 07:45 PM																				
07:45 PM to 08:00 PM																				
08:00 PM to 08:15 PM																				
08:15 PM to 08:30 PM																				
08:30 PM to 08:45 PM																				
08:45 PM to 09:00 PM																				
INT. PEAK HR (ALL VEH)	2					0					1					0				
04:45 PM to 05:45 PM	0	0	2	0		0	0	0	0		0	0	1	0		0	0	0	0	
INT. PEAK HR (BIKES)	2					0					1					0				
04:45 PM to 05:45 PM	0	0	2	0		0	0	0	0		0	0	1	0		0	0	0	0	

DATA COLLECTION NOTES :

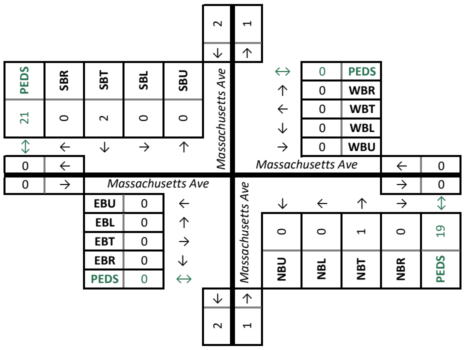
VEHICLE PEAK HOUR VOLS AND PHF: Intersection Peak (vehicle)



HEAVY VEH PEAK HOUR VOLS AND PHV: Intersection Peak (vehicle)



PED AND BIKE PEAK HOUR VOLUMES: Intersection Peak (vehicle)



H. Vehicular Capacity Analysis Worksheets – 2021 Existing Conditions

Queues
1: Tilden St NW/46th St NW & Massachusetts Ave NW

The Standard at WTS
10/22/2021

	↘	↳	↖	↙
Lane Group	SET	SER	NWT	SWT
Lane Group Flow (vph)	1229	8	677	152
v/c Ratio	0.62	0.01	0.37	0.57
Control Delay	11.2	5.5	2.6	52.1
Queue Delay	0.0	0.0	0.2	0.0
Total Delay	11.2	5.5	2.9	52.1
Queue Length 50th (ft)	237	2	18	106
Queue Length 95th (ft)	299	6	24	179
Internal Link Dist (ft)	282		152	19
Turn Bay Length (ft)		90		
Base Capacity (vph)	1988	829	1820	265
Starvation Cap Reductn	0	0	445	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.62	0.01	0.49	0.57

Intersection Summary

HCM Signalized Intersection Capacity Analysis
1: Tilden St NW/46th St NW & Massachusetts Ave NW

The Standard at WTS
10/22/2021

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↑↑	↱		↰↑						✣	
Traffic Volume (vph)	0	1168	8	13	630	0	0	0	0	85	57	3
Future Volume (vph)	0	1168	8	13	630	0	0	0	0	85	57	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	9	9	9
Grade (%)		7%			-7%			0%			7%	
Total Lost time (s)		4.0	4.0		4.0						4.0	
Lane Util. Factor		0.95	1.00		0.95						1.00	
Frpb, ped/bikes		1.00	0.96		1.00						1.00	
Flpb, ped/bikes		1.00	1.00		1.00						1.00	
Frt		1.00	0.85		1.00						1.00	
Flt Protected		1.00	1.00		1.00						0.97	
Satd. Flow (prot)		2841	1185		2837						1269	
Flt Permitted		1.00	1.00		0.92						0.97	
Satd. Flow (perm)		2841	1185		2602						1269	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1229	8	14	663	0	0	0	0	89	60	3
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	1229	8	0	677	0	0	0	0	0	151	0
Confl. Peds. (#/hr)	19		28	28		19	5					5
Confl. Bikes (#/hr)			2									1
Heavy Vehicles (%)	3%	3%	3%	5%	5%	5%	0%	0%	0%	2%	2%	2%
Bus Blockages (#/hr)	0	0	7	0	0	0	0	0	0	0	0	0
Parking (#/hr)					0					0	0	0
Turn Type		NA	Perm	Perm	NA					Split	NA	
Protected Phases		6			2					4	4	
Permitted Phases			6	2								
Actuated Green, G (s)		82.0	82.0		82.0						23.0	
Effective Green, g (s)		84.0	84.0		84.0						25.0	
Actuated g/C Ratio		0.70	0.70		0.70						0.21	
Clearance Time (s)		6.0	6.0		6.0						6.0	
Lane Grp Cap (vph)		1988	829		1821						264	
v/s Ratio Prot		c0.43									c0.12	
v/s Ratio Perm			0.01		0.26							
v/c Ratio		0.62	0.01		0.37						0.57	
Uniform Delay, d1		9.5	5.4		7.3						42.7	
Progression Factor		1.00	1.00		0.28						1.00	
Incremental Delay, d2		1.5	0.0		0.6						8.7	
Delay (s)		11.0	5.5		2.6						51.4	
Level of Service		B	A		A						D	
Approach Delay (s)		10.9			2.6			0.0			51.4	
Approach LOS		B			A			A			D	

Intersection Summary			
HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	55.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
2: University Ave NW & Wesley Cir NW

The Standard at WTS
10/22/2021

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↳					↱
Traffic Volume (veh/h)	46	15	0	0	0	37
Future Volume (Veh/h)	46	15	0	0	0	37
Sign Control	Free			Free	Yield	
Grade	5%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	51	17	0	0	0	41
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			68		60	60
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			68		60	60
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	96
cM capacity (veh/h)			1533		947	1006

Direction, Lane #	EB 1	NB 1
Volume Total	68	41
Volume Left	0	0
Volume Right	17	41
cSH	1700	1006
Volume to Capacity	0.04	0.04
Queue Length 95th (ft)	0	3
Control Delay (s)	0.0	8.7
Lane LOS		A
Approach Delay (s)	0.0	8.7
Approach LOS		A

Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
3: Wesley Cir NW & Massachusetts Ave NW

The Standard at WTS
10/22/2021

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		✥						↑↑			↑↱	
Traffic Volume (veh/h)	6	2	75	0	0	0	0	1253	0	0	652	34
Future Volume (Veh/h)	6	2	75	0	0	0	0	1253	0	0	652	34
Sign Control		Stop			Stop			Free			Free	
Grade		5%			0%			0%			-7%	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	6	2	77	0	0	0	0	1279	0	0	665	35
Pedestrians					16							
Lane Width (ft)					0.0							
Walking Speed (ft/s)					4.0							
Percent Blockage					0							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								232			230	
pX, platoon unblocked	0.78	0.78	0.78	0.78	0.78					0.78		
vC, conflicting volume	1612	1995	640	1416	1978	366	716			1279		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1225	1715	0	975	1693	366	716			800		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	94	97	91	100	100	100	100			100		
cM capacity (veh/h)	105	69	848	143	72	631	874			635		

Direction, Lane #	NB 1	SE 1	SE 2	NW 1	NW 2
Volume Total	85	640	640	443	257
Volume Left	6	0	0	0	0
Volume Right	77	0	0	0	35
cSH	481	1700	1700	1700	1700
Volume to Capacity	0.18	0.38	0.38	0.26	0.15
Queue Length 95th (ft)	16	0	0	0	0
Control Delay (s)	14.1	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	14.1	0.0		0.0	
Approach LOS	B				

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
4: University Ave NW & Sedgwick St NW/WTS Dwy

The Standard at WTS
10/22/2021

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			↰			↳	
Traffic Volume (veh/h)	4	0	2	1	1	4	1	25	0	0	14	1
Future Volume (Veh/h)	4	0	2	1	1	4	1	25	0	0	14	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	0	2	1	1	4	1	28	0	0	16	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	51	46	16	48	47	28	17			28		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	51	46	16	48	47	28	17			28		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	100	100			100		
cM capacity (veh/h)	943	845	1063	950	844	1047	1600			1585		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	6	6	29	17
Volume Left	4	1	1	0
Volume Right	2	4	0	1
cSH	980	990	1600	1700
Volume to Capacity	0.01	0.01	0.00	0.01
Queue Length 95th (ft)	0	0	0	0
Control Delay (s)	8.7	8.7	0.3	0.0
Lane LOS	A	A	A	
Approach Delay (s)	8.7	8.7	0.3	0.0
Approach LOS	A	A		

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Queues
5: Massachusetts Ave NW & 45th St NW

Lane Group	SET	NWT	SWL
Lane Group Flow (vph)	1476	768	30
v/c Ratio	0.54	0.23	0.02
Control Delay	1.2	0.1	0.0
Queue Delay	0.0	0.0	0.0
Total Delay	1.2	0.1	0.0
Queue Length 50th (ft)	18	0	0
Queue Length 95th (ft)	3	0	0
Internal Link Dist (ft)	150	66	207
Turn Bay Length (ft)			
Base Capacity (vph)	2742	3405	1587
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.54	0.23	0.02

Intersection Summary

HCM Signalized Intersection Capacity Analysis

5: Massachusetts Ave NW & 45th St NW

The Standard at WTS

10/22/2021

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↰↑	↑↱		↰↱	
Traffic Volume (vph)	63	1265	673	18	14	13
Future Volume (vph)	63	1265	673	18	14	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		4%	-7%		0%	
Total Lost time (s)		9.0	9.0		9.0	
Lane Util. Factor		0.95	0.95		1.00	
Frt		1.00	1.00		0.94	
Flt Protected		1.00	1.00		0.97	
Satd. Flow (prot)		3230	3406		1587	
Flt Permitted		0.85	1.00		0.97	
Satd. Flow (perm)		2742	3406		1587	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	70	1406	748	20	16	14
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	1476	768	0	30	0
Turn Type	Perm	NA	NA		D.Pm	
Protected Phases		2!	2!			
Permitted Phases	2!				2!	
Actuated Green, G (s)		120.0	120.0		120.0	
Effective Green, g (s)		120.0	120.0		120.0	
Actuated g/C Ratio		1.00	1.00		1.00	
Clearance Time (s)		11.0	11.0		11.0	
Vehicle Extension (s)		1.0	1.0		1.0	
Lane Grp Cap (vph)		2742	3406		1587	
v/s Ratio Prot			0.23			
v/s Ratio Perm		c0.54			0.02	
v/c Ratio		0.54	0.23		0.02	
Uniform Delay, d1		0.0	0.0		0.0	
Progression Factor		1.00	1.00		1.00	
Incremental Delay, d2		0.7	0.1		0.0	
Delay (s)		0.7	0.1		0.0	
Level of Service		A	A		A	
Approach Delay (s)		0.7	0.1		0.0	
Approach LOS		A	A		A	

Intersection Summary			
HCM 2000 Control Delay	0.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	86.8%	ICU Level of Service	E
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
6: WTS Dwy & Massachusetts Ave NW

The Standard at WTS
10/22/2021

Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations		↱	↑↱			↰
Traffic Volume (veh/h)	0	7	1272	7	18	691
Future Volume (Veh/h)	0	7	1272	7	18	691
Sign Control	Stop		Free			Free
Grade	0%		4%			-7%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	8	1413	8	20	768
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			214			651
pX, platoon unblocked	0.76					
vC, conflicting volume	2225	710			1421	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2448	710			1421	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			96	
cM capacity (veh/h)	19	376			475	

Direction, Lane #	NB 1	SE 1	SE 2	NW 1
Volume Total	8	942	479	788
Volume Left	0	0	0	20
Volume Right	8	0	8	0
cSH	376	1700	1700	475
Volume to Capacity	0.02	0.55	0.28	0.04
Queue Length 95th (ft)	2	0	0	3
Control Delay (s)	14.8	0.0	0.0	1.3
Lane LOS	B			A
Approach Delay (s)	14.8	0.0		1.3
Approach LOS	B			

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	54.2%	ICU Level of Service	A
Analysis Period (min)	15		

Queues
The Standard at WTS

7: Glover Gate/Katzen Arts Center Dwy & Massachusetts Ave NW
10/22/2021

	↘	↖	↰	↗	↷	↙
Lane Group	SET	NWT	NWR	NET	NER	SWT
Lane Group Flow (vph)	1391	754	65	30	36	29
v/c Ratio	0.70	0.66	0.08	0.25	0.24	0.15
Control Delay	12.1	11.0	1.1	52.6	7.3	42.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.1	11.0	1.1	52.6	7.3	42.3
Queue Length 50th (ft)	286	250	0	21	0	17
Queue Length 95th (ft)	394	370	10	52	12	46
Internal Link Dist (ft)	571	391		281		141
Turn Bay Length (ft)						
Base Capacity (vph)	1995	1137	863	120	148	188
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.66	0.08	0.25	0.24	0.15

Intersection Summary

HCM Signalized Intersection Capacity Analysis — The Standard at WTS

7: Glover Gate/Katzen Arts Center Dwy & Massachusetts Ave NW — 10/22/2021

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↰↑↱			↑	↱		↰	↱		↰↑↱	
Traffic Volume (vph)	22	1179	78	11	683	60	21	6	33	4	18	5
Future Volume (vph)	22	1179	78	11	683	60	21	6	33	4	18	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)		4%			-4%			-1%			5%	
Total Lost time (s)		4.0			4.0	4.0		4.0	4.0		4.0	
Lane Util. Factor		0.95			1.00	1.00		1.00	1.00		1.00	
Frpb, ped/bikes		1.00			1.00	0.86		1.00	0.67		0.98	
Flpb, ped/bikes		1.00			1.00	1.00		0.93	1.00		0.96	
Frt		0.99			1.00	0.85		1.00	0.85		0.98	
Flt Protected		1.00			1.00	1.00		0.96	1.00		0.99	
Satd. Flow (prot)		2845			1564	1130		1089	694		1417	
Flt Permitted		0.93			0.97	1.00		0.80	1.00		0.97	
Satd. Flow (perm)		2655			1516	1130		904	694		1383	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	24	1282	85	12	742	65	23	7	36	4	20	5
RTOR Reduction (vph)	0	4	0	0	0	16	0	0	31	0	4	0
Lane Group Flow (vph)	0	1387	0	0	754	49	0	30	5	0	25	0
Confl. Peds. (#/hr)	19		8	8		19	22		160	160		22
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	3%	3%	3%	4%	4%	4%	32%	32%	32%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	2	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		6			2			8			4	
Permitted Phases	6			2		2	8		8	4		
Actuated Green, G (s)		88.0			88.0	88.0		14.0	14.0		14.0	
Effective Green, g (s)		90.0			90.0	90.0		16.0	16.0		16.0	
Actuated g/C Ratio		0.75			0.75	0.75		0.13	0.13		0.13	
Clearance Time (s)		6.0			6.0	6.0		6.0	6.0		6.0	
Lane Grp Cap (vph)		1991			1137	847		120	92		184	
v/s Ratio Prot												
v/s Ratio Perm		c0.52			0.50	0.04		c0.03	0.01		0.02	
v/c Ratio		0.70			0.66	0.06		0.25	0.05		0.13	
Uniform Delay, d1		7.9			7.5	3.9		46.6	45.4		45.9	
Progression Factor		1.29			1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2		1.8			3.1	0.1		4.9	1.1		1.5	
Delay (s)		11.9			10.5	4.0		51.5	46.5		47.4	
Level of Service		B			B	A		D	D		D	
Approach Delay (s)		11.9			10.0			48.8			47.4	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	12.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Queues

1: Tilden St NW/46th St NW & Massachusetts Ave NW

	↘	⤵	↖	↙
Lane Group	SET	SER	NWT	SWT
Lane Group Flow (vph)	1005	6	1116	131
v/c Ratio	0.49	0.01	0.55	0.64
Control Delay	6.9	3.8	4.1	62.5
Queue Delay	0.0	0.0	0.1	0.0
Total Delay	6.9	3.8	4.2	62.5
Queue Length 50th (ft)	138	1	71	95
Queue Length 95th (ft)	176	4	84	#175
Internal Link Dist (ft)	290		149	39
Turn Bay Length (ft)		90		
Base Capacity (vph)	2064	824	2032	204
Starvation Cap Reductn	0	0	205	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.49	0.01	0.61	0.64

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
1: Tilden St NW/46th St NW & Massachusetts Ave NW

The Standard at WTS

10/22/2021

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↑↑	↱		↰↑						✥	
Traffic Volume (vph)	0	965	6	35	1037	0	0	0	0	91	32	3
Future Volume (vph)	0	965	6	35	1037	0	0	0	0	91	32	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	9	9	9
Grade (%)		7%			-7%			0%			7%	
Total Lost time (s)		4.0	4.0		4.0						4.0	
Lane Util. Factor		0.95	1.00		0.95						1.00	
Frpb, ped/bikes		1.00	0.96		1.00						1.00	
Flpb, ped/bikes		1.00	1.00		1.00						1.00	
Frt		1.00	0.85		1.00						1.00	
Flt Protected		1.00	1.00		1.00						0.97	
Satd. Flow (prot)		2752	1099		3071						1285	
Flt Permitted		1.00	1.00		0.88						0.97	
Satd. Flow (perm)		2752	1099		2711						1285	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	1005	6	36	1080	0	0	0	0	95	33	3
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	1005	6	0	1116	0	0	0	0	0	130	0
Confl. Peds. (#/hr)	7		28	28		7	7					7
Confl. Bikes (#/hr)						2						1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	5	0	5	0	0	0	0	0	0	0
Parking (#/hr)		0	0							0	0	0
Turn Type		NA	Perm	Perm	NA					Split	NA	
Protected Phases		6			2					4	4	
Permitted Phases			6	2								
Actuated Green, G (s)		88.0	88.0		88.0						17.0	
Effective Green, g (s)		90.0	90.0		90.0						19.0	
Actuated g/C Ratio		0.75	0.75		0.75						0.16	
Clearance Time (s)		6.0	6.0		6.0						6.0	
Lane Grp Cap (vph)		2064	824		2033						203	
v/s Ratio Prot		0.37									c0.10	
v/s Ratio Perm			0.01		c0.41							
v/c Ratio		0.49	0.01		0.55						0.64	
Uniform Delay, d1		5.9	3.8		6.4						47.3	
Progression Factor		1.00	1.00		0.47						1.00	
Incremental Delay, d2		0.8	0.0		1.0						14.5	
Delay (s)		6.7	3.8		4.0						61.8	
Level of Service		A	A		A						E	
Approach Delay (s)		6.7			4.0			0.0			61.8	
Approach LOS		A			A			A			E	

Intersection Summary			
HCM 2000 Control Delay	8.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	79.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
2: University Ave NW & Wesley Cir NW

The Standard at WTS
10/22/2021

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↴					↱
Traffic Volume (veh/h)	33	26	0	0	0	41
Future Volume (Veh/h)	33	26	0	0	0	41
Sign Control	Free			Free	Yield	
Grade	5%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	37	29	0	0	0	46
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			66		52	52
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			66		52	52
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	95
cM capacity (veh/h)			1536		957	1016

Direction, Lane #	EB 1	NB 1
Volume Total	66	46
Volume Left	0	0
Volume Right	29	46
cSH	1700	1016
Volume to Capacity	0.04	0.05
Queue Length 95th (ft)	0	4
Control Delay (s)	0.0	8.7
Lane LOS		A
Approach Delay (s)	0.0	8.7
Approach LOS		A

Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis

The Standard at WTS

3: Wesley Cir NW & Massachusetts Ave NW

10/22/2021

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↰↑↱						↑↑			↑↱	
Traffic Volume (veh/h)	15	6	48	0	0	0	0	1056	0	0	1067	75
Future Volume (Veh/h)	15	6	48	0	0	0	0	1056	0	0	1067	75
Sign Control		Stop			Stop			Free			Free	
Grade		5%			0%			0%			-7%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	16	6	50	0	0	0	0	1100	0	0	1111	78
Pedestrians					7							
Lane Width (ft)					0.0							
Walking Speed (ft/s)					4.0							
Percent Blockage					0							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								229			230	
pX, platoon unblocked	0.87	0.87	0.87	0.87	0.87					0.87		
vC, conflicting volume	1656	2296	550	1760	2257	602	1196			1100		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1453	2190	180	1573	2145	602	1196			813		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	80	85	93	100	100	100	100			100		
cM capacity (veh/h)	79	39	722	53	42	443	585			709		

Direction, Lane #	NB 1	SE 1	SE 2	NW 1	NW 2
Volume Total	72	550	550	741	448
Volume Left	16	0	0	0	0
Volume Right	50	0	0	0	78
cSH	169	1700	1700	1700	1700
Volume to Capacity	0.43	0.32	0.32	0.44	0.26
Queue Length 95th (ft)	48	0	0	0	0
Control Delay (s)	41.3	0.0	0.0	0.0	0.0
Lane LOS	E				
Approach Delay (s)	41.3	0.0		0.0	
Approach LOS	E				

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
4: University Ave NW & Sedgwick St NW/WTS Dwy

The Standard at WTS
10/22/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			↰			↳	
Traffic Volume (veh/h)	5	0	1	1	6	12	1	8	0	0	21	5
Future Volume (Veh/h)	5	0	1	1	6	12	1	8	0	0	21	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	6	0	1	1	7	13	1	9	0	0	23	6
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	54	37	26	38	40	9	29			9		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	54	37	26	38	40	9	29			9		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	100	100	99	99	100			100		
cM capacity (veh/h)	927	855	1050	966	852	1073	1584			1611		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	7	21	10	29
Volume Left	6	1	1	0
Volume Right	1	13	0	6
cSH	943	982	1584	1700
Volume to Capacity	0.01	0.02	0.00	0.02
Queue Length 95th (ft)	1	2	0	0
Control Delay (s)	8.8	8.7	0.7	0.0
Lane LOS	A	A	A	
Approach Delay (s)	8.8	8.7	0.7	0.0
Approach LOS	A	A		

Intersection Summary			
Average Delay	3.8		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Queues
5: Massachusetts Ave NW & 45th St NW

	↘	↖	↲
Lane Group	SET	NWT	SWL
Lane Group Flow (vph)	1227	1300	73
v/c Ratio	0.45	0.38	0.04
Control Delay	0.7	0.3	0.0
Queue Delay	0.0	0.0	0.0
Total Delay	0.7	0.3	0.0
Queue Length 50th (ft)	6	0	0
Queue Length 95th (ft)	0	0	0
Internal Link Dist (ft)	150	66	258
Turn Bay Length (ft)			
Base Capacity (vph)	2729	3402	1637
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.45	0.38	0.04

Intersection Summary

HCM Signalized Intersection Capacity Analysis
5: Massachusetts Ave NW & 45th St NW

The Standard at WTS
10/22/2021

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↰↑	↑↱		Y	
Traffic Volume (vph)	35	1069	1133	37	57	9
Future Volume (vph)	35	1069	1133	37	57	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		4%	-7%		0%	
Total Lost time (s)		9.0	9.0		9.0	
Lane Util. Factor		0.95	0.95		1.00	
Frt		1.00	1.00		0.98	
Flt Protected		1.00	1.00		0.96	
Satd. Flow (prot)		3232	3403		1636	
Flt Permitted		0.84	1.00		0.96	
Satd. Flow (perm)		2728	3403		1636	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	39	1188	1259	41	63	10
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	1227	1300	0	73	0
Turn Type	Perm	NA	NA		D.Pm	
Protected Phases		2!	2!			
Permitted Phases	2!				2!	
Actuated Green, G (s)		120.0	120.0		120.0	
Effective Green, g (s)		120.0	120.0		120.0	
Actuated g/C Ratio		1.00	1.00		1.00	
Clearance Time (s)		11.0	11.0		11.0	
Vehicle Extension (s)		1.0	1.0		1.0	
Lane Grp Cap (vph)		2728	3403		1636	
v/s Ratio Prot			0.38			
v/s Ratio Perm		c0.45			0.04	
v/c Ratio		0.45	0.38		0.04	
Uniform Delay, d1		0.0	0.0		0.0	
Progression Factor		1.00	1.00		1.00	
Incremental Delay, d2		0.5	0.3		0.1	
Delay (s)		0.5	0.3		0.1	
Level of Service		A	A		A	
Approach Delay (s)		0.5	0.3		0.1	
Approach LOS		A	A		A	

Intersection Summary			
HCM 2000 Control Delay	0.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	78.3%	ICU Level of Service	D
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
6: WTS Dwy & Massachusetts Ave NW

The Standard at WTS
10/22/2021

	↖	↱	↘	↘	↶	↖
Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations		↱	↳			↰↑
Traffic Volume (veh/h)	0	18	1111	15	16	1170
Future Volume (Veh/h)	0	18	1111	15	16	1170
Sign Control	Stop		Free			Free
Grade	0%		4%			-7%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	20	1234	17	18	1300
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			219			646
pX, platoon unblocked	0.11	0.02			0.02	
vC, conflicting volume	1928	1242			1251	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0			0	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	13			48	
cM capacity (veh/h)	55	23			34	

Direction, Lane #	NB 1	SE 1	NW 1	NW 2
Volume Total	20	1251	451	867
Volume Left	0	0	18	0
Volume Right	20	17	0	0
cSH	23	1700	34	1700
Volume to Capacity	0.87	0.74	0.52	0.51
Queue Length 95th (ft)	64	0	44	0
Control Delay (s)	380.1	0.0	136.8	0.0
Lane LOS	F		F	
Approach Delay (s)	380.1	0.0	46.8	
Approach LOS	F			

Intersection Summary			
Average Delay	26.8		
Intersection Capacity Utilization	69.4%	ICU Level of Service	C
Analysis Period (min)	15		

SimTraffic Simulation Summary
Existing 2021

11/10/2021

Summary of All Intervals

Run Number	1	2	3	284	1)\Analysis\5	Synchro\EX PM	Avg
Start Time	4:45	4:45	4:45	4:45	4:45	4:45	4:45
End Time	6:00	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	2528	2572	2627	2598	2660	2529	2587
Vehs Exited	2480	2521	2620	2533	2628	2514	2550
Starting Vehs	116	122	138	106	119	143	116
Ending Vehs	164	173	145	171	151	158	159
Travel Distance (mi)	1303	1336	1386	1344	1391	1324	1347
Travel Time (hr)	210.7	152.3	185.8	179.5	163.9	256.5	191.4
Total Delay (hr)	165.0	105.2	137.1	132.3	115.2	209.8	144.1
Total Stops	3624	3857	4116	3890	4027	3458	3827
Fuel Used (gal)	82.9	69.8	79.4	76.4	73.5	93.6	79.3

Interval #0 Information Seeding

Start Time	4:45
End Time	5:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	284	1)\Analysis\5	Synchro\EX PM	Avg
Vehs Entered	2528	2572	2627	2598	2660	2529	2587
Vehs Exited	2480	2521	2620	2533	2628	2514	2550
Starting Vehs	116	122	138	106	119	143	116
Ending Vehs	164	173	145	171	151	158	159
Travel Distance (mi)	1303	1336	1386	1344	1391	1324	1347
Travel Time (hr)	210.7	152.3	185.8	179.5	163.9	256.5	191.4
Total Delay (hr)	165.0	105.2	137.1	132.3	115.2	209.8	144.1
Total Stops	3624	3857	4116	3890	4027	3458	3827
Fuel Used (gal)	82.9	69.8	79.4	76.4	73.5	93.6	79.3

6: WTS Dwy & Massachusetts Ave NW Performance by approach

Approach	NB	SE	NW	All
Denied Del/Veh (s)	0.1	0.0	0.0	0.0
Total Del/Veh (s)	31.4	1.3	4.8	3.4

Intersection: 6: WTS Dwy & Massachusetts Ave NW

Movement	NB	SE	B918	NW	NW
Directions Served	R	TR	T	LT	T
Maximum Queue (ft)	56	33	4	266	262
Average Queue (ft)	16	1	0	70	55
95th Queue (ft)	43	16	3	216	192
Link Distance (ft)	240	22	87	582	582
Upstream Blk Time (%)		0			
Queuing Penalty (veh)		0			
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Queues

7: Glover Gate/Katzen Arts Center Dwy & Massachusetts Ave NW

	↘	↖	↗	↷	↙
Lane Group	SET	NWT	NET	NER	SWT
Lane Group Flow (vph)	1201	1224	74	88	73
v/c Ratio	0.69	0.62	0.41	0.45	0.33
Control Delay	10.6	10.8	52.0	17.0	30.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	10.6	10.8	52.0	17.0	30.7
Queue Length 50th (ft)	210	230	52	0	28
Queue Length 95th (ft)	242	291	102	52	74
Internal Link Dist (ft)	566	391	281		141
Turn Bay Length (ft)					
Base Capacity (vph)	1747	1971	179	194	224
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.69	0.62	0.41	0.45	0.33

Intersection Summary

HCM Signalized Intersection Capacity Analysis

7: Glover Gate/Katzen Arts Center Dwy & Massachusetts Ave NW

The Standard at WTS

10/22/2021

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↰↑↑↱			↑↑↱			↰↑	↱		↰↑↱	
Traffic Volume (vph)	21	1012	96	15	1093	42	61	8	83	19	18	32
Future Volume (vph)	21	1012	96	15	1093	42	61	8	83	19	18	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)		4%			-4%			-1%			5%	
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor		0.95			0.95			1.00	1.00		1.00	
Frpb, ped/bikes		0.98			0.99			1.00	0.54		0.96	
Flpb, ped/bikes		1.00			1.00			0.94	1.00		0.89	
Frt		0.99			0.99			1.00	0.85		0.94	
Flt Protected		1.00			1.00			0.96	1.00		0.99	
Satd. Flow (prot)		2701			2996			1381	697		1221	
Flt Permitted		0.91			0.93			0.71	1.00		0.91	
Satd. Flow (perm)		2459			2781			1025	697		1132	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	22	1077	102	16	1163	45	65	9	88	20	19	34
RTOR Reduction (vph)	0	6	0	0	2	0	0	0	73	0	26	0
Lane Group Flow (vph)	0	1195	0	0	1222	0	0	74	15	0	47	0
Confl. Peds. (#/hr)	21		41	41		21	32		428	428		32
Confl. Bikes (#/hr)			3			1						
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	5%	5%	5%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	5	5	0	0	0	0	0	0
Parking (#/hr)	0	0	0									
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		6			2			8			4	
Permitted Phases	6			2			8		8	4		
Actuated Green, G (s)		83.0			83.0			19.0	19.0		19.0	
Effective Green, g (s)		85.0			85.0			21.0	21.0		21.0	
Actuated g/C Ratio		0.71			0.71			0.18	0.18		0.18	
Clearance Time (s)		6.0			6.0			6.0	6.0		6.0	
Lane Grp Cap (vph)		1741			1969			179	121		198	
v/s Ratio Prot												
v/s Ratio Perm		c0.49			0.44			c0.07	0.02		0.04	
v/c Ratio		0.69			0.62			0.41	0.13		0.24	
Uniform Delay, d1		9.9			9.1			44.0	41.8		42.6	
Progression Factor		0.85			1.00			1.00	1.00		1.00	
Incremental Delay, d2		2.1			1.5			6.9	2.2		2.8	
Delay (s)		10.5			10.6			50.9	43.9		45.4	
Level of Service		B			B			D	D		D	
Approach Delay (s)		10.5			10.6			47.1			45.4	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	13.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

I. Vehicular Capacity Analysis Worksheets – 2024 Background Conditions

Queues
1: Tilden St NW/46th St NW & Massachusetts Ave NW

The Standard at WTS
10/22/2021

	↘	↴	↖	↙
Lane Group	SET	SER	NWT	SWT
Lane Group Flow (vph)	1241	8	679	152
v/c Ratio	0.62	0.01	0.37	0.57
Control Delay	11.3	5.5	2.6	52.1
Queue Delay	0.0	0.0	0.2	0.0
Total Delay	11.3	5.5	2.8	52.1
Queue Length 50th (ft)	242	2	17	106
Queue Length 95th (ft)	303	6	24	179
Internal Link Dist (ft)	282		152	19
Turn Bay Length (ft)		90		
Base Capacity (vph)	1988	829	1820	265
Starvation Cap Reductn	0	0	443	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.62	0.01	0.49	0.57

Intersection Summary

HCM Signalized Intersection Capacity Analysis
1: Tilden St NW/46th St NW & Massachusetts Ave NW

The Standard at WTS
10/22/2021

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↑↑	↱		↰↑						✥	
Traffic Volume (vph)	0	1179	8	13	632	0	0	0	0	85	57	3
Future Volume (vph)	0	1179	8	13	632	0	0	0	0	85	57	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	9	9	9
Grade (%)		7%			-7%			0%			7%	
Total Lost time (s)		4.0	4.0		4.0						4.0	
Lane Util. Factor		0.95	1.00		0.95						1.00	
Frpb, ped/bikes		1.00	0.96		1.00						1.00	
Flpb, ped/bikes		1.00	1.00		1.00						1.00	
Frt		1.00	0.85		1.00						1.00	
Flt Protected		1.00	1.00		1.00						0.97	
Satd. Flow (prot)		2841	1185		2837						1269	
Flt Permitted		1.00	1.00		0.92						0.97	
Satd. Flow (perm)		2841	1185		2601						1269	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1241	8	14	665	0	0	0	0	89	60	3
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	1241	8	0	679	0	0	0	0	0	151	0
Confl. Peds. (#/hr)	19		28	28		19	5					5
Confl. Bikes (#/hr)			2									1
Heavy Vehicles (%)	3%	3%	3%	5%	5%	5%	0%	0%	0%	2%	2%	2%
Bus Blockages (#/hr)	0	0	7	0	0	0	0	0	0	0	0	0
Parking (#/hr)					0					0	0	0
Turn Type		NA	Perm	Perm	NA					Split	NA	
Protected Phases		6			2					4	4	
Permitted Phases			6	2								
Actuated Green, G (s)		82.0	82.0		82.0						23.0	
Effective Green, g (s)		84.0	84.0		84.0						25.0	
Actuated g/C Ratio		0.70	0.70		0.70						0.21	
Clearance Time (s)		6.0	6.0		6.0						6.0	
Lane Grp Cap (vph)		1988	829		1820						264	
v/s Ratio Prot		c0.44									c0.12	
v/s Ratio Perm			0.01		0.26							
v/c Ratio		0.62	0.01		0.37						0.57	
Uniform Delay, d1		9.6	5.4		7.3						42.7	
Progression Factor		1.00	1.00		0.28						1.00	
Incremental Delay, d2		1.5	0.0		0.6						8.7	
Delay (s)		11.1	5.5		2.6						51.4	
Level of Service		B	A		A						D	
Approach Delay (s)		11.0			2.6			0.0			51.4	
Approach LOS		B			A			A			D	

Intersection Summary			
HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	55.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
2: University Ave NW & Wesley Cir NW

The Standard at WTS
10/22/2021

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↳					↱
Traffic Volume (veh/h)	46	15	0	0	0	37
Future Volume (Veh/h)	46	15	0	0	0	37
Sign Control	Free			Free	Yield	
Grade	5%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	51	17	0	0	0	41
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			68		60	60
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			68		60	60
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	96
cM capacity (veh/h)			1533		947	1006

Direction, Lane #	EB 1	NB 1
Volume Total	68	41
Volume Left	0	0
Volume Right	17	41
cSH	1700	1006
Volume to Capacity	0.04	0.04
Queue Length 95th (ft)	0	3
Control Delay (s)	0.0	8.7
Lane LOS		A
Approach Delay (s)	0.0	8.7
Approach LOS		A

Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
3: Wesley Cir NW & Massachusetts Ave NW

The Standard at WTS
10/22/2021

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		✥						↑↑			↑↱	
Traffic Volume (veh/h)	6	2	75	0	0	0	0	1264	0	0	654	34
Future Volume (Veh/h)	6	2	75	0	0	0	0	1264	0	0	654	34
Sign Control		Stop			Stop			Free			Free	
Grade		5%			0%			0%			-7%	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	6	2	77	0	0	0	0	1290	0	0	667	35
Pedestrians					16							
Lane Width (ft)					0.0							
Walking Speed (ft/s)					4.0							
Percent Blockage					0							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								232			230	
pX, platoon unblocked	0.78	0.78	0.78	0.78	0.78					0.78		
vC, conflicting volume	1624	2008	645	1424	1990	367	718			1290		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1231	1725	0	974	1703	367	718			803		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	94	97	91	100	100	100	100			100		
cM capacity (veh/h)	103	68	844	143	71	630	872			631		

Direction, Lane #	NB 1	SE 1	SE 2	NW 1	NW 2
Volume Total	85	645	645	445	257
Volume Left	6	0	0	0	0
Volume Right	77	0	0	0	35
cSH	476	1700	1700	1700	1700
Volume to Capacity	0.18	0.38	0.38	0.26	0.15
Queue Length 95th (ft)	16	0	0	0	0
Control Delay (s)	14.2	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	14.2	0.0		0.0	
Approach LOS	B				

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	51.1%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
4: University Ave NW & Sedgwick St NW/WTS Dwy

The Standard at WTS
10/22/2021

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			↰			↱	
Traffic Volume (veh/h)	4	0	2	1	1	4	1	25	0	0	14	1
Future Volume (Veh/h)	4	0	2	1	1	4	1	25	0	0	14	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	0	2	1	1	4	1	28	0	0	16	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	51	46	16	48	47	28	17			28		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	51	46	16	48	47	28	17			28		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	100	100			100		
cM capacity (veh/h)	943	845	1063	950	844	1047	1600			1585		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	6	6	29	17
Volume Left	4	1	1	0
Volume Right	2	4	0	1
cSH	980	990	1600	1700
Volume to Capacity	0.01	0.01	0.00	0.01
Queue Length 95th (ft)	0	0	0	0
Control Delay (s)	8.7	8.7	0.3	0.0
Lane LOS	A	A	A	
Approach Delay (s)	8.7	8.7	0.3	0.0
Approach LOS	A	A		

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Queues
5: Massachusetts Ave NW & 45th St NW

	↘	↖	↲
Lane Group	SET	NWT	SWL
Lane Group Flow (vph)	1488	770	30
v/c Ratio	0.54	0.23	0.02
Control Delay	1.3	0.1	0.0
Queue Delay	0.0	0.0	0.0
Total Delay	1.3	0.1	0.0
Queue Length 50th (ft)	18	0	0
Queue Length 95th (ft)	4	0	0
Internal Link Dist (ft)	150	66	207
Turn Bay Length (ft)			
Base Capacity (vph)	2742	3405	1587
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.54	0.23	0.02

Intersection Summary

HCM Signalized Intersection Capacity Analysis
5: Massachusetts Ave NW & 45th St NW

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↰↑	↑↱		↰↱	
Traffic Volume (vph)	63	1276	675	18	14	13
Future Volume (vph)	63	1276	675	18	14	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		4%	-7%		0%	
Total Lost time (s)		9.0	9.0		9.0	
Lane Util. Factor		0.95	0.95		1.00	
Frt		1.00	1.00		0.94	
Flt Protected		1.00	1.00		0.97	
Satd. Flow (prot)		3230	3406		1587	
Flt Permitted		0.85	1.00		0.97	
Satd. Flow (perm)		2743	3406		1587	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	70	1418	750	20	16	14
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	1488	770	0	30	0
Turn Type	Perm	NA	NA		D.Pm	
Protected Phases		2!	2!			
Permitted Phases	2!				2!	
Actuated Green, G (s)		120.0	120.0		120.0	
Effective Green, g (s)		120.0	120.0		120.0	
Actuated g/C Ratio		1.00	1.00		1.00	
Clearance Time (s)		11.0	11.0		11.0	
Vehicle Extension (s)		1.0	1.0		1.0	
Lane Grp Cap (vph)		2743	3406		1587	
v/s Ratio Prot			0.23			
v/s Ratio Perm		c0.54			0.02	
v/c Ratio		0.54	0.23		0.02	
Uniform Delay, d1		0.0	0.0		0.0	
Progression Factor		1.00	1.00		1.00	
Incremental Delay, d2		0.7	0.1		0.0	
Delay (s)		0.7	0.1		0.0	
Level of Service		A	A		A	
Approach Delay (s)		0.7	0.1		0.0	
Approach LOS		A	A		A	

Intersection Summary			
HCM 2000 Control Delay	0.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	87.2%	ICU Level of Service	E
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
6: WTS Dwy & Massachusetts Ave NW

The Standard at WTS
10/22/2021

Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations		↱	↑↱			↰
Traffic Volume (veh/h)	0	7	1283	7	18	693
Future Volume (Veh/h)	0	7	1283	7	18	693
Sign Control	Stop		Free			Free
Grade	0%		4%			-7%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	8	1426	8	20	770
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			214			651
pX, platoon unblocked	0.76					
vC, conflicting volume	2240	717			1434	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2471	717			1434	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			96	
cM capacity (veh/h)	18	372			470	

Direction, Lane #	NB 1	SE 1	SE 2	NW 1
Volume Total	8	951	483	790
Volume Left	0	0	0	20
Volume Right	8	0	8	0
cSH	372	1700	1700	470
Volume to Capacity	0.02	0.56	0.28	0.04
Queue Length 95th (ft)	2	0	0	3
Control Delay (s)	14.9	0.0	0.0	1.3
Lane LOS	B			A
Approach Delay (s)	14.9	0.0		1.3
Approach LOS	B			

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		

Queues

The Standard at WTS

7: Glover Gate/Katzen Arts Center Dwy & Massachusetts Ave NW

10/22/2021

	↘	↖	↰	↗	↷	↙
Lane Group	SET	NWT	NWR	NET	NER	SWT
Lane Group Flow (vph)	1402	757	65	30	36	29
v/c Ratio	0.70	0.67	0.08	0.25	0.24	0.15
Control Delay	12.4	11.1	1.1	52.6	7.3	42.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.4	11.1	1.1	52.6	7.3	42.3
Queue Length 50th (ft)	295	253	0	21	0	17
Queue Length 95th (ft)	400	376	10	52	12	46
Internal Link Dist (ft)	571	391		281		141
Turn Bay Length (ft)						
Base Capacity (vph)	1995	1136	863	120	148	188
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.67	0.08	0.25	0.24	0.15

Intersection Summary

HCM Signalized Intersection Capacity Analysis

The Standard at WTS

7: Glover Gate/Katzen Arts Center Dwy & Massachusetts Ave NW

10/22/2021

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↰↑↱			↑	↱		↰↑	↱		↰↑↱	
Traffic Volume (vph)	22	1190	78	11	685	60	21	6	33	4	18	5
Future Volume (vph)	22	1190	78	11	685	60	21	6	33	4	18	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)		4%			-4%			-1%			5%	
Total Lost time (s)		4.0			4.0	4.0		4.0	4.0		4.0	
Lane Util. Factor		0.95			1.00	1.00		1.00	1.00		1.00	
Frpb, ped/bikes		1.00			1.00	0.86		1.00	0.67		0.98	
Flpb, ped/bikes		1.00			1.00	1.00		0.93	1.00		0.96	
Frt		0.99			1.00	0.85		1.00	0.85		0.98	
Flt Protected		1.00			1.00	1.00		0.96	1.00		0.99	
Satd. Flow (prot)		2846			1564	1130		1089	694		1417	
Flt Permitted		0.93			0.97	1.00		0.80	1.00		0.97	
Satd. Flow (perm)		2655			1516	1130		904	694		1383	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	24	1293	85	12	745	65	23	7	36	4	20	5
RTOR Reduction (vph)	0	4	0	0	0	16	0	0	31	0	4	0
Lane Group Flow (vph)	0	1398	0	0	757	49	0	30	5	0	25	0
Confl. Peds. (#/hr)	19		8	8		19	22		160	160		22
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	3%	3%	3%	4%	4%	4%	32%	32%	32%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	2	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		6			2			8			4	
Permitted Phases	6			2		2	8		8	4		
Actuated Green, G (s)		88.0			88.0	88.0		14.0	14.0		14.0	
Effective Green, g (s)		90.0			90.0	90.0		16.0	16.0		16.0	
Actuated g/C Ratio		0.75			0.75	0.75		0.13	0.13		0.13	
Clearance Time (s)		6.0			6.0	6.0		6.0	6.0		6.0	
Lane Grp Cap (vph)		1991			1137	847		120	92		184	
v/s Ratio Prot												
v/s Ratio Perm		c0.53			0.50	0.04		c0.03	0.01		0.02	
v/c Ratio		0.70			0.67	0.06		0.25	0.05		0.13	
Uniform Delay, d1		7.9			7.5	3.9		46.6	45.4		45.9	
Progression Factor		1.30			1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2		1.8			3.1	0.1		4.9	1.1		1.5	
Delay (s)		12.1			10.6	4.0		51.5	46.5		47.4	
Level of Service		B			B	A		D	D		D	
Approach Delay (s)		12.1			10.1			48.8			47.4	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	12.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Queues

1: Tilden St NW/46th St NW & Massachusetts Ave NW

	↘	↲	↖	↙
Lane Group	SET	SER	NWT	SWT
Lane Group Flow (vph)	1008	6	1126	131
v/c Ratio	0.49	0.01	0.55	0.64
Control Delay	6.9	3.8	4.1	62.5
Queue Delay	0.0	0.0	0.1	0.0
Total Delay	6.9	3.8	4.2	62.5
Queue Length 50th (ft)	140	1	72	95
Queue Length 95th (ft)	177	4	84	#175
Internal Link Dist (ft)	290		149	39
Turn Bay Length (ft)		90		
Base Capacity (vph)	2064	824	2034	204
Starvation Cap Reductn	0	0	197	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.49	0.01	0.61	0.64

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

The Standard at WTS

1: Tilden St NW/46th St NW & Massachusetts Ave NW

10/22/2021

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↑↑	↱		↰↑						✥	
Traffic Volume (vph)	0	968	6	35	1046	0	0	0	0	91	32	3
Future Volume (vph)	0	968	6	35	1046	0	0	0	0	91	32	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	9	9	9
Grade (%)		7%			-7%			0%			7%	
Total Lost time (s)		4.0	4.0		4.0						4.0	
Lane Util. Factor		0.95	1.00		0.95						1.00	
Frpb, ped/bikes		1.00	0.96		1.00						1.00	
Flpb, ped/bikes		1.00	1.00		1.00						1.00	
Frt		1.00	0.85		1.00						1.00	
Flt Protected		1.00	1.00		1.00						0.97	
Satd. Flow (prot)		2752	1099		3071						1285	
Flt Permitted		1.00	1.00		0.88						0.97	
Satd. Flow (perm)		2752	1099		2712						1285	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	1008	6	36	1090	0	0	0	0	95	33	3
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	1008	6	0	1126	0	0	0	0	0	130	0
Confl. Peds. (#/hr)	7		28	28		7	7					7
Confl. Bikes (#/hr)						2						1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	5	0	5	0	0	0	0	0	0	0
Parking (#/hr)		0	0							0	0	0
Turn Type		NA	Perm	Perm	NA					Split	NA	
Protected Phases		6			2					4	4	
Permitted Phases			6	2								
Actuated Green, G (s)		88.0	88.0		88.0						17.0	
Effective Green, g (s)		90.0	90.0		90.0						19.0	
Actuated g/C Ratio		0.75	0.75		0.75						0.16	
Clearance Time (s)		6.0	6.0		6.0						6.0	
Lane Grp Cap (vph)		2064	824		2034						203	
v/s Ratio Prot		0.37									c0.10	
v/s Ratio Perm			0.01		c0.42							
v/c Ratio		0.49	0.01		0.55						0.64	
Uniform Delay, d1		5.9	3.8		6.4						47.3	
Progression Factor		1.00	1.00		0.47						1.00	
Incremental Delay, d2		0.8	0.0		1.0						14.5	
Delay (s)		6.7	3.8		4.0						61.8	
Level of Service		A	A		A						E	
Approach Delay (s)		6.7			4.0			0.0			61.8	
Approach LOS		A			A			A			E	

Intersection Summary			
HCM 2000 Control Delay	8.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	79.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

2: University Ave NW & Wesley Cir NW

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱					↱
Traffic Volume (veh/h)	33	26	0	0	0	41
Future Volume (Veh/h)	33	26	0	0	0	41
Sign Control	Free			Free	Yield	
Grade	5%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	37	29	0	0	0	46
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			66		52	52
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			66		52	52
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	95
cM capacity (veh/h)			1536		957	1016

Direction, Lane #	EB 1	NB 1
Volume Total	66	46
Volume Left	0	0
Volume Right	29	46
cSH	1700	1016
Volume to Capacity	0.04	0.05
Queue Length 95th (ft)	0	4
Control Delay (s)	0.0	8.7
Lane LOS		A
Approach Delay (s)	0.0	8.7
Approach LOS		A

Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis

The Standard at WTS

3: Wesley Cir NW & Massachusetts Ave NW

10/22/2021

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		✣						↑↑			↑↱	
Traffic Volume (veh/h)	15	6	48	0	0	0	0	1059	0	0	1077	75
Future Volume (Veh/h)	15	6	48	0	0	0	0	1059	0	0	1077	75
Sign Control		Stop			Stop			Free			Free	
Grade		5%			0%			0%			-7%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	16	6	50	0	0	0	0	1103	0	0	1122	78
Pedestrians					7							
Lane Width (ft)					0.0							
Walking Speed (ft/s)					4.0							
Percent Blockage					0							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								229			230	
pX, platoon unblocked	0.87	0.87	0.87	0.87	0.87					0.87		
vC, conflicting volume	1664	2310	552	1772	2271	607	1207			1103		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1461	2205	180	1586	2160	607	1207			815		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	79	84	93	100	100	100	100			100		
cM capacity (veh/h)	78	38	722	52	41	439	579			707		

Direction, Lane #	NB 1	SE 1	SE 2	NW 1	NW 2
Volume Total	72	552	552	748	452
Volume Left	16	0	0	0	0
Volume Right	50	0	0	0	78
cSH	166	1700	1700	1700	1700
Volume to Capacity	0.43	0.32	0.32	0.44	0.27
Queue Length 95th (ft)	49	0	0	0	0
Control Delay (s)	42.2	0.0	0.0	0.0	0.0
Lane LOS	E				
Approach Delay (s)	42.2	0.0		0.0	
Approach LOS	E				

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	47.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			↰			↱	
Traffic Volume (veh/h)	5	0	1	1	6	12	1	8	0	0	21	5
Future Volume (Veh/h)	5	0	1	1	6	12	1	8	0	0	21	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	6	0	1	1	7	13	1	9	0	0	23	6
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	54	37	26	38	40	9	29			9		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	54	37	26	38	40	9	29			9		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	100	100	99	99	100			100		
cM capacity (veh/h)	927	855	1050	966	852	1073	1584			1611		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	7	21	10	29
Volume Left	6	1	1	0
Volume Right	1	13	0	6
cSH	943	982	1584	1700
Volume to Capacity	0.01	0.02	0.00	0.02
Queue Length 95th (ft)	1	2	0	0
Control Delay (s)	8.8	8.7	0.7	0.0
Lane LOS	A	A	A	
Approach Delay (s)	8.8	8.7	0.7	0.0
Approach LOS	A	A		

Intersection Summary			
Average Delay	3.8		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Queues
The Standard at WTS

5: Massachusetts Ave NW & 45th St NW
10/22/2021

	↘	↖	↲
Lane Group	SET	NWT	SWL
Lane Group Flow (vph)	1230	1311	73
v/c Ratio	0.45	0.39	0.04
Control Delay	0.7	0.3	0.0
Queue Delay	0.0	0.0	0.0
Total Delay	0.7	0.3	0.0
Queue Length 50th (ft)	6	0	0
Queue Length 95th (ft)	0	0	0
Internal Link Dist (ft)	150	66	258
Turn Bay Length (ft)			
Base Capacity (vph)	2726	3402	1637
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.45	0.39	0.04

Intersection Summary

HCM Signalized Intersection Capacity Analysis
5: Massachusetts Ave NW & 45th St NW

The Standard at WTS
10/22/2021

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↰↑	↑↱		Y	
Traffic Volume (vph)	35	1072	1143	37	57	9
Future Volume (vph)	35	1072	1143	37	57	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		4%	-7%		0%	
Total Lost time (s)		9.0	9.0		9.0	
Lane Util. Factor		0.95	0.95		1.00	
Frt		1.00	1.00		0.98	
Flt Protected		1.00	1.00		0.96	
Satd. Flow (prot)		3232	3403		1636	
Flt Permitted		0.84	1.00		0.96	
Satd. Flow (perm)		2725	3403		1636	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	39	1191	1270	41	63	10
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	1230	1311	0	73	0
Turn Type	Perm	NA	NA		D.Pm	
Protected Phases		2!	2!			
Permitted Phases	2!				2!	
Actuated Green, G (s)		120.0	120.0		120.0	
Effective Green, g (s)		120.0	120.0		120.0	
Actuated g/C Ratio		1.00	1.00		1.00	
Clearance Time (s)		11.0	11.0		11.0	
Vehicle Extension (s)		1.0	1.0		1.0	
Lane Grp Cap (vph)		2725	3403		1636	
v/s Ratio Prot			0.39			
v/s Ratio Perm		c0.45			0.04	
v/c Ratio		0.45	0.39		0.04	
Uniform Delay, d1		0.0	0.0		0.0	
Progression Factor		1.00	1.00		1.00	
Incremental Delay, d2		0.5	0.3		0.1	
Delay (s)		0.5	0.3		0.1	
Level of Service		A	A		A	
Approach Delay (s)		0.5	0.3		0.1	
Approach LOS		A	A		A	

Intersection Summary			
HCM 2000 Control Delay	0.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	78.3%	ICU Level of Service	D
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

6: WTS Dwy & Massachusetts Ave NW

The Standard at WTS

10/22/2021

Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations		↱	↳			↰↑
Traffic Volume (veh/h)	0	18	1114	15	16	1181
Future Volume (Veh/h)	0	18	1114	15	16	1181
Sign Control	Stop		Free			Free
Grade	0%		4%			-7%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	20	1238	17	18	1312
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			219			646
pX, platoon unblocked	0.11	0.02			0.02	
vC, conflicting volume	1938	1246			1255	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0			0	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	12			47	
cM capacity (veh/h)	55	23			34	

Direction, Lane #	NB 1	SE 1	NW 1	NW 2
Volume Total	20	1255	455	875
Volume Left	0	0	18	0
Volume Right	20	17	0	0
cSH	23	1700	34	1700
Volume to Capacity	0.88	0.74	0.53	0.51
Queue Length 95th (ft)	64	0	44	0
Control Delay (s)	385.5	0.0	140.3	0.0
Lane LOS	F		F	
Approach Delay (s)	385.5	0.0	48.0	
Approach LOS	F			

Intersection Summary			
Average Delay	27.5		
Intersection Capacity Utilization	69.5%	ICU Level of Service	C
Analysis Period (min)	15		

SimTraffic Simulation Summary
Background 2024

11/10/2021

Summary of All Intervals

Run Number	1	2	3	4	5	2811)\Analysis\Synchro\BG PM	Avg
Start Time	4:45	4:45	4:45	4:45	4:45	4:45	4:45
End Time	6:00	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	2548	2428	2541	2633	2443	2529	2520
Vehs Exited	2512	2394	2539	2557	2446	2509	2492
Starting Vehs	139	117	148	113	136	133	126
Ending Vehs	175	151	150	189	133	153	154
Travel Distance (mi)	1319	1285	1320	1353	1283	1317	1313
Travel Time (hr)	238.8	221.7	267.1	212.9	244.9	232.1	236.3
Total Delay (hr)	192.6	176.8	220.5	165.4	199.8	185.8	190.1
Total Stops	3605	3560	3536	3813	3406	3685	3599
Fuel Used (gal)	89.6	84.3	95.9	84.6	89.3	88.1	88.6

Interval #0 Information Seeding

Start Time	4:45
End Time	5:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	2811)\Analysis\Synchro\BG PM	Avg
Vehs Entered	2548	2428	2541	2633	2443	2529	2520
Vehs Exited	2512	2394	2539	2557	2446	2509	2492
Starting Vehs	139	117	148	113	136	133	126
Ending Vehs	175	151	150	189	133	153	154
Travel Distance (mi)	1319	1285	1320	1353	1283	1317	1313
Travel Time (hr)	238.8	221.7	267.1	212.9	244.9	232.1	236.3
Total Delay (hr)	192.6	176.8	220.5	165.4	199.8	185.8	190.1
Total Stops	3605	3560	3536	3813	3406	3685	3599
Fuel Used (gal)	89.6	84.3	95.9	84.6	89.3	88.1	88.6

6: WTS Dwy & Massachusetts Ave NW Performance by approach

Approach	NB	SE	NW	All
Denied Del/Veh (s)	0.1	0.0	0.0	0.0
Total Del/Veh (s)	29.9	1.1	5.1	3.6

Queuing and Blocking Report
Background 2024

11/10/2021

Intersection: 6: WTS Dwy & Massachusetts Ave NW

Movement	NB	SE	NW	NW
Directions Served	R	TR	LT	T
Maximum Queue (ft)	56	16	256	227
Average Queue (ft)	16	1	72	56
95th Queue (ft)	45	9	213	188
Link Distance (ft)	240	22	582	582
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Queues
7: Glover Gate/Katzen Arts Center Dwy & Massachusetts Ave NW

	↘	↖	↗	↷	↙
Lane Group	SET	NWT	NET	NER	SWT
Lane Group Flow (vph)	1204	1234	74	88	73
v/c Ratio	0.69	0.63	0.41	0.45	0.33
Control Delay	10.6	10.8	52.0	17.0	30.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	10.6	10.8	52.0	17.0	30.7
Queue Length 50th (ft)	210	233	52	0	28
Queue Length 95th (ft)	242	295	102	52	74
Internal Link Dist (ft)	566	391	281		141
Turn Bay Length (ft)					
Base Capacity (vph)	1746	1973	179	194	224
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.69	0.63	0.41	0.45	0.33

Intersection Summary

HCM Signalized Intersection Capacity Analysis

The Standard at WTS

7: Glover Gate/Katzen Arts Center Dwy & Massachusetts Ave NW

10/22/2021

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↰↑↱			↑↱			↰↑	↱		↰↑↱	
Traffic Volume (vph)	21	1015	96	15	1103	42	61	8	83	19	18	32
Future Volume (vph)	21	1015	96	15	1103	42	61	8	83	19	18	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)		4%			-4%			-1%			5%	
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor		0.95			0.95			1.00	1.00		1.00	
Frpb, ped/bikes		0.98			0.99			1.00	0.54		0.96	
Flpb, ped/bikes		1.00			1.00			0.94	1.00		0.89	
Frt		0.99			0.99			1.00	0.85		0.94	
Flt Protected		1.00			1.00			0.96	1.00		0.99	
Satd. Flow (prot)		2701			2996			1381	697		1221	
Flt Permitted		0.91			0.93			0.71	1.00		0.91	
Satd. Flow (perm)		2458			2782			1025	697		1132	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	22	1080	102	16	1173	45	65	9	88	20	19	34
RTOR Reduction (vph)	0	6	0	0	2	0	0	0	73	0	26	0
Lane Group Flow (vph)	0	1198	0	0	1232	0	0	74	15	0	47	0
Confl. Peds. (#/hr)	21		41	41		21	32		428	428		32
Confl. Bikes (#/hr)			3			1						
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	5%	5%	5%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	5	5	0	0	0	0	0	0
Parking (#/hr)	0	0	0									
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		6			2			8			4	
Permitted Phases	6			2			8		8	4		
Actuated Green, G (s)		83.0			83.0			19.0	19.0		19.0	
Effective Green, g (s)		85.0			85.0			21.0	21.0		21.0	
Actuated g/C Ratio		0.71			0.71			0.18	0.18		0.18	
Clearance Time (s)		6.0			6.0			6.0	6.0		6.0	
Lane Grp Cap (vph)		1741			1970			179	121		198	
v/s Ratio Prot												
v/s Ratio Perm		c0.49			0.44			c0.07	0.02		0.04	
v/c Ratio		0.69			0.63			0.41	0.13		0.24	
Uniform Delay, d1		10.0			9.2			44.0	41.8		42.6	
Progression Factor		0.84			1.00			1.00	1.00		1.00	
Incremental Delay, d2		2.1			1.5			6.9	2.2		2.8	
Delay (s)		10.5			10.7			50.9	43.9		45.4	
Level of Service		B			B			D	D		D	
Approach Delay (s)		10.5			10.7			47.1			45.4	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	13.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

J. Vehicular Capacity Analysis Worksheets – 2024 Total Future Conditions with Existing Access (Alternative A)

	↘	↲	↖	↙
Lane Group	SET	SER	NWT	SWT
Lane Group Flow (vph)	1243	8	681	152
v/c Ratio	0.63	0.01	0.37	0.57
Control Delay	11.3	5.5	2.6	52.1
Queue Delay	0.0	0.0	0.2	0.0
Total Delay	11.3	5.5	2.9	52.1
Queue Length 50th (ft)	242	2	18	106
Queue Length 95th (ft)	305	6	24	179
Internal Link Dist (ft)	282		152	19
Turn Bay Length (ft)		90		
Base Capacity (vph)	1988	829	1820	265
Starvation Cap Reductn	0	0	443	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.63	0.01	0.49	0.57

Intersection Summary

HCM Signalized Intersection Capacity Analysis

1: Tilden St NW/46th St NW & Massachusetts Ave NW

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↑↑	↱		↰↑						✥	
Traffic Volume (vph)	0	1181	8	13	634	0	0	0	0	85	57	3
Future Volume (vph)	0	1181	8	13	634	0	0	0	0	85	57	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	9	9	9
Grade (%)		7%			-7%			0%			7%	
Total Lost time (s)		4.0	4.0		4.0						4.0	
Lane Util. Factor		0.95	1.00		0.95						1.00	
Frpb, ped/bikes		1.00	0.96		1.00						1.00	
Flpb, ped/bikes		1.00	1.00		1.00						1.00	
Frt		1.00	0.85		1.00						1.00	
Flt Protected		1.00	1.00		1.00						0.97	
Satd. Flow (prot)		2841	1185		2837						1269	
Flt Permitted		1.00	1.00		0.92						0.97	
Satd. Flow (perm)		2841	1185		2601						1269	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1243	8	14	667	0	0	0	0	89	60	3
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	1243	8	0	681	0	0	0	0	0	151	0
Confl. Peds. (#/hr)	19		28	28		19	5					5
Confl. Bikes (#/hr)			2									1
Heavy Vehicles (%)	3%	3%	3%	5%	5%	5%	0%	0%	0%	2%	2%	2%
Bus Blockages (#/hr)	0	0	7	0	0	0	0	0	0	0	0	0
Parking (#/hr)					0					0	0	0
Turn Type		NA	Perm	Perm	NA					Split	NA	
Protected Phases		6			2					4	4	
Permitted Phases			6	2								
Actuated Green, G (s)		82.0	82.0		82.0						23.0	
Effective Green, g (s)		84.0	84.0		84.0						25.0	
Actuated g/C Ratio		0.70	0.70		0.70						0.21	
Clearance Time (s)		6.0	6.0		6.0						6.0	
Lane Grp Cap (vph)		1988	829		1820						264	
v/s Ratio Prot		c0.44									c0.12	
v/s Ratio Perm			0.01		0.26							
v/c Ratio		0.63	0.01		0.37						0.57	
Uniform Delay, d1		9.6	5.4		7.3						42.7	
Progression Factor		1.00	1.00		0.28						1.00	
Incremental Delay, d2		1.5	0.0		0.6						8.7	
Delay (s)		11.1	5.5		2.6						51.4	
Level of Service		B	A		A						D	
Approach Delay (s)		11.1			2.6			0.0			51.4	
Approach LOS		B			A			A			D	

Intersection Summary			
HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	55.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
The Standard at WTS

2: University Ave NW & Wesley Cir NW
10/25/2021

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↳					↱
Traffic Volume (veh/h)	46	15	0	0	0	39
Future Volume (Veh/h)	46	15	0	0	0	39
Sign Control	Free			Free	Yield	
Grade	5%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	51	17	0	0	0	43
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			68		60	60
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			68		60	60
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	96
cM capacity (veh/h)			1533		947	1006

Direction, Lane #	EB 1	NB 1
Volume Total	68	43
Volume Left	0	0
Volume Right	17	43
cSH	1700	1006
Volume to Capacity	0.04	0.04
Queue Length 95th (ft)	0	3
Control Delay (s)	0.0	8.7
Lane LOS		A
Approach Delay (s)	0.0	8.7
Approach LOS		A

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
3: Wesley Cir NW & Massachusetts Ave NW

The Standard at WTS
10/25/2021

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		✥						↑↑			↑↱	
Traffic Volume (veh/h)	8	2	75	0	0	0	0	1266	0	0	654	34
Future Volume (Veh/h)	8	2	75	0	0	0	0	1266	0	0	654	34
Sign Control		Stop			Stop			Free			Free	
Grade		5%			0%			0%			-7%	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	8	2	77	0	0	0	0	1292	0	0	667	35
Pedestrians					16							
Lane Width (ft)					0.0							
Walking Speed (ft/s)					4.0							
Percent Blockage					0							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								232			230	
pX, platoon unblocked	0.78	0.78	0.78	0.78	0.78					0.78		
vC, conflicting volume	1626	2010	646	1424	1992	367	718			1292		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1232	1727	0	974	1704	367	718			803		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	92	97	91	100	100	100	100			100		
cM capacity (veh/h)	103	68	843	142	70	630	872			630		

Direction, Lane #	NB 1	SE 1	SE 2	NW 1	NW 2
Volume Total	87	646	646	445	257
Volume Left	8	0	0	0	0
Volume Right	77	0	0	0	35
cSH	439	1700	1700	1700	1700
Volume to Capacity	0.20	0.38	0.38	0.26	0.15
Queue Length 95th (ft)	18	0	0	0	0
Control Delay (s)	15.2	0.0	0.0	0.0	0.0
Lane LOS	C				
Approach Delay (s)	15.2	0.0		0.0	
Approach LOS	C				

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	51.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
4: University Ave NW & Sedgwick St NW/WTS Dwy

The Standard at WTS
10/25/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			↰			↳	
Traffic Volume (veh/h)	4	0	2	1	1	6	1	25	0	0	14	1
Future Volume (Veh/h)	4	0	2	1	1	6	1	25	0	0	14	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	0	2	1	1	7	1	28	0	0	16	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	54	46	16	48	47	28	17			28		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	54	46	16	48	47	28	17			28		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	99	100			100		
cM capacity (veh/h)	937	845	1063	950	844	1047	1600			1585		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	6	9	29	17
Volume Left	4	1	1	0
Volume Right	2	7	0	1
cSH	975	1009	1600	1700
Volume to Capacity	0.01	0.01	0.00	0.01
Queue Length 95th (ft)	0	1	0	0
Control Delay (s)	8.7	8.6	0.3	0.0
Lane LOS	A	A	A	
Approach Delay (s)	8.7	8.6	0.3	0.0
Approach LOS	A	A		

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Queues

5: Massachusetts Ave NW & 45th St NW

	↘	↖	↲
Lane Group	SET	NWT	SWL
Lane Group Flow (vph)	1490	770	30
v/c Ratio	0.54	0.23	0.02
Control Delay	1.3	0.1	0.0
Queue Delay	0.0	0.0	0.0
Total Delay	1.3	0.1	0.0
Queue Length 50th (ft)	18	0	0
Queue Length 95th (ft)	3	0	0
Internal Link Dist (ft)	150	66	207
Turn Bay Length (ft)			
Base Capacity (vph)	2745	3405	1587
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.54	0.23	0.02

Intersection Summary

HCM Signalized Intersection Capacity Analysis

5: Massachusetts Ave NW & 45th St NW

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↰↑	↑↱		Y	
Traffic Volume (vph)	63	1278	675	18	14	13
Future Volume (vph)	63	1278	675	18	14	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		4%	-7%		0%	
Total Lost time (s)		9.0	9.0		9.0	
Lane Util. Factor		0.95	0.95		1.00	
Frt		1.00	1.00		0.94	
Flt Protected		1.00	1.00		0.97	
Satd. Flow (prot)		3230	3406		1587	
Flt Permitted		0.85	1.00		0.97	
Satd. Flow (perm)		2744	3406		1587	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	70	1420	750	20	16	14
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	1490	770	0	30	0
Turn Type	Perm	NA	NA		D.Pm	
Protected Phases		2!	2!			
Permitted Phases	2!				2!	
Actuated Green, G (s)		120.0	120.0		120.0	
Effective Green, g (s)		120.0	120.0		120.0	
Actuated g/C Ratio		1.00	1.00		1.00	
Clearance Time (s)		11.0	11.0		11.0	
Vehicle Extension (s)		1.0	1.0		1.0	
Lane Grp Cap (vph)		2744	3406		1587	
v/s Ratio Prot			0.23			
v/s Ratio Perm		c0.54			0.02	
v/c Ratio		0.54	0.23		0.02	
Uniform Delay, d1		0.0	0.0		0.0	
Progression Factor		1.00	1.00		1.00	
Incremental Delay, d2		0.7	0.1		0.0	
Delay (s)		0.7	0.1		0.0	
Level of Service		A	A		A	
Approach Delay (s)		0.7	0.1		0.0	
Approach LOS		A	A		A	

Intersection Summary			
HCM 2000 Control Delay	0.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	87.2%	ICU Level of Service	E
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
6: WTS Dwy & Massachusetts Ave NW

The Standard at WTS
10/25/2021

Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations		↱	↑↱			↰
Traffic Volume (veh/h)	0	13	1283	7	22	693
Future Volume (Veh/h)	0	13	1283	7	22	693
Sign Control	Stop		Free			Free
Grade	0%		4%			-7%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	14	1426	8	24	770
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			214			651
pX, platoon unblocked	0.76					
vC, conflicting volume	2248	717			1434	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2485	717			1434	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	96			95	
cM capacity (veh/h)	17	372			470	

Direction, Lane #	NB 1	SE 1	SE 2	NW 1
Volume Total	14	951	483	794
Volume Left	0	0	0	24
Volume Right	14	0	8	0
cSH	372	1700	1700	470
Volume to Capacity	0.04	0.56	0.28	0.05
Queue Length 95th (ft)	3	0	0	4
Control Delay (s)	15.1	0.0	0.0	1.6
Lane LOS	C			A
Approach Delay (s)	15.1	0.0		1.6
Approach LOS	C			

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	57.6%	ICU Level of Service	B
Analysis Period (min)	15		

7: Glover Gate/Katzen Arts Center Dwy & Massachusetts Ave NW

	↘	↖	↰	↗	↪	↙
Lane Group	SET	NWT	NWR	NET	NER	SWT
Lane Group Flow (vph)	1409	761	65	30	36	29
v/c Ratio	0.71	0.67	0.08	0.25	0.24	0.15
Control Delay	12.5	11.2	1.1	52.6	7.3	42.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.5	11.2	1.1	52.6	7.3	42.3
Queue Length 50th (ft)	298	255	0	21	0	17
Queue Length 95th (ft)	401	380	10	52	12	46
Internal Link Dist (ft)	571	391		281		141
Turn Bay Length (ft)						
Base Capacity (vph)	1995	1136	863	120	148	188
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.67	0.08	0.25	0.24	0.15

Intersection Summary

HCM Signalized Intersection Capacity Analysis
The Standard at WTS

7: Glover Gate/Katzen Arts Center Dwy & Massachusetts Ave NW
10/25/2021

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↰↑↱			↑	↱		↰	↱		↰↑↱	
Traffic Volume (vph)	22	1196	78	11	689	60	21	6	33	4	18	5
Future Volume (vph)	22	1196	78	11	689	60	21	6	33	4	18	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)		4%			-4%			-1%			5%	
Total Lost time (s)		4.0			4.0	4.0		4.0	4.0		4.0	
Lane Util. Factor		0.95			1.00	1.00		1.00	1.00		1.00	
Frpb, ped/bikes		1.00			1.00	0.86		1.00	0.67		0.98	
Flpb, ped/bikes		1.00			1.00	1.00		0.93	1.00		0.96	
Frt		0.99			1.00	0.85		1.00	0.85		0.98	
Flt Protected		1.00			1.00	1.00		0.96	1.00		0.99	
Satd. Flow (prot)		2846			1564	1130		1089	694		1417	
Flt Permitted		0.93			0.97	1.00		0.80	1.00		0.97	
Satd. Flow (perm)		2655			1516	1130		904	694		1383	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	24	1300	85	12	749	65	23	7	36	4	20	5
RTOR Reduction (vph)	0	4	0	0	0	16	0	0	31	0	4	0
Lane Group Flow (vph)	0	1405	0	0	761	49	0	30	5	0	25	0
Confl. Peds. (#/hr)	19		8	8		19	22		160	160		22
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	3%	3%	3%	4%	4%	4%	32%	32%	32%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	2	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		6			2			8			4	
Permitted Phases	6			2		2	8		8	4		
Actuated Green, G (s)		88.0			88.0	88.0		14.0	14.0		14.0	
Effective Green, g (s)		90.0			90.0	90.0		16.0	16.0		16.0	
Actuated g/C Ratio		0.75			0.75	0.75		0.13	0.13		0.13	
Clearance Time (s)		6.0			6.0	6.0		6.0	6.0		6.0	
Lane Grp Cap (vph)		1991			1137	847		120	92		184	
v/s Ratio Prot												
v/s Ratio Perm		c0.53			0.50	0.04		c0.03	0.01		0.02	
v/c Ratio		0.71			0.67	0.06		0.25	0.05		0.13	
Uniform Delay, d1		8.0			7.5	3.9		46.6	45.4		45.9	
Progression Factor		1.30			1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2		1.8			3.1	0.1		4.9	1.1		1.5	
Delay (s)		12.2			10.7	4.0		51.5	46.5		47.4	
Level of Service		B			B	A		D	D		D	
Approach Delay (s)		12.2			10.1			48.8			47.4	
Approach LOS		B			B			D			D	

Intersection Summary

HCM 2000 Control Delay	12.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

1: Tilden St NW/46th St NW & Massachusetts Ave NW

	↘	↲	↖	↙
Lane Group	SET	SER	NWT	SWT
Lane Group Flow (vph)	1013	6	1130	131
v/c Ratio	0.49	0.01	0.56	0.64
Control Delay	6.9	3.8	4.1	62.5
Queue Delay	0.0	0.0	0.1	0.0
Total Delay	6.9	3.8	4.2	62.5
Queue Length 50th (ft)	141	1	72	95
Queue Length 95th (ft)	178	4	84	#175
Internal Link Dist (ft)	290		149	39
Turn Bay Length (ft)		90		
Base Capacity (vph)	2064	824	2032	204
Starvation Cap Reductn	0	0	195	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.49	0.01	0.62	0.64

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
The Standard at WTS

1: Tilden St NW/46th St NW & Massachusetts Ave NW
10/25/2021

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↑↑	↱		↰↑						✥	
Traffic Volume (vph)	0	972	6	35	1050	0	0	0	0	91	32	3
Future Volume (vph)	0	972	6	35	1050	0	0	0	0	91	32	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	9	9	9
Grade (%)		7%			-7%			0%			7%	
Total Lost time (s)		4.0	4.0		4.0						4.0	
Lane Util. Factor		0.95	1.00		0.95						1.00	
Frpb, ped/bikes		1.00	0.96		1.00						1.00	
Flpb, ped/bikes		1.00	1.00		1.00						1.00	
Frt		1.00	0.85		1.00						1.00	
Flt Protected		1.00	1.00		1.00						0.97	
Satd. Flow (prot)		2752	1099		3071						1285	
Flt Permitted		1.00	1.00		0.88						0.97	
Satd. Flow (perm)		2752	1099		2711						1285	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	1012	6	36	1094	0	0	0	0	95	33	3
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	1013	6	0	1130	0	0	0	0	0	130	0
Confl. Peds. (#/hr)	7		28	28		7	7					7
Confl. Bikes (#/hr)						2						1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	5	0	5	0	0	0	0	0	0	0
Parking (#/hr)		0	0							0	0	0
Turn Type		NA	Perm	Perm	NA					Split	NA	
Protected Phases		6			2					4	4	
Permitted Phases			6	2								
Actuated Green, G (s)		88.0	88.0		88.0						17.0	
Effective Green, g (s)		90.0	90.0		90.0						19.0	
Actuated g/C Ratio		0.75	0.75		0.75						0.16	
Clearance Time (s)		6.0	6.0		6.0						6.0	
Lane Grp Cap (vph)		2064	824		2033						203	
v/s Ratio Prot		0.37									c0.10	
v/s Ratio Perm			0.01		c0.42							
v/c Ratio		0.49	0.01		0.56						0.64	
Uniform Delay, d1		5.9	3.8		6.4						47.3	
Progression Factor		1.00	1.00		0.46						1.00	
Incremental Delay, d2		0.8	0.0		1.0						14.5	
Delay (s)		6.8	3.8		4.0						61.8	
Level of Service		A	A		A						E	
Approach Delay (s)		6.8			4.0			0.0			61.8	
Approach LOS		A			A			A			E	

Intersection Summary			
HCM 2000 Control Delay	8.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	79.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

The Standard at WTS

2: University Ave NW & Wesley Cir NW

10/25/2021

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↳					↱
Traffic Volume (veh/h)	33	26	0	0	0	46
Future Volume (Veh/h)	33	26	0	0	0	46
Sign Control	Free			Free	Yield	
Grade	5%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	37	29	0	0	0	51
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			66		52	52
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			66		52	52
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	95
cM capacity (veh/h)			1536		957	1016

Direction, Lane #	EB 1	NB 1
Volume Total	66	51
Volume Left	0	0
Volume Right	29	51
cSH	1700	1016
Volume to Capacity	0.04	0.05
Queue Length 95th (ft)	0	4
Control Delay (s)	0.0	8.7
Lane LOS		A
Approach Delay (s)	0.0	8.7
Approach LOS		A

Intersection Summary			
Average Delay	3.8		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis

The Standard at WTS

3: Wesley Cir NW & Massachusetts Ave NW

10/25/2021

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		✥						↑↑			↑↱	
Traffic Volume (veh/h)	19	6	49	0	0	0	0	1063	0	0	1077	75
Future Volume (Veh/h)	19	6	49	0	0	0	0	1063	0	0	1077	75
Sign Control		Stop			Stop			Free			Free	
Grade		5%			0%			0%			-7%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	20	6	51	0	0	0	0	1107	0	0	1122	78
Pedestrians					7							
Lane Width (ft)					0.0							
Walking Speed (ft/s)					4.0							
Percent Blockage					0							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								229			230	
pX, platoon unblocked	0.87	0.87	0.87	0.87	0.87					0.87		
vC, conflicting volume	1668	2314	554	1776	2275	607	1207			1107		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1464	2209	178	1588	2164	607	1207			817		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	74	84	93	100	100	100	100			100		
cM capacity (veh/h)	77	38	723	51	40	439	579			705		

Direction, Lane #	NB 1	SE 1	SE 2	NW 1	NW 2
Volume Total	77	554	554	748	452
Volume Left	20	0	0	0	0
Volume Right	51	0	0	0	78
cSH	158	1700	1700	1700	1700
Volume to Capacity	0.49	0.33	0.33	0.44	0.27
Queue Length 95th (ft)	58	0	0	0	0
Control Delay (s)	47.9	0.0	0.0	0.0	0.0
Lane LOS	E				
Approach Delay (s)	47.9	0.0		0.0	
Approach LOS	E				

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	47.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis

The Standard at WTS

4: University Ave NW & Sedgwick St NW/WTS Dwy

10/25/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			↰			↱	
Traffic Volume (veh/h)	5	0	1	1	6	17	1	8	0	0	21	5
Future Volume (Veh/h)	5	0	1	1	6	17	1	8	0	0	21	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	6	0	1	1	7	19	1	9	0	0	23	6
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	60	37	26	38	40	9	29			9		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	60	37	26	38	40	9	29			9		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	100	100	99	98	100			100		
cM capacity (veh/h)	914	855	1050	966	852	1073	1584			1611		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	7	27	10	29
Volume Left	6	1	1	0
Volume Right	1	19	0	6
cSH	931	1001	1584	1700
Volume to Capacity	0.01	0.03	0.00	0.02
Queue Length 95th (ft)	1	2	0	0
Control Delay (s)	8.9	8.7	0.7	0.0
Lane LOS	A	A	A	
Approach Delay (s)	8.9	8.7	0.7	0.0
Approach LOS	A	A		

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Queues
The Standard at WTS

5: Massachusetts Ave NW & 45th St NW
10/25/2021

	↘	↖	↲
Lane Group	SET	NWT	SWL
Lane Group Flow (vph)	1236	1311	74
v/c Ratio	0.46	0.39	0.05
Control Delay	0.7	0.3	0.0
Queue Delay	0.0	0.0	0.0
Total Delay	0.7	0.3	0.0
Queue Length 50th (ft)	7	0	0
Queue Length 95th (ft)	0	0	0
Internal Link Dist (ft)	150	66	258
Turn Bay Length (ft)			
Base Capacity (vph)	2713	3402	1637
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.46	0.39	0.05

Intersection Summary

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↰↑	↑↱		↰↱	
Traffic Volume (vph)	36	1076	1143	37	58	9
Future Volume (vph)	36	1076	1143	37	58	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		4%	-7%		0%	
Total Lost time (s)		9.0	9.0		9.0	
Lane Util. Factor		0.95	0.95		1.00	
Frt		1.00	1.00		0.98	
Flt Protected		1.00	1.00		0.96	
Satd. Flow (prot)		3232	3403		1636	
Flt Permitted		0.84	1.00		0.96	
Satd. Flow (perm)		2714	3403		1636	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	40	1196	1270	41	64	10
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	1236	1311	0	74	0
Turn Type	Perm	NA	NA		D.Pm	
Protected Phases		2!	2!			
Permitted Phases	2!				2!	
Actuated Green, G (s)		120.0	120.0		120.0	
Effective Green, g (s)		120.0	120.0		120.0	
Actuated g/C Ratio		1.00	1.00		1.00	
Clearance Time (s)		11.0	11.0		11.0	
Vehicle Extension (s)		1.0	1.0		1.0	
Lane Grp Cap (vph)		2714	3403		1636	
v/s Ratio Prot			0.39			
v/s Ratio Perm		c0.46			0.05	
v/c Ratio		0.46	0.39		0.05	
Uniform Delay, d1		0.0	0.0		0.0	
Progression Factor		1.00	1.00		1.00	
Incremental Delay, d2		0.5	0.3		0.1	
Delay (s)		0.5	0.3		0.1	
Level of Service		A	A		A	
Approach Delay (s)		0.5	0.3		0.1	
Approach LOS		A	A		A	

Intersection Summary			
HCM 2000 Control Delay	0.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	79.2%	ICU Level of Service	D
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

The Standard at WTS

6: WTS Dwy & Massachusetts Ave NW

10/25/2021

Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations		↱	↱			↰↑
Traffic Volume (veh/h)	0	30	1114	20	27	1181
Future Volume (Veh/h)	0	30	1114	20	27	1181
Sign Control	Stop		Free			Free
Grade	0%		4%			-7%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	33	1238	22	30	1312
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			219			646
pX, platoon unblocked	0.12	0.02			0.02	
vC, conflicting volume	1965	1249			1260	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0			0	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	0			11	
cM capacity (veh/h)	13	22			34	

Direction, Lane #	NB 1	SE 1	NW 1	NW 2
Volume Total	33	1260	467	875
Volume Left	0	0	30	0
Volume Right	33	22	0	0
cSH	22	1700	34	1700
Volume to Capacity	1.47	0.74	0.89	0.51
Queue Length 95th (ft)	106	0	78	0
Control Delay (s)	611.8	0.0	296.4	0.0
Lane LOS	F		F	
Approach Delay (s)	611.8	0.0	103.2	
Approach LOS	F			

Intersection Summary			
Average Delay	60.2		
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		

SimTraffic Simulation Summary
Total Future Alternative A 2024

11/10/2021

Summary of All Intervals

Run Number	1	2	3	4	5	2811)\Analysis\Synchro\TF Alt A PM	Avg
Start Time	4:45	4:45	4:45	4:45	4:45	4:45	4:45
End Time	6:00	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	2536	2495	2517	2538	2536	2636	2541
Vehs Exited	2510	2468	2490	2515	2493	2639	2519
Starting Vehs	132	141	119	100	116	148	123
Ending Vehs	158	168	146	123	159	145	145
Travel Distance (mi)	1309	1289	1299	1318	1312	1364	1315
Travel Time (hr)	274.6	299.6	262.8	220.9	198.5	224.5	246.8
Total Delay (hr)	228.6	254.4	217.1	174.5	152.5	176.3	200.5
Total Stops	3749	3666	3598	3817	3663	3952	3737
Fuel Used (gal)	97.7	103.0	94.3	85.3	79.9	87.7	91.3

Interval #0 Information Seeding

Start Time	4:45
End Time	5:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	2811)\Analysis\Synchro\TF Alt A PM	Avg
Vehs Entered	2536	2495	2517	2538	2536	2636	2541
Vehs Exited	2510	2468	2490	2515	2493	2639	2519
Starting Vehs	132	141	119	100	116	148	123
Ending Vehs	158	168	146	123	159	145	145
Travel Distance (mi)	1309	1289	1299	1318	1312	1364	1315
Travel Time (hr)	274.6	299.6	262.8	220.9	198.5	224.5	246.8
Total Delay (hr)	228.6	254.4	217.1	174.5	152.5	176.3	200.5
Total Stops	3749	3666	3598	3817	3663	3952	3737
Fuel Used (gal)	97.7	103.0	94.3	85.3	79.9	87.7	91.3

6: WTS Dwy & Massachusetts Ave NW Performance by approach

Approach	NB	SE	NW	All
Denied Del/Veh (s)	0.1	0.0	0.0	0.0
Total Del/Veh (s)	32.5	1.2	6.3	4.4

Queuing and Blocking Report
Total Future Alternative A 2024

11/10/2021

Intersection: 6: WTS Dwy & Massachusetts Ave NW

Movement	NB	SE	NW	NW
Directions Served	R	TR	LT	T
Maximum Queue (ft)	72	12	275	258
Average Queue (ft)	23	0	90	67
95th Queue (ft)	55	6	241	214
Link Distance (ft)	240	22	582	582
Upstream Blk Time (%)		0		
Queuing Penalty (veh)		0		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

7: Glover Gate/Katzen Arts Center Dwy & Massachusetts Ave NW

	↘	↖	↗	↱	↙
Lane Group	SET	NWT	NET	NER	SWT
Lane Group Flow (vph)	1217	1246	74	88	73
v/c Ratio	0.70	0.63	0.41	0.45	0.33
Control Delay	10.8	10.9	52.0	17.0	30.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	10.8	10.9	52.0	17.0	30.7
Queue Length 50th (ft)	213	237	52	0	28
Queue Length 95th (ft)	245	300	102	52	74
Internal Link Dist (ft)	566	391	281		141
Turn Bay Length (ft)					
Base Capacity (vph)	1745	1974	179	194	224
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.70	0.63	0.41	0.45	0.33

Intersection Summary

HCM Signalized Intersection Capacity Analysis

7: Glover Gate/Katzen Arts Center Dwy & Massachusetts Ave NW

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	21	1027	96	15	1114	42	61	8	83	19	18	32
Future Volume (vph)	21	1027	96	15	1114	42	61	8	83	19	18	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)		4%			-4%			-1%			5%	
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor		0.95			0.95			1.00	1.00		1.00	
Frpb, ped/bikes		0.98			0.99			1.00	0.54		0.96	
Flpb, ped/bikes		1.00			1.00			0.94	1.00		0.89	
Frt		0.99			0.99			1.00	0.85		0.94	
Flt Protected		1.00			1.00			0.96	1.00		0.99	
Satd. Flow (prot)		2702			2996			1381	697		1221	
Flt Permitted		0.91			0.93			0.71	1.00		0.91	
Satd. Flow (perm)		2459			2782			1025	697		1132	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	22	1093	102	16	1185	45	65	9	88	20	19	34
RTOR Reduction (vph)	0	6	0	0	2	0	0	0	73	0	26	0
Lane Group Flow (vph)	0	1211	0	0	1244	0	0	74	15	0	47	0
Confl. Peds. (#/hr)	21		41	41		21	32		428	428		32
Confl. Bikes (#/hr)			3			1						
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	5%	5%	5%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	5	5	0	0	0	0	0	0
Parking (#/hr)	0	0	0									
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		6			2			8			4	
Permitted Phases	6			2			8		8	4		
Actuated Green, G (s)		83.0			83.0			19.0	19.0		19.0	
Effective Green, g (s)		85.0			85.0			21.0	21.0		21.0	
Actuated g/C Ratio		0.71			0.71			0.18	0.18		0.18	
Clearance Time (s)		6.0			6.0			6.0	6.0		6.0	
Lane Grp Cap (vph)		1741			1970			179	121		198	
v/s Ratio Prot												
v/s Ratio Perm		c0.49			0.45			c0.07	0.02		0.04	
v/c Ratio		0.70			0.63			0.41	0.13		0.24	
Uniform Delay, d1		10.1			9.2			44.0	41.8		42.6	
Progression Factor		0.84			1.00			1.00	1.00		1.00	
Incremental Delay, d2		2.1			1.6			6.9	2.2		2.8	
Delay (s)		10.6			10.8			50.9	43.9		45.4	
Level of Service		B			B			D	D		D	
Approach Delay (s)		10.6			10.8			47.1			45.4	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	13.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

K. Vehicular Capacity Analysis Worksheets – 2024 Total Future Conditions with Proposed Access (Alternative B)

1: Tilden St NW/46th St NW & Massachusetts Ave NW

	↘	↲	↖	↙
Lane Group	SET	SER	NWT	SWT
Lane Group Flow (vph)	1243	8	683	152
v/c Ratio	0.63	0.01	0.38	0.57
Control Delay	11.3	5.5	2.6	52.1
Queue Delay	0.0	0.0	0.2	0.0
Total Delay	11.3	5.5	2.8	52.1
Queue Length 50th (ft)	242	2	17	106
Queue Length 95th (ft)	305	6	22	179
Internal Link Dist (ft)	282		152	19
Turn Bay Length (ft)		90		
Base Capacity (vph)	1988	829	1820	265
Starvation Cap Reductn	0	0	439	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.63	0.01	0.49	0.57

Intersection Summary

HCM Signalized Intersection Capacity Analysis
1: Tilden St NW/46th St NW & Massachusetts Ave NW

The Standard at WTS
10/25/2021

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↑↑	↱		↰↑						✥	
Traffic Volume (vph)	0	1181	8	13	636	0	0	0	0	85	57	3
Future Volume (vph)	0	1181	8	13	636	0	0	0	0	85	57	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	9	9	9
Grade (%)		7%			-7%			0%			7%	
Total Lost time (s)		4.0	4.0		4.0						4.0	
Lane Util. Factor		0.95	1.00		0.95						1.00	
Frpb, ped/bikes		1.00	0.96		1.00						1.00	
Flpb, ped/bikes		1.00	1.00		1.00						1.00	
Frt		1.00	0.85		1.00						1.00	
Flt Protected		1.00	1.00		1.00						0.97	
Satd. Flow (prot)		2841	1185		2837						1269	
Flt Permitted		1.00	1.00		0.92						0.97	
Satd. Flow (perm)		2841	1185		2601						1269	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1243	8	14	669	0	0	0	0	89	60	3
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	1243	8	0	683	0	0	0	0	0	151	0
Confl. Peds. (#/hr)	19		28	28		19	5					5
Confl. Bikes (#/hr)			2									1
Heavy Vehicles (%)	3%	3%	3%	5%	5%	5%	0%	0%	0%	2%	2%	2%
Bus Blockages (#/hr)	0	0	7	0	0	0	0	0	0	0	0	0
Parking (#/hr)					0					0	0	0
Turn Type		NA	Perm	Perm	NA					Split	NA	
Protected Phases		6			2					4	4	
Permitted Phases			6	2								
Actuated Green, G (s)		82.0	82.0		82.0						23.0	
Effective Green, g (s)		84.0	84.0		84.0						25.0	
Actuated g/C Ratio		0.70	0.70		0.70						0.21	
Clearance Time (s)		6.0	6.0		6.0						6.0	
Lane Grp Cap (vph)		1988	829		1820						264	
v/s Ratio Prot		c0.44									c0.12	
v/s Ratio Perm			0.01		0.26							
v/c Ratio		0.63	0.01		0.38						0.57	
Uniform Delay, d1		9.6	5.4		7.3						42.7	
Progression Factor		1.00	1.00		0.27						1.00	
Incremental Delay, d2		1.5	0.0		0.6						8.7	
Delay (s)		11.1	5.5		2.5						51.4	
Level of Service		B	A		A						D	
Approach Delay (s)		11.1			2.5			0.0			51.4	
Approach LOS		B			A			A			D	

Intersection Summary				
HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.61			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0	
Intersection Capacity Utilization	55.4%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

2: University Ave NW & Wesley Cir NW

The Standard at WTS
10/25/2021

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↳					↱
Traffic Volume (veh/h)	46	15	0	0	0	33
Future Volume (Veh/h)	46	15	0	0	0	33
Sign Control	Free			Free	Yield	
Grade	5%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	51	17	0	0	0	37
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			68		60	60
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			68		60	60
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	96
cM capacity (veh/h)			1533		947	1006

Direction, Lane #	EB 1	NB 1
Volume Total	68	37
Volume Left	0	0
Volume Right	17	37
cSH	1700	1006
Volume to Capacity	0.04	0.04
Queue Length 95th (ft)	0	3
Control Delay (s)	0.0	8.7
Lane LOS		A
Approach Delay (s)	0.0	8.7
Approach LOS		A

Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
3: Wesley Cir NW & Massachusetts Ave NW

The Standard at WTS
10/25/2021

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		✥						↑↑			↑↱	
Traffic Volume (veh/h)	2	2	75	0	0	0	0	1266	0	0	662	34
Future Volume (Veh/h)	2	2	75	0	0	0	0	1266	0	0	662	34
Sign Control		Stop			Stop			Free			Free	
Grade		5%			0%			0%			-7%	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	2	2	77	0	0	0	0	1292	0	0	676	35
Pedestrians					16							
Lane Width (ft)					0.0							
Walking Speed (ft/s)					4.0							
Percent Blockage					0							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								232			230	
pX, platoon unblocked	0.78	0.78	0.78	0.78	0.78					0.78		
vC, conflicting volume	1630	2019	646	1434	2002	372	727			1292		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1238	1738	0	985	1716	372	727			803		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	97	91	100	100	100	100			100		
cM capacity (veh/h)	102	67	843	140	69	626	866			630		

Direction, Lane #	NB 1	SE 1	SE 2	NW 1	NW 2
Volume Total	81	646	646	451	260
Volume Left	2	0	0	0	0
Volume Right	77	0	0	0	35
cSH	575	1700	1700	1700	1700
Volume to Capacity	0.14	0.38	0.38	0.27	0.15
Queue Length 95th (ft)	12	0	0	0	0
Control Delay (s)	12.3	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	12.3	0.0		0.0	
Approach LOS	B				

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	50.9%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis

The Standard at WTS

4: University Ave NW & Sedgwick St NW/WTS Dwy

10/25/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			↰			↱	
Traffic Volume (veh/h)	4	0	2	0	0	0	1	25	0	0	14	1
Future Volume (Veh/h)	4	0	2	0	0	0	1	25	0	0	14	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	0	2	0	0	0	1	28	0	0	16	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	46	46	16	48	47	28	17			28		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	46	46	16	48	47	28	17			28		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	100	100			100		
cM capacity (veh/h)	954	845	1063	950	844	1047	1600			1585		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	6	0	29	17
Volume Left	4	0	1	0
Volume Right	2	0	0	1
cSH	988	1700	1600	1700
Volume to Capacity	0.01	0.01	0.00	0.01
Queue Length 95th (ft)	0	0	0	0
Control Delay (s)	8.7	0.0	0.3	0.0
Lane LOS	A	A	A	
Approach Delay (s)	8.7	0.0	0.3	0.0
Approach LOS	A	A		

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Queues
The Standard at WTS

5: Massachusetts Ave NW & 45th St NW
10/25/2021

	↘	↖	↲
Lane Group	SET	NWT	SWL
Lane Group Flow (vph)	1490	779	30
v/c Ratio	0.54	0.23	0.02
Control Delay	1.3	0.1	0.0
Queue Delay	0.0	0.0	0.0
Total Delay	1.3	0.1	0.0
Queue Length 50th (ft)	18	0	0
Queue Length 95th (ft)	4	0	0
Internal Link Dist (ft)	150	66	207
Turn Bay Length (ft)			
Base Capacity (vph)	2739	3405	1587
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.54	0.23	0.02

Intersection Summary

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↰↑	↑↱		↰↱	
Traffic Volume (vph)	63	1278	683	18	14	13
Future Volume (vph)	63	1278	683	18	14	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		4%	-7%		0%	
Total Lost time (s)		9.0	9.0		9.0	
Lane Util. Factor		0.95	0.95		1.00	
Frt		1.00	1.00		0.94	
Flt Protected		1.00	1.00		0.97	
Satd. Flow (prot)		3230	3406		1587	
Flt Permitted		0.85	1.00		0.97	
Satd. Flow (perm)		2739	3406		1587	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	70	1420	759	20	16	14
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	1490	779	0	30	0
Turn Type	Perm	NA	NA		D.Pm	
Protected Phases		2!	2!			
Permitted Phases	2!				2!	
Actuated Green, G (s)		120.0	120.0		120.0	
Effective Green, g (s)		120.0	120.0		120.0	
Actuated g/C Ratio		1.00	1.00		1.00	
Clearance Time (s)		11.0	11.0		11.0	
Vehicle Extension (s)		1.0	1.0		1.0	
Lane Grp Cap (vph)		2739	3406		1587	
v/s Ratio Prot			0.23			
v/s Ratio Perm		c0.54			0.02	
v/c Ratio		0.54	0.23		0.02	
Uniform Delay, d1		0.0	0.0		0.0	
Progression Factor		1.00	1.00		1.00	
Incremental Delay, d2		0.7	0.1		0.0	
Delay (s)		0.7	0.1		0.0	
Level of Service		A	A		A	
Approach Delay (s)		0.7	0.1		0.0	
Approach LOS		A	A		A	

Intersection Summary			
HCM 2000 Control Delay	0.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	87.4%	ICU Level of Service	E
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

6: WTS Dwy & Massachusetts Ave NW

Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations		↱	↑↱			↰↑
Traffic Volume (veh/h)	0	21	1283	9	22	701
Future Volume (Veh/h)	0	21	1283	9	22	701
Sign Control	Stop		Free			Free
Grade	0%		4%			-7%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	23	1426	10	24	779
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			214			651
pX, platoon unblocked	0.75					
vC, conflicting volume	2258	718			1436	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2506	718			1436	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	94			95	
cM capacity (veh/h)	17	371			469	

Direction, Lane #	NB 1	SE 1	SE 2	NW 1
Volume Total	23	951	485	803
Volume Left	0	0	0	24
Volume Right	23	0	10	0
cSH	371	1700	1700	469
Volume to Capacity	0.06	0.56	0.29	0.05
Queue Length 95th (ft)	5	0	0	4
Control Delay (s)	15.3	0.0	0.0	1.6
Lane LOS	C			A
Approach Delay (s)	15.3	0.0		1.6
Approach LOS	C			

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	58.0%	ICU Level of Service	B
Analysis Period (min)	15		

Queues

The Standard at WTS

7: Glover Gate/Katzen Arts Center Dwy & Massachusetts Ave NW

10/25/2021

	↘	↖	↱	↗	↷	↙
Lane Group	SET	NWT	NWR	NET	NER	SWT
Lane Group Flow (vph)	1418	770	65	30	36	29
v/c Ratio	0.71	0.68	0.08	0.25	0.24	0.15
Control Delay	12.6	11.4	1.1	52.6	7.3	42.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.6	11.4	1.1	52.6	7.3	42.3
Queue Length 50th (ft)	303	262	0	21	0	17
Queue Length 95th (ft)	404	389	10	52	12	46
Internal Link Dist (ft)	571	391		281		141
Turn Bay Length (ft)						
Base Capacity (vph)	1995	1136	863	120	148	188
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.68	0.08	0.25	0.24	0.15

Intersection Summary

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↰↑↱			↑	↱		↰↑	↱		↰↑↱	
Traffic Volume (vph)	22	1204	78	11	697	60	21	6	33	4	18	5
Future Volume (vph)	22	1204	78	11	697	60	21	6	33	4	18	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)		4%			-4%			-1%			5%	
Total Lost time (s)		4.0			4.0	4.0		4.0	4.0		4.0	
Lane Util. Factor		0.95			1.00	1.00		1.00	1.00		1.00	
Frpb, ped/bikes		1.00			1.00	0.86		1.00	0.67		0.98	
Flpb, ped/bikes		1.00			1.00	1.00		0.93	1.00		0.96	
Frt		0.99			1.00	0.85		1.00	0.85		0.98	
Flt Protected		1.00			1.00	1.00		0.96	1.00		0.99	
Satd. Flow (prot)		2846			1564	1130		1089	694		1417	
Flt Permitted		0.93			0.97	1.00		0.80	1.00		0.97	
Satd. Flow (perm)		2655			1516	1130		904	694		1383	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	24	1309	85	12	758	65	23	7	36	4	20	5
RTOR Reduction (vph)	0	4	0	0	0	16	0	0	31	0	4	0
Lane Group Flow (vph)	0	1414	0	0	770	49	0	30	5	0	25	0
Confl. Peds. (#/hr)	19		8	8		19	22		160	160		22
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	3%	3%	3%	4%	4%	4%	32%	32%	32%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	2	0	0	0	0	0	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		6			2			8			4	
Permitted Phases	6			2		2	8		8	4		
Actuated Green, G (s)		88.0			88.0	88.0		14.0	14.0		14.0	
Effective Green, g (s)		90.0			90.0	90.0		16.0	16.0		16.0	
Actuated g/C Ratio		0.75			0.75	0.75		0.13	0.13		0.13	
Clearance Time (s)		6.0			6.0	6.0		6.0	6.0		6.0	
Lane Grp Cap (vph)		1991			1137	847		120	92		184	
v/s Ratio Prot												
v/s Ratio Perm		c0.53			0.51	0.04		c0.03	0.01		0.02	
v/c Ratio		0.71			0.68	0.06		0.25	0.05		0.13	
Uniform Delay, d1		8.0			7.6	3.9		46.6	45.4		45.9	
Progression Factor		1.30			1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2		1.9			3.2	0.1		4.9	1.1		1.5	
Delay (s)		12.3			10.9	4.0		51.5	46.5		47.4	
Level of Service		B			B	A		D	D		D	
Approach Delay (s)		12.3			10.3			48.8			47.4	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	13.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Queues
The Standard at WTS

1: Tilden St NW/46th St NW & Massachusetts Ave NW
11/10/2021

	↘	↲	↖	↙
Lane Group	SET	SER	NWT	SWT
Lane Group Flow (vph)	1013	6	1137	131
v/c Ratio	0.49	0.01	0.56	0.64
Control Delay	6.9	3.8	4.1	62.5
Queue Delay	0.0	0.0	0.1	0.0
Total Delay	6.9	3.8	4.2	62.5
Queue Length 50th (ft)	141	1	71	95
Queue Length 95th (ft)	178	4	83	#175
Internal Link Dist (ft)	290		149	39
Turn Bay Length (ft)		90		
Base Capacity (vph)	2064	824	2034	204
Starvation Cap Reductn	0	0	183	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.49	0.01	0.61	0.64

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

The Standard at WTS

1: Tilden St NW/46th St NW & Massachusetts Ave NW

11/10/2021

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↑↑	↱		↰↑						✣	
Traffic Volume (vph)	0	972	6	35	1057	0	0	0	0	91	32	3
Future Volume (vph)	0	972	6	35	1057	0	0	0	0	91	32	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	9	9	9
Grade (%)		7%			-7%			0%			7%	
Total Lost time (s)		4.0	4.0		4.0						4.0	
Lane Util. Factor		0.95	1.00		0.95						1.00	
Frpb, ped/bikes		1.00	0.96		1.00						1.00	
Flpb, ped/bikes		1.00	1.00		1.00						1.00	
Frt		1.00	0.85		1.00						1.00	
Flt Protected		1.00	1.00		1.00						0.97	
Satd. Flow (prot)		2752	1099		3071						1285	
Flt Permitted		1.00	1.00		0.88						0.97	
Satd. Flow (perm)		2752	1099		2713						1285	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	1012	6	36	1101	0	0	0	0	95	33	3
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	1013	6	0	1137	0	0	0	0	0	130	0
Confl. Peds. (#/hr)	7		28	28		7	7					7
Confl. Bikes (#/hr)						2						1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	5	0	5	0	0	0	0	0	0	0
Parking (#/hr)		0	0							0	0	0
Turn Type		NA	Perm	Perm	NA					Split	NA	
Protected Phases		6			2					4	4	
Permitted Phases			6	2								
Actuated Green, G (s)		88.0	88.0		88.0						17.0	
Effective Green, g (s)		90.0	90.0		90.0						19.0	
Actuated g/C Ratio		0.75	0.75		0.75						0.16	
Clearance Time (s)		6.0	6.0		6.0						6.0	
Lane Grp Cap (vph)		2064	824		2034						203	
v/s Ratio Prot		0.37									c0.10	
v/s Ratio Perm			0.01		c0.42							
v/c Ratio		0.49	0.01		0.56						0.64	
Uniform Delay, d1		5.9	3.8		6.5						47.3	
Progression Factor		1.00	1.00		0.45						1.00	
Incremental Delay, d2		0.8	0.0		1.0						14.5	
Delay (s)		6.8	3.8		4.0						61.8	
Level of Service		A	A		A						E	
Approach Delay (s)		6.8			4.0			0.0			61.8	
Approach LOS		A			A			A			E	

Intersection Summary			
HCM 2000 Control Delay	8.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	79.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

2: University Ave NW & Wesley Cir NW

11/10/2021

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↳					↱
Traffic Volume (veh/h)	33	26	0	0	0	29
Future Volume (Veh/h)	33	26	0	0	0	29
Sign Control	Free			Free	Yield	
Grade	5%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	37	29	0	0	0	32
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			66		52	52
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			66		52	52
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	97
cM capacity (veh/h)			1536		957	1016

Direction, Lane #	EB 1	NB 1
Volume Total	66	32
Volume Left	0	0
Volume Right	29	32
cSH	1700	1016
Volume to Capacity	0.04	0.03
Queue Length 95th (ft)	0	2
Control Delay (s)	0.0	8.7
Lane LOS		A
Approach Delay (s)	0.0	8.7
Approach LOS		A

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
3: Wesley Cir NW & Massachusetts Ave NW

The Standard at WTS
11/10/2021

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		✥						↑↑			↑↱	
Traffic Volume (veh/h)	3	6	49	0	0	0	0	1063	0	0	1100	75
Future Volume (Veh/h)	3	6	49	0	0	0	0	1063	0	0	1100	75
Sign Control		Stop			Stop			Free			Free	
Grade		5%			0%			0%			-7%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	3	6	51	0	0	0	0	1107	0	0	1146	78
Pedestrians					7							
Lane Width (ft)					0.0							
Walking Speed (ft/s)					4.0							
Percent Blockage					0							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								229			230	
pX, platoon unblocked	0.87	0.87	0.87	0.87	0.87					0.87		
vC, conflicting volume	1680	2338	554	1800	2299	619	1231			1107		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1477	2236	178	1615	2191	619	1231			817		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	83	93	100	100	100	100			100		
cM capacity (veh/h)	76	36	723	49	39	432	567			705		

Direction, Lane #	NB 1	SE 1	SE 2	NW 1	NW 2
Volume Total	60	554	554	764	460
Volume Left	3	0	0	0	0
Volume Right	51	0	0	0	78
cSH	217	1700	1700	1700	1700
Volume to Capacity	0.28	0.33	0.33	0.45	0.27
Queue Length 95th (ft)	27	0	0	0	0
Control Delay (s)	27.8	0.0	0.0	0.0	0.0
Lane LOS	D				
Approach Delay (s)	27.8	0.0		0.0	
Approach LOS	D				

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	47.0%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis

The Standard at WTS

4: University Ave NW & Sedgwick St NW/WTS Dwy

11/10/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			↰			↱	
Traffic Volume (veh/h)	5	0	1	0	0	0	1	8	0	0	21	5
Future Volume (Veh/h)	5	0	1	0	0	0	1	8	0	0	21	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	6	0	1	0	0	0	1	9	0	0	23	6
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	37	37	26	38	40	9	29			9		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	37	37	26	38	40	9	29			9		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	100	100	100	100	100			100		
cM capacity (veh/h)	968	855	1050	966	852	1073	1584			1611		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	7	0	10	29
Volume Left	6	0	1	0
Volume Right	1	0	0	6
cSH	979	1700	1584	1700
Volume to Capacity	0.01	0.00	0.00	0.02
Queue Length 95th (ft)	1	0	0	0
Control Delay (s)	8.7	0.0	0.7	0.0
Lane LOS	A	A	A	
Approach Delay (s)	8.7	0.0	0.7	0.0
Approach LOS	A	A		

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Queues
5: Massachusetts Ave NW & 45th St NW

	↘	↖	↲
Lane Group	SET	NWT	SWL
Lane Group Flow (vph)	1235	1338	74
v/c Ratio	0.45	0.39	0.05
Control Delay	0.7	0.3	0.0
Queue Delay	0.0	0.0	0.0
Total Delay	0.7	0.3	0.0
Queue Length 50th (ft)	7	0	0
Queue Length 95th (ft)	0	0	0
Internal Link Dist (ft)	150	66	258
Turn Bay Length (ft)			
Base Capacity (vph)	2716	3402	1637
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.45	0.39	0.05

Intersection Summary

HCM Signalized Intersection Capacity Analysis

5: Massachusetts Ave NW & 45th St NW

The Standard at WTS

11/10/2021

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↰↑	↑↱		Y	
Traffic Volume (vph)	35	1076	1166	38	58	9
Future Volume (vph)	35	1076	1166	38	58	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)		4%	-7%		0%	
Total Lost time (s)		9.0	9.0		9.0	
Lane Util. Factor		0.95	0.95		1.00	
Frt		1.00	1.00		0.98	
Flt Protected		1.00	1.00		0.96	
Satd. Flow (prot)		3232	3403		1636	
Flt Permitted		0.84	1.00		0.96	
Satd. Flow (perm)		2716	3403		1636	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	39	1196	1296	42	64	10
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	1235	1338	0	74	0
Turn Type	Perm	NA	NA		D.Pm	
Protected Phases		2!	2!			
Permitted Phases	2!				2!	
Actuated Green, G (s)		120.0	120.0		120.0	
Effective Green, g (s)		120.0	120.0		120.0	
Actuated g/C Ratio		1.00	1.00		1.00	
Clearance Time (s)		11.0	11.0		11.0	
Vehicle Extension (s)		1.0	1.0		1.0	
Lane Grp Cap (vph)		2716	3403		1636	
v/s Ratio Prot			0.39			
v/s Ratio Perm		c0.45			0.05	
v/c Ratio		0.45	0.39		0.05	
Uniform Delay, d1		0.0	0.0		0.0	
Progression Factor		1.00	1.00		1.00	
Incremental Delay, d2		0.5	0.3		0.1	
Delay (s)		0.5	0.3		0.1	
Level of Service		A	A		A	
Approach Delay (s)		0.5	0.3		0.1	
Approach LOS		A	A		A	

Intersection Summary			
HCM 2000 Control Delay	0.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	78.4%	ICU Level of Service	D
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations		↱	↱			↰↑
Traffic Volume (veh/h)	0	54	1114	20	27	1205
Future Volume (Veh/h)	0	54	1114	20	27	1205
Sign Control	Stop		Free			Free
Grade	0%		4%			-7%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	60	1238	22	30	1339
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			219			646
pX, platoon unblocked	0.12	0.02			0.02	
vC, conflicting volume	1978	1249			1260	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0			0	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	0			11	
cM capacity (veh/h)	13	22			34	

Direction, Lane #	NB 1	SE 1	NW 1	NW 2
Volume Total	60	1260	476	893
Volume Left	0	0	30	0
Volume Right	60	22	0	0
cSH	22	1700	34	1700
Volume to Capacity	2.67	0.74	0.89	0.53
Queue Length 95th (ft)	191	0	78	0
Control Delay (s)	1116.9	0.0	296.3	0.0
Lane LOS	F		F	
Approach Delay (s)	1116.9	0.0	103.1	
Approach LOS	F			

Intersection Summary			
Average Delay	77.4		
Intersection Capacity Utilization	69.9%	ICU Level of Service	C
Analysis Period (min)	15		

Since the static HCM unsignalized analyses do not adequately account for gaps in through traffic created by the upstream traffic signals, this intersection was further analyzed using the SimTraffic analyses software.

SimTraffic Simulation Summary
Total Future Alternative B 2024

11/10/2021

Summary of All Intervals

Run Number	1	2	3	4	5	2811)\Analysis\Synchro\TF Alt B PM2	Avg
Start Time	4:45	4:45	4:45	4:45	4:45	4:45	4:45
End Time	6:00	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	2515	2603	2642	2554	2554	2643	2583
Vehs Exited	2469	2549	2633	2556	2550	2600	2559
Starting Vehs	104	119	159	161	141	126	132
Ending Vehs	150	173	168	159	145	169	155
Travel Distance (mi)	1291	1342	1406	1344	1328	1371	1347
Travel Time (hr)	219.7	225.8	229.7	214.3	252.6	244.8	231.1
Total Delay (hr)	174.5	178.7	180.5	167.2	205.9	196.7	183.9
Total Stops	3677	4133	4467	3746	3561	3737	3884
Fuel Used (gal)	84.3	87.7	89.8	85.3	92.5	91.7	88.5

Interval #0 Information Seeding

Start Time	4:45
End Time	5:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	2811)\Analysis\Synchro\TF Alt B PM2	Avg
Vehs Entered	2515	2603	2642	2554	2554	2643	2583
Vehs Exited	2469	2549	2633	2556	2550	2600	2559
Starting Vehs	104	119	159	161	141	126	132
Ending Vehs	150	173	168	159	145	169	155
Travel Distance (mi)	1291	1342	1406	1344	1328	1371	1347
Travel Time (hr)	219.7	225.8	229.7	214.3	252.6	244.8	231.1
Total Delay (hr)	174.5	178.7	180.5	167.2	205.9	196.7	183.9
Total Stops	3677	4133	4467	3746	3561	3737	3884
Fuel Used (gal)	84.3	87.7	89.8	85.3	92.5	91.7	88.5

The traffic simulations were prepared by taking the average of five (5) model runs with 15-minute seed times and 60-minute run times.

6: WTS Dwy & Massachusetts Ave NW Performance by approach

Approach	NB	SE	NW	All
Denied Del/Veh (s)	0.1	0.0	0.0	0.0
Total Del/Veh (s)	28.3	1.2	6.7	4.9

The traffic simulations were prepared by taking the average of five (5) model runs with 15-minute seed times and 60-minute run times.

Queuing and Blocking Report
Total Future Alternative B 2024

11/10/2021

Intersection: 6: WTS Dwy & Massachusetts Ave NW

Movement	NB	SE	NW	NW
Directions Served	R	TR	LT	T
Maximum Queue (ft)	82	35	274	290
Average Queue (ft)	33	1	106	83
95th Queue (ft)	70	15	254	233
Link Distance (ft)	240	22	582	582
Upstream Blk Time (%)		0		
Queuing Penalty (veh)		0		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

7: Glover Gate/Katzen Arts Center Dwy & Massachusetts Ave NW

11/10/2021

	↘	↖	↗	↷	↙
Lane Group	SET	NWT	NET	NER	SWT
Lane Group Flow (vph)	1242	1272	74	88	73
v/c Ratio	0.71	0.65	0.41	0.45	0.33
Control Delay	11.1	11.2	52.0	17.0	30.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	11.1	11.2	52.0	17.0	30.7
Queue Length 50th (ft)	219	247	52	0	28
Queue Length 95th (ft)	251	312	102	52	74
Internal Link Dist (ft)	566	391	281		141
Turn Bay Length (ft)					
Base Capacity (vph)	1746	1971	179	194	224
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.71	0.65	0.41	0.45	0.33

Intersection Summary

HCM Signalized Intersection Capacity Analysis
7: Glover Gate/Katzen Arts Center Dwy & Massachusetts Ave NW

The Standard at WTS
11/10/2021

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↰↑↑↱			↑↑↱			↰↑	↱		↰↑↱	
Traffic Volume (vph)	21	1051	96	15	1138	42	61	8	83	19	18	32
Future Volume (vph)	21	1051	96	15	1138	42	61	8	83	19	18	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	10	10	10	10	10	10
Grade (%)		4%			-4%			-1%			5%	
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor		0.95			0.95			1.00	1.00		1.00	
Frpb, ped/bikes		0.98			0.99			1.00	0.54		0.96	
Flpb, ped/bikes		1.00			1.00			0.94	1.00		0.89	
Frt		0.99			0.99			1.00	0.85		0.94	
Flt Protected		1.00			1.00			0.96	1.00		0.99	
Satd. Flow (prot)		2704			2997			1381	697		1221	
Flt Permitted		0.91			0.93			0.71	1.00		0.91	
Satd. Flow (perm)		2459			2781			1025	697		1132	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	22	1118	102	16	1211	45	65	9	88	20	19	34
RTOR Reduction (vph)	0	6	0	0	2	0	0	0	73	0	26	0
Lane Group Flow (vph)	0	1236	0	0	1270	0	0	74	15	0	47	0
Confl. Peds. (#/hr)	21		41	41		21	32		428	428		32
Confl. Bikes (#/hr)			3			1						
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	5%	5%	5%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	5	5	0	0	0	0	0	0
Parking (#/hr)	0	0	0									
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		6			2			8			4	
Permitted Phases	6			2			8		8	4		
Actuated Green, G (s)		83.0			83.0			19.0	19.0		19.0	
Effective Green, g (s)		85.0			85.0			21.0	21.0		21.0	
Actuated g/C Ratio		0.71			0.71			0.18	0.18		0.18	
Clearance Time (s)		6.0			6.0			6.0	6.0		6.0	
Lane Grp Cap (vph)		1741			1969			179	121		198	
v/s Ratio Prot												
v/s Ratio Perm		c0.50			0.46			c0.07	0.02		0.04	
v/c Ratio		0.71			0.64			0.41	0.13		0.24	
Uniform Delay, d1		10.3			9.4			44.0	41.8		42.6	
Progression Factor		0.84			1.00			1.00	1.00		1.00	
Incremental Delay, d2		2.3			1.6			6.9	2.2		2.8	
Delay (s)		10.9			11.0			50.9	43.9		45.4	
Level of Service		B			B			D	D		D	
Approach Delay (s)		10.9			11.0			47.1			45.4	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	14.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group