Technical Attachments

Wardman Park Redevelopment

Washington, DC

December 5, 2022

GOROVE SLADE
Transportation Planners and Engineers

CONTENTS

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

A. Finalized DDOT CTR Scoping Form

B. Truck Turning Maneuvers

C. Mode Split and Trip Generation Information

D. Existing Turning Movement Counts

E. LOS Descriptions

F. Existing (2022) Capacity Analysis Worksheets

G. Background Development Trips

H. Future (2025) Conditions without Development Capacity Analysis Worksheets

I. Future (2025) Conditions with Development Capacity Analysis Worksheets

A. Finalized DDOT CTR Scoping Form

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 in Word format 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. The Applicant should fill out as many sections as possible and leave blank any sections that are not relevant to their project. Once a completed *Scoping Form* is submitted, DDOT will provide feedback on the initial proposed 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 and comply with all CTR requirements not specifically addressed in this *Form*.

Scoping Information
Date(s) Scoping Form Submitted to DDOT: June 28, 2022
DDOT Case Manager: Kelsey Bridges
Date(s) Scoping Form Comments Returned to Applicant: 7/22/22, **GS Response 8/9/2022, 9/15/22, GS Response 9/28/2022, 10/13/22**
Date Scoping Form Finalized: 10/13/22

Project Overview	**Proposed Development Program**
Project Name: Wardman Park Redevelopment	**Use(s)**
Case Type & No. (ZC, BZA, PSC, etc.): By-Right Development, Public Space Approvals	**Residential (dwelling units):** Up to 875 dwelling units
Applicant/Developer Name: Carmel Partners 1330 Connecticut Avenue NW, Suite 320, Washington, DC 20036 Brad Greene, 301-664-4821, bgreene@carmelpartners.com	**Retail (square feet):** --
Transportation Consultant and Contact Info: Gorove Slade Associates, Inc. 1140 Connecticut Avenue NW, Suite 1050, Washington, DC 20036 Dan VanPelt, 202-540-1924, dbv@goroveslade.com Daniel Solomon, 202-540-1928, ds@goroveslade.com	**Office (square feet):** --
Land Use Counsel and Contact Info: Leila Jackson Batties, Holland & Knight LLP, 202.419.2583, leila.batties@hklaw.com	**Hotel (rooms):** --

Site Street Address: 2660 Woodley Road Washington, DC 20008	**Other:** --
Site Square & Lot: Square 2132, Lot 854	**# of Vehicle Parking Spaces:** 635 spaces proposed and 282 existing spaces to remain; 145-289 required by zoning
Current Zoning and/or Overlay District: RA-2 (majority of site), RA-4 (southern portion of site)	**# of Carshare spaces:** None
Estimated Date of Hearing: September 2022	**# of Electric Vehicle Stations:** At least 13 spaces proposed (1 per every 50 parking spaces provided)
ANC/SMD No. & SMD Commissioner Name: ANC 3C/SMD 3C02; SMD Commissioner: Jason Fink	**Bicycle Parking Facilities**
OP Small Area Plan (if applicable): N/A	**Long-term / Short-Term spaces:** Long-Term: At least 292 spaces proposed; 171 spaces required by zoning Short-Term: At least 44 spaces proposed; 44 spaces required by zoning
DDOT Livability Study (if applicable): N/A	**Showers / Lockers (non-residential):** --
Within ½ Mile of Metrorail or ¼ mile of Priority Bus/Streetcar?: Yes, 1/8 mile of Metrorail and 1/4 mile of DC Circulator	**Loading Berths/Spaces:** Four (4) 30-foot loading berths proposed; Two (2) 30-foot loading berths and two (2) 20-foot delivery spaces required by zoning

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 more total peak hour person trips OR 25 or more peak hour vehicle trips in peak direction, or as deemed necessary by DDOT)

☐ **TIA Component of CTR Study Triggered** (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:** Voluntary CTR

☐ Include PDF of report with appendices, traffic analysis files, and traffic counts in DDOT 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. Also note any other needed regulatory approvals outside of the zoning action discussed in this Form (e.g., Surveyor's Order for alley closure).*

The proposed project, referred to as the **Wardman Park Redevelopment**, is undergoing a voluntary CTR for a residential development located at 2660 Woodley Road in Northwest, Washington, DC.

The project will replace the existing Wardman Park Marriott, a now closed hotel complex containing 1,152 guest rooms and 195,000 square feet of event space, including 95,000 square feet of exhibit space. The existing site is bounded by Woodley Road to the north, Calvert Street to the east, and existing properties to the east and west. The proposed development program consists of two (2) building that include up to 875 residential dwelling units total.

Vehicular parking is proposed to be provided in a below-grade garage shared between the two (2) buildings on site. Vehicular access to the project's below-grade parking garage is proposed via curb cuts on Woodley Road, Calvert Street, and 24th Street. The development is proposing a total parking supply of approximately 917 parking spaces, with 282 spaces in the existing garage to remain and approximately 635 new parking spaces proposed.

Prior Related Action(s), Conditions, and Commitments: *Note any prior approvals by ZC, BZA, or PSC (e.g., 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.*

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	APPLICANT PROPOSAL	DDOT COMMENTS

Site Access and Connectivity 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 ROW closures are proposed. *See Section 1.1 of the CTR Guidelines for more detailed guidance.*	Site access points for vehicles, pedestrians, and bicyclists will be highlighted in the CTR. Vehicular parking is proposed to be provided in a below-grade garage shared between the two (2) buildings on site. Vehicular access to the project's below-grade parking garage is proposed via curb cuts on Woodley Road, Calvert Street, and 24th Street, where vehicular access exists today. Pick-up/drop-off activity will occur within the loop adjacent to the building lobbies, accessed via Woodley Road. Primary pedestrian access to the development will be from the pedestrian walkways connecting to Woodley Road. Primary bicycle access to the development will be from Woodley Road, Calvert Street, and 24th Street. Long-term bicycle parking will be provided in the below-grade parking garage. Loading access for both buildings will also be available via 24th Street and Calvert Street. Three (4) curb cuts serve the existing site: two (2) on Woodley Road, one (1) on Calvert Street, and one (1) on 24th Street. As part of the proposed development, one (1) existing curb cut will be eliminated along Woodley Road NW and the number of curb cuts along Calvert Street NW and 24th Street NW will remain the same as in existing conditions. Curb cuts on Woodley Road, Calvert Street, and 24th Street were reduced where possible while maintaining shared access between the proposed project and adjacent properties. The Woodley Road curb cut provides access to the existing below-grade garage on the north end of the site and the building lobbies for the proposed project. The Calvert Street curb cut provides access to loading and parking access for the proposed project and access to The Woodley. The 24th Street curb cut provides loading and parking access for the proposed project and access to Wardman Tower. ☒ *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 copy from SURDOCS)*	Please ensure that intersection site triangles are provided for all new curb cuts. GS: Noted. Please explain why three curb cuts are necessary and why are there not more connections across the site. GS: Curb cuts were eliminated where possible, including the reduction of the curb cut on Woodley Road from two (2) to one (1). The remaining curb cuts on 24th Street, Woodley Road, and Culvert Street cannot be removed as they provide access to adjacent properties (through legally binding access easement agreements) and fire department access for the buildings. The curb cuts will be narrowed to meet DDOT and DEM standards. 10/13 – We will continue to discuss this during permitting. It appears that the Culvert and Woodley connections could meet or the 24th and

		Woodley could connect. Ideally one of these connections can be made. GS: Connections between Woodley Road and 24th Street or Woodley Road and Calvert Street cannot be made as they would bifurcate the building footprints and provide less green space. There is also a 70' grade change between Woodley Road and Calvert Street that makes a connection infeasible. Zoning requires a meaningful, fully enclosed connection which prevents cross site access. There is an existing and enclosed connection between the building that is not zoning compliant. 10/13 – We will continue to discuss this during permitting. The Applicant should consider through pedestrian connections across the site, especially connecting from Woodley to Culvert as the block is very

		larger. Particular attention should be given to an internal sidewalk connection to the 24th Street connection. GS: See previous response. 10/13 – We will continue to discuss this during permitting. 9/15 - Please provide elevations so DDOT can understand the grade change across the site. It's possible that's an acceptable explanation for the lack of vehicle connections, but a pedestrian connection should be made even if that means an occasional staircase. GS: An elevation exhibit has been provided in the scoping attachments. No vehicular connection is proposed due to the significant grade change shown in this exhibit. Regarding pedestrian connections, the lot has multiple buildings and current zoning requires a 'meaningful connection' between all four buildings. These connections

		need to be above grade, enclosed and conditioned, rather than an open covered walkway. These meaningful connections, by definition, create physical barriers inhibiting pedestrian access through the site between buildings. The locations for the connections are based on the existing connections to the existing buildings. Under existing conditions, the Woodley building does not have a pedestrian connection across the site, so there will be no change in access with the proposed project. Residents of the site will have pedestrian access to/from the Woodley Park Metrorail station from both buildings. Building A (the east building) will have pedestrian access directly via the 24th Street access. Building B (the west building) will have pedestrian access via the pedestrian path along the southern end of the Building A, which

		connects the internal courtyard to the 24th Street access. The courtyard will be open to residents of the site only and will not be used as a public pedestrian connection. 10/13 – We will continue to discuss this during permitting.
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. Include a Loading Management Plan (LMP) if zoning relief, back-in loading, or curbside loading is proposed. *See Section 1.2 of the CTR Guidelines for more detailed guidance. A template LMP is provided in Appendix E.*	Per ZR16 requirements, any residential development providing 50 or more dwelling units is required to provide one (1) loading berth and one (1) service/delivery space. Both residential buildings are proposed to have more than 50 dwelling units. Consistent with these requirements, each building will provide two (2) loading berths, for a total of four (4) loading berths for the site. This exceeds the ZR16 requirements of a minimum of one (1) loading berth and one (1) service/delivery space for each building. All truck backing maneuvers will occur within the site. Truck access to the site will be via front-in/front-out maneuvers only at public space. Truck turning diagrams will be provided in the CTR. ☒ *Scoping Graphic: Location of loading area with internal building routing* ☐ *Scoping Graphic: Truck Turning Diagrams (to/from the site, alley, truck routes)*	DDOT concurs GS: Noted.
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	Under ZR16, the development is required to provide 145-289 spaces. The zoning requirements utilize the calculations shown in the table below. The development is located within a 1/8 mile of the Woodley Park-Zoo/Adams Morgan Metrorail station and within a ¼ mile of a DC Circulator route along Calvert Street NW.	The site is close to bus priority routes and a metro-rail station and is more than three times overparked. There are more

Land Use	Size	Vehicle Parking Spaces				
		Proposed		DDOT-Preferred Rate[2]	ZR16	
		Supply[1]	Ratio[1]		Supply[3]	Ratio[1]

required by ZR16 and DDOT's Preferred Maximum rates (Figure 10). 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.). Confirm whether ZR16 TDM Measures will be required per Subtitle C § 707.3 for providing more than double the required amount of parking.

See Section 1.3 of the CTR Guidelines for more detailed guidance.

Residential (du)	Up to 875	917	1.0	0.25	145-289	0.33/du in excess of 4 du

[1] Supply is measured in *spaces*, while ratio is measured in *spaces/du*.
[2] Rates are proximate to Metrorail and Priority Transit with the development being located within a 1/8 mile of the Woodley Park-Zoo/Adams Morgan Metrorail station and within a ¼ mile of a DC Circulator route along Calvert Street NW.
[3] The ZR16 minimum vehicle parking supply is calculated based on the table of Subtitle C § 701.5 with and without taking a 50% reduction based on the proposed development's proximity to Metrorail and priority transit. This reduction is allowed but not required.

Details on the proposed parking supply will be provided in the CTR. The development is proposing a total parking supply of approximately 917 parking spaces, with 282 spaces in the existing garage to remain and approximately 635 new parking spaces proposed in the below-grade garage on-site.

☒ *Scoping Table: Parking Calculations with Comparison to ZR16 and DDOT's Preferred Maximum Vehicle Parking (Figure 10)*

☐ *Scoping Graphic: Off-Street Parking Locations (both on- and off-site)*

parking spaces than units. The Applicant should consider reducing the number of parking spaces and potentially eliminating curb cuts. If parking cannot be reduced, additional physical mitigations will be required as part of curb cut and public space permitting. The amount of parking currently triggers the 707.3 TDM mitigations for excessive parking.
GS: Noted. 40 spaces included in the existing garage are provided for the Wardman Tower, per the existing easement agreement. These spaces would not count toward the new unit requirements and 707.3 would not be triggered, per information provided by Land Use Council. Additionally, the unit mix will include a high proportion of larger units, with a total of 1,291 bedrooms between the two buildings. This is a ratio of approximately 0.7 spaces per bedroom for the site.

		10/13 – We will continue to discuss this during permitting.
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, as well as showers and lockers for non-residential uses, and ensure they are designed appropriately into the project. *See Section 1.4 and Appendix F of the CTR Guidelines, and the latest DDOT Bike Parking Guide, for more detailed design guidance.*	The proposed development will be designed to meet ZR16 bicycle parking requirements. As shown in the table below, a total of 171 long-term and 40 short-term bicycle parking spaces are required by ZR16 across the combined buildings. The calculations are as follows (802.1): The zoning requirements for Long-Term spaces utilize the following calculations: • Residential: One (1) space for every three (3) dwelling units. After the first 50 spaces are provided, additional spaces are required at half the rate. The zoning requirements for Short-Term spaces utilize the following calculations: • Residential: One (1) space for every 20 dwelling units. **Land Use** | **Size** | **Bicycle Parking Spaces** (Required by Zoning: Long-Term, Short-term; Proposed: Long-Term, Short-term) Residential | Up to 875 du | 171 | 44 | 292 | 44 The Applicant proposes to provide a minimum of 292 long-term and 44 short-term bicycle parking spaces across the site. The proposed bicycle facilities will be distributed across the site so as to meet bicycle parking requirements by land use and to provide short-term bicycle parking in highly accessible locations. As such, the proposed bicycle facilities meet ZR16 requirements. Per ZR16, the development is not required to provide showers and lockers and there are no non-residential uses proposed. The location of the internal bicycle parking spaces, routing to those spaces, and related support facilities including storage areas, and service repair rooms will be included in the CTR. ☐ *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*	Please ensure short and long-term bicycle parking spaces are installed according to the DDOT Bike Parking Guide with close attention paid to spacing dimensions and 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 the bike being suspended). Short-term bicycle racks must be galvanized or stainless steel and covered with a powdercoat, PVC, or thermoplastic coating. Racks, if surface-mounted, must also not have anchors along a single axis, leaving them vulnerable to a "fulcrum attack". DDOT recommends dedicating 5% of long-term bicycle parking spaces for oversized or cargo bicycles. A typical oversized space would measure

		in at 10'x3' compared to 6'x2' for a traditional bicycle. DDOT also recommends providing several accessible power outlets in the bike room for electric bicycle and scooter charging. GS: Noted.
Streetscape and Public Realm 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. Note any non-compliant public space elements requiring a DCRA code modification or PSC approval. *See Section 1.5 of the CTR Guidelines for more detailed guidance. A summary of public space best practices and DDOT standards are also documented in the DEM, Public Realm Design Manual, and corridor Streetscape Guidelines (if applicable).*	A conceptual layout will be provided in the CTR. Detailed layouts will be included in site plans submitted with the Application as part of the zoning process. ☐ *Scoping Graphic: Preliminary Public Space Concept*	Please add a 53'x7' concrete pad near Woodley Road at 27th Street NW in the public space submission for a future CaBi Station. GS: Noted. The Applicant will work with DDOT on the location of the concrete pad. Depending on the final amount of parking, a CaBi station may be required. GS: Noted. The markings on Calvert are very difficult to see in existing conditions on the concrete paved section, please replace/outline with black tape so that the lane markings and bike lanes are more visible.

		GS: Noted. The Applicant will work with DDOT to understand the scope of this request. Curb cuts should be constructed to DDOT standard: commercial curb cut no larger than 24-ft, at grade with the sidewalk that meets, 6-ft from adjacent property lines, 24-ft from neighboring curb cuts. GS: Noted.
Sustainable Transportation Elements Identify all sustainable transportation elements, such as electric vehicle (EV) charging stations and carshare spaces proposed to be included 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. Note that District regulations for EV infrastructure is fast evolving and additional requirements may go into effect. *See Section 1.6 of the CTR Guidelines for more detailed guidance.*	Sustainable transportation elements will be identified as part of the CTR. Section 1.6 of the DDOT CTR guidelines recommends that one (1) out of every 50 spaces be served by an EV charging station. The Applicant will provide a minimum of 13 electric vehicle parking stations within the new below-grade parking garage.	DDOT concurs GS: Noted.

Heritage, Special, and Street Trees Heritage Trees are defined as having a circumference of 100 inches or more. They are protected by District law 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. Conduct an inventory of existing and missing street trees within a 2-block radius of the site. Provide a screenshot from UFD's map of existing and missing street trees. *See Section 1.7 of the CTR Guidelines for more detailed guidance.*	The Applicant will work with UFD to determine if there are any Heritage or Special Trees that will be impacted on-site. The CTR will include a screenshot of the street tree inventory for the area surrounding the site using DC UFD mapping layer of Street Trees in Washington, DC.	There are a lot of trees/vegetation within the limits of work, follow-up with the ward arborist, Janet Miller at janet.miller@dc.gov to discuss. A site visit will really help both Janet and the project team to understand how best to proceed with regards to not only the on-site trees but also the street trees. GS: Noted.

Section 2: MULTI-MODAL TRIP GENERATION

CATEGORY & GUIDELINES	APPLICANT PROPOSAL	DDOT COMMENTS
Mode Split Provide mode split assumptions with sources and justification. 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	Mode split assumptions are based on CTPP census data, proximity to multimodal transportation, and the proposed parking supply. A detailed breakdown of these assumptions is included in the scoping form attachments.	Based on parking ratios significantly higher than DDOT preferred, and zoning required ratios, the "Drive" mode share should be increased. GS: The drive mode split has been increased to 70%. The mode splits for other modes have been adjusted accordingly.

Land Use	Mode			
	Drive	Transit	Bike	Walk
Residential	70%	25%	2%	3%

☒ *Scoping Table: Mode Split Assumptions by Land Use*

and CTR submission without amending the scoping form and receiving DDOT concurrence.

See Section 2.1 of the CTR Guidelines for acceptable data sources and methodologies.

Trip Calculations

Provide site-generated person trip 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. Include estimates for the transit, bicycle, walk, and automobile modes.

The agreed upon trip generation methodology may not be revised between scoping and CTR submission without amending the scoping form and receiving DDOT concurrence. Consult the DDOT Case Manager if site plan, development program, land uses, or density changes significantly.

See Section 2.2 of the CTR Guidelines for guidance on auto occupancy rates, acceptable trip reductions, and other methodologies.

We propose a multi-modal trip generation methodology using ITE *Trip Generation,* 11th Edition rates for Land Use 221 (Mid-Rise Multifamily Housing – Close to Rail Transit) following DDOT CTR guidelines set forth in section 2.2. Attached to this form are details on the trip generation and mode split assumptions. ITE does not provide Saturday peak hour trip generation rates for LU 221 with the Close to Rail Transit setting. As such, Saturday peak hour trip generation estimates are based on rates for Land Use 221 (Mid- Multifamily Housing – Not Close to Rail Transit). The ITE trip generation is shown below.

Mode	AM Peak Hour			PM Peak Hour			Saturday Peak Hour			Daily
	In	Out	Total	In	Out	Total	In	Out	Total	Total
Proposed Residential (875 Units)										
Auto	110 veh/hr	86 veh/hr	196 veh/hr	76 veh/hr	102 veh/hr	178 veh/hr	125 veh/hr	122 veh/hr	247 veh/hr	2,909 veh
Transit	46 ppl/hr	37 ppl/hr	83 ppl/hr	32 ppl/hr	43 ppl/hr	75 ppl/hr	53 ppl/hr	51 ppl/hr	104 ppl/hr	1,226 ppl
Bike	4 ppl/hr	3 ppl/hr	7 ppl/hr	3 ppl/hr	3 ppl/hr	6 ppl/hr	4 ppl/hr	4 ppl/hr	8 ppl/hr	98 ppl
Walk	5 ppl/hr	4 ppl/hr	9 ppl/hr	4 ppl/hr	5 ppl/hr	9 ppl/hr	7 ppl/hr	5 ppl/hr	12 ppl/hr	147 ppl

The existing hotel on-site is closed. As such, no trips are generated by the site currently. However, the hotel was previously very active and it is expected that the redevelopment of the site to residential use will be a less intensive use than the previous site. The table below shows the reduction in trips during the AM and PM peak hours based on the proposed ITE trip generation for the proposed site and driveway counts for the hotel previously collected in 2016 when the hotel was open.

Use	Size	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total
Proposed Residential	875 du	110 veh/hr	86 veh/hr	196 veh/hr	76 veh/hr	102 veh/hr	178 veh/hr
Existing Hotel*	--	179 veh/hr	104 veh/hr	283 veh/hr	152 veh/hr	206 veh/hr	358 veh/hr
	Difference in Trips	**-69 veh/hr**	**-18 veh/hr**	**-87 veh/hr**	**-76 veh/hr**	**-104 veh/hr**	**-180 veh/hr**

*Existing hotel trip generation based on 2016 driveway counts

☒ *Scoping Table: Multi-Modal Trip Gen Summary (with mode split and applicable reductions, as appropriate)*

The Trip Generation Manual 11th Edition shows 324-vph and 341-vph during the AM and PM peak hours of adjacent street traffic, respectively, using average rates and 875-DU. Please update trip generation values accordingly.
GS: The rates used for AM and PM peak hour trip generation were based on ITE LU 221 with the Close to Rail Transit setting, given the proximity to Metro. ITE does not provide rates with the Close to Transit setting for the Saturday peak hour.

Update the tables with the adjusted mode-split.
GS: The trip generation tables have been updated to reflect a 70% drive mode split.

Section 3: MULTI-MODAL NETWORK EVALUATION

A multi-modal network evaluation is required in the CTR or Transportation Statement if the project generates 100 or more total person trips (combined inbound and outbound) OR 25 or more vehicle trips in the peak direction (highest of inbound or outbound) during any peak hour 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, the reductions may be applied in the analysis, as appropriate, if a study is triggered. Multi-modal analyses in this 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.

Requirement for a CTR may be waived if site is within ½ mile from Metrorail or ¼ mile from Priority Transit, total vehicle parking supply is below the max amount for its distance to transit (see Figure 10), site has a maximum of 100 parking spaces, a Baseline TDM Plan is implemented, site access and loading design are acceptable, an off-site safety or non-auto improvement is constructed, and long-term bike parking requirements are exceeded. Additional criteria may be found in the Low Impact Development Exemption section of the *CTR Guidelines*.

CATEGORY & GUIDELINES	APPLICANT PROPOSAL	DDOT COMMENTS
Strategic Planning Elements List any relevant planning efforts and demonstrate how the proposed action is consistent with District-wide planning documents, as well as localized studies. Note in any recommendations from these documents relevant to the development proposal. *See Section 3.1 of CTR Guidelines for a list of strategic planning documents. Details on additional relevant plans and studies may be provided by the DDOT Case Manager.*	The CTR will consider the suggested studies included in the column to the left, and the studies listed below: ▪ Connecticut Avenue NW Reversible Lane Safety and Operations Study	Add the Connecticut Avenue NW Reversible Lane Safety and Operations Study GS: The text has been revised to include this study.
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, and whether facilities meet DDOT and ADA standards. 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 activity	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 a ¼ mile of the site following Section 3.2 of DDOT's CTR guidelines. The assessment will evaluate whether facilities meet DDOT and ADA standards. ☒ *Scoping Graphic: Pedestrian Study Area with Walking Routes to Transit, Schools, Activity Centers, and Neighborhood Amenities*	The Applicant will be required to bring pedestrian infrastructure up to standard by adding missing crosswalks, ADA ramps, and updating deteriorating or too narrow sidewalks around the streets surrounding the project. GS: Noted. The Applicant will improve pedestrian infrastructure at curb

centers, and other neighborhood amenities. *See Section 3.2 of the CTR Guidelines for more detailed guidance.*		cuts for the site and continue coordination with DDOT on the scope of improvements. 10/13 – We will continue to discuss this during permitting.
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. 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, major activity centers, and other bicycle trails or facilities. Look for opportunities to convert traditional bike lanes to protected bike lanes. *See Section 3.3 of the CTR Guidelines for more detailed guidance.*	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 with Bicycling Routes to Transit, Schools, Activity Centers, and Other Bicycle Facilities and Trails*	Please add a 53'x7' concrete pad near Woodley Road at 27th Street NW in the public space submission for a future CaBi Station. GS: Noted. The Applicant will work with DDOT on the location of the concrete pad. The existing bicycle facilities map is not showing the CaBi stations. GS: Noted. This has been corrected in the revised figure. Plan to make the bike lanes on Calvert protected lanes between 28th and right before Connecticut Ave. Please coordinate with DDOT's bike/ped team. GS: Noted. The Applicant will coordinate further

		with DDOT's bike/ped team to understand the scope of this request. 10/13 – We will continue to discuss this during permitting.
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.). Study area is 1.0 mile for Metrorail stations and ½ mile for Streetcar, Circulator, and buses. *See Section 3.4 of the CTR Guidelines for more detailed guidance.*	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 a ¼ 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 (Figures 11 and 12)*	DDOT has a bus project that may make changes to the 24th Street NW bus operations and may change on-street parking or directional operations. GS: Noted.
Safety Analysis Qualitatively evaluate safety conditions at intersections and along blocks within the vehicle study area using professional expertise. This might identify geometric design issues, missing critical signage or restrictions, or unforeseen pedestrian desire lines, for example. 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.	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.	DDOT Concurs. The Applicant should provide site distances at curbcuts and update and install any missing crosswalks and receiving ramps. GS: Noted.

See Section 3.5 of the CTR Guidelines for more detailed guidance.		
Curbside Management Propose a preliminary curbside management plan that is consistent with current DDOT policies and practices. Curbside signage / restrictions reset with new development and the Applicant is responsible for installing meters if required. The curbside management plan must delineate existing and proposed on-street parking designations/restrictions, including but not limited to pick-up/drop-off zones, loading zones, multi-space meters, RPP, and net change in number of on-street spaces as a result of the proposal. *See Section 3.6 of the CTR Guidelines for more detailed guidance.*	A curbside management plan will be provided in the CTR, including existing and proposed curbside designations within two (2) blocks of the site. ☒ *Scoping Graphic: Existing Curbside Designations (minimum 2 block radius of site)*	DDOT Concurs GS: Noted.
Pick-Up and Drop-Off Plan Required for all new and existing schools and daycares with 20 or more students. May also be required for churches, hotels, or any other use expected to have significant pick-up/drop-off operations, as necessary. The plan will identify pick-up/drop-off locations and demonstrate adequate circulation so that the flow of bicycles and vehicles on adjacent street is not impeded and queueing does not occur through the pedestrian realm.	A pick-up and drop-off plan is not necessary. The type and intensity of the development program is not expected to have significant pick-up and drop-off operations.	DDOT Concurs GS: Noted.

See Section 3.6.4 of the CTR Guidelines for more detailed guidance.		
On-Street Parking Occupancy Study This analysis is required if relief from 5 or more on-site vehicle parking spaces is being requested. It may also be required as part of a zoning or permitting case if DDOT has concerns about site-generated vehicles parking in adjacent residential neighborhoods. *See Section 3.6.5 of the CTR Guidelines for more detailed guidance on study periods and analysis requirements.*	Zoning relief for parking is not being sought, therefore this section is not applicable. ☐ *Scoping Graphic: Study Area and Block Faces*	DDOT Concurs GS: Noted.
Parking Garage/Drive-Thru Queuing Analysis If site contains 150 or more vehicle parking spaces AND direct access to a public street OR site contains a drive-thru, evaluate on-site vehicle queueing demand and provide analysis demonstrating parking entrance/ramps or drive aisle can properly process vehicles without queuing onto public streets. *See Section 1.3.4 of CTR Guidelines for more detailed guidance.*	No queuing analysis is being proposed as garage access from public roadways is not proposed.	DDOT Concurs GS: Noted.

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, subject to DDOT approval. This section is typically only required for uses that generate significant tourist activity (hotels, museums, cruises, concerts, etc.). *See Section 3.7 of the CTR Guidelines for more detailed guidance.*	No material motorcoach activity is anticipated.	DDOT Concurs GS: Noted.

Section 4: TRAFFIC IMPACT ANALYSIS (TIA)

The TIA component of a CTR is required when a development generates 25 or more vehicle trips in the peak direction (higher of either inbound or outbound vehicles) during any of the critical peak hour periods, 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. However, trip reductions may be used in the multi-modal trip generation summary and assignment of trips within the TIA, as appropriate and agreed to by DDOT. 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	APPLICANT 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	The study area will include intersections where site impacts are most likely to occur, including: 1. All site access points 2. Adjacent streets/intersections at the boundary of the site 3. The nearest intersection(s) with an arterial street Weekday TMC's for all intersections were collected in May 2022, from 6:30 to 9:30 am and 4:00 to 7:00 pm, including pedestrian and bicycle counts along with percent truck traffic. The TIA study area and data collection will comply with sections 4.1 and 4.2 of DDOT's CTR guidelines The following study intersections are proposed: 1. Woodley Road/Garfield Street & 29th Street, NW 2. Woodley Road & 27th Street, NW 3. Woodley Road & Site Driveway, NW 4. Connecticut Avenue & Woodley Road, NW 5. Connecticut Avenue & 24th Street, NW 6. Site Driveway & 24th Street, NW 7. Calvert Street/Cleveland Avenue & 29th Street, NW	DDOT Concurs GS: Noted.

experience changing traffic patterns. *See Sections 4.1 and 4.2 of the CTR Guidelines for more detailed guidance on study intersection selection and TMC count periods.*	8. Site Driveway & Calvert Street, NW 9. Calvert Street & 24th Street/Shoreham Drive, NW 10. Connecticut Avenue & Calvert Street, NW ☒ *Scoping Graphic: Proposed Study Intersections* ☒ *Will provide hard copies of TMCs in CTR appendix and electronic copies in DDOT spreadsheet format at time of submission.*	
TIA Study Scenarios Propose an appropriate set of scenarios to analyze. These commonly include Existing, Background (No Build), Total Future, and Future with Mitigation. Note the anticipated build-out year and project phasing. *See Section 4.3 of CTR Guidelines for guidance on study scenarios.*	The following scenarios are proposed, following Section 4.3 of DDOT's CTR guidelines: ▪ Existing Conditions (2022) ▪ 2025 Future Conditions without the development (2025 Background Conditions) ▪ 2025 Future Conditions with the development (2025 Total Future Conditions)	DDOT Concurs GS: 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. *See Section 4.4 of the CTR Guidelines for more detailed guidance. DDOT's required standard Synchro and SimTraffic inputs/settings are provided in Appendix H.*	Capacity analyses will be performed using Highway Capacity Manual (HCM) methodologies with an industry recognized software package. Analysis is proposed to be done in Synchro 10, reporting the results in delay and LOS using HCM 2000 methodologies. Proposed analysis periods include 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. The capacity analysis results will show the average delay 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. • All LOS E or LOS F conditions per intersection and approach will be highlighted. • Mitigation measures will be proposed 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 five (5) percent, when compared to the background scenario. • All locations where the 95th percentile queue length exceeds the length of storage will be highlighted. Locations will be noted 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. • Mitigation measures will be proposed 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.*	DDOT Concurs GS: 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 proposal's anticipated build-out year. Review the STIP, CLRP, and proffers/commitments for other nearby developments. *See Section 4.5 of the CTR Guidelines for more detailed guidance.*	No network improvements have been identified as part of background developments or improvements funded by the District Government. ☐ *Scoping Graphic: Locations of Background Transportation Network Improvements and Anticipated Completion Years*	DDOT Concurs GS: Noted.
Background Development / Local 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. *See Section 4.6.1 of the CTR Guidelines for more detailed guidance.*	The following background developments will be considered: 1. 2607 Connecticut Avenue, NW ☒ *Scoping Graphic: Background Development Projects Near Study Area* ☐ *Scoping Table: Completion Amounts/Portions Occupied of Background Developments*	Provide additional information on this project. GS: 2607 Connecticut Ave NW is a planned 28-unit condo development. The project is not yet complete and was included as a background development.

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. 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.

See Section 4.6.2 of the CTR Guidelines for more detailed guidance.

Volumes contained in the MWCOG regional model are proposed for analysis to develop an average annual growth rate for study area roadways. This methodology is preferred for calculating growth rates as it considers all future projects and developments in the COG model and allows for District growth rates by direction and time of day. Growth rates for this study are based on the differences between the year 2022 and 2026 COG model scenarios to determine an annual growth rate for the study scenarios. Where the COG model showed negative or minimal growth, a conservative 0.1% per year minimum growth was assumed. A maximum growth rate of 2.0% was used. Based on this methodology, the following is a summary of the growth rates to be used:

Roadway	Direction	Proposed Annual Growth Rate		Total Growth (2022-2025)	
		AM Peak	PM Peak	AM Peak	PM Peak
Connecticut Avenue NW	NB	0.10%	0.10%	0.30%	0.30%
	SB	0.12%	0.10%	0.30%	0.30%
Woodley Road NW	EB	0.50%	0.10%	1.51%	0.30%
	WB	0.10%	0.50%	0.30%	1.51%
Calvert Street/Cleveland Avenue NW	EB	0.20%	0.10%	0.60%	0.30%
	WB	0.10%	0.10%	0.30%	0.30%
Shoreham Drive/Rock Creek Parkway	NB	0.10%	0.10%	0.30%	0.30%
	SB	0.10%	0.10%	0.30%	0.30%
All Other Roadways		0.10%	0.10%	0.30%	0.30%

☒ *Scoping Table and Graphic: Projected Regional Growth Assumptions (dependent on methodology), Show Growth rates by Road, Direction, and Time of Day*

DDOT Concurs
GS: Noted.

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

Trip distribution for the site was determined based on: (1) CTPP TAZ flow data and (2) existing traffic volumes and travel patterns in the study area.

The proposed trip distributions are illustrated on an attached graphic.

☒ *Scoping Graphic(s): Percentage Distribution by Land Use, Direction, Time of Day (must be shown turning at intersections and driveways)*

Update graphic to show percentages at driveways.
GS: The graphic has been revised to show trip percentages at driveways.

appropriate routing assumptions. The agreed upon trip distribution methodology may not be revised between scoping and CTR submission without amending this scoping form and receiving concurrence by DDOT Case Manager. *See Section 4.7 of the CTR Guidelines for more detailed guidance.*		

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 are under consideration. Any mitigation strategies discussed and included in the *Scoping Form* are considered non-binding until formally evaluated in the study and committed to in documentation submitted as part of the case record.

CATEGORY & GUIDELINES	APPLICANT PROPOSAL	DDOT COMMENTS
DDOT Significant Impact Policy DDOT has two primary impact mitigation tests for development projects: 1) off-street vehicle parking supply, and 2) capacity impacts at intersections. *See Section 5.1 of the CTR Guidelines for detailed policies and metrics for each of the two impact tests.*	☒ *The Applicant acknowledges DDOT's Significant Impact Policy in Section 5.1 of the CTR Guidelines.* ☒ *The study will comply with all other policies in the CTR Guidelines not explicitly documented in the Applicant Proposal or DDOT Comments columns.* ☒ *The study will include all of the required graphics, tables, and deliverables for the relevant sections determined during scoping, as shown in Figure 7 of the CTR Guidelines.*	DDOT Concurs GS: Noted.
DDOT's Approach to Mitigation DDOT's approach to mitigation prioritizes (in order of preference) optimal site design, reducing vehicle parking, implementing TDM strategies, making non-automotive network improvements, and making a monetary contribution to DDOT's Mitigation Fund for non-auto improvements, before considering options	☒ *The Applicant acknowledges DDOT's approach to mitigation in Section 5.2 of the CTR Guidelines.*	DDOT Concurs GS: Noted.

that increase roadway capacity or alter roadway operations. *See Section 5.2 and Figure 18 of the CTR Guidelines for more detailed guidance on mitigation selection.*		
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. Document all existing TDM strategies being implemented on-site (even outside of a formal 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. *See Section 5.3 of the CTR Guidelines for more detailed guidance. Sample TDM plans by land use and tier can be found in Appendix C.*	☒ *The study will include at least a Baseline TDM Plan. The TDM plan will increase to depending on the parking supply and other impacts identified in the study.*	Start with an enhanced TDM and increase the strength of the plan based on the amount of vehicle parking and results of the LOS analysis. GS: Noted. 9/15 - If the vehicle parking supply is more than double the requirement of subtitle C 701.5 (without the 50% transit reduction) then the CTR's TDM plan should add in all the mitigations from 707.3. GS: Noted. 10/13 – We will continue to discuss this during permitting.
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 campus plans,	We are not aware of any performance monitoring plans currently in effect for the site and thus no changes or new PMP is proposed for the site.	DDOT Concurs GS: Noted.

schools, or large developments expected to have a significant amount of single occupancy vehicle trips. Document any existing performance monitoring Plans in effect and any proposed changes. *See Section 5.4 of the CTR Guidelines for more detailed guidance. Sample PMPs can be found in Appendix D.*		
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. Note any preliminary ideas being considered. *See Section 5.7 of the CTR Guidelines for more detailed guidance.*	No operational and geometric changes to the roadway network are proposed as part of the development.	DDOT Concurs GS: Noted.

Section 6: ADDITIONAL TOPICS FOR DISCUSSION DURING SCOPING

CATEGORY & GUIDELINES	APPLICANT PROPOSAL	DDOT COMMENTS
ANC Discussions and Feedback Provide an update on the status of Community Benefits Agreement (CBA), any on-going ANC discussions/meetings, and any concerns expressed by the community. DDOT can provide ideas and a feasibility check for transportation items to be included in the CBA.		Keep DDOT aware of any community feedback. GS: Noted.

Miscellaneous Items for Discussion Any relevant on-going conversations with DOEE, SHPO, DMPED, GSA, NPS, neighboring jurisdictions, Historic Preservation, etc.? Seeking direction on other types of analyses such as traffic calming, TOPP, TMP, IMR/IJR, etc.? Anything unusual proposed not covered under other sections, such as air-rights, right-of-way actions, removal from Highway Plan, removal of BRLs, or construction under or close to a bridge?		DDOT Concurs GS: Noted.

B. Truck Turning Maneuvers

CALVERT ST ACCESS - INBOUND

CALVERT ST ACCESS - OUTBOUND

DRAWING SCALE		DATE	12.05.2022
30' 60'		REV.1	
		REV.2	
DRAWN: MEP	DESIGNED: MEP / CHECKED: DS	REV.3	

TRUCK MANEUVERING DIAGRAMS

Wardman Park

Washington, DC

GOROVE SLADE
Transportation Planners and Engineers

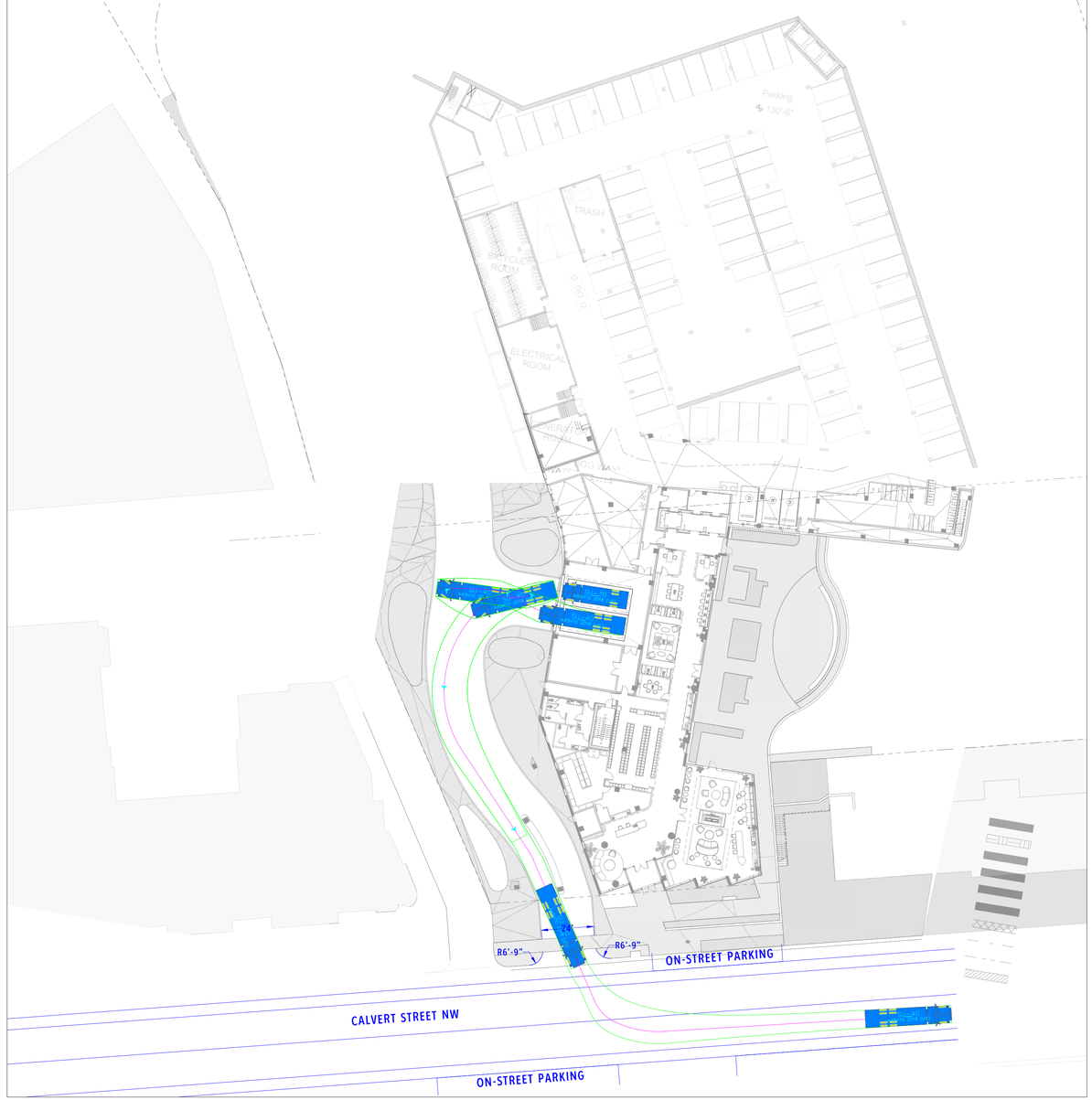
1140 Connecticut Ave. NW / Suite 1010 / Washington DC / 20036 / 202.296.8625
225 Reinekers Lane / Suite 750 / Alexandria VA / 20314 / 703.721.3044
4114 Legato Road / Suite 650 / Fairfax VA / 22033 / 703.787.9595
4951 Lake Brook Drive / Suite 250 / Glen Allen VA / 23060 / 804.362.0578

PROJECT NO. 2673-005

SHEET PP-1

CALVERT ST ACCESS - SU40 INBOUND

CALVERT ST ACCESS - SU40 OUTBOUND



DRAWING SCALE	0 30' 60'
DRAWN	MEP
DESIGNED	MEP
CHECKED	DS
DATE	12.05.2022
REV.1	
REV.2	
REV.3	

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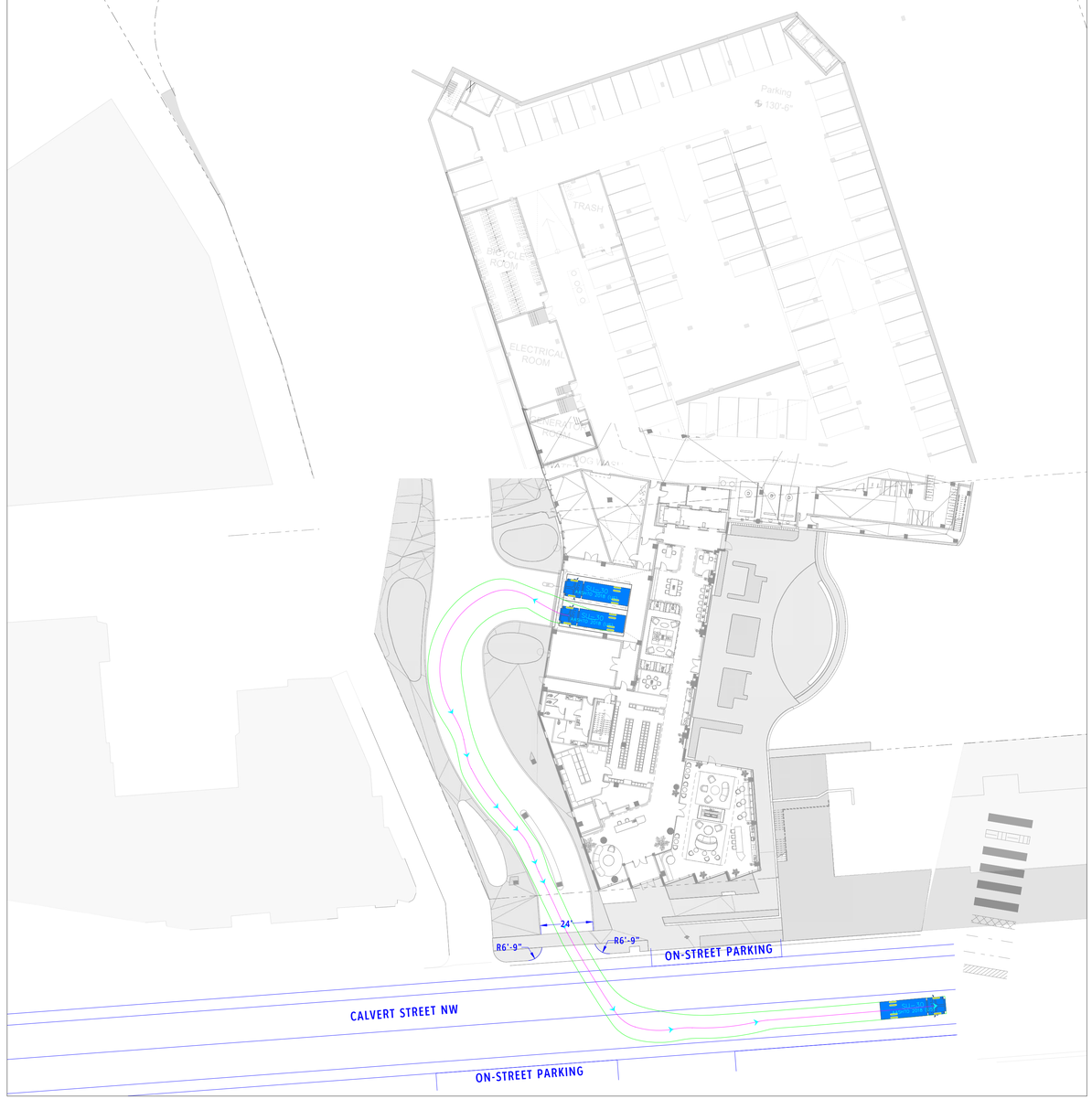
PROJECT NO. 2673-005

SHEET PP-2

CALVERT ST ACCESS - SU30 INBOUND

CALVERT ST ACCESS - SU30 OUTBOUND



DRAWING SCALE

0 30' 60'

DRAWN	DESIGNED	CHECKED
MEP	MEP	DS

DATE	12.05.2022
REV.1	
REV.2	
REV.3	

GOROVE SLADE
Transportation Planners and Engineers

TRUCK MANEUVERING DIAGRAMS

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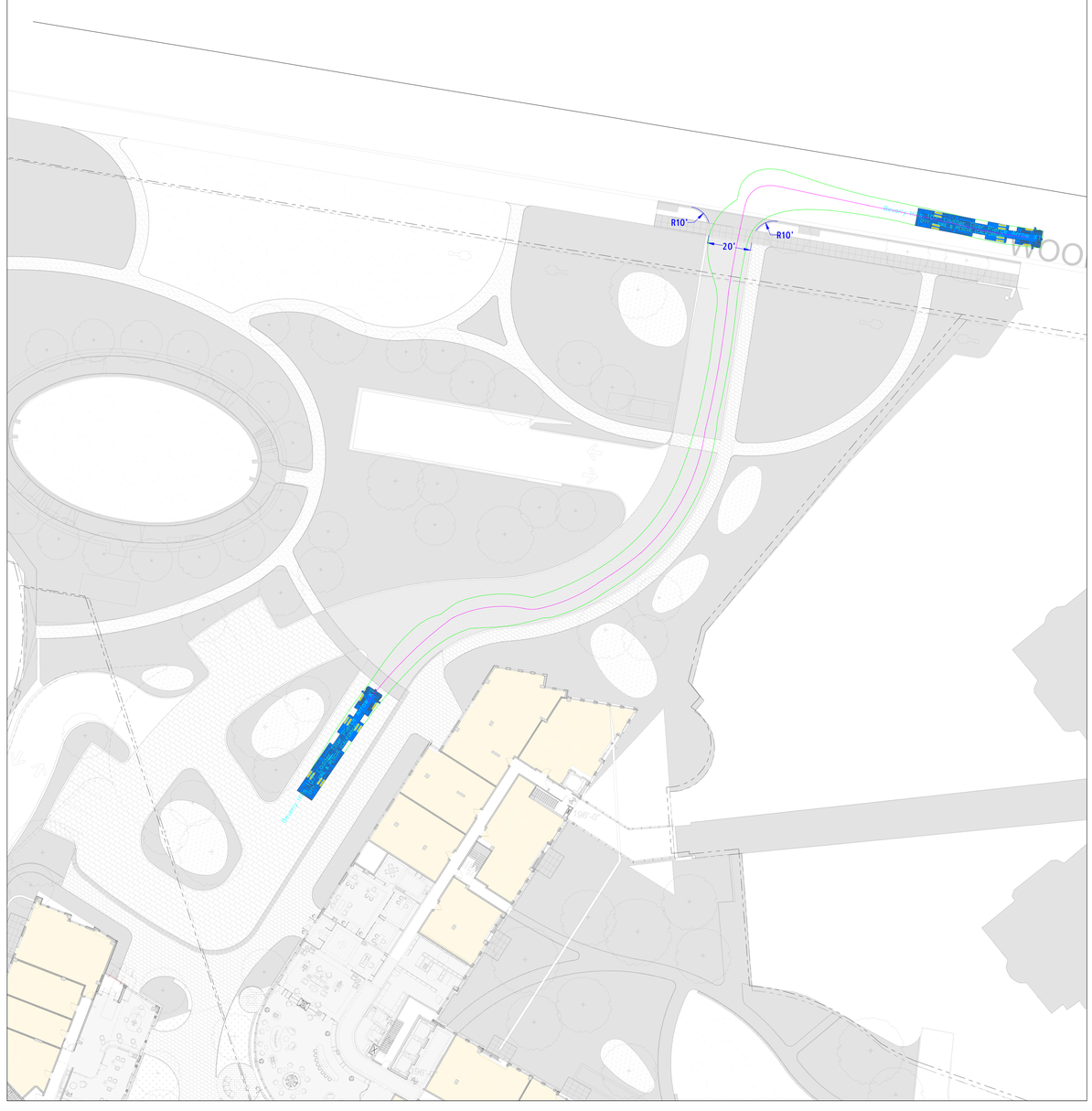
PROJECT NO. 2673-005

SHEET PP-3

WOODLEY RD ACCESS - INBOUND

WOODLEY RD ACCESS - OUTBOUND



DRAWING SCALE

0 30' 60'

DRAWN	DESIGNED	CHECKED
MEP	MEP	DS

DATE	12.05.2022
REV.1	
REV.2	
REV.3	

TRUCK MANEUVERING DIAGRAMS

Wardman Park

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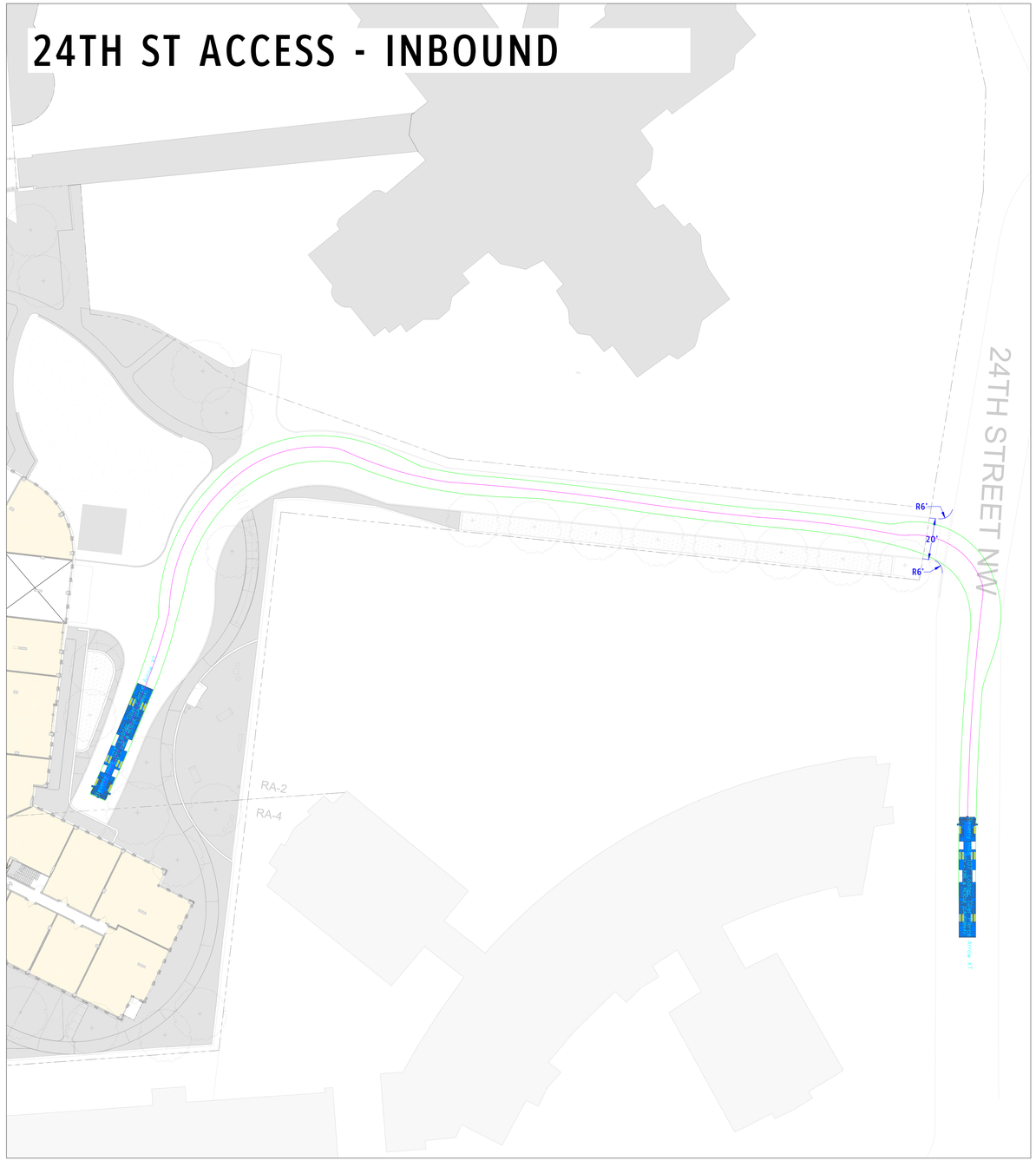
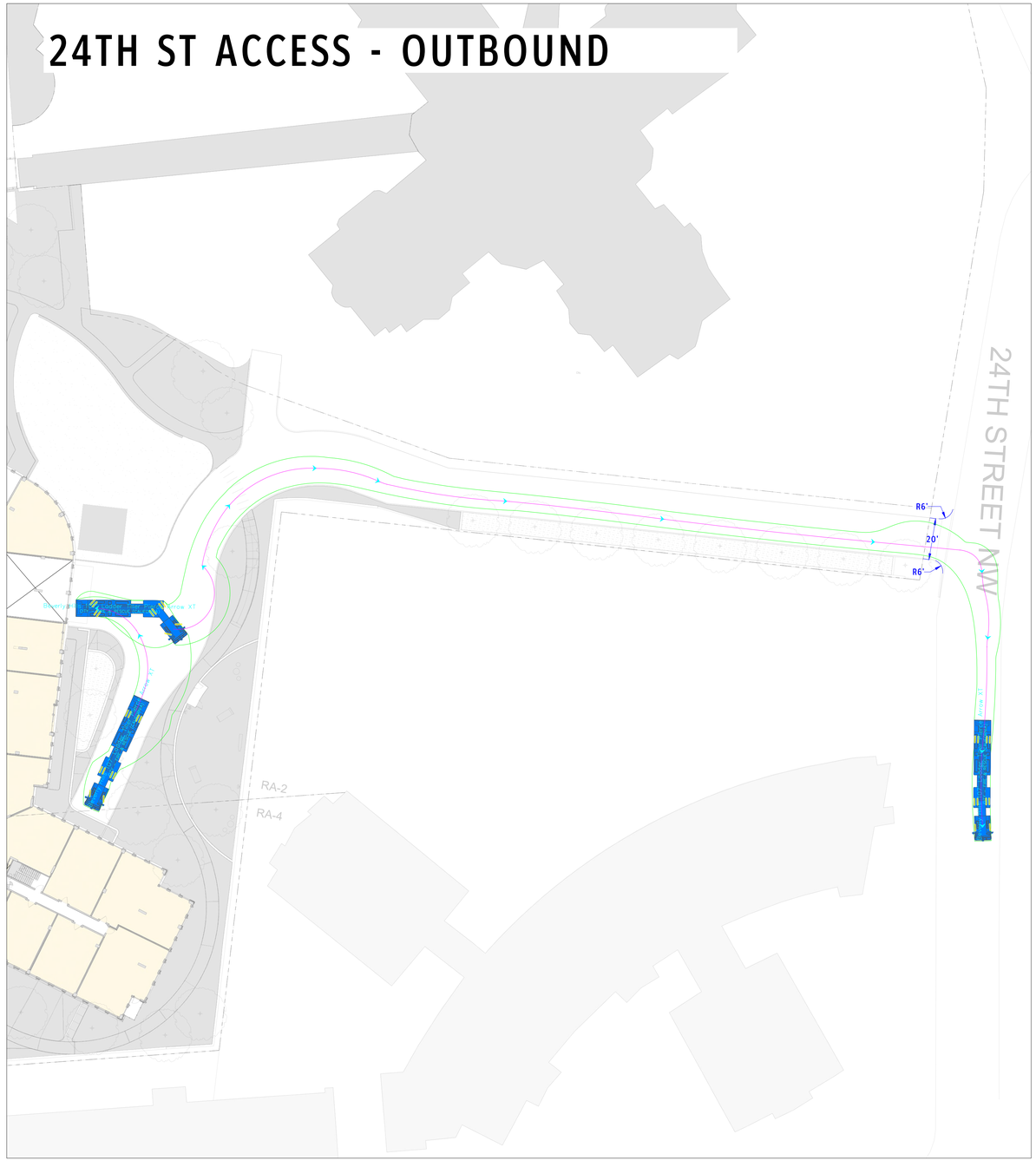
PROJECT NO. 2673-005

SHEET PP-4

24TH ST ACCESS - INBOUND



24TH ST ACCESS - OUTBOUND



DRAWING SCALE

0 30' 60'

DRAWN	DESIGNED	CHECKED
MEP	MEP	DS

DATE	12.05.2022
REV.1	
REV.2	
REV.3	

TRUCK MANEUVERING DIAGRAMS

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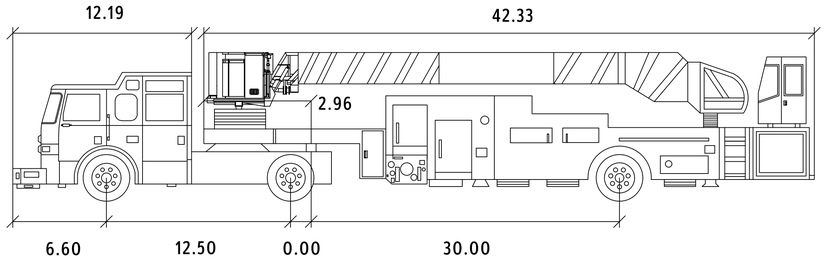
PROJECT NO. 2673-005

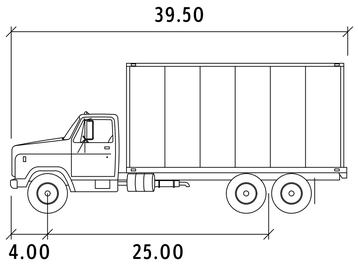
SHEET PP-5

VEHICLE PROFILES



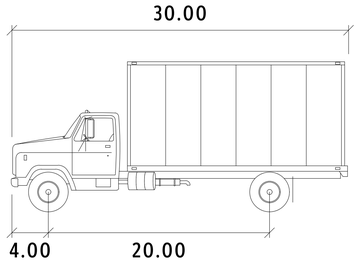
Beverly Hills 107' Ladder Tiller Pierce Arrow XT

		feet			
First Unit Width	:	8.00	Lock to Lock Time	:	6.0
Trailer Width	:	8.00	Steering Angle	:	45.0
First Unit Track	.	8.00	Articulating Angle	:	70.0
Trailer Track	:	8.00			



SU-40

	feet
Width	: 8.00
Track	: 8.00
Lock to Lock Time	: 6.0
Steering Angle	: 31.8



SU-30

	feet
Width	: 8.00
Track	: 8.00
Lock to Lock Time	: 6.0
Steering Angle	: 31.8

DRAWING SCALE
0 20' 40'

DRAWN MEP | DESIGNED MEP | CHECKED DS

DATE	12.05.2022
REV.1	
REV.2	
REV.3	

GOROVE SLADE
Transportation Planners and Engineers

TRUCK MANEUVERING DIAGRAMS

Wardman Park

Washington, DC

☐ 1140 Connecticut Ave. NW / Suite 600 / Washington DC / 20036 / 202.296.8625
☒ 225 Reinekers Lane / Suite 750 / Alexandria VA / 20314 / 703.721.3044
☐ 4114 Legato Road / Suite 650 / Fairfax VA / 22033 / 703.787.9595
☐ 4951 Lake Brook Drive / Suite 250 / Glen Allen VA / 23060 / 804.362.0578

PROJECT NO. 2673-005

SHEET PP-6

C. Mode Split and Trip Generation Information

Mode Split Assumptions

Proposed Residential Component

Description of proposed residential component of project:

The development will contain approximately 875 residential units.

Pertinent Mode Split data from other sources:

Information Source	Mode						
	SOV	Carpool	Transit	Bike	Walk	Telecommute	Other
CTPP - TAZ Residents (20074)	30%	7%	40%	3%	8%	11%	1%
Census Tract 5.01	27%	1%	44%	6%	8%	14%	--
State of the Commute 2019 (of District residents)	31%	2%	47%	17%		3%	
WMATA Ridership Survey (average within 1/2 mile of station)	54%		36%	10%		--	
WMATA Ridership Survey (average for *Suburban-Inside the Beltway*)	39%		49%	12%		--	

Mode Split assumed in TIS:

Land Use	Mode				
	Drive	Transit	Bike	Walk	Telecommute/Other
Residential Mode Split	70%	25%	2%	3%	---

Notes: Census data (CTPP) are used as the basis for mode split assumptions and then adjusted based on the site's proximity to transit and the proposed parking supply.

Trip Generation- Wardman Park

Approximately 875 units

Step 1: Base trip generation using ITEs' 11th Edition *Trip Generation*

Land Use	Land Use Code	Quantity (x)	AM Peak Hour			PM Peak Hour			Saturday Peak Hour			Weekday
			In	Out	Total	In	Out	Total	In	Out	Total	Total
Multifamily Housing (Mid-Rise) (4-1	221	875 du	157 veh/hr	123 veh/hr	280 veh/hr	109 veh/hr	145 veh/hr	254 veh/hr	180 veh/hr	172 veh/hr	352 veh/hr	4,156 veh
		Calculation Details:	*56%*	*44%*	*=0.32X*	*43%*	*57%*	*=0.29X*	*51%*	*49%*	*Ln(T)=1Ln(X)-0.91*	*=4.75X*

Note: Setting used for trip generation is General Urban/Suburban and Close to Rail Transit. The Close to Rail Transit setting is no available for the Saturday peak hour; therefore, calculations were based on rates using the Not Close to Rail Transit setting.

Step 2: Convert to people per hour, before applying mode splits

Land Use	People/Car (from 2022 DDOT CTR Guidance, Table 13)	AM Peak Hour			PM Peak Hour			Saturday Peak Hour			
		In	Out	Total	In	Out	Total	In	Out	Total	Total
Multifamily Housing (Mid-Rise) (4-1	1.18 ppl/veh	185 ppl/hr	145 ppl/hr	330 ppl/hr	129 ppl/hr	171 ppl/hr	300 ppl/hr	212 ppl/hr	203 ppl/hr	415 ppl/hr	4,904 ppl

Step 3: Split between modes, per assumed Mode Splits

Land Use	Mode	Split	AM Peak Hour			PM Peak Hour			Saturday Peak Hour			
			In	Out	Total	In	Out	Total	In	Out	Total	Total
Multifamily Housing (Mid-Rise) (4-1	Auto	70%	130 ppl/hr	101 ppl/hr	231 ppl/hr	90 ppl/hr	120 ppl/hr	210 ppl/hr	148 ppl/hr	143 ppl/hr	291 ppl/hr	3,433 ppl
Multifamily Housing (Mid-Rise) (4-1	Transit	25%	46 ppl/hr	37 ppl/hr	83 ppl/hr	32 ppl/hr	43 ppl/hr	75 ppl/hr	53 ppl/hr	51 ppl/hr	104 ppl/hr	1,226 ppl
Multifamily Housing (Mid-Rise) (4-1	Bike	2%	4 ppl/hr	3 ppl/hr	7 ppl/hr	3 ppl/hr	3 ppl/hr	6 ppl/hr	4 ppl/hr	4 ppl/hr	8 ppl/hr	98 ppl
Multifamily Housing (Mid-Rise) (4-1	Walk	3%	5 ppl/hr	4 ppl/hr	9 ppl/hr	4 ppl/hr	5 ppl/hr	9 ppl/hr	7 ppl/hr	5 ppl/hr	12 ppl/hr	147 ppl

Step 4: Convert auto trips back to vehicles/hour

Land Use	People/Car (from 2022 DDOT CTR Guidance, Table 13)	AM Peak Hour			PM Peak Hour			Saturday Peak Hour			
		In	Out	Total	In	Out	Total	In	Out	Total	Total
Multifamily Housing (Mid-Rise) (4-1	1.18 ppl/veh	110 veh/hr	86 veh/hr	196 veh/hr	76 veh/hr	102 veh/hr	178 veh/hr	125 veh/hr	122 veh/hr	247 veh/hr	2,909 veh

Trip Gen Summary for Proposed Development

Mode	AM Peak Hour			PM Peak Hour			Saturday Peak Hour			
	In	Out	Total	In	Out	Total	In	Out	Total	Total
Auto	110 veh/hr	86 veh/hr	196 veh/hr	76 veh/hr	102 veh/hr	178 veh/hr	125 veh/hr	122 veh/hr	247 veh/hr	2,932 veh
Transit	46 ppl/hr	37 ppl/hr	83 ppl/hr	32 ppl/hr	43 ppl/hr	75 ppl/hr	53 ppl/hr	51 ppl/hr	104 ppl/hr	1,522 veh
Bike	4 ppl/hr	3 ppl/hr	7 ppl/hr	3 ppl/hr	3 ppl/hr	6 ppl/hr	4 ppl/hr	4 ppl/hr	8 ppl/hr	183 veh
Walk	5 ppl/hr	4 ppl/hr	9 ppl/hr	4 ppl/hr	5 ppl/hr	9 ppl/hr	7 ppl/hr	5 ppl/hr	12 ppl/hr	570 veh

D. Existing Turning Movement Counts

Gorove/Slade Associates - Multimodal Turning Movement Count Report

Project Name : Wardman Park
Project # : 2673-005
Location Washington, DC
Data Source: Gorove/Slade Associates, Inc.

Analysis Period: STUDY_PERIOD 06:30 AM to 09:30 AM
Date of Counts: Tuesday, May 24, 2022
Weather: Partly Cloudy

Volumes Displayed as: 2. System Peak (vehicle)
Intersection Peak Hour (all vehicles): 07:45 AM to 08:45 AM
System Peak Hour (all vehicles): 08:00 AM to 09:00 AM
User-Defined Peak Hour: 07:30 AM to 08:30 AM

Intersection: 1. 29th Street NW & Woodley Road/Garfield Street

ALL VEHICLES

Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	29th Street NW					Woodley Road					29th Street NW					Garfield Street				
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	2	1	0	0	0	3	0	3	0	0	1	2	1	0	0	0	0	0
06:45 AM to 07:00 AM	0	1	2	0	1	0	0	6	0	4	0	3	4	2	1	0	1	4	1	0
07:00 AM to 07:15 AM	0	3	3	2	0	0	1	7	0	1	0	0	2	3	7	0	0	1	1	2
07:15 AM to 07:30 AM	0	3	4	2	1	0	5	11	0	2	0	3	1	1	3	0	0	1	0	0
07:30 AM to 07:45 AM	0	4	6	2	1	0	2	12	0	1	0	5	7	2	1	0	1	0	2	1
07:45 AM to 08:00 AM	0	4	14	5	0	0	2	23	0	1	0	1	5	1	8	0	2	9	0	0
08:00 AM to 08:15 AM	0	6	22	3	0	0	6	25	1	6	0	4	2	7	3	0	1	8	0	2
08:15 AM to 08:30 AM	0	8	9	5	0	0	6	18	1	10	0	6	6	7	7	0	2	10	3	0
08:30 AM to 08:45 AM	0	6	22	3	2	0	16	20	0	17	0	5	15	27	15	0	1	13	6	0
08:45 AM to 09:00 AM	0	6	5	6	0	0	0	9	0	5	0	2	7	10	3	0	3	4	0	5
09:00 AM to 09:15 AM	0	5	11	3	0	0	3	7	1	1	0	1	2	0	3	0	2	0	2	0
09:15 AM to 09:30 AM	0	5	1	4	0	1	4	6	0	2	0	1	3	3	4	0	0	3	1	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																				
SYSTEM PEAK HR (VEH.)	101				2	102				38	98				28	51				7
08:00 AM to 09:00 AM	0	26	58	17		0	28	72	2		0	17	30	51		0	7	35	9	
Peak Hour Factor (PHF) Overall **0.66**	U	Left	Thru	Right	**SB**	U	Left	Thru	Right	**WB**	U	Left	Thru	Right	**NB**	U	Left	Thru	Right	**EB**
	n/a	0.81	0.66	0.71	**0.81**	n/a	0.44	0.72	0.50	**0.71**	n/a	0.71	0.50	0.47	**0.52**	n/a	0.58	0.67	0.38	**0.64**

HEAVY VEHICLES (FHWA 4+)

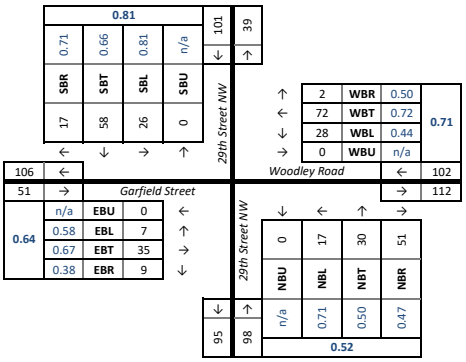
Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	29th Street NW					Woodley Road					29th Street NW					Garfield Street				
Movement:	U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right	
06:30 AM to 06:45 AM	0	0	1	0		0	0	1	0		0	0	0	0		0	0	0	0	
06:45 AM to 07:00 AM	0	0	1	0		0	0	0	0		0	0	2	0		0	0	0	0	
07:00 AM to 07:15 AM	0	1	1	0		0	1	0	0		0	0	0	0		0	0	0	0	
07:15 AM to 07:30 AM	0	0	1	1		0	0	0	0		0	0	1	0		0	0	0	0	
07:30 AM to 07:45 AM	0	1	1	0		0	1	1	0		0	0	0	1		0	0	0	0	
07:45 AM to 08:00 AM	0	0	1	0		0	0	1	0		0	0	1	0		0	0	0	0	
08:00 AM to 08:15 AM	0	0	0	0		0	0	1	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	1	1		0	0	1	0	
08:30 AM to 08:45 AM	0	0	3	0		0	0	0	0		0	0	1	3		0	0	0	0	
08:45 AM to 09:00 AM	0	0	1	0		0	0	0	0		0	0	1	0		0	0	0	0	
09:00 AM to 09:15 AM	0	0	2	0		0	0	1	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	1	1		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																				
SYSTEM PEAK HR (VEH.)	5					1					7					1				
08:00 AM to 09:00 AM	0	0	5	0		0	0	1	0		0	0	3	4		0	0	1	0	
Heavy Vehicle % (PHV):	0.0%	0.0%	8.6%	0.0%	**5.0%**	0.0%	0.0%	1.4%	0.0%	**1.0%**	0.0%	0.0%	10.0%	7.8%	**7.1%**	0.0%	0.0%	2.9%	0.0%	**2.0%**
INT. PEAK HR (HV ONLY)	7					1					7					1				
08:15 AM to 09:15 AM	0	0	7	0		0	0	1	0		0	0	3	4		0	0	1	0	
Heavy Vehicle % (PHV):	0.0%	0.0%	14.9%	0.0%	**7.9%**	0.0%	0.0%	1.9%	0.0%	**1.2%**	0.0%	0.0%	10.0%	9.1%	**8.0%**	0.0%	0.0%	3.7%	0.0%	**2.2%**

BICYCLES

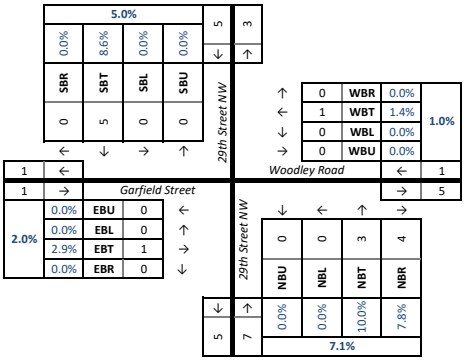
Direction:	Southbound				Westbound				Northbound				Eastbound			
Roadway:	29th Street NW				Woodley Road				29th Street NW				Garfield Street			
Movement:	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right
06:30 AM to 06:45 AM	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0
06:45 AM to 07:00 AM	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	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	1	0	0	0	1	1	0	0	1	0	0	0	0	1	0
08:15 AM to 08:30 AM	0	2	1	0	0	0	0	0	0	1	0	0	0	0	1	0
08:30 AM to 08:45 AM	0	4	0	0	0	0	0	0	0	1	0	0	0	0	1	0
08:45 AM to 09:00 AM	0	1	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	2	0	0	0	0	1	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																
SYSTEM PEAK HR (VEH.)	9				2				3				3			
08:00 AM to 09:00 AM	0	8	1	0	0	1	1	0	0	3	0	0	0	0	3	0
INT. PEAK HR (BIKES)	9				2				3				3			
08:00 AM to 09:00 AM	0	8	1	0	0	1	1	0	0	3	0	0	0	0	3	0

DATA COLLECTION NOTES :

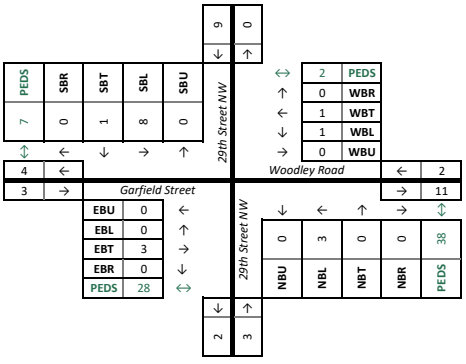
VEHICLE PEAK HOUR VOLS AND PHF: System Peak (vehicle)



HEAVY VEH PEAK HOUR VOLS AND PHV: System Peak (vehicle)



PED AND BIKE PEAK HOUR VOLUMES: System Peak (vehicle)



Gorove/Slade Associates - Multimodal Turning Movement Count Report

Project Name : Wardman Park
Project # : 2673-005
Location Washington, DC
Data Source: Gorove/Slade Associates, Inc.

Analysis Period: STUDY_PERIOD 06:30 AM to 09:30 AM
Date of Counts: Tuesday, May 24, 2022
Weather: Partly Cloudy

Volumes Displayed as: 2. System Peak (vehicle)
Intersection Peak Hour (all vehicles): 08:00 AM to 09:00 AM
System Peak Hour (all vehicles): 08:00 AM to 09:00 AM
User-Defined Peak Hour: 07:30 AM to 08:30 AM

Intersection: 1. 27th Street NW/The Woodley Apartments Ent. & Woodley Road

ALL VEHICLES

Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	27th Street NW					Woodley Road					The Woodley Apartments Ent.					Woodley Road				
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	1	0	0	0	2	1	3	0	0	0	0	0	2	2	0	0	1	0	0
06:45 AM to 07:00 AM	0	0	0	3	4	0	1	8	0	1	0	1	0	3	6	0	0	7	1	0
07:00 AM to 07:15 AM	0	3	0	4	5	0	1	10	1	4	0	0	0	3	12	0	0	6	0	0
07:15 AM to 07:30 AM	0	0	0	3	2	0	2	17	0	3	0	1	0	4	11	0	0	7	1	1
07:30 AM to 07:45 AM	0	1	0	2	2	0	1	21	0	5	0	2	0	0	10	0	0	11	0	0
07:45 AM to 08:00 AM	0	1	0	1	5	0	2	33	0	7	0	5	0	2	13	0	0	10	1	0
08:00 AM to 08:15 AM	0	16	0	11	15	1	2	28	0	12	0	1	0	1	20	0	0	25	0	2
08:15 AM to 08:30 AM	0	21	0	5	14	0	2	21	0	11	0	2	0	7	15	0	0	25	1	9
08:30 AM to 08:45 AM	0	16	0	9	12	0	0	21	0	12	0	1	0	4	24	0	0	33	5	1
08:45 AM to 09:00 AM	0	6	0	3	7	2	6	11	0	2	0	4	0	4	18	0	1	19	3	2
09:00 AM to 09:15 AM	0	3	0	1	6	0	0	13	0	3	0	0	0	0	7	0	0	6	0	3
09:15 AM to 09:30 AM	0	1	0	1	1	0	3	12	0	3	0	1	0	3	10	1	0	15	1	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																				
SYSTEM PEAK HR (VEH.)	87				48	94				37	24				77	112				14
08:00 AM to 09:00 AM	0	59	0	28		3	10	81	0		0	8	0	16		0	1	102	9	
Peak Hour Factor (PHF) Overall **0.89**	U	Left	Thru	Right	**SB**	U	Left	Thru	Right	**WB**	U	Left	Thru	Right	**NB**	U	Left	Thru	Right	**EB**
	n/a	0.70	n/a	0.64	**0.81**	0.38	0.42	0.72	n/a	**0.76**	n/a	0.50	n/a	0.57	**0.67**	n/a	0.25	0.77	0.45	**0.74**

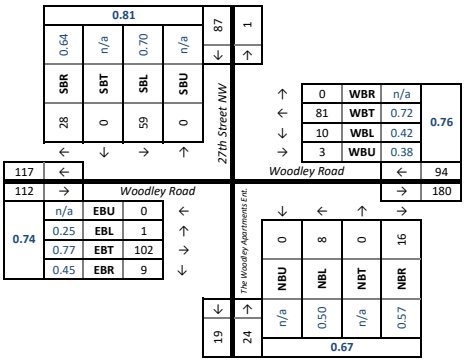
HEAVY VEHICLES (FHWA 4+)

Direction:	Southbound				Westbound				Northbound				Eastbound			
Roadway:	27th Street NW				Woodley Road				The Woodley Apartments Ent.				Woodley Road			
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	1	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	1	0	0	0	0	0	0	0	0	0
07:15 AM to 07:30 AM	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	1
07:30 AM to 07:45 AM	0	1	0	0	0	0	2	0	0	0	0	0	0	0	2	0
07:45 AM to 08:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
08:00 AM to 08:15 AM	0	0	0	0	0	0	1	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	1	0	0	1	0
08:30 AM to 08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	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	2	0	0	0	0	0	0	0	0	0
09:15 AM to 09:30 AM	0	0	0	0	0	1	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																
SYSTEM PEAK HR (VEH.)	0				1				1				2			
08:00 AM to 09:00 AM	0	0	0	0	0	0	1	0	0	0	0	1	0	0	2	0
Heavy Vehicle % (PHV):	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.2%	0.0%	1.1%	0.0%	0.0%	0.0%	6.3%	4.2%	0.0%	0.0%	2.0%	0.0%	1.8%
INT. PEAK HR (HV ONLY)	1				5				1				3			
07:00 AM to 08:00 AM	0	1	0	0	0	0	5	0	0	0	0	1	0	0	2	1
Heavy Vehicle % (PHV):	0.0%	20.0%	0.0%	0.0%	0.0%	0.0%	6.2%	0.0%	5.7%	0.0%	0.0%	0.0%	11.1%	5.9%	0.0%	0.0%	5.9%	50.0%	8.3%

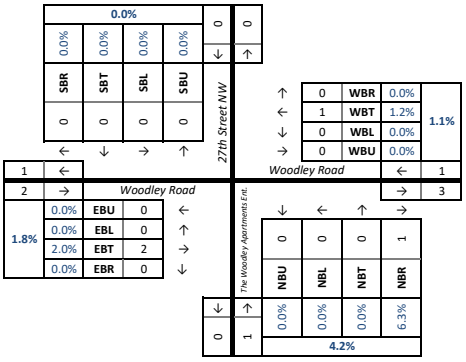
BICYCLES

Direction:	Southbound				Westbound				Northbound				Eastbound			
Roadway:	27th Street NW				Woodley Road				The Woodley Apartments Ent.				Woodley Road			
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	2	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	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM to 07:30 AM	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0
07:30 AM to 07:45 AM	0	0	0	1	0	0	2	0	0	0	0	1	0	0	1	0
07:45 AM to 08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
08:00 AM to 08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
08:15 AM to 08:30 AM	0	1	0	0	0	0	1	0	0	0	0	0	0	0	2	0
08:30 AM to 08:45 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0
08:45 AM to 09:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
09:00 AM to 09:15 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
09:15 AM to 09:30 AM	0	0	0	1	0	0	1	0	0	0	0	0	0	0	1	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																
SYSTEM PEAK HR (VEH.)	1				3				0				7			
08:00 AM to 09:00 AM	0	1	0	0	0	0	3	0	0	0	0	0	0	0	7	0
INT. PEAK HR (BIKES)	2				3				1				7			
07:30 AM to 08:30 AM	0	1	0	1	0	0	3	0	0	0	0	1	0	0	7	0

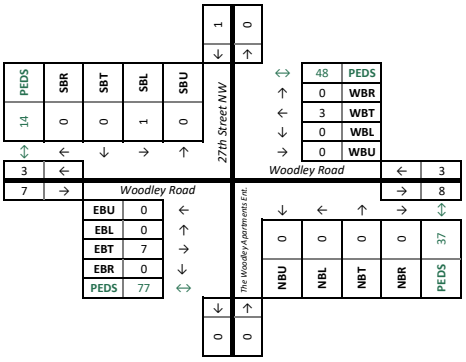
VEHICLE PEAK HOUR VOLS AND PHF: System Peak (vehicle)



HEAVY VEH PEAK HOUR VOLS AND PHV: System Peak (vehicle)



PED AND BIKE PEAK HOUR VOLUMES: System Peak (vehicle)



DATA COLLECTION NOTES :

Gorove/Slade Associates - Multimodal Turning Movement Count Report

Project Name : Wardman Park
Project # : 2673-005
Location Washington, DC
Data Source: Gorove/Slade Associates, Inc.

Analysis Period: STUDY_PERIOD 06:30 AM to 09:30 AM
Date of Counts: Tuesday, May 24, 2022
Weather: Partly Cloudy

Volumes Displayed as: 2. System Peak (vehicle)
Intersection Peak Hour (all vehicles): 07:45 AM to 08:45 AM
System Peak Hour (all vehicles): 08:00 AM to 09:00 AM
User-Defined Peak Hour: 07:30 AM to 08:30 AM

Intersection: 1. Connecticut Avenue & Woodley Road NW

ALL VEHICLES

Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	Connecticut Avenue					Woodley Road NW					Connecticut Avenue					Woodley Road NW				
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	130	10	1	0	1	5	1	2	0	12	43	1	2	0	0	0	4	3
06:45 AM to 07:00 AM	0	1	137	3	3	0	4	3	1	2	0	16	48	0	2	0	2	0	9	8
07:00 AM to 07:15 AM	0	1	162	6	3	0	0	1	5	5	0	13	71	1	3	0	1	0	10	2
07:15 AM to 07:30 AM	0	0	246	3	1	0	6	1	0	8	0	14	79	1	4	0	2	0	12	3
07:30 AM to 07:45 AM	0	0	266	1	7	0	3	3	3	11	0	20	115	2	8	0	2	1	11	3
07:45 AM to 08:00 AM	0	0	262	5	9	0	5	6	5	6	0	24	120	1	10	0	4	0	11	7
08:00 AM to 08:15 AM	0	0	309	6	11	0	5	2	1	14	0	29	128	1	16	0	8	5	32	5
08:15 AM to 08:30 AM	0	0	239	3	9	0	6	3	6	16	0	18	114	1	37	0	7	3	44	7
08:30 AM to 08:45 AM	0	0	273	7	4	0	9	7	6	22	0	16	116	1	13	0	10	3	36	3
08:45 AM to 09:00 AM	0	0	236	1	10	0	2	4	2	7	0	17	104	2	20	0	4	0	26	8
09:00 AM to 09:15 AM	0	1	190	5	5	0	6	3	2	10	0	9	111	1	9	0	1	0	8	9
09:15 AM to 09:30 AM	0	1	241	2	8	0	5	3	7	9	0	11	101	1	4	0	1	2	19	27
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																				
SYSTEM PEAK HR (VEH.)	1074				34	53				59	547				86	178				23
08:00 AM to 09:00 AM	0	0	1057	17		0	22	16	15		0	80	462	5		0	29	11	138	
Peak Hour Factor (PHF) Overall **0.88**	U	Left	Thru	Right	**SB**	U	Left	Thru	Right	**WB**	U	Left	Thru	Right	**NB**	U	Left	Thru	Right	**EB**
	n/a	n/a	0.86	0.61	**0.85**	n/a	0.61	0.57	0.63	**0.60**	n/a	0.69	0.90	0.63	**0.87**	n/a	0.73	0.55	0.78	**0.82**

HEAVY VEHICLES (FHWA 4+)

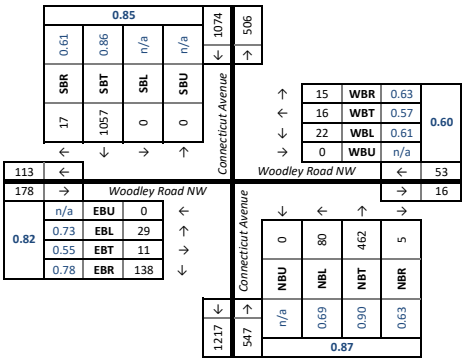
Direction:	Southbound				Westbound				Northbound				Eastbound			
Roadway:	Connecticut Avenue				Woodley Road NW				Connecticut Avenue				Woodley Road NW			
Movement:	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right
06:30 AM to 06:45 AM	0	0	6	0	0	0	0	0	0	2	3	0	0	0	0	0
06:45 AM to 07:00 AM	0	1	5	0	0	1	0	0	0	1	2	0	0	0	0	0
07:00 AM to 07:15 AM	0	0	4	1	0	0	0	0	0	1	6	0	0	0	0	1
07:15 AM to 07:30 AM	0	0	6	0	0	1	0	0	0	0	6	0	0	0	0	3
07:30 AM to 07:45 AM	0	0	5	0	0	0	1	0	0	2	13	1	0	0	0	4
07:45 AM to 08:00 AM	0	0	8	0	0	0	0	0	0	2	6	0	0	0	1	1
08:00 AM to 08:15 AM	0	0	5	0	0	0	0	0	0	2	5	0	0	0	0	0
08:15 AM to 08:30 AM	0	0	6	0	0	1	0	0	0	1	2	1	0	0	0	2
08:30 AM to 08:45 AM	0	0	10	0	0	0	0	0	0	1	4	0	0	0	0	2
08:45 AM to 09:00 AM	0	0	5	0	0	0	0	0	0	0	4	0	0	0	0	1
09:00 AM to 09:15 AM	0	0	8	1	0	1	0	0	0	1	5	0	0	0	0	0
09:15 AM to 09:30 AM	0	1	9	0	0	1	0	1	0	1	7	0	0	0	0	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																
SYSTEM PEAK HR (VEH.)	26				1				20				5			
08:00 AM to 09:00 AM	0	0	26	0	0	1	0	0	0	4	15	1	0	0	0	5
Heavy Vehicle % (PHV):	0.0%	0.0%	2.5%	0.0%	0.0%	4.5%	0.0%	0.0%	0.0%	5.0%	3.2%	20.0%	0.0%	0.0%	0.0%	3.6%
				2.4%				**1.9%**				**3.7%**				**2.8%**
INT. PEAK HR (HV ONLY)	24				2				37				10			
07:00 AM to 08:00 AM	0	0	23	1	0	1	1	0	0	5	31	1	0	0	1	9
Heavy Vehicle % (PHV):	0.0%	0.0%	2.5%	6.7%	0.0%	7.1%	9.1%	0.0%	0.0%	7.0%	8.1%	20.0%	0.0%	0.0%	100.0%	20.5%
				2.5%				**5.3%**				**8.0%**				**18.5%**

BICYCLES

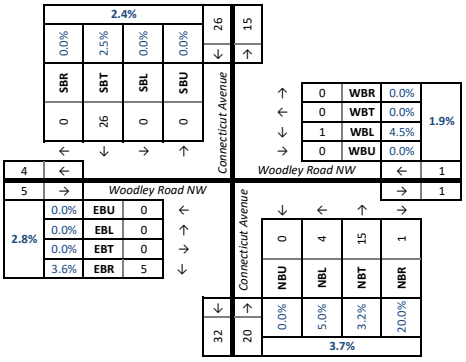
Direction:	Southbound				Westbound				Northbound				Eastbound			
Roadway:	Connecticut Avenue				Woodley Road NW				Connecticut Avenue				Woodley Road NW			
Movement:	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right
06:30 AM to 06:45 AM	0	0	2	0	0	0	0	0	0	0	1	0	0	0	1	0
06:45 AM to 07:00 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0
07:00 AM to 07:15 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1
07:15 AM to 07:30 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM to 07:45 AM	0	0	2	0	0	0	0	0	0	0	1	0	0	0	2	0
07:45 AM to 08:00 AM	0	0	3	0	0	0	0	0	0	0	2	0	0	0	2	0
08:00 AM to 08:15 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1
08:15 AM to 08:30 AM	0	0	4	0	0	0	1	0	0	0	0	0	0	0	1	2
08:30 AM to 08:45 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	1
08:45 AM to 09:00 AM	0	0	6	0	0	0	1	0	0	0	1	0	0	0	0	1
09:00 AM to 09:15 AM	0	0	5	0	0	0	0	0	0	0	0	0	0	0	1	0
09:15 AM to 09:30 AM	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	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																
SYSTEM PEAK HR (VEH.)	12				2				1				9			
08:00 AM to 09:00 AM	0	0	12	0	0	0	2	0	0	0	1	0	0	0	4	5
INT. PEAK HR (BIKES)	16				2				1				8			
08:15 AM to 09:15 AM	0	0	16	0	0	0	2	0	0	0	1	0	0	0	4	4

DATA COLLECTION NOTES :

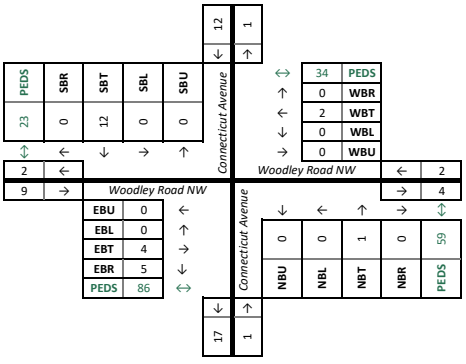
VEHICLE PEAK HOUR VOLS AND PHF: System Peak (vehicle)



HEAVY VEH PEAK HOUR VOLS AND PHV: System Peak (vehicle)



PED AND BIKE PEAK HOUR VOLUMES: System Peak (vehicle)



Gorove/Slade Associates - Multimodal Turning Movement Count Report

Project Name : Wardman Park
Project # : 2673-005
Location Washington, DC
Data Source: Gorove/Slade Associates, Inc.

Analysis Period: STUDY_PERIOD 06:30 AM to 09:30 AM
Date of Counts: Tuesday, May 24, 2022
Weather: Partly Cloudy

Volumes Displayed as: 2. System Peak (vehicle)
Intersection Peak Hour (all vehicles): 07:45 AM to 08:45 AM
System Peak Hour (all vehicles): 08:00 AM to 09:00 AM
User-Defined Peak Hour: 07:30 AM to 08:30 AM

Intersection: 1. Connecticut Avenue & /24th Street NW

ALL VEHICLES

Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	Connecticut Avenue										Connecticut Avenue					24th Street NW				
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	98	37	0	0	0	0	0	0	0	0	49	0	6	0	7	0	2	8
06:45 AM to 07:00 AM	0	0	106	44	0	0	0	0	0	0	0	0	62	0	1	0	2	0	2	11
07:00 AM to 07:15 AM	0	0	124	48	0	0	0	0	0	0	0	0	81	0	5	0	3	0	3	8
07:15 AM to 07:30 AM	0	0	207	57	0	0	0	0	0	0	0	0	92	0	3	0	2	0	8	16
07:30 AM to 07:45 AM	0	0	223	57	0	0	0	0	0	0	0	0	128	0	4	0	9	0	2	22
07:45 AM to 08:00 AM	0	0	204	73	0	0	0	0	0	0	0	0	134	0	4	0	11	0	4	28
08:00 AM to 08:15 AM	0	0	272	74	0	0	0	0	0	0	0	0	152	0	7	0	5	0	3	26
08:15 AM to 08:30 AM	0	0	232	57	0	0	0	0	0	0	0	1	126	0	27	0	7	0	3	21
08:30 AM to 08:45 AM	0	0	247	71	0	0	0	0	0	0	0	0	127	0	18	0	6	0	4	26
08:45 AM to 09:00 AM	0	0	180	84	0	0	0	0	0	0	0	0	115	0	3	0	9	0	5	17
09:00 AM to 09:15 AM	0	0	143	61	0	0	0	0	0	0	0	0	115	0	6	0	10	0	7	11
09:15 AM to 09:30 AM	0	0	183	82	0	0	0	0	0	0	0	0	105	0	4	0	5	0	5	55
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																				
SYSTEM PEAK HR (VEH.)	1217				0	0				0	521				55	42				90
08:00 AM to 09:00 AM	0	0	931	286		0	0	0	0		0	1	520	0		0	27	0	15	
Peak Hour Factor (PHF) Overall **0.88**	U	Left	Thru	Right	**SB**	U	Left	Thru	Right	**WB**	U	Left	Thru	Right	**NB**	U	Left	Thru	Right	**EB**
	n/a	n/a	0.86	0.85	**0.88**	n/a	n/a	n/a	n/a	**n/a**	n/a	0.25	0.86	n/a	**0.86**	n/a	0.75	n/a	0.75	**0.75**

HEAVY VEHICLES (FHWA 4+)

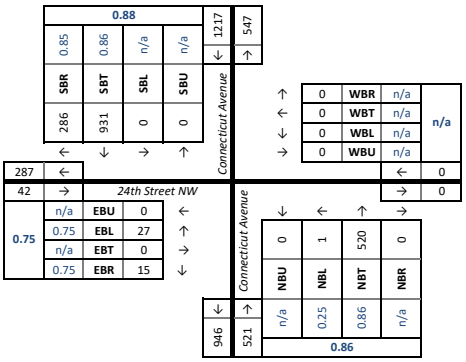
Direction:	Southbound				Westbound				Northbound				Eastbound			
Roadway:	Connecticut Avenue								Connecticut Avenue				24th Street NW			
Movement:	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right
06:30 AM to 06:45 AM	0	0	5	1	0	0	0	0	0	0	5	0	0	0	0	2
06:45 AM to 07:00 AM	0	0	3	3	0	0	0	0	0	0	3	0	0	0	0	1
07:00 AM to 07:15 AM	0	0	3	2	0	0	0	0	0	0	5	0	0	2	0	3
07:15 AM to 07:30 AM	0	0	5	5	0	0	0	0	0	0	7	0	0	0	0	4
07:30 AM to 07:45 AM	0	0	8	1	0	0	0	0	0	0	13	0	0	2	0	1
07:45 AM to 08:00 AM	0	0	6	3	0	0	0	0	0	0	6	0	0	2	0	2
08:00 AM to 08:15 AM	0	0	5	0	0	0	0	0	0	0	6	0	0	1	0	2
08:15 AM to 08:30 AM	0	0	8	1	0	0	0	0	0	0	3	0	0	1	0	3
08:30 AM to 08:45 AM	0	0	6	6	0	0	0	0	0	0	5	0	0	0	0	1
08:45 AM to 09:00 AM	0	0	4	2	0	0	0	0	0	0	2	0	0	1	0	3
09:00 AM to 09:15 AM	0	0	8	1	0	0	0	0	0	0	6	0	0	2	0	1
09:15 AM to 09:30 AM	0	0	9	2	0	0	0	0	0	0	7	0	0	1	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																
SYSTEM PEAK HR (VEH.)	32				0				16				12			
08:00 AM to 09:00 AM	0	0	23	9	0	0	0	0	0	0	16	0	0	3	0	9
Heavy Vehicle % (PHV):	0.0%	0.0%	2.5%	3.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.1%	0.0%	0.0%	11.1%	0.0%	60.0%
	2.6%				**0.0%**				**3.1%**				**28.6%**			
INT. PEAK HR (HV ONLY)	33				0				31				16			
07:00 AM to 08:00 AM	0	0	22	11	0	0	0	0	0	0	31	0	0	6	0	10
Heavy Vehicle % (PHV):	0.0%	0.0%	2.9%	4.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.1%	0.0%	0.0%	24.0%	0.0%	58.8%
	3.3%				**0.0%**				**7.1%**				**38.1%**			

BICYCLES

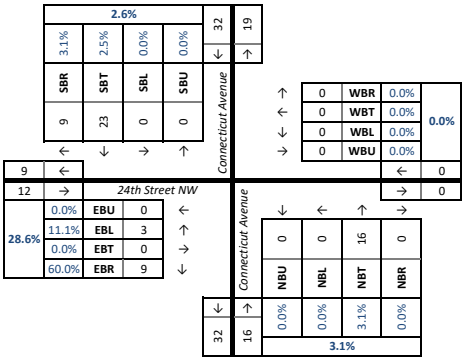
Direction:	Southbound				Westbound				Northbound				Eastbound			
Roadway:	Connecticut Avenue								Connecticut Avenue				24th Street NW			
Movement:	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right
06:30 AM to 06:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45 AM to 07:00 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00 AM to 07:15 AM	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM to 07:30 AM	0	0	2	0	0	0	0	1	0	0	1	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	3	0	0	0	0	0	0	0	2	0	0	0	0	0
08:00 AM to 08:15 AM	0	0	1	0	0	0	1	0	0	0	0	0	0	1	0	0
08:15 AM to 08:30 AM	0	0	4	0	0	0	0	0	0	0	1	0	0	0	0	0
08:30 AM to 08:45 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM to 09:00 AM	0	0	5	0	0	0	0	0	0	0	0	0	0	2	0	0
09:00 AM to 09:15 AM	0	0	5	0	0	0	0	0	0	0	1	0	0	0	0	0
09:15 AM to 09:30 AM	0	0	1	0	0	0	0	0	0	0	2	0	0	0	0	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																
SYSTEM PEAK HR (VEH.)	11				1				1				3			
08:00 AM to 09:00 AM	0	0	11	0	0	0	1	0	0	0	1	0	0	3	0	0
INT. PEAK HR (BIKES)	15				0				2				2			
08:15 AM to 09:15 AM	0	0	15	0	0	0	0	0	0	0	2	0	0	2	0	0

DATA COLLECTION NOTES :

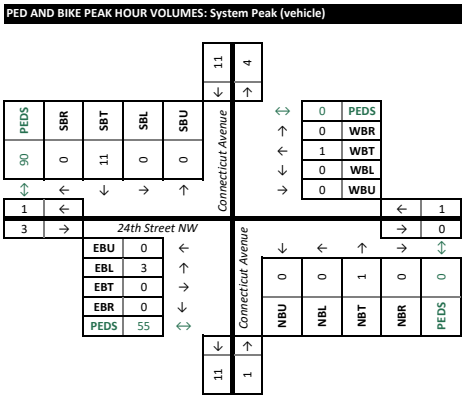
VEHICLE PEAK HOUR VOLS AND PHF: System Peak (vehicle)



HEAVY VEH PEAK HOUR VOLS AND PHV: System Peak (vehicle)



PED AND BIKE PEAK HOUR VOLUMES: System Peak (vehicle)



Gorove/Slade Associates - Multimodal Turning Movement Count Report

Project Name : Wardman Park
Project # : 2673-005
Location Washington, DC
Data Source: Gorove/Slade Associates, Inc.

Analysis Period: STUDY_PERIOD 06:30 AM to 09:30 AM
Date of Counts: Tuesday, May 24, 2022
Weather: Partly Cloudy

Volumes Displayed as: 2. System Peak (vehicle)
Intersection Peak Hour (all vehicles): 08:00 AM to 09:00 AM
System Peak Hour (all vehicles): 08:00 AM to 09:00 AM
User-Defined Peak Hour: 07:30 AM to 08:30 AM

Intersection: 1. 29th Street NW & Calvert Street NW/Cleveland Avenue NW

ALL VEHICLES

	Direction:	Southbound					Westbound					Northbound					Eastbound				
	Roadway:	29th Street NW					Calvert Street NW					29th Street NW					Cleveland Avenue NW				
	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	4	0	0	0	0	0	30	3	4	0	0	0	0	0	0	0	13	0	0
06:45 AM	to 07:00 AM	0	4	0	0	1	0	1	29	5	2	0	0	0	0	0	0	1	28	0	0
07:00 AM	to 07:15 AM	0	7	0	0	0	1	1	39	2	2	0	0	0	0	3	0	0	27	0	0
07:15 AM	to 07:30 AM	0	9	0	0	1	0	3	39	3	1	0	0	0	2	3	0	0	42	0	0
07:30 AM	to 07:45 AM	1	11	0	1	1	1	3	64	12	2	0	0	1	2	0	0	1	45	0	1
07:45 AM	to 08:00 AM	0	16	0	0	0	1	1	61	5	7	0	1	0	0	0	0	1	84	0	0
08:00 AM	to 08:15 AM	0	30	0	0	7	0	1	58	22	3	0	0	0	0	1	1	1	104	0	1
08:15 AM	to 08:30 AM	0	42	0	1	20	5	0	62	21	11	0	2	0	1	0	0	4	106	0	4
08:30 AM	to 08:45 AM	0	34	1	2	18	3	2	45	29	11	1	0	0	0	5	0	8	82	1	6
08:45 AM	to 09:00 AM	0	18	0	2	5	3	2	56	13	1	0	1	0	0	3	0	5	139	2	3
09:00 AM	to 09:15 AM	0	12	1	2	2	2	1	44	7	1	0	0	0	1	4	0	0	89	2	0
09:15 AM	to 09:30 AM	0	9	0	0	1	0	1	47	7	2	0	0	0	2	0	0	0	72	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																				
SYSTEM PEAK HR (VEH.)		130				50	322				26	5				9	453				14
08:00 AM	to 09:00 AM	0	124	1	5		11	5	221	85		1	3	0	1		1	18	431	3	
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	0.74	0.25	0.63	**0.76**	0.55	0.63	0.89	0.73	**0.91**	0.25	0.38	n/a	0.25	**0.42**	0.25	0.56	0.78	0.38	**0.78**

HEAVY VEHICLES (FHWA 4+)

	Direction:	Southbound				Westbound				Northbound				Eastbound			
	Roadway:	29th Street NW				Calvert Street NW				29th Street NW				Cleveland Avenue NW			
	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	1	0	0	0	0	2	0	0	0	0	0	0	0	1	0
06:45 AM	to 07:00 AM	0	1	0	0	0	0	1	2	0	0	0	0	0	0	0	0
07:00 AM	to 07:15 AM	0	1	0	0	0	0	1	0	0	0	0	0	0	0	2	0
07:15 AM	to 07:30 AM	0	2	0	0	0	0	2	1	0	0	0	0	0	0	3	0
07:30 AM	to 07:45 AM	0	3	0	0	0	0	4	1	0	0	0	0	0	0	2	0
07:45 AM	to 08:00 AM	0	1	0	0	0	0	3	1	0	0	0	0	0	0	3	0
08:00 AM	to 08:15 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
08:15 AM	to 08:30 AM	0	1	0	0	0	0	2	2	0	0	0	0	0	0	1	0
08:30 AM	to 08:45 AM	0	1	0	0	0	0	1	2	0	0	0	0	0	0	3	0
08:45 AM	to 09:00 AM	0	2	0	0	0	0	1	1	0	0	0	0	0	0	3	0
09:00 AM	to 09:15 AM	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0
09:15 AM	to 09:30 AM	0	1	0	0	0	0	5	2	0	0	0	0	0	0	2	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																
SYSTEM PEAK HR (VEH.)		4				10				0				8			
08:00 AM	to 09:00 AM	0	4	0	0	0	0	5	5	0	0	0	0	0	0	8	0
Heavy Vehicle % (PHV):		0.0%	3.2%	0.0%	0.0%	**3.1%**	0.0%	0.0%	2.3%	5.9%	**3.1%**	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	1.9%	0.0%	**1.8%**
INT. PEAK HR (HV ONLY)		7				13				0				10			
07:00 AM	to 08:00 AM	0	7	0	0	0	0	10	3	0	0	0	0	0	0	10	0
Heavy Vehicle % (PHV):		0.0%	16.3%	0.0%	0.0%	**15.6%**	0.0%	0.0%	4.9%	13.6%	**5.5%**	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	5.1%	0.0%	**5.0%**

BICYCLES

	Direction:	Southbound				Westbound				Northbound				Eastbound			
	Roadway:	29th Street NW				Calvert Street NW				29th Street NW				Cleveland Avenue NW			
	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	1	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	1	0
07:30 AM	to 07:45 AM	0	1	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	1	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	3	0	0	0	1	0	2	0	0	0	0	0	0	1	0
08:30 AM	to 08:45 AM	0	2	0	0	0	0	1	2	0	0	0	0	0	0	1	0
08:45 AM	to 09:00 AM	0	1	1	1	0	0	0	1	0	0	0	0	0	0	2	0
09:00 AM	to 09:15 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	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																
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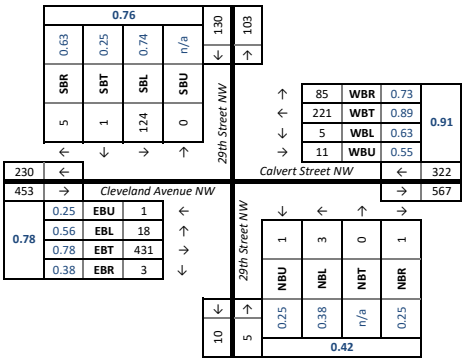
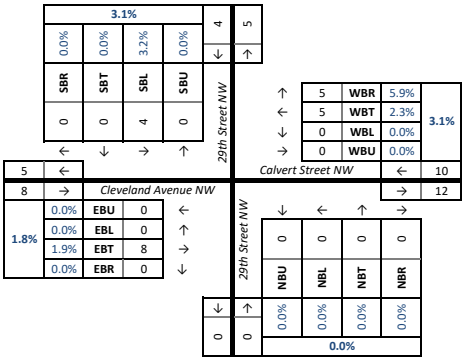
10:30 AM	to 10:45 AM																
10:45 AM	to 11:00 AM																
11:00 AM	to 11:15 AM																
11:15 AM	to 11:30 AM																
SYSTEM PEAK HR (VEH.)		8				7				0				4			
08:00 AM	to 09:00 AM	0	6	1	1	0	1	1	5	0	0	0	0	0	0	4	0
INT. PEAK HR (BIKES)		8				8				0				5			
08:15 AM	to 09:15 AM	0	6	1	1	0	1	1	6	0	0	0	0	0	0	5	0

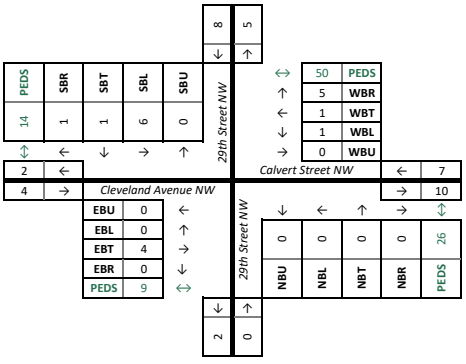
VEHICLE PEAK HOUR VOLS AND PHF: System Peak (vehicle)



HEAVY VEH PEAK HOUR VOLS AND PHV: System Peak (vehicle)



PED AND BIKE PEAK HOUR VOLUMES: System Peak (vehicle)



DATA COLLECTION NOTES :

Gorove/Slade Associates - Multimodal Turning Movement Count Report

Project Name : Wardman Park
Project # : 2673-005
Location Washington, DC
Data Source: Gorove/Slade Associates, Inc.

Analysis Period: STUDY_PERIOD 06:30 AM to 09:30 AM
Date of Counts: Tuesday, May 24, 2022
Weather: Partly Cloudy

Volumes Displayed as: 2. System Peak (vehicle)
Intersection Peak Hour (all vehicles): 08:15 AM to 09:15 AM
System Peak Hour (all vehicles): 08:00 AM to 09:00 AM
User-Defined Peak Hour: 07:30 AM to 08:30 AM

Intersection: 1. 24th Street NW/Shoreham Drive & Calvert Street NW

ALL VEHICLES

Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	24th Street NW					Calvert Street NW					Shoreham Drive					Calvert Street NW				
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	1	25	7	0	0	24	31	2	0	0	5	5	11	7	0	3	16	2	0
06:45 AM to 07:00 AM	0	3	37	7	2	0	30	48	4	1	0	0	1	0	2	0	1	30	9	5
07:00 AM to 07:15 AM	0	2	44	5	2	0	49	44	4	3	0	0	0	0	6	0	3	40	8	3
07:15 AM to 07:30 AM	0	3	49	4	10	0	53	47	7	6	0	0	0	0	10	0	4	49	18	4
07:30 AM to 07:45 AM	0	1	58	8	1	0	43	86	4	6	0	0	1	0	4	0	10	49	10	5
07:45 AM to 08:00 AM	0	3	63	8	6	0	47	82	8	0	0	0	0	1	2	0	6	85	35	4
08:00 AM to 08:15 AM	0	3	68	12	8	0	51	65	3	10	0	0	0	0	5	0	2	96	43	4
08:15 AM to 08:30 AM	0	4	61	11	24	0	71	81	4	5	0	0	0	0	1	0	6	119	44	2
08:30 AM to 08:45 AM	0	3	61	7	19	0	42	103	9	13	0	0	0	0	0	0	6	143	40	17
08:45 AM to 09:00 AM	0	3	78	9	24	0	62	82	11	8	0	0	1	0	4	0	9	131	48	12
09:00 AM to 09:15 AM	0	5	71	2	5	0	51	72	5	4	0	2	0	0	5	0	12	104	24	8
09:15 AM to 09:30 AM	0	6	71	8	10	0	44	71	7	5	0	2	0	3	5	0	5	78	18	6
09:30 AM to 09:45 AM																				
09:45 AM to 10:00 AM																				
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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																				
SYSTEM PEAK HR (VEH.)	320				75	584				36	1				10	687				35
08:00 AM to 09:00 AM	0	13	268	39		0	226	331	27		0	0	1	0		0	23	489	175	
Peak Hour Factor (PHF) Overall	**0.92**	U	Left	Thru	Right	**SB**	U	Left	Thru	Right	**WB**	U	Left	Thru	Right	**NB**	U	Left	Thru	Right	**EB**
		n/a	0.81	0.86	0.81	**0.89**	n/a	0.80	0.80	0.61	**0.94**	n/a	n/a	0.25	n/a	**0.25**	n/a	0.64	0.85	0.91	**0.91**

HEAVY VEHICLES (FHWA 4+)

Direction:	Southbound				Westbound				Northbound				Eastbound			
Roadway:	24th Street NW				Calvert Street NW				Shoreham Drive				Calvert Street NW			
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	1	0	0	0	0	0	2	0	0	0	0	0	1	1	0
06:45 AM to 07:00 AM	0	3	0	1	0	0	3	2	0	0	0	0	0	0	1	0
07:00 AM to 07:15 AM	0	1	0	1	0	1	3	1	0	0	0	0	0	1	1	1
07:15 AM to 07:30 AM	0	2	0	1	0	1	2	3	0	0	0	0	0	0	4	1
07:30 AM to 07:45 AM	0	0	0	2	0	0	4	1	0	0	0	0	0	2	4	0
07:45 AM to 08:00 AM	0	3	1	0	0	0	3	3	0	0	0	0	0	3	0	0
08:00 AM to 08:15 AM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	1
08:15 AM to 08:30 AM	0	3	0	0	0	0	2	1	0	0	0	0	0	0	3	0
08:30 AM to 08:45 AM	0	2	1	2	0	0	3	1	0	0	0	0	0	0	2	1
08:45 AM to 09:00 AM	0	1	0	0	0	1	4	3	0	0	0	0	0	1	4	1
09:00 AM to 09:15 AM	0	2	0	0	0	0	4	1	0	1	0	0	0	0	1	1
09:15 AM to 09:30 AM	0	2	0	0	0	2	5	3	0	0	0	0	0	1	3	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																
SYSTEM PEAK HR (VEH.)	9				17				0				14			
08:00 AM to 09:00 AM	0	6	1	2	0	1	10	6	0	0	0	0	0	1	10	3
Heavy Vehicle % (PHV):	0.0%	46.2%	0.4%	5.1%	0.0%	0.4%	3.0%	22.2%	0.0%	0.0%	0.0%	0.0%	0.0%	4.3%	2.0%	1.7%
PEAK HOUR VOLS AND PHF: System Peak (vehicle)	**2.8%**				**0.0%**				**0.0%**				**2.0%**			
INT. PEAK HR (HV ONLY)	10				27				1				15			
08:30 AM to 09:30 AM	0	7	1	2	0	3	16	8	0	1	0	0	0	2	10	3
Heavy Vehicle % (PHV):	0.0%	41.2%	0.4%	7.7%	0.0%	1.5%	4.9%	25.0%	0.0%	25.0%	0.0%	0.0%	0.0%	6.3%	2.2%	2.3%
PEAK HOUR VOLS AND PHV: System Peak (vehicle)	**3.1%**				**4.8%**				**12.5%**				**2.4%**			

BICYCLES

Direction:	Southbound				Westbound				Northbound				Eastbound			
Roadway:	24th Street NW				Calvert Street NW				Shoreham Drive				Calvert Street NW			
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	1	0
06:45 AM to 07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
07:00 AM to 07:15 AM	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	0	0	0	0	0	0	0	0	0	0	0	2	0
07:30 AM to 07:45 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
07:45 AM to 08:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
08:00 AM to 08:15 AM	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0
08:15 AM to 08:30 AM	0	0	0	0	0	0	4	0	0	0	0	0	0	0	4	0
08:30 AM to 08:45 AM	0	0	0	0	0	0	4	0	0	0	0	0	0	0	5	0
08:45 AM to 09:00 AM	0	0	0	0	0	0	4	0	0	0	0	0	0	0	2	1
09:00 AM to 09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
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																
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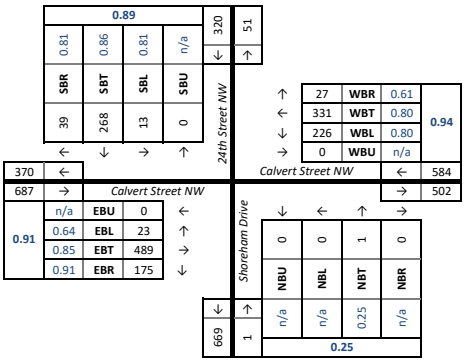
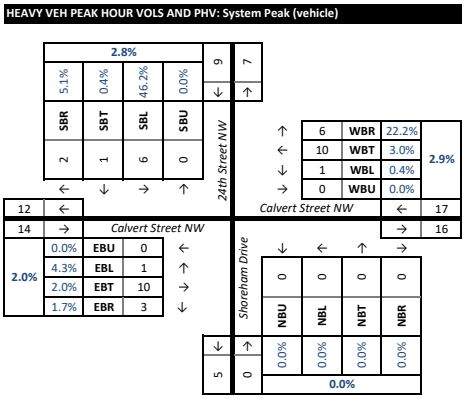
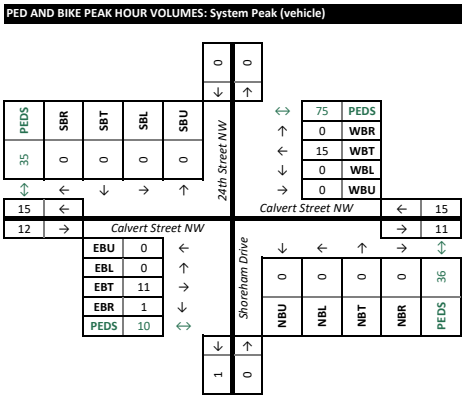
10:30 AM to 10:45 AM																
10:45 AM to 11:00 AM																
11:00 AM to 11:15 AM																
11:15 AM to 11:30 AM																
SYSTEM PEAK HR (VEH.)	0				15				0				12			
08:00 AM to 09:00 AM	0	0	0	0	0	0	15	0	0	0	0	0	0	0	11	1
INT. PEAK HR (BIKES)	0				15				0				12			
08:00 AM to 09:00 AM	0	0	0	0	0	0	15	0	0	0	0	0	0	0	11	1

PED AND BIKE PEAK HOUR VOLUMES: System Peak (vehicle)

DATA COLLECTION NOTES :







Gorove/Slade Associates - Multimodal Turning Movement Count Report

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Data Source: Gorove/Slade Associates, Inc.

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Intersection Peak Hour (all vehicles): 08:00 AM to 09:00 AM
System Peak Hour (all vehicles): 08:00 AM to 09:00 AM
User-Defined Peak Hour: 07:30 AM to 08:30 AM

Intersection: 1. Connecticut Avenue & Calvert Street NW

ALL VEHICLES

Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	Connecticut Avenue					Calvert Street NW					Connecticut Avenue					Calvert Street NW				
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	17	84	1	5	0	0	46	15	2	0	9	28	0	6	0	1	18	9	5
06:45 AM to 07:00 AM	0	12	93	6	14	0	0	54	12	5	0	20	56	2	5	0	1	23	10	8
07:00 AM to 07:15 AM	0	21	118	3	13	0	0	68	19	2	0	32	73	2	11	0	0	22	16	9
07:15 AM to 07:30 AM	0	24	174	3	20	0	0	74	22	6	0	26	83	0	7	0	1	28	23	12
07:30 AM to 07:45 AM	0	21	167	5	25	0	0	90	27	8	0	38	98	1	5	0	0	25	30	15
07:45 AM to 08:00 AM	0	31	159	4	20	0	0	93	29	12	0	41	99	5	6	0	0	48	36	17
08:00 AM to 08:15 AM	0	36	214	2	24	0	0	84	25	16	0	35	118	6	13	0	0	49	54	16
08:15 AM to 08:30 AM	0	33	197	1	42	0	0	108	25	16	0	43	105	2	16	0	0	48	62	18
08:30 AM to 08:45 AM	0	40	192	3	32	0	0	114	27	11	0	39	95	8	20	0	0	59	78	12
08:45 AM to 09:00 AM	0	35	166	2	29	0	3	109	24	14	0	40	92	12	11	0	0	52	71	14
09:00 AM to 09:15 AM	0	32	182	6	11	0	1	97	22	19	0	27	93	3	15	0	0	45	58	14
09:15 AM to 09:30 AM	0	23	192	5	19	0	0	83	20	14	0	33	91	3	6	0	1	41	45	13
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																				
SYSTEM PEAK HR (VEH.)	921				127	519				57	595				60	473				60
08:00 AM to 09:00 AM	0	144	769	8		0	3	415	101		0	157	410	28		0	0	208	265	
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) 0.96	n/a	0.90	0.90	0.67	**0.91**	n/a	0.25	0.91	0.94	**0.92**	n/a	0.91	0.87	0.58	**0.94**	n/a	n/a	0.88	0.85	**0.86**

HEAVY VEHICLES (FHWA 4+)

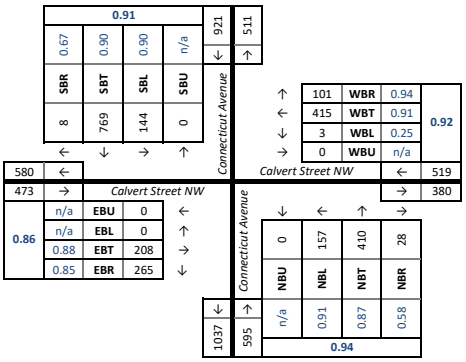
Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	Connecticut Avenue					Calvert Street NW					Connecticut Avenue					Calvert Street NW				
Movement:	U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right	
06:30 AM to 06:45 AM	0	5	4	0		0	0	2	5		0	0	0	0		0	0	2	0	
06:45 AM to 07:00 AM	0	2	1	0		0	0	5	2		0	0	2	0		0	1	3	0	
07:00 AM to 07:15 AM	0	4	3	0		0	0	5	2		0	1	1	0		0	0	2	0	
07:15 AM to 07:30 AM	0	2	3	1		0	0	5	1		0	0	5	0		0	1	5	0	
07:30 AM to 07:45 AM	0	5	4	1		0	0	4	6		0	0	8	0		0	0	2	3	
07:45 AM to 08:00 AM	0	5	4	2		0	0	4	3		0	1	3	0		0	0	3	0	
08:00 AM to 08:15 AM	0	4	3	0		0	0	1	0		0	2	6	1		0	0	2	0	
08:15 AM to 08:30 AM	0	2	5	0		0	0	5	1		0	0	1	0		0	0	3	1	
08:30 AM to 08:45 AM	0	3	6	0		0	0	4	3		0	0	2	0		0	0	3	1	
08:45 AM to 09:00 AM	0	1	6	1		0	0	5	3		0	1	1	0		0	0	4	0	
09:00 AM to 09:15 AM	0	5	6	0		0	0	4	3		0	1	3	0		0	0	2	1	
09:15 AM to 09:30 AM	0	1	10	1		0	0	4	3		0	4	3	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																				
SYSTEM PEAK HR (VEH.)	31					22					14					14				
08:00 AM to 09:00 AM	0	10	20	1		0	0	15	7		0	3	10	1		0	0	12	2	
Heavy Vehicle % (PHV):	0.0%	6.9%	2.6%	12.5%	**3.4%**	0.0%	0.0%	3.6%	6.9%	**4.2%**	0.0%	1.9%	2.4%	3.6%	**2.4%**	0.0%	0.0%	5.8%	0.8%	**3.0%**
INT. PEAK HR (HV ONLY)	34					24					26					16				
07:15 AM to 08:15 AM	0	16	14	4		0	0	14	10		0	3	22	1		0	1	12	3	
Heavy Vehicle % (PHV):	0.0%	14.3%	2.0%	28.6%	**4.0%**	0.0%	0.0%	4.1%	9.7%	**5.4%**	0.0%	2.1%	5.5%	8.3%	**4.7%**	0.0%	100.0%	8.0%	2.1%	**5.4%**

BICYCLES

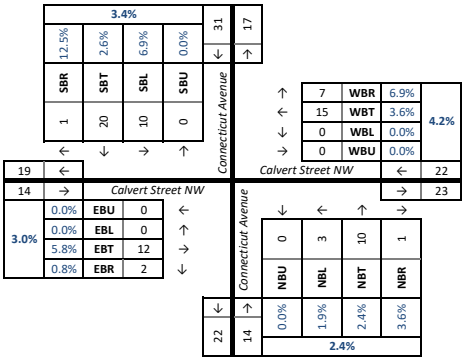
Direction:	Southbound				Westbound				Northbound				Eastbound			
Roadway:	Connecticut Avenue				Calvert Street NW				Connecticut Avenue				Calvert Street NW			
Movement:	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right
06:30 AM to 06:45 AM	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
06:45 AM to 07:00 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00 AM to 07:15 AM	0	0	4	0	0	0	0	0	0	0	0	0	0	0	1	0
07:15 AM to 07:30 AM	0	0	3	0	0	0	2	2	0	0	0	0	0	0	1	0
07:30 AM to 07:45 AM	0	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0
07:45 AM to 08:00 AM	0	0	3	0	0	0	0	1	0	0	1	0	0	0	1	0
08:00 AM to 08:15 AM	0	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0
08:15 AM to 08:30 AM	0	1	5	0	0	0	9	0	0	0	1	0	0	0	2	0
08:30 AM to 08:45 AM	0	0	2	0	0	0	3	0	0	0	2	0	0	0	5	0
08:45 AM to 09:00 AM	0	1	8	0	0	0	5	0	0	0	2	0	0	0	3	2
09:00 AM to 09:15 AM	0	0	6	0	0	0	0	0	0	0	1	0	0	0	2	0
09:15 AM to 09:30 AM	0	0	2	0	0	0	2	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																
SYSTEM PEAK HR (VEH.)	18				18				5				13			
08:00 AM to 09:00 AM	0	3	15	0	0	0	18	0	0	0	5	0	0	0	11	2
INT. PEAK HR (BIKES)	23				17				6				14			
08:15 AM to 09:15 AM	0	2	21	0	0	0	17	0	0	0	6	0	0	0	12	2

DATA COLLECTION NOTES :

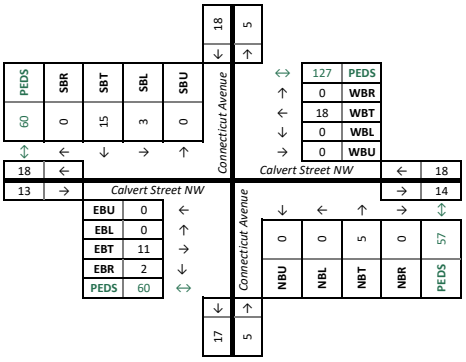
VEHICLE PEAK HOUR VOLS AND PHF: System Peak (vehicle)



HEAVY VEH PEAK HOUR VOLS AND PHV: System Peak (vehicle)



PED AND BIKE PEAK HOUR VOLUMES: System Peak (vehicle)



E. LOS Descriptions

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.

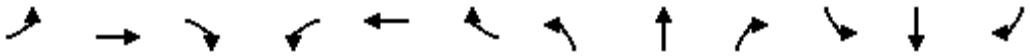
The level of service grade is provided for each conflicting movement at an unsignalized intersection and is based on the total average delay experienced by each vehicle. The delay includes the time it takes a vehicle to move from the back of a queue through the intersection.

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.

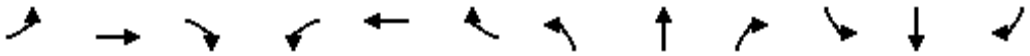
F. Existing (2022) Capacity Analysis Worksheets



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	7	35	9	28	72	2	17	30	51	26	58	17
Future Volume (vph)	7	35	9	28	72	2	17	30	51	26	58	17
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	8	41	11	33	85	2	20	35	60	31	68	20

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	60	120	115	119
Volume Left (vph)	8	33	20	31
Volume Right (vph)	11	2	60	20
Hadj (s)	-0.04	0.08	-0.16	0.05
Departure Headway (s)	4.6	4.6	4.3	4.5
Degree Utilization, x	0.08	0.15	0.14	0.15
Capacity (veh/h)	734	736	791	753
Control Delay (s)	7.9	8.4	8.0	8.3
Approach Delay (s)	7.9	8.4	8.0	8.3
Approach LOS	A	A	A	A

Intersection Summary				
Delay	8.2			
Level of Service	A			
Intersection Capacity Utilization	29.9%	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)	1	102	9	13	81	0	8	0	16	59	0	28
Future Volume (Veh/h)	1	102	9	13	81	0	8	0	16	59	0	28
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	1	115	10	15	91	0	9	0	18	66	0	31
Pedestrians		14			37			77			48	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		3.5			3.5			3.5			3.5	
Percent Blockage		1			4			7			5	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					799							
pX, platoon unblocked												
vC, conflicting volume	139			202			360	363	229	341	373	153
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	139			202			360	363	229	341	373	153
tC, single (s)	4.1			4.1			7.1	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	100			99			98	100	97	87	100	96
cM capacity (veh/h)	1378			1269			474	493	716	497	487	841

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	116	10	106	27	97
Volume Left	1	0	15	9	66
Volume Right	0	10	0	18	31
cSH	1378	1700	1269	611	571
Volume to Capacity	0.00	0.01	0.01	0.04	0.17
Queue Length 95th (ft)	0	0	1	3	15
Control Delay (s)	0.1	0.0	1.2	11.2	12.6
Lane LOS	A		A	B	B
Approach Delay (s)	0.1		1.2	11.2	12.6
Approach LOS				B	B

Intersection Summary				
Average Delay	4.7			
Intersection Capacity Utilization	43.2%	ICU Level of Service		A
Analysis Period (min)	15			

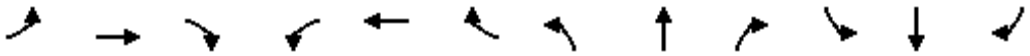
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	178	1	1	113	1	1
Future Volume (Veh/h)	178	1	1	113	1	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	209	1	1	133	1	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				302		
pX, platoon unblocked						
vC, conflicting volume			210		344	210
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			210		344	210
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	100
cM capacity (veh/h)			1361		652	831

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	210	134	2
Volume Left	0	1	1
Volume Right	1	0	1
cSH	1700	1361	730
Volume to Capacity	0.12	0.00	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.1	9.9
Lane LOS		A	A
Approach Delay (s)	0.0	0.1	9.9
Approach LOS			A

Intersection Summary			
Average Delay		0.1	
Intersection Capacity Utilization		20.5%	ICU Level of Service
Analysis Period (min)		15	

Lane Group	EBT	EBR	WBT	NBT	SBT
Lane Group Flow (vph)	46	157	60	622	1220
v/c Ratio	0.17	0.41	0.25	0.29	0.50
Control Delay	41.1	31.8	42.9	2.0	18.2
Queue Delay	0.0	0.0	0.0	0.2	0.0
Total Delay	41.1	31.8	42.9	2.2	18.2
Queue Length 50th (ft)	30	86	39	9	208
Queue Length 95th (ft)	63	139	78	19	240
Internal Link Dist (ft)	222		292	102	141
Turn Bay Length (ft)		180			
Base Capacity (vph)	267	387	244	2172	2427
Starvation Cap Reductn	0	0	0	772	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.17	0.41	0.25	0.44	0.50

Intersection Summary



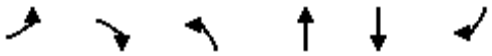
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	11	138	22	16	15	80	462	5	0	1057	17
Future Volume (vph)	29	11	138	22	16	15	80	462	5	0	1057	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	4.0		5.0			4.0			4.0	
Lane Util. Factor		1.00	1.00		1.00			0.91			0.91	
Frpb, ped/bikes		1.00	0.90		0.98			1.00			1.00	
Flpb, ped/bikes		0.97	1.00		0.95			1.00			1.00	
Frt		1.00	0.85		0.96			1.00			1.00	
Flt Protected		0.97	1.00		0.98			0.99			1.00	
Satd. Flow (prot)		1563	1258		1306			4424			4478	
Flt Permitted		0.79	1.00		0.88			0.69			1.00	
Satd. Flow (perm)		1282	1258		1172			3073			4478	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	33	12	157	25	18	17	91	525	6	0	1201	19
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	46	157	0	60	0	0	622	0	0	1219	0
Confl. Peds. (#/hr)	34		86	86		34	23		59	59		23
Heavy Vehicles (%)	2%	2%	4%	5%	2%	2%	5%	3%	20%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	6	6	0	6	6
Parking (#/hr)				0	0	0						
Turn Type	Perm	NA	pm+ov	Perm	NA		pm+pt	NA			NA	
Protected Phases		4	5		8		5	2			6	
Permitted Phases	4		4	8			2					
Actuated Green, G (s)		23.0	32.0		23.0			78.0			63.0	
Effective Green, g (s)		25.0	36.0		25.0			80.0			65.0	
Actuated g/C Ratio		0.21	0.30		0.21			0.67			0.54	
Clearance Time (s)		7.0	6.0		7.0			6.0			6.0	
Lane Grp Cap (vph)		267	377		244			2172			2425	
v/s Ratio Prot			c0.04					0.03			c0.27	
v/s Ratio Perm		0.04	0.09		0.05			0.16				
v/c Ratio		0.17	0.42		0.25			0.29			0.50	
Uniform Delay, d1		39.0	33.6		39.6			8.2			17.3	
Progression Factor		1.00	1.00		1.00			0.20			1.00	
Incremental Delay, d2		1.4	3.4		2.4			0.3			0.7	
Delay (s)		40.4	37.0		42.0			2.0			18.1	
Level of Service		D	D		D			A			B	
Approach Delay (s)		37.7			42.0			2.0			18.1	
Approach LOS		D			D			A			B	

Intersection Summary			
HCM 2000 Control Delay	15.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	68.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	NBT	SBT
Lane Group Flow (vph)	48	592	1383
v/c Ratio	0.20	0.20	0.51
Control Delay	34.9	0.5	3.3
Queue Delay	0.0	0.0	0.1
Total Delay	34.9	0.5	3.3
Queue Length 50th (ft)	17	4	31
Queue Length 95th (ft)	40	m4	43
Internal Link Dist (ft)	96	1	1
Turn Bay Length (ft)	150		
Base Capacity (vph)	237	3014	2733
Starvation Cap Reductn	0	0	274
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.20	0.20	0.56

Intersection Summary

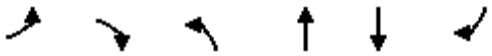
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	27	15	1	520	931	286
Future Volume (vph)	27	15	1	520	931	286
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			5.0	5.0	
Lane Util. Factor	1.00			0.91	0.91	
Frpb, ped/bikes	0.96			1.00	0.88	
Flpb, ped/bikes	1.00			1.00	1.00	
Frt	0.95			1.00	0.96	
Flt Protected	0.97			1.00	1.00	
Satd. Flow (prot)	1177			4532	3858	
Flt Permitted	0.97			0.94	1.00	
Satd. Flow (perm)	1177			4254	3858	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	31	17	1	591	1058	325
RTOR Reduction (vph)	2	0	0	0	0	0
Lane Group Flow (vph)	46	0	0	592	1383	0
Confl. Peds. (#/hr)		55	90			90
Heavy Vehicles (%)	11%	60%	2%	3%	3%	3%
Bus Blockages (#/hr)	0	4	0	0	0	0
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	2	
Permitted Phases			2			
Actuated Green, G (s)	22.0			83.0	83.0	
Effective Green, g (s)	24.0			85.0	85.0	
Actuated g/C Ratio	0.20			0.71	0.71	
Clearance Time (s)	5.0			7.0	7.0	
Lane Grp Cap (vph)	235			3013	2732	
v/s Ratio Prot	c0.04				c0.36	
v/s Ratio Perm				0.14		
v/c Ratio	0.20			0.20	0.51	
Uniform Delay, d1	40.0			5.9	8.0	
Progression Factor	0.84			0.09	0.33	
Incremental Delay, d2	1.9			0.0	0.6	
Delay (s)	35.3			0.5	3.2	
Level of Service	D			A	A	
Approach Delay (s)	35.3			0.5	3.2	
Approach LOS	D			A	A	

Intersection Summary			
HCM 2000 Control Delay	3.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	50.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



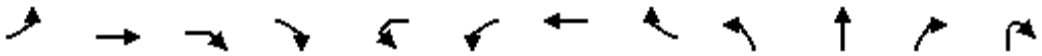
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	1	1	42	287	1
Future Volume (Veh/h)	1	1	1	42	287	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	1	1	1	49	338	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				340	176	
pX, platoon unblocked						
vC, conflicting volume	390	338	339			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	390	338	339			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	614	704	1220			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	2	50	339
Volume Left	1	1	0
Volume Right	1	0	1
cSH	656	1220	1700
Volume to Capacity	0.00	0.00	0.20
Queue Length 95th (ft)	0	0	0
Control Delay (s)	10.5	0.2	0.0
Lane LOS	B	A	
Approach Delay (s)	10.5	0.2	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	26.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBT	NBT	SBT
Lane Group Flow (vph)	512	9	374	7	149
v/c Ratio	0.56	0.03	0.26	0.07	0.60
Control Delay	20.1	12.4	14.3	53.0	57.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	20.1	12.4	14.3	53.0	57.0
Queue Length 50th (ft)	244	3	56	5	108
Queue Length 95th (ft)	336	11	98	20	176
Internal Link Dist (ft)	310		417	213	1015
Turn Bay Length (ft)		570			
Base Capacity (vph)	907	332	1455	116	247
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	0.56	0.03	0.26	0.06	0.60

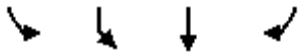
Intersection Summary



Movement	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	NBR2
Lane Configurations												
Traffic Volume (vph)	19	431	5	3	7	16	221	85	4	0	1	1
Future Volume (vph)	19	431	5	3	7	16	221	85	4	0	1	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0				5.0			6.0		
Lane Util. Factor		1.00	1.00				0.95			1.00		
Frpb, ped/bikes		1.00	0.58				1.00			1.00		
Flpb, ped/bikes		1.00	1.00				1.00			1.00		
Frt		1.00	0.85				0.96			0.96		
Flt Protected		1.00	1.00				1.00			0.97		
Satd. Flow (prot)		1667	595				2898			1401		
Flt Permitted		0.97	1.00				0.90			0.97		
Satd. Flow (perm)		1626	595				2606			1401		
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	22	490	6	3	8	18	251	97	5	0	1	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	512	9	0	0	0	374	0	0	7	0	0
Confl. Peds. (#/hr)			55			55			90			
Heavy Vehicles (%)	11%	2%	60%	2%	2%	2%	2%	2%	2%	3%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	3	0	0	0	0
Parking (#/hr)					0	0	0	0	0	0	0	0
Turn Type	Perm	NA	Perm		Perm	Perm	NA		Split	NA		
Protected Phases		6					2		4	4		
Permitted Phases	6		6		2	2						
Actuated Green, G (s)		58.6	58.6				58.6			1.5		
Effective Green, g (s)		60.6	60.6				60.6			3.5		
Actuated g/C Ratio		0.51	0.51				0.51			0.03		
Clearance Time (s)		7.0	7.0				7.0			8.0		
Vehicle Extension (s)		1.0	1.0				1.0			3.0		
Lane Grp Cap (vph)		821	300				1316			40		
v/s Ratio Prot										c0.00		
v/s Ratio Perm		c0.31	0.02				0.14					
v/c Ratio		0.62	0.03				0.28			0.17		
Uniform Delay, d1		21.5	14.9				17.2			56.8		
Progression Factor		1.00	1.00				1.01			1.00		
Incremental Delay, d2		3.6	0.2				0.5			2.1		
Delay (s)		25.0	15.1				17.8			58.9		
Level of Service		C	B				B			E		
Approach Delay (s)		24.8					17.8			58.9		
Approach LOS		C					B			E		

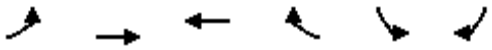
Intersection Summary			
HCM 2000 Control Delay	27.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	60.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	SBL2	SBL	SBT	SBR
Lane Configurations				
Traffic Volume (vph)	124	1	1	5
Future Volume (vph)	124	1	1	5
Ideal Flow (vphpl)	1900	1900	1900	1900
Total Lost time (s)			5.0	
Lane Util. Factor			1.00	
Frpb, ped/bikes			0.99	
Flpb, ped/bikes			1.00	
Frt			0.99	
Flt Protected			0.95	
Satd. Flow (prot)			1413	
Flt Permitted			0.95	
Satd. Flow (perm)			1413	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88
Adj. Flow (vph)	141	1	1	6
RTOR Reduction (vph)	0	0	0	0
Lane Group Flow (vph)	0	0	149	0
Confl. Peds. (#/hr)				90
Heavy Vehicles (%)	2%	2%	3%	3%
Bus Blockages (#/hr)	0	0	0	0
Parking (#/hr)	0	0	0	0
Turn Type	Split	Split	NA	
Protected Phases	3	3	3	
Permitted Phases				
Actuated Green, G (s)			19.0	
Effective Green, g (s)			21.0	
Actuated g/C Ratio			0.18	
Clearance Time (s)			7.0	
Vehicle Extension (s)			1.0	
Lane Grp Cap (vph)			247	
v/s Ratio Prot			c0.11	
v/s Ratio Perm				
v/c Ratio			0.60	
Uniform Delay, d1			45.7	
Progression Factor			1.00	
Incremental Delay, d2			10.5	
Delay (s)			56.1	
Level of Service			E	
Approach Delay (s)			56.1	
Approach LOS			E	

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	687	370	1	1	1
Future Volume (Veh/h)	1	687	370	1	1	1
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	1	808	435	1	1	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)		497	926			
pX, platoon unblocked	0.93				0.83	0.93
vC, conflicting volume	436				1246	436
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	351				989	350
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	100
cM capacity (veh/h)	1118				226	642

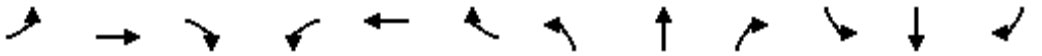
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	809	436	2
Volume Left	1	0	1
Volume Right	0	1	1
cSH	1118	1700	334
Volume to Capacity	0.00	0.26	0.01
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	15.8
Lane LOS	A		C
Approach Delay (s)	0.0	0.0	15.8
Approach LOS			C

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization		51.1%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBL	EBT	WBL	WBT	WBR	SBT
Lane Group Flow (vph)	25	722	246	360	29	347
v/c Ratio	0.09	0.54	0.56	0.35	0.07	0.75
Control Delay	19.0	22.0	10.0	1.3	0.9	34.5
Queue Delay	0.0	0.0	0.7	1.3	0.0	0.0
Total Delay	19.0	22.0	10.7	2.6	0.9	34.5
Queue Length 50th (ft)	10	161	19	9	1	209
Queue Length 95th (ft)	m22	222	m25	m10	m1	#358
Internal Link Dist (ft)		846		235		260
Turn Bay Length (ft)	170					
Base Capacity (vph)	293	1342	442	1023	434	462
Starvation Cap Reductn	0	0	49	454	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.54	0.63	0.63	0.07	0.75

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	489	175	226	331	27	0	0	0	13	268	39
Future Volume (vph)	23	489	175	226	331	27	0	0	0	13	268	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		3.0	4.0	4.0					4.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00					1.00	
Frpb, ped/bikes	1.00	0.98		1.00	1.00	0.54					0.98	
Flpb, ped/bikes	0.73	1.00		1.00	1.00	1.00					1.00	
Frt	1.00	0.96		1.00	1.00	0.85					0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00					1.00	
Satd. Flow (prot)	1136	2982		1593	1660	704					1587	
Flt Permitted	0.55	1.00		0.27	1.00	1.00					1.00	
Satd. Flow (perm)	653	2982		448	1660	704					1587	
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)	25	532	190	246	360	29	0	0	0	14	291	42
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	25	722	0	246	360	29	0	0	0	0	347	0
Confl. Peds. (#/hr)	75		10	10		75	35		36	36		35
Heavy Vehicles (%)	4%	2%	2%	2%	3%	10%	2%	2%	2%	46%	2%	2%
Bus Blockages (#/hr)	0	3	3	0	0	3	0	0	0	0	0	0
Turn Type	Perm	NA		pm+pt	NA	Perm				Perm	NA	
Protected Phases		6		5	2						8	
Permitted Phases	6			2		2				8		
Actuated Green, G (s)	52.0	52.0		72.0	72.0	72.0					33.0	
Effective Green, g (s)	54.0	54.0		74.0	74.0	74.0					35.0	
Actuated g/C Ratio	0.45	0.45		0.62	0.62	0.62					0.29	
Clearance Time (s)	6.0	6.0		5.0	6.0	6.0					6.0	
Lane Grp Cap (vph)	293	1341		438	1023	434					462	
v/s Ratio Prot		0.24		c0.08	0.22							
v/s Ratio Perm	0.04			c0.27		0.04					0.22	
v/c Ratio	0.09	0.54		0.56	0.35	0.07					0.75	
Uniform Delay, d1	18.9	24.0		12.3	11.3	9.2					38.5	
Progression Factor	0.95	0.85		0.76	0.07	0.08					0.62	
Incremental Delay, d2	0.5	1.4		2.4	0.4	0.1					9.7	
Delay (s)	18.5	21.8		11.7	1.2	0.9					33.8	
Level of Service	B	C		B	A	A					C	
Approach Delay (s)		21.6			5.3			0.0			33.8	
Approach LOS		C			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	18.1	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)	13.0
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

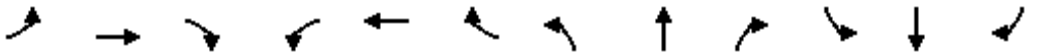
Lane Group	EBT	EBR	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	217	276	435	105	591	29	959
v/c Ratio	0.21	0.42	0.78	0.31	1.32	0.08	0.57
Control Delay	40.0	18.7	46.4	39.6	198.8	27.9	15.8
Queue Delay	0.0	0.2	0.0	0.0	0.0	0.0	0.0
Total Delay	40.0	18.9	46.4	39.6	198.8	27.9	15.8
Queue Length 50th (ft)	61	77	300	66	~311	14	73
Queue Length 95th (ft)	m99	m95	#433	119	#431	38	79
Internal Link Dist (ft)	235		274		428		387
Turn Bay Length (ft)		220		190		190	
Base Capacity (vph)	1047	653	560	339	448	386	1685
Starvation Cap Reductn	0	69	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.47	0.78	0.31	1.32	0.08	0.57

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

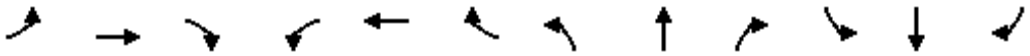
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	208	265	3	415	101	157	410	28	144	769	8
Future Volume (vph)	0	208	265	3	415	101	157	410	28	144	769	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0	4.0		4.0	
Lane Util. Factor		0.95	1.00		1.00	1.00		0.95	1.00		0.91	
Frpb, ped/bikes		1.00	0.93		1.00	1.00		1.00	0.89		1.00	
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00	1.00		0.99	
Frt		1.00	0.85		1.00	0.85		1.00	0.85		1.00	
Flt Protected		1.00	1.00		1.00	1.00		0.99	1.00		0.99	
Satd. Flow (prot)		3065	1324		1643	1358		3134	1247		4434	
Flt Permitted		1.00	1.00		1.00	1.00		0.57	1.00		0.77	
Satd. Flow (perm)		3065	1324		1641	1358		1825	1247		3426	
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	217	276	3	432	105	164	427	29	150	801	8
RTOR Reduction (vph)	0	0	14	0	0	0	0	0	2	0	1	0
Lane Group Flow (vph)	0	217	262	0	435	105	0	591	27	0	958	0
Confl. Peds. (#/hr)	127		60	60		127	60		57	57		60
Heavy Vehicles (%)	2%	6%	2%	2%	4%	7%	2%	2%	4%	7%	3%	13%
Turn Type		NA	pm+ov	Perm	NA	Over	Prot	NA	Perm	pm+pt	NA	
Protected Phases		8	1		4	5	1	6		5	2	
Permitted Phases			8	4					6	2		
Actuated Green, G (s)		39.0	54.0		39.0	28.0		35.0	35.0		48.0	
Effective Green, g (s)		41.0	58.0		41.0	30.0		37.0	37.0		50.0	
Actuated g/C Ratio		0.34	0.48		0.34	0.25		0.31	0.31		0.42	
Clearance Time (s)		6.0	6.0		6.0	6.0		6.0	6.0		6.0	
Lane Grp Cap (vph)		1047	684		560	339		748	384		1679	
v/s Ratio Prot		0.07	0.05			0.08		c0.11			c0.14	
v/s Ratio Perm			0.14		c0.27			c0.13	0.02		0.10	
v/c Ratio		0.21	0.38		0.78	0.31		0.79	0.07		0.57	
Uniform Delay, d1		28.0	19.7		35.4	36.6		37.9	29.3		26.8	
Progression Factor		1.40	1.04		1.00	1.00		1.00	1.00		0.51	
Incremental Delay, d2		0.4	1.4		10.2	2.4		8.3	0.4		1.2	
Delay (s)		39.7	21.8		45.6	38.9		46.3	29.7		14.9	
Level of Service		D	C		D	D		D	C		B	
Approach Delay (s)		29.7			44.3			45.5			14.9	
Approach LOS		C			D			D			B	

Intersection Summary			
HCM 2000 Control Delay	31.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	6	29	6	7	115	1	12	32	26	25	30	7
Future Volume (vph)	6	29	6	7	115	1	12	32	26	25	30	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)	6	30	6	7	120	1	12	33	27	26	31	7

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	42	128	72	64
Volume Left (vph)	6	7	12	26
Volume Right (vph)	6	1	27	7
Hadj (s)	-0.02	0.04	-0.07	0.06
Departure Headway (s)	4.3	4.3	4.3	4.4
Degree Utilization, x	0.05	0.15	0.09	0.08
Capacity (veh/h)	796	811	798	768
Control Delay (s)	7.6	8.1	7.7	7.8
Approach Delay (s)	7.6	8.1	7.7	7.8
Approach LOS	A	A	A	A

Intersection Summary				
Delay	7.9			
Level of Service	A			
Intersection Capacity Utilization	28.0%	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)	0	73	14	23	130	1	8	0	12	18	4	14
Future Volume (Veh/h)	0	73	14	23	130	1	8	0	12	18	4	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	0	86	16	27	153	1	9	0	14	21	5	16
Pedestrians		8			41			77			19	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		3.5			3.5			3.5			3.5	
Percent Blockage		1			4			7			2	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					799							
pX, platoon unblocked												
vC, conflicting volume	173			179			397	390	204	368	406	180
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	173			179			397	390	204	368	406	180
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.8	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.2	3.3
p0 queue free %	100			98			98	100	98	96	99	98
cM capacity (veh/h)	1378			1294			462	486	745	500	446	840

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	86	16	181	23	42
Volume Left	0	0	27	9	21
Volume Right	0	16	1	14	16
cSH	1700	1700	1294	601	581
Volume to Capacity	0.05	0.01	0.02	0.04	0.07
Queue Length 95th (ft)	0	0	2	3	6
Control Delay (s)	0.0	0.0	1.3	11.2	11.7
Lane LOS			A	B	B
Approach Delay (s)	0.0		1.3	11.2	11.7
Approach LOS				B	B

Intersection Summary				
Average Delay	2.8			
Intersection Capacity Utilization	39.5%	ICU Level of Service		A
Analysis Period (min)	15			

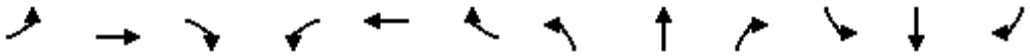
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	106	1	1	164	1	1
Future Volume (Veh/h)	106	1	1	164	1	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	125	1	1	193	1	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				302		
pX, platoon unblocked						
vC, conflicting volume			126		320	126
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			126		320	126
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	100
cM capacity (veh/h)			1460		673	925

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	126	194	2
Volume Left	0	1	1
Volume Right	1	0	1
cSH	1700	1460	779
Volume to Capacity	0.07	0.00	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	9.6
Lane LOS		A	A
Approach Delay (s)	0.0	0.0	9.6
Approach LOS			A

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	20.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBT	NBT	SBT
Lane Group Flow (vph)	30	82	139	947	486
v/c Ratio	0.10	0.12	0.51	0.38	0.34
Control Delay	36.6	11.4	47.3	4.8	32.2
Queue Delay	0.0	0.0	0.0	0.2	0.0
Total Delay	36.6	11.4	47.3	5.0	32.2
Queue Length 50th (ft)	18	26	94	34	105
Queue Length 95th (ft)	44	49	163	41	138
Internal Link Dist (ft)	222		292	175	141
Turn Bay Length (ft)		180			
Base Capacity (vph)	295	705	270	2513	1425
Starvation Cap Reductn	0	0	0	684	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.10	0.12	0.51	0.52	0.34

Intersection Summary

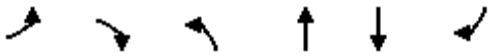


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	6	77	61	34	36	121	763	6	0	447	9
Future Volume (vph)	23	6	77	61	34	36	121	763	6	0	447	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	4.0		5.0			4.0			4.0	
Lane Util. Factor		1.00	1.00		1.00			0.91			0.91	
Frpb, ped/bikes		1.00	0.93		0.97			1.00			1.00	
Flpb, ped/bikes		0.95	1.00		0.93			1.00			1.00	
Frt		1.00	0.85		0.96			1.00			1.00	
Flt Protected		0.96	1.00		0.98			0.99			1.00	
Satd. Flow (prot)		1537	1324		1293			4507			4500	
Flt Permitted		0.76	1.00		0.85			0.78			1.00	
Satd. Flow (perm)		1222	1324		1119			3523			4500	
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)	24	6	82	65	36	38	129	812	6	0	476	10
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	30	82	0	139	0	0	947	0	0	485	0
Confl. Peds. (#/hr)	53		93	93		53	24		95	95		24
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	11%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	6	0	0	6
Parking (#/hr)				0	0	0						
Turn Type	Perm	NA	pm+ov	Perm	NA		pm+pt	NA			NA	
Protected Phases		4	5		8		5	2			6	
Permitted Phases	4		4	8			2					
Actuated Green, G (s)		27.0	59.0		27.0			74.0			36.0	
Effective Green, g (s)		29.0	63.0		29.0			76.0			38.0	
Actuated g/C Ratio		0.24	0.52		0.24			0.63			0.32	
Clearance Time (s)		7.0	6.0		7.0			6.0			6.0	
Lane Grp Cap (vph)		295	695		270			2510			1425	
v/s Ratio Prot			0.03					c0.11			0.11	
v/s Ratio Perm		0.02	0.03		c0.12			c0.13				
v/c Ratio		0.10	0.12		0.51			0.38			0.34	
Uniform Delay, d1		35.4	14.4		39.4			10.6			31.4	
Progression Factor		1.00	1.00		1.00			0.39			1.00	
Incremental Delay, d2		0.7	0.3		6.9			0.4			0.7	
Delay (s)		36.1	14.8		46.3			4.6			32.1	
Level of Service		D	B		D			A			C	
Approach Delay (s)		20.5			46.3			4.6			32.1	
Approach LOS		C			D			A			C	

Intersection Summary			
HCM 2000 Control Delay	17.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

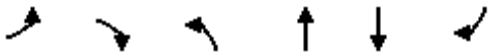
Lane Group	EBL	NBT	SBT
Lane Group Flow (vph)	163	840	627
v/c Ratio	0.40	0.31	0.24
Control Delay	36.0	4.2	3.5
Queue Delay	0.0	0.0	0.2
Total Delay	36.0	4.2	3.7
Queue Length 50th (ft)	89	28	28
Queue Length 95th (ft)	179	36	34
Internal Link Dist (ft)	96	1	175
Turn Bay Length (ft)	150		
Base Capacity (vph)	405	2688	2628
Starvation Cap Reductn	0	0	1176
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.40	0.31	0.43

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	110	42	1	780	529	54
Future Volume (vph)	110	42	1	780	529	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			5.0	5.0	
Lane Util. Factor	1.00			0.91	0.91	
Frpb, ped/bikes	0.92			1.00	0.94	
Flpb, ped/bikes	1.00			1.00	1.00	
Frt	0.96			1.00	0.99	
Flt Protected	0.97			1.00	1.00	
Satd. Flow (prot)	1421			4575	4205	
Flt Permitted	0.97			0.94	1.00	
Satd. Flow (perm)	1421			4299	4205	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	118	45	1	839	569	58
RTOR Reduction (vph)	3	0	0	0	0	0
Lane Group Flow (vph)	160	0	0	840	627	0
Confl. Peds. (#/hr)	1	133	211			211
Heavy Vehicles (%)	2%	7%	2%	2%	2%	13%
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	2	
Permitted Phases			2			
Actuated Green, G (s)	32.0			73.0	73.0	
Effective Green, g (s)	34.0			75.0	75.0	
Actuated g/C Ratio	0.28			0.62	0.62	
Clearance Time (s)	5.0			7.0	7.0	
Lane Grp Cap (vph)	402			2686	2628	
v/s Ratio Prot	c0.11				0.15	
v/s Ratio Perm				c0.20		
v/c Ratio	0.40			0.31	0.24	
Uniform Delay, d1	34.7			10.5	9.9	
Progression Factor	0.96			0.37	0.33	
Incremental Delay, d2	2.8			0.2	0.2	
Delay (s)	36.2			4.1	3.5	
Level of Service	D			A	A	
Approach Delay (s)	36.2			4.1	3.5	
Approach LOS	D			A	A	

Intersection Summary			
HCM 2000 Control Delay	7.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



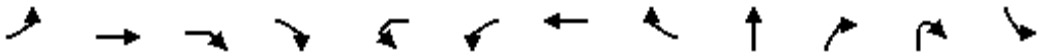
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	1	1	152	55	1
Future Volume (Veh/h)	1	1	1	152	55	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	1	1	1	179	65	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				340	176	
pX, platoon unblocked						
vC, conflicting volume	246	66	66			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	246	66	66			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	741	998	1536			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	2	180	66
Volume Left	1	1	0
Volume Right	1	0	1
cSH	851	1536	1700
Volume to Capacity	0.00	0.00	0.04
Queue Length 95th (ft)	0	0	0
Control Delay (s)	9.2	0.0	0.0
Lane LOS	A	A	
Approach Delay (s)	9.2	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	19.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBT	NBT	SBT
Lane Group Flow (vph)	364	5	535	7	75
v/c Ratio	0.40	0.01	0.34	0.07	0.45
Control Delay	16.6	11.8	11.1	53.2	58.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	16.6	11.8	11.1	53.2	58.6
Queue Length 50th (ft)	153	2	72	5	56
Queue Length 95th (ft)	222	8	135	21	103
Internal Link Dist (ft)	310		415	213	1015
Turn Bay Length (ft)		570			
Base Capacity (vph)	921	744	1579	107	271
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	0.40	0.01	0.34	0.07	0.28

Intersection Summary



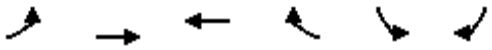
Movement	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBT	NBR	NBR2	SBL2
Lane Configurations												
Traffic Volume (vph)	8	327	4	1	4	11	398	79	3	3	1	60
Future Volume (vph)	8	327	4	1	4	11	398	79	3	3	1	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0				5.0		6.0			
Lane Util. Factor		1.00	1.00				0.95		1.00			
Frpb, ped/bikes		1.00	0.94				0.98		0.82			
Flpb, ped/bikes		1.00	1.00				1.00		1.00			
Frt		1.00	0.85				0.98		0.92			
Flt Protected		1.00	1.00				1.00		1.00			
Satd. Flow (prot)		1673	1334				3012		1143			
Flt Permitted		0.98	1.00				0.94		1.00			
Satd. Flow (perm)		1650	1334				2829		1143			
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)	9	355	4	1	4	12	433	86	3	3	1	65
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	364	5	0	0	0	535	0	7	0	0	0
Confl. Peds. (#/hr)	14		6			6		14		18		18
Heavy Vehicles (%)	2%	2%	2%	2%	2%	43%	2%	4%	2%	2%	2%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	3	0	0	0	0
Parking (#/hr)									0	0	0	
Turn Type	Perm	NA	Perm		Perm	Perm	NA		NA			Split
Protected Phases		6					2		4			3
Permitted Phases	6		6		2	2						
Actuated Green, G (s)		57.2	57.2				57.2		1.6			
Effective Green, g (s)		59.2	59.2				59.2		3.6			
Actuated g/C Ratio		0.49	0.49				0.49		0.03			
Clearance Time (s)		7.0	7.0				7.0		8.0			
Vehicle Extension (s)		1.0	1.0				1.0		3.0			
Lane Grp Cap (vph)		814	658				1395		34			
v/s Ratio Prot									c0.01			
v/s Ratio Perm		c0.22	0.00				0.19					
v/c Ratio		0.45	0.01				0.38		0.21			
Uniform Delay, d1		19.8	15.5				19.0		56.8			
Progression Factor		1.00	1.00				0.73		1.00			
Incremental Delay, d2		1.8	0.0				0.7		3.0			
Delay (s)		21.5	15.5				14.5		59.8			
Level of Service		C	B				B		E			
Approach Delay (s)		21.5					14.5		59.8			
Approach LOS		C					B		E			

Intersection Summary			
HCM 2000 Control Delay	20.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	47.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBT	SBR
Lane Configurations			
Traffic Volume (vph)	1	1	7
Future Volume (vph)	1	1	7
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)		5.0	
Lane Util. Factor		1.00	
Frpb, ped/bikes		0.99	
Flpb, ped/bikes		1.00	
Frt		0.99	
Flt Protected		0.96	
Satd. Flow (prot)		1552	
Flt Permitted		0.96	
Satd. Flow (perm)		1552	
Peak-hour factor, PHF	0.92	0.92	0.92
Adj. Flow (vph)	1	1	8
RTOR Reduction (vph)	0	0	0
Lane Group Flow (vph)	0	75	0
Confl. Peds. (#/hr)			21
Heavy Vehicles (%)	2%	2%	2%
Bus Blockages (#/hr)	0	0	0
Parking (#/hr)			
Turn Type	Split	NA	
Protected Phases	3	3	
Permitted Phases			
Actuated Green, G (s)		9.0	
Effective Green, g (s)		11.0	
Actuated g/C Ratio		0.09	
Clearance Time (s)		7.0	
Vehicle Extension (s)		1.0	
Lane Grp Cap (vph)		142	
v/s Ratio Prot		c0.05	
v/s Ratio Perm			
v/c Ratio		0.53	
Uniform Delay, d1		52.0	
Progression Factor		1.00	
Incremental Delay, d2		1.6	
Delay (s)		53.7	
Level of Service		D	
Approach Delay (s)		53.7	
Approach LOS		D	

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	490	619	1	1	1
Future Volume (Veh/h)	1	490	619	1	1	1
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	1	576	728	1	1	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)		495	929			
pX, platoon unblocked	0.79				0.86	0.79
vC, conflicting volume	729				1306	728
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	524				931	524
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	100
cM capacity (veh/h)	824				253	437

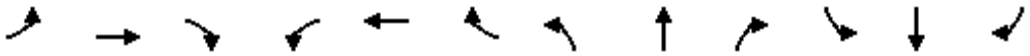
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	577	729	2
Volume Left	1	0	1
Volume Right	0	1	1
cSH	824	1700	321
Volume to Capacity	0.00	0.43	0.01
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	16.3
Lane LOS	A		C
Approach Delay (s)	0.0	0.0	16.3
Approach LOS			C

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	30	494	449	36	281	349	70
v/c Ratio	0.16	0.39	0.67	0.15	0.52	0.52	0.15
Control Delay	35.3	34.5	35.4	27.9	23.9	23.4	5.2
Queue Delay	0.0	0.0	1.7	0.0	0.0	0.0	0.0
Total Delay	35.3	34.6	37.2	27.9	23.9	23.4	5.2
Queue Length 50th (ft)	17	161	195	15	140	175	6
Queue Length 95th (ft)	46	219	314	m25	225	265	13
Internal Link Dist (ft)		849	235		143		260
Turn Bay Length (ft)	170					110	
Base Capacity (vph)	193	1266	670	246	545	665	480
Starvation Cap Reductn	0	0	99	0	0	0	0
Spillback Cap Reductn	0	54	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.41	0.79	0.15	0.52	0.52	0.15

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	464	0	0	422	34	166	98	328	35	0	31
Future Volume (vph)	28	464	0	0	422	34	166	98	328	35	0	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0	4.0		4.0	
Lane Util. Factor	1.00	0.95			1.00	1.00		1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00			1.00	0.47		1.00	0.92		0.86	
Flpb, ped/bikes	1.00	1.00			1.00	1.00		0.83	1.00		0.98	
Frt	1.00	1.00			1.00	0.85		1.00	0.85		0.94	
Flt Protected	0.95	1.00			1.00	1.00		0.97	1.00		0.97	
Satd. Flow (prot)	1562	3166			1676	615		1348	1310		1178	
Flt Permitted	0.29	1.00			1.00	1.00		0.77	1.00		0.78	
Satd. Flow (perm)	484	3166			1676	615		1074	1310		947	
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)	30	494	0	0	449	36	177	104	349	37	0	33
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	30	494	0	0	449	36	0	281	349	0	70	0
Confl. Peds. (#/hr)	134		55	55		134	88		35	35		88
Heavy Vehicles (%)	4%	2%	2%	2%	2%	9%	3%	2%	2%	18%	2%	3%
Bus Blockages (#/hr)	0	3	3	0	0	3	0	0	0	0	0	0
Turn Type	Perm	NA			NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6					2	4		4	8		
Actuated Green, G (s)	46.0	46.0			46.0	46.0		59.0	59.0		59.0	
Effective Green, g (s)	48.0	48.0			48.0	48.0		61.0	61.0		61.0	
Actuated g/C Ratio	0.40	0.40			0.40	0.40		0.51	0.51		0.51	
Clearance Time (s)	6.0	6.0			6.0	6.0		6.0	6.0		6.0	
Lane Grp Cap (vph)	193	1266			670	246		545	665		481	
v/s Ratio Prot		0.16			c0.27							
v/s Ratio Perm	0.06					0.06		0.26	c0.27		0.07	
v/c Ratio	0.16	0.39			0.67	0.15		0.52	0.52		0.15	
Uniform Delay, d1	23.0	25.6			29.5	22.9		19.7	19.8		15.7	
Progression Factor	1.40	1.30			1.03	1.13		1.00	1.00		0.28	
Incremental Delay, d2	1.7	0.9			4.3	1.0		3.5	2.9		0.6	
Delay (s)	33.9	34.2			34.7	26.9		23.1	22.7		5.1	
Level of Service	C	C			C	C		C	C		A	
Approach Delay (s)		34.2			34.1			22.9			5.1	
Approach LOS		C			C			C			A	

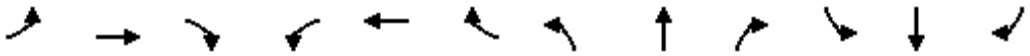
Intersection Summary			
HCM 2000 Control Delay	28.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	64.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	338	506	216	92	906	23	525
v/c Ratio	0.46	0.58	0.56	0.59	0.72	0.04	0.54
Control Delay	32.0	10.3	47.1	66.2	34.3	11.9	28.2
Queue Delay	0.0	0.8	0.3	0.0	0.1	0.0	0.3
Total Delay	32.0	11.2	47.4	66.2	34.4	11.9	28.5
Queue Length 50th (ft)	83	45	148	69	307	7	138
Queue Length 95th (ft)	113	346	231	#129	385	20	178
Internal Link Dist (ft)	235		274		428		387
Turn Bay Length (ft)		220		190		190	
Base Capacity (vph)	728	877	385	157	1258	606	979
Starvation Cap Reductn	0	148	0	0	0	0	0
Spillback Cap Reductn	0	0	19	0	15	0	108
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.69	0.59	0.59	0.73	0.04	0.60

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	335	501	2	212	91	220	677	23	124	377	19
Future Volume (vph)	0	335	501	2	212	91	220	677	23	124	377	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0	4.0		4.0	
Lane Util. Factor		0.95	1.00		1.00	1.00		0.95	1.00		0.91	
Frpb, ped/bikes		1.00	0.95		1.00	1.00		1.00	0.77		0.99	
Flpb, ped/bikes		1.00	1.00		1.00	1.00		0.99	1.00		0.99	
Frt		1.00	0.85		1.00	0.85		1.00	0.85		0.99	
Flt Protected		1.00	1.00		1.00	1.00		0.99	1.00		0.99	
Satd. Flow (prot)		3124	1356		1659	1346		3121	1101		4404	
Flt Permitted		1.00	1.00		1.00	1.00		0.56	1.00		0.69	
Satd. Flow (perm)		3124	1356		1654	1346		1763	1101		3076	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	0	338	506	2	214	92	222	684	23	125	381	19
RTOR Reduction (vph)	0	0	18	0	0	0	0	0	1	0	1	0
Lane Group Flow (vph)	0	338	488	0	216	92	0	906	22	0	524	0
Confl. Peds. (#/hr)	181		81	81		181	105		128	128		105
Heavy Vehicles (%)	2%	4%	2%	2%	3%	8%	2%	2%	2%	4%	2%	2%
Turn Type		NA	pm+ov	Perm	NA	Over	Prot	NA	Perm	pm+pt	NA	
Protected Phases		8	1		4	5	1	6		5	2	
Permitted Phases			8	4					6	2		
Actuated Green, G (s)		26.0	72.0		26.0	12.0		64.0	64.0		30.0	
Effective Green, g (s)		28.0	76.0		28.0	14.0		66.0	66.0		32.0	
Actuated g/C Ratio		0.23	0.63		0.23	0.12		0.55	0.55		0.27	
Clearance Time (s)		6.0	6.0		6.0	6.0		6.0	6.0		6.0	
Lane Grp Cap (vph)		728	904		385	157		1512	605		975	
v/s Ratio Prot		0.11	c0.22			0.07		c0.24			c0.06	
v/s Ratio Perm			0.14		0.13			c0.09	0.02		0.08	
v/c Ratio		0.46	0.54		0.56	0.59		0.60	0.04		0.54	
Uniform Delay, d1		39.6	12.3		40.6	50.3		18.1	12.4		37.7	
Progression Factor		0.75	0.74		1.00	1.00		1.00	1.00		0.67	
Incremental Delay, d2		2.0	2.1		5.8	15.0		1.8	0.1		2.1	
Delay (s)		31.8	11.1		46.4	65.3		19.9	12.5		27.2	
Level of Service		C	B		D	E		B	B		C	
Approach Delay (s)		19.4			52.0			19.7			27.2	
Approach LOS		B			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	24.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	88.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

G. Background Development Trips

Trip Generation- 2607 Connecticut Avenue

Approximately 28 units

Step 1: Base trip generation using ITEs' 11th Edition *Trip Generation*

Land Use	Land Use Code	Quantity (x)	AM Peak Hour			PM Peak Hour			Saturday Peak Hour			Weekday
			In	Out	Total	In	Out	Total	In	Out	Total	Total
Multifamily Housing (Mid-Rise) (4-10	221	28 du	5 veh/hr	4 veh/hr	9 veh/hr	3 veh/hr	5 veh/hr	8 veh/hr	6 veh/hr	5 veh/hr	11 veh/hr	133 veh
		Calculation Details:	*56%*	*44%*	*=0.32X*	*43%*	*57%*	*=0.29X*	*51%*	*49%*	*Ln(T)=1Ln(X)-0.91*	*=4.75X*

Note: Setting used for trip generation is General Urban/Suburban.

Step 2: Convert to people per hour, before applying mode splits

Land Use	People/Car (from 2022 DDOT CTR Guidance, Table 13)	AM Peak Hour			PM Peak Hour			Saturday Peak Hour			
		In	Out	Total	In	Out	Total	In	Out	Total	Total
Multifamily Housing (Mid-Rise) (4-10	1.18 ppl/veh	6 ppl/hr	5 ppl/hr	11 ppl/hr	4 ppl/hr	5 ppl/hr	9 ppl/hr	7 ppl/hr	6 ppl/hr	13 ppl/hr	157 ppl

Step 3: Split between modes, per assumed Mode Splits

Land Use	Mode	Split	AM Peak Hour			PM Peak Hour			Saturday Peak Hour			
			In	Out	Total	In	Out	Total	In	Out	Total	Total
Multifamily Housing (Mid-Rise) (4-10	Auto	55%	3 ppl/hr	3 ppl/hr	6 ppl/hr	2 ppl/hr	3 ppl/hr	5 ppl/hr	4 ppl/hr	3 ppl/hr	7 ppl/hr	86 ppl
Multifamily Housing (Mid-Rise) (4-10	Transit	40%	2 ppl/hr	2 ppl/hr	4 ppl/hr	2 ppl/hr	2 ppl/hr	4 ppl/hr	3 ppl/hr	2 ppl/hr	5 ppl/hr	63 ppl
Multifamily Housing (Mid-Rise) (4-10	Bike	2%	0 ppl/hr	0 ppl/hr	0 ppl/hr	0 ppl/hr	0 ppl/hr	0 ppl/hr	0 ppl/hr	0 ppl/hr	0 ppl/hr	3 ppl
Multifamily Housing (Mid-Rise) (4-10	Walk	3%	1 ppl/hr	0 ppl/hr	1 ppl/hr	0 ppl/hr	0 ppl/hr	0 ppl/hr	0 ppl/hr	1 ppl/hr	1 ppl/hr	5 ppl

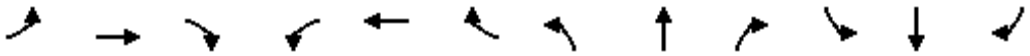
Step 4: Convert auto trips back to vehicles/hour

Land Use	People/Car (from 2022 DDOT CTR Guidance, Table 13)	AM Peak Hour			PM Peak Hour			Saturday Peak Hour			
		In	Out	Total	In	Out	Total	In	Out	Total	Total
Multifamily Housing (Mid-Rise) (4-10	1.18 ppl/veh	3 veh/hr	2 veh/hr	5 veh/hr	2 veh/hr	2 veh/hr	4 veh/hr	3 veh/hr	3 veh/hr	6 veh/hr	73 veh

Trip Gen Summary for Proposed Development

Mode	AM Peak Hour			PM Peak Hour			Saturday Peak Hour			
	In	Out	Total	In	Out	Total	In	Out	Total	Total
Auto	3 veh/hr	2 veh/hr	5 veh/hr	2 veh/hr	2 veh/hr	4 veh/hr	3 veh/hr	3 veh/hr	6 veh/hr	73 veh
Transit	2 ppl/hr	2 ppl/hr	4 ppl/hr	2 ppl/hr	2 ppl/hr	4 ppl/hr	3 ppl/hr	2 ppl/hr	5 ppl/hr	63 veh
Bike	0 ppl/hr	0 ppl/hr	0 ppl/hr	0 ppl/hr	0 ppl/hr	0 ppl/hr	0 ppl/hr	0 ppl/hr	0 ppl/hr	3 veh
Walk	1 ppl/hr	0 ppl/hr	1 ppl/hr	0 ppl/hr	0 ppl/hr	0 ppl/hr	0 ppl/hr	1 ppl/hr	1 ppl/hr	5 veh

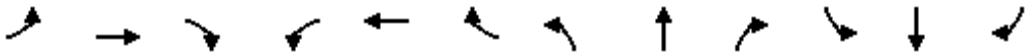
H. Future (2025) Conditions without Development Capacity Analysis Worksheets



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	7	37	10	28	72	2	18	30	51	26	58	17
Future Volume (vph)	7	37	10	28	72	2	18	30	51	26	58	17
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	8	44	12	33	85	2	21	35	60	31	68	20

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	64	120	116	119
Volume Left (vph)	8	33	21	31
Volume Right (vph)	12	2	60	20
Hadj (s)	-0.04	0.08	-0.16	0.05
Departure Headway (s)	4.6	4.6	4.3	4.5
Degree Utilization, x	0.08	0.15	0.14	0.15
Capacity (veh/h)	734	735	788	751
Control Delay (s)	8.0	8.4	8.0	8.3
Approach Delay (s)	8.0	8.4	8.0	8.3
Approach LOS	A	A	A	A

Intersection Summary				
Delay	8.2			
Level of Service	A			
Intersection Capacity Utilization	30.2%	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)	1	105	9	13	81	0	8	0	16	59	0	28
Future Volume (Veh/h)	1	105	9	13	81	0	8	0	16	59	0	28
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	1	118	10	15	91	0	9	0	18	66	0	31
Pedestrians		14			37			77			48	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		3.5			3.5			3.5			3.5	
Percent Blockage		1			4			7			5	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					799							
pX, platoon unblocked												
vC, conflicting volume	139			205			363	366	232	344	376	153
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	139			205			363	366	232	344	376	153
tC, single (s)	4.1			4.1			7.1	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	100			99			98	100	97	87	100	96
cM capacity (veh/h)	1378			1266			471	491	713	494	485	841

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	119	10	106	27	97
Volume Left	1	0	15	9	66
Volume Right	0	10	0	18	31
cSH	1378	1700	1266	609	569
Volume to Capacity	0.00	0.01	0.01	0.04	0.17
Queue Length 95th (ft)	0	0	1	3	15
Control Delay (s)	0.1	0.0	1.2	11.2	12.6
Lane LOS	A		A	B	B
Approach Delay (s)	0.1		1.2	11.2	12.6
Approach LOS				B	B

Intersection Summary				
Average Delay	4.6			
Intersection Capacity Utilization	43.2%	ICU Level of Service		A
Analysis Period (min)	15			

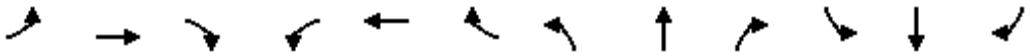
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	181	1	1	113	1	1
Future Volume (Veh/h)	181	1	1	113	1	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	213	1	1	133	1	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				302		
pX, platoon unblocked						
vC, conflicting volume			214		348	214
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			214		348	214
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	100
cM capacity (veh/h)			1356		648	827

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	214	134	2
Volume Left	0	1	1
Volume Right	1	0	1
cSH	1700	1356	727
Volume to Capacity	0.13	0.00	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.1	10.0
Lane LOS		A	A
Approach Delay (s)	0.0	0.1	10.0
Approach LOS			A

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	20.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBT	NBT	SBT
Lane Group Flow (vph)	46	160	60	624	1225
v/c Ratio	0.17	0.41	0.25	0.29	0.50
Control Delay	41.1	32.0	42.9	2.0	18.2
Queue Delay	0.0	0.0	0.0	0.2	0.0
Total Delay	41.1	32.0	42.9	2.2	18.2
Queue Length 50th (ft)	30	88	39	9	209
Queue Length 95th (ft)	63	142	78	20	241
Internal Link Dist (ft)	222		292	102	141
Turn Bay Length (ft)		180			
Base Capacity (vph)	267	387	244	2172	2427
Starvation Cap Reductn	0	0	0	770	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.17	0.41	0.25	0.45	0.50

Intersection Summary



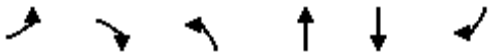
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	11	141	22	16	15	80	464	5	0	1061	17
Future Volume (vph)	29	11	141	22	16	15	80	464	5	0	1061	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	4.0		5.0			4.0			4.0	
Lane Util. Factor		1.00	1.00		1.00			0.91			0.91	
Frpb, ped/bikes		1.00	0.90		0.98			1.00			1.00	
Flpb, ped/bikes		0.97	1.00		0.95			1.00			1.00	
Frt		1.00	0.85		0.96			1.00			1.00	
Flt Protected		0.97	1.00		0.98			0.99			1.00	
Satd. Flow (prot)		1563	1258		1306			4424			4478	
Flt Permitted		0.79	1.00		0.88			0.69			1.00	
Satd. Flow (perm)		1282	1258		1172			3071			4478	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	33	12	160	25	18	17	91	527	6	0	1206	19
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	46	160	0	60	0	0	624	0	0	1224	0
Confl. Peds. (#/hr)	34		86	86		34	23		59	59		23
Heavy Vehicles (%)	2%	2%	4%	5%	2%	2%	5%	3%	20%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	6	6	0	6	6
Parking (#/hr)				0	0	0						
Turn Type	Perm	NA	pm+ov	Perm	NA		pm+pt	NA			NA	
Protected Phases		4	5		8		5	2			6	
Permitted Phases	4		4	8			2					
Actuated Green, G (s)		23.0	32.0		23.0			78.0			63.0	
Effective Green, g (s)		25.0	36.0		25.0			80.0			65.0	
Actuated g/C Ratio		0.21	0.30		0.21			0.67			0.54	
Clearance Time (s)		7.0	6.0		7.0			6.0			6.0	
Lane Grp Cap (vph)		267	377		244			2171			2425	
v/s Ratio Prot			c0.04					0.03			c0.27	
v/s Ratio Perm		0.04	0.09		0.05			0.17				
v/c Ratio		0.17	0.42		0.25			0.29			0.50	
Uniform Delay, d1		39.0	33.7		39.6			8.2			17.3	
Progression Factor		1.00	1.00		1.00			0.20			1.00	
Incremental Delay, d2		1.4	3.5		2.4			0.3			0.8	
Delay (s)		40.4	37.2		42.0			2.0			18.1	
Level of Service		D	D		D			A			B	
Approach Delay (s)		37.9			42.0			2.0			18.1	
Approach LOS		D			D			A			B	

Intersection Summary			
HCM 2000 Control Delay	15.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	68.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	NBT	SBT
Lane Group Flow (vph)	48	595	1390
v/c Ratio	0.20	0.20	0.51
Control Delay	35.5	0.5	3.3
Queue Delay	0.0	0.0	0.1
Total Delay	35.5	0.5	3.4
Queue Length 50th (ft)	18	4	31
Queue Length 95th (ft)	43	m4	44
Internal Link Dist (ft)	96	1	1
Turn Bay Length (ft)	150		
Base Capacity (vph)	237	3014	2734
Starvation Cap Reductn	0	0	272
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.20	0.20	0.56

Intersection Summary

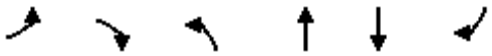
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	27	15	1	523	936	287
Future Volume (vph)	27	15	1	523	936	287
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			5.0	5.0	
Lane Util. Factor	1.00			0.91	0.91	
Frpb, ped/bikes	0.96			1.00	0.88	
Flpb, ped/bikes	1.00			1.00	1.00	
Frt	0.95			1.00	0.96	
Flt Protected	0.97			1.00	1.00	
Satd. Flow (prot)	1177			4532	3859	
Flt Permitted	0.97			0.94	1.00	
Satd. Flow (perm)	1177			4254	3859	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	31	17	1	594	1064	326
RTOR Reduction (vph)	2	0	0	0	0	0
Lane Group Flow (vph)	46	0	0	595	1390	0
Confl. Peds. (#/hr)		55	90			90
Heavy Vehicles (%)	11%	60%	2%	3%	3%	3%
Bus Blockages (#/hr)	0	4	0	0	0	0
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	2	
Permitted Phases			2			
Actuated Green, G (s)	22.0			83.0	83.0	
Effective Green, g (s)	24.0			85.0	85.0	
Actuated g/C Ratio	0.20			0.71	0.71	
Clearance Time (s)	5.0			7.0	7.0	
Lane Grp Cap (vph)	235			3013	2733	
v/s Ratio Prot	c0.04				c0.36	
v/s Ratio Perm				0.14		
v/c Ratio	0.20			0.20	0.51	
Uniform Delay, d1	40.0			5.9	8.0	
Progression Factor	0.85			0.09	0.33	
Incremental Delay, d2	1.9			0.0	0.6	
Delay (s)	36.0			0.5	3.3	
Level of Service	D			A	A	
Approach Delay (s)	36.0			0.5	3.3	
Approach LOS	D			A	A	

Intersection Summary			
HCM 2000 Control Delay	3.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



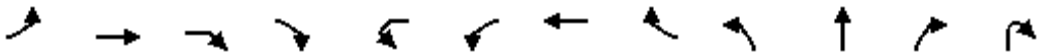
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	1	1	51	288	1
Future Volume (Veh/h)	1	1	1	51	288	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	1	1	1	60	339	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				340	176	
pX, platoon unblocked						
vC, conflicting volume	402	340	340			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	402	340	340			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	604	703	1219			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	2	61	340
Volume Left	1	1	0
Volume Right	1	0	1
cSH	650	1219	1700
Volume to Capacity	0.00	0.00	0.20
Queue Length 95th (ft)	0	0	0
Control Delay (s)	10.6	0.1	0.0
Lane LOS	B	A	
Approach Delay (s)	10.6	0.1	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	26.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBT	NBT	SBT
Lane Group Flow (vph)	515	9	376	7	150
v/c Ratio	0.57	0.03	0.26	0.07	0.61
Control Delay	20.2	12.4	14.3	53.0	57.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	20.2	12.4	14.3	53.0	57.2
Queue Length 50th (ft)	246	3	56	5	108
Queue Length 95th (ft)	339	11	98	20	177
Internal Link Dist (ft)	310		417	213	1015
Turn Bay Length (ft)		570			
Base Capacity (vph)	907	332	1455	116	247
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	0.57	0.03	0.26	0.06	0.61

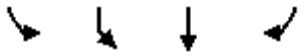
Intersection Summary



Movement	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	NBR2
Lane Configurations												
Traffic Volume (vph)	19	434	5	3	7	16	222	86	4	0	1	1
Future Volume (vph)	19	434	5	3	7	16	222	86	4	0	1	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0				5.0			6.0		
Lane Util. Factor		1.00	1.00				0.95			1.00		
Frpb, ped/bikes		1.00	0.58				1.00			1.00		
Flpb, ped/bikes		1.00	1.00				1.00			1.00		
Frt		1.00	0.85				0.96			0.96		
Flt Protected		1.00	1.00				1.00			0.97		
Satd. Flow (prot)		1667	595				2898			1401		
Flt Permitted		0.97	1.00				0.90			0.97		
Satd. Flow (perm)		1626	595				2605			1401		
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	22	493	6	3	8	18	252	98	5	0	1	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	515	9	0	0	0	376	0	0	7	0	0
Confl. Peds. (#/hr)			55			55			90			
Heavy Vehicles (%)	11%	2%	60%	2%	2%	2%	2%	2%	2%	3%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	3	0	0	0	0
Parking (#/hr)					0	0	0	0	0	0	0	0
Turn Type	Perm	NA	Perm		Perm	Perm	NA		Split	NA		
Protected Phases		6					2		4	4		
Permitted Phases	6		6		2	2						
Actuated Green, G (s)		58.6	58.6				58.6			1.5		
Effective Green, g (s)		60.6	60.6				60.6			3.5		
Actuated g/C Ratio		0.51	0.51				0.51			0.03		
Clearance Time (s)		7.0	7.0				7.0			8.0		
Vehicle Extension (s)		1.0	1.0				1.0			3.0		
Lane Grp Cap (vph)		821	300				1315			40		
v/s Ratio Prot										c0.00		
v/s Ratio Perm		c0.32	0.02				0.14					
v/c Ratio		0.63	0.03				0.29			0.17		
Uniform Delay, d1		21.5	14.9				17.2			56.8		
Progression Factor		1.00	1.00				1.00			1.00		
Incremental Delay, d2		3.6	0.2				0.5			2.1		
Delay (s)		25.1	15.1				17.7			58.9		
Level of Service		C	B				B			E		
Approach Delay (s)		25.0					17.7			58.9		
Approach LOS		C					B			E		

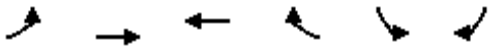
Intersection Summary			
HCM 2000 Control Delay	27.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	60.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	SBL2	SBL	SBT	SBR
Lane Configurations				
Traffic Volume (vph)	125	1	1	5
Future Volume (vph)	125	1	1	5
Ideal Flow (vphpl)	1900	1900	1900	1900
Total Lost time (s)			5.0	
Lane Util. Factor			1.00	
Frpb, ped/bikes			0.99	
Flpb, ped/bikes			1.00	
Frt			0.99	
Flt Protected			0.95	
Satd. Flow (prot)			1413	
Flt Permitted			0.95	
Satd. Flow (perm)			1413	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88
Adj. Flow (vph)	142	1	1	6
RTOR Reduction (vph)	0	0	0	0
Lane Group Flow (vph)	0	0	150	0
Confl. Peds. (#/hr)				90
Heavy Vehicles (%)	2%	2%	3%	3%
Bus Blockages (#/hr)	0	0	0	0
Parking (#/hr)	0	0	0	0
Turn Type	Split	Split	NA	
Protected Phases	3	3	3	
Permitted Phases				
Actuated Green, G (s)			19.0	
Effective Green, g (s)			21.0	
Actuated g/C Ratio			0.18	
Clearance Time (s)			7.0	
Vehicle Extension (s)			1.0	
Lane Grp Cap (vph)			247	
v/s Ratio Prot			c0.11	
v/s Ratio Perm				
v/c Ratio			0.61	
Uniform Delay, d1			45.7	
Progression Factor			1.00	
Incremental Delay, d2			10.6	
Delay (s)			56.3	
Level of Service			E	
Approach Delay (s)			56.3	
Approach LOS			E	

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	692	372	1	1	1
Future Volume (Veh/h)	1	692	372	1	1	1
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	1	814	438	1	1	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)		497	926			
pX, platoon unblocked	0.92				0.82	0.92
vC, conflicting volume	439				1254	438
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	352				996	352
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	100
cM capacity (veh/h)	1115				223	639

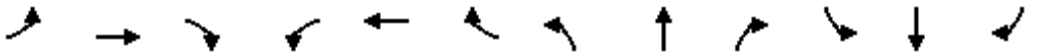
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	815	439	2
Volume Left	1	0	1
Volume Right	0	1	1
cSH	1115	1700	331
Volume to Capacity	0.00	0.26	0.01
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	16.0
Lane LOS	A		C
Approach Delay (s)	0.0	0.0	16.0
Approach LOS			C

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization		51.3%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBL	EBT	WBL	WBT	WBR	SBT
Lane Group Flow (vph)	25	727	249	362	29	348
v/c Ratio	0.09	0.54	0.57	0.35	0.07	0.75
Control Delay	19.1	22.1	10.7	1.4	1.0	34.6
Queue Delay	0.0	0.0	0.8	1.4	0.0	0.0
Total Delay	19.1	22.1	11.4	2.8	1.0	34.6
Queue Length 50th (ft)	10	162	20	10	1	210
Queue Length 95th (ft)	m22	224	m27	m12	m1	#354
Internal Link Dist (ft)		846		235		260
Turn Bay Length (ft)	170					
Base Capacity (vph)	293	1342	440	1023	434	462
Starvation Cap Reductn	0	0	48	455	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.54	0.64	0.64	0.07	0.75

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	493	176	229	333	27	0	0	0	13	269	39
Future Volume (vph)	23	493	176	229	333	27	0	0	0	13	269	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		3.0	4.0	4.0					4.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00					1.00	
Frpb, ped/bikes	1.00	0.98		1.00	1.00	0.54					0.98	
Flpb, ped/bikes	0.73	1.00		1.00	1.00	1.00					1.00	
Frt	1.00	0.96		1.00	1.00	0.85					0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00					1.00	
Satd. Flow (prot)	1137	2983		1593	1660	704					1587	
Flt Permitted	0.55	1.00		0.26	1.00	1.00					1.00	
Satd. Flow (perm)	652	2983		444	1660	704					1587	
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)	25	536	191	249	362	29	0	0	0	14	292	42
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	25	727	0	249	362	29	0	0	0	0	348	0
Confl. Peds. (#/hr)	75		10	10		75	35		36	36		35
Heavy Vehicles (%)	4%	2%	2%	2%	3%	10%	2%	2%	2%	46%	2%	2%
Bus Blockages (#/hr)	0	3	3	0	0	3	0	0	0	0	0	0
Turn Type	Perm	NA		pm+pt	NA	Perm				Perm	NA	
Protected Phases		6		5	2						8	
Permitted Phases	6			2		2				8		
Actuated Green, G (s)	52.0	52.0		72.0	72.0	72.0					33.0	
Effective Green, g (s)	54.0	54.0		74.0	74.0	74.0					35.0	
Actuated g/C Ratio	0.45	0.45		0.62	0.62	0.62					0.29	
Clearance Time (s)	6.0	6.0		5.0	6.0	6.0					6.0	
Lane Grp Cap (vph)	293	1342		436	1023	434					462	
v/s Ratio Prot		0.24		c0.08	0.22							
v/s Ratio Perm	0.04			c0.27		0.04					0.22	
v/c Ratio	0.09	0.54		0.57	0.35	0.07					0.75	
Uniform Delay, d1	18.9	24.0		12.4	11.3	9.2					38.6	
Progression Factor	0.96	0.85		0.81	0.08	0.10					0.62	
Incremental Delay, d2	0.5	1.4		2.5	0.4	0.1					9.8	
Delay (s)	18.5	21.9		12.5	1.4	1.0					33.9	
Level of Service	B	C		B	A	A					C	
Approach Delay (s)		21.8			5.7			0.0			33.9	
Approach LOS		C			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	18.3	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)	13.0
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

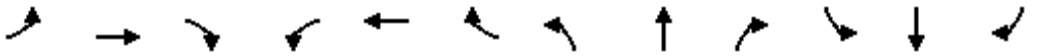
Lane Group	EBT	EBR	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	219	278	436	105	594	29	964
v/c Ratio	0.21	0.43	0.78	0.31	1.33	0.08	0.57
Control Delay	40.2	18.7	46.6	39.6	201.5	27.9	15.8
Queue Delay	0.0	0.2	0.0	0.0	0.0	0.0	0.0
Total Delay	40.2	18.9	46.6	39.6	201.5	27.9	15.8
Queue Length 50th (ft)	62	78	301	66	~314	14	73
Queue Length 95th (ft)	m100	m95	#436	119	#434	38	79
Internal Link Dist (ft)	235		274		428		387
Turn Bay Length (ft)		220		190		190	
Base Capacity (vph)	1047	653	560	339	448	386	1683
Starvation Cap Reductn	0	69	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.48	0.78	0.31	1.33	0.08	0.57

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

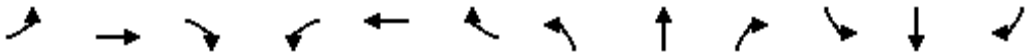
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	210	267	3	416	101	157	413	28	144	771	11
Future Volume (vph)	0	210	267	3	416	101	157	413	28	144	771	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0	4.0		4.0	
Lane Util. Factor		0.95	1.00		1.00	1.00		0.95	1.00		0.91	
Frpb, ped/bikes		1.00	0.93		1.00	1.00		1.00	0.89		1.00	
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00	1.00		0.99	
Frt		1.00	0.85		1.00	0.85		1.00	0.85		1.00	
Flt Protected		1.00	1.00		1.00	1.00		0.99	1.00		0.99	
Satd. Flow (prot)		3065	1324		1643	1358		3134	1247		4430	
Flt Permitted		1.00	1.00		1.00	1.00		0.57	1.00		0.77	
Satd. Flow (perm)		3065	1324		1641	1358		1825	1247		3422	
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	219	278	3	433	105	164	430	29	150	803	11
RTOR Reduction (vph)	0	0	14	0	0	0	0	0	2	0	1	0
Lane Group Flow (vph)	0	219	264	0	436	105	0	594	27	0	963	0
Confl. Peds. (#/hr)	127		60	60		127	60		57	57		60
Heavy Vehicles (%)	2%	6%	2%	2%	4%	7%	2%	2%	4%	7%	3%	13%
Turn Type		NA	pm+ov	Perm	NA	Over	Prot	NA	Perm	pm+pt	NA	
Protected Phases		8	1		4	5	1	6		5	2	
Permitted Phases			8	4					6	2		
Actuated Green, G (s)		39.0	54.0		39.0	28.0		35.0	35.0		48.0	
Effective Green, g (s)		41.0	58.0		41.0	30.0		37.0	37.0		50.0	
Actuated g/C Ratio		0.34	0.48		0.34	0.25		0.31	0.31		0.42	
Clearance Time (s)		6.0	6.0		6.0	6.0		6.0	6.0		6.0	
Lane Grp Cap (vph)		1047	684		560	339		748	384		1677	
v/s Ratio Prot		0.07	0.05			0.08		c0.11			c0.14	
v/s Ratio Perm			0.14		c0.27			c0.13	0.02		0.10	
v/c Ratio		0.21	0.39		0.78	0.31		0.79	0.07		0.57	
Uniform Delay, d1		28.0	19.7		35.4	36.6		38.0	29.3		26.8	
Progression Factor		1.41	1.03		1.00	1.00		1.00	1.00		0.51	
Incremental Delay, d2		0.4	1.4		10.2	2.4		8.5	0.4		1.3	
Delay (s)		39.9	21.7		45.7	38.9		46.5	29.7		15.0	
Level of Service		D	C		D	D		D	C		B	
Approach Delay (s)		29.7			44.4			45.7			15.0	
Approach LOS		C			D			D			B	

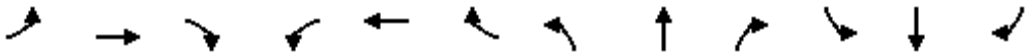
Intersection Summary			
HCM 2000 Control Delay	31.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	6	29	7	7	117	1	13	32	26	25	30	7
Future Volume (vph)	6	29	7	7	117	1	13	32	26	25	30	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)	6	30	7	7	122	1	14	33	27	26	31	7

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	43	130	74	64
Volume Left (vph)	6	7	14	26
Volume Right (vph)	7	1	27	7
Hadj (s)	-0.04	0.04	-0.06	0.06
Departure Headway (s)	4.3	4.3	4.3	4.4
Degree Utilization, x	0.05	0.16	0.09	0.08
Capacity (veh/h)	797	809	795	766
Control Delay (s)	7.6	8.1	7.7	7.8
Approach Delay (s)	7.6	8.1	7.7	7.8
Approach LOS	A	A	A	A

Intersection Summary				
Delay	7.9			
Level of Service	A			
Intersection Capacity Utilization	28.1%	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)	0	73	14	23	132	1	8	0	12	18	4	14
Future Volume (Veh/h)	0	73	14	23	132	1	8	0	12	18	4	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	0	86	16	27	155	1	9	0	14	21	5	16
Pedestrians		8			41			77			19	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		3.5			3.5			3.5			3.5	
Percent Blockage		1			4			7			2	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					799							
pX, platoon unblocked												
vC, conflicting volume	175			179			399	392	204	370	408	182
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	175			179			399	392	204	370	408	182
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.8	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.2	3.3
p0 queue free %	100			98			98	100	98	96	99	98
cM capacity (veh/h)	1376			1294			460	485	745	498	445	838

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	86	16	183	23	42
Volume Left	0	0	27	9	21
Volume Right	0	16	1	14	16
cSH	1700	1700	1294	600	579
Volume to Capacity	0.05	0.01	0.02	0.04	0.07
Queue Length 95th (ft)	0	0	2	3	6
Control Delay (s)	0.0	0.0	1.3	11.2	11.7
Lane LOS			A	B	B
Approach Delay (s)	0.0		1.3	11.2	11.7
Approach LOS				B	B

Intersection Summary				
Average Delay	2.8			
Intersection Capacity Utilization	39.6%	ICU Level of Service		A
Analysis Period (min)	15			

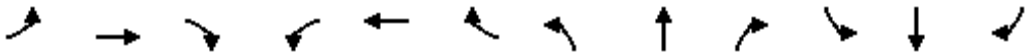
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	106	1	1	166	1	1
Future Volume (Veh/h)	106	1	1	166	1	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	125	1	1	195	1	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				302		
pX, platoon unblocked						
vC, conflicting volume			126		322	126
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			126		322	126
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	100
cM capacity (veh/h)			1460		671	925

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	126	196	2
Volume Left	0	1	1
Volume Right	1	0	1
cSH	1700	1460	778
Volume to Capacity	0.07	0.00	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	9.6
Lane LOS		A	A
Approach Delay (s)	0.0	0.0	9.6
Approach LOS			A

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	20.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBT	NBT	SBT
Lane Group Flow (vph)	30	82	142	950	487
v/c Ratio	0.10	0.12	0.53	0.38	0.34
Control Delay	36.6	11.4	47.7	4.8	32.2
Queue Delay	0.0	0.0	0.0	0.2	0.0
Total Delay	36.6	11.4	47.7	5.0	32.2
Queue Length 50th (ft)	18	26	96	34	105
Queue Length 95th (ft)	44	49	165	41	138
Internal Link Dist (ft)	222		292	175	141
Turn Bay Length (ft)		180			
Base Capacity (vph)	294	705	270	2513	1425
Starvation Cap Reductn	0	0	0	680	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.10	0.12	0.53	0.52	0.34

Intersection Summary

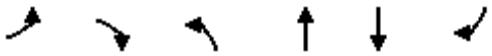


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	6	77	62	35	37	121	766	6	0	448	9
Future Volume (vph)	23	6	77	62	35	37	121	766	6	0	448	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	4.0		5.0			4.0			4.0	
Lane Util. Factor		1.00	1.00		1.00			0.91			0.91	
Frpb, ped/bikes		1.00	0.93		0.97			1.00			1.00	
Flpb, ped/bikes		0.95	1.00		0.94			1.00			1.00	
Frt		1.00	0.85		0.96			1.00			1.00	
Flt Protected		0.96	1.00		0.98			0.99			1.00	
Satd. Flow (prot)		1538	1324		1294			4507			4500	
Flt Permitted		0.76	1.00		0.85			0.78			1.00	
Satd. Flow (perm)		1220	1324		1119			3523			4500	
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)	24	6	82	66	37	39	129	815	6	0	477	10
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	30	82	0	142	0	0	950	0	0	486	0
Confl. Peds. (#/hr)	53		93	93		53	24		95	95		24
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	11%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	6	0	0	6
Parking (#/hr)				0	0	0						
Turn Type	Perm	NA	pm+ov	Perm	NA		pm+pt	NA			NA	
Protected Phases		4	5		8		5	2			6	
Permitted Phases	4		4	8			2					
Actuated Green, G (s)		27.0	59.0		27.0			74.0			36.0	
Effective Green, g (s)		29.0	63.0		29.0			76.0			38.0	
Actuated g/C Ratio		0.24	0.52		0.24			0.63			0.32	
Clearance Time (s)		7.0	6.0		7.0			6.0			6.0	
Lane Grp Cap (vph)		294	695		270			2510			1425	
v/s Ratio Prot			0.03					c0.11			0.11	
v/s Ratio Perm		0.02	0.03		c0.13			c0.13				
v/c Ratio		0.10	0.12		0.53			0.38			0.34	
Uniform Delay, d1		35.4	14.4		39.5			10.6			31.4	
Progression Factor		1.00	1.00		1.00			0.39			1.00	
Incremental Delay, d2		0.7	0.3		7.2			0.4			0.7	
Delay (s)		36.1	14.8		46.7			4.6			32.1	
Level of Service		D	B		D			A			C	
Approach Delay (s)		20.5			46.7			4.6			32.1	
Approach LOS		C			D			A			C	

Intersection Summary			
HCM 2000 Control Delay	17.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

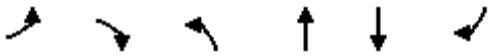
Lane Group	EBL	NBT	SBT
Lane Group Flow (vph)	163	843	629
v/c Ratio	0.40	0.31	0.24
Control Delay	36.0	4.2	3.5
Queue Delay	0.0	0.0	0.2
Total Delay	36.0	4.2	3.7
Queue Length 50th (ft)	89	28	28
Queue Length 95th (ft)	179	37	35
Internal Link Dist (ft)	96	1	175
Turn Bay Length (ft)	150		
Base Capacity (vph)	405	2688	2628
Starvation Cap Reductn	0	0	1174
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.40	0.31	0.43

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	110	42	1	783	531	54
Future Volume (vph)	110	42	1	783	531	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			5.0	5.0	
Lane Util. Factor	1.00			0.91	0.91	
Frpb, ped/bikes	0.92			1.00	0.94	
Flpb, ped/bikes	1.00			1.00	1.00	
Frt	0.96			1.00	0.99	
Flt Protected	0.97			1.00	1.00	
Satd. Flow (prot)	1421			4575	4206	
Flt Permitted	0.97			0.94	1.00	
Satd. Flow (perm)	1421			4299	4206	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	118	45	1	842	571	58
RTOR Reduction (vph)	3	0	0	0	0	0
Lane Group Flow (vph)	160	0	0	843	629	0
Confl. Peds. (#/hr)	1	133	211			211
Heavy Vehicles (%)	2%	7%	2%	2%	2%	13%
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	2	
Permitted Phases			2			
Actuated Green, G (s)	32.0			73.0	73.0	
Effective Green, g (s)	34.0			75.0	75.0	
Actuated g/C Ratio	0.28			0.62	0.62	
Clearance Time (s)	5.0			7.0	7.0	
Lane Grp Cap (vph)	402			2686	2628	
v/s Ratio Prot	c0.11				0.15	
v/s Ratio Perm				c0.20		
v/c Ratio	0.40			0.31	0.24	
Uniform Delay, d1	34.7			10.5	9.9	
Progression Factor	0.96			0.37	0.33	
Incremental Delay, d2	2.8			0.2	0.2	
Delay (s)	36.1			4.1	3.5	
Level of Service	D			A	A	
Approach Delay (s)	36.1			4.1	3.5	
Approach LOS	D			A	A	

Intersection Summary			
HCM 2000 Control Delay	7.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	40.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



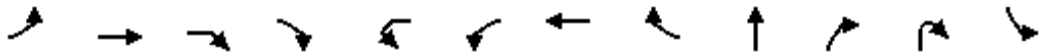
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	1	1	152	55	1
Future Volume (Veh/h)	1	1	1	152	55	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	1	1	1	179	65	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				340	176	
pX, platoon unblocked						
vC, conflicting volume	246	66	66			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	246	66	66			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	741	998	1536			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	2	180	66
Volume Left	1	1	0
Volume Right	1	0	1
cSH	851	1536	1700
Volume to Capacity	0.00	0.00	0.04
Queue Length 95th (ft)	0	0	0
Control Delay (s)	9.2	0.0	0.0
Lane LOS	A	A	
Approach Delay (s)	9.2	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	19.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBT	NBT	SBT
Lane Group Flow (vph)	367	6	538	7	80
v/c Ratio	0.40	0.01	0.34	0.07	0.47
Control Delay	16.7	11.8	11.1	53.2	59.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	16.7	11.8	11.1	53.2	59.0
Queue Length 50th (ft)	154	2	72	5	60
Queue Length 95th (ft)	225	8	136	21	108
Internal Link Dist (ft)	310		415	213	1015
Turn Bay Length (ft)		570			
Base Capacity (vph)	921	744	1577	107	271
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	0.40	0.01	0.34	0.07	0.30

Intersection Summary



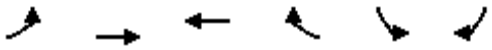
Movement	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBT	NBR	NBR2	SBL2
Lane Configurations												
Traffic Volume (vph)	8	329	5	1	5	11	399	80	3	3	1	64
Future Volume (vph)	8	329	5	1	5	11	399	80	3	3	1	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0				5.0		6.0			
Lane Util. Factor		1.00	1.00				0.95		1.00			
Frpb, ped/bikes		1.00	0.94				0.98		0.82			
Flpb, ped/bikes		1.00	1.00				1.00		1.00			
Frt		1.00	0.85				0.98		0.92			
Flt Protected		1.00	1.00				1.00		1.00			
Satd. Flow (prot)		1673	1334				3011		1143			
Flt Permitted		0.98	1.00				0.94		1.00			
Satd. Flow (perm)		1650	1334				2824		1143			
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)	9	358	5	1	5	12	434	87	3	3	1	70
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	367	6	0	0	0	538	0	7	0	0	0
Confl. Peds. (#/hr)	14		6			6		14		18		18
Heavy Vehicles (%)	2%	2%	2%	2%	2%	43%	2%	4%	2%	2%	2%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	3	0	0	0	0
Parking (#/hr)									0	0	0	
Turn Type	Perm	NA	Perm		Perm	Perm	NA		NA			Split
Protected Phases		6					2		4			3
Permitted Phases	6		6		2	2						
Actuated Green, G (s)		57.2	57.2				57.2		1.6			
Effective Green, g (s)		59.2	59.2				59.2		3.6			
Actuated g/C Ratio		0.49	0.49				0.49		0.03			
Clearance Time (s)		7.0	7.0				7.0		8.0			
Vehicle Extension (s)		1.0	1.0				1.0		3.0			
Lane Grp Cap (vph)		814	658				1393		34			
v/s Ratio Prot									c0.01			
v/s Ratio Perm		c0.22	0.00				0.19					
v/c Ratio		0.45	0.01				0.39		0.21			
Uniform Delay, d1		19.8	15.5				19.0		56.8			
Progression Factor		1.00	1.00				0.73		1.00			
Incremental Delay, d2		1.8	0.0				0.7		3.0			
Delay (s)		21.6	15.5				14.5		59.8			
Level of Service		C	B				B		E			
Approach Delay (s)		21.5					14.5		59.8			
Approach LOS		C					B		E			

Intersection Summary			
HCM 2000 Control Delay	20.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	48.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBT	SBR
Lane Configurations			
Traffic Volume (vph)	1	1	7
Future Volume (vph)	1	1	7
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)		5.0	
Lane Util. Factor		1.00	
Frpb, ped/bikes		0.99	
Flpb, ped/bikes		1.00	
Frt		0.99	
Flt Protected		0.96	
Satd. Flow (prot)		1554	
Flt Permitted		0.96	
Satd. Flow (perm)		1554	
Peak-hour factor, PHF	0.92	0.92	0.92
Adj. Flow (vph)	1	1	8
RTOR Reduction (vph)	0	0	0
Lane Group Flow (vph)	0	80	0
Confl. Peds. (#/hr)			21
Heavy Vehicles (%)	2%	2%	2%
Bus Blockages (#/hr)	0	0	0
Parking (#/hr)			
Turn Type	Split	NA	
Protected Phases	3	3	
Permitted Phases			
Actuated Green, G (s)		9.2	
Effective Green, g (s)		11.2	
Actuated g/C Ratio		0.09	
Clearance Time (s)		7.0	
Vehicle Extension (s)		1.0	
Lane Grp Cap (vph)		145	
v/s Ratio Prot		c0.05	
v/s Ratio Perm			
v/c Ratio		0.55	
Uniform Delay, d1		52.0	
Progression Factor		1.00	
Incremental Delay, d2		2.6	
Delay (s)		54.6	
Level of Service		D	
Approach Delay (s)		54.6	
Approach LOS		D	

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	494	622	1	1	1
Future Volume (Veh/h)	1	494	622	1	1	1
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	1	581	732	1	1	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)		495	929			
pX, platoon unblocked	0.79				0.85	0.79
vC, conflicting volume	733				1316	732
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	528				937	527
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	100
cM capacity (veh/h)	820				251	435

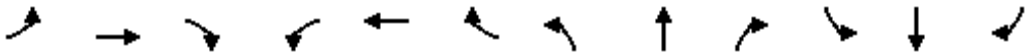
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	582	733	2
Volume Left	1	0	1
Volume Right	0	1	1
cSH	820	1700	318
Volume to Capacity	0.00	0.43	0.01
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	16.4
Lane LOS	A		C
Approach Delay (s)	0.0	0.0	16.4
Approach LOS			C

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization		46.4%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBL	EBT	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	30	496	451	36	282	351	70
v/c Ratio	0.16	0.39	0.67	0.15	0.52	0.53	0.15
Control Delay	35.3	34.5	35.5	27.9	23.9	23.4	5.2
Queue Delay	0.0	0.0	1.8	0.0	0.0	0.0	0.0
Total Delay	35.3	34.5	37.3	27.9	23.9	23.4	5.2
Queue Length 50th (ft)	17	162	196	15	141	176	6
Queue Length 95th (ft)	47	221	315	m26	226	268	13
Internal Link Dist (ft)		849	235		143		260
Turn Bay Length (ft)	170					110	
Base Capacity (vph)	192	1266	670	246	545	665	481
Starvation Cap Reductn	0	0	99	0	0	0	0
Spillback Cap Reductn	0	54	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.41	0.79	0.15	0.52	0.53	0.15

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	466	0	0	424	34	167	98	330	35	0	31
Future Volume (vph)	28	466	0	0	424	34	167	98	330	35	0	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0	4.0		4.0	
Lane Util. Factor	1.00	0.95			1.00	1.00		1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00			1.00	0.47		1.00	0.92		0.86	
Flpb, ped/bikes	1.00	1.00			1.00	1.00		0.83	1.00		0.98	
Frt	1.00	1.00			1.00	0.85		1.00	0.85		0.94	
Flt Protected	0.95	1.00			1.00	1.00		0.97	1.00		0.97	
Satd. Flow (prot)	1562	3166			1676	615		1347	1310		1178	
Flt Permitted	0.29	1.00			1.00	1.00		0.77	1.00		0.78	
Satd. Flow (perm)	481	3166			1676	615		1073	1310		946	
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)	30	496	0	0	451	36	178	104	351	37	0	33
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	30	496	0	0	451	36	0	282	351	0	70	0
Confl. Peds. (#/hr)	134		55	55		134	88		35	35		88
Heavy Vehicles (%)	4%	2%	2%	2%	2%	9%	3%	2%	2%	18%	2%	3%
Bus Blockages (#/hr)	0	3	3	0	0	3	0	0	0	0	0	0
Turn Type	Perm	NA			NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6					2	4		4	8		
Actuated Green, G (s)	46.0	46.0			46.0	46.0		59.0	59.0		59.0	
Effective Green, g (s)	48.0	48.0			48.0	48.0		61.0	61.0		61.0	
Actuated g/C Ratio	0.40	0.40			0.40	0.40		0.51	0.51		0.51	
Clearance Time (s)	6.0	6.0			6.0	6.0		6.0	6.0		6.0	
Lane Grp Cap (vph)	192	1266			670	246		545	665		480	
v/s Ratio Prot		0.16			c0.27							
v/s Ratio Perm	0.06					0.06		0.26	c0.27		0.07	
v/c Ratio	0.16	0.39			0.67	0.15		0.52	0.53		0.15	
Uniform Delay, d1	23.0	25.6			29.6	22.9		19.7	19.8		15.7	
Progression Factor	1.39	1.30			1.03	1.13		1.00	1.00		0.28	
Incremental Delay, d2	1.7	0.9			4.3	1.0		3.5	3.0		0.6	
Delay (s)	33.8	34.2			34.7	26.9		23.2	22.8		5.1	
Level of Service	C	C			C	C		C	C		A	
Approach Delay (s)		34.2			34.1			23.0			5.1	
Approach LOS		C			C			C			A	

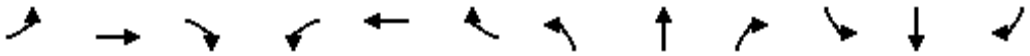
Intersection Summary			
HCM 2000 Control Delay	28.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	339	508	217	92	909	23	530
v/c Ratio	0.47	0.58	0.56	0.59	0.72	0.04	0.54
Control Delay	31.9	10.5	47.2	66.2	34.4	11.9	28.4
Queue Delay	0.0	0.8	0.3	0.0	0.1	0.0	0.3
Total Delay	31.9	11.3	47.5	66.2	34.5	11.9	28.7
Queue Length 50th (ft)	83	46	149	69	308	7	140
Queue Length 95th (ft)	113	349	232	#129	387	20	180
Internal Link Dist (ft)	235		274		428		387
Turn Bay Length (ft)		220		190		190	
Base Capacity (vph)	728	877	385	157	1258	606	979
Starvation Cap Reductn	0	148	0	0	0	0	0
Spillback Cap Reductn	0	0	20	0	16	0	108
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.70	0.59	0.59	0.73	0.04	0.61

Intersection Summary

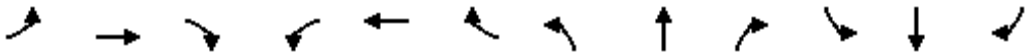
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	336	503	2	213	91	221	679	23	124	381	20
Future Volume (vph)	0	336	503	2	213	91	221	679	23	124	381	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0	4.0		4.0	
Lane Util. Factor		0.95	1.00		1.00	1.00		0.95	1.00		0.91	
Frpb, ped/bikes		1.00	0.95		1.00	1.00		1.00	0.77		0.99	
Flpb, ped/bikes		1.00	1.00		1.00	1.00		0.99	1.00		0.99	
Frt		1.00	0.85		1.00	0.85		1.00	0.85		0.99	
Flt Protected		1.00	1.00		1.00	1.00		0.99	1.00		0.99	
Satd. Flow (prot)		3124	1356		1659	1346		3121	1101		4403	
Flt Permitted		1.00	1.00		1.00	1.00		0.56	1.00		0.69	
Satd. Flow (perm)		3124	1356		1654	1346		1764	1101		3076	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	0	339	508	2	215	92	223	686	23	125	385	20
RTOR Reduction (vph)	0	0	18	0	0	0	0	0	1	0	1	0
Lane Group Flow (vph)	0	339	490	0	217	92	0	909	22	0	529	0
Confl. Peds. (#/hr)	181		81	81		181	105		128	128		105
Heavy Vehicles (%)	2%	4%	2%	2%	3%	8%	2%	2%	2%	4%	2%	2%
Turn Type		NA	pm+ov	Perm	NA	Over	Prot	NA	Perm	pm+pt	NA	
Protected Phases		8	1		4	5	1	6		5	2	
Permitted Phases			8	4					6	2		
Actuated Green, G (s)		26.0	72.0		26.0	12.0		64.0	64.0		30.0	
Effective Green, g (s)		28.0	76.0		28.0	14.0		66.0	66.0		32.0	
Actuated g/C Ratio		0.23	0.63		0.23	0.12		0.55	0.55		0.27	
Clearance Time (s)		6.0	6.0		6.0	6.0		6.0	6.0		6.0	
Lane Grp Cap (vph)		728	904		385	157		1513	605		975	
v/s Ratio Prot		0.11	c0.22			0.07		c0.24			c0.06	
v/s Ratio Perm			0.14		0.13			c0.09	0.02		0.08	
v/c Ratio		0.47	0.54		0.56	0.59		0.60	0.04		0.54	
Uniform Delay, d1		39.6	12.3		40.6	50.3		18.1	12.4		37.7	
Progression Factor		0.75	0.74		1.00	1.00		1.00	1.00		0.67	
Incremental Delay, d2		2.0	2.1		5.9	15.0		1.8	0.1		2.1	
Delay (s)		31.7	11.2		46.5	65.3		19.9	12.5		27.4	
Level of Service		C	B		D	E		B	B		C	
Approach Delay (s)		19.4			52.1			19.7			27.4	
Approach LOS		B			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	25.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	88.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

I. Future (2025) Conditions with Development Capacity Analysis Worksheets



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	7	67	14	28	83	2	20	30	51	26	58	17
Future Volume (vph)	7	67	14	28	83	2	20	30	51	26	58	17
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	8	79	16	33	98	2	24	35	60	31	68	20

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	103	133	119	119
Volume Left (vph)	8	33	24	31
Volume Right (vph)	16	2	60	20
Hadj (s)	-0.03	0.07	-0.15	0.05
Departure Headway (s)	4.6	4.7	4.5	4.7
Degree Utilization, x	0.13	0.17	0.15	0.15
Capacity (veh/h)	727	723	756	722
Control Delay (s)	8.3	8.6	8.3	8.5
Approach Delay (s)	8.3	8.6	8.3	8.5
Approach LOS	A	A	A	A

Intersection Summary				
Delay	8.4			
Level of Service	A			
Intersection Capacity Utilization	32.3%	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)	1	135	9	13	92	0	8	0	16	59	0	28
Future Volume (Veh/h)	1	135	9	13	92	0	8	0	16	59	0	28
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	1	152	10	15	103	0	9	0	18	66	0	31
Pedestrians		14			37			77			48	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		3.5			3.5			3.5			3.5	
Percent Blockage		1			4			7			5	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					799							
pX, platoon unblocked												
vC, conflicting volume	151			239			409	412	266	390	422	165
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	151			239			409	412	266	390	422	165
tC, single (s)	4.1			4.1			7.1	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	100			99			98	100	97	86	100	96
cM capacity (veh/h)	1365			1230			439	463	682	460	457	828

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	153	10	118	27	97
Volume Left	1	0	15	9	66
Volume Right	0	10	0	18	31
cSH	1365	1700	1230	576	537
Volume to Capacity	0.00	0.01	0.01	0.05	0.18
Queue Length 95th (ft)	0	0	1	4	16
Control Delay (s)	0.1	0.0	1.1	11.6	13.2
Lane LOS	A		A	B	B
Approach Delay (s)	0.1		1.1	11.6	13.2
Approach LOS				B	B

Intersection Summary				
Average Delay	4.3			
Intersection Capacity Utilization	43.4%	ICU Level of Service		A
Analysis Period (min)	15			

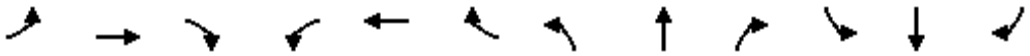
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	181	30	36	113	10	37
Future Volume (Veh/h)	181	30	36	113	10	37
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	213	35	42	133	12	44
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				302		
pX, platoon unblocked						
vC, conflicting volume			248		448	230
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			248		448	230
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		98	95
cM capacity (veh/h)			1318		551	809

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	248	175	56
Volume Left	0	42	12
Volume Right	35	0	44
cSH	1700	1318	735
Volume to Capacity	0.15	0.03	0.08
Queue Length 95th (ft)	0	2	6
Control Delay (s)	0.0	2.1	10.3
Lane LOS		A	B
Approach Delay (s)	0.0	2.1	10.3
Approach LOS			B

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	34.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBT	NBT	SBT
Lane Group Flow (vph)	60	189	60	657	1238
v/c Ratio	0.24	0.47	0.25	0.32	0.51
Control Delay	42.5	30.2	41.5	2.6	18.3
Queue Delay	0.0	0.0	0.0	0.2	0.0
Total Delay	42.5	30.2	41.5	2.8	18.3
Queue Length 50th (ft)	39	94	38	10	212
Queue Length 95th (ft)	78	153	77	33	245
Internal Link Dist (ft)	222		292	102	141
Turn Bay Length (ft)		180			
Base Capacity (vph)	255	401	244	2078	2420
Starvation Cap Reductn	0	0	0	653	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.24	0.47	0.25	0.46	0.51

Intersection Summary



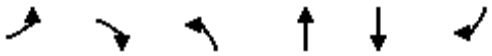
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	11	166	22	16	15	108	465	5	0	1063	26
Future Volume (vph)	41	11	166	22	16	15	108	465	5	0	1063	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	4.0		5.0			4.0			4.0	
Lane Util. Factor		1.00	1.00		1.00			0.91			0.91	
Frpb, ped/bikes		1.00	0.90		0.98			1.00			1.00	
Flpb, ped/bikes		0.96	1.00		0.95			1.00			1.00	
Frt		1.00	0.85		0.96			1.00			1.00	
Flt Protected		0.96	1.00		0.98			0.99			1.00	
Satd. Flow (prot)		1553	1258		1308			4413			4468	
Flt Permitted		0.76	1.00		0.87			0.65			1.00	
Satd. Flow (perm)		1223	1258		1167			2910			4468	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	47	12	189	25	18	17	123	528	6	0	1208	30
RTOR Reduction (vph)	0	0	14	0	2	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	60	175	0	58	0	0	657	0	0	1237	0
Confl. Peds. (#/hr)	34		86	86		34	23		59	59		23
Heavy Vehicles (%)	2%	2%	4%	5%	2%	2%	5%	3%	20%	2%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	6	6	0	6	6
Parking (#/hr)				0	0	0						
Turn Type	Perm	NA	pm+ov	Perm	NA		pm+pt	NA			NA	
Protected Phases		4	5		8		5	2			6	
Permitted Phases	4		4	8			2					
Actuated Green, G (s)		23.0	32.0		23.0			78.0			63.0	
Effective Green, g (s)		25.0	36.0		25.0			80.0			65.0	
Actuated g/C Ratio		0.21	0.30		0.21			0.67			0.54	
Clearance Time (s)		7.0	6.0		7.0			6.0			6.0	
Lane Grp Cap (vph)		254	377		243			2077			2420	
v/s Ratio Prot			c0.04					0.03			c0.28	
v/s Ratio Perm		0.05	0.10		0.05			0.18				
v/c Ratio		0.24	0.46		0.24			0.32			0.51	
Uniform Delay, d1		39.6	34.2		39.6			8.4			17.4	
Progression Factor		1.00	1.00		1.00			0.26			1.00	
Incremental Delay, d2		2.2	4.1		2.3			0.4			0.8	
Delay (s)		41.7	38.2		41.9			2.6			18.2	
Level of Service		D	D		D			A			B	
Approach Delay (s)		39.1			41.9			2.6			18.2	
Approach LOS		D			D			A			B	

Intersection Summary			
HCM 2000 Control Delay	16.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	70.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	NBT	SBT
Lane Group Flow (vph)	56	627	1420
v/c Ratio	0.25	0.21	0.52
Control Delay	37.3	0.5	3.5
Queue Delay	0.0	0.0	0.1
Total Delay	37.3	0.5	3.5
Queue Length 50th (ft)	24	4	36
Queue Length 95th (ft)	53	m4	50
Internal Link Dist (ft)	96	1	1
Turn Bay Length (ft)	150		
Base Capacity (vph)	226	3014	2734
Starvation Cap Reductn	0	0	264
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.25	0.21	0.57

Intersection Summary

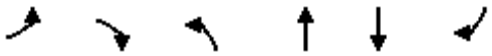
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	28	21	1	551	957	292
Future Volume (vph)	28	21	1	551	957	292
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			5.0	5.0	
Lane Util. Factor	1.00			0.91	0.91	
Frpb, ped/bikes	0.95			1.00	0.88	
Flpb, ped/bikes	1.00			1.00	1.00	
Frt	0.94			1.00	0.96	
Flt Protected	0.97			1.00	1.00	
Satd. Flow (prot)	1126			4532	3861	
Flt Permitted	0.97			0.94	1.00	
Satd. Flow (perm)	1126			4254	3861	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	32	24	1	626	1088	332
RTOR Reduction (vph)	2	0	0	0	0	0
Lane Group Flow (vph)	54	0	0	627	1420	0
Confl. Peds. (#/hr)		55	90			90
Heavy Vehicles (%)	11%	60%	2%	3%	3%	3%
Bus Blockages (#/hr)	0	4	0	0	0	0
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	2	
Permitted Phases			2			
Actuated Green, G (s)	22.0			83.0	83.0	
Effective Green, g (s)	24.0			85.0	85.0	
Actuated g/C Ratio	0.20			0.71	0.71	
Clearance Time (s)	5.0			7.0	7.0	
Lane Grp Cap (vph)	225			3013	2734	
v/s Ratio Prot	c0.05				c0.37	
v/s Ratio Perm				0.15		
v/c Ratio	0.24			0.21	0.52	
Uniform Delay, d1	40.4			6.0	8.1	
Progression Factor	0.87			0.09	0.35	
Incremental Delay, d2	2.5			0.0	0.6	
Delay (s)	37.7			0.5	3.4	
Level of Service	D			A	A	
Approach Delay (s)	37.7			0.5	3.4	
Approach LOS	D			A	A	

Intersection Summary			
HCM 2000 Control Delay	3.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	51.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	7	17	24	51	292	2
Future Volume (Veh/h)	7	17	24	51	292	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	8	20	28	60	344	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				340	176	
pX, platoon unblocked						
vC, conflicting volume	461	345	346			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	461	345	346			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	97	98			
cM capacity (veh/h)	546	698	1213			

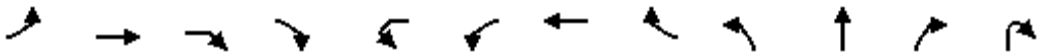
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	28	88	346
Volume Left	8	28	0
Volume Right	20	0	2
cSH	646	1213	1700
Volume to Capacity	0.04	0.02	0.20
Queue Length 95th (ft)	3	2	0
Control Delay (s)	10.8	2.7	0.0
Lane LOS	B	A	
Approach Delay (s)	10.8	2.7	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	35.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBT	NBT	SBT
Lane Group Flow (vph)	519	9	382	7	155
v/c Ratio	0.57	0.03	0.26	0.07	0.63
Control Delay	20.3	12.4	14.4	53.0	58.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	20.3	12.4	14.4	53.0	58.3
Queue Length 50th (ft)	249	3	60	5	112
Queue Length 95th (ft)	342	11	m100	20	182
Internal Link Dist (ft)	310		417	213	1015
Turn Bay Length (ft)		570			
Base Capacity (vph)	907	332	1455	116	247
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	0.57	0.03	0.26	0.06	0.63

Intersection Summary

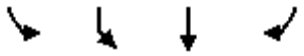
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	NBR2
Lane Configurations												
Traffic Volume (vph)	19	437	5	3	7	16	225	88	4	0	1	1
Future Volume (vph)	19	437	5	3	7	16	225	88	4	0	1	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0				5.0			6.0		
Lane Util. Factor		1.00	1.00				0.95			1.00		
Frpb, ped/bikes		1.00	0.58				1.00			1.00		
Flpb, ped/bikes		1.00	1.00				1.00			1.00		
Frt		1.00	0.85				0.96			0.96		
Flt Protected		1.00	1.00				1.00			0.97		
Satd. Flow (prot)		1667	595				2897			1401		
Flt Permitted		0.97	1.00				0.90			0.97		
Satd. Flow (perm)		1626	595				2606			1401		
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	22	497	6	3	8	18	256	100	5	0	1	1
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	519	9	0	0	0	382	0	0	7	0	0
Confl. Peds. (#/hr)			55			55			90			
Heavy Vehicles (%)	11%	2%	60%	2%	2%	2%	2%	2%	2%	3%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	3	0	0	0	0
Parking (#/hr)					0	0	0	0	0	0	0	0
Turn Type	Perm	NA	Perm		Perm	Perm	NA		Split	NA		
Protected Phases		6					2		4	4		
Permitted Phases	6		6		2	2						
Actuated Green, G (s)		58.6	58.6				58.6			1.5		
Effective Green, g (s)		60.6	60.6				60.6			3.5		
Actuated g/C Ratio		0.51	0.51				0.51			0.03		
Clearance Time (s)		7.0	7.0				7.0			8.0		
Vehicle Extension (s)		1.0	1.0				1.0			3.0		
Lane Grp Cap (vph)		821	300				1316			40		
v/s Ratio Prot										c0.00		
v/s Ratio Perm		c0.32	0.02				0.15					
v/c Ratio		0.63	0.03				0.29			0.17		
Uniform Delay, d1		21.6	14.9				17.2			56.8		
Progression Factor		1.00	1.00				1.01			1.00		
Incremental Delay, d2		3.7	0.2				0.5			2.1		
Delay (s)		25.3	15.1				17.9			58.9		
Level of Service		C	B				B			E		
Approach Delay (s)		25.1					17.9			58.9		
Approach LOS		C					B			E		

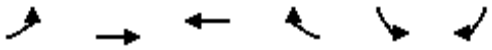
Intersection Summary			
HCM 2000 Control Delay	27.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	61.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	SBL2	SBL	SBT	SBR
Lane Configurations				
Traffic Volume (vph)	129	1	1	5
Future Volume (vph)	129	1	1	5
Ideal Flow (vphpl)	1900	1900	1900	1900
Total Lost time (s)			5.0	
Lane Util. Factor			1.00	
Frpb, ped/bikes			0.99	
Flpb, ped/bikes			1.00	
Frt			0.99	
Flt Protected			0.95	
Satd. Flow (prot)			1414	
Flt Permitted			0.95	
Satd. Flow (perm)			1414	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88
Adj. Flow (vph)	147	1	1	6
RTOR Reduction (vph)	0	0	0	0
Lane Group Flow (vph)	0	0	155	0
Confl. Peds. (#/hr)				90
Heavy Vehicles (%)	2%	2%	3%	3%
Bus Blockages (#/hr)	0	0	0	0
Parking (#/hr)	0	0	0	0
Turn Type	Split	Split	NA	
Protected Phases	3	3	3	
Permitted Phases				
Actuated Green, G (s)			19.0	
Effective Green, g (s)			21.0	
Actuated g/C Ratio			0.18	
Clearance Time (s)			7.0	
Vehicle Extension (s)			1.0	
Lane Grp Cap (vph)			247	
v/s Ratio Prot			c0.11	
v/s Ratio Perm				
v/c Ratio			0.63	
Uniform Delay, d1			45.9	
Progression Factor			1.00	
Incremental Delay, d2			11.5	
Delay (s)			57.4	
Level of Service			E	
Approach Delay (s)			57.4	
Approach LOS			E	

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	12	694	373	8	5	10
Future Volume (Veh/h)	12	694	373	8	5	10
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	14	816	439	9	6	12
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		497	926			
pX, platoon unblocked	0.92				0.82	0.92
vC, conflicting volume	448				1288	444
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	357				1024	352
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				97	98
cM capacity (veh/h)	1106				212	636

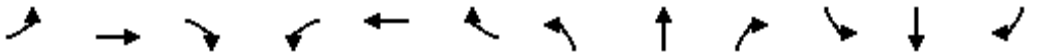
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	830	448	18
Volume Left	14	0	6
Volume Right	0	9	12
cSH	1106	1700	382
Volume to Capacity	0.01	0.26	0.05
Queue Length 95th (ft)	1	0	4
Control Delay (s)	0.3	0.0	14.9
Lane LOS	A		B
Approach Delay (s)	0.3	0.0	14.9
Approach LOS			B

Intersection Summary			
Average Delay		0.4	
Intersection Capacity Utilization		61.3%	ICU Level of Service B
Analysis Period (min)		15	

Lane Group	EBL	EBT	WBL	WBT	WBR	SBT
Lane Group Flow (vph)	27	733	270	370	52	372
v/c Ratio	0.09	0.55	0.62	0.36	0.12	0.81
Control Delay	19.2	22.3	12.8	2.1	1.9	39.5
Queue Delay	0.0	0.0	0.9	1.6	0.0	0.0
Total Delay	19.2	22.3	13.7	3.7	1.9	39.5
Queue Length 50th (ft)	11	165	21	19	2	252
Queue Length 95th (ft)	m23	228	m34	m21	m3	#421
Internal Link Dist (ft)		846		235		260
Turn Bay Length (ft)	170					
Base Capacity (vph)	292	1341	437	1023	434	461
Starvation Cap Reductn	0	0	43	466	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.55	0.69	0.66	0.12	0.81

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	494	180	248	340	48	0	0	0	17	284	41
Future Volume (vph)	25	494	180	248	340	48	0	0	0	17	284	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		3.0	4.0	4.0					4.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00					1.00	
Frpb, ped/bikes	1.00	0.98		1.00	1.00	0.54					0.98	
Flpb, ped/bikes	0.73	1.00		1.00	1.00	1.00					1.00	
Frt	1.00	0.96		1.00	1.00	0.85					0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00					1.00	
Satd. Flow (prot)	1142	2979		1593	1660	704					1580	
Flt Permitted	0.54	1.00		0.26	1.00	1.00					1.00	
Satd. Flow (perm)	650	2979		439	1660	704					1580	
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)	27	537	196	270	370	52	0	0	0	18	309	45
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	27	733	0	270	370	52	0	0	0	0	372	0
Confl. Peds. (#/hr)	75		10	10		75	35		36	36		35
Heavy Vehicles (%)	4%	2%	2%	2%	3%	10%	2%	2%	2%	46%	2%	2%
Bus Blockages (#/hr)	0	3	3	0	0	3	0	0	0	0	0	0
Turn Type	Perm	NA		pm+pt	NA	Perm				Perm	NA	
Protected Phases		6		5	2						8	
Permitted Phases	6			2		2				8		
Actuated Green, G (s)	52.0	52.0		72.0	72.0	72.0					33.0	
Effective Green, g (s)	54.0	54.0		74.0	74.0	74.0					35.0	
Actuated g/C Ratio	0.45	0.45		0.62	0.62	0.62					0.29	
Clearance Time (s)	6.0	6.0		5.0	6.0	6.0					6.0	
Lane Grp Cap (vph)	292	1340		434	1023	434					460	
v/s Ratio Prot		0.25		c0.09	0.22							
v/s Ratio Perm	0.04			c0.30		0.07					0.24	
v/c Ratio	0.09	0.55		0.62	0.36	0.12					0.81	
Uniform Delay, d1	18.9	24.1		12.7	11.3	9.5					39.4	
Progression Factor	0.95	0.86		0.99	0.15	0.17					0.65	
Incremental Delay, d2	0.6	1.5		2.6	0.4	0.2					13.0	
Delay (s)	18.6	22.1		15.2	2.1	1.8					38.6	
Level of Service	B	C		B	A	A					D	
Approach Delay (s)		22.0			7.2			0.0			38.6	
Approach LOS		C			A			A			D	

Intersection Summary			
HCM 2000 Control Delay	19.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	74.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

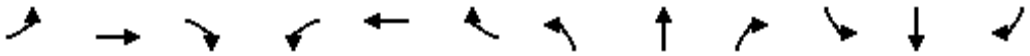
Lane Group	EBT	EBR	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	222	280	441	107	646	29	992
v/c Ratio	0.21	0.43	0.79	0.32	1.43	0.08	0.60
Control Delay	40.4	18.5	47.2	39.8	242.6	27.9	16.2
Queue Delay	0.0	0.2	0.0	0.0	0.0	0.0	0.0
Total Delay	40.4	18.7	47.2	39.8	242.6	27.9	16.2
Queue Length 50th (ft)	64	78	306	68	~355	14	76
Queue Length 95th (ft)	m101	m96	#448	121	#478	38	82
Internal Link Dist (ft)	235		274		428		387
Turn Bay Length (ft)		220		190		190	
Base Capacity (vph)	1047	653	560	339	452	386	1666
Starvation Cap Reductn	0	70	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.48	0.79	0.32	1.43	0.08	0.60

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

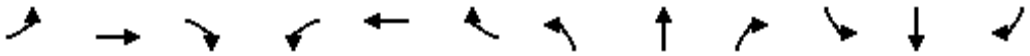
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	213	269	3	420	103	182	438	28	145	778	30
Future Volume (vph)	0	213	269	3	420	103	182	438	28	145	778	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0	4.0		4.0	
Lane Util. Factor		0.95	1.00		1.00	1.00		0.95	1.00		0.91	
Frpb, ped/bikes		1.00	0.93		1.00	1.00		1.00	0.89		1.00	
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00	1.00		1.00	
Frt		1.00	0.85		1.00	0.85		1.00	0.85		1.00	
Flt Protected		1.00	1.00		1.00	1.00		0.99	1.00		0.99	
Satd. Flow (prot)		3065	1324		1643	1358		3131	1247		4402	
Flt Permitted		1.00	1.00		1.00	1.00		0.58	1.00		0.76	
Satd. Flow (perm)		3065	1324		1641	1358		1846	1247		3368	
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	222	280	3	438	107	190	456	29	151	810	31
RTOR Reduction (vph)	0	0	14	0	0	0	0	0	2	0	2	0
Lane Group Flow (vph)	0	222	266	0	441	107	0	646	27	0	990	0
Confl. Peds. (#/hr)	127		60	60		127	60		57	57		60
Heavy Vehicles (%)	2%	6%	2%	2%	4%	7%	2%	2%	4%	7%	3%	13%
Turn Type		NA	pm+ov	Perm	NA	Over	Prot	NA	Perm	pm+pt	NA	
Protected Phases		8	1		4	5	1	6		5	2	
Permitted Phases			8	4					6	2		
Actuated Green, G (s)		39.0	54.0		39.0	28.0		35.0	35.0		48.0	
Effective Green, g (s)		41.0	58.0		41.0	30.0		37.0	37.0		50.0	
Actuated g/C Ratio		0.34	0.48		0.34	0.25		0.31	0.31		0.42	
Clearance Time (s)		6.0	6.0		6.0	6.0		6.0	6.0		6.0	
Lane Grp Cap (vph)		1047	684		560	339		751	384		1661	
v/s Ratio Prot		0.07	0.06			0.08		c0.12			c0.15	
v/s Ratio Perm			0.15		c0.27			c0.14	0.02		0.10	
v/c Ratio		0.21	0.39		0.79	0.32		0.86	0.07		0.60	
Uniform Delay, d1		28.0	19.7		35.6	36.6		39.1	29.3		27.2	
Progression Factor		1.42	1.02		1.00	1.00		1.00	1.00		0.51	
Incremental Delay, d2		0.4	1.4		10.7	2.4		12.3	0.4		1.4	
Delay (s)		40.1	21.5		46.3	39.1		51.4	29.7		15.3	
Level of Service		D	C		D	D		D	C		B	
Approach Delay (s)		29.7			44.9			50.5			15.3	
Approach LOS		C			D			D			B	

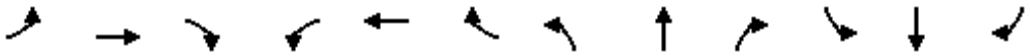
Intersection Summary			
HCM 2000 Control Delay	32.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	78.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	6	52	7	7	129	1	16	32	26	25	30	7
Future Volume (vph)	6	52	7	7	129	1	16	32	26	25	30	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)	6	54	7	7	134	1	17	33	27	26	31	7

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	67	142	77	64
Volume Left (vph)	6	7	17	26
Volume Right (vph)	7	1	27	7
Hadj (s)	-0.01	0.04	-0.05	0.06
Departure Headway (s)	4.4	4.3	4.4	4.5
Degree Utilization, x	0.08	0.17	0.09	0.08
Capacity (veh/h)	787	790	772	746
Control Delay (s)	7.8	8.2	7.9	7.9
Approach Delay (s)	7.8	8.2	7.9	7.9
Approach LOS	A	A	A	A

Intersection Summary				
Delay	8.0			
Level of Service	A			
Intersection Capacity Utilization	28.6%	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)	0	96	14	23	144	1	8	0	12	18	4	14
Future Volume (Veh/h)	0	96	14	23	144	1	8	0	12	18	4	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	0	113	16	27	169	1	9	0	14	21	5	16
Pedestrians		8			41			77			19	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		3.5			3.5			3.5			3.5	
Percent Blockage		1			4			7			2	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					799							
pX, platoon unblocked												
vC, conflicting volume	189			206			440	433	231	410	448	196
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	189			206			440	433	231	410	448	196
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.8	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.2	3.3
p0 queue free %	100			98			98	100	98	96	99	98
cM capacity (veh/h)	1360			1265			432	459	720	468	421	823

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	113	16	197	23	42
Volume Left	0	0	27	9	21
Volume Right	0	16	1	14	16
cSH	1700	1700	1265	571	551
Volume to Capacity	0.07	0.01	0.02	0.04	0.08
Queue Length 95th (ft)	0	0	2	3	6
Control Delay (s)	0.0	0.0	1.2	11.6	12.1
Lane LOS			A	B	B
Approach Delay (s)	0.0		1.2	11.6	12.1
Approach LOS				B	B

Intersection Summary				
Average Delay	2.6			
Intersection Capacity Utilization	40.0%	ICU Level of Service		A
Analysis Period (min)	15			

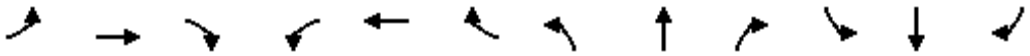
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	106	23	27	166	12	39
Future Volume (Veh/h)	106	23	27	166	12	39
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	125	27	32	195	14	46
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				302		
pX, platoon unblocked						
vC, conflicting volume			152		398	138
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			152		398	138
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		98	95
cM capacity (veh/h)			1429		594	910

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	152	227	60
Volume Left	0	32	14
Volume Right	27	0	46
cSH	1700	1429	809
Volume to Capacity	0.09	0.02	0.07
Queue Length 95th (ft)	0	2	6
Control Delay (s)	0.0	1.2	9.8
Lane LOS		A	A
Approach Delay (s)	0.0	1.2	9.8
Approach LOS			A

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	32.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBT	NBT	SBT
Lane Group Flow (vph)	42	113	142	977	495
v/c Ratio	0.15	0.16	0.53	0.40	0.35
Control Delay	37.5	11.8	47.9	5.2	32.3
Queue Delay	0.0	0.0	0.0	0.2	0.0
Total Delay	37.5	11.8	47.9	5.4	32.3
Queue Length 50th (ft)	26	37	96	37	107
Queue Length 95th (ft)	57	65	166	43	140
Internal Link Dist (ft)	222		292	175	141
Turn Bay Length (ft)		180			
Base Capacity (vph)	288	705	268	2467	1419
Starvation Cap Reductn	0	0	0	624	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.15	0.16	0.53	0.53	0.35

Intersection Summary

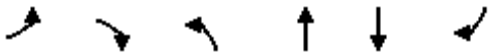


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	6	106	62	35	37	142	771	6	0	450	15
Future Volume (vph)	34	6	106	62	35	37	142	771	6	0	450	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	4.0		5.0			4.0			4.0	
Lane Util. Factor		1.00	1.00		1.00			0.91			0.91	
Frpb, ped/bikes		1.00	0.93		0.97			1.00			1.00	
Flpb, ped/bikes		0.95	1.00		0.94			1.00			1.00	
Frt		1.00	0.85		0.96			1.00			1.00	
Flt Protected		0.96	1.00		0.98			0.99			1.00	
Satd. Flow (prot)		1528	1324		1295			4502			4481	
Flt Permitted		0.75	1.00		0.84			0.75			1.00	
Satd. Flow (perm)		1193	1324		1113			3393			4481	
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)	36	6	113	66	37	39	151	820	6	0	479	16
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	42	113	0	142	0	0	977	0	0	494	0
Confl. Peds. (#/hr)	53		93	93		53	24		95	95		24
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	11%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	6	0	0	6
Parking (#/hr)				0	0	0						
Turn Type	Perm	NA	pm+ov	Perm	NA		pm+pt	NA			NA	
Protected Phases		4	5		8		5	2			6	
Permitted Phases	4		4	8			2					
Actuated Green, G (s)		27.0	59.0		27.0			74.0			36.0	
Effective Green, g (s)		29.0	63.0		29.0			76.0			38.0	
Actuated g/C Ratio		0.24	0.52		0.24			0.63			0.32	
Clearance Time (s)		7.0	6.0		7.0			6.0			6.0	
Lane Grp Cap (vph)		288	695		268			2463			1418	
v/s Ratio Prot			0.05					c0.11			0.11	
v/s Ratio Perm		0.04	0.04		c0.13			c0.14				
v/c Ratio		0.15	0.16		0.53			0.40			0.35	
Uniform Delay, d1		35.8	14.8		39.6			10.8			31.5	
Progression Factor		1.00	1.00		1.00			0.41			1.00	
Incremental Delay, d2		1.1	0.5		7.3			0.5			0.7	
Delay (s)		36.8	15.3		46.9			4.9			32.2	
Level of Service		D	B		D			A			C	
Approach Delay (s)		21.1			46.9			4.9			32.2	
Approach LOS		C			D			A			C	

Intersection Summary			
HCM 2000 Control Delay	17.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

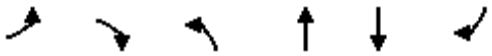
Lane Group	EBL	NBT	SBT
Lane Group Flow (vph)	181	863	651
v/c Ratio	0.45	0.32	0.25
Control Delay	37.4	4.3	3.7
Queue Delay	0.0	0.0	0.2
Total Delay	37.4	4.3	3.9
Queue Length 50th (ft)	101	31	31
Queue Length 95th (ft)	198	39	38
Internal Link Dist (ft)	96	1	175
Turn Bay Length (ft)	150		
Base Capacity (vph)	400	2688	2628
Starvation Cap Reductn	0	0	1159
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.45	0.32	0.44

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	117	51	1	802	550	56
Future Volume (vph)	117	51	1	802	550	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0			5.0	5.0	
Lane Util. Factor	1.00			0.91	0.91	
Frpb, ped/bikes	0.92			1.00	0.94	
Flpb, ped/bikes	1.00			1.00	1.00	
Frt	0.96			1.00	0.99	
Flt Protected	0.97			1.00	1.00	
Satd. Flow (prot)	1404			4575	4206	
Flt Permitted	0.97			0.94	1.00	
Satd. Flow (perm)	1404			4299	4206	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	126	55	1	862	591	60
RTOR Reduction (vph)	3	0	0	0	0	0
Lane Group Flow (vph)	178	0	0	863	651	0
Confl. Peds. (#/hr)	1	133	211			211
Heavy Vehicles (%)	2%	7%	2%	2%	2%	13%
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	2	
Permitted Phases			2			
Actuated Green, G (s)	32.0			73.0	73.0	
Effective Green, g (s)	34.0			75.0	75.0	
Actuated g/C Ratio	0.28			0.62	0.62	
Clearance Time (s)	5.0			7.0	7.0	
Lane Grp Cap (vph)	397			2686	2628	
v/s Ratio Prot	c0.13				0.15	
v/s Ratio Perm				c0.20		
v/c Ratio	0.45			0.32	0.25	
Uniform Delay, d1	35.3			10.6	10.0	
Progression Factor	0.96			0.39	0.35	
Incremental Delay, d2	3.5			0.2	0.2	
Delay (s)	37.4			4.3	3.7	
Level of Service	D			A	A	
Approach Delay (s)	37.4			4.3	3.7	
Approach LOS	D			A	A	

Intersection Summary			
HCM 2000 Control Delay	7.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



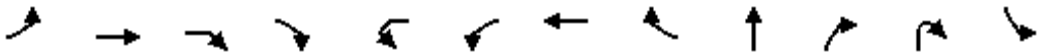
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	13	10	15	155	55	2
Future Volume (Veh/h)	13	10	15	155	55	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	15	12	18	182	65	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				340	176	
pX, platoon unblocked						
vC, conflicting volume	284	66	67			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	284	66	67			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	99	99			
cM capacity (veh/h)	698	998	1535			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	27	200	67
Volume Left	15	18	0
Volume Right	12	0	2
cSH	806	1535	1700
Volume to Capacity	0.03	0.01	0.04
Queue Length 95th (ft)	3	1	0
Control Delay (s)	9.6	0.8	0.0
Lane LOS	A	A	
Approach Delay (s)	9.6	0.8	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	26.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBT	NBT	SBT
Lane Group Flow (vph)	369	6	544	7	80
v/c Ratio	0.40	0.01	0.35	0.07	0.47
Control Delay	16.7	11.8	11.1	53.2	59.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	16.7	11.8	11.1	53.2	59.0
Queue Length 50th (ft)	155	2	73	5	60
Queue Length 95th (ft)	226	8	136	21	108
Internal Link Dist (ft)	310		415	213	1015
Turn Bay Length (ft)		570			
Base Capacity (vph)	921	744	1575	107	271
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	0.40	0.01	0.35	0.07	0.30

Intersection Summary



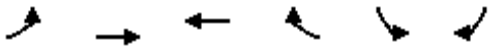
Movement	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBT	NBR	NBR2	SBL2
Lane Configurations												
Traffic Volume (vph)	8	331	5	1	5	11	402	83	3	3	1	64
Future Volume (vph)	8	331	5	1	5	11	402	83	3	3	1	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0				5.0		6.0			
Lane Util. Factor		1.00	1.00				0.95		1.00			
Frpb, ped/bikes		1.00	0.94				0.98		0.82			
Flpb, ped/bikes		1.00	1.00				1.00		1.00			
Frt		1.00	0.85				0.98		0.92			
Flt Protected		1.00	1.00				1.00		1.00			
Satd. Flow (prot)		1673	1334				3008		1143			
Flt Permitted		0.98	1.00				0.94		1.00			
Satd. Flow (perm)		1650	1334				2822		1143			
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)	9	360	5	1	5	12	437	90	3	3	1	70
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	369	6	0	0	0	544	0	7	0	0	0
Confl. Peds. (#/hr)	14		6			6		14		18		18
Heavy Vehicles (%)	2%	2%	2%	2%	2%	43%	2%	4%	2%	2%	2%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	3	0	0	0	0
Parking (#/hr)									0	0	0	
Turn Type	Perm	NA	Perm		Perm	Perm	NA		NA			Split
Protected Phases		6					2		4			3
Permitted Phases	6		6		2	2						
Actuated Green, G (s)		57.2	57.2				57.2		1.6			
Effective Green, g (s)		59.2	59.2				59.2		3.6			
Actuated g/C Ratio		0.49	0.49				0.49		0.03			
Clearance Time (s)		7.0	7.0				7.0		8.0			
Vehicle Extension (s)		1.0	1.0				1.0		3.0			
Lane Grp Cap (vph)		814	658				1392		34			
v/s Ratio Prot									c0.01			
v/s Ratio Perm		c0.22	0.00				0.19					
v/c Ratio		0.45	0.01				0.39		0.21			
Uniform Delay, d1		19.8	15.5				19.1		56.8			
Progression Factor		1.00	1.00				0.72		1.00			
Incremental Delay, d2		1.8	0.0				0.7		3.0			
Delay (s)		21.7	15.5				14.5		59.8			
Level of Service		C	B				B		E			
Approach Delay (s)		21.6					14.5		59.8			
Approach LOS		C					B		E			

Intersection Summary			
HCM 2000 Control Delay	20.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	48.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBL	SBT	SBR
Lane Configurations			
Traffic Volume (vph)	1	1	7
Future Volume (vph)	1	1	7
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)		5.0	
Lane Util. Factor		1.00	
Frpb, ped/bikes		0.99	
Flpb, ped/bikes		1.00	
Frt		0.99	
Flt Protected		0.96	
Satd. Flow (prot)		1554	
Flt Permitted		0.96	
Satd. Flow (perm)		1554	
Peak-hour factor, PHF	0.92	0.92	0.92
Adj. Flow (vph)	1	1	8
RTOR Reduction (vph)	0	0	0
Lane Group Flow (vph)	0	80	0
Confl. Peds. (#/hr)			21
Heavy Vehicles (%)	2%	2%	2%
Bus Blockages (#/hr)	0	0	0
Parking (#/hr)			
Turn Type	Split	NA	
Protected Phases	3	3	
Permitted Phases			
Actuated Green, G (s)		9.2	
Effective Green, g (s)		11.2	
Actuated g/C Ratio		0.09	
Clearance Time (s)		7.0	
Vehicle Extension (s)		1.0	
Lane Grp Cap (vph)		145	
v/s Ratio Prot		c0.05	
v/s Ratio Perm			
v/c Ratio		0.55	
Uniform Delay, d1		52.0	
Progression Factor		1.00	
Incremental Delay, d2		2.6	
Delay (s)		54.6	
Level of Service		D	
Approach Delay (s)		54.6	
Approach LOS		D	

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	495	622	4	14	6
Future Volume (Veh/h)	1	495	622	4	14	6
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	1	582	732	5	16	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		495	929			
pX, platoon unblocked	0.79				0.85	0.79
vC, conflicting volume	737				1318	734
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	532				938	529
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				94	98
cM capacity (veh/h)	816				251	433

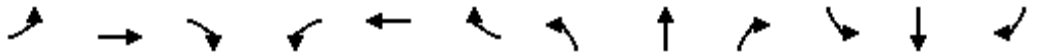
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	583	737	23
Volume Left	1	0	16
Volume Right	0	5	7
cSH	816	1700	287
Volume to Capacity	0.00	0.43	0.08
Queue Length 95th (ft)	0	0	6
Control Delay (s)	0.0	0.0	18.6
Lane LOS	A		C
Approach Delay (s)	0.0	0.0	18.6
Approach LOS			C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	46.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	31	511	452	43	297	366	81
v/c Ratio	0.16	0.40	0.67	0.17	0.54	0.55	0.17
Control Delay	35.3	34.6	35.7	28.2	24.4	24.1	7.6
Queue Delay	0.0	0.0	1.9	0.0	0.0	0.0	0.0
Total Delay	35.3	34.7	37.6	28.2	24.4	24.1	7.6
Queue Length 50th (ft)	18	167	197	19	150	187	12
Queue Length 95th (ft)	49	226	318	m30	239	283	22
Internal Link Dist (ft)		849	235		143		260
Turn Bay Length (ft)	170					110	
Base Capacity (vph)	191	1266	670	246	555	665	465
Starvation Cap Reductn	0	0	103	0	0	0	0
Spillback Cap Reductn	0	57	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.42	0.80	0.17	0.54	0.55	0.17

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	480	0	0	425	40	170	109	344	45	0	31
Future Volume (vph)	29	480	0	0	425	40	170	109	344	45	0	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0	4.0		4.0	
Lane Util. Factor	1.00	0.95			1.00	1.00		1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00			1.00	0.47		1.00	0.92		0.87	
Flpb, ped/bikes	1.00	1.00			1.00	1.00		0.84	1.00		0.98	
Frt	1.00	1.00			1.00	0.85		1.00	0.85		0.94	
Flt Protected	0.95	1.00			1.00	1.00		0.97	1.00		0.97	
Satd. Flow (prot)	1562	3166			1676	615		1366	1310		1200	
Flt Permitted	0.29	1.00			1.00	1.00		0.78	1.00		0.74	
Satd. Flow (perm)	479	3166			1676	615		1092	1310		915	
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)	31	511	0	0	452	43	181	116	366	48	0	33
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	31	511	0	0	452	43	0	297	366	0	81	0
Confl. Peds. (#/hr)	134		55	55		134	88		35	35		88
Heavy Vehicles (%)	4%	2%	2%	2%	2%	9%	3%	2%	2%	18%	2%	3%
Bus Blockages (#/hr)	0	3	3	0	0	3	0	0	0	0	0	0
Turn Type	Perm	NA			NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6					2	4		4	8		
Actuated Green, G (s)	46.0	46.0			46.0	46.0		59.0	59.0		59.0	
Effective Green, g (s)	48.0	48.0			48.0	48.0		61.0	61.0		61.0	
Actuated g/C Ratio	0.40	0.40			0.40	0.40		0.51	0.51		0.51	
Clearance Time (s)	6.0	6.0			6.0	6.0		6.0	6.0		6.0	
Lane Grp Cap (vph)	191	1266			670	246		555	665		465	
v/s Ratio Prot		0.16			c0.27							
v/s Ratio Perm	0.06					0.07		0.27	c0.28		0.09	
v/c Ratio	0.16	0.40			0.67	0.17		0.54	0.55		0.17	
Uniform Delay, d1	23.1	25.8			29.6	23.2		19.9	20.1		15.9	
Progression Factor	1.39	1.30			1.03	1.12		1.00	1.00		0.42	
Incremental Delay, d2	1.8	0.9			4.3	1.2		3.7	3.3		0.8	
Delay (s)	33.8	34.3			34.9	27.2		23.6	23.4		7.4	
Level of Service	C	C			C	C		C	C		A	
Approach Delay (s)		34.3			34.2			23.5			7.4	
Approach LOS		C			C			C			A	

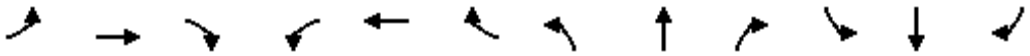
Intersection Summary			
HCM 2000 Control Delay	29.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	66.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	344	528	219	94	917	23	567
v/c Ratio	0.47	0.60	0.57	0.60	0.73	0.04	0.58
Control Delay	32.0	11.5	47.4	67.0	34.7	11.9	29.5
Queue Delay	0.0	1.0	0.4	0.0	0.1	0.0	0.4
Total Delay	32.0	12.4	47.7	67.0	34.7	11.9	29.9
Queue Length 50th (ft)	85	51	151	70	312	7	148
Queue Length 95th (ft)	116	366	234	#136	392	20	189
Internal Link Dist (ft)	235		274		428		387
Turn Bay Length (ft)		220		190		190	
Base Capacity (vph)	728	877	385	157	1258	606	983
Starvation Cap Reductn	0	145	0	0	0	0	0
Spillback Cap Reductn	0	0	20	0	20	0	109
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.72	0.60	0.60	0.74	0.04	0.65

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	341	523	2	215	93	226	682	23	124	418	20
Future Volume (vph)	0	341	523	2	215	93	226	682	23	124	418	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0		4.0	4.0		4.0	
Lane Util. Factor		0.95	1.00		1.00	1.00		0.95	1.00		0.91	
Frpb, ped/bikes		1.00	0.95		1.00	1.00		1.00	0.77		0.99	
Flpb, ped/bikes		1.00	1.00		1.00	1.00		0.99	1.00		0.99	
Frt		1.00	0.85		1.00	0.85		1.00	0.85		0.99	
Flt Protected		1.00	1.00		1.00	1.00		0.99	1.00		0.99	
Satd. Flow (prot)		3124	1356		1659	1346		3122	1101		4414	
Flt Permitted		1.00	1.00		1.00	1.00		0.56	1.00		0.69	
Satd. Flow (perm)		3124	1356		1654	1346		1774	1101		3097	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	0	344	528	2	217	94	228	689	23	125	422	20
RTOR Reduction (vph)	0	0	18	0	0	0	0	0	1	0	1	0
Lane Group Flow (vph)	0	344	510	0	219	94	0	917	22	0	566	0
Confl. Peds. (#/hr)	181		81	81		181	105		128	128		105
Heavy Vehicles (%)	2%	4%	2%	2%	3%	8%	2%	2%	2%	4%	2%	2%
Turn Type		NA	pm+ov	Perm	NA	Over	Prot	NA	Perm	pm+pt	NA	
Protected Phases		8	1		4	5	1	6		5	2	
Permitted Phases			8	4					6	2		
Actuated Green, G (s)		26.0	72.0		26.0	12.0		64.0	64.0		30.0	
Effective Green, g (s)		28.0	76.0		28.0	14.0		66.0	66.0		32.0	
Actuated g/C Ratio		0.23	0.63		0.23	0.12		0.55	0.55		0.27	
Clearance Time (s)		6.0	6.0		6.0	6.0		6.0	6.0		6.0	
Lane Grp Cap (vph)		728	904		385	157		1514	605		979	
v/s Ratio Prot		0.11	c0.23			0.07		c0.24			c0.07	
v/s Ratio Perm			0.15		0.13			c0.09	0.02		0.09	
v/c Ratio		0.47	0.56		0.57	0.60		0.61	0.04		0.58	
Uniform Delay, d1		39.6	12.5		40.7	50.3		18.2	12.4		38.1	
Progression Factor		0.75	0.79		1.00	1.00		1.00	1.00		0.68	
Incremental Delay, d2		2.0	2.3		6.0	15.7		1.8	0.1		2.4	
Delay (s)		31.8	12.2		46.6	66.1		20.0	12.5		28.5	
Level of Service		C	B		D	E		C	B		C	
Approach Delay (s)		19.9			52.5			19.8			28.5	
Approach LOS		B			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	25.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	89.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			