WELLS + ASSOCIATES

THE RIVER SCHOOL

COMPREHENSIVE TRANSPORTATION REPORT

September 2021

The River School

Comprehensive Transportation Report

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TABLE OF CONTENTS

PAGE

INTRODUCTION 1
OVERVIEW 1
STUDY SCOPE 2
TRANSPORTATION FACILITIES 3
ROADWAY NETWORK 3
Existing Conditions 3
Table 1: Existing Conditions by Roadway Segment Details 3
Future Conditions 3
MULTI-MODAL TRANSPORTATION FACILITIES 4
Existing Public Transportation Facilities and Services 4
Pedestrian Facilities 4
Bicycle Facilities 5
Capital Bikeshare 6
Car Sharing Services 6
EXISTING CONDITIONS ANALYSIS 7
TRAFFIC VOLUMES 7
Table 2: AM and PM Commuter Peak Period Traffic Count Summary 7
CAPACITY ANALYSIS 8
Table 3: Level of Service Summary 9
QUEUE ANALYSIS 14
Table 4: 95TH Percentile Queue Summary 16
SAFETY EVALUATION 20
2026 BACKGROUND CONDITIONS 21
TRAFFIC VOLUMES 21
Overview 21
Regional Growth 21
Pipeline Developments 21
Background Forecasts 24
CAPACITY ANALYSIS 24
QUEUE ANALYSIS 25
SITE ANALYSIS 27
OVERVIEW 27
SITE ACCESS AND CIRCULATION 27
Overview 27
Pick-Up/Drop-off Operations 28
Pick-Up/Drop-off Queue Analysis 29
Exhibit 1A: Existing Queues-AM Drop-off 30
Exhibit 1B: Projected Queues-AM Drop-off 31
Exhibit 2A: Existing Queues-PM Pick-up 32

TABLE OF CONTENTS (CONTINUED)

Exhibit 2B: Projected Queues-PM Pick-up 33
Table 5: PUDO Queue Summary 33
CURBSIDE MANAGEMENT 34
PROPOSED PARKING 34
Vehicular Parking 34
Table 6: Parking Summary 34
Bicycle Parking 34
Table 7: Bicycle Parking Summary 35
PPROPOSED LOADING 35
Table 8: Loading Summary 35
TRIP GENERATION ANALYSIS 36
Overview 36
Total Trips 36
Table 9A: The River School Peak Hour Trip Generation-Without TDM Plan 36
Table 9B: The River School Peak Hour Trip Generation-With TDM Plan Assumes all students in K-6 are shuttled from an offsite location in the morning 38
Site Trip Distribution and Assignment 40
TRANSPORTATION MANAGEMENT PLAN 40
Transportation Demand Management 40
Operations Management Plan 44
Monitoring Plan 45
Table 10: The River School Trip Generation Thresholds 46
2026 TOTAL FUTURE CONDITIONS 49
TRAFFIC FORECASTS 49
CAPACITY ANALYSIS 49
QUEUE ANALYSIS 51
IMPROVEMENT ANALYSIS 52
Overview 52
Intersection #1 (River Road/42nd Street) 52
Table 11: Level of Service and Queue Results PM Commuter Peak Hour – River Road/42nd Street 53
Intersection #5 (42nd Street/Warren Street) 53
Table 12: Preliminary Signal Warrant Evaluation (2026 Total Future Conditions) Nebraska Avenue/Warren Street 54
Intersection #7 (Van Ness Street/42nd Street) 54
Intersection #8 (Nebraska Avenue/42nd Street), Intersection #9 (Van Ness Street/Nebraska Avenue), and Intersection #10 (Van Ness Street/41st Street/NPS Driveway) 54

TABLE OF CONTENTS (CONTINUED)

Table 13: Level of Service Summary
Nebraska Avenue/42nd Street and Nebraska Avenue/Van Ness Street 55
Table 14: 95th Percentile Queue Summary
Nebraska Avenue/42nd Street and Nebraska Avenue/Van Ness Street 56
Intersection #11 (Van Ness Street/Wisconsin Avenue) 56
Intersection #12-1 (Wisconsin Avenue/Tenley Circle South) 56
Table 15: Level of Service and Queue Results
AM Peak Hour – Wisconsin Avenue/Tenley Circle 57
Intersection #12-6 (Tenley Circle/Yuma Street West) 57
Intersection #13 (Warren Street/Nebraska Avenue) 57
Table 16: Preliminary Signal Warrant Evaluation
(2026 Total Future Conditions) Nebraska Avenue/Warren Street 59
Table 17: Level of Service Summary – Nebraska Avenue/Warren Street 60
Table 18: 95th Percentile Queue Summary
Nebraska Avenue/42nd Street and Nebraska Avenue/Van Ness Street 61
Intersection #14 (Nebraska Avenue/41st Street) 61
Table 19: Level of Service Summary – Nebraska Avenue/41st Street 62
Table 20: 95th Percentile Queue Summary – Nebraska Avenue/41st Street 62
CONCLUSION AND RECOMMENDATIONS _____ **63**

LIST OF FIGURES

FIGURE	TITLE
1	Site Location Map
2	Proposed Plan
3	Study Area
4	Multimodal Transportation Network
5	Concept Plan for Nebraska Avenue Multiuse Trail
6	¼ Mile Walk Shed
7	½ Mile Bicycle Shed
8	Intersection Layout Key
9	2020 Peak Hour Vehicle Volumes
10	Existing Lane Use and Traffic Control
11	Location of Pipeline Developments
12	Peak Hour Pipeline Traffic Volumes
13	2026 Background Peak Hour Traffic Volumes
14A	Proposed Site Circulation – Ground Level
14B	Proposed Site Circulation – Garage Level (B1)
14C	Proposed Pick-up/Drop-off Circulation
15	Curbside Management Plan
16A-F	Peak Hour Site Trip Distributions
17	Peak Hour Site Trip Assignment
18	2026 Total Future Peak Hour Traffic Volumes
19	2026 Total Future Peak Hour Traffic Volumes with Improvements

LIST OF APPENDICES

APPENDIX	TITLE
A	Scoping Document
B	Traffic Count Data
C	Existing Traffic Signal Timings
D	Level of Service Descriptions
E	Existing Level of Service and Queue Reports
F	Background Level of Service and Queue Reports
G	On-site Queuing Analysis
H	Swept Area Diagrams
I	Total Future Level of Service and Queue Reports
J	Improvement Analyses

INTRODUCTION

OVERVIEW

This report presents a Comprehensive Transportation Review (CTR) conducted for the River School's proposed relocation plan. Founded in 1999 and currently located at 4880 MacArthur Boulevard NW in the Palisades neighborhood of Washington, DC, the River School (referred to herein as the Applicant or the School) is seeking to relocate to 4220 Nebraska Avenue NW to bolster their mission, their financial sustainability, and their unique legacy of ensuring an inclusive educational experience for children with hearing loss. In addition to its core academic program enrolling students from 18 months through third grades, the School also includes a clinic that supports children and their families with a range of services aimed at optimizing the outcomes of children with hearing loss. The clinic primarily serves children enrolled at the School and alumni, but also offers specialized services to those throughout the greater DC area.

The River School currently has an enrollment of approximately 220 students with 70 faculty and staff. The School proposes to expand to a maximum enrollment of 350 students and 90 faculty and staff at the new campus at 4220 Nebraska Avenue. The proposed increase in enrollment and faculty/staff will allow the School to add Grades 4 through 6 to its.

The proposed site of the relocation is in the R-1-B zone and generally is bordered by Nebraska Avenue on the east, 42nd Street on the west, Van Ness Street on the south, and single-family homes on the north, as shown on Figure 1. The existing site currently is occupied by a single-family estate located on approximately 2.3 acres. Because the proposed site is in a residential zone, the proposed project will require the approval of a Special Exception application by the Board of Zoning Adjustment (BZA).

The Applicant proposes to redevelop the site with a school facility that will contain 48,678 SF of gross floor area (GFA), as well as below grade space. The School also will use the existing house and outbuildings on site (13,162 SF of GFA). The proposed development will include a 55-space below-grade parking garage plus 10 surface parking spaces. Access to the site will be provided by two new curb cuts on Nebraska Avenue: one for inbound traffic and one for outbound traffic. The northern-most (inbound) curb cut will be in the approximate location of the existing driveway and curb cut and will be 20 feet in width to facilitate emergency vehicle access to the site[1]. The southern-most (outbound) curb cut will be 10 feet in width. Left turns into and out of the site will be prohibited. An existing curb cut on 42nd Street will be closed. The proposed plan is shown on Figure 2.

[1] The project team currently is evaluating the feasibility of reducing the northern curb cut width to 10 feet.

The purpose of this report is to:

- Evaluate existing traffic operational and safety conditions,
- Evaluate full build out future traffic conditions without the proposed development,
- Evaluate full build out future traffic conditions with the proposed development,
- Identify existing mode choice alternatives,
- Identify any traffic operational impacts associated with the proposed development,
- Evaluate the appropriateness of the proposed parking,
- Evaluate effectiveness of the proposed loading facilities, and
- Recommend transportation improvements (including roadway, operational, and transportation management strategies) to mitigate the impact of the development and promote the safe and efficient flow of vehicular and pedestrian traffic associated with the proposed development.

STUDY SCOPE

This study was undertaken to assess the impacts of the proposed development on the surrounding roadway network. The scope of the study and proposed methodologies were approved by the District Department of Transportation (DDOT) prior to beginning the study. The agreed upon scoping document is included in Appendix A.

The study area was selected based on those intersections that potentially could be impacted by the proposed development. Subsequent to the scoping process, Advisory Neighborhood Commission (ANC) 3E requested that additional study intersections be included. Therefore, the study area was expanded to include eight additional intersections.

The following intersections were identified for detailed analysis, and are shown on Figure 3:

1. 42nd Street/River Road, *
2. 42nd Street/Albemarle Street,*
3. 42nd Street/Yuma Street,*
4. 42nd Street/Warren Street (North),*
5. 42nd Street/Warren Street (Middle),*
6. 42nd Street/Warren Street (South),*
7. Van Ness Street/42nd Street,
8. 42nd Street/Nebraska Avenue,*
9. Van Ness Street/Nebraska Avenue,
10. Van Ness Street/41st Street,*
11. Van Ness Street/Wisconsin Avenue,
12. Tenley Circle/Wisconsin Avenue,
13. Nebraska Avenue/Warren Street, and
14. Nebraska Avenue/41st Street.*

* Intersection added at the request of ANC 3E.

TRANSPORTATION FACILITIES

ROADWAY NETWORK

Existing Conditions

General details regarding the surrounding roadway segments, including functional classification, average daily traffic (ADT) volume, and speed limit are summarized in Table 1. All roadways in the study area operate as two-way streets with the exception of Tenley Circle, which operates in a one-way, counterclockwise direction.

Table 1
Existing Conditions by Roadway Segment Details

Roadway	Functional Classification	Average Daily Traffic (vehicles per day)①	Speed Limit (miles per hour)
Nebraska Avenue NW	Principal Arterial	16,000	30②
Wisconsin Avenue NW	Principal Arterial	29,000	30
Tenley Circle NW	Principal Arterial	11,000	25③
River Road NW	Minor Arterial	7,000	25②
Van Ness Street NW	Collector	4,000	25②④
42nd Street NW	Collector	6,000	25⑤
Albemarle Street NW	Collector	2,000	25⑥
Warren Street NW	Local	N/A	25③
Yuma Street NW	Local	N/A	25②
41st Street NW	Local	N/A	25③

① ADT volume is based on DDOT traffic volume data collected in 2018, which are the most recent data available.
② 15 mph School Zone ("When Children are Present") speed limit posted.
③ Speed limit unposted in the study area; assumed to be 25 mph.
④ Only one School Zone speed limit sign is posted on Van Ness Street. It is located immediately east of Nebraska Avenue and faces westbound traffic.
⑤ A 15 mph School Zone ("When Children are Present") speed limit is posted for northbound traffic south of Yuma Street. North of Yuma Street, a 15 mph School Zone (from 8:30 AM to 4:00 PM) is posted for northbound traffic.
⑥ A 15 mph School Zone ("When Flashing") speed limit is posted for eastbound traffic east of Alton Place and for westbound traffic, west of Wisconsin Avenue. A 15 mph School Zone (from 8:30 AM to 4:00 PM) is posted for eastbound traffic east of 42nd Street.

Future Conditions

The developer of the Broadcast building (4620-4624 Wisconsin Avenue) is expanding the park at the intersection of River Road/42nd Street/Brandywine Drive by closing the segment of Brandywine Drive between 42nd Street and River Road. Construction of the park is imminent, with completion anticipated in Spring 2022. This change to the roadway network was incorporated into the 2026 future conditions presented herein.

MULTI-MODAL TRANSPORTATION FACILITIES

Existing Public Transportation Facilities and Services

Public transportation facilities in the vicinity of the site include bus stops immediately south of the site and at Tenley Circle and the Tenleytown – AU Metro Station on the Metro Red Line.

Metrorail Service

As shown on Figure 4, the proposed project is located approximately 0.3 miles south of the Tenleytown – AU Metro Station. The station provides access to the Metro Red Line. Riders can transfer to the Orange, Blue or Silver Lines with an out-of-station transfer between the Farragut North and Farragut West Metro Stations or at Metro Center. Riders can transfer to the Yellow or Green Lines at the Gallery Place – Chinatown Metro Station.

The Red Line currently operates with six-minute headways on weekdays between 5:00 AM and 7:00 PM. On weekends, the Red Line operates with 12-minute headways from 7:00 AM to 7:00 PM. From 7:00 PM to midnight, the Red Line operates with 15-minute headways each day of the week.

Bus Service

The site is approximately 300 feet from bus stops serving Metrobus route M4. Within ¼ mile of the site, bus stops along Wisconsin Avenue at Yuma and Van Ness Streets serve eight additional routes (30N, 30S, 31, 33, 96, D32, H2, and H4).

Existing bus service is shown on Figure 4.

Pedestrian Facilities

MoveDC is a 25-year vision for the District's Transportation Infrastructure. Priorities outlined in *moveDC* have been incorporated in the District of Columbia's Statewide Transportation Improvement Program (DC STIP). *MoveDC* provides infrastructure and policy recommendations for all modes of transportation, including pedestrians.

According to the *Pedestrian Element* of *moveDC*, several opportunities for improvement exist within the District, including:

- Enhancing accessibility, which includes evaluating and improving uncontrolled crosswalks on high-speed, multi-lane roadways and improving signalized intersections with high pedestrian crash rates;
- Improving the pedestrian network outside of downtown, which includes providing pedestrian facility enhancements where sidewalks are lacking;

- Making priority investments, which includes prioritizing pedestrian needs in critical locations near schools, transit stations, and high hazard locations;
- Promoting enforcement, which includes enforcement policy changes; and
- Improving intersection designs, which includes closing gaps in the pedestrian network and improvement in intersection lighting, crosswalks, signage, refuge islands, and pedestrian signalization/phasing.

The *Pedestrian Element's* Recommended Pedestrian Network includes addressing sidewalk gaps in the District. The Recommended Pedestrian Network also includes proposed trails and sidewalks at the following locations within the study area:

- Sidewalk on Warren Street between 42nd Street and Nebraska Avenue,
- Sidewalk on Veazy Street between Warren Street and 41st Street, and
- Trail on Nebraska Avenue between Tenley Circle and Newark Street.

As shown in Figure 5, the conceptual plan provided by DDOT shows that the proposed multi-use trail on Nebraska Avenue would widen the existing sidewalk by four feet. In addition, shrubs would be removed and trimmed along the proposed multi-use trail to accommodate sidewalk widening.

Additionally, at the request of DDOT, the River School proposes to construct a new sidewalk along the property's 42nd Street frontage. The ¼-mile pedestrian walkshed is shown on Figure 6.

Bicycle Facilities

According to the *Bicycle Element* of *moveDC*, several opportunities for improvement exist within the District, including:

- Improving the cycling experience on bridges and approaches to bridges;
- Minimizing barriers such as complex intersections, security barriers, freeway ramps, and driveways;
- Expanding investment in the bicycle network beyond downtown; and
- Improving safety by educating all road users and increasing public awareness.

The *Bicycle Element's* Recommended Bicycle Network includes the following improvements within the study area:

- Trail along Nebraska Avenue between Tenley Circle and Newark Street,
- Bicycle lane on Van Ness Street between Wisconsin Avenue and 41st Street (completed),
- Bicycle lane on Albemarle Street between 49th Street and Broad Branch Road, and
- Bicycle lane on River Road between Western Avenue and Wisconsin Avenue.

The ½-mile bicycle shed is shown on Figure 7.

Capital Bikeshare

As shown on Figure 7, the closest Capital Bikeshare (CaBi) station is located on Yuma Street west of Tenley Circle and includes 19 docks. A 14-dock station also is located at the Wisconsin Avenue/ Albemarle Street intersection and a 14-dock station is located at the 39th Street/Veazey Street intersection.

In conjunction with the American University 2021 Campus Plan (AU Campus Plan), the University will be required to install a new 19-dock CaBi station, which is expected to be located near the intersection of Nebraska Avenue and Rockwood Parkway. Additionally, the University will be required to install at least one four dock expansion plate to each to the two existing CaBi stations on Nebraska Avenue and Massachusetts Avenue.

The Draft Capital Bikeshare Development Plan Update (May 2020) outlined a system-wide expansion plan. The Draft Plan estimates that 81 new stations could be added to the program while remaining within existing fiscal constraints. Simultaneously, the program would refurbish 194 stations and replace 2,533 bicycles either retired due to end-of-life or lost due to theft and vandalism. E-bikes would replace half of all bicycles retired at the end of their useful life.

The proposed station locations are identified as DDOT-planned stations or stations recommended by the CaBi project team. Stations recommended by the project team were classified as low priority or high priority. A DDOT-planned station was identified just west of the River School site, within a ¼-mile radius, approximately centered on the Van Ness Street/45th Street intersection. The project team identified a low priority recommended location for a station with ¼-mile radius, approximately centered on 4000 Nebraska Avenue. Both locations are shown on Figure 7.

Car Sharing Services

Two car-sharing providers currently operate in the District. Zipcar uses a reserved space model, meaning cars must be returned to the same designated parking spaces from which they were picked up. No Zipcars are located near the site.

Free2Move uses a point-to-point model, which means a vehicle does not have to be returned to its original location; a Free2Move vehicle can be parked in any unrestricted curbside parking space, in any metered curbside parking space (without paying meter fees), or in any residential permit parking space. Free2Move currently has 600 vehicles in the District.

EXISTING CONDITIONS ANALYSIS

TRAFFIC VOLUMES

Vehicular turning movement, bicycle, and pedestrian counts were obtained for the AM peak hour, PM School peak hour, and PM Commuter peak hour. The majority of the AM and PM Commuter peak period traffic counts were obtained from the American University 2021 Campus Plan CTR conducted by Nelson/Nygaard (latest revision February 4, 2021) or from available historical traffic counts. Table 2 summarizes the sources of the traffic counts for the AM and PM Commuter peak period traffic counts and the dates of the counts.

Table 2
AM and PM Commuter Peak Period Traffic Count Summary

Intersection	Date	Source
1. 42nd /River*	11/19/14[π]	W+A Files
2. 42nd/Albemarle*	2/27/20	AU 2021 Campus Plan CTR
3. 42nd/Yuma*	2/27/20	AU 2021 Campus Plan CTR
4. 42nd/Warren North*	2/27/20	AU 2021 Campus Plan CTR
5. 42nd/Warren Middle*	2/27/20	Derived from Ints. #4,6,13
6. 42nd/Warren South*	2/27/20	AU 2021 Campus Plan CTR
7. 42nd/Van Ness	1/6/16	DDOT Traffic Count Database
8. 42nd/Nebraska*	12/16/15[π]	DDOT Traffic Count Database
9. Van Ness/Nebraska	2/27/20	AU 2021 Campus Plan CTR
10. Van Ness/41st*	5/18/21	W+A Count and derived from Ints. #9,11[†]
11. Van Ness/Wisconsin	2/27/20	AU 2021 Campus Plan CTR
12-1. Wisconsin/Tenley South	2/27/20	AU 2021 Campus Plan CTR
12-2. Yuma/Tenley East	5/18/21	AU Tenley Campus CTR
12-3. Internal Tenley Circle Intersection	5/18/21	AU Tenley Campus CTR
12-4. Internal Tenley Circle Intersection	5/18/21	Derived from Ints. #12-3, 12-9
12-5. Wisconsin/Tenley North	2/27/20	AU 2021 Campus Plan CTR
12-6. Yuma/Tenley West	2/27/20	AU 2021 Campus Plan CTR
12-7. Internal Tenley Circle Intersection	2/27/20	AU 2021 Campus Plan CTR
12-8. Internal Tenley Circle Intersection	2/27/20	Derived from Ints. #12-1, 12-7
12-9. Nebraska/Fort/Tenley	5/18/21	AU Tenley Campus CTR
13. Nebraska/Warren	2/27/20	AU 2021 Campus Plan CTR
14. Nebraska/41st Street*	5/18/21	W+A Count[‡]

* Intersection added at the request of ANC 3E.
π Historical counts factored to 2020 using a growth rate of 0.5 percent per year for arterial roadways and 1.0 percent per year for all other roadways.
† The percent of left turns in the EB traffic stream and the percent of right turns in the WB traffic stream were determined from counts conducted in May 2021. EB and WB through volumes were derived from February 2020 counts at Ints. #9 and 11, respectively. EB left and WB right turn volumes were calculated by applying the aforementioned percentages to the 2020 through volumes.
‡ Counts conducted in May 2021 were factored to reflect non-pandemic conditions by the adjustment factors described below.

Historical counts older than 2020 were factored to the year 2020 based on growth rates approved by DDOT during the scoping process.

Traffic counts for the PM School peak period were conducted by Wells + Associates on Tuesday, May 18, 2021, and Wednesday, May 19, 2021. Select study intersections also were recounted during the AM peak hour on Wednesday, May 19, 2021. The new AM counts were compared to the AM counts conducted in February 2020 (prior to the pandemic), and adjustment factors were developed. The adjustment factors were applied to the PM School peak period counts to grow the PM School peak data collected on May 18 and May 19, 2021 to non-pandemic conditions.

Existing (2020) vehicular peak hour traffic volumes are shown on Figures 8 (intersection layout key) and 9 (2020 peak hour volumes). Traffic count data are included in Appendix B.

CAPACITY ANALYSIS

Capacity/level of service (LOS) analyses were conducted at the study intersections based on the existing lane use and traffic control shown on Figure 10 and 2020 peak hour traffic volumes shown on Figure 9.

Synchro software (Version 10.3, Build 151) was used to evaluate levels of service at the study intersections for the AM, PM School, and PM Commuter peak hours. Synchro is a macroscopic model used to evaluate the effects of changing intersection geometrics, traffic demands, traffic control, and/or traffic signal settings and to optimize traffic signal timings. The levels of service reported were taken from the Highway Capacity Manual (HCM) 2000 reports generated by Synchro[2]. Level of service descriptions are included in Appendix C.

The results of the analyses are summarized in Table 3. Capacity analysis worksheets for existing conditions are included in Appendix D.

[2] HCM 2000 reports typically are used because HCM 2010 does not allow for many of the non-standard intersection configurations present in the District. Because HCM 2000 does not provide queue results for all-way stop control intersection or level of service and queue results for roundabouts, the HCM 6th Edition results were used for those study intersections.

Table 3
Level of Service Summary

Approach	Existing Conditions			2026 Background Conditions			2026 Total Future Conditions		
	AM Peak	PM School	PM Comm	AM Peak	PM School	PM Comm	AM Peak	PM School	PM Comm
1. River Road/42nd Street									
SEB	B	B	A	B	B	A	B	B	A
NWB	A	B	B	A	B	B	A	B	B
NB	D	D	D	D	D	D	D	D	E (55.2) [0.82]
SB	D	C	D	D	C	D	D	C	D
Overall	**C (25.4)**	**B (19.5)**	**C (25.1)**	**C (24.1)**	**C (22.4)**	**C (25.1)**	**C (25.6)**	**C (23.5)**	**C (27.1)**
2. Albermarle Street/42nd Street									
EB	B	D	B	B	D	B	B	D	B
WB	B	F (181.3) [1.32]	B	B	F (221.9) [1.42]	B	B	F (223.5) [1.42]	B
NB	C	B	B	C	B	B	C	B	B
SB	C	B	B	C	B	B	C	B	B
Overall	**C (20.1)**	**F (88.4) [0.84]**	**B (16.5)**	**C (21.3)**	**F (104.4) [0.90]**	**B (16.9)**	**C (22.2)**	**F (103.9) [0.92]**	**B (16.8)**
3. Yuma Street/42nd Street									
EB	A	A	A	B	B	A	B	B	A
WB	A	B	A	B	B	A	B	B	A
NB	A	A	A	B	B	A	B	B	A
SB	A	A	A	B	B	A	B	B	A
4. Warren Street (North)/42nd Street									
EB	A	A	A	A	A	A	A	A	A
NB	A	A	A	A	A	A	A	A	A
SB	A	A	A	A	A	A	A	A	A
5. Warren Street/42nd Street									
WB	A	A	A	B	B	A	B	B	A
SB	A	A	A	A	A	A	A	A	A

Table 3
Level of Service Summary

Approach	Existing Conditions			2026 Background Conditions			2026 Total Future Conditions		
	AM Peak	PM School	PM Comm	AM Peak	PM School	PM Comm	AM Peak	PM School	PM Comm
6. Warren Street (South)/42nd Street									
EB	A	A	A	A	A	A	A	A	A
NB	A	A	A	A	A	A	A	A	A
SB	A	A	A	A	A	A	A	A	A
7. Van Ness Street/42nd Street									
EB	A	A	A	A	A	A	A	A	A
WB	A	A	A	A	A	A	A	A	A
NB	C	C	C	C	D	C	C	D	C
SB	C	C	C	C	E (37.9) [0.68]	D	D	E (44.8) [0.73]	D
8. Nebraska Avenue/42nd Street									
SB	B	C	C	B	D	C	B	E (37.9) [0.76]	C
NEB	A	A	A	A	B	A	A	B	A
9. Van Ness Street/Nebraska Avenue									
EB	D	C	C	D	C	C	D	C	C
WB	C	E (58.5) [0.42]	D	C	F (100.7) [1.22]	E (71.1) [1.08]	C	F (107.2) [1.22]	E (71.0) [1.08]
NEB	F (275.6) [1.54]	F (425.8) [1.88]	B	F (329.1) [1.66]	F (474.4) [1.99]	C	F (460.7) [1.96]	F (488.8) [2.02]	C
SWB	B	C	B	A	C	B	B	F (98.0) [1.09]	C
Overall	**F (123.8) [1.23]**	**F (219.1) [1.54]**	**C (21.4)**	**F (145.3) [1.36]**	**F (246.5) [1.70]**	**C (31.4)**	**F (193.5) [1.55]**	**F (267.7) [1.72]**	**C (34.7)**
10. Van Ness Street/41st Street									
EB	A	A	A	A	A	A	A	A	A
WB	A	A	A	A	A	A	A	A	A
NB	C	F (123.8) [0.83]	C	C	F (304.7) [1.27]	D	C	F (331.7) [1.32]	D
SB	B	D	C	B	E (43.7) [0.22]	C	B	E (46.5) [0.23]	C

Table 3
Level of Service Summary

Approach	Existing Conditions			2026 Background Conditions			2026 Total Future Conditions		
	AM Peak	PM School	PM Comm	AM Peak	PM School	PM Comm	AM Peak	PM School	PM Comm
11. Van Ness Street/Wisconsin Avenue									
EB	D	F (98.6) [1.08]	D	D	F (138.2) [1.18]	E (62.0) [0.83]	D	F (138.5) [1.19]	E (63..0) [0.84]
WB	D	E (76.7) [0.87]	D	E (57.3) [0.79]	F (136.6) [1.69]	E (56.4) [0.84]	E (62.3) [0.81]	F (138.4) [1.69]	E (57.2) [0.85]
NB	C	F (325.6) [1.65]	A	C	F (552.2) [2.16]	C	C	F (559.6) [2.16]	C
SB	A	F (98.0) [1.15]	B	A	F (279.1) [1.55]	B	A	F (282.4) [1.56]	B
Overall	**B (18.2)**	**F (188.9) [1.44]**	**C (22.2)**	**C (22.1)**	**F (355.2) [1.97]**	**C (28.4)**	**C (24.3)**	**F (359.8) [1.98]**	**C (28.6)**
12-1. Tenley Circle/Wisconsin Avenue (South)									
NB	D	F (202.1) [1.36]	C	D	F (285.4) [1.55]	C	E (57.2) [0.98]	F (292.3) [1.57]	C
SB	A	B	B	B	B	B	B	B	B
NEB	B	D	C	C	E (71.0) [1.06]	C	C	E (70.7) [1.07]	C
Overall	**B (19.4)**	**F (95.3) [1.33]**	**C (21.9)**	**C (25.6)**	**F (130.5) [1.47]**	**C (23.0)**	**C (27.1)**	**F (133.3) [1.49]**	**C (23.0)**
12-2. Tenley Circle/Yuma Street (East)									
WB	B	B	B	B	B	B	B	B	B
12-5. Tenley Circle/Wisconsin Avenue (North)									
NB	B	B	A	A	B	A	A	B	A
SB	C	C	C	D	D	C	D	D	C
SWB	C	B	B	D	B	B	D	B	B
Overall	**C (26.1)**	**C (20.1)**	**B (17.1)**	**C (32.5)**	**C (27.5)**	**C (20.3)**	**C (35.0)**	**C (27.8)**	**C (20.4)**
12-6. Tenley Circle/Yuma Street (West)									
EB	B	E (39.0) [0.75]	C	B	F (55.9) [0.87]	D	B	F (79.6) [0.98]	D

Table 3
Level of Service Summary

Approach	Existing Conditions			2026 Background Conditions			2026 Total Future Conditions		
	AM Peak	PM School	PM Comm	AM Peak	PM School	PM Comm	AM Peak	PM School	PM Comm
12-9. Tenley Circle/Nebraska Avenue/Fort Drive									
NB	B	F (401.6) [1.54]	F (112.1) [0.89]	B	F (447.8) [1.65]	F (135.2) [0.95]	B	F (448.5) [1.66]	F (135.3) [0.96]
SB	A	A	A	A	A	A	A	A	A
SWB	D	D	D	D	D	D	D	D	D
Overall	**C (24.8)**	**F (270.4) [1.63]**	**E (77.1) [0.96]**	**C**	**F (302.8) [1.74]**	**F (90.9) [1.03]**	**C (27.4)**	**F (303.0) [1.75]**	**F (91.1) [1.04]**
13. Warren Street/Nebraska Avenue									
EB	E (36.8) [0.17]	F (59.3) [0.35]	C	F (52.4) [0.34]	F (107.0) [0.64]	F (57.9) [0.32]	E (44.0) [0.45]	F (109.2) [0.76]	F (169.0) [0.79]
WB	E (44.2) [0.34]	F (255.0) [1.06]	F (50.6) [0.35]	F (51.0) [0.40]	F (616.9) [1.80]	F (105.3) [0.62]	F (72.7) [0.55]	F (1110.3) [2.76]	F (*) [*]
NEB	A	A	A	A	A	A	A	A	A
SWB	A	A	A	A	A	A	A	A	A
14. Nebraska Avenue/41st Street									
SWB	A	A	A	A	A	A	A	A	A
NB	C	E (42.8) [0.57]	B	C	F (54.8) [0.66]	B	C	F (58.2) [0.70]	C
15. Site Entrance/Nebraska Avenue									
EB	NA			NA			C	D	C

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

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

Where approach includes multiple lane groups, the lane group with the highest v/c ratio is provided.

As shown in Table 3, all approaches at the study intersections operate at a LOS D or better under existing conditions, with the exception of the following intersections/approaches:

- Intersection #2 (42nd Street/Albemarle Street)
  - The westbound approach operates at a LOS F during the PM School peak hour.
  - The intersection operates at an overall LOS F during the PM School peak hour.
- Intersection #9 (Van Ness Street/Nebraska Avenue)
  - The northeast-bound (Nebraska Avenue) approach operates at a LOS F during the AM and PM School peak hours.
  - The westbound (Van Ness Street) approach operates at a LOS E during the PM School peak hour.
  - The intersection operates at an overall LOS F during the AM peak hour and PM School peak hour.
- Intersection #10 (Van Ness Street/41st Street)
  - The northbound (National Presbyterian School (NPS) Driveway) approach operates at LOS F during the PM School peak hour.
- Intersection #11 (Van Ness Street/Wisconsin Avenue)
  - All approaches operate at a LOS F during the PM School peak hour.
  - The intersection operates at an overall LOS F during the PM School peak hour.
- Intersection #12-1 (Tenley Circle/Yuma Street East)
  - The northbound (Tenley Circle) approach operates at a LOS F during the PM School peak hour.
  - The intersection operates at an overall LOS F during the PM School peak hour.
- Intersection #12-6 (Tenley Circle/Yuma Street West)
  - The eastbound approach operates at a LOS E during the PM School peak hour.
- Intersection #12-9 (Tenley Circle/Nebraska Avenue/Fort Drive)
  - The northbound (Tenley Circle) approach operates at a LOS F during the PM School and PM Commuter peak hours.
  - The intersection operates at an overall LOS F during the PM School peak hour and an overall LOS E during the PM Commuter peak hour.
- Intersection #13 (Nebraska Avenue/Warren Street)
  - The eastbound and westbound (Warren Street) approaches operate at a LOS E during the AM peak hour.
  - The eastbound and westbound (Warren Street) approaches operate at a LOS F during the PM School peak hour.

- The westbound (Warren Street) approach operates at a LOS F during the PM Commuter peak hour.

- Intersection #14 (Nebraska Avenue/41st Street)
  - The northbound (41st Street) approach operates at a LOS E during the PM School peak hour.

QUEUE ANALYSIS

A queuing analysis was conducted for the study intersections under existing conditions using the 95th percentile queue lengths reported by HCM 2000 and 6th Edition (HCM 6th Edition was only used for queues at all-way stop intersections and roundabouts since HCM 2000 does not provide queues for such intersections). The results are summarized in Table 4. Queue reports for existing conditions are provided in Appendix D.

As shown in Table 4, the results of the queuing analysis indicate that the existing queues would be adequately accommodated within the existing turn lane bays (where present) or without spilling back through adjacent intersections, with the following exceptions:

- Intersection #1 (River Road/42nd Street)
  - The northwest-bound (River Road) shared left-through-right lane group currently exceeds the available storage length during the PM School and PM Commuter peak hours.
  - The northbound (42nd Street) shared left-through-right lane group currently exceeds the available storage length during the AM, PM School, and PM Commuter peak hours.
- Intersection #2 (Albemarle Street/42nd Street)
  - The eastbound shared left-through-right lane group currently exceeds the available storage length during the AM and PM School peak hours.
- Intersection #9 (Van Ness Street/Nebraska Avenue)
  - The eastbound (Van Ness Street) shared left-through-right lane group currently exceeds the available storage length during the AM, PM School, and PM Commuter peak hours.
  - The westbound (Van Ness Street) left turn lane group currently exceeds the available storage length during the PM School and PM Commuter peak hours.
  - The northeast-bound (Nebraska Avenue) shared left-through-right lane group currently exceeds the available storage length during the AM, PM School, and PM Commuter peak hours.

  - The southwest-bound (Nebraska Avenue) shared left-through-right lane group queue currently exceeds the available storage length during the PM School peak hour.

- Intersection #11 (Van Ness Street/Wisconsin Avenue)
  - The eastbound (Van Ness Street) shared through-right lane group currently exceeds the available storage length during the AM, PM School, and PM Commuter peak hours.
  - The westbound (Van Ness Street) left turn lane group currently exceeds the available storage length during the PM School peak hour.
  - The northwest-bound (Wisconsin Avenue) shared left-through-right lane group currently exceeds the available storage length during the AM and PM School peak hours.
  - The southeast-bound (Wisconsin Avenue) shared left-through-right lane group currently exceeds the available storage length during the PM School peak hour.
- Intersection #12-1 (Tenley Circle/Wisconsin Avenue South)
  - The northbound (Wisconsin Avenue) shared through-right turn lane group currently exceeds the available storage length during the AM, PM School, and PM Commuter peak hours.
  - The northeast-bound (Tenley Circle) shared left-through-right lane group currently exceeds the available storage length during the PM School and PM Commuter peak hours.
- Intersection #12-5 (Tenley Circle/Wisconsin Avenue North)
  - The southbound (Wisconsin Avenue) shared through-right lane group currently exceeds the available storage length during the AM, PM School, and PM Commuter peak hours.
  - The southwest-bound (Tenley Circle) shared left-through-right lane group currently exceeds the available storage length during the AM, PM School, and PM Commuter peak hours.
- Intersection #12-9 (Tenley Circle/Nebraska Avenue/Fort Drive)
  - The northbound (Tenley Circle) right turn lane currently exceeds the available storage length during the PM School peak hour.
  - The southwest-bound (Nebraska Avenue) shared through-right lane group currently exceeds the available storage length during the AM, PM School, and PM Commuter peak hours.

Table 4
95th Percentile Queue Summary

Approach	Available Storage	Existing Conditions			2026 Background Conditions			2026 Total Future Conditions		
		AM Peak	PM School	PM Comm	AM Peak	PM School	PM Comm	AM Peak	PM School	PM Comm
1. River Road/42nd Street										
SEBLT SEBR	450	146	187	67	197	227	68	213	240	70
NWBLTR	70	71	261	155	103	338	163	103	338	163
NBLTR	40	188	171	201	215	233	210	244	257	242
SBLTR	280	230	126	178	224	130	169	224	130	169
2. Albermarle Street/42nd Street										
EBLTR	100	130	293	101	140	321	112	144	324	112
WBLTR	565	88	416	113	85	442	119	86	442	119
NBLTR	515	127	66	61	157	85	64	180	91	69
SBLTR	265	113	120	90	120	133	89	130	141	90
3. Yuma Street/42nd Street										
EBLTR	410	23	18	10	33	23	13	25	28	13
WBLTR	220	20	30	23	25	40	25	40	40	25
NBLTR	375	25	20	23	35	30	25	33	35	28
SBLTR	500	23	25	18	35	43	23	40	45	23
4. Warren Street (North)/42nd Street										
EBLR	275	0	0	0	0	0	0	0	0	0
NBLT	125	0	0	0	25	25	0	25	25	0
SBTR	375	0	0	0	25	25	0	0	25	0

Table 4
95th Percentile Queue Summary

Approach	Available Storage	Existing Conditions			2026 Background Conditions			2026 Total Future Conditions		
		AM Peak	PM School	PM Comm	AM Peak	PM School	PM Comm	AM Peak	PM School	PM Comm
5. Warren Street/42nd Street										
WBLTR	695	4	4	5	4	4	6	4	5	6
SBLT	125	2	1	0	2	1	0	2	1	0
6. Warren Street (South)/42nd Street										
EBLR	265	0	25	0	0	25	0	0	25	0
NBLT	360	0	0	0	0	25	0	25	25	0
SBTR	140	0	0	0	0	25	0	0	25	0
7. Van Ness Street/42nd Street										
EBLTR	440	1	0	0	1	3	0	1	3	1
WBLTR	95	2	1	1	2	1	2	2	1	2
NBLTR	150	20	31	26	24	56	37	27	69	41
SBLTR	360	40	46	59	51	115	104	58	130	113
8. Nebraska Avenue/42nd Street										
SBLR	150	31	94	51	34	139	66	31	154	69
NEBLT	490	11	25	14	12	27	16	12	31	16
9. Van Ness Street/Nebraska Avenue										
EBLTR	95	253	182	129	281	232	201	281	232	201
WBL	240	153	302	289	173	351	386	167	347	382
WBTR	240	160	181	196	187	204	238	182	196	237
NEBLTR	290	1261	1757	314	1354	1870	361	1057	1886	384
SWBLTR	435†	136	761	292	138	802	297	246	995	769

Table 4
95th Percentile Queue Summary

Approach	Available Storage	Existing Conditions			2026 Background Conditions			2026 Total Future Conditions		
		AM Peak	PM School	PM Comm	AM Peak	PM School	PM Comm	AM Peak	PM School	PM Comm
10. Van Ness Street/41st Street										
EBLTR	240	1	3	1	1	3	1	2	4	1
WBLTR	585	0	1	1	0	1	1	0	1	1
NBLTR	NA	16	116	23	17	171	30	19	176	31
SBLTR	240	4	11	6	4	20	8	4	21	9
11. Van Ness Street/Wisconsin Avenue										
EBL	90	39	84	78	64	131	148	65	131	144
EBTR	215	278	416	315	288	476	412	299	467	410
WBL	80	83	159	63	118	205	94	130	205	94
WBTR	595	324	436	340	375	490	431	388	500	436
NWBL NWBTR	280	341	1079	269	548	1317	346	612	1330	347
SEBLTR	220	36	790	110	60	1091	196	61	1094	196
12-1. Tenley Circle/Wisconsin Avenue (South)										
NBT NBR	155	345	928	257	556	1122	313	567	1136	314
SBT	95	87	97	90	91	100	92	90	100	92
NEBLTR	515	451	802	533	502	875	594	514	881	598
12-2. Tenley Circle/Yuma Street (East)										
WBR	320	20	29	14	24	33	17	25	33	17
12-5. Tenley Circle/Wisconsin Avenue (North)										
NBT	95	83	88	74	84	83	77	84	82	76
SBTR	160	435	359	245	532	497	378	536	500	378
SWBLTR	95	620	468	442	678	511	496	709	529	501

Table 4
95th Percentile Queue Summary

Approach	Available Storage	Existing Conditions			2026 Background Conditions			2026 Total Future Conditions		
		AM Peak	PM School	PM Comm	AM Peak	PM School	PM Comm	AM Peak	PM School	PM Comm
12-6. Tenley Circle/Yuma Street (West)										
EBR	510	18	150	39	22	205	49	29	269	55
12-9. Tenley Circle/Nebraska Avenue/Fort Drive										
NBT	135	86	77	106	86	78	109	83	77	108
NBR	145	15	961	129	27	1236	165	20	1235	169
SBR	170	0	0	0	0	0	0	0	0	0
SWBTR	90	342	207	227	356	215	234	361	217	235
13. Warren Street/Nebraska Avenue										
EBLTR	695	15	35	2	33	74	31	52	102	89
WBLTR	290	35	124	35	42	180	70	65	222	*
NEBLT	120	1	1	2	1	1	2	2	1	3
NEBTR	120									0
SWBLT	480	2	2	3	2	2	4	2	2	4
SWBTR	480									
14. Nebraska Avenue/41st Street										
SWBLT	120	2	4	1	2	4	1	2	4	2
NBLR	90	16	78	9	18	99	10	21	108	23
15. Site Entrance/Nebraska Avenue										
EB	NA	NA			NA			31	39	30

† Distrance reported is to nearest intersection. Distance to proposed outbound driveway is approximately 200'. Distance to proposed inbound driveway is approximately 280'.

SAFETY EVALUATION

According to the DDOT's *Vision Zero Plan*, serious injuries decreased for nearly all modes of transportation in 2017, but fatalities increased. No fatal crashes occurred within ½ mile of the project in 2017.

The goal of Vision Zero is no fatalities and no serious injuries on the transportation system. In order to achieve the Vision Zero goal, the *Vision Zero Plan* identifies a number of strategies to improve safety. The strategies are categorized into four themes: 1) create safer streets, 2) protect vulnerable users, 3) prevent dangerous driving, and 4) be transparent and responsive.

The proposed project includes several recommended improvements (details discussed later in this report) to the transportation network that will further the Vision Zero goals. Specifically, these improvements include:

- Construction of a new sidewalk along the site's property frontage on 42nd Street where no sidewalk currently exists (this improvement furthers strategies under the following categories: creating safer streets and protecting vulnerable users);
- Installation of a pedestrian hybrid beacon on Nebraska Avenue near Warren Street to facilitate pedestrians crossing an arterial roadway where there currently are unsignalized crosswalks (this improvement furthers strategies under the following categories: creating safer streets and protecting vulnerable users);
- Replacement of a YIELD sign as the only means of traffic control on 41st Street at its intersection with Nebraska Avenue with a STOP sign and NO LEFT TURN sign (this improvement furthers strategies under the following category: creating safer streets); and
- Provision for traffic control officers at the access to and egress from the site to help manage conflicts between pedestrians and bicycles and entering and exiting vehicles (this improvement furthers strategies under the following categories: protecting vulnerable users and preventing dangerous driving).

2026 BACKGROUND CONDITIONS

TRAFFIC VOLUMES

Overview

The proposed school is anticipated to be constructed and open in 2026. In order to forecast year 2026 background traffic volumes in the study area without the proposed school, increases in traffic associated with growth outside the immediate site vicinity (regional growth) and increases in traffic associated with approved but not yet constructed developments in the study area (pipeline developments) were considered.

Regional Growth

DDOT's historical average daily traffic (ADT) volume maps were examined to determine an appropriate growth rate for the study area. Based on the calculated growth rates as summarized in the scoping document (included in Appendix A), an annual growth rate of 0.5 percent, compounded annually, was used for the arterial roadways, including Nebraska Avenue, Wisconsin Avenue, and River Road, and an annual growth rate of 1.0 percent per year, compounded annually, was used for the remaining roadways.

Pipeline Developments

Seven pipeline developments in the area that have been approved but were not yet constructed at the time of the counts area were identified. The locations of the pipeline developments are shown on Figure 11. Peak hour traffic volumes associated with the pipeline developments are shown on Figure 12. A summary of the pipeline developments is provided below.

Note that for purposes of the analyses contained herein, traffic associated with the AU Campus Plan was included in the regional growth. Although the AU Campus Plan was approved by the Zoning Commission in July 2021, a final order including conditions of approval has not yet been issued. The AU Campus Plan does not propose any new development on the Tenley Campus that would result in additional GFA, and AU only anticipates potential improvements to the existing Dunblane House to address accessibility requirements and accommodate academic and administrative needs. Under the new Campus Plan conditions proposed by AU, the Tenley Campus would continue to be limited to the 2,000-student cap established in AU's 2010 Campus Plan, although given that current and anticipated enrollment at Washington College of Law is substantially less than the 2,000-student cap, AU sought flexibility to allow students enrolled in other academic programs at AU to attend classes at the Tenley Campus subject to the 2,000-student cap. According to the CTR for the AU Campus Plan, traffic to the Tenley Campus is projected to increase by just 12 vehicle trips during the AM peak hour and just 18 vehicle trips during the PM peak hour over the course of the 10-year Campus Plan. In addition, vehicle trips associated with potential increases in student enrollment at AU's Main Campus and other

campus locations could gradually add through traffic along Nebraska Avenue over the course of the 2021 Campus Plan. Such growth would be accounted for in the regional growth rates.

Upton Place – 4000 Wisconsin Avenue

Upton Place features the replacement of a building formerly housing approximately 405,000 SF of office and 79,000 SF of retail to approximately 700 residential dwelling units and 126,000 SF of retail space. It is anticipated that construction will be completed in 2023. Site trip assignments for the development were taken from the 4000 Wisconsin Avenue Revised Comprehensive Transportation Review, prepared by Wells + Associates, dated August 2017. The CTR analyzed the net increase in trips associated with the project (i.e., trips generated by the proposed uses minus trips generated by the former uses) since the existing building was in use at the time of the study. However, at the time traffic counts were conducted for this study, the project was under construction and the former occupants had vacated the building. Therefore, the site assignments reflected in the analyses contained herein reflect the total new trips generated by the project, not the net new trips. The Upton Place development will generate an estimated 315 AM peak hour vehicle trips and 611 PM peak hour vehicle trips.

City Ridge – 3900 Wisconsin Avenue

City Ridge will feature approximately 750 residential dwelling units and 250,000 SF of retail space. It is anticipated that construction will be completed this year. Site trip assignments for the development were taken from the Comprehensive Transportation Review for the 3900 Wisconsin Avenue Large Tract Review conducted by Gorove/Slade, dated September 18, 2017. Like the Upton Place study, site assignments used in the CTR conducted by Gorove/Slade used the number of net new trips (i.e., trips generated by the proposed uses minus trips generated by existing uses). Since the project was under construction and former uses vacated at the time traffic counts for this study were conducted, the site assignments from the Gorove/Slade study were adjusted to account for the total number of new site trips, not the net new site trips. According to the study, the City Ridge development will generate an estimated 501 AM peak hour vehicle trips and 987 PM peak hour vehicle trips.

Sidwell Friends Campus Consolidation – 3825 Wisconsin Avenue

Sidwell Friends Campus Consolidation will increase its student capacity from 850 to 1250 students and its faculty and staff capacity from 190 to 310. It is anticipated that construction will be completed prior to the opening of the River School. Site trip assignments for the development were taken from the Sidwell Friends School Transportation Statement, prepared by Wells + Associates, dated December 2019. Because Sidwell Friends School committed to implementation of a comprehensive transportation demand management plan with established trip caps and monitoring requirements, the consolidation plan will result in 68 fewer AM peak hour trips than currently generated. During the PM School and PM Commuter peak hours, the school will generate an additional 33 and 111 peak hour trips, respectively. In conjunction with the campus

consolidation, all pick-up/drop-off traffic will be relocated to locations on campus, resulting in redistribution of existing school-related trips. Both the new site trips and the rerouted existing site trips were included in the pipeline site traffic assignments for Sidwell Friends School.

The Broadcast – 4620-4624 Wisconsin Avenue

The Broadcast will feature 146 residential dwelling units with 10,400 SF of retail space. It is anticipated that construction will be completed this year. Site trip assignments for the development were taken from the 4620 Wisconsin Avenue PUD Comprehensive Transportation Review Addendum, prepared by Wells + Associates, dated August 1, 2017. According to the study, the Broadcast development will generate an estimated 52 AM peak hour vehicle trips and 103 PM peak hour vehicle trips. At the time the CTR for the Broadcast development was completed, existing uses on the site were still in operation. As such, the CTR added only the net new site trips (i.e., total proposed site generated traffic minus existing site generated traffic) to the roadway network. Since the existing uses were vacated at the time the traffic counts for this study were done, the site trip assignments for the Broadcast development were adjusted to account for the total site trip generation, rather than the net new site trip generation.

Dancing Crab – 4615 Wisconsin Avenue

Dancing Crab will feature 41 residential dwelling units and 6,700 SF of retail space. Site trip assignments for the development were taken from the Dancing Crab Properties Multimodal Transportation Assessment, prepared by Wells + Associates, dated August 13, 2018. According to the study, the Dancing Crab development will generate an estimated 22 AM peak hour vehicle trips and 30 PM peak hour vehicle trips. The volume of traffic generated by the site was below DDOT's threshold for requiring a traffic impact assessment. As such, the trips associated with the Dancing Crab redevelopment are anticipated to be de minimis. Therefore, the trips generated by this pipeline project were not explicitly taken into account. Rather, the regional growth rate applied to the traffic volumes in the study area would account for traffic associated with this redevelopment.

Georgetown Day School Campus Consolidation – 4200 Davenport Street

Georgetown Day School recently relocated its Lower/Middle School from its location on MacArthur Boulevard to its Davenport Campus. Because the relocation had not yet taken place at the time the vast majority of the traffic counts were conducted, the trip generation associated with the campus consolidation was taken into account as a pipeline development. The proposed project ultimately will increase the cap at the School's Davenport campus from 500 students to 1,200 students. The faculty/staff cap will be increased from 100 full-time equivalent (FTE) faculty/staff to 260 FTEs.

Access to the Davenport Campus was provided via Davenport Street, which provided access to the below-grade and surface parking and the High School's pick-up/drop-off operation. In

conjunction with the campus consolidation, a new curb cut was constructed on River Road to provide an additional access point to the High School garage. Access to the new Lower/Middle School is provided via a new curb cut on Davenport Street and the existing public alley on Ellicott Street.

Traffic associated with the proposed increases in faculty/staff and student caps was included in the pipeline site trip assignments along with changes associated with changes to traffic patterns resulting from the change in access.

The Lady Bird – 4615 Wisconsin Avenue

The Lady Bird will feature 219 residential dwelling units and approximately 18,000 SF of retail space. It is anticipated that construction will be completed prior to 2026. Site trip assignments for the development were taken from The Lady Bird PUD Comprehensive Transportation Review, prepared by Gorove/Slade, dated August 23, 2019. According to the study, The Lady Bird development will generate an estimated 131 AM peak hour vehicle trips and 283 PM peak hour vehicle trips.

Background Forecasts

Background 2026 traffic forecasts were developed by combining the traffic grown to the year 2026 with the pipeline traffic volumes. The resulting 2026 background traffic forecasts are shown on Figure 13.

CAPACITY ANALYSIS

Capacity/level of service (LOS) analyses were conducted at the study intersections based on the future background traffic forecasts shown on Figure 13 and the existing lane use and traffic control shown on Figure 10.

The results of the analyses are summarized in Table 3. Capacity analysis worksheets are included in Appendix E. As shown in Table 3, background conditions generally are consistent with existing conditions for intersections along 42nd Street. Intersections along Van Ness Street and Wisconsin Avenue generally are expected to experience additional delay. The following summarizes intersections and approaches that operate at acceptable levels of service under existing conditions but drop to a LOS E or LOS F under background conditions.

- Intersection #7 (Van Ness Street/42nd Street)
  - The southbound (42nd Street) approach is projected to drop from a LOS C to a LOS E during the PM School peak hour.
- Intersection #9 (Van Ness Street/Nebraska Avenue)
  - The westbound (Van Ness Street) approach is projected to drop from a LOS D to a LOS E during the PM Commuter peak hour.
- Intersection #10 (Van Ness Street/41st Street)
  - The southbound (41st Street) approach is projected to drop from a LOS D to a LOS E during the AM and PM School peak hours.
- Intersection #11 (Van Ness Street/Wisconsin Avenue)
  - The eastbound (Van Ness Street) approach is projected to drop from a LOS D to a LOS E during the PM Commuter peak hour.
  - The westbound (Van Ness Street) approach is projected to drop from a LOS D during the AM and PM Commuter peak hours to a LOS E and from a LOS E to a LOS F during the PM School peak hour.
- Intersection #12-1 (Tenley Circle/Yuma Street East)
  - The northeast-bound (Tenley Circle) approach is projected to drop from a LOS D to a LOS E during the PM School peak hour.
- Intersection #12-6 (Tenley Circle/Yuma Street West)
  - The eastbound (Yuma Street) approach is projected to drop from a LOS E to a LOS F during the PM School peak hour.
- Intersection #12-9 (Tenley Circle/Nebraska Avenue / Fort Drive)
  - The intersection is projected to drop from an overall LOS E to a LOS F during the PM Commuter peak hour.
- Intersection #13 (Warren Street/Nebraska Avenue)
  - The westbound (Warren Street) approach is projected to drop from a LOS E to a LOS F during the AM peak hour.
- Intersection #14 (Nebraska Avenue/41st Street)
  - The northbound (41st Street) approach is projected to drop from a LOS E to a LOS F during the PM School peak hour.

QUEUE ANALYSIS

A queuing analysis was conducted for the study intersections under 2026 background conditions using the 95th percentile queues reported by Synchro. The results are summarized Table 4. Queue reports are provided in Appendix E.

As shown in Table 4, the 95th percentile queues at the study intersections under 2026 background conditions generally are consistent with existing conditions. The following summarizes the locations where queues would exceed the available storage as a result of regional growth and pipeline traffic or where queues increase by 150 feet or more compared to existing conditions:

- Intersection #1 (River Road/42nd Street)
  - The northwest-bound (River Road) shared left-through-right queue is expected to exceed the available storage length during the AM peak hour.
- Intersection #2 (Albemarle Street/42nd Street)
  - The eastbound (Albemarle Street) shared left-through-right queue is expected to exceed the available storage length during the PM Commuter peak hour.
- Intersection #11 (Van Ness Street/Wisconsin Avenue)
  - The eastbound (Van Ness Street) left turn queue is expected to exceed the available storage length during the PM School and PM Commuter peak hours.
  - The westbound (Van Ness Street) left turn queue is expected to exceed the available storage length during the AM and PM Commuter peak hours.
- Intersection #12-1 (Tenley Circle/Wisconsin Avenue South)
  - The northbound (Wisconsin Avenue) shared through-right turn queue is expected to increase by more than 150 feet during the AM peak hour and PM School peak hour.
  - The southbound (Wisconsin Avenue) through queue is expected to exceed the available storage length during the PM School peak hour.
- Intersection #12-9 (Tenley Circle/Nebraska Avenue/Fort Drive)
  - The northbound right turn queue is expected to increase by more than 150 feet during the PM School peak hour when compared to existing conditions.
- Intersection 14 (Nebraska Avenue / 41st Street)
  - The northbound (41st Street) shared left-right queue is expected to exceed the available storage length during the PM School peak hour.

SITE ANALYSIS

OVERVIEW

The subject site is located on Square 1727, Lots 4 and 5 in Ward 3 and within the boundaries of ANC 3E. The site generally is bordered by Nebraska Avenue on the east, 42nd Street on the west, Van Ness Street on the south, and single-family homes on the north. The property is located in the R-1-B zone and currently is occupied by a single-family home with several outbuildings.

The River School proposes to renovate the interior of the existing single-family home and construct two new pavilions on site.[3] The existing building will house the School's administrative and clinic offices and some of the School's youngest students. The pavilions will house space for classrooms, student gatherings, offices, and a gym.

The new facility will allow the River School to expand its student body by adding fourth through sixth grades. The School proposes an enrollment cap of 350 students and a faculty/staff cap of 90. However, some of the students are part-week students who attend school either two mornings per week or three mornings per week. Based on current enrollment numbers, the School projects that 24 to 48 of the 350 students will be part-week in the future. As a result, the maximum number of students on campus on any given day will be 326 to 338. To provide the most conservative analysis, the analyses contained herein used a maximum of 338 students on campus on any given day.

The proposed clinic use will continue to provide the array of services as it does at the current school on MacArthur Boulevard. The clinic serves as an ancillary function that directly supports the School's core educational mission. The clinic primarily serves the River School population, including alumni, but also is open to the surrounding community. Based on current clinic patients, 60 percent of the patients at the new site are anticipated to be students enrolled at the River School. Once the School reaches its maximum enrollment of 350 students, the School will have 10 full-time clinicians on staff.

SITE ACCESS AND CIRCULATION

Overview

The site currently is served by two curb cuts: one on Nebraska Avenue and one on 42nd Street. Under the proposed plan, there will be no increase in the number of curb cuts. At the request of several community members, the 42nd Street curb cut will be closed to vehicular access and a second curb cut will be introduced to Nebraska Avenue. As a result, all vehicular access to the site will be provided via two curb cuts on Nebraska Avenue. The northern curb cut will replace

[3] For zoning purposes, the two new pavilions are considered a single building since they are connected below-grade by a level of programmed space and the below-grade parking garage.

the existing curb cut and will be in approximately the same location. The northern curb cut will provide inbound access only and will be limited to right-in maneuvers. The northern curb cut is proposed to be 20 feet wide to accommodate emergency vehicle access. Within the property, a portion of the 20-foot northern driveway will be paved with a vegetated permeable pavement that will be drivable but will provide additional permeable surface and greenery. The southern curb cut is proposed to be 10 feet wide and will provide right turn egress only. The two proposed curb cuts will provide access to a one-way pick-up/drop-off (PUDO) loop on campus. Access to the below-grade garage will be provided from the loop road via a covered ramp in the northeast corner of the site. Vehicular access is shown on Figure 14A.

Pedestrians and bicyclists can access the site via Nebraska Avenue, as shown on Figures 14A (Ground Level) and 14B (Garage Level).

Pick-up/Drop-off Operations

Internal to the site, the loop road will provide sufficient stacking to accommodate the PUDO operations without causing spillback onto Nebraska Avenue. As shown on Figure 14C, the PUDO loop has a capacity of 22 vehicles. The capacity was identified as the number of cars that could be queued on site without blocking access to the ramp to the parking garage (to allow vehicles heading to the garage to do so without having to wait in the queue). The 22-vehicle capacity also assumes that the portion of the driveway paved with the vegetated permeable pavement will not be used for queuing of vehicles on a regular basis. An additional five vehicles could be accommodated before the queue would block the sidewalk or spill out onto Nebraska Avenue ("overflow" spaces) and includes the portion of the driveway paved with vegetated permeable pavement.

Importantly, the proposed PUDO plan allows for up to 14 vehicles to load or unload students simultaneously. Such a design gives the School flexibility in their PUDO management to determine the most efficient loading and unloading scenario. For example, if three cars load students simultaneously, vehicles will move more quickly through the queue than if one vehicle loads at a time. However, at some point, adding more vehicles to the simultaneous loading process ceases to gain efficiency and could start slowing the process down.

In addition to the surface PUDO loop, three parking spaces in the garage will be designated as short-term (15-minute) parking for parents who need to walk their children into the school. Parents using the PUDO loop will not be permitted to exit their vehicle.

Pick-up/Drop-off Queue Analysis

Detailed queuing analyses were undertaken to ensure that the on-site stacking capacity is adequate to accommodate the volume of PUDO traffic projected for the site. Two different methods were used to estimate the queues: 1) an M/M/I queuing model and 2) queuing data collected at the River School's existing site were extrapolated based on the projected increase in traffic volumes at the new school.

M/M/1 Queue Model

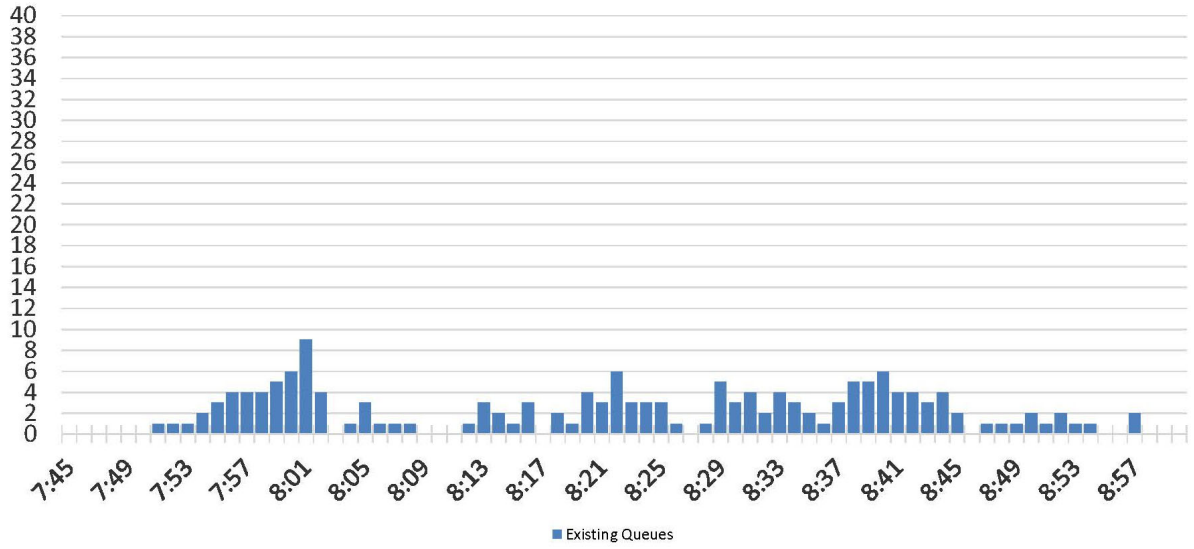
The M/M/1 queuing model assumes that arrivals follow a Poisson distribution with exponential service times. In other words, it assumes that all arrivals occur randomly and independent of each other. The model also assumes a single server processes the arrivals. A single server is appropriate in this case. Although a bypass lane is incorporated into the design of the PUDO lane, traffic monitors will only allow traffic to use the bypass lane in special circumstances since students will be loading and unloading from a dual stacked lane.

The queuing model was calibrated for the morning drop-off and afternoon pick-up based on field observations at the existing school. The arrival volume was modified to match the projected trip generation for the proposed school. The results of the M/M/1 queuing model indicate a 99th percentile queue of 12 vehicles during the morning drop-off and 17 vehicles during the afternoon pick-up. Details of the M/M/1 queueing analysis are included in Appendix F.

Extrapolation Method

Exhibit 1A shows the existing AM peak hour queues recorded at the existing River School site. The maximum queue was recorded every minute from 7:00 AM to 9:00 AM. The maximum observed queue was nine vehicles. Existing trip generation for the site indicates that 88 vehicles enter the queue during the AM peak hour.

Exhibit 1A
Existing Queues – AM Drop-off



At the time the queuing study was conducted, the River School was operating under a staggered morning arrival as part of their COVID protocols to limit the number of children entering the building at one time. Parents are given a 15-minute window in which to arrive at the school. The effect of the staggered arrivals can be seen in Exhibit 1, which shows distinct peaks. The School has had positive results from the staggered arrival and has agreed to continue the staggered arrival and extend the protocol to the afternoon dismissal.

Exhibit 1B overlays the projected queues with the existing queues. The projected queues were derived by proportionally increasing the queues based on the proportional increase in trip generation. The capacity of the PUDO operation also is shown on Exhibit 1B. Note that the three spaces in the garage were assumed to turn over three times in the hour resulting in nine PUDO spaces in the garage.

Exhibit 1B
Projected Queues – AM Drop-off

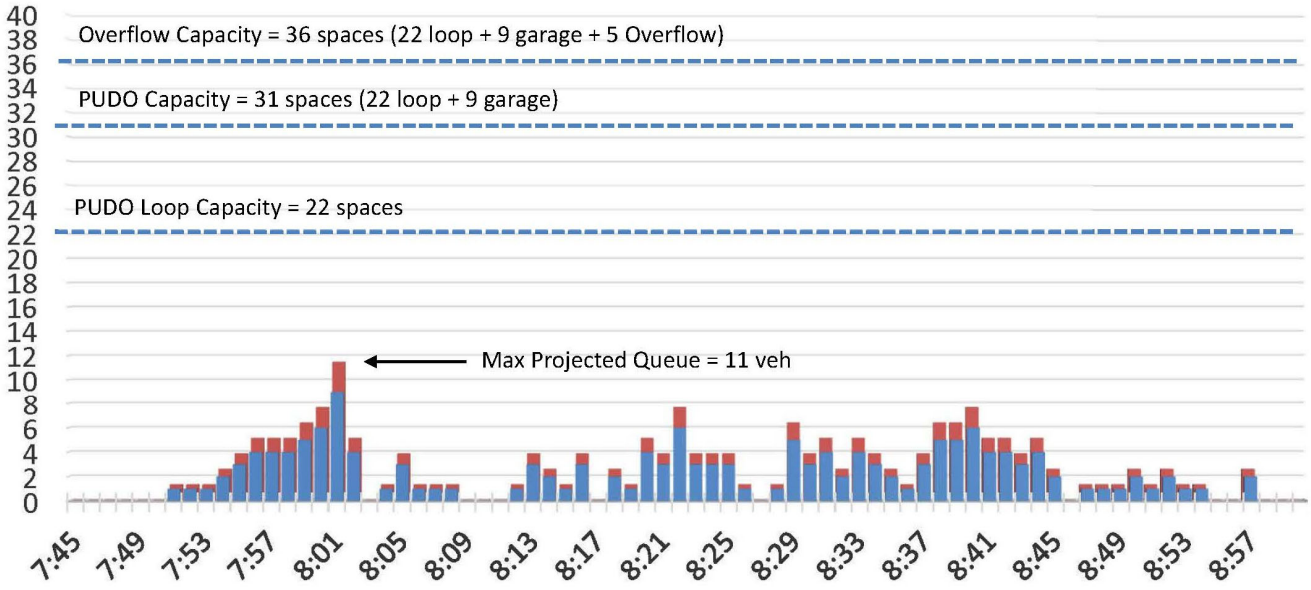


Exhibit 2A shows the existing PM peak hour queues recorded at the existing River School site. The maximum queue was recorded every minute from 2:30 PM to 3:30 PM. The maximum observed queue was 38 vehicles. Existing trip generation for the site indicates that 95 vehicles enter the queue during the PM peak hour. Of note, the School did not offer its aftercare program at the time the queuing study was conducted because of COVID protocols. As such, all full-day students were dismissed at the same time.

Exhibit 2A
Existing Queues – PM Pick-up

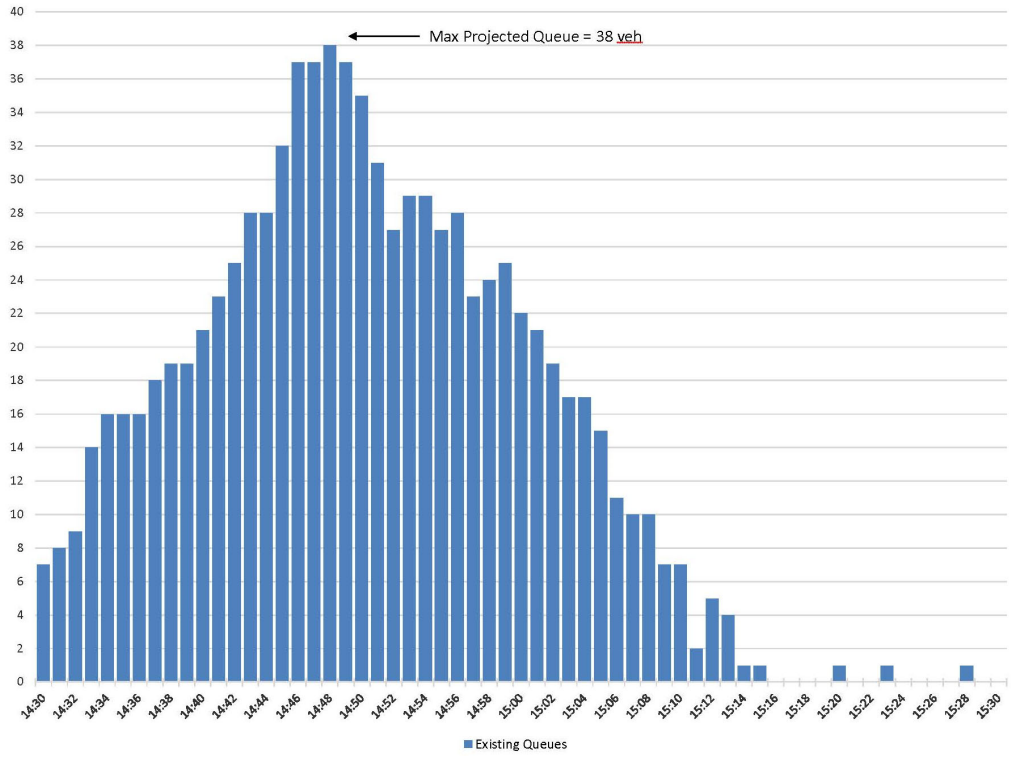


Exhibit 2B overlays the projected queues with the existing queues. The projected queues were derived by proportionally decreasing the queues based on the proportional decrease in trip generation. The queues also were adjusted to reflect staggered dismissals since the School has agreed to continue the protocol that was in place when the AM queuing study was conducted. The capacity of the PUDO operation also is shown on Exhibit 2B.

Exhibit 2B
Projected Queues – PM Pick-up

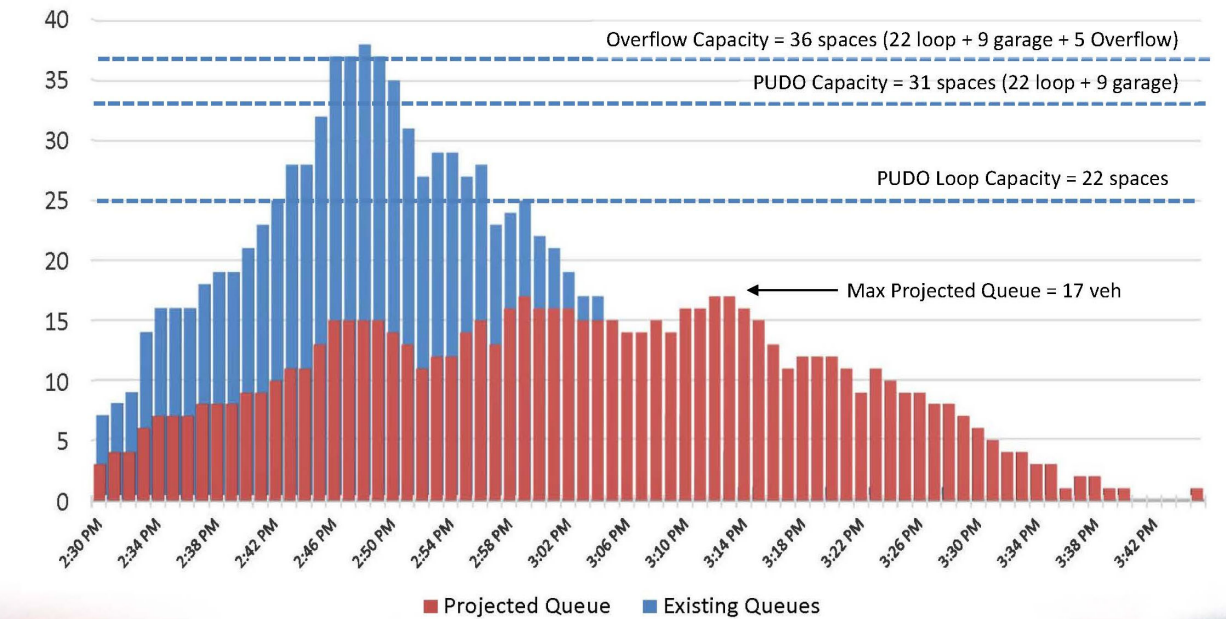


Table 5 summarizes the projected queues under both queuing methodologies. As shown in the table, the maximum projected queues under either method are projected to be well below the capacity available for PUDO operations during both the morning drop-off and afternoon pick-up.

Table 5
PUDO Queue Summary

Time Period	M/M/1 Model	Extrapolation	Capacity†
AM Peak	12	11	31
PM Peak	11	17	31

† Capacity includes the loop capacity plus three spaces in the garage. It does not include "overflow" capacity of five vehicles.

CURBSIDE MANAGEMENT

Introduction of two new curb cuts and removal of the existing curb cut on Nebraska Avenue will require modification to the curbside use along the west side of Nebraska Avenue along the site frontage. The proposed curbside management are shown on Figure 15.

PROPOSED PARKING

Vehicular Parking

Based on parking requirements prescribed in the 2016 Zoning Regulations (ZR16), a **minimum** of 60 parking spaces would be required for the school. A summary of the parking required is provided in Table 6. For comparative purposes, DDOT's preferred parking maximum also is provided in the table.

Table 6
Parking Summary

Required (per §701.5)†	DDOT Preferred Vehicle Parking	Proposed
Education, private (Elementary and Middle Schools) 2 per 3 teachers and other employees 2(90/3) = 60 spaces	"Other Uses" ≤ 90% of §701.5 0.9(60) ≤ 54 spaces	55 garage spaces‡ 10 surface spaces

† Although the site is within ½ mile of Metro, since the site is in an R zone, it is not eligible for the 50% parking reduction per §702.1.
‡ Includes 12 tandem spaces.

The School is seeking special exception relief in accordance with §703.2 of ZR16 to allow the 12 tandem spaces in the garage and the six surface spaces that are located in the PUDO loop to count toward the 60-space parking requirement.

Bicycle Parking

The School also would be required to provide long-term and short-term bicycle parking. Long-term bicycle parking must be located on the first level below grade or on the ground floor of each building. Short-term bicycle parking is intended for use by visitors to the site and should be located on the same lot as the use they are intended to serve or in public space within 20 feet of the lot. Final locations will be determined with input from DDOT during the public space process. The required bicycle parking for the development is summarized in Table 7 below.

Long-term bicycle parking will be provided in the below-grade parking facility, which is the first below-grade level, as required by ZR16.

Table 7
Bicycle Parking Summary

Long-Term Parking		Short-Term Parking	
Required	**Proposed**	**Required**	**Proposed**
Education, private school 1 per 7,500 SF of GFA 48,678†/7,500 = 6	7	Education, private school 1 per 2,000 SF of GFA 48,678/2,000 = 24	24
† GFA calculated in accordance with §803.2			

PROPOSED LOADING

The loading requirements for the proposed development are prescribed by the ZR16 and are summarized in Table 8. Access to and egress from the loading berth and service/delivery space will be provided via the curb cuts on Nebraska Avenue. Trucks will enter and exit the site front-first. All backing maneuvers will take place on-site. Truck maneuvering diagrams are provided in Appendix G.

Table 8
Loading Summary

Use	Required		Proposed	
	Berths	**Service/Delivery Spaces**	**Berths**	**Service/Delivery Spaces**
Education, private school 30-100 kSF of GFA	1	1	1 (30’)	1

The following provisions will be implemented through the School’s Operations Plan to promote safe and efficient circulation through the site:

- Deliveries (except parcel deliveries via UPS/FedEx/Amazon and mail delivery) and trash/recycling pick-up will be scheduled such that they do not coincide with pick-up/drop-off activities.
- All vendors will be notified that they must use the on-campus loading facilities for deliveries.
- All vendors will be notified that deliveries must be made in box trucks (i.e., no tractor trailers will be permitted on-campus).

TRIP GENERATION ANALYSIS

Overview

The total number of trips generated by the proposed development would be comprised of vehicular, pedestrian, bicycle, and transit trips.

Total Trips

The total number of trips anticipated to be generated by the School was based on site-specific trip generation rates based on details specific to the River School. The anticipated trip generation for the School, without the implementation of a Transportation Demand Management (TDM) plan, is shown in Table 9A.

Table 9A
The River School Peak Hour Trip Generation – without TDM Plan

COMPONENT	AM			PM SCHOOL			PM COMMUTER			NOTES
	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL	
Student Trip Generation (350 students)										
person-trips	338	338	676	138	138	276	60	60	120	①②
parents are faculty/staff	-15	-15	-30	0	0	0	-7	-7	-14	③
absentees	-17	-17	-34	-7	-7	-14	-3	-3	-6	④
sub-total person-trips	306	306	612	131	131	262	50	50	100	
auto person-trips (90%)	*275*	*275*	*550*	*118*	*118*	*236*	*45*	*45*	*90*	⑤
walk person-trips (8%)	*25*	*25*	*50*	*10*	*10*	*20*	*4*	*4*	*8*	⑥
bike person-trips (2%)	*6*	*6*	*12*	*3*	*3*	*6*	*1*	*1*	*2*	⑥
transit person-trips (0%)	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	⑦
auto trips	**204**	**204**	**408**	**87**	**87**	**174**	**33**	**33**	**66**	⑧
Faculty/Staff Trip Generation (90 Faculty/Staff)										
person-trips	0	0	0	0	0	0	0	45	45	⑨
auto person-trips (85%)	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*38*	*38*	⑩
walk person-trips (0%)	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	⑩
bike person-trips (0%)	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	⑩
transit person-trips (15%)	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*7*	*7*	⑩
auto trips	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**38**	**38**	⑪
Clinic Trip Generation										
person-trips	0	0	0	0	0	0	2	2	4	⑫
auto person-trips	*0*	*0*	*0*	*0*	*0*	*0*	*2*	*2*	*4*	⑬
auto trips	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**2**	**4**	⑭
Total Trip Generation										
person-trips	306	306	612	131	131	262	52	97	149	
auto person-trips	*275*	*275*	*550*	*118*	*118*	*236*	*47*	*85*	*132*	
walk person-trips	*25*	*25*	*50*	*10*	*10*	*20*	*4*	*4*	*8*	
bike person-trips	*6*	*6*	*12*	*3*	*3*	*6*	*1*	*1*	*2*	
transit person-trips	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*7*	*7*	
auto trips	**204**	**204**	**408**	**87**	**87**	**174**	**35**	**73**	**108**	

Table 9A continued on next page

Table 9A
The River School Peak Hour Trip Generation – without TDM Plan

Notes
① 12-24 students will attend school two days per week; 12-24 will attend school three days per week. Therefore, the maximum number of students at school on any given day would be 326-338.
② Approximately 24% of students are half-day students and dismiss at noon, 41% dismiss between 2:45 and 3:45 PM, and 35% are in after care and are picked up between 4:00 and 6:00 PM. Half of the latter category were assumed to be picked up between 4:00 and 5:00 PM and half between 5:00 PM and 6:00 PM.
③ Each year, the River School enrolls a portion of students whose parents are faculty/staff members. These children arrive and depart with their parents and are accounted for in the faculty/staff trip generation component.
④ The number of absent students was assumed conservatively to be 5%. Historical trends at the School indicate that 20 to 25 students are absent on a typical day.
⑤ 90% of River School students currently arrive by car.
⑥ 10% of River School students currently are walked or biked to school. 8% were assumed to walk; 2% were assumed to bike.
⑦ No River School students currently arrive by transit.
⑧ Approximately 30% of families enrolled in the River School have multiple children enrolled. Assuming 25% have two siblings enrolled and 5% have three siblings enrolled, the AVO (average number of students per car) would be 1.35. The number of vehicle trips was calculated as the number of auto-person trips divided by the AVO.
⑨ All faculty and staff will be required to arrive before 8:00 AM and will not be permitted to depart between 2:45 and 3:45 PM. Half of faculty/staff are assumed to depart between 4:00 and 5:00 PM and half are assumed to depart between 5:00 and 6:00 PM.
⑩ Based on pre-pandemic mode split characteristics of faculty/staff, no faculty/staff walk or bike to work and 15% take transit.
⑪ No faculty/staff were assumed to carpool. Therefore, the number of vehicle trips is equal to the number of auto person-trips.
⑫ 10 clinicians (included in the 90 faculty/staff) will see 4 to 5 patients/day for a total of 40 to 50 visits/day. 60% of the patients will be students enrolled at the River School and would not generate additional trips. Outside patients will be scheduled for appointments so they do not arrive or depart during drop-off (8:00 to 9:00 AM) or primary pick-up (2:45 to 3:45 PM).
⑬ All clinic trips were assumed to be made by car.
⑭ No carpooling was assumed for clinic trips.

As shown in Table 9A, the School would be expected to generate 408 vehicle trips (204 inbound, 204 outbound) during the AM peak hour vehicle, 174 vehicle trips (87 inbound, 87 outbound) during the PM School peak hour, and 108 (35 inbound, 73 outbound) vehicle trips during the PM Commuter peak hour without implementation of a TDM plan.

In an effort to reduce trips through the study area and to minimize impacts, the School has proposed a robust TDM plan that provides for shuttle bus service in the morning peak, incentives for transit and biking, and strategies for encouraging walking and biking. The TDM plan is discussed in detail in a subsequent section. The trip generation analysis with implementation of the TDM plan is shown in Table 9B.

As shown in Table 9B, with the implementation of the proposed TDM plan, the vehicle trip generation for the School would reduce to 224 vehicle trips (112 inbound, 112 outbound) in the

AM peak hour (a 45 percent reduction), 148 vehicle trips (74 inbound, 74 outbound) in the PM School peak hour (a 15 percent reduction), and 92 vehicle trips (30 inbound, 62 outbound) in the PM Commuter peak hour (a 15 percent reduction).

Note that for purposes of this analysis, all students in Grades K through 6 were assumed to be shuttled from an off-site location. However, as discussed below, in the Transportation Management Plan (TMP) the School will have flexibility in determining which strategies to use to remain at or below the trip thresholds.

Table 9B
The River School Peak Hour Trip Generation – with TDM Plan
Assumes all students in K – 6 are shuttled from an offsite location in the morning

COMPONENT	AM			PM SCHOOL			PM COMMUTER			NOTES
	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL	
Student Trip Generation (350 students)										
person-trips	338	338	676	138	138	276	60	60	120	①②
parents are faculty/staff	-15	-15	-30	0	0	0	-7	-7	-14	
absentees	-17	-17	-34	-7	-7	-14	-3	-3	-6	③
sub-total person-trips	306	306	612	131	131	262	50	50	100	
bus person-trips (45%/0%)	*139*	*139*	*278*	*0*	*0*	*0*	*0*	*0*	*0*	④
auto person-trips (48%/81%)	*143*	*143*	*292*	*106*	*106*	*212*	*40*	*40*	*80*	⑤⑥
walk person-trips (8%/10%)	*24*	*24*	*48*	*13*	*13*	*26*	*5*	*5*	*10*	⑦
bike person-trips (0%/5%)	*0*	*0*	*0*	*7*	*7*	*14*	*3*	*3*	*6*	⑦
transit person-trips (0%/4%)	*0*	*0*	*0*	*5*	*5*	*10*	*2*	*2*	*4*	⑧
auto trips	**106**	**106**	**212**	**74**	**74**	**148**	**28**	**28**	**56**	⑨
bus trips	**6**	**6**	**12**	**0**	**0**	**0**	**0**	**0**	**0**	⑩
Faculty/Staff Trip Generation (90 Faculty/Staff)										
person-trips	0	0	0	0	0	0	0	45	45	
auto person-trips (70%)	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*32*	*32*	⑪
walk person-trips (3%)	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*1*	⑫
bike person-trips (2%)	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*1*	⑫
transit person-trips (25%)	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*11*	*11*	⑫
vehicle trips	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**32**	**32**	⑬
Clinic Trip Generation										
person-trips	0	0	0	0	0	0	2	2	4	⑭
auto person-trips	*0*	*0*	*0*	*0*	*0*	*0*	*2*	*2*	*4*	⑮
auto trips	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**2**	**4**	⑯
Total Trip Generation										
person-trips	306	306	612	131	131	262	52	97	149	
bus person-trips	*139*	*139*	*278*	*0*	*0*	*0*	*0*	*0*	*0*	
auto person-trips	*143*	*143*	*286*	*106*	*106*	*212*	*42*	*74*	*116*	
walk person-trips	*24*	*24*	*48*	*13*	*13*	*26*	*5*	*6*	*11*	
bike person-trips	*0*	*0*	*0*	*7*	*7*	*14*	*3*	*4*	*7*	
transit person-trips	*0*	*0*	*0*	*5*	*5*	*10*	*2*	*13*	*15*	
auto trips	106	106	212	74	74	149	30	62	92	
bus trips	6	6	12	0	0	0	0	0	0	
Total Vehicle Trips	**112**	**112**	**224**	**74**	**74**	**148**	**30**	**62**	**92**	

Table 9B continued on next page

Table 9B
The River School Peak Hour Trip Generation – with TDM Plan
Assumes all students in K through 6 are shuttled from an offsite location in the morning

NOTES
① 12 – 24 students will attend school two days per week; 12-24 will attend school three days per week. Therefore, the maximum number of students at school on any given day would be 326-338.
② Approximately 24% of students are half-day students and dismiss at noon, 41% dismiss between 2:45 and 3:45 PM, and 35% are in after care and are picked up between 4:00 and 6:00 PM. Half of the latter category were assumed to be picked up between 4:00 and 5:00 PM and half between 5:00 PM and 6:00 PM.
③ The number of absent students was assumed conservatively to be 5%.
④ The number of bus person-trips for the AM peak hour was calculated based on the number of students younger than Kindergarten, the estimated number of students in Grades K – 6 who have enrolled siblings younger than Kindergarten, and adjusting for absenteeism and children who arrive at school with a parent who is a faculty/staff member. # of students to be bused = 338 – (135*1.35) – 10 – 7 = 139.
⑤ The number of auto person-trips for the AM peak hour was calculated based on the number of students younger than Kindergarten plus siblings of those students, less those students who are anticipated to walk.
⑥ The auto mode split for PM School and PM Commuter peak hours decreased from 90% to 81% because of incentives for walking, biking, and transit offered through the TDM plan.
⑦ Because only families with children younger than Kindergarten will be dropped off on-site during the AM peak hour, the AM walk percentage was not increased from conditions without the TDM plan (i.e., it remained at 8%). The bike percentage was reduced from 2% to 0%. During the PM School and PM Commuter peak hours, the walk/bike percentage was assumed to increase from 10% to 15%, reflective of the bicycling and walking strategies in the TDM plan. 10% were assumed to walk; 5% were assumed to bike.
⑧ Transit mode split was assumed to be 0% during the AM since shuttle buses will be provided. During the PM School and PM Commuter peak hours, the transit percentage was assumed to increase from 0% to 4% based on proximity to the Tenleytown Metro Station and transit.
⑨ Auto trips were calculated by dividing number of auto person trips by the AVO. In the AM, the AVO was calculated to be 1.35 based on the number of families with siblings enrolled in the School (consistent with the calculations outlined in Table 9A). In the PM School and PM commuter peak hours, the AVO was calculated to be 1.43 based on mandatory carpooling of at least two students per vehicle for students in Grades K through 6. The projected number of students in K – 6 is 203; the projected number of students younger than Kindergarten is 135. Therefore, the AVO = 338 ÷ [(203/2) + 135] = 1.43.
⑩ Number of bus trips was calculated assuming 24 students per bus.
⑪ All faculty and staff will be required to arrive before 8:00 AM and will not permitted to depart between 2:45 and 3:45 PM. Half of faculty/staff are assumed to depart between 4:00 and 5:00 PM and half are assumed to depart between 5:00 and 6:00 PM.
⑫ The walk/bike mode share was increased from 0% to 5% based on walking and biking strategies outlined in the TDM plan.
⑬ No faculty/staff were assumed to carpool. Therefore, the number of vehicle trips for is equal to the number of auto person-trips.
⑭ 10 clinicians (included in the 90 faculty/staff) will see 4 to 5 patients/day for a total of 40 to 50 visits/day. 60% of the patients will be students enrolled at the River School and would not generate additional trips. Outside patients will be scheduled for appointments so that they do not arrive or depart during drop-off (8:00 to 9:00 AM) or primary pick-up (2:45 to 3:45 PM).
⑮ All clinic trips were assumed to be made by car.
⑯ No carpooling was assumed for clinic trips.

Site Trip Distribution and Assignment

The distribution of new peak hour site trips generated by the School was based on student zip code lists, the distribution of inbound and outbound trips to/from the site, general knowledge of commuter routes to/from the site, and recognition that some parents drop children off on their way to work. The AM, PM School, and PM Commuter peak hour distributions are shown in Figures 16A through 16F.

The trip distributions then were applied to the vehicle trip generation for the School. The resulting traffic assignments for the AM, PM School, and PM Commuter peak hours are as shown on Figures 17A through 17C, respectively.

TRANSPORTATION MANAGEMENT PLAN

To help facilitate ingress to, egress from, and the flow of traffic on campus and to reduce the impact of the proposed development, the River School will implement a Transportation Management Plan that will consist of: 1) a Transportation Demand Management (TDM) Plan, 2) an Operations Management Plan, and 3) a Monitoring Plan. Each plan is summarized below:

Transportation Demand Management

Overview

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

Proposed Components of TDM Plan

The TDM Plan is intended to be flexible in order to respond to changes in School demographics, technology, transportation services, and various mitigation options available. Accordingly, it is envisioned that over time, new approaches in addition to those listed below will be identified and programs developed to respond to these changes. The River School proposes the following strategies as part of their TDM “toolbox”:

General Strategies

1. Designate a TDM coordinator who will be responsible for organizing, marketing, and accomplishing the tasks in the TDM plan and who will act as a liaison with DDOT and the community. The TDM coordinator position may be part of other duties assigned to the individual.

2. Create a transportation section on the School's website with up-to-date information regarding all transportation options available to students, parents/guardians, and employees, including but not limited to public transportation (Metrobus and Metrorail), biking facilities and amenities (including campus bicycle parking).

3. Hold quarterly meetings with ANCs 3E and 3D to garner feedback on traffic and parking related issues for the length of the performance monitoring program.

4. Provide a bike maintenance facility and bicycle parking in the garage or other easily accessible area for students and faculty/staff.

5. Make showers and lockers available to students and faculty/staff who walk, jog, or bike to school.

6. Provide one 200V electric vehicle charging station in the proposed parking garage.

7. The updated TDM plan will be incorporated into the student contract. The following procedure will be followed for multiple infractions:

   1st Infraction – Email from Principal

   2nd Infraction – Phone call from Principal

   3rd Infraction – Meeting with Principal

   4th Infraction – Meeting with Head of School

   5th Infraction – Probation from school for up to 10 days

   6th Infraction – Dismissal; contract revoked

Strategies for Students

Rideshare:

1. Establish a mandatory carpooling program that requires parents dropping off or picking up students by automobile to have at least two students per vehicle, with the following exceptions:

   - Parents of Pre-K and younger students are not required to carpool and

- On a case-by-case basis, students who demonstrate a hardship based on special transportation needs are not required to carpool with prior approval.

2. Provide carpool matching assistance for parents to increase the Average Vehicle Occupancy (AVO) for the School. Assistance programs could include:
   - Creation of an online, interactive map for parents to identify other River School families who live near them and are interested in carpooling, as well as provide contact information.
   - Register with and promote Commuter Connections School Pool Program to assist parents in finding other parents in their neighborhood to form carpools, walking groups, or biking groups.
3. Actively promote carpooling by providing links to the carpool matching website on the School's website and by providing fliers, emails, and/or other informational pieces at least once per semester.

Shuttle:

1. Provide a shuttle(s) to transport students from an off-site location(s) during the morning drop-off period.

Incentives:

1. Provide transit/alternate commute incentives to encourage students to use non-auto modes of transportation to travel to school. Incentives would include:
   - Encourage District of Columbia students/families to take advantage of the WMATA's Kids Ride Free program, which allows students who live in DC to ride free on Metrorail and Metrobus;

Outreach and Education:

1. Provide outreach and education events to stress the importance of using non-auto modes of transportation and make information more readily available. Outreach and educational events could include:
   - Hold a "Transportation to School" event at the beginning of each school year, stressing the importance of public transportation, carpooling, biking, etc.;
   - Participate in DDOT's Safe Routes to School Program – The program encourages students and their parents to walk and bicycle to school by examining conditions around schools and conducting projects and activities to improve safety and accessibility. The program also provides pedestrian and bicycle safety training in the classroom;
   - Establish inter-class and inter-grade competitions with incentives and prizes for the classes that take transit, walk, and bike the most.
   - Host four Walk to School/Bike to School Days each year;

- Promote walking/biking in communications with parents.

2. Add bicycle education into the general physical education curriculum.

Strategies for Faculty/Staff

Rideshare:

1. Provide carpool matching assistance for faculty/staff to increase the Average Vehicle Occupancy (AVO) for the School. Assistance programs could include:
   - Creation of an online, interactive map for faculty/staff to identify other River School employees who live near them and are interested in carpooling, as well as provide contact information.
   - Register with Commuter Connections and promote Commuter Connections' Ride-matching Service.
   - Parking passes for the proposed garage will be distributed first to faculty/staff who carpool, then to faculty/staff who live more than one mile from the school and more than one mile from a red-line Metro station.

Incentives:

1. Provide transit/alternate commute incentives to encourage faculty/staff to use non-auto modes of transportation to travel to school. Incentives would include:
   a. Provide $135 monthly SmarTrip cards for faculty/staff who take public transportation;
   b. Allow employees to set aside $255/month in pre-tax funds (or current amount allowed under federal law) through their paycheck for transit or vanpool expenses;
   c. Enroll in Guaranteed Ride Home, which provides employees who regularly take transit, vanpool, carpool, walk, or bike to work with a reliable ride home when an unexpected emergency arises; and
   d. For faculty/staff who do not drive or take public transit to school, provide $20 in monthly subsidies to those who bike (or current amount allowed tax-free under Federal law) OR provide bikeshare memberships.

Outreach and Education:

1. Provide training for the faculty/staff at the beginning of each academic year to implement and enforce the TDM Plan.

Operations Management Plan

In addition to the TDM plan, the River School will implement an Operations Management Plan to ensure that drop-off/pick-up procedures do not adversely impact the surrounding neighborhood. The following are the components of the plan:

1. Establish a clear drop-off/pick-up protocol for parents. The protocol will be as follows:
   a. Prior to the beginning of the school year, parents/guardians who will be dropping off and picking up students via automobile will be assigned 15-minute drop-off and pick-up windows to ensure the PUDO area on campus does not exceed capacity (pick-up windows do not apply to students in after care).
   b. Drop-off will occur between 8:00 and 9:00 AM. Pick-up will occur between 12:00 and 12:30 PM for half-day students, between 2:45 and 3:45 PM for full-day students, and between 4:00 and 6:00 PM for students in the after-school program.
   c. Drop-off/pick-up traffic will enter the campus via the northern curb cut on Nebraska Avenue and will exit via the southern curb cut on Nebraska Avenue.
   d. Under no circumstances will drop-off/pick-up be permitted on 42nd Street, Van Ness Street, Warren Street, or other neighborhood streets.
   e. Families who walk their children to school will be given badges to identify them as "walkers." School staff will be stationed at pedestrian entrances to campus to ensure that only "walkers" are entering campus on foot (and not families walking from a parked car on a neighborhood street).
   f. All parents who must leave their vehicle to drop-off/pick up students during regular drop-off/pick-up times, must park in a designated, on-campus parking space (three spaces will be designated in the garage for drop-off/pick-up). Parents using the drop-off/pick-up lanes must remain in their vehicles and will drop-off/pick-up their student(s) when they stop in front of the school.
   g. Up to 14 vehicles can load/unload students at a time. Staff members will direct traffic within the PUDO area to ensure queued vehicles backfill the loading/unloading area in a safe and efficient manner.
   h. Parents/guardians will be given a tag with students' names, which will be placed in the vehicle and visible through the windshield (PUDO Pass). A member of staff will radio the names back to the school as the vehicles enter campus. Staff at the School then will shepherd the appropriate students to the awaiting vehicles once they stop. This process may be replaced with an app-based system or other, similar system depending on available technology.
   i. Students who have a yearlong exemption from mandatory carpooling will have a special tag to display in the windshield of their car.

j. School staff members will be stationed at the PUDO location to assist students in getting from vehicles into the school in the morning and from the school into the appropriate vehicles in the afternoon.

2. Utilize two traffic control officers at the access to and egress from the site to help manage conflicts between pedestrians and bicycles and entering and exiting vehicles
3. All faculty and staff will be required to arrive before 8:00 AM and will not permitted to depart between 2:45 and 3:45 PM.
4. Loading
   - Deliveries (except parcel deliveries via UPS/FedEx/Amazon and mail delivery) and trash/recycling pick-up will be scheduled such that they do not coincide with pick-up/drop-off activities.
   - All vendors will be notified that they must use the on-campus loading facilities for deliveries.
   - All vendors will be notified that deliveries must be made in box trucks (i.e., no tractor trailers will be permitted on-campus).

Monitoring Plan

To ensure that the TDM and Operations Management plans are functioning as intended, the River School will conduct annual monitoring studies, which will be submitted to DDOT and ANC 3E.

Elements of the Monitoring Study

1. The number of vehicle trips generated by the School during the AM peak hour, PM School peak hour, and PM Commuter peak hour will be determined.
2. Traffic counts shall be conducted when the River School, DC Public Schools, and Congress are in session.
3. Counts shall be conducted during the Fall Semester at the driveways to the School on a typical weekday from 7:30 AM to 9:30 AM and from 2:30 PM to 6:30 PM. Counts shall be conducted on days when no adverse weather impacts travel conditions.
4. The number of trips generated by the School shall be determined as follows:

   a. AM peak hour shall be determined by selecting the single highest hourly inbound plus outbound volume (for all driveways combined) between 7:30 AM and 9:30 AM.

   b. PM School peak hour shall be determined by selecting the single highest hourly inbound plus outbound volume (for all driveways combined) between 2:30 PM and 4:30 PM.

c. PM Commuter peak hour shall be determined by selecting the single highest hourly inbound plus outbound volume (for all driveways combined) between 4:30 PM and 6:30 PM.

5. Vehicle occupancy counts (number of students per vehicle) will be conducted at the PUDO location to determine the average vehicle occupancy (AVO). The vehicle occupancy counts will be conducted during the same timeframes as the trip generation counts indicated above.
6. A queue study will be conducted at the PUDO location to determine the length of the queues and to ensure that the queues do not spillback onto Nebraska Avenue.
7. A mode split survey (conducted during the Fall Semester) will be conducted to determine the mode of transportation for students and faculty/staff.
8. A list of TDM measures in effect at the time the study was conducted.
9. The number of students enrolled, and faculty/staff employed at the time the study was conducted.
10. Notes from ANC 3E and/or other community meetings documenting traffic issues.

Trip Generation Thresholds

The River School will establish a goal of reducing peak hour vehicular traffic generated by the School (from what would otherwise be generated without a TDM plan) by 45 percent during the AM peak hour and 15 percent during the PM School and PM Commuter peak hours through implementation of a TDM plan. The vehicular trip thresholds are provided in Table 10.

Table 10
The River School Trip Generation Thresholds

Trip Type	AM Peak Hour			PM School Peak Hour			PM Commuter Peak Hour		
	In	Out	Total	In	Out	Total	In	Out	Total
Vehicle Trips without TDM Plan	204	204	408	87	87	174	35	73	108
Vehicle Trips with TDM Plan	112	112	224	74	74	148	30	62	92

Sequencing of Monitoring Studies

1. During Year 1 (where "Year 1" is defined as the first school year commencing upon the initial opening of the School), the monitoring study shall be conducted two times per semester. The first monitoring study shall be completed no later than October 15.
2. Beginning Year 2, the monitoring study shall be conducted during the Fall Semester each year and completed no later than October 15. If the monitoring study reveals that Trip Thresholds are not met, or if PUDO queues are not contained on-site, the School shall

request a meeting with ANC 3E and DDOT within five days of completion of the study. The meeting with ANC 3E commissioners and DDOT shall be held within 30 days of completion of the study, subject to availability of the ANC 3E commissioners and DDOT. The purpose of the meeting shall be to work with DDOT and the ANC to identify remedial revisions to the TMP necessary to promote compliance. The School shall make diligent efforts to implement such measures within 30 days of the meeting. Such remedial strategies would include but not be limited to at least one of the following Enhanced Strategies:

a. Enhanced Strategy #1 – Acquire off-site/off-street parking for PUDO spaces

   i. Reduce the number of PUDO passes issued proportionally based on the percentage of trips in excess of the trip threshold or by the number of vehicles queued in excess of the on-site queuing capacity.

   ii. Lease a number of off-street parking spaces in a garage within a ⅓-mile radius of the school (e.g., City Ridge, Upton Place, or 4200 Wisconsin Avenue), at the School's expense, for use as short-term parking/PUDO spaces for use by parents who would otherwise drive to campus but would now park in the leased spaces and walk their children to the school. The number of leased spaces shall be at least equal to the number of revoked PUDO passes.

b. Enhanced Strategy #2 – Convert on-site garage to PUDO operation

   i. Convert all spaces in the garage, with the exception of the tandem spaces and the ADA spaces, to short-term parking for PUDO operations and visitor spaces when PUDO is not in operation.

   ii. Lease off-site parking within a ⅓-mile radius of the school (e.g., City Ridge, Upton Place, or 4200 Wisconsin Avenue), at the School's expense, for River School faculty and staff. The number of off-site spaces required shall be equal to the number of spaces converted to PUDO in the garage.

   iii. Modify the PUDO lane to utilize a single stacking lane with a bypass lane to allow garage PUDO lane to bypass the queue lane.

c. Enhanced Strategy #3 – Increased Carpooling Requirements

   i. For any families still dropping off or picking up students on-campus, increase the mandatory carpooling requirement from two students per vehicle to three students per vehicle subject to the requirements described on page 40 under *Strategies for Students - Rideshare*.

3. Beginning in Year 2, if the Trip Thresholds and Queue Requirements are not met during the Fall Semester, a second study must be conducted during the Spring Semester of that year to determine whether the Enhanced Strategies resulted in compliance.

4. Beginning in Year 5, if the River School has successfully shown compliance with the Trip Threshold and Queuing requirements for two consecutive years, the School shall monitor compliance with the Trip Thresholds triennially in the Fall Semester (with the monitoring

report being completed no later than October 15). Triennial studies shall continue through at least Year 17 (i.e., five times between Year 5 and Year 17). If the School fails to meet the Trip Thresholds and Queuing requirements during the Fall Semester, the School shall request a meeting with ANC 3E and DDOT within five days of completion of the study. The meeting with ANC 3E commissioners and DDOT shall be held within 30 days of completion of the study, subject to availability of the ANC 3E commissioners and DDOT, to identify additional Enhanced Strategies to be implemented by the School. The School shall implement such measures as soon as feasible but no later than the end of the Fall Semester. The School shall be required to monitor again in the Spring Semester of such year and shall, thereafter, resume annual monitoring studies until such time as the annual monitoring study demonstrates that the School has met the Trip Thresholds and Queuing Requirements for two consecutive years. At such time, triennial studies shall resume until Year 17 or until such time as two consecutive triennial studies demonstrate compliance, whichever is later.

2026 TOTAL FUTURE CONDITIONS

TRAFFIC FORECASTS

Total future traffic forecasts with the proposed school were determined by combining the 2026 background traffic forecasts shown in Figure 13 with the site traffic volumes shown on Figure 17 to yield the 2026 total future traffic forecasts shown on Figure 18.

CAPACITY ANALYSIS

Capacity analyses were performed at the study intersections using the total future peak hour traffic forecasts shown on Figure 18. The level of service results for the 2026 total future conditions with the proposed development are included in Appendix H and summarized in Table 3.

By comparing total future levels of service to background levels of service, the impact of the proposed development can be identified. In accordance with the methodology outlined in DDOT's *Guidance for Comprehensive Transportation Review*, an impact is defined as follows:

- Degradation in overall or approach level of service to LOS E or LOS F, or
- Increase in intersection volume-to-capacity (v/c) ratio to 1.0 or greater with the addition of site-generated traffic, or
- Increase in overall or approach delay or v/c ratio by five percent or more when compared to background conditions for intersections operating at an approach delay of LOS E or LOS F.

As shown in Table 3, impacts were identified at the following locations:

- <u>Intersection #1 (River Road/42nd Street)</u>
    - The northbound (42nd Street) approach is projected to drop from a LOS D to a LOS E during the PM Commuter peak hour. School traffic is expected to account for 1.6 percent of the total future traffic at this intersection during the PM Commuter peak hour.
- <u>Intersection #7 (Van Ness Street/42nd Street)</u>
    - The southbound (42nd Street) approach is projected to continue to operate at a LOS E during the PM School peak hour; however, the delay for the approach will increase by more than five percent. School traffic is expected to account for 4.6 percent of the total future traffic at this intersection during the PM School peak hour.
- <u>Intersection #8 (Nebraska Avenue/42nd Street)</u>
    - The southbound (42nd Street) approach is projected to drop from a LOS D to a LOS E during PM School peak hour. School traffic is expected to account for 2.1

percent of the total future traffic at this intersection during the PM School peak hour.

- Intersection #9 (Van Ness Street/Nebraska Avenue)
  - The northeast-bound (Nebraska Avenue) approach is expected to continue to operate at a LOS F during the AM peak hour; however, the delay for the approach is expected to increase by more than five percent. School traffic is expected to account for 5.5 percent of the total future traffic at this intersection during the AM peak hour.
  - The westbound (Van Ness Street) approach is projected to continue to operate at a LOS F during the PM School peak hour; however, the delay is expected to increase by more than five percent. School traffic is expected to account for 3.0 percent of the total future traffic at this intersection during the PM School peak hour.
  - The southwest-bound (Nebraska Avenue) approach is projected to drop from a LOS C to a LOS F during the PM School peak hour.
- Intersection #10 (Van Ness Street/41st Street)
  - The northbound (NPS Driveway) approach is projected to continue to operate at a LOS F during the PM School peak hour; however, the delay is expected to increase by more than five percent. School traffic is expected to account for 0.8 percent of the total future traffic at this intersection during the PM School peak hour.
  - The southbound (41st Street) approach is projected to continue to operate at a LOS E during the PM School peak hour; however, the delay is expected to increase by more than five percent.
- Intersection #11 (Van Ness Street/Wisconsin Avenue)
  - The westbound (Van Ness Street) approach is projected to continue to operate at a LOS E during the AM peak hour; however, the delay is expected to increase by more than five percent. School traffic is expected to account for 1.4 percent of the total future traffic at this intersection during the AM peak hour.
- Intersection #12-1 (Wisconsin Avenue/Tenley Circle South)
  - The northbound (Wisconsin Avenue) approach is projected to drop from a LOS D to a LOS E during the AM peak hour. School traffic is expected to account for 0.8 percent of the total future traffic at this intersection during the AM peak hour.
- Intersection #12-6 (Tenley Circle / Yuma Street West)
  - The eastbound (Yuma Street) approach is projected to continue to operate at a LOS F during the PM School peak hour; however, the delay is expected to increase by more than five percent. School traffic is expected to account for 3.6 percent of the total future traffic at this intersection during the PM School peak hour.

- Intersection #13 (Warren Street/Nebraska Avenue)
  - The eastbound (Warren Street) approach is projected to continue to operate at a LOS F during the AM peak hour; however, the delay is expected to increase by more than five percent. School traffic is expected to account for 7.1 percent of the total future traffic at this intersection during the AM peak hour.
  - The westbound (Warren Street) approach is projected to continue to operate at a LOS F during the PM School peak hour; however, the delay is expected to increase by more than five percent. School traffic is expected to account for 4.3 percent of the total future traffic at this intersection during the PM School peak hour.
  - The eastbound and westbound (Warren Street) approaches are projected to continue to operate at a LOS F during the PM Commuter peak hour; however, the delay is expected to increase by more than five percent. School traffic is expected to account for 2.1 percent of the total future traffic at this intersection during the PM Commuter peak hour.
- Intersection #14 (Nebraska Avenue/41st Street)
  - The northbound (41st Street) approach is projected to drop from a LOS E to a LOS F during the PM School peak hour. School traffic is expected to account for 4.5 percent of the total future traffic at this intersection during the PM School peak hour.

QUEUE ANALYSIS

A queuing analysis was conducted for the study intersections under 2026 total future conditions. Synchro was used to conduct the analyses, using the 95th percentile queue lengths. The results are summarized in Table 4 and queue reports are provided in Appendix H.

By comparing total future queues to background queues, the impact of the proposed development can be identified. In accordance with DDOT guidelines, an impact is defined as:

- An increase in the 95th percentile queue greater than 150 feet when compared to background conditions, or
- A 95th percentile queue that exceeds the available storage length as the result of the proposed development.

As shown in Table 4, impacts were identified at the following locations:

- Intersection #9 (Van Ness Street/Nebraska Avenue)
  - The southwest-bound (Nebraska Avenue) queue is expected to increase by more than 150 feet with the addition of school-generated traffic during the PM School and PM Commuter peak hours.

- Intersection #13 (Warren Street/Nebraska Avenue)
  - The westbound shared left-through-right queue is expected to increase by more than 150 feet with the addition of site-generated traffic during the PM Commuter peak hour.

IMPROVEMENT ANALYSIS

Overview

An incremental series of improvements was evaluated at several of the study intersections to identify improvements required to mitigate the impact of the proposed project. For locations where physical roadway improvements are undesirable or infeasible, the School proposes traffic calming or pedestrian and bicycle improvements to be determined in consultation with DDOT. Cost estimates for such improvements will be developed once a specific improvement has been identified.

Details regarding the improvement analyses are included in Appendix I.

Intersection #1 (River Road/42nd Street)

The School's impact at the signalized River Road/42nd Street intersection is isolated to the northbound (42nd Street) approach during the PM Commuter peak hour. Given the proximity of the Brandywine Street intersection to the south of River Road, any improvements on the northbound approach of the River Road/42nd Street intersection are not feasible. Therefore, other approaches were evaluated to determine whether turn pockets would mitigate the impact. As shown in Table 11, creation of a southeast-bound right turn lane on River Road would mitigate the impact. To accommodate the right turn lane, the centerline of River Road would need to be shifted to the north and approximately four to six Residential Permit Parking (RPP) spaces would need to be eliminated to accommodate the right turn lane.

The proposed project would increase the volume of traffic through the intersection by just 14 trips during the PM Commuter peak and the delay for the northbound approach is projected to increase by just 7.2 seconds/vehicle. Given the minor increase in volume and delay and concern about the loss of RPP parking, installation of the right turn lane may not be desirable.

Table 11
Level of Service and Queue Results
PM Commuter Peak Hour – River Road/42nd Street

Approach	Levels of Service		95th Percentile Queues	
	Background	TF + Imps.	Background	TF + Imps.
SEBLT	B	A	68	40
SEBR				37
NWBLTR	A	B	163	168
NBLTR	D	D	210	212
SBLTR	D	C	169	162
Overall	**C (25.1)**	**C (24.5)**	**---**	**---**

Intersection #5 (42nd Street/Warren Street)

Although the school would not have an impact at the 42nd Street/Warren Street intersection, a multi-way stop warrant evaluation was undertaken at the request of the ANC 3E. The *Manual on Uniform Traffic Control Devices* provides criteria for the appropriate installation of multi-way stop signs. Specifically, the MUTCD provides the following guidance:

- Multi-way stop control can be used as an interim measure at locations where traffic signals are justified until such time as the traffic signal can be installed.
- Multi-way stop control should be considered when certain volume criteria (including vehicular, pedestrian and bicycle volumes) are met or when a certain number of crashes (of the type susceptible to correction by a multi-way stop) have occurred over a 12-month period.

The preliminary evaluation is summarized in Table 12.

Table 12
Preliminary Signal Warrant Evaluation (2026 Total Future Conditions)
Nebraska Avenue/Warren Street

Criteria	Met?
Crash History – Five or more reported crashes in a 12-month period that are susceptible to correction by a multi-way stop installation.	Unknown
Vehicular Volume – The vehicular volume entering the intersection from the major street approaches (total of both approaches) averages at least 300 vehicles per hour for any 8 hours of an average day.	Projected 2026 forecasts meet criteria two of the three peak hours (AM and PM School). Therefore, it is unlikely another 6 hours would meet the criteria.
Combined Volumes – The combined vehicular, pedestrian, and bicycle volume entering the intersection from the minor street approaches (total of both approaches) averages at least 200 units per hour for the same 8 hours, with an average delay to minor-street vehicular traffic of at least 30 seconds per vehicle during the highest hour.†	Projected minor street vehicular volume is less than 40 vph for the AM and PM School peaks and 60 vph for the PM Commuter peak. The highest volume of pedestrian and bicycle counts during a peak hour was 26. Therefore, it is highly unlikely that this criterion would be met.
80% Volumes – If no single criterion listed above is satisfied, but 80% of the minimum values are satisfied for all three criteria.	Based on the forecasted vehicular volumes and existing pedestrian/bicycle volumes described above, it is highly unlikely that this criterion would be met.

† If the 85th-percentile approach speed of the major-street traffic exceeds 40 mph, the minimum vehicular volume warrants are 70 percent of the values provided.

Based on the preliminary evaluation, it is highly unlikely that a multi-way stop at the 42nd Street/Warren Street intersection would be met in the future.

Intersection #7 (Van Ness Street/42nd Street)

Physical improvements at the Van Ness Street/42nd Street intersection are not feasible because of the curb extensions in place at the intersection. The width of Van Ness Street is not wide enough to accommodate any additional turn lanes.

Intersection #8 (Nebraska Avenue/42nd Street), Intersection #9 (Van Ness Street/Nebraska Avenue), and Intersection #10 (Van Ness Street/41st Street/NPS Driveway

During numerous meetings over the course of the last year, the project team heard many comments from community members regarding the existing congestion at the Nebraska Avenue/Van Ness Street intersection. Capacity improvements were explored at the intersection to not only mitigate the impact of the School but to also provide improvements over existing conditions.

During a site visit with members of NPS staff, they indicated that a particular problem they face is the difficulty in turning left out of their driveway onto Van Ness Street. Of particular concern, was the fact that vehicles parking on the north side of Van Ness Street (between Nebraska Avenue and 41st Street) block access to the westbound left turn lane at the intersection with

Nebraska. As a result, westbound queues from Nebraska Avenue extend beyond the NPS Driveway/41st Street intersection.

An iterative analysis was undertaken to determine the most appropriate improvements to address the issues noted. Table 13 summarizes the level of service results with the following improvements (for comparative purposes, background levels of service also are provided in Table 13):

- Modification of the Nebraska Avenue/Van Ness Street traffic signal to include a westbound left turn phase;
- Removal of parking on the north side of Van Ness Street between Nebraska Avenue and 41st Street (approximately four RPP spaces); and
- Removal of parking along both sides of Nebraska Avenue from approximately 500 feet south of Van Ness Street to Warren Street from 7:00 AM to 7:00 PM to improve capacity through the intersection.

Parking on both sides of Nebraska Avenue south of Van Ness currently is restricted from 7:30 AM to 9:00 AM and from 4:00 PM to 6:30 PM. North of Van Ness Street, parking on the east side of Nebraska Avenue is restricted from 4:00 PM to 6:30 PM, and parking on the west side is restricted from 7:00 AM to 9:30 AM.

As shown on Table 13, the proposed improvements would substantially reduce delays compared to background conditions during the AM and PM School peak hours. During the PM commuter peak hour, the reduction in delays is less pronounced, but the improvements would result in all approaches operating at acceptable levels of service during the PM Commuter peak hour.

Table 13
Level of Service Summary
Nebraska Avenue/42nd Street and Nebraska Avenue/Van Ness Street

Approach	Background Conditions			Total Future Conditions with Improvements		
	AM	PM School	PM Comm	AM	PM School	PM Comm
8. Nebraska Avenue/42nd Street						
SB	B	D	C	B	B	B
NEB	A	B	A	A	A	A
9. Nebraska Avenue/Van Ness Street						
EB	D	C	C	D	D	D
WB	C	F (100.7) [1.22]	E (71.1) [1.08]	C	E (65.8) [1.03]	D
NEB	F (329.1) [1.66]	F (474.4) [1.99]	C	D	E (66.4) [1.05]	C
SEB	A	C	B	B	C	C
Overall	**F (145.3) [1.36]**	**F (246.5) [1.70]**	**C**	**D (37.1)**	**E (55.5) [1.07]**	**D (37.0)**

(x.x) = intersection control delay in sec/veh
[x.x] = v/c ratio

Table 14 summarizes the queues for the proposed improvements. As shown in the table, queues will still exceed available storage in some instances, but would be reduced on the westbound (Van Ness Street) approach and northeast-bound (Nebraska Avenue) approach.

Table 14
95th Percentile Queue Summary
Nebraska Avenue/42nd Street and Nebraska Avenue/Van Ness Street

Approach	Available Storage (feet)	Background Conditions			Total Future Conditions with Improvements		
		AM	PM School	PM Comm	AM	PM School	PM Comm
8. Nebraska Avenue/42nd Street							
SBLR	150	32	139	66	30	50	35
NEBLT	490	11	27	16	12	25	14
9. Nebraska Avenue/Van Ness Street							
EBLTR	95	281	232	201	343	276	247
WBL	240	173	351	386	153	277	271
WBTR	240	187	204	238	180	184	223
NEBLTR	290	1354	1870	361	546	722	464
SEBLTR	435†	138	802	297	330	384	360

† 435' represents the distance to the nearest intersection. Distance to the proposed outbound driveway is approximately 200'

Intersection #11 (Van Ness Street/Wisconsin Avenue)

The River School would account for just 1.4 percent of the AM peak hour traffic at the intersection. The impact of the school (based on DDOT's criteria) is limited to the westbound approach, which is projected to operate at a LOS E under both background and total future conditions. Site-generated traffic would add just 5.0 seconds of delay per vehicle to the approach.

Therefore, no physical improvements are recommended at the Van Ness Street/Wisconsin Avenue intersection. Notably, CTRs conducted for pipeline developments that more directly impact the intersection (such as those located on Wisconsin Avenue), have recommended timing adjustments at the intersection.

Intersection #12-1 (Wisconsin Avenue/Tenley Circle South)

The school's impact at the signalized Wisconsin Avenue/Tenley Circle South intersection is isolated to the northbound (Wisconsin Avenue) approach during the AM peak hour. A northbound right turn lane was modelled and determined to mitigate the school's impact at the intersection. Level of service and queue results are shown in Table 15.

Table 15
Level of Service and Queue Results
AM Peak Hour – Wisconsin Avenue/Tenley Circle

Approach	Levels of Service		95th Percentile Queues	
	Background	TF + Imps.	Background	TF + Imps.
NBT	D	D	313	385
NBR				98
SBT	B	B	92	90
NEBLTR	C	C	594	514
Overall	**C (25.6)**	**C (20.7)**	**---**	**---**

The proposed project would increase the volume of traffic through the intersection by 36 vehicles during the AM peak hour, which represents just 0.8 percent of the total traffic. Additionally, the delay for the northbound approach is projected to increase by just 4.3 seconds/vehicle. Since the installation of a right turn lane would require the removal of four metered parking spaces during the morning rush period, installation of the right turn lane may not be desirable, particularly given the minor increase in volume and delay and the sensitivity in loss of parking.

Intersection #12-6 (Tenley Circle/Yuma Street West)

Due to physical constraints at the intersection, no roadway improvements are feasible at this location. The school's impact is limited to the PM School peak hour. School-generated traffic would account for 3.7 percent of the total future traffic at the intersection during the PM School peak hour.

Intersection #13 (Warren Street/Nebraska Avenue)

Under 2026 total future conditions, the eastbound and westbound (Warren Street) approaches would continue to operate at a LOS F but with increased delay as a result of school-generated traffic. Traffic signal warrants were evaluated to determine if signalization would be an appropriate form of mitigation. Warrants contained in the MUTCD were evaluated.

The MUTCD provides nine warrants for evaluating the need for and appropriateness of signalization:

- Warrant 1, Eight-Hour Vehicular Volume – requires certain volume thresholds on the major street in combination with certain volume thresholds on the minor street to be met for eight hours on a typical day;
- Warrant 2, Four-Hour Vehicular Volume – requires certain volume thresholds on the major street in combination with certain volume thresholds on the minor street to be met for four hours on a typical day;

- Warrant 3, Peak Hour – requires certain volume thresholds on the major street in combination with certain volume thresholds on the minor street to be met for a single hour on a typical day;
- Warrant 4, Pedestrian Volume – Requires certain volume thresholds on the major street in combination with certain pedestrian volume thresholds crossing the major street to be met for four hours on a typical day or higher thresholds to be required for a single hour;
- Warrant 5, School Crossing – applies to locations with a designated school crossing;
- Warrant 6, Coordinated Signal System – applies to signalized corridors where additional signals would improve vehicle platooning;
- Warrant 7, Crash Experience – requires five or more crashes that are of the type that potentially would be correctable by signalization and requires certain volume thresholds to be met for eight hours of a typical day;
- Warrant 8, Roadway Network – applies only to the intersection of two major roadways;
- Warrant 9, Intersection Near a Grade Crossing – applies to intersections near a rail grade crossing.

Projected 2026 AM, PM School, and PM Commuter peak hour traffic volumes were used to conduct a preliminary evaluation as to whether signalization at the intersection would be warranted. The preliminary evaluation is summarized in Table 16.

Table 16
Preliminary Signal Warrant Evaluation (2026 Total Future Conditions)
Nebraska Avenue/Warren Street

Warrant	Peak Hours Met	Comments
1 – 8 Hour Volume	None	Since none of the peak hour volumes meet the volume thresholds, the 8 hour volume warrant would not be met.
2 – 4 Hour Volume	None	Since none of the peak hour volumes meet the volume threshold, the 4 hour volume warrant would not be met.
3 – Peak Hour Volume	None	Since none of the peak hour volumes meet the volume threshold, the peak hour warrant would not be met.
4 – Ped Volume	None	Not met with combination of current ped volumes and mainline traffic volumes. Significant ped volumes would need to be realized in the future for this warrant to be met.
5 – School Crossing	Not Applicable. Warrant requires: 1) an established school crossing 2) ≥ 20 children (in elementary through high school) 3) a study of the frequency and adequacy of gaps in the vehicular traffic stream as related to the number and size of groups of school children at an established school crossing across the major street shows that the number of adequate gaps in the traffic stream during the period when the schoolchildren are using the crossing is less than the number of minutes in the same period	
6 – Coordinated Signal	Not Applicable	
7 – Crash Experience	None	The volume requirements of the warrant would not be met for any of the peak hours.
8 – Roadway Network	Not Applicable	
9 – Grade Crossing	Not Applicable	

Based on the preliminary evaluation of traffic signal warrants, it is highly unlikely that the Nebraska Avenue/Warren Street intersection would meet traffic signal warrants in 2026 upon full build out of the River School.

During several community meetings, some neighbors expressed concern over the difficulty in crossing the unsignalized crosswalks on Nebraska Avenue at Warren Street. Therefore, an evaluation of hybrid pedestrian beacon warrants was undertaken.

The MUTCD provides the following guidance for installing pedestrian hybrid beacons:

- The need for a pedestrian hybrid beacon should be considered If a traffic control signal is not justified under the signal warrants (as outlined above) and:
    - gaps in traffic are not adequate to permit pedestrians to cross,
    - the speed for vehicles approaching on the major street is too high to permit pedestrians to cross, or

- pedestrian delay is excessive,

- The need for a pedestrian hybrid beacon should be considered if major street vehicular volumes and pedestrian crossing volumes meet certain thresholds based on travel speeds and crossing distance.

Projected 2026 AM, PM School, and PM Commuter peak hour traffic volumes were used to conduct a preliminary evaluation as to whether a pedestrian hybrid beacon would be warranted. Based on the evaluation, the AM and PM Commuter peak hour pedestrian and vehicular volumes are projected to meet the thresholds established in the MUTCD. Therefore, it is recommended that a pedestrian hybrid beacon be installed on Nebraska Avenue south of Warren Street to facilitate pedestrian crossings.

During community meetings, residents also expressed concern about cut-through traffic using Warren Street. In order to reduce delays and discourage cut through traffic, without unduly restricting access/egress for residents, an evaluation was conducted to determine the impact of restricting eastbound and westbound left turns from Warren Street onto Nebraska Avenue.

The results of the evaluation are summarized in Tables 17 and 18.

Table 17
Level of Service Summary
Nebraska Avenue/Warren Street

Approach	Background Conditions			Total Future Conditions with Improvements		
	AM	PM School	PM Comm	AM	PM School	PM Comm
13. Nebraska Avenue/Warren Street						
EB	F (52.4) [0.34]	F (107.0) [0.64]	F (57.9) [0.32)	D	F (116.6) [0.78]	F (177.2) [0.81]
WB	F (51.0) [0.40]	F (616.9) [1.80]	F (105.3) [0.62]	F (61.7) [0.44]	F (65.1) [0.31]	F (90.6) [0.40]
NEB	A	A	A	A	A	A
SEB	A	A	A	A	A	A

(x.x) = intersection control delay in sec/veh
[x.x] = v/c ratio

As shown in Table 17, restriction of left turns from Warren Street onto Nebraska Avenue during the peak periods would provide a substantial reduction in delay for the eastbound approach during the AM peak hour and for the westbound approach during the PM School peak hour. On a weighted average basis, the side street delay would decrease by 18% in the AM peak hour and 84% in the PM School peak hour. However, the weighted average delay would increase by 68 percent during the PM Commuter peak hour (due to the additional traffic added to Nebraska Avenue as a result of rerouting).

Table 18 summarizes the queues for the proposed improvements. As shown in the table, queues will still exceed available storage in some instances, but would be reduced on the westbound (Van Ness Street) approach and northeast-bound (Nebraska Avenue) approach.

Table 18
95th Percentile Queue Summary
Nebraska Avenue/42nd Street and Nebraska Avenue/Van Ness Street

Approach	Available Storage (feet)	Background Conditions			Total Future Conditions with Improvements		
		AM	PM School	PM Comm	AM	PM School	PM Comm
8. Nebraska Avenue/42nd Street							
SBLR	150	32	139	66	30	50	35
NEBLT	490	11	27	16	12	25	14
9. Nebraska Avenue/Van Ness Street							
EBLTR	95	281	232	201	343	276	247
WBL	240	173	351	386	153	277	271
WBTR	240	187	204	238	180	184	223
NEBLTR	290	1354	1870	361	546	722	464
SEBLTR	435†	138	802	297	330	384	360

† 435' represents the distance to the nearest intersection. Distance to the proposed outbound driveway is approximately 200'

Intersection #14 (Nebraska Avenue/41st Street)

41st Street currently is controlled by a YIELD sign at its intersection with Nebraska Avenue. According to the MUTCD, "vehicles controlled by a YIELD sign need to slow down to a speed that is reasonable for the existing conditions or stop when necessary to avoid interfering with conflicting traffic." The MUTCD further states, "YIELD signs may be installed . . . on the approaches to a through street or highway where conditions are such that a full stop is not always required." Given the volume of traffic on Nebraska Avenue and the sharp left turn required based on the acute intersecting angle, a STOP sign and a NO LEFT TURN sign are recommended in place of the YIELD sign.

Levels of service and 95th percentile queue with the recommended improvement are shown on Tables 19 and 20, respectively. For comparative purposes, background conditions also are shown.

Table 19
Level of Service Summary
Nebraska Avenue/41st Street

Approach	Background Conditions			Total Future Conditions with Improvements		
	AM	PM School	PM Comm	AM	PM School	PM Comm
14. Nebraska Avenue/41st Street						
SWB	A	A	A	A	A	A
NB	C	F (54.8) [0.66]	B	C	E (48.1) [0.62]	B
(x.x) = intersection control delay in sec/veh [x.x] = v/c ratio						

Table 20
95th Percentile Queue Summary
Nebraska Avenue/41ST Street

Approach	Available Storage	Background Conditions			Total Future Conditions with Improvements		
		AM	PM School	PM Comm	AM	PM School	PM Comm
8. Nebraska Avenue/41st Street							
SWBLT	120	2	4	1	2	4	2
NBL	90	18	99	10	15	89	13
NBR					2	4	2
(x.x) = intersection control delay in sec/veh [x.x] = v/c ratio							

CONCLUSIONS AND RECOMMENDATIONS

The conclusions and recommendations of this study are as follows:

1. The proposed new campus at 4220 Nebraska Avenue would provide the River School with the opportunity to bolster their mission, their financial stability, and their unique legacy of ensuring an inclusive educational experience for children with hearing loss. The additional space would allow the School to expand its program to students through sixth grade.

2. At full build out, the School would enroll a maximum of 350 students with 90 faculty and staff. Because some students attend only two or three mornings per week, the number of students on campus on any given day will be 326 to 338, based on enrollment projections.

3. Access to the School will be provided via two new curb cuts on Nebraska Avenue that will replace two existing curb cuts serving the site (one on Nebraska Avenue and one on 42nd Street). There will be no net increase in curb cuts. The curb cuts will provide access to a one-way loop. The loop has been designed to accommodate the School's pick-up/drop-off operation on-site without creating spillback onto Nebraska Avenue. The loop road also will provide access to the below-grade parking, (55 parking spaces), 10 surface parking spaces, and at-grade loading facilities.

4. The School is seeking special exception relief to allow 12 tandem spaces in the garage and six of the 10 surface spaces (i.e., the six spaces that are located in the PUDO loop) to count toward the 60-space parking requirement.

5. The School will implement a comprehensive Transportation Management Plan (TMP) comprised of a Transportation Demand Management (TDM) Plan, an Operations Management Plan, and a Monitoring Plan.

    - The TDM Plan provides strategies for reducing vehicular trips for both students and faculty/staff through carpooling initiatives, a School-provided shuttle, and transit and bicycling initiatives and incentives. The TDM plan is anticipated to result in a 45 percent reduction in trips during the AM peak hour and a 15 percent reduction during the PM School and Commuter peak hours.

    - The Operations Management Plan outlines protocols that will be established by the School to promote safe and efficient travel to and from the school and on school property.

    - The Monitoring Plan established criteria by which to measure the School's success, establishes the frequency of required studies, and outlines a process to be followed should the required criteria not be met.

6. With implementation of the TMP, the school will generate 224 AM peak hour vehicle trips, 149 PM School peak hour vehicle trips, and 92 PM Commuter peak hour vehicle trips.

7. In addition to implementation of the Comprehensive TMP, the following roadway improvements are recommended to mitigate the impact of school-generated traffic:
   - Modification of the traffic signal at the Nebraska Avenue/Van Ness Street intersection to include a westbound left turn phase;
   - Removal of approximately four RPP parking spaces on the north side of Van Ness Street between Nebraska Avenue and 41st Street to improve access to the westbound left turn lane at the Nebraska Avenue/Van Ness Street intersection;
   - Removal of parking on both sides of Nebraska Avenue from 7:00 AM to 7:00 PM from approximately 500 feet south of Van Ness Street to Warren Street to improve the capacity of the Nebraska Avenue/Van Ness Street intersection;
   - Installation of a pedestrian hybrid beacon on Nebraska Avenue south of Warren Street to facilitate pedestrian crossings across Nebraska Avenue;
   - Installation of a STOP sign and a NO LEFT TURN sign in place of the YIELD sign on 41st Street at its intersection with Nebraska Avenue; and
   - Installation a STOP sign and a NO LEFT TURN sign on the School's outbound driveway, at its intersection with Nebraska Avenue and installation of a NO LEFT TURN SIGN on Nebraska Avenue (for northeast-bound traffic) in advance of the School's inbound driveway.
8. For locations where physical roadway improvements are undesirable or infeasible, the School proposes to provide traffic calming or pedestrian and bicycle improvements to be determined in consultation with DDOT. Cost estimates for such improvements will be developed once a specific improvement has been identified.

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FIGURES

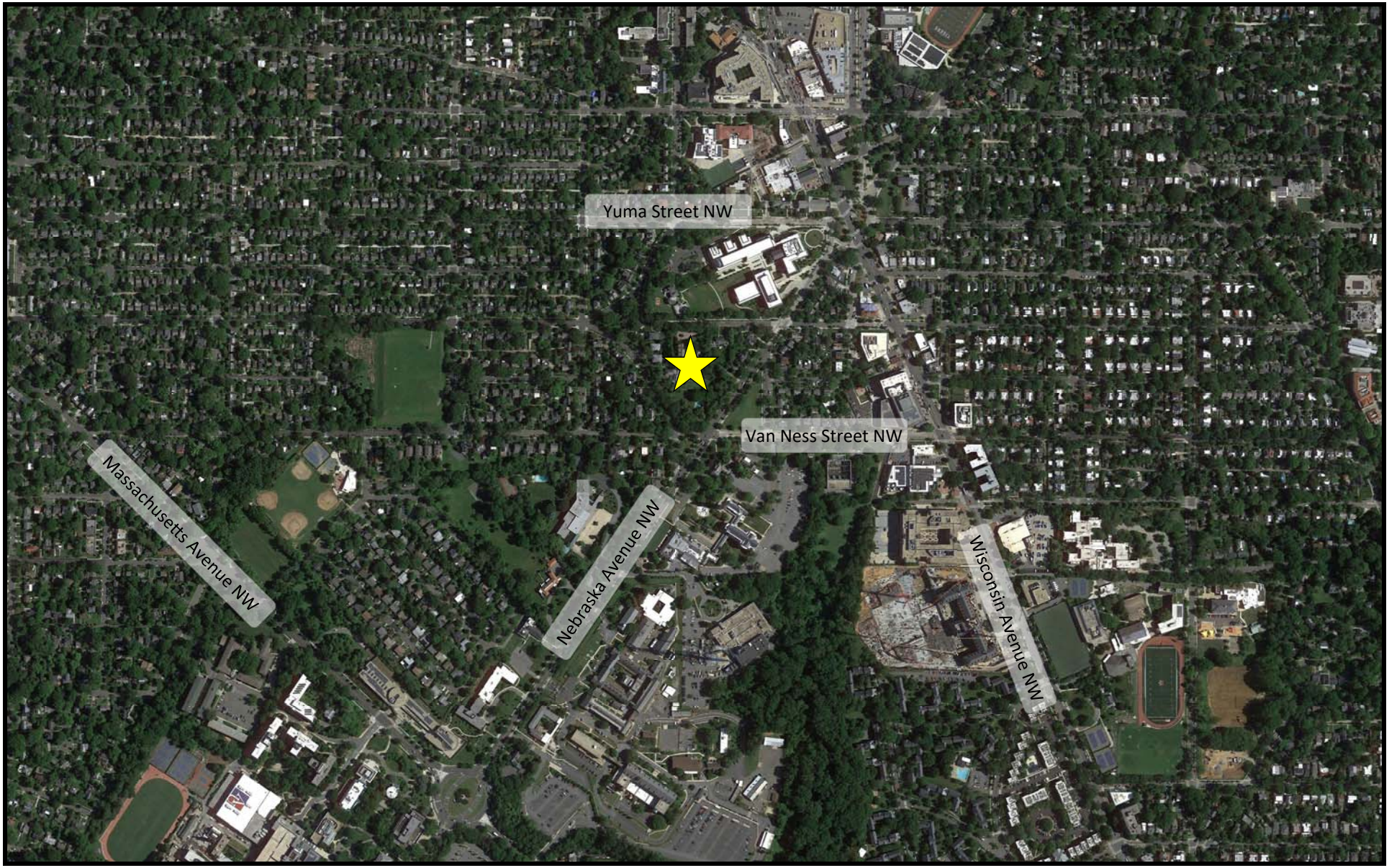
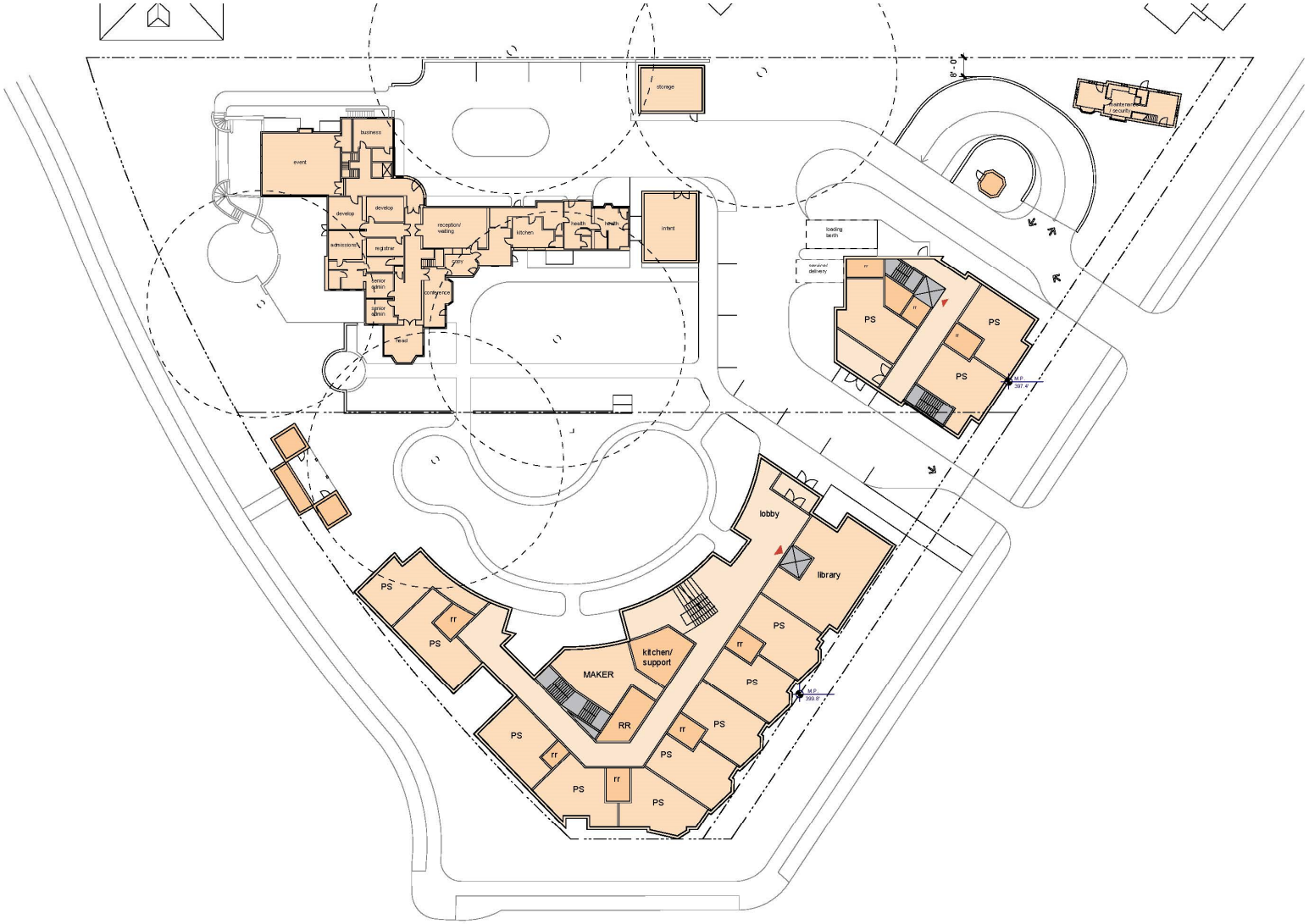


Figure 1
Site Location

Site

NORTH

The River School
Washington, DC



Source: shalom baranes associates—NTS

Figure 2
Proposed Plan

NORTH

The River School
Washington, DC

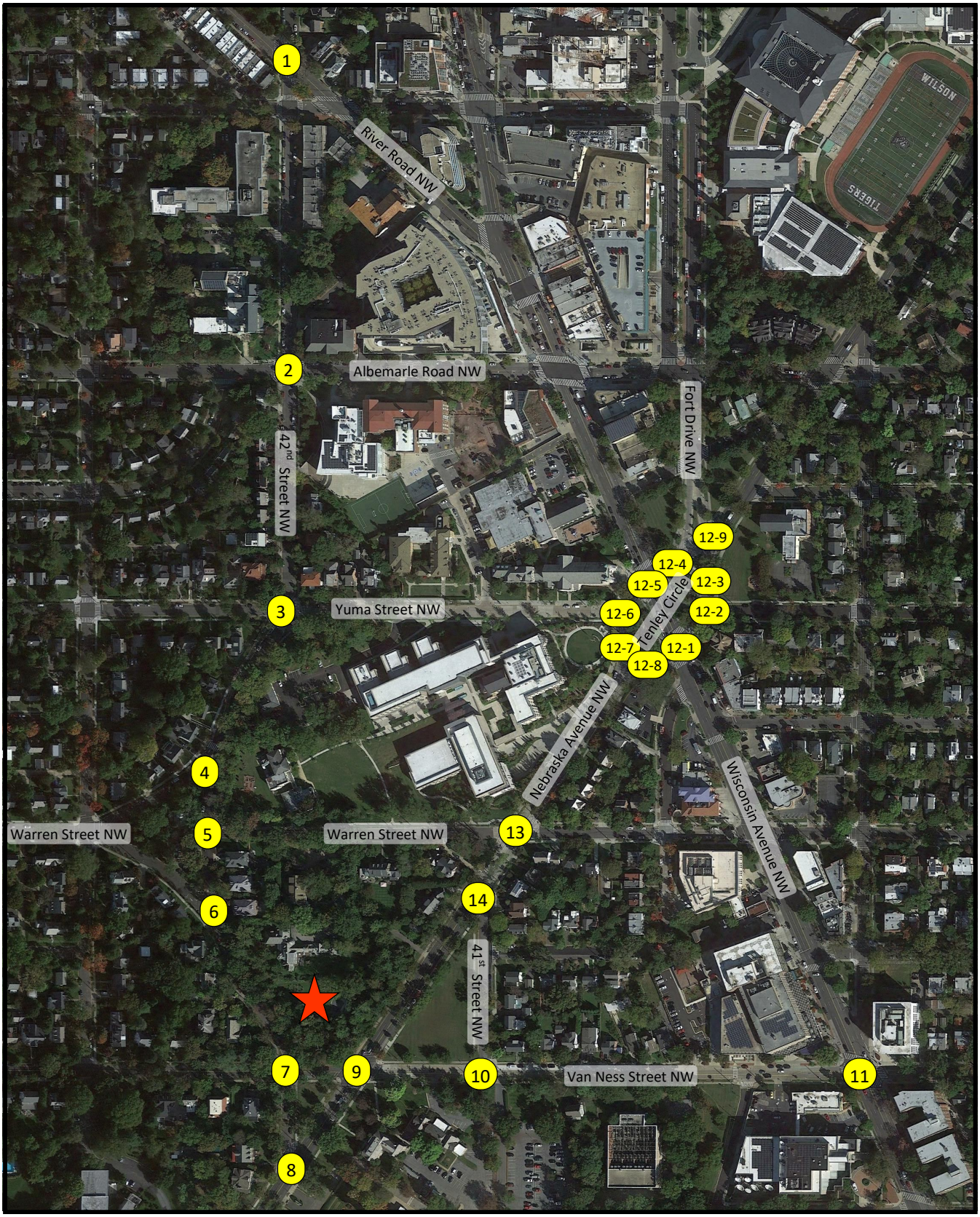


Figure 3
Study Area

Site
Study Intersection

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Washington, DC

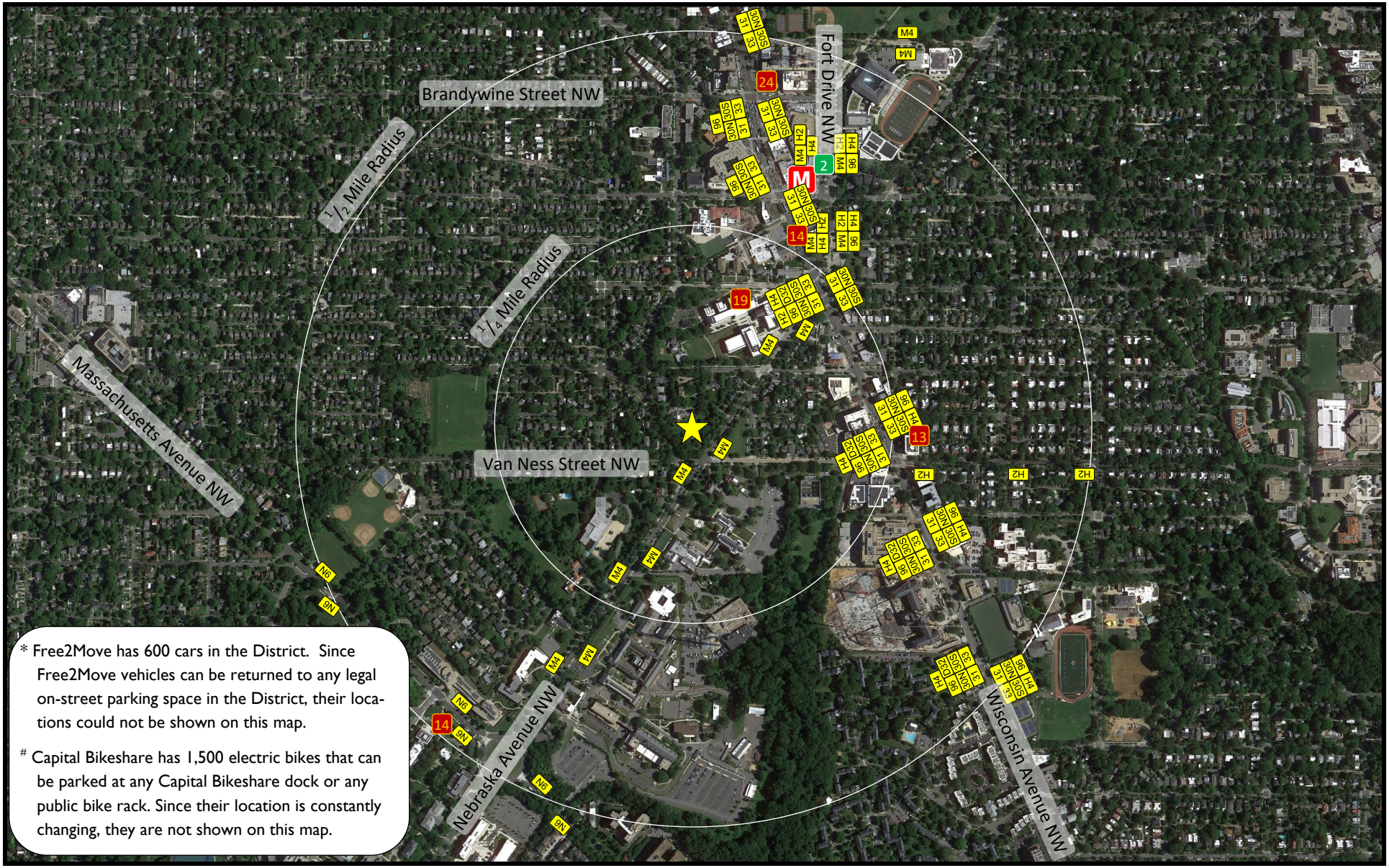

Figure 4
Multi-Modal Transportation Network

Site
Bus Stop (Route Number)
Capital Bike Share (Number of Docks)
Zipcar (Number of Cars)

Tenleytown—AU Metro Station (Red Line)

NORTH

The River School
Washington, DC

Figure 5
Concept Plan for Nebraska Avenue Multiuse Trail

Site

NORTH

The River School
Washington, DC

Figure 6
Quarter Mile Walk Shed

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The River School
Washington, DC

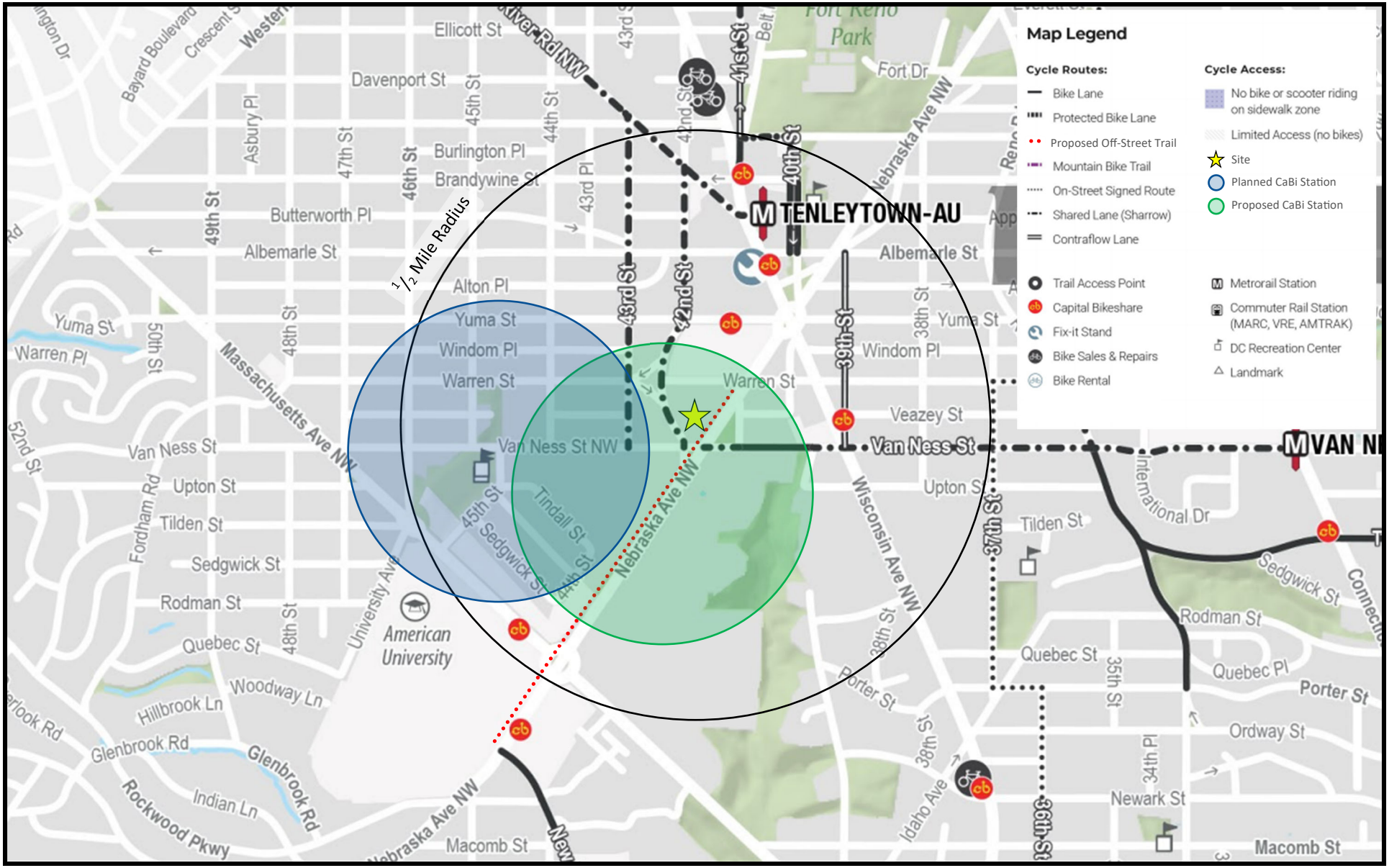

Figure 7
Half-Mile Bike Shed

NORTH

The River School
Washington, DC

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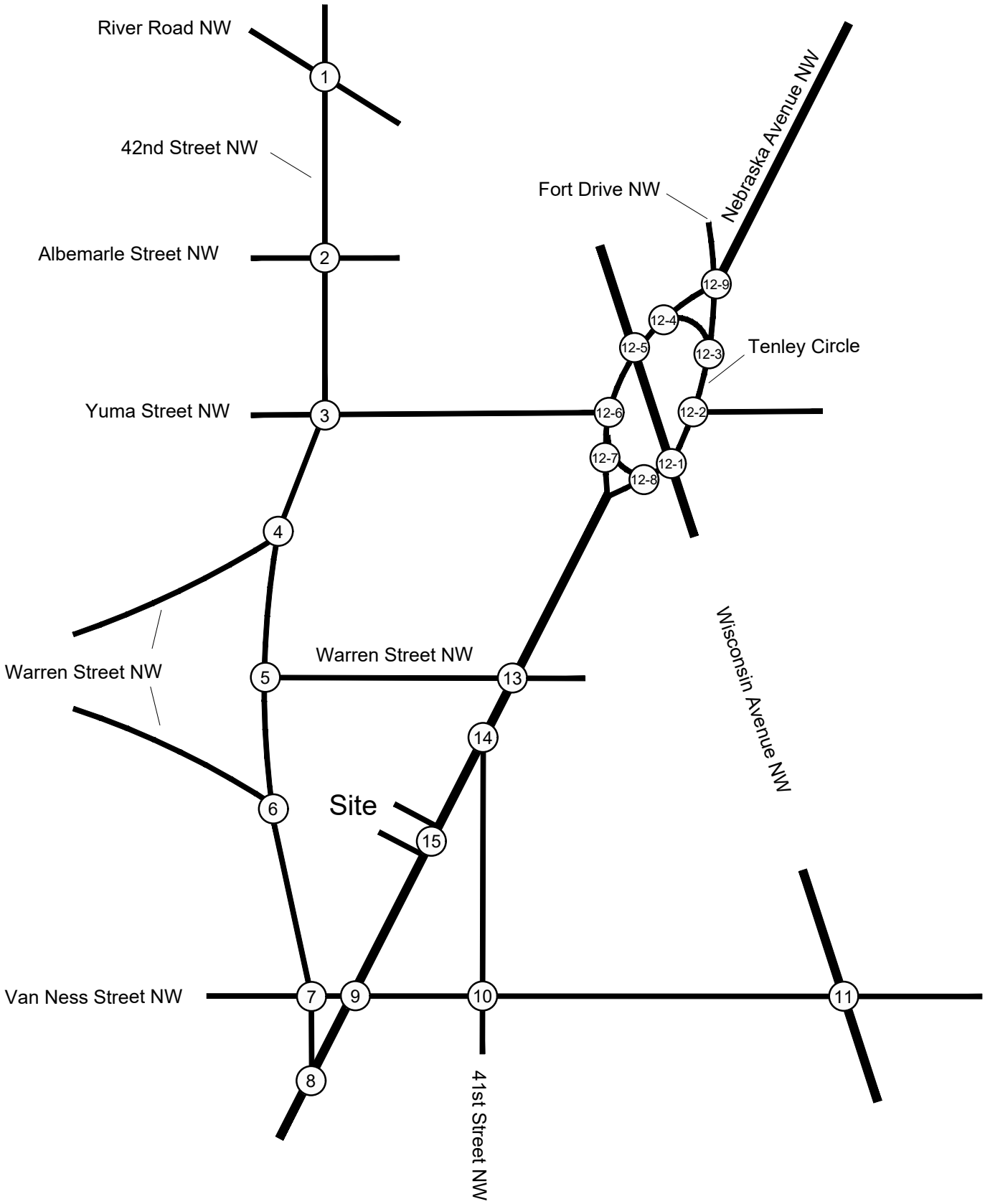

Figure 8
Intersection Layout Key

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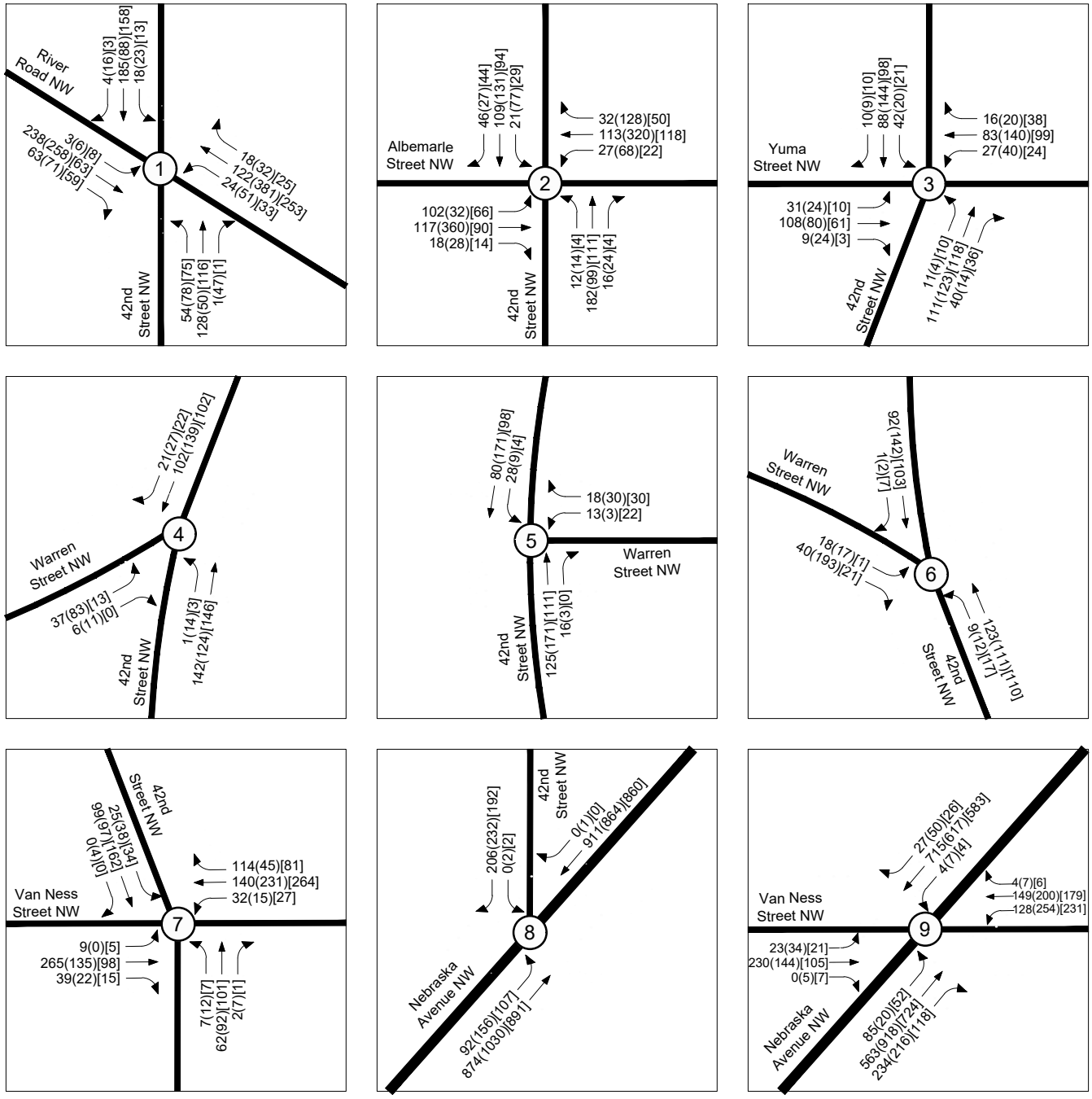

Figure 9

Existing Peak Hour Traffic Volumes

AM PEAK HOUR
SCHOOL PEAK HOUR
PM PEAK HOUR

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River School
Washington, DC

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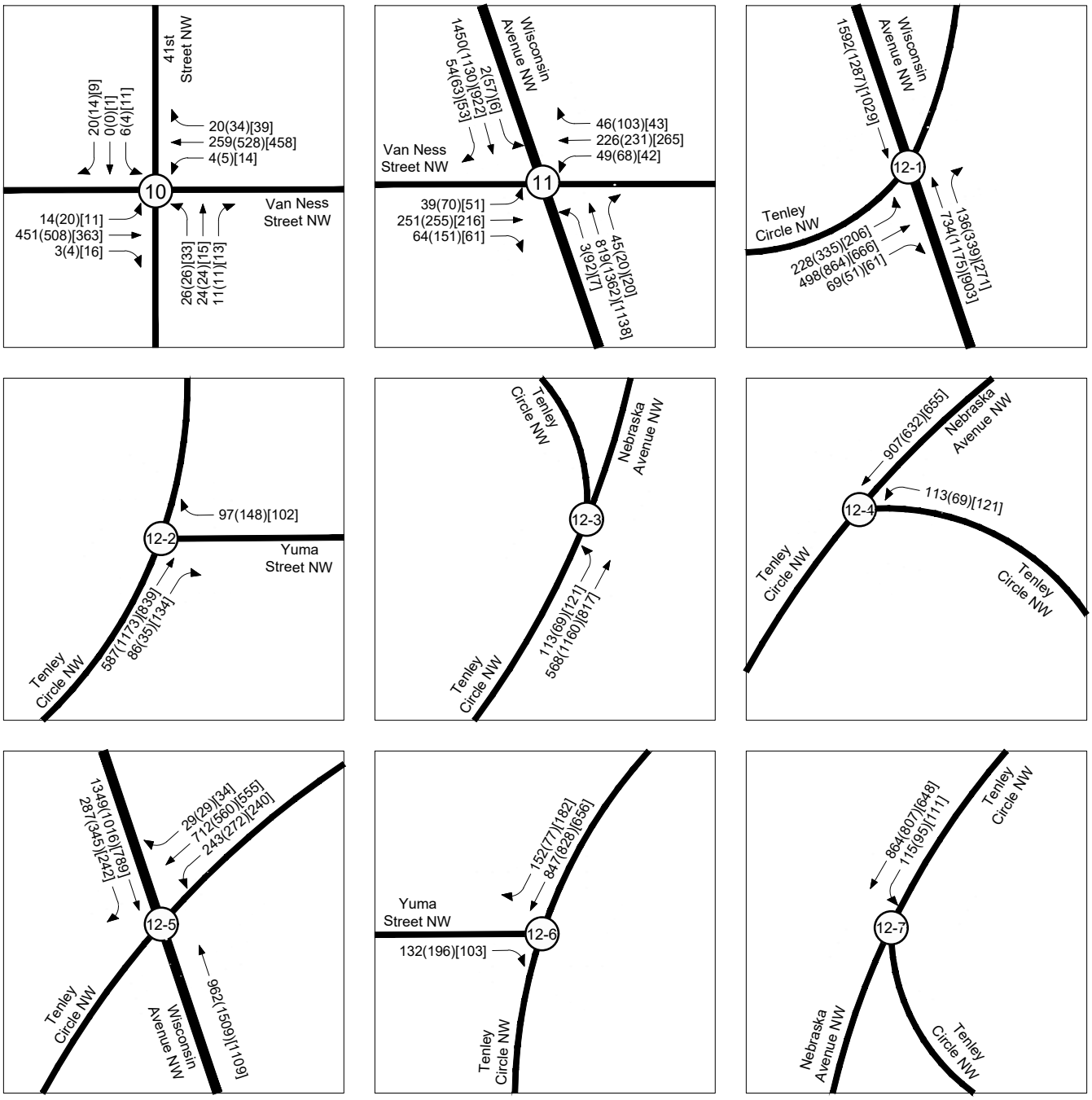

Figure 9-Cont

Existing Peak Hour Traffic Volumes

AM PEAK HOUR
SCHOOL PEAK HOUR
PM PEAK HOUR

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River School
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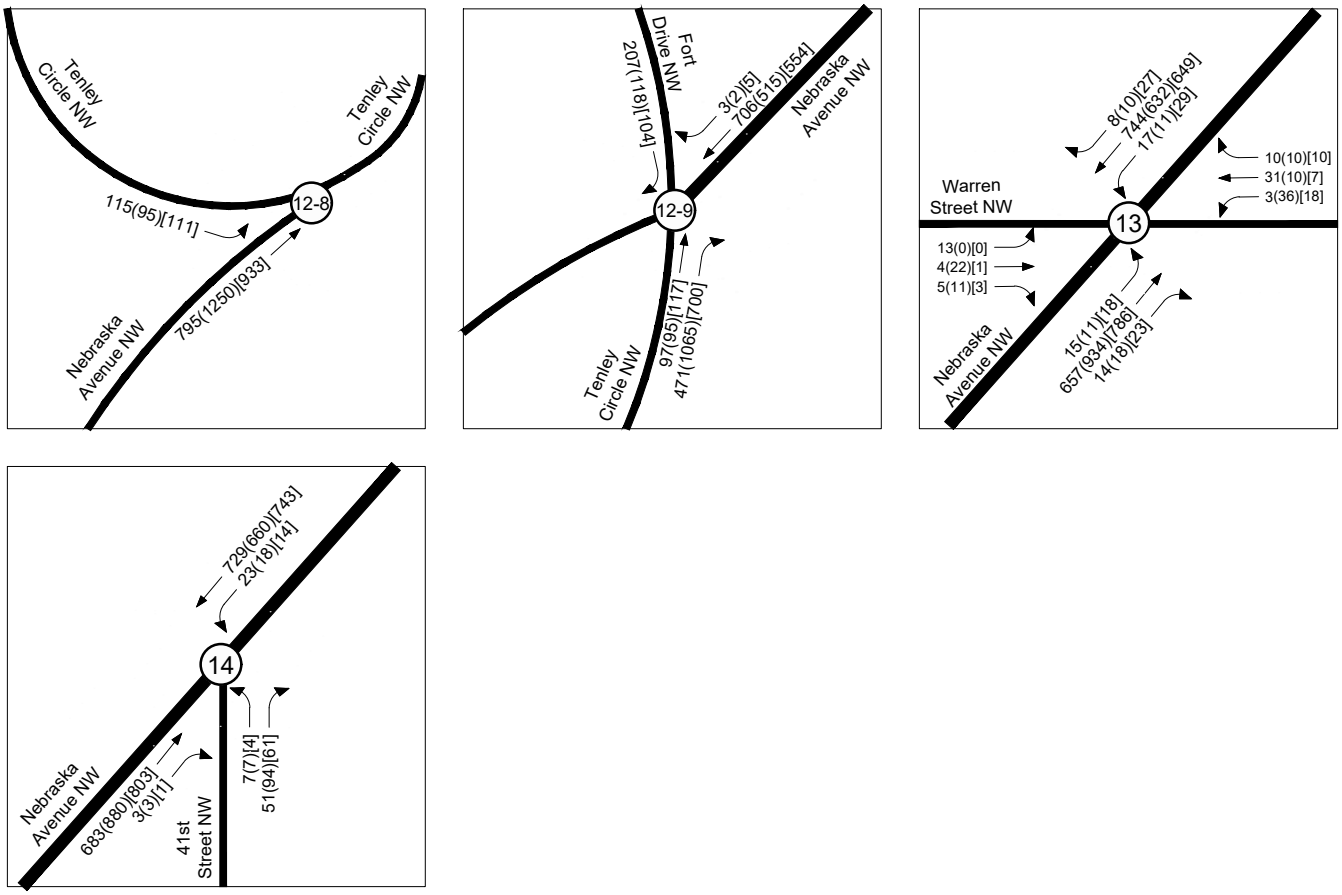

Figure 9-Cont

Existing Peak Hour Traffic Volumes

AM PEAK HOUR
SCHOOL PEAK HOUR
PM PEAK HOUR
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River School
Washington, DC

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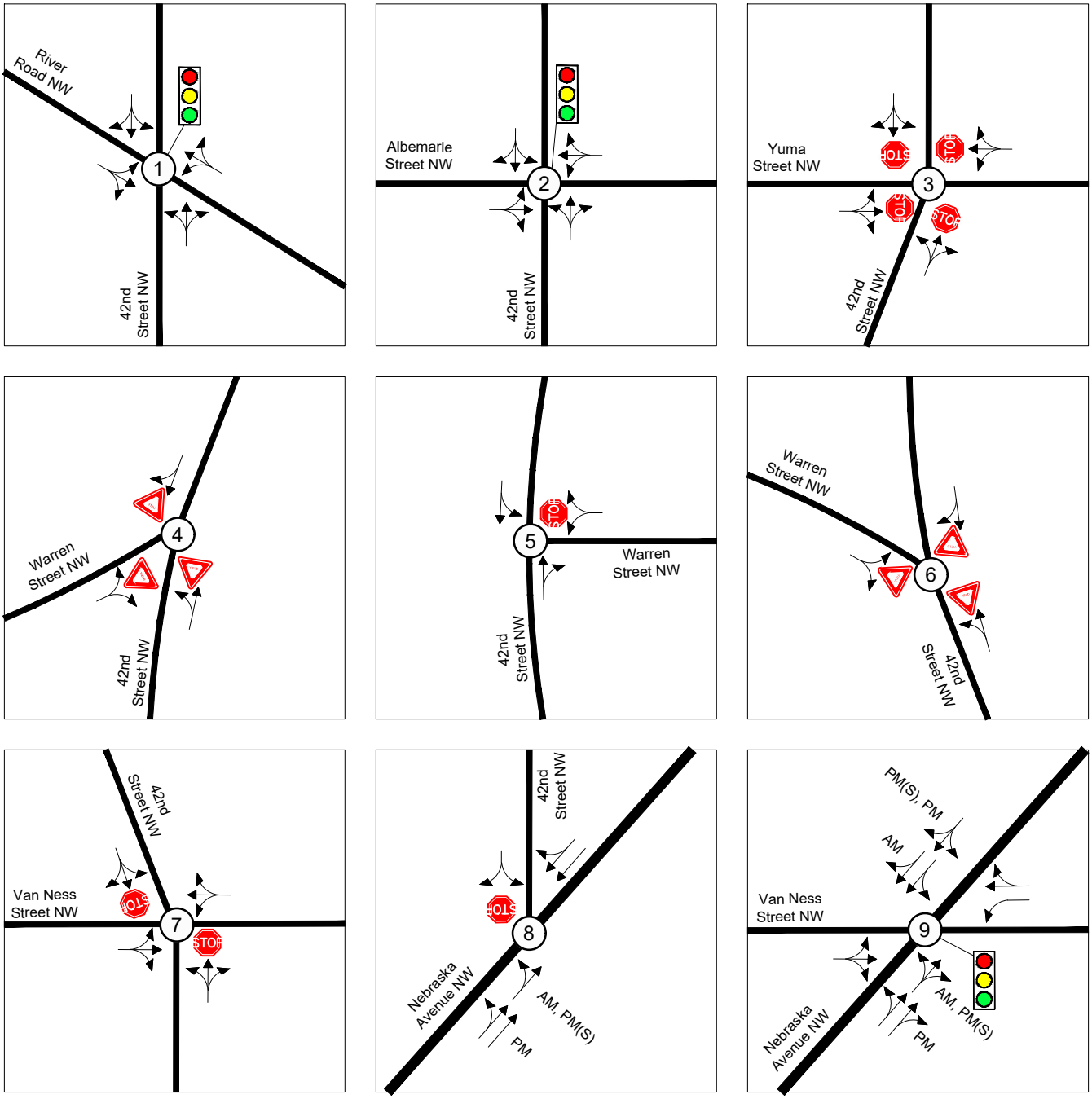

Figure 10
Exisitng Lane Use and Traffic Control

Represents One Travel Lane
Traffic Signal
Stop Sign
Yield Sign

NORTH
River School
Washington, DC

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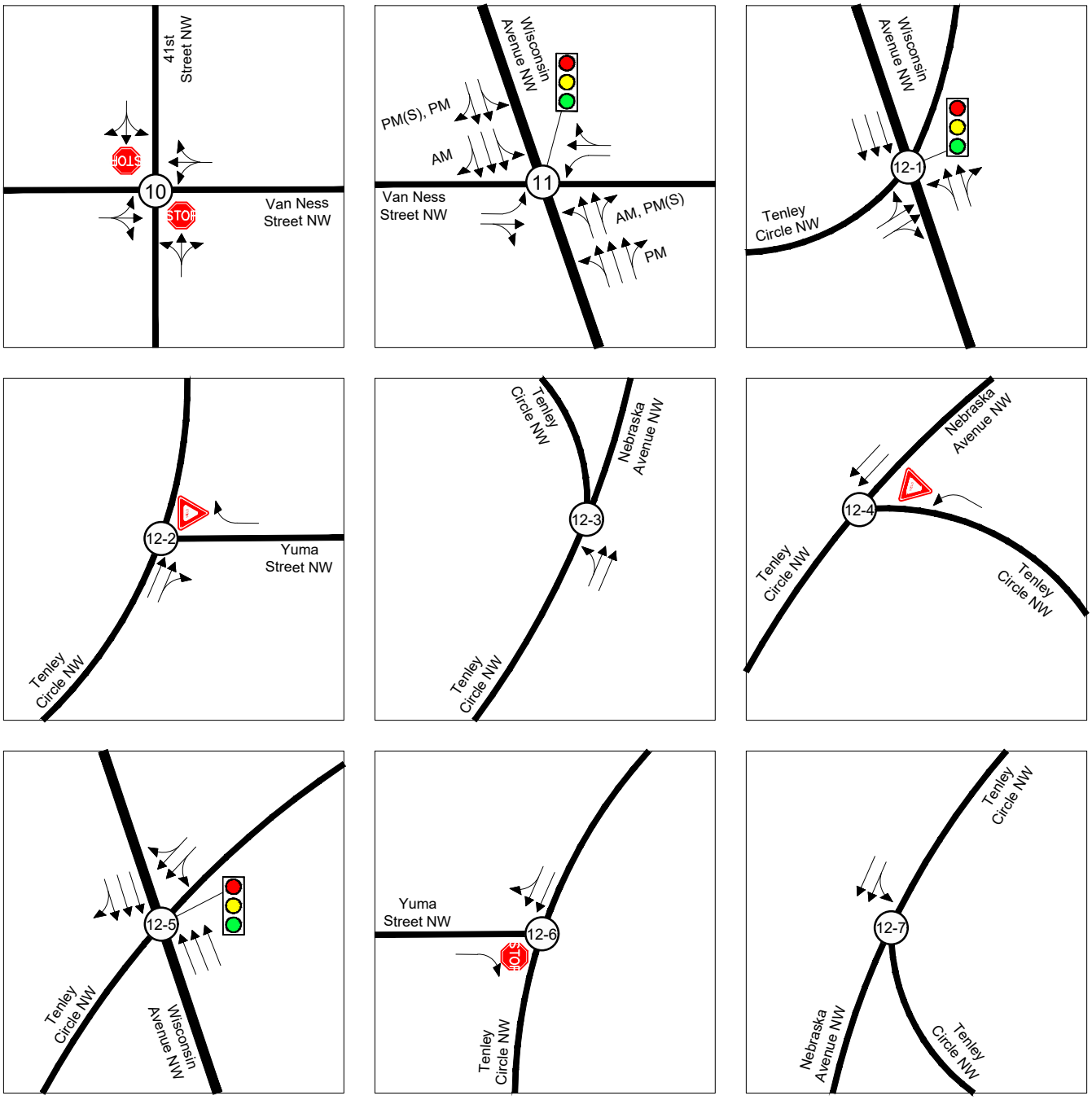

Figure 10-Cont
Existing Lane Use and Traffic Control

Represents One Travel Lane
Traffic Signal
Stop Sign
Yield Sign

NORTH
River School
Washington, DC

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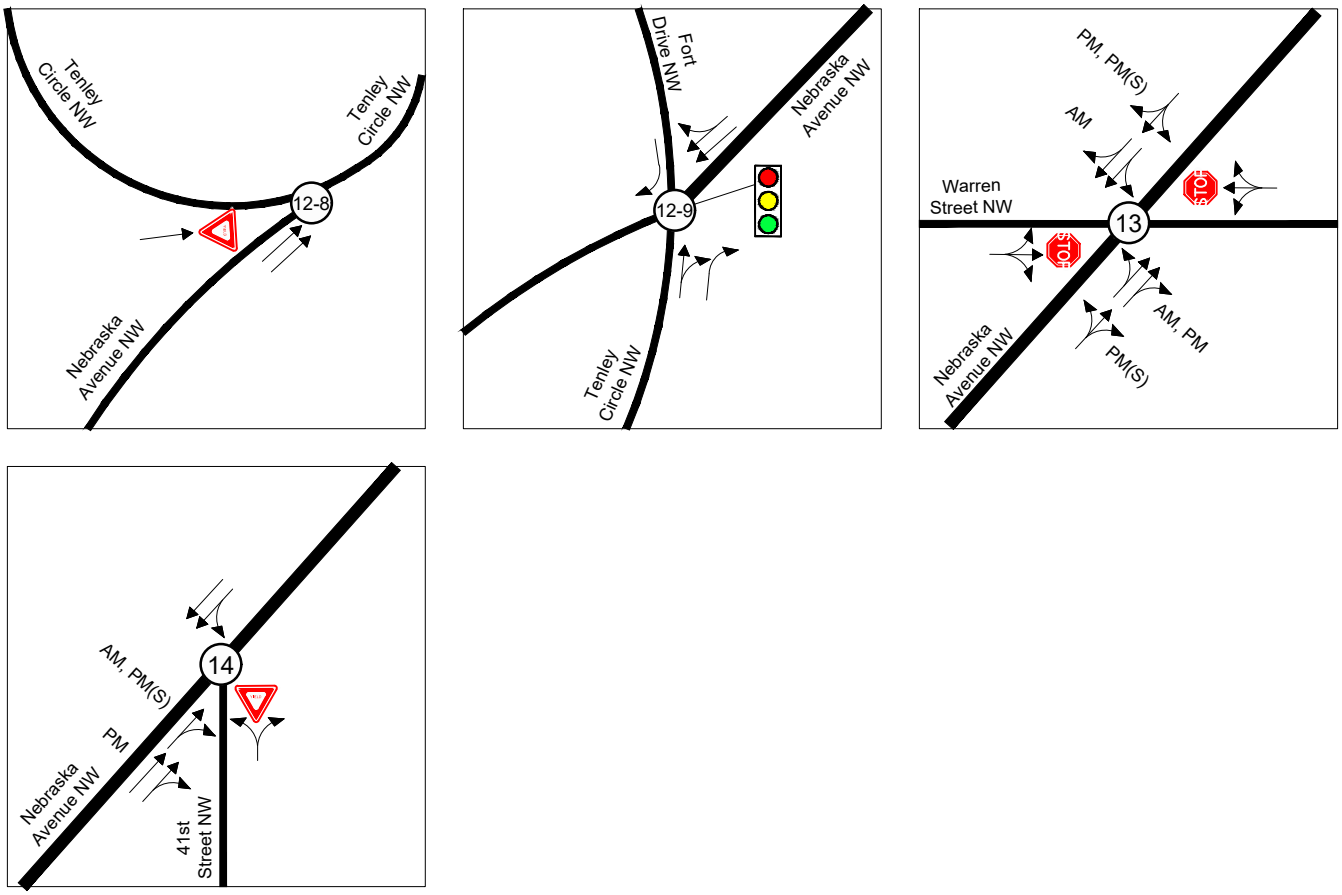

Figure 10-Cont
Existing Lane Use and Traffic Control

Represents One Travel Lane
Traffic Signal
Stop Sign
Yield Sign

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River School
Washington, DC

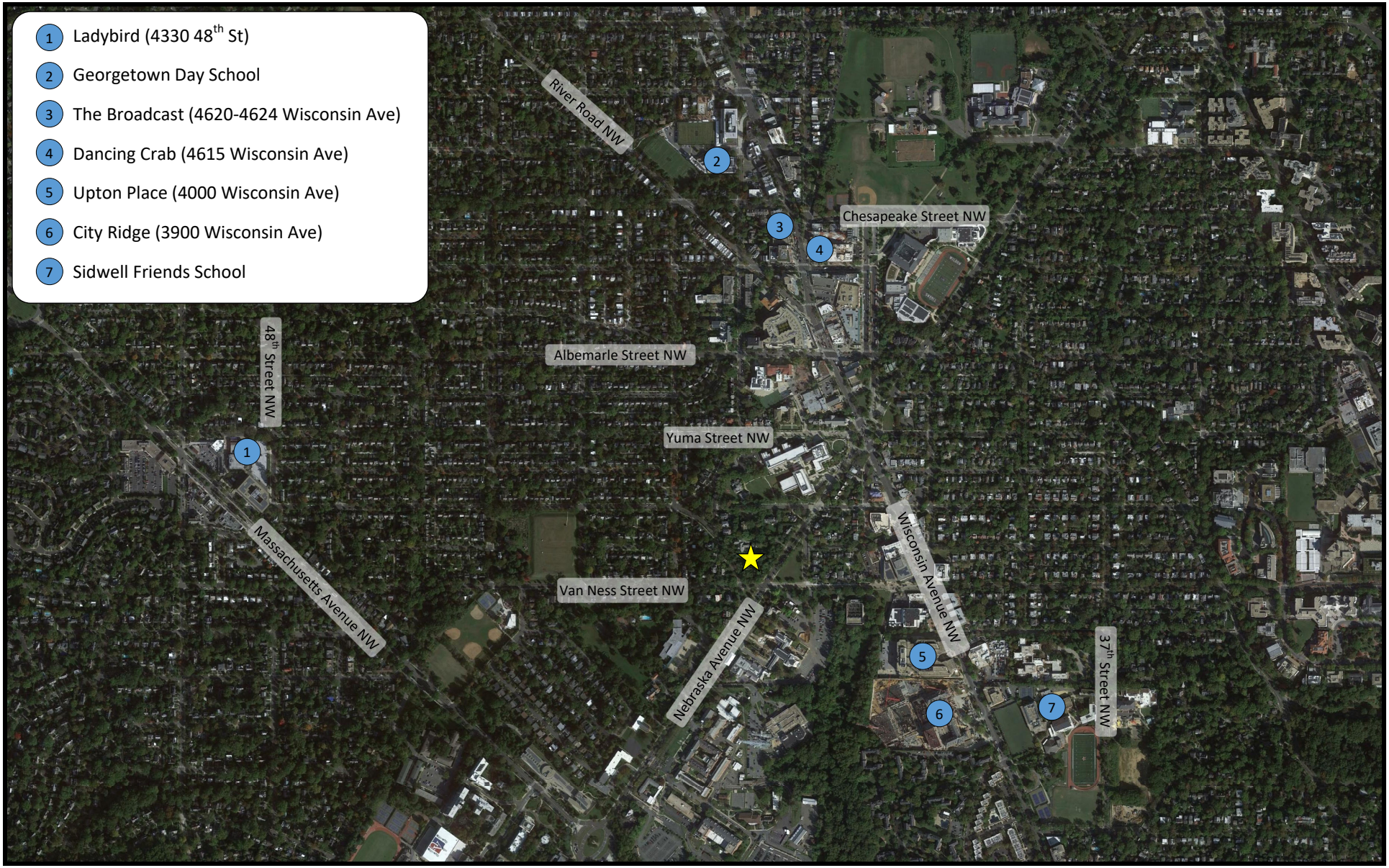

Figure 11
Location of Pipeline Developments

Site

NORTH

The River School
Washington, DC

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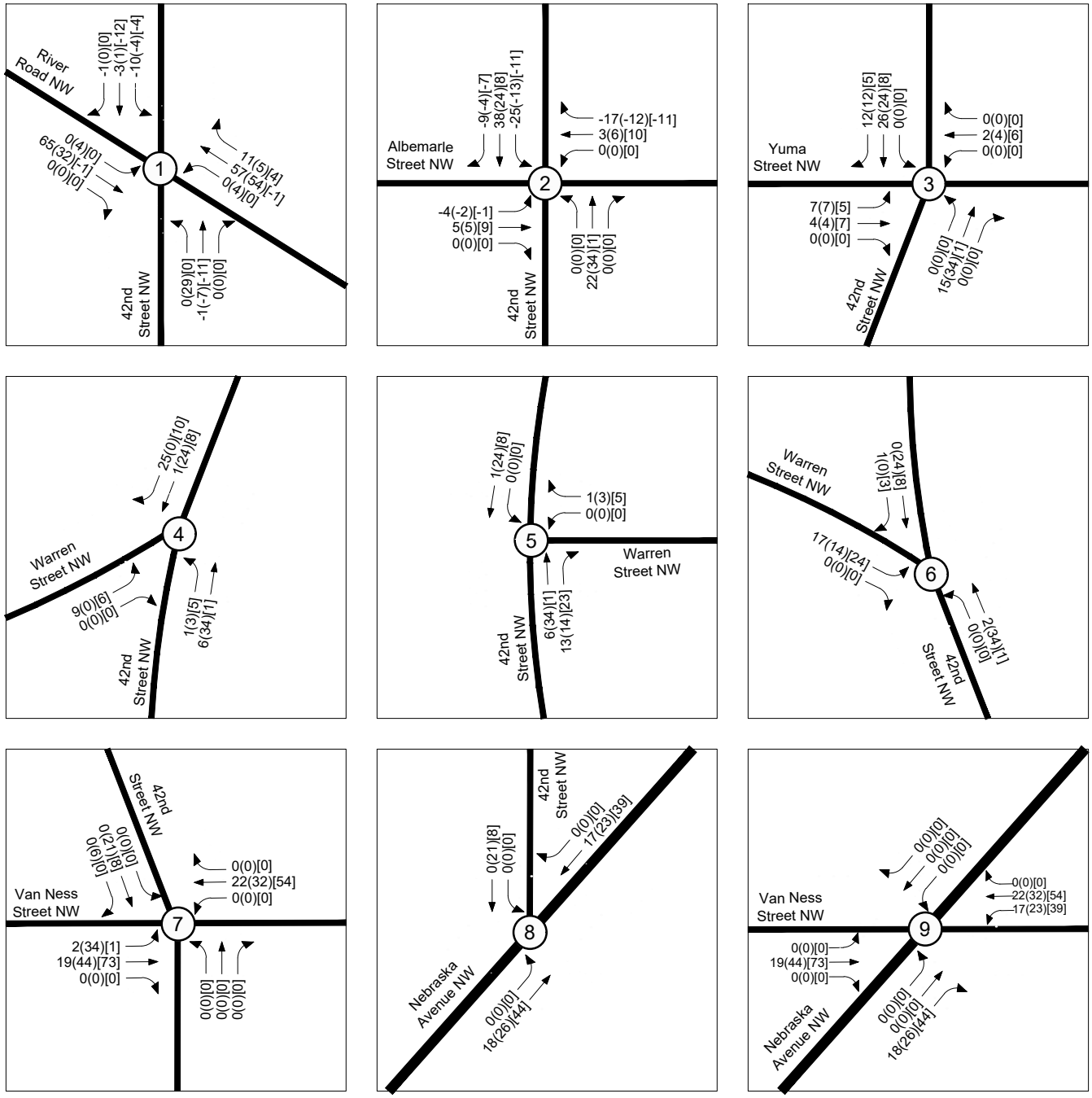

Figure 12

Total Pipeline Peak Hour Traffic Volumes

AM PEAK HOUR
SCHOOL PEAK HOUR
PM PEAK HOUR

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NORTH

River School
Washington, DC

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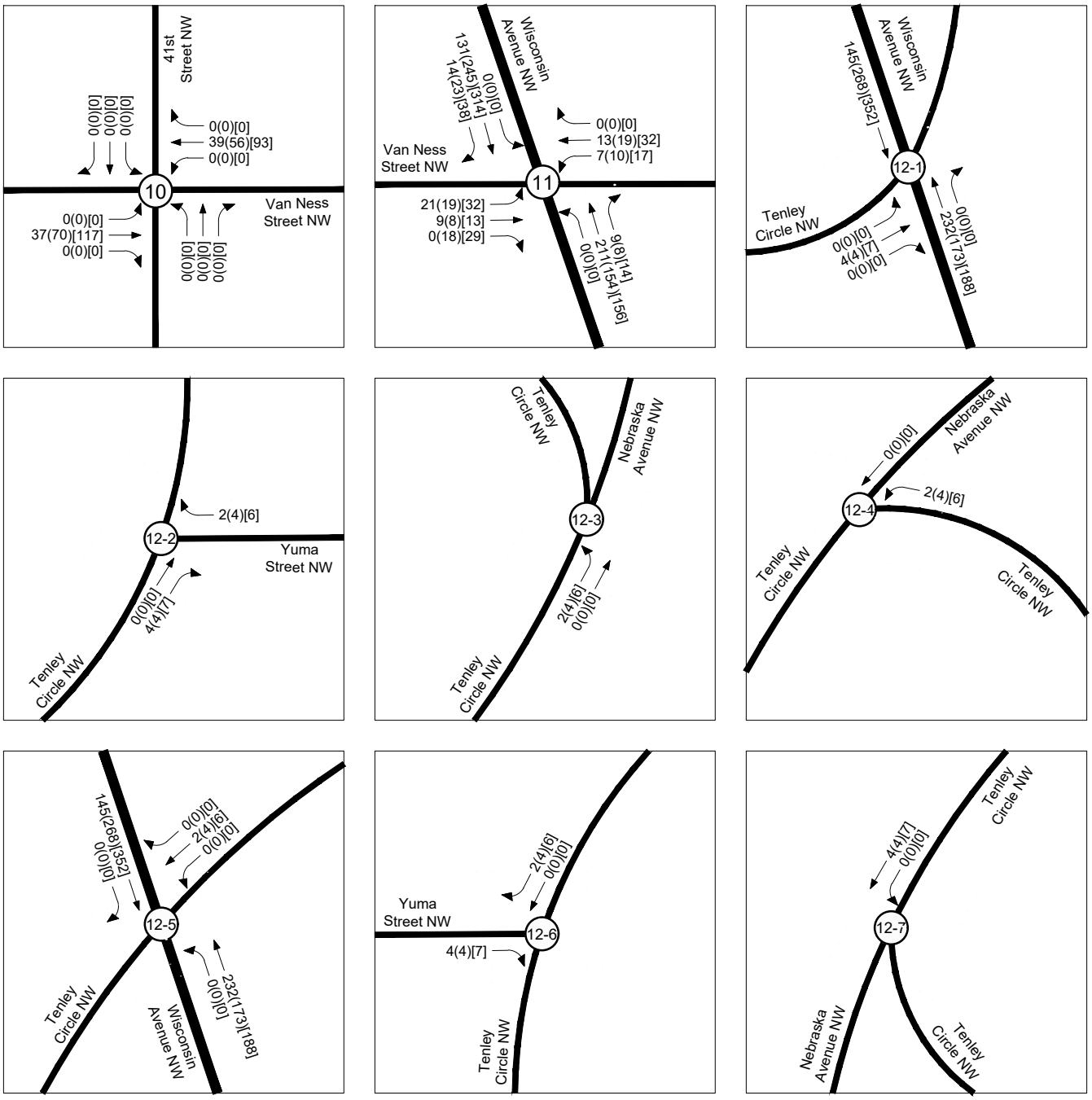

Figure 12-Cont

Total Pipeline Peak Hour Traffic Volumes

AM PEAK HOUR
SCHOOL PEAK HOUR
PM PEAK HOUR

000 (000) [000]

NORTH

River School
Washington, DC

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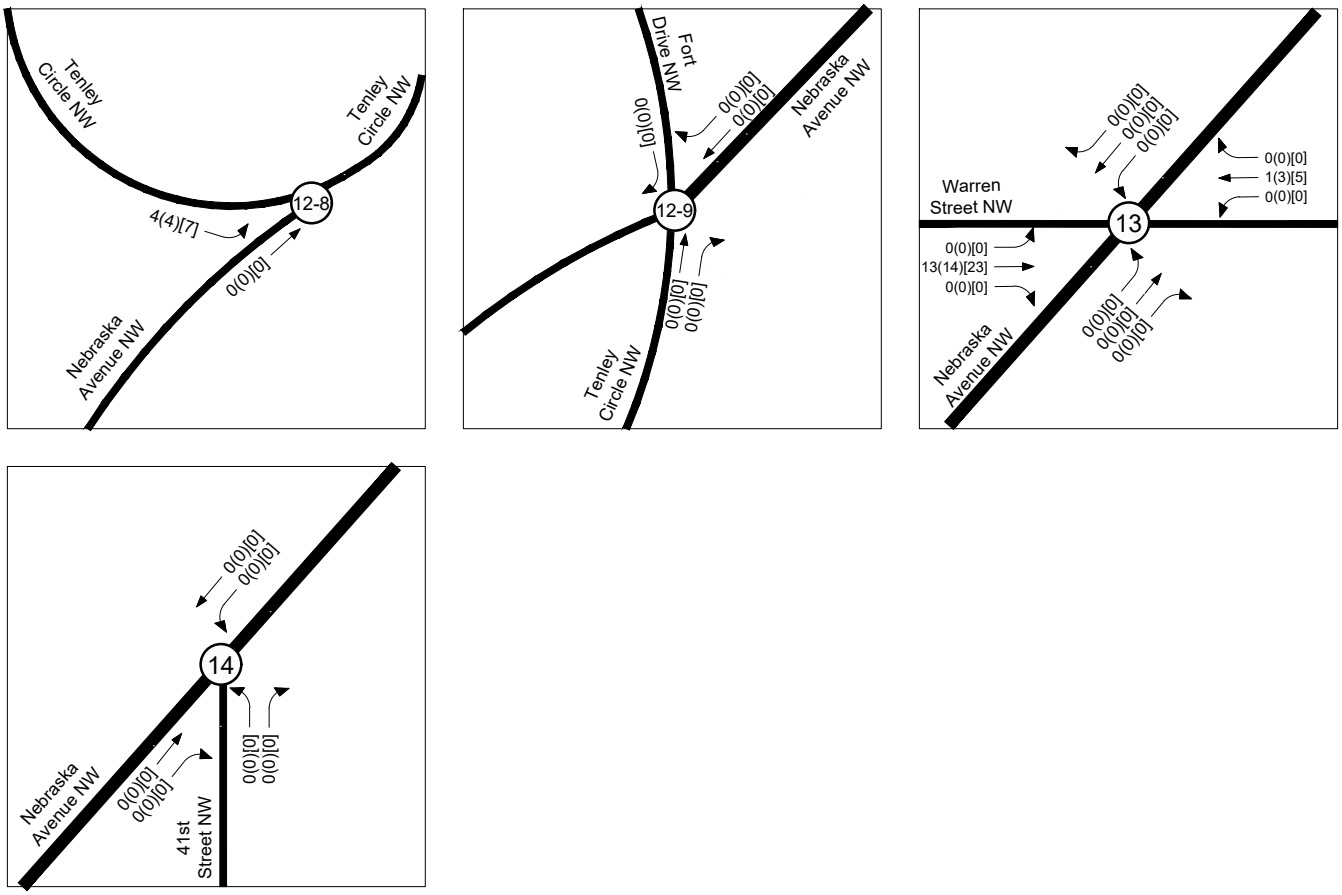

Figure 12-Cont

Total Pipeline Peak Hour Traffic Volumes

AM PEAK HOUR
SCHOOL PEAK HOUR
PM PEAK HOUR
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NORTH

River School
Washington, DC

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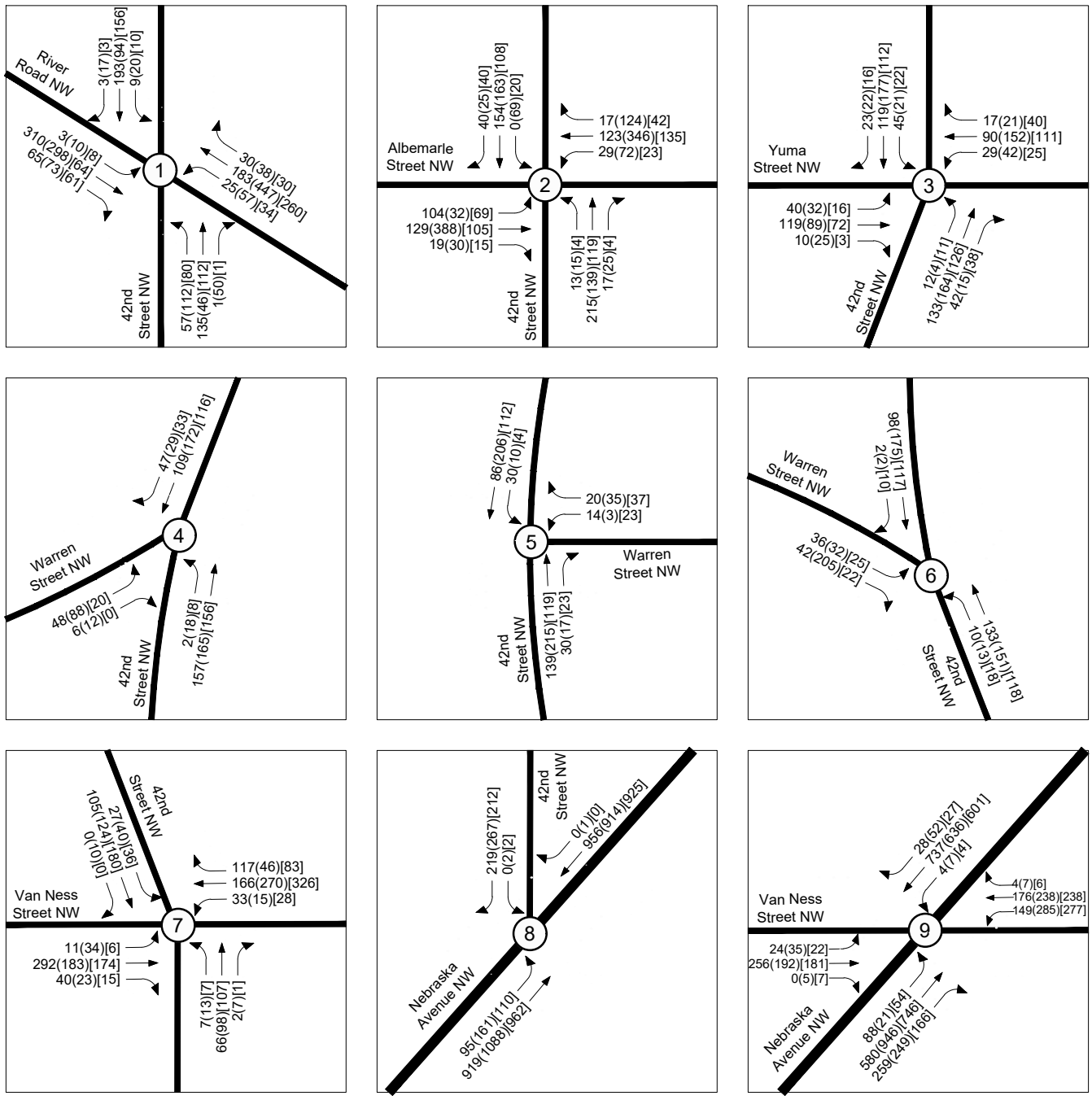

Figure 13

2026 Background Peak Hour Traffic Forecasts

AM PEAK HOUR
SCHOOL PEAK HOUR
PM PEAK HOUR

000 (000) [000]

NORTH

River School
Washington, DC

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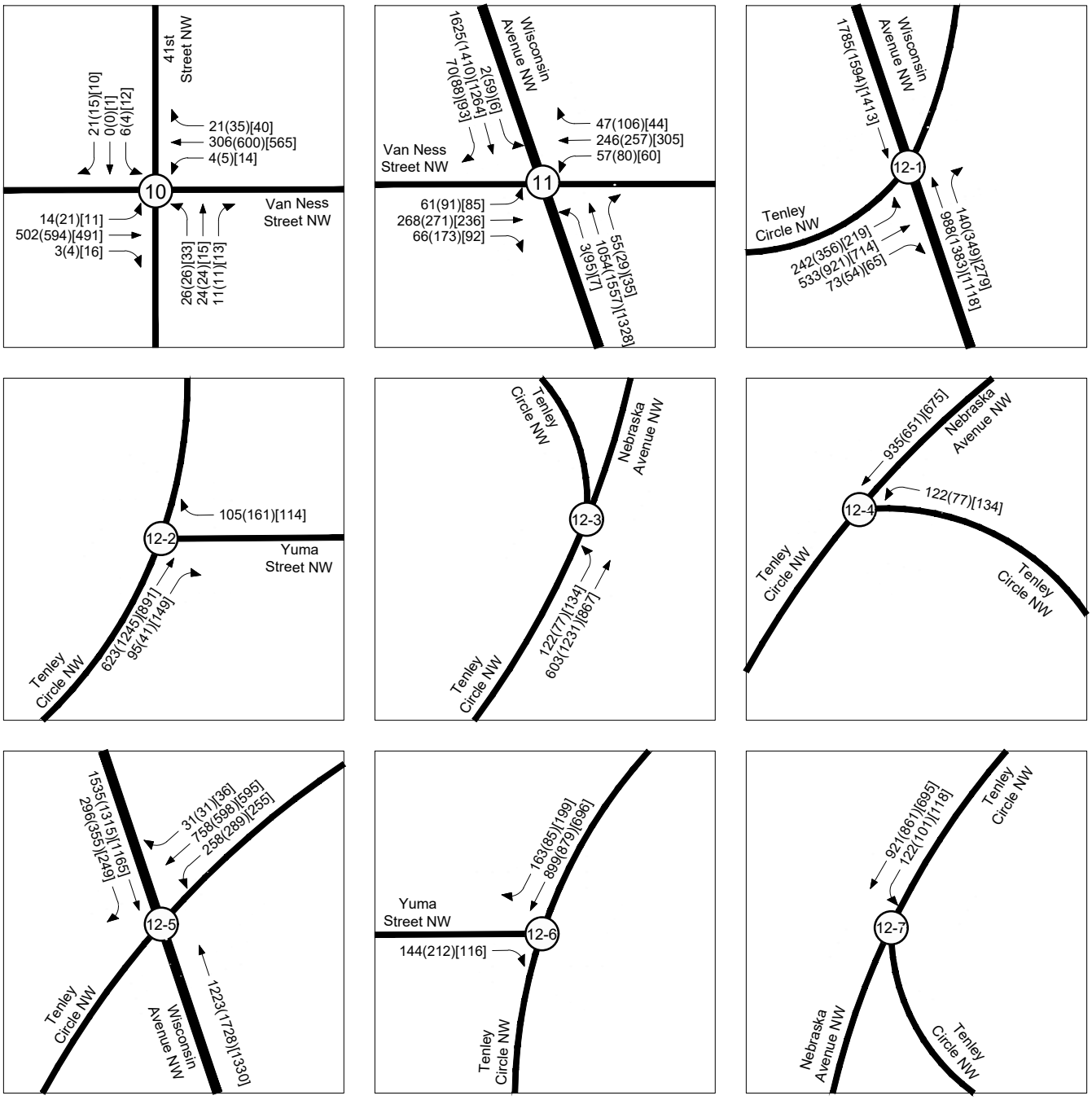

Figure 13-Cont

2026 Background Peak Hour Traffic Forecasts

AM PEAK HOUR
SCHOOL PEAK HOUR
PM PEAK HOUR

000 (000) [000]

NORTH

River School
Washington, DC

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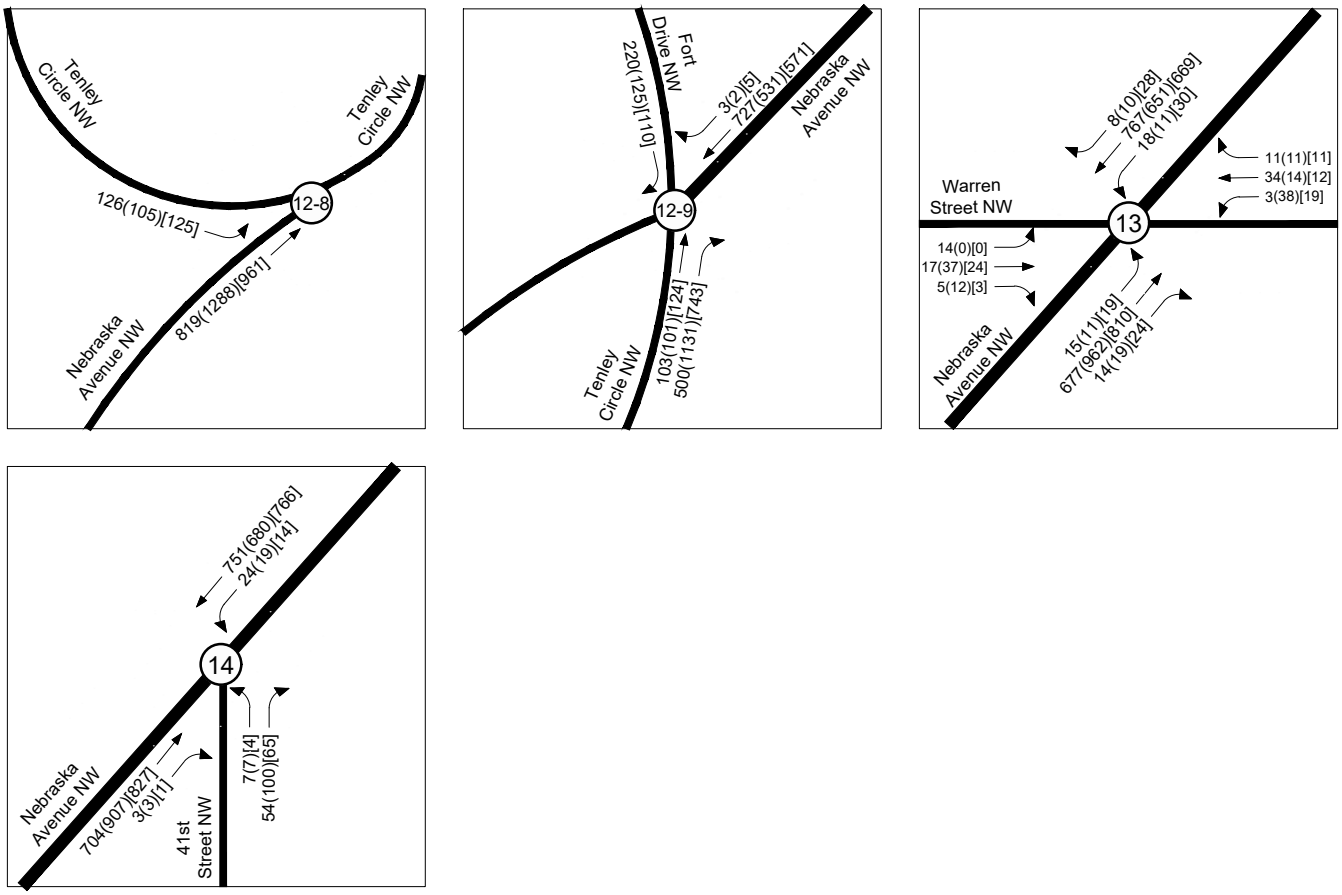

Figure 13-Cont

2026 Background Peak Hour Traffic Forecasts

AM PEAK HOUR
SCHOOL PEAK HOUR
PM PEAK HOUR

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River School
Washington, DC

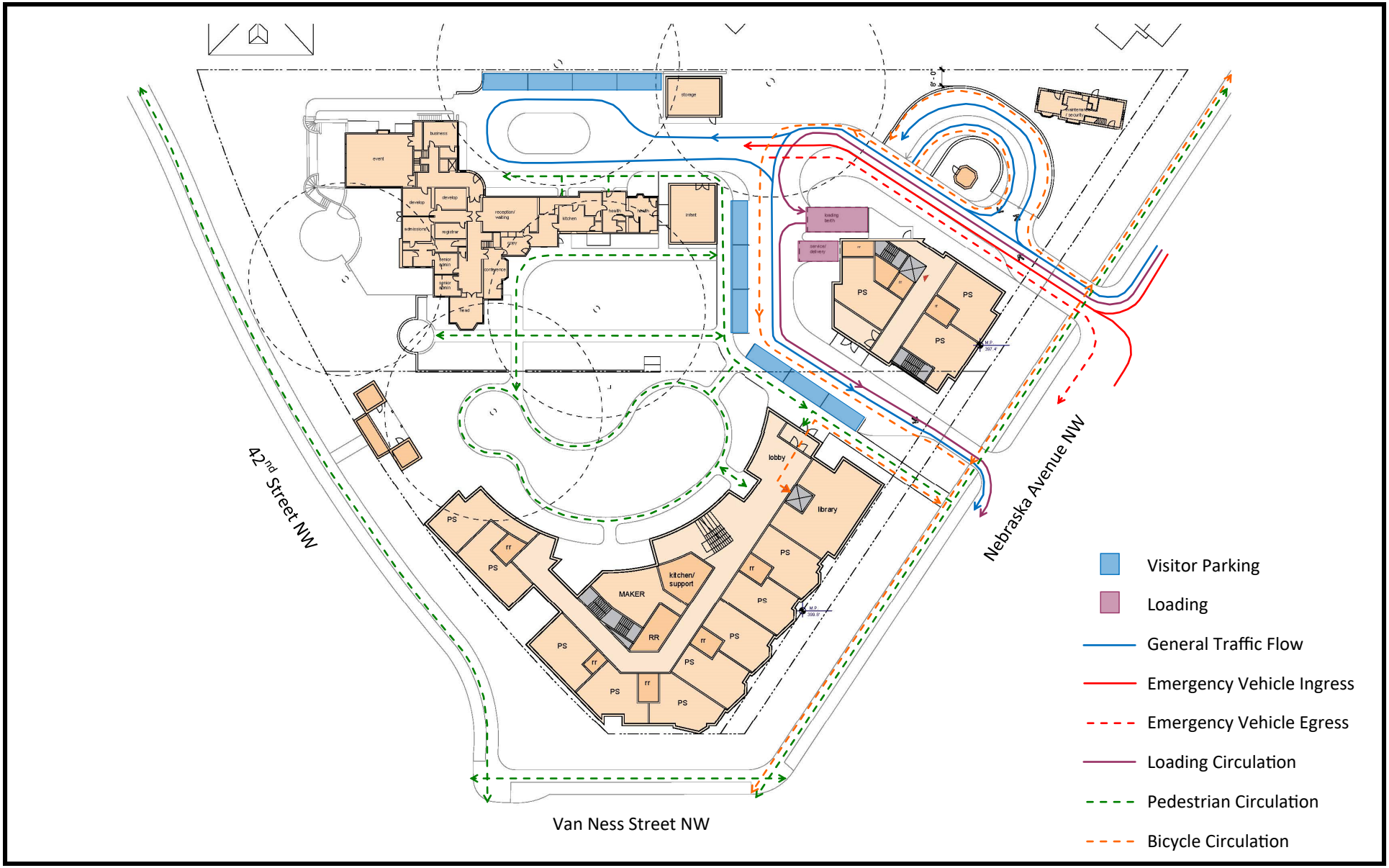

Figure 14A
Proposed Site Circulation
Ground Level

NORTH

The River School
Washington, DC

Figure 14B
Proposed Site Circulation
Garage Level B1

NORTH

The River School
Washington, DC

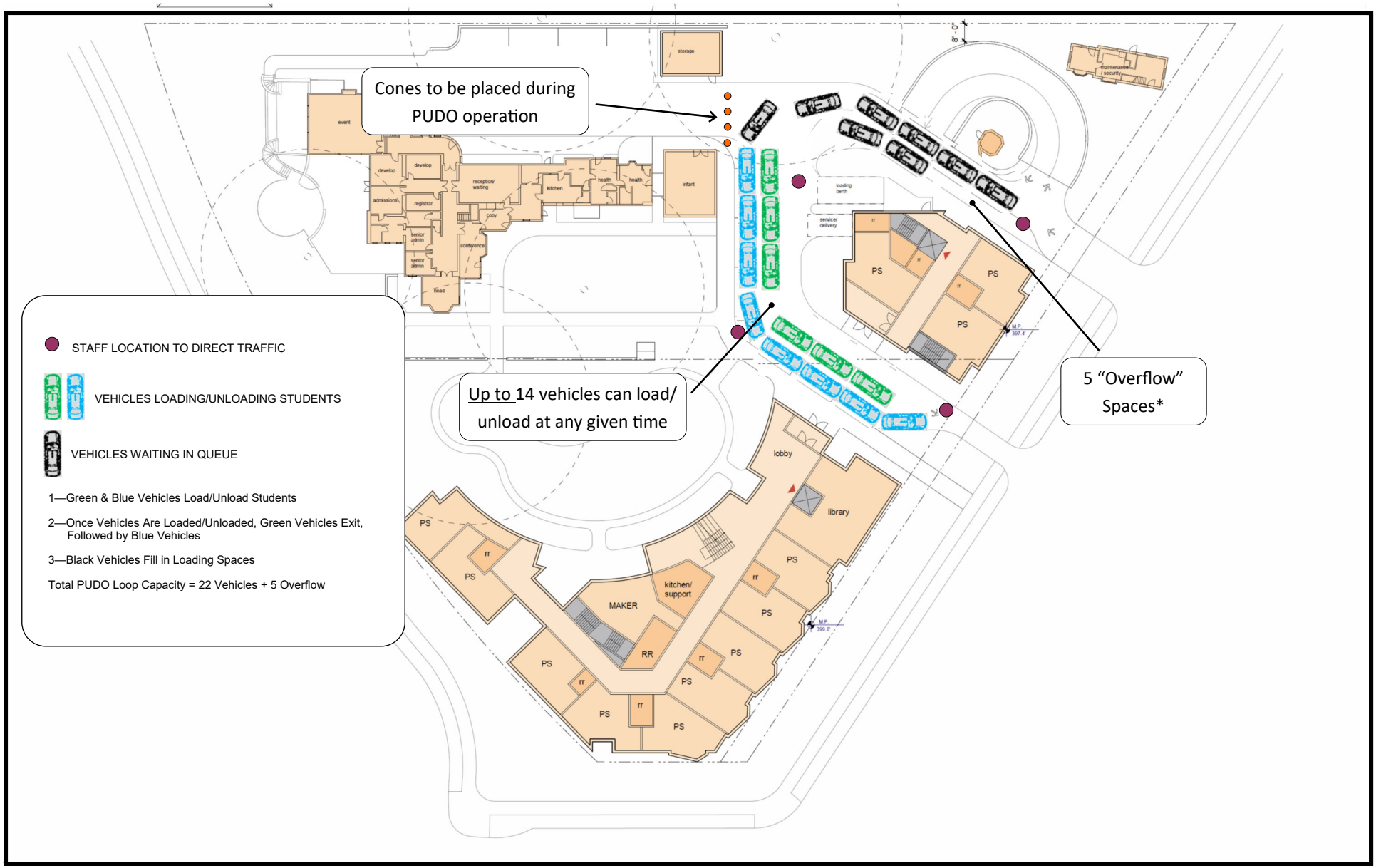

Figure 14C
Proposed Pick-up/Drop-off Circulation

NORTH

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Two Hour Parking Limit in Zone 3
7AM-9:30AM, Monday-Friday
Zone 3 Permit Holders Excepted

No Standing or Parking
7AM-9:30AM, Monday-Friday*

No Parking Anytime

* Note: If recommendations of this CTR are implemented parking would be restricted from 7AM - 7PM

SCALE: 1/64" = 1'-0"

NORTH

The River School
Washington, DC

Figure 15
Curbside Management Plan

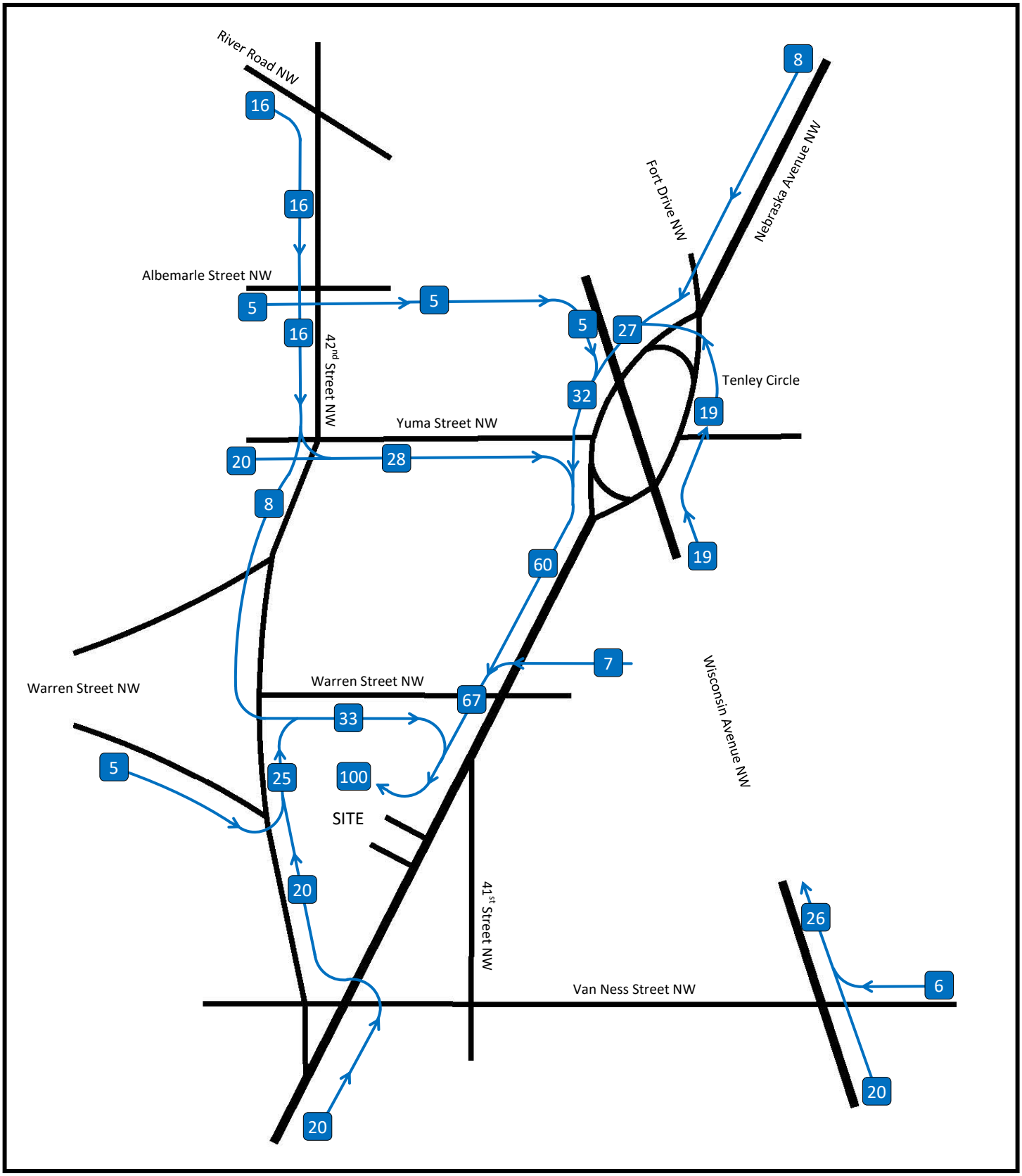

Figure 16A
AM Peak Hour Site Trip Distributions (%)—Inbound
(Excludes Shuttle Buses)

NORTH
River School
Washington, DC

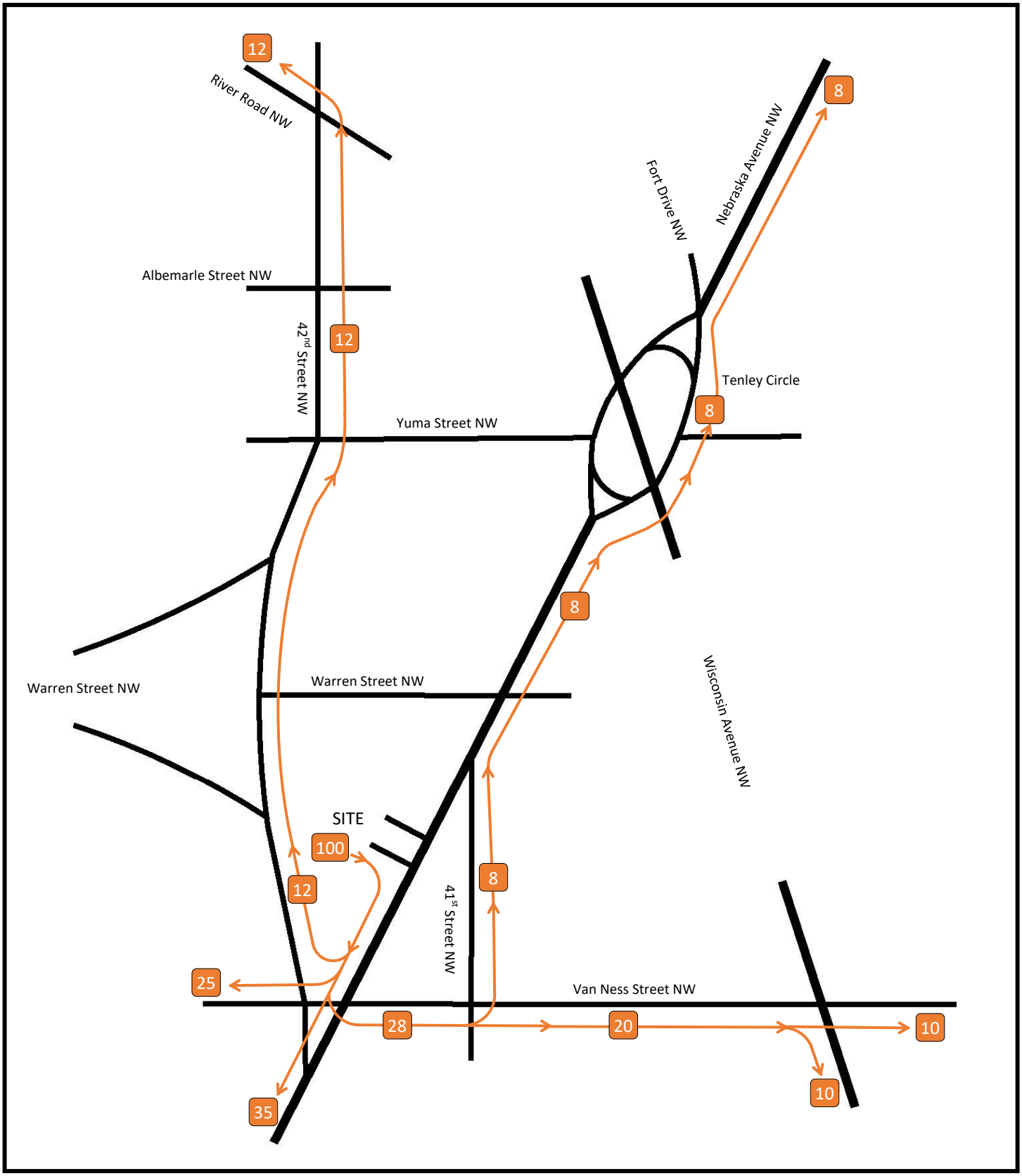

Figure 16B
AM Peak Hour Site Trip Distributions (%)—Outbound
(Excludes Shuttle Buses)

NORTH
River School
Washington, DC

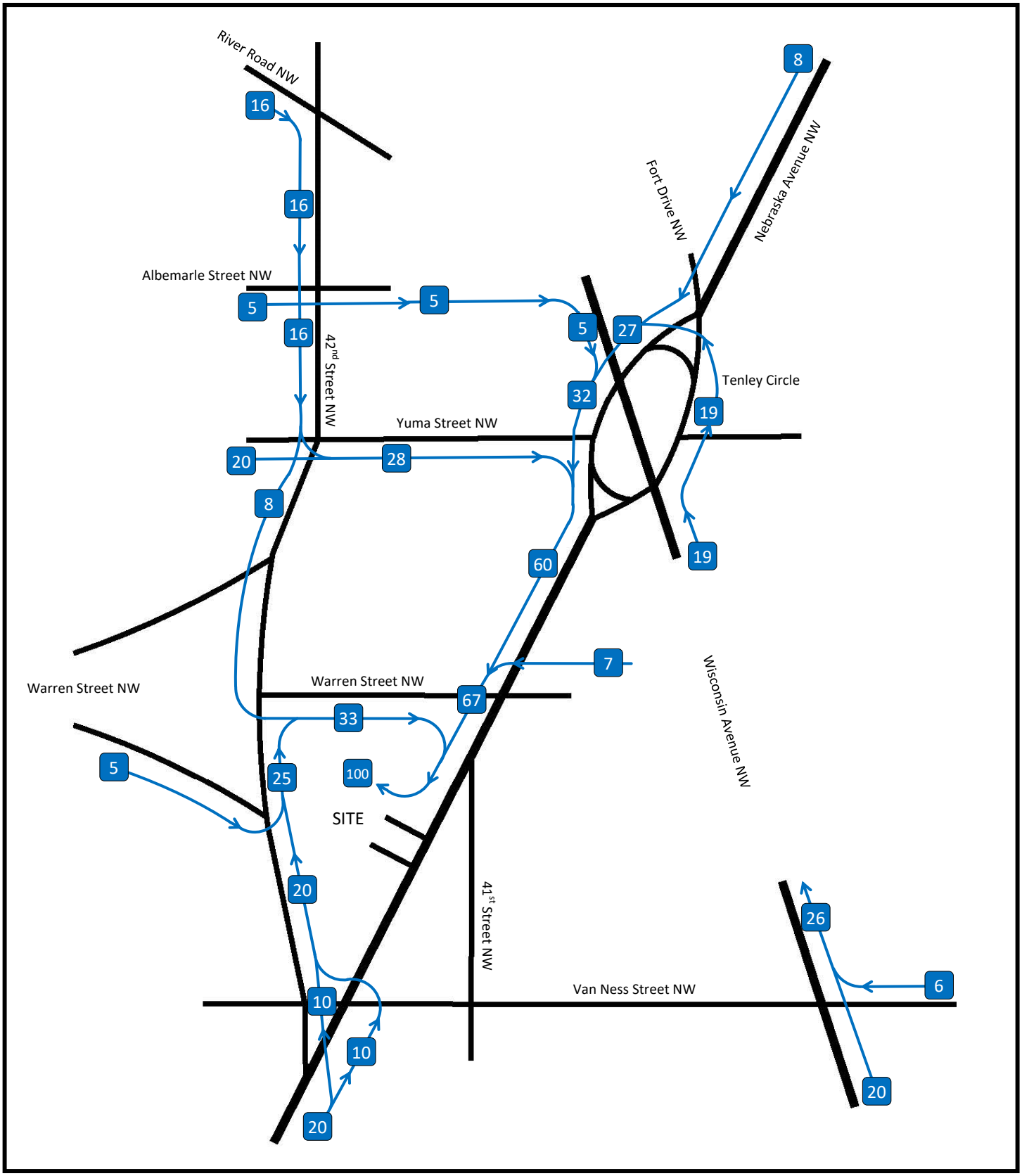

Figure 16C
PM School Peak Hour Site Trip Distributions (%)—Inbound

NORTH
River School
Washington, DC

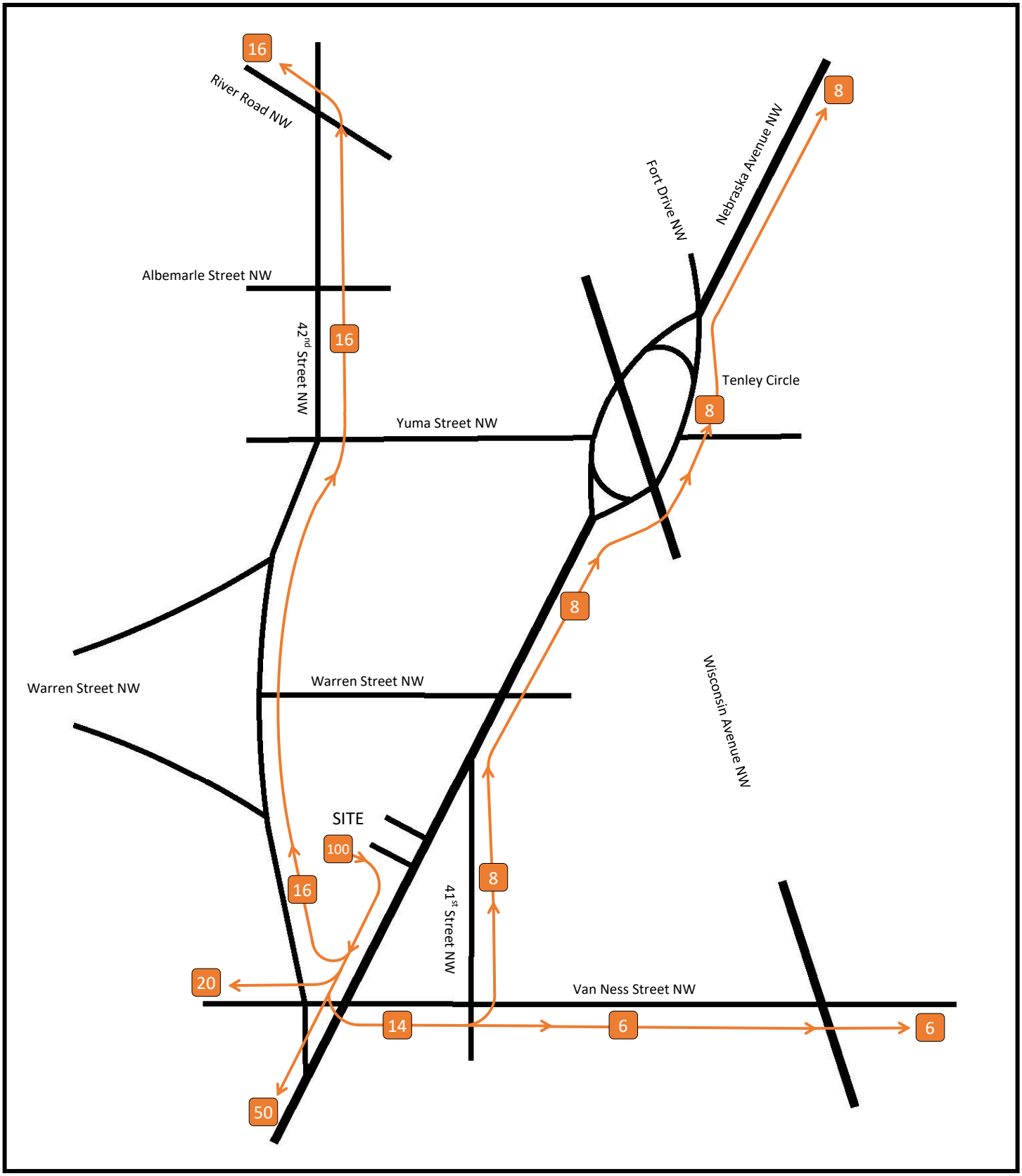

Figure 16D
PM School Peak Hour Site Trip Distributions (%)—Outbound

NORTH
River School
Washington, DC

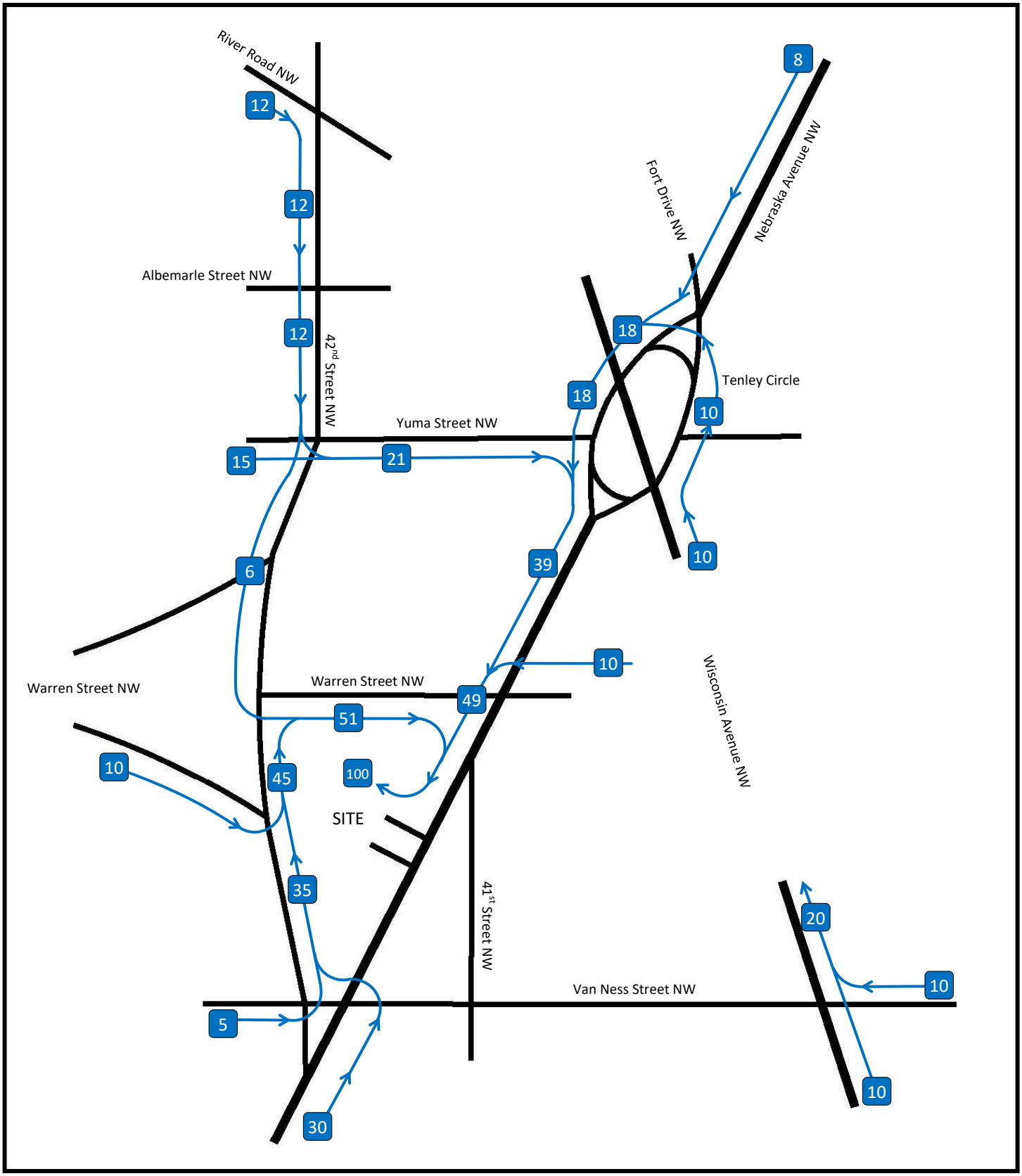

Figure 16E
PM Commuter Peak Hour Site Trip Distributions (%)—Inbound

NORTH
River School
Washington, DC

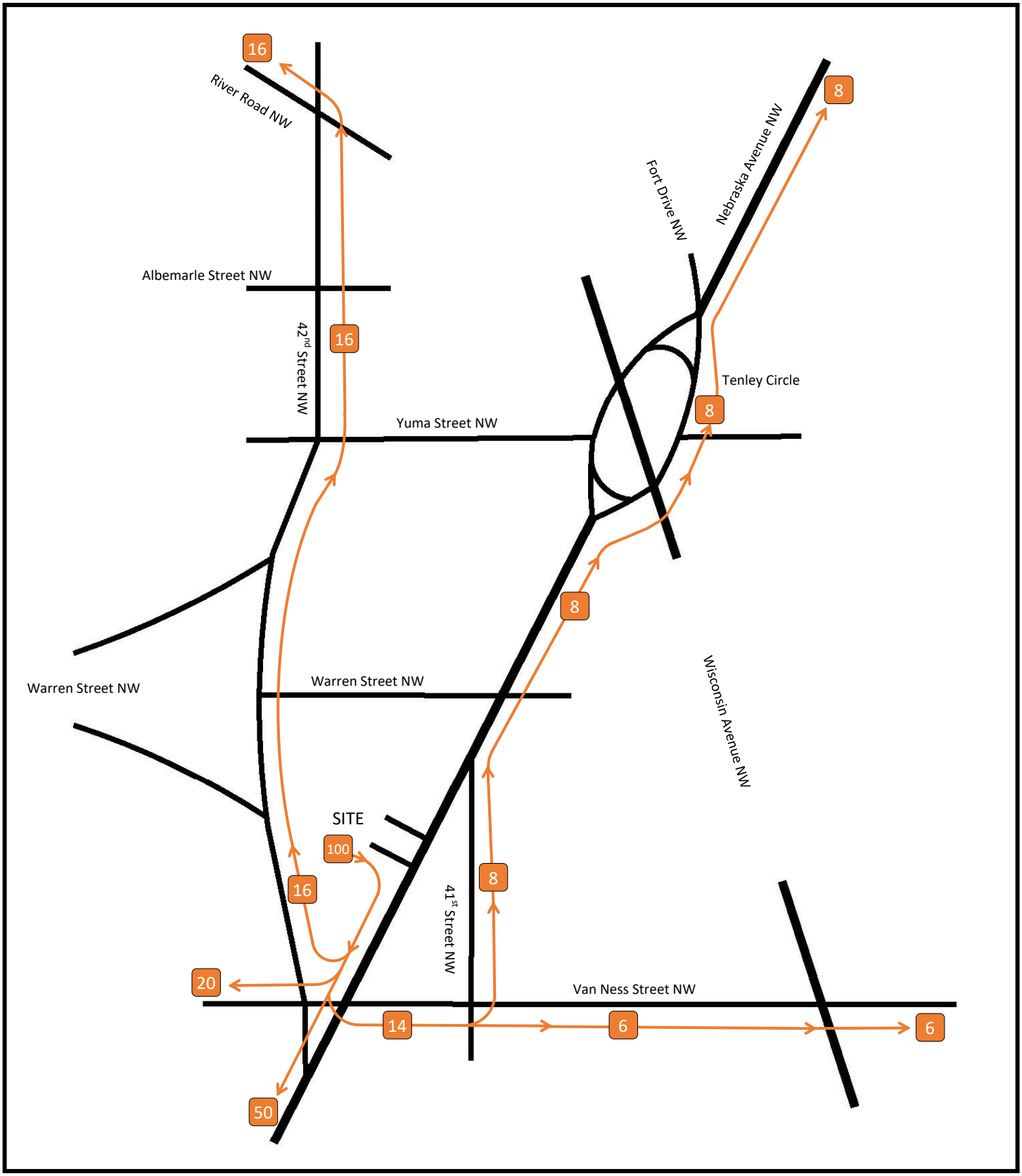

Figure 16F
PM Commuter Peak Hour Site Trip Distributions (%)—Outbound

NORTH
River School
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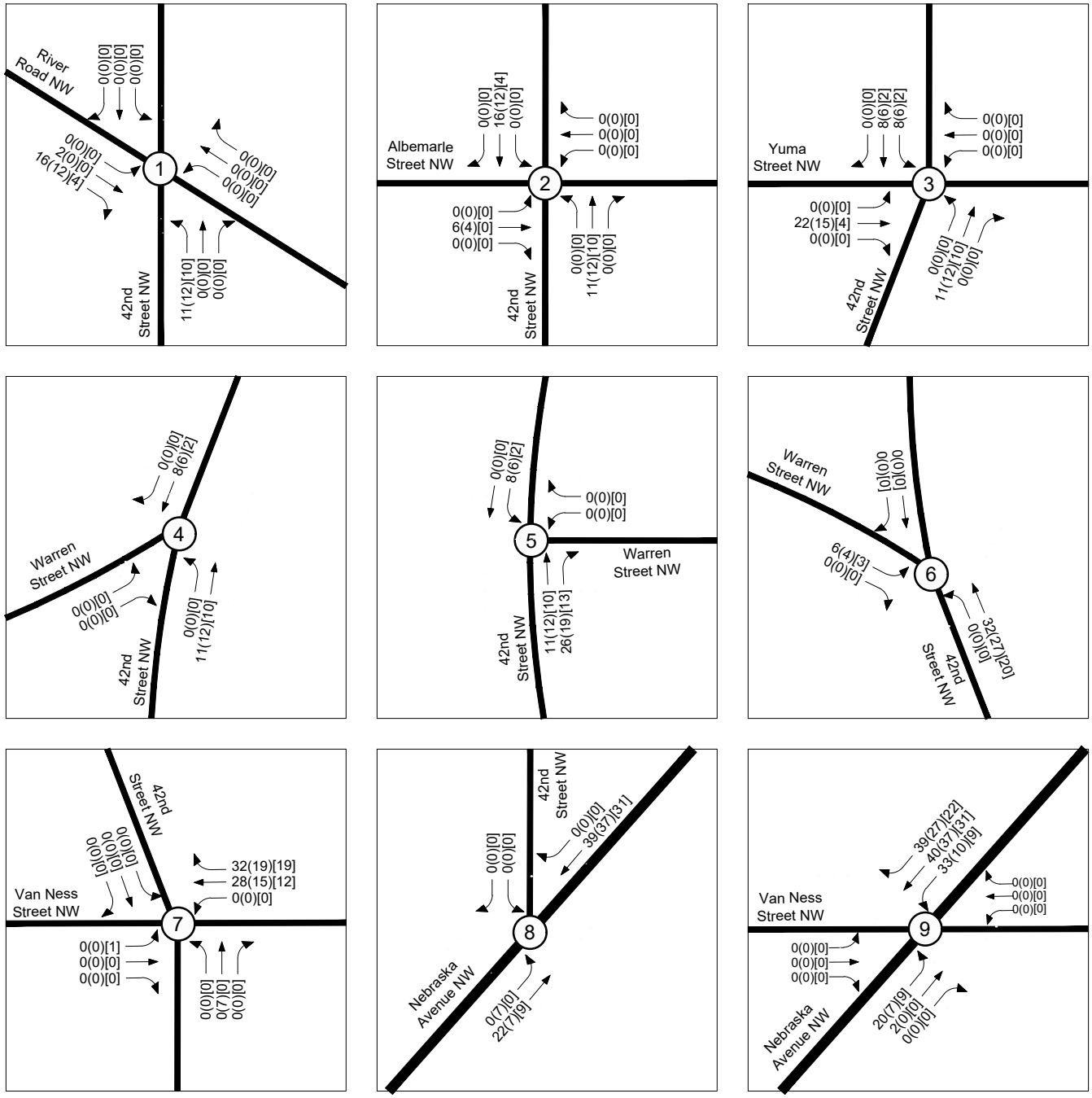

Figure 17
Peak Hour Site Trip Assignments

AM PEAK HOUR
SCHOOL PEAK HOUR
PM PEAK HOUR
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NORTH
River School
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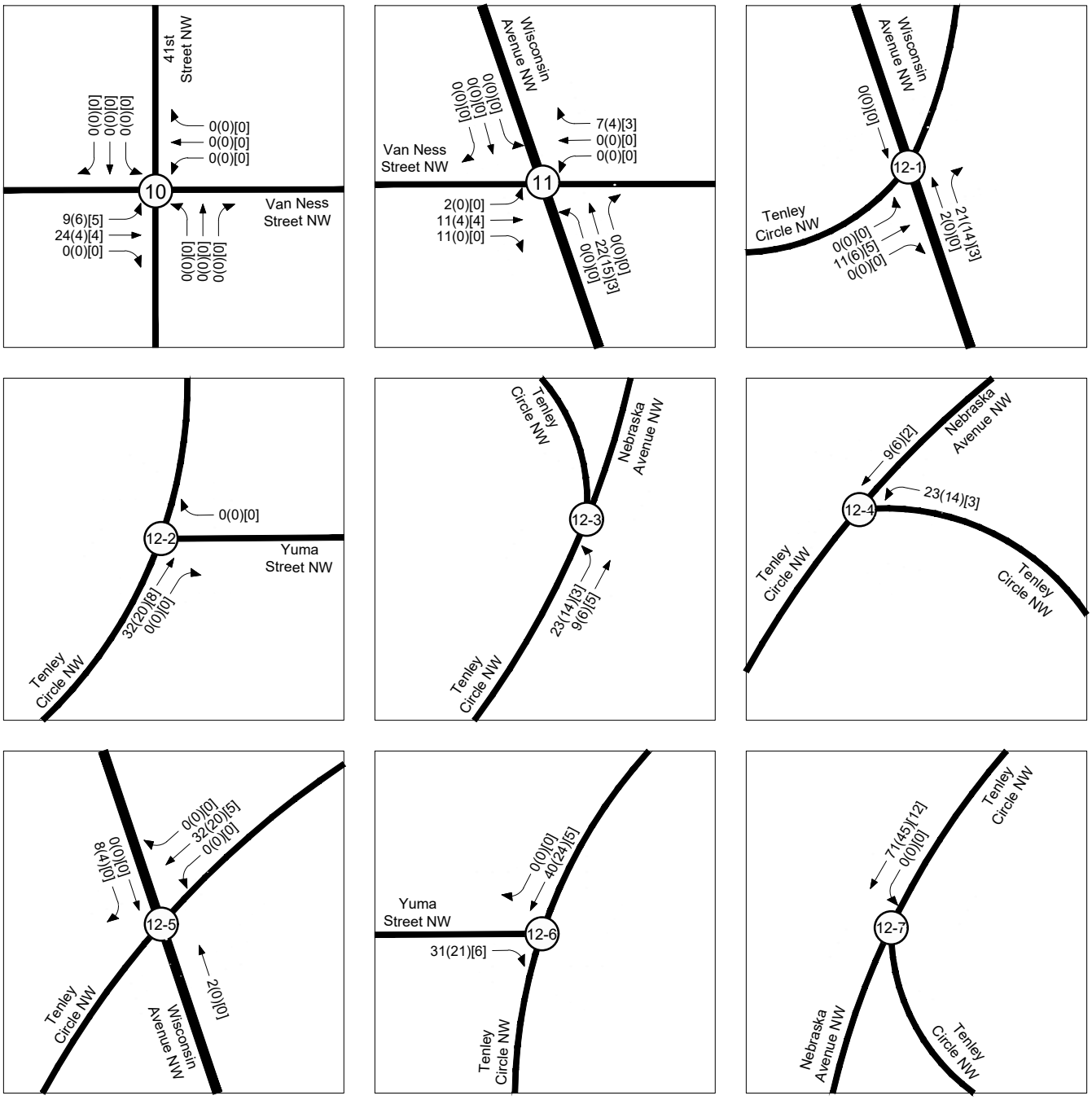

Figure 17-Cont

Peak Hour Site Trip Assignments

AM PEAK HOUR
SCHOOL PEAK HOUR
PM PEAK HOUR
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NORTH

River School
Washington, DC

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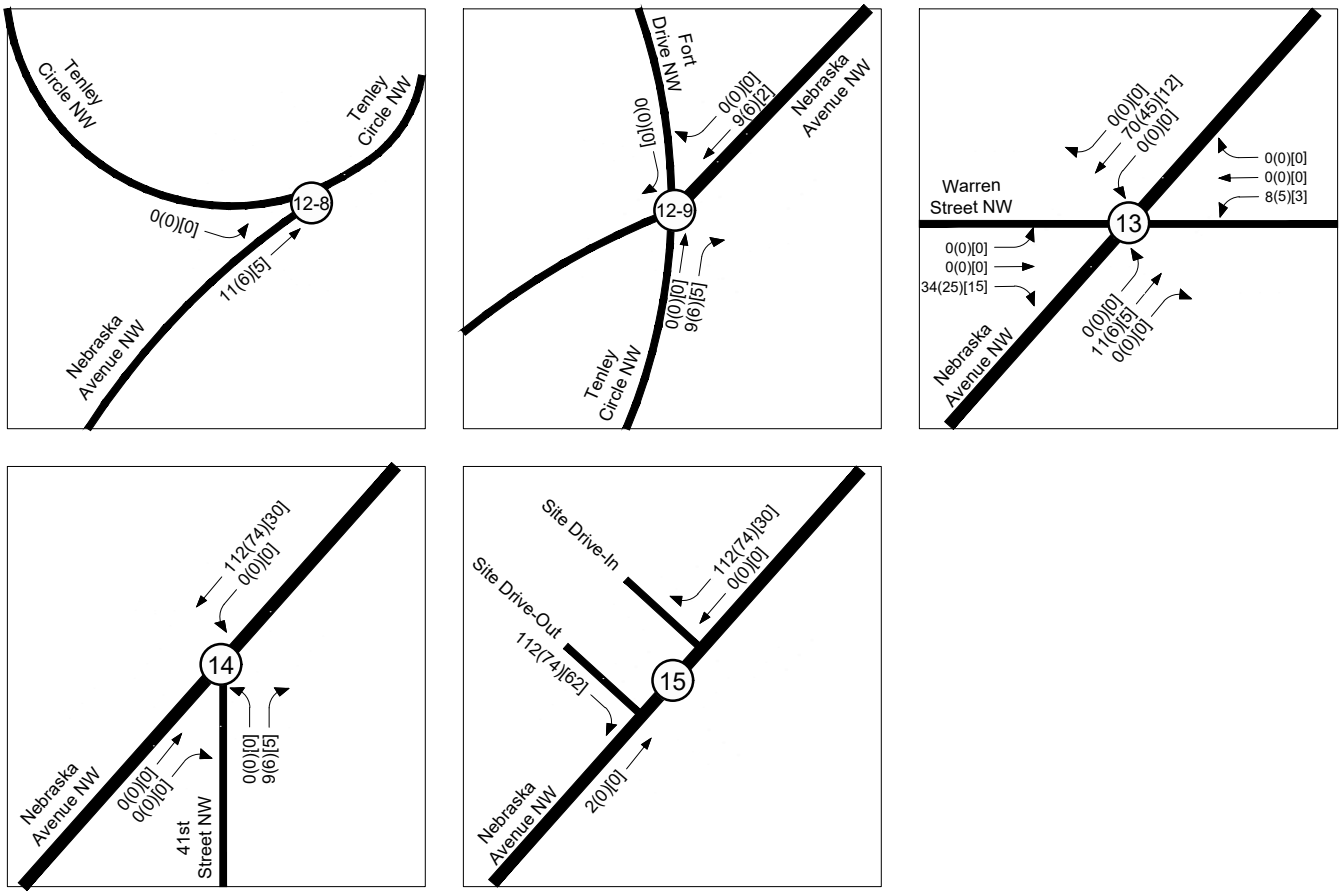

Figure 17-Cont

Peak Hour Site Trip Assignments

AM PEAK HOUR
SCHOOL PEAK HOUR
PM PEAK HOUR
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River School
Washington, DC

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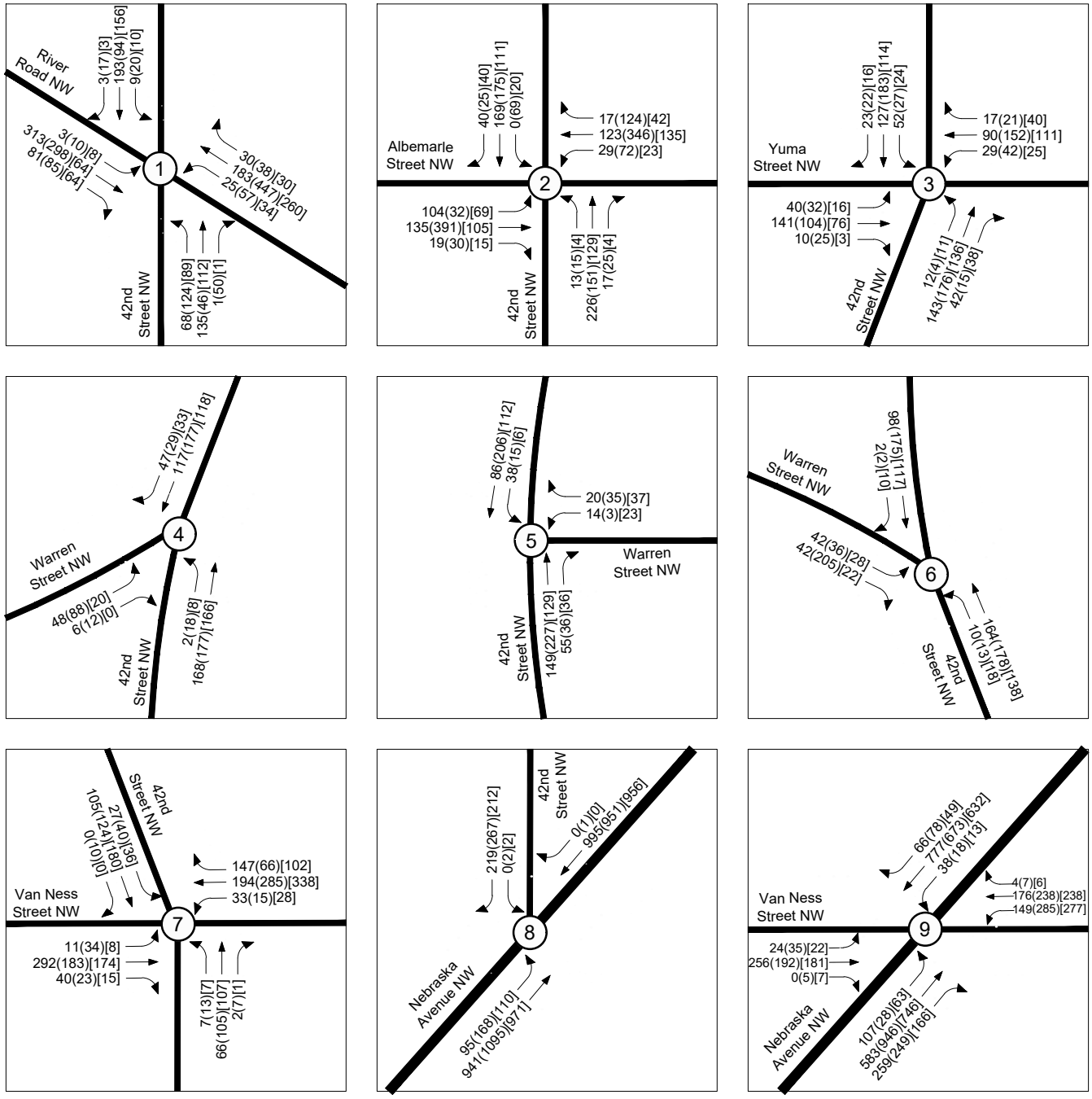

Figure 18

2026 Total Future Peak Hour Traffic Volumes

AM PEAK HOUR
SCHOOL PEAK HOUR
PM PEAK HOUR

000 (000) [000]

NORTH

River School
Washington, DC

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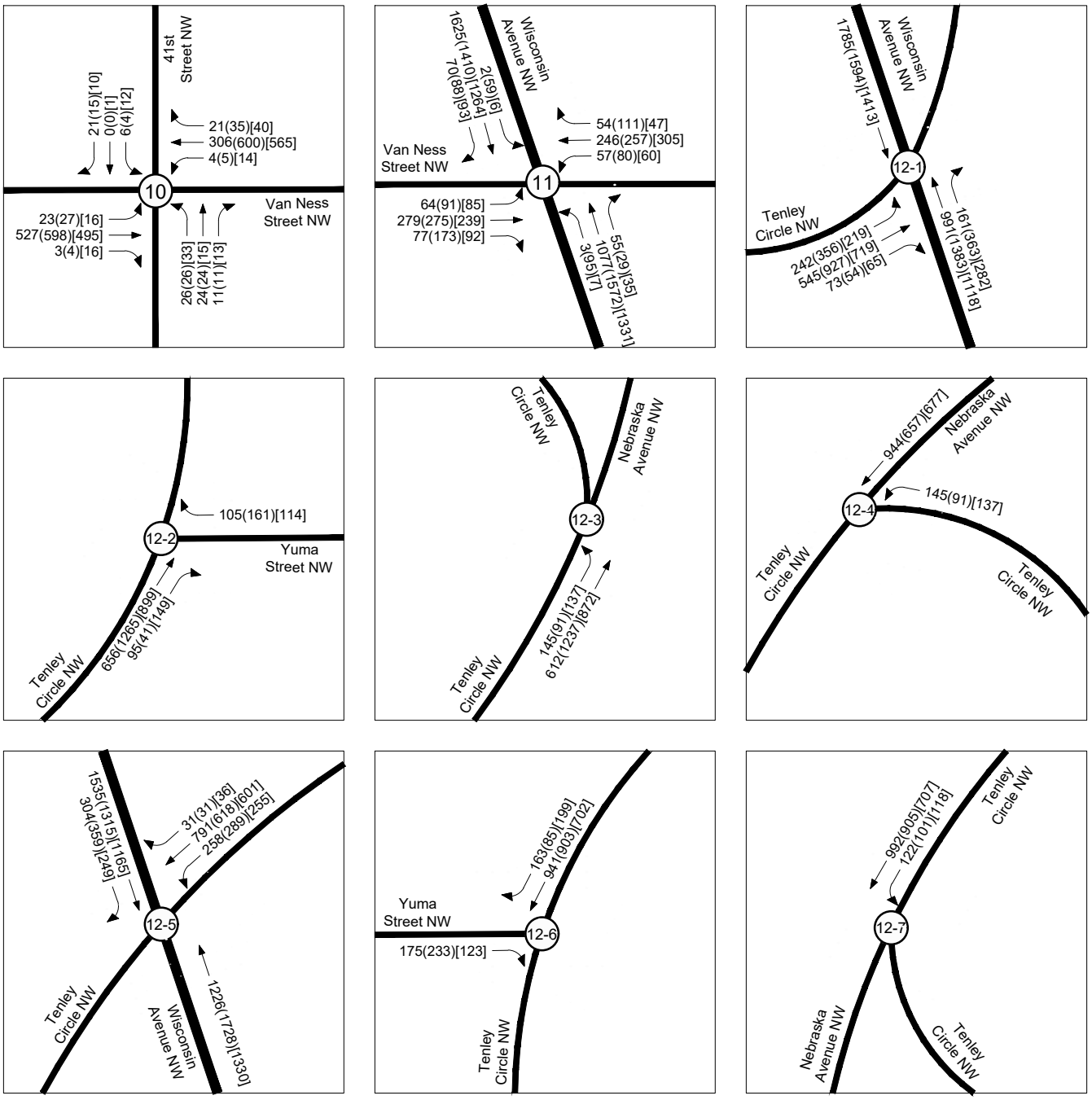

Figure 18-Cont

2026 Total Future Peak Hour Traffic Volumes

AM PEAK HOUR
SCHOOL PEAK HOUR
PM PEAK HOUR

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River School
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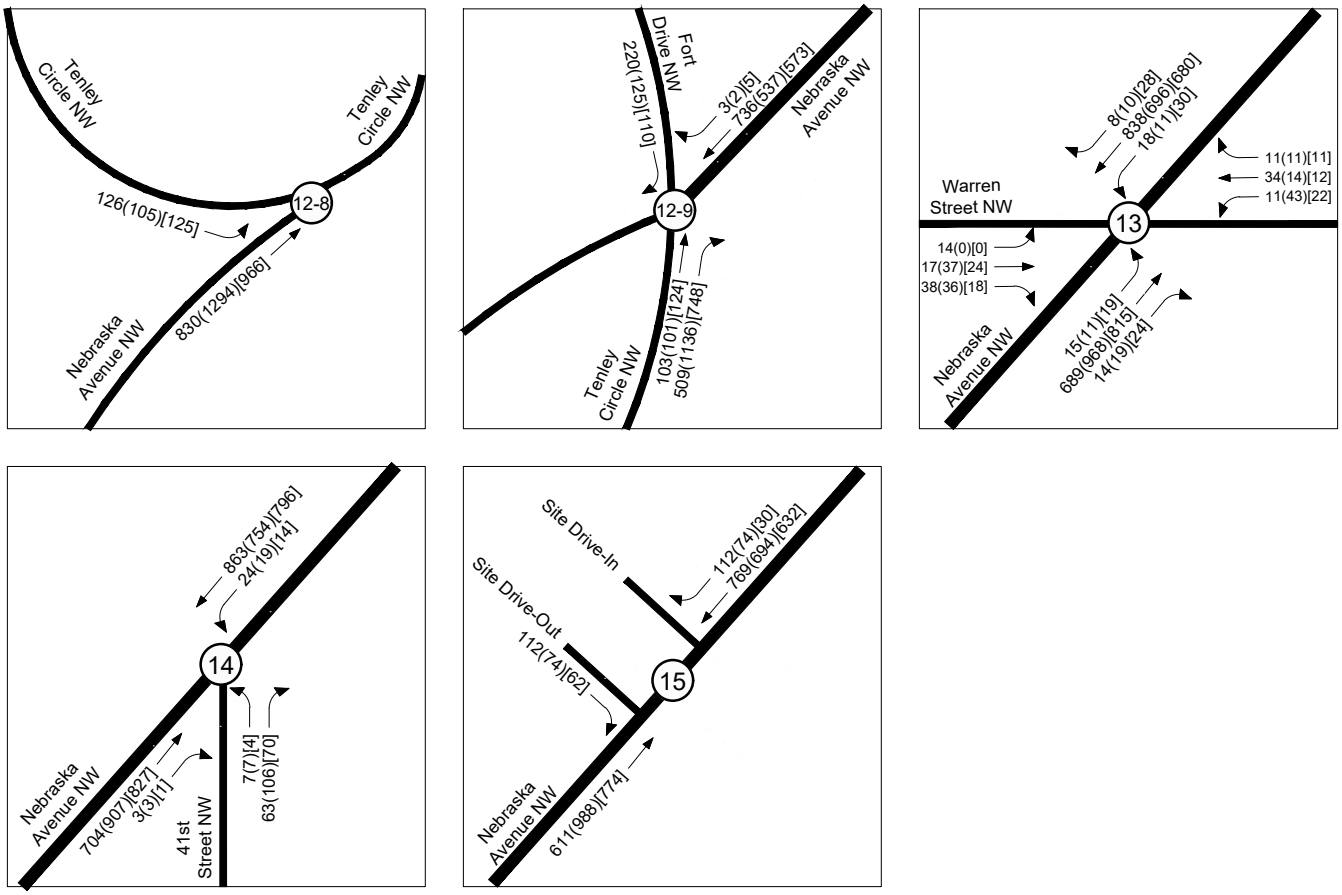

Figure 18-Cont

2026 Total Future Peak Hour Traffic Volumes

AM PEAK HOUR
SCHOOL PEAK HOUR
PM PEAK HOUR
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River School
Washington, DC

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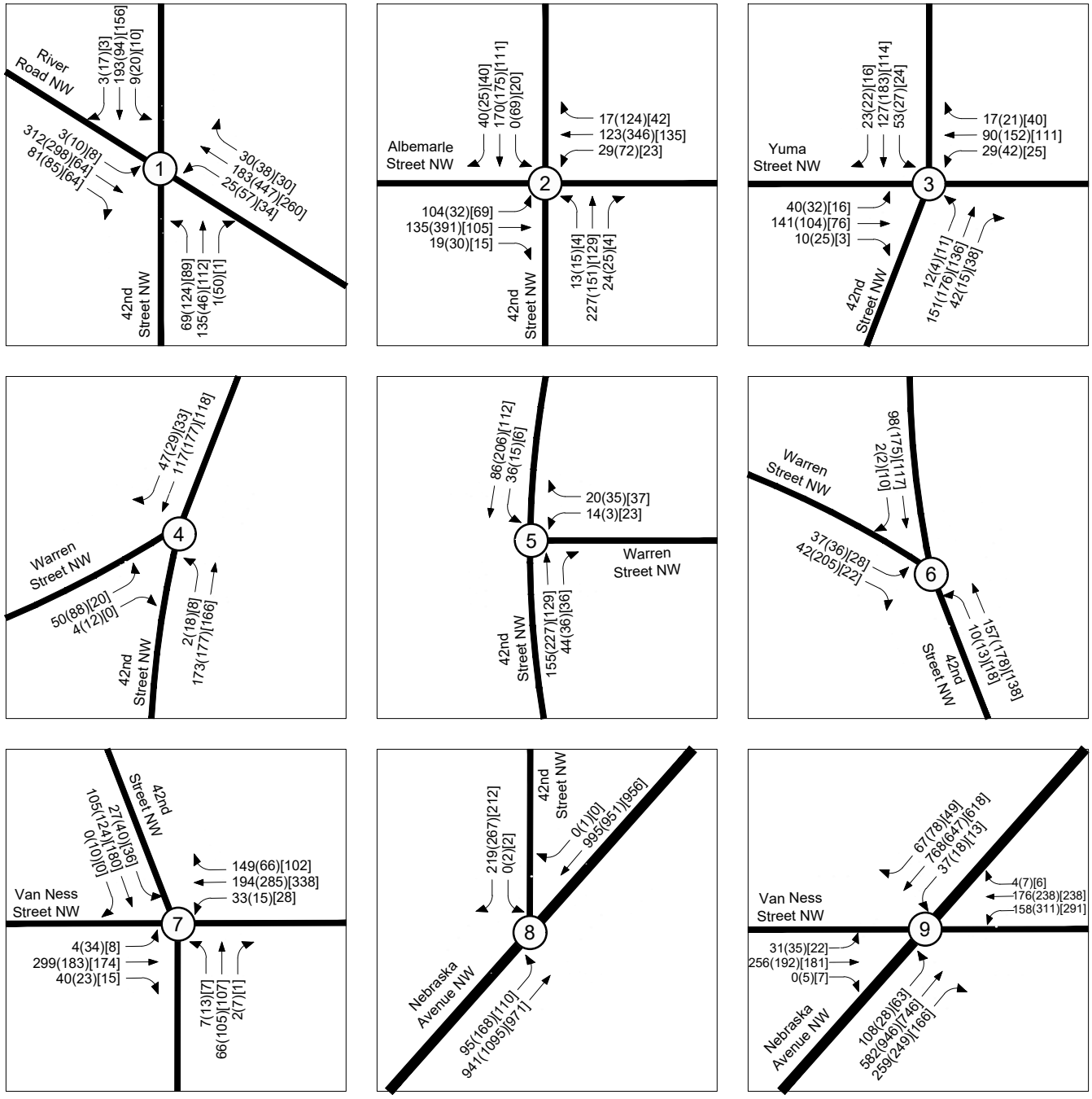

Figure 19

2026 Total Future Peak Hour Traffic Volumes with Improvements

AM PEAK HOUR
SCHOOL PEAK HOUR
PM PEAK HOUR
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River School
Washington, DC

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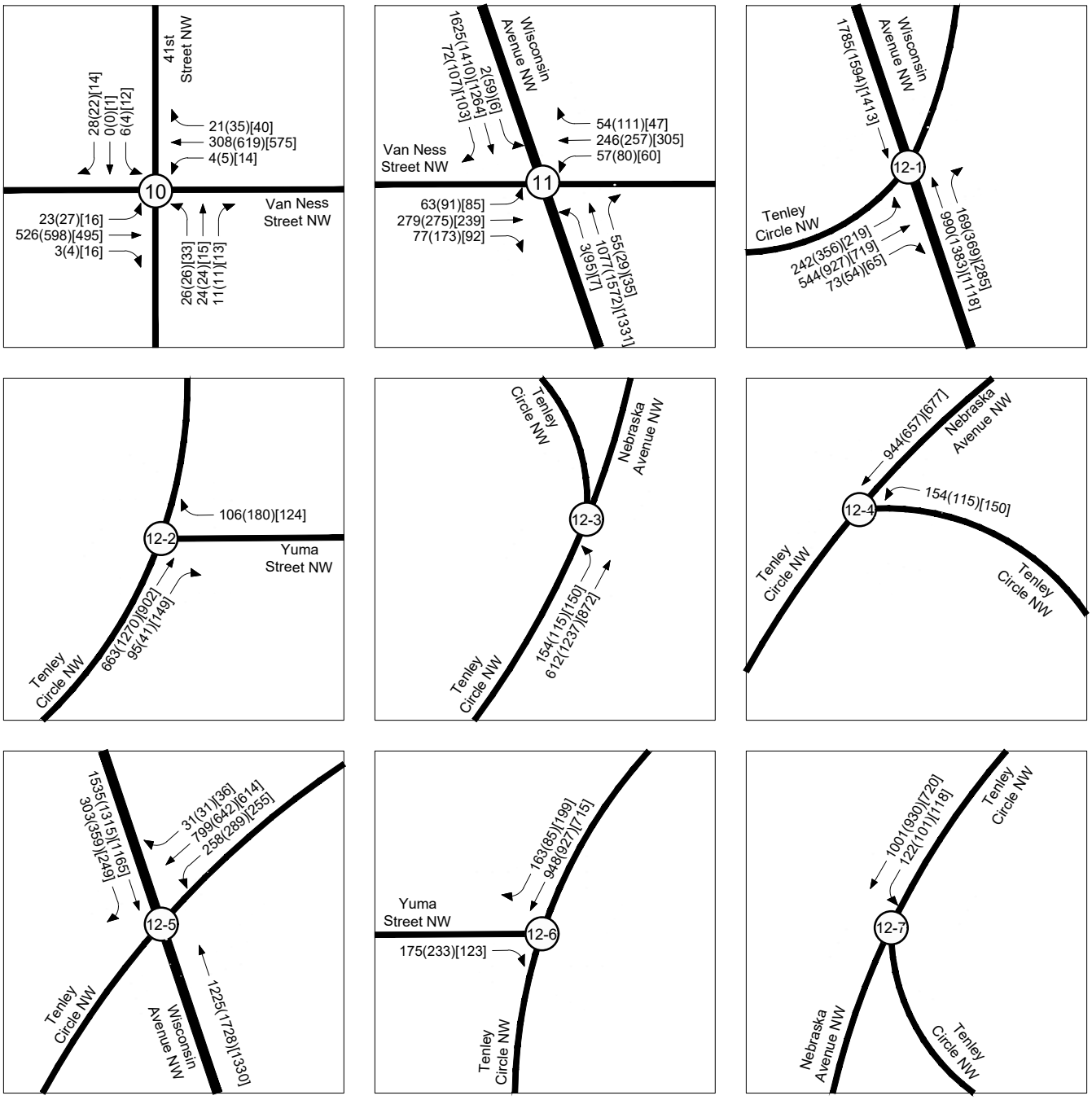

Figure 19-Cont

2026 Total Future Peak Hour Traffic Volumes with Improvements

AM PEAK HOUR
SCHOOL PEAK HOUR
PM PEAK HOUR
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River School
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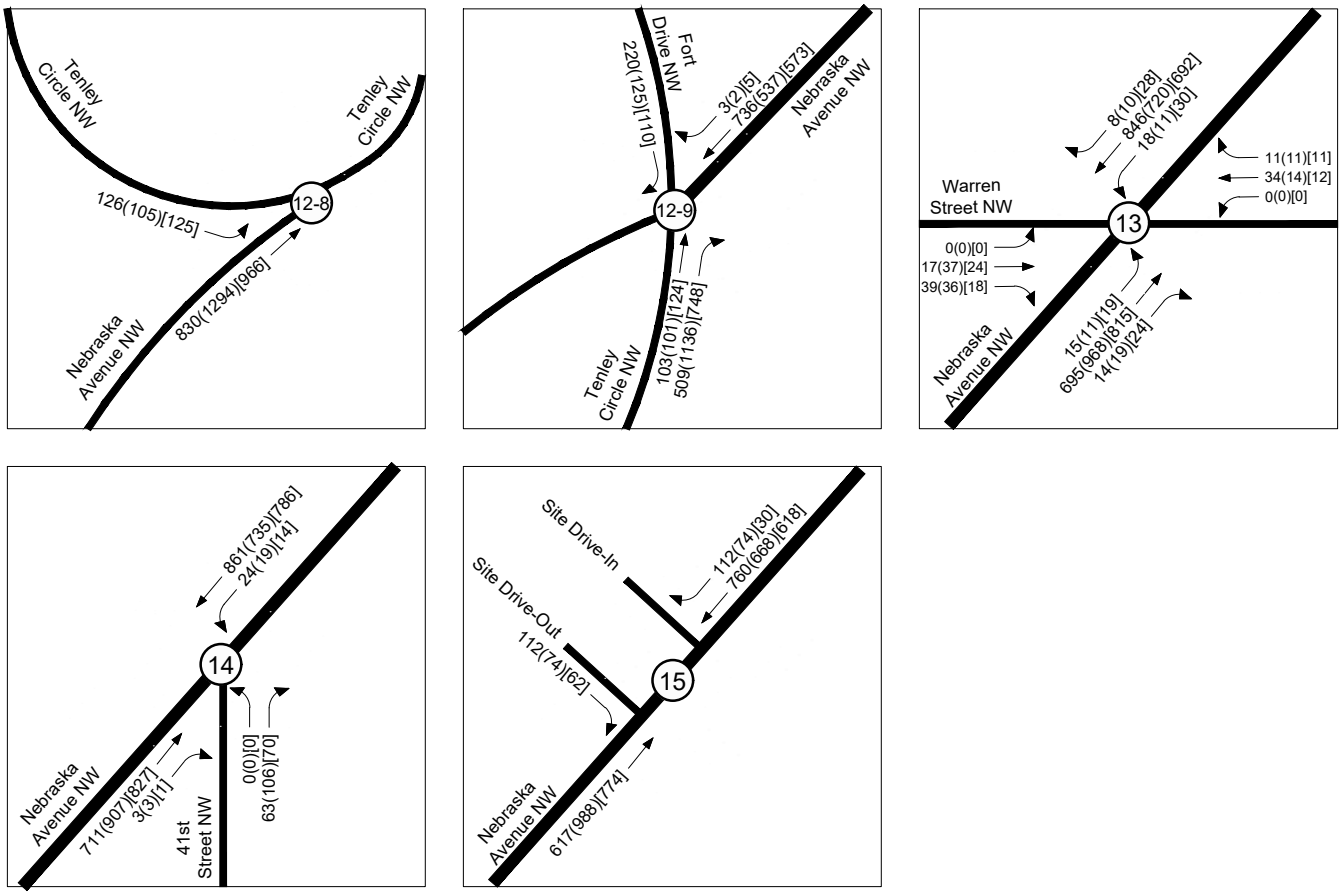


Figure 19-Cont
2026 Total Future Peak Hour Traffic Volumes with Improvements

AM PEAK HOUR
SCHOOL PEAK HOUR
PM PEAK HOUR
000 (000) [000]

NORTH
River School
Washington, DC

APPENDIX A
SCOPING DOCUMENT

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 in order to determine the scope of the analysis. An Applicant should fill out this *Scoping Form* with a proposed scope of analysis commensurate with the requested action and submit to DDOT for review and concurrence. Accordingly, not all elements and figures identified in the *Scoping Form* are required for every action, and there may be situations where additional analyses and figures may be necessary. Once a completed Scoping Form is submitted, DDOT will provide feedback on the initial parameters of an appropriate analysis scope. DDOT's turnaround times are four (4) weeks for CTRs with a Traffic Impact Analysis (TIA) and three (3) weeks for all other lower tier studies. After the *Scoping Form* has been finalized and agreed to by DDOT, the Applicant is required to expand upon the elements outlined in this Form within the study.

Scoping Information
Date(s) Scoping Form Submitted to DDOT: November 6, 2020
DDOT Case Manager: Ted Van Houten
Date(s) Scoping Form Comments Returned to Applicant: December 11, 2020
Date Scoping Form Finalized: December 21, 2020

Project Overview	Proposed Development Program
Project Name: The River School	**Use(s)**
Case Type & No. (ZC, BZA, PSC, etc.): BZA # - Not assigned yet	**Residential (dwelling units):**
ANC/SMD: ANC 3E	**Retail (square feet):**
Applicant/Developer Name: The River School	**Office (square feet):**
Transportation Consultant and Contact Info: Wells + Associates, Inc.; Jami Milanovich – jlmilanovich@wellsandassociates.com	**Hotel (rooms):**
Land Use Counsel and Contact Info: Goulston & Storrs, Allison Prince – aprince@goulstonstorrs.com	**Other:** Private School: Preschool-6
Site Street Address: 4220 Nebraska Avenue NW	**# of Vehicle Parking Spaces:** Approx. 50 (41 garage + 9 surface)
Site Square & Block: Square 1727, Lots 4 & 5	**# of Carshare spaces:** NA
Current Zoning and/or Overlay District: R-1-B	**# of Electric Vehicle Stations:** NA
Estimated Date of Hearing: March or April 2021	**# of Bicycle Parking Spaces (long- and short-term)**
Small Area Plan (if applicable):	**Long-term:** 7

Livability Study (if applicable):	Short-term: 28
Within ½ Mile of Metrorail or ¼ mile of Streetcar/Circulator/Priority Bus?: Yes	Loading Berths/Spaces: 1 30-foot loading berth and 1 Service/Delivers space

Documents to be Submitted to DDOT: *Any action requiring a CTR or some other evaluation of on-site or off-site transportation facilities must submit one of the following documents to DDOT. It must be appropriately scoped for the specific action proposed and document all relevant site operations and transportation analyses.*

☒ **CTR Study** (100 or person total person trips, or 25 or more peak hour vehicle trips in peak direction, or as deemed necessary by DDOT)

☐ **Transportation Statement** (limited scope based on specifics of project or if Low Impact Development Exemption from CTR and TIA is requested)

☐ **Standalone TIA** (project proposes a change to roadway capacity, operations, or directionality, has a site access challenge, or as deemed necessary by DDOT)

☐ **Other, specify:** _____

☐ Include one (1) hard copy of final report, PDF of report w/appendices, traffic analysis files, and traffic counts in DDOT-required spreadsheet format (total size of all digital files under 15 MB, if possible)

Existing Site and Description of Action: *Describe the type(s) of regulatory approval(s) being requested and any background information on the project relevant to the requested action such as the existing uses, amount of vehicle parking, and other notable proposed changes on-site.*

The River School is currently located at 4880 MacArthur Boulevard NW, and currently has 220 students and 70 faculty and staff. The school proposes to expand and relocate its facilities to 4220 Nebraska Avenue NW. The school is planning to have an estimated enrollment of 350 students and 90 faculty and staff. The proposed increase in enrollment and faculty/staff will allow the school to add Grades 4-6 to its program (currently the school enrolls students in preschool through 3rd grade).

The proposed site is located in the R-1-B zoning district and is currently occupied by a single-family estate. The site is located on Square 1727, Lots 4 and 5 and generally is bordered by Nebraska Avenue on the east, 42nd St on the west, Van Ness Street on the south and single-family homes on the north. The proposed site currently is a residential zone; therefore, the project will require the approval of a Special Exception application by the Board of Zoning Adjustment (BZA).

Prior Related Action(s), Conditions, and Commitments: *Note any prior approvals by ZC, BZA, or PSC (Campus Master Plan, First Stage PUD, student/faculty cap, etc.) for the site and list all relevant conditions and proffers still in effect from the previous approval and status of completion. Attach a copy of the Decision section from the previous Zoning Order if still in effect.*

NA – there are no prior cases for the proposed site.

Section 1: SITE DESIGN

DDOT reviews the site plan to evaluate consistency with DDOT's standards, policies, and approach to access as documented in the most recent Design and Engineering Manual (DEM). If the proposal for use of public space is found to be inconsistent with the agency approach, DDOT will note this regardless of its relevance to the action. It is DDOT's position that issues regarding public space be addressed at the earliest possible opportunity to ensure the highest quality project design and to minimize project delays and the need to re-design a site in the future.

CATEGORY & GUIDELINES	CONSULTANT PROPOSAL	DDOT COMMENTS
Site Access Show site access points for all modes. Include proposed curb cut locations, curb cuts to be closed, access controls (e.g., right-in/out, signalized), sight distances and sight triangles from access points and new intersections, driveway widths and spacing, on- and off-site parking locations, inter-parcel connections, public/private status of driveways, alleys, and streets, and whether easements, dedications, or closures are proposed. *Access must be located off an adjacent existing or "paper" alley, otherwise off the lower volume street. Note any deviations from curb cut policies (DEM 31.5) w/justification and if Conceptual Approval by the Public Space Committee (PSC) has/is being sought. Subtitle I § 600-603 of ZR16 further restricts where curb cuts can be located.* *DDOT will not support curb cut design relief unless there is a clear hardship preventing a project from meeting all DDOT standards and other alternatives have been explored.* *All proposed private streets connecting to a public street must be built to DDOT standards and have a public access easement. Design of driveways and drive aisles on private property must comply with Subtitle C § 711 of ZR16.*	The existing site currently is served by one curb cut on Nebraska Avenue. A second curb cut on 42nd Street currently is closed by a fence. Vehicular access to the school will be provided via two curb cuts on Nebraska Avenue. The first curb cut will be located in approximately the same location as the existing curb cut but will be widened to 20' to accommodate two-way traffic. This curb cut will serve traffic entering and exiting the parking garage, loading berth, and service/delivery space as well as traffic entering the PUDO loop. The second curb cut will be located south of the first curb cut and will serve as an egress from the PUDO loop. The second curb cut will be 10' wide. ☒ *Scoping Graphic: Project Location Map – see Figure 1* ☒ *Scoping Graphic: Site Circulation Plan - see Figure 2* ☒ *Scoping Graphic: Plat for Site's Square and Lot from Office of the Surveyor (if official plat not available, provide plans from SURDOCs) - see Figure 3*	Does the Applicant plan to close the second curb cut on Nebraska when not in PUDO operation? The PUDO lane will provide approx. six visitor parking spaces when not in use as a PUDO lane. Therefore, due to the one-way operation, the southern curb cut will need to remain open during non-PUDO hours to allow visitors using the six spaces to exit. Please confirm that you will be closing the 42nd Street curb cut. Confirmed. How will the expansion of the existing curb cut and the addition of a new curb cut affect the supply of off-peak street parking on Nebraska Avenue? A preliminary evaluation indicates only one space would be lost on Nebraska Avenue. A detailed evaluation will be conducted and included in the CTR. Please meet with DDOT arborists as soon as possible to discuss how changes to site access will impact existing street trees. Noted. The project team (AMT) met with Vera and Michael in August 2020 to discuss the specimen tree removals and relocations. Street trees were not discussed in detail, but there will be a few (potentially 2 or 3) street trees removed on Nebraska Ave. (6" – 9" DBH). There is one street tree on Van Ness that we believes will remain. On 42nd, there are no street trees in the traditional sense, but there are trees growing on the hillside that are within the public ROW. AMT's understanding from Vera and Michael was that there are two different entities that cover

trees in public space; one that covers street trees (I think this is UFD), then one that covers any other trees. There will be trees removed along 42nd that sit within public space. The extent/quantity has yet to be determined as an LOD hasn't been established. Once the survey is completed and a preliminary LOD, the number to be removed will be quantified. The project will include new trees, and AMT will work with UFD to get the required street trees planted.

Loading

Discuss and show the quantity and sizes of loading berths/delivery spaces, trash storage locations, on- and off-site loading locations, turnaround design, nearby commercial loading zones, and anticipated demand, operations, and routing of delivery and trash vehicles. Identify the sizes of trucks anticipated to serve the site and design vehicles to be used in truck turning diagrams. Provide truck turning diagrams in the body of the report not the appendix.

DDOT requires head-in and head-out truck movements through public space (DEM 31.5) and that direct internal pedestrian connections be provided between retail bays and loading facilities. Note any proposed deviations or requested relief from ZR16 or DDOT standards with justification. If any relief is being sought then a Loading Management Plan (LMP) is required. A template LMP is provided in Appendix E.

Building	Use	Min Berths	Min S/D Spaces	Prop Berths	Prop S/D Spaces
River School (53,551 SF of GFA)†	Education 30-100k sq ft gross floor area	1	1	1 (30')	1
† GFA calculated in accordance with §902.4					

☒ *Scoping Graphic: Location of loading area w/ internal building routing – see Figure 2*

☐ *Scoping Graphic: Truck Turning Diagrams (to/from the site, alley, truck routes) – Autoturn diagrams will be included in the CTR*

Please include a diagram of how trucks are expected to access and exit the loading areas on the site. Please describe the expected type and number of deliveries and typical vehicle sizes/types that will be received on site. If there is a cafeteria, will there be refrigerated trucks coming to deliver food? Will they fit within the loading berth? If not, what will be the recourse? Please also provide similar details for garbage pick-up.
The school receives an average of 4.7 deliveries per day, including daily UPS and USPS deliveries. Trash is picked up twice per week and recycling is picked up once per week. Delivery and service vehicles will enter and exit the site front-first via the northern curb cut. Autoturn diagrams will be included in the CTR.

Vehicle Parking

Identify all off-street parking locations (on- and off-site) and justify the amount of on-site vehicle parking, including a comparison to the number of spaces required by ZR16 and any previous approvals. Provide parking calculations and parking ratios by land use, including any eligible ZR16 vehicle parking reductions (i.e., within ¼ mile of Priority Bus Route, within ½ mile of Metrorail Station, providing carshare spaces, located within a D zone, etc.).

Review the DDOT Preferred Parking Rates (Table 2). If the total parking provision proposed exceeds the amount calculated using ratios in that table then the number of spaces should be

Required (per §701.5)†	DDOT Preferred Vehicle Parking	Proposed
Education, private (Elementary and Middle Schools) 2 per 3 teachers and other employees 2(90/3) = 60 spaces	"Other Uses" ≤ 90% of §701.5 0.9(60) = 54 spaces	41 garage spaces 9 surface spaces
† Although the site is within ½ mile of Metro, since the site is in an R zone, it is not eligible for the 50% parking reduction per §702.1.		

The applicant will be seeking relief from parking requirements in conjunction with the Special Exception application.

☒ *Scoping Table: Parking Calculations with Comparison to ZR16 and DDOT's Preferred Vehicle Parking (Table 2)*

The Applicant should provide TDM measures appropriate with the amount of parking relief requested. Noted.

reduced or substantial TDM / non-auto improvements be provided. If parking provision is significantly out of line with appropriate parking ratios, one way or the other, then mode split and trip generations estimates will be adjusted.

Confirm whether ZR16 TDM Mitigations will be required, per Subtitle C § 707.3, for providing more than double the amount of required vehicle parking. Coordinate with the Zoning Administrator as early in the process as possible for an official determination.

A TDM Plan is required for BZA parking reduction cases, per Subtitle C § 703.4. If relief is being requested from 5 or more spaces, then a Parking Occupancy Study is required (see Multi-Modal section).

☒ *Scoping Graphic: Off-Street Parking Locations (both on- and off-site) – see Figure 2*

Bicycle Parking

Identify the locations of proposed bicycle parking and justify the amount of long- and short-term spaces proposed. Provide a calculation of the number of spaces required by ZR16.

Long-term bicycle parking spaces must be easily accessible from building lobby or located in the parking garage level closest to the ground floor. Lockers and showers must be included with non-residential long-term bicycle storage rooms, per Subtitle C § 806. Provide calculations for required lockers and showers.

Short-term bicycle parking must be accommodated by installing inverted U-racks along the perimeter of the site in the 'furniture zone' of public space, near the site entrance(s).

Long-term Bicycle Parking		Short-term Bicycle Parking	
Required (per §802.1)	**Provided**	**Required (per §802.1)**	**Provided**
Education, private school 1 per 7,500 sq ft of GFA 53,551†/7,500 = 7	7	Education, private school 1 per 2,000 sq ft of GFA 53,551/2,000 = 27	28

† GFA calculated in accordance with §803.2

Note that the locations of the proposed bicycle parking are still be finalized. As such, no graphic is included with the scoping document, but one 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 show proposed locations of bike parking in the CTR.
Noted.

Ensure all bike racks are installed according to DDOT's Bike Parking Guide (attached) 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 with the bike being suspended).
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.

DDOT expects new developments to rehabilitate the streetscape between the curb and property line and meet all public space design standards. Streetscape must meet ADA requirements and ensure nothing impedes accessible curb access or pedestrian circulation.

Per DDOT's request, a sidewalk will be constructed along the 42nd Street frontage where a sidewalk currently is missing.

Public Space plans are still being developed and are not included with this scoping document. One will be included in the CTR.

☐ *Scoping Graphic: Preliminary Public Space Concept*

Please show proposed sidewalk on the CTR, along with how the installation will impact existing site features and trees. Please design the sidewalk according to DDOT standards. Specify if you propose to move curb lines, remove trees, or add retaining walls or other features as part of the sidewalk design.
Noted.

The pick-up/drop-off loop, transition between two lanes and one lane, and the edge of the parking garage ramp should not cross over the BRL into DDOT-regulated space.

Note any non-compliant public space elements requiring a DCRA code modification or PSC approval. *A summary of public space best practices is provided in Section 1.5. DDOT standards are documented in the DEM, Public Realm Design Manual, and corridor Streetscape Guidelines (if applicable).*		Noted. The plan will be updated accordingly.
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. DDOT encourages providing car share spaces on-site to reduce the ZR16 parking requirement and support non-car ownership lifestyles.*	Number of electric car charging stations TBD	Please include the number of charging stations you will provide in the CTR. Noted.
Heritage, Special, and Street Trees Heritage Trees are defined as having a circumference of 100 inches or more and are typically located on private property. They are protected by the District's Tree Canopy Protection Amendment Act of 2016 and must be preserved if deemed non-hazardous by Urban Forestry Division (UFD). Special Trees are between 44 inches and 99.99 inches in circumference and may be removed with a permit. *Note whether there are existing Heritage Trees on-site or in adjacent public space. The presence of Heritage Trees will impact site design since they may not be cut down. Work w/the UFD Ward Arborist to determine if there are Heritage or Special Trees on-site that must be preserved and if Tree Preservation or Relocation Plans are required.* *Conduct an inventory of existing and missing street trees within a 3-block radius of the site (design standards are in DEM 37.5). Identify any opportunities for UFD or the Applicant (as part of the mitigations package) to install missing treeboxes and street trees.*	See Figure 4 for tree inventory. T53 and T54 will be relocated on-site. The relocated positions are shown on Figure 2A in red. ☒ *Scoping Graphic: Street Tree Inventory Study Area – see Figure 4*	Please explain why these trees are being removed, and how big they are. Will there be any new trees planted? Are there any trees that need to be removed because of the sidewalk addition? The project team (AMT) met with Vera and Michael in August 2020 to discuss the specimen tree removals and relocations. As shown on the tree inventory, T53 is a tulip poplar with a DBH of 37". T54 is a black walnut with a DBH of 36". The trees are being relocated to provide a sufficient area to develop the new school building and below-grade parking garage while maintaining the structures required per our conversations with HPO. The scoping documents included a tree inventory showing several Special Trees and 7 Heritage Trees, 2 of which are proposed for relocation. As a result, it is very important for the applicant to contact the DDOT Arborists listed in the attached document as soon as possible to discuss next steps. The applicant must become familiar with the

		requirements for tree preservation and tree relocation and hire a Certified Arborist to start the process. Here is the link to UFDs website – https://ddot-urban-forestry-dcgis.hub.arcgis.com/ and the information needed can be found under Preservation. The project team (AMT) met with Vera and Michael in August 2020 to discuss the specimen tree removals and relocations. See attached email thread with related correspondence with Vera. On the relocations, the project team will reach out to Chris Cowles and Paul Cox to discuss. See attachment for further information on how the proposed development would impact existing trees. Noted. Thank you for providing the info.

Section 2: TRAVEL ASSUMPTIONS

CATEGORY & GUIDELINES	CONSULTANT PROPOSAL	DDOT COMMENTS
Mode Split Provide mode split assumptions with sources and justification. Sources of data could include the most recent *Census Transportation Planning Products (CTPP)* the *2005 WMATA Development-Related Ridership Survey,* or previous planning studies and CTRs. Note that the walking mode share will account for internal trip synergies for mixed use developments. *Adjustments to mode split assumptions may be made, as appropriate, if the number of vehicle parking spaces proposed is significantly lower or higher than expected for the context of the neighborhood.* *The agreed upon mode split assumptions may not be revised between scoping and CTR submission without DDOT concurrence.*	Site specific trip generation rates will be used. Current mode splits were provided by the school and are summarized in the table below: Car / Walk / Bike / Metrobus/ Metrorail Students: 90% / 8% / 2% / 0% Faculty/Staff: 85% / 0% / 0% / 15% Currently, 30 families have siblings enrolled at the school. Therefore, an average vehicle occupancy of 1.35 will be used for students who arrive/depart by car (25 families with 2 students and 5 families with 3 students). ☒ *Scoping Table: Mode Split Assumptions*	DDOT would like to see the Applicant try to figure out a way to get more students on public transit (especially grades 4-6). Noted. Please note that of the 350 students anticipated for the school, only 90 will be in grades 4-6. Given that the supply of bicycle parking is being increased and the residential nature of the neighborhood, please consider strategies to increase the bike mode. Noted. We will work with the Applicant to develop strategies to encourage more biking.

Trip Generation Provide site-generated person trip generation estimates, utilizing the most recent version of ITE *Trip Generation Manual* or another		Noted. Note that since that the trip generation was updated since the original submission of the scoping

agreed upon methodology such as manual doorway or driveway counts at similar facilities. Estimates must be provided by mode, type of trip, land use, and development phase during weekday AM and PM commuter peaks, Saturday mid-day peak, and daily totals. CTR must also include existing site trip generation based on observed counts. Modes include transit, bicycle, walk, and automobile.

DDOT TripsDC tool will be used to determine trip generation estimates for residential-over-retail projects (see Section 2.2.4 for parameters).

Auto occupancy rates by travel purpose published in the 2017 National Household Travel Survey should be used when calculating person trips based on suburban vehicle trip data in Trip Generation Manual (see Table 3).

Adjustments to trip generation may be made, as appropriate, if the number of vehicle parking spaces proposed is significantly lower or higher than expected for the context of the neighborhood.

Pass-by rates in the District are minimal and should only apply to major retail-dominant destinations, grocery stores, and gas stations. An adjusted pass-by/diverted trips methodology should be developed if development is not located on a road classified as arterial or higher.

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

Mode	Trip Generation AM Peak			Trip Generation PM School Peak			Trip Generation PM Commuter Peak		
	In	Out	Total	In	Out	Total	In	Out	Total
Person Trips	368	350	718	130	202	332	120	129	249
Auto Person Trips	*330*	*315*	*645*	*117*	*178*	*295*	*108*	*116*	*224*
Walk Person Trips	*28*	*28*	*56*	*10*	*10*	*20*	*10*	*10*	*20*
Bicycle Person-Trips	*7*	*7*	*14*	*3*	*3*	*6*	*2*	*2*	*4*
Transit Person-trips	*3*	*0*	*3*	*0*	*11*	*11*	*0*	*1*	*1*
Auto Trips	249	233	482	87	148	235	80	88	168

Notes:
Trip generation assumes 350 students and 90 faculty/staff.
Auto trips calculated by dividing Student Auto Trips by a 1.35 AVO and then adding the faculty/staff Auto Trips (faculty/staff AVO assumed to be 1.0).

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

document to reflect an enrollment of 350 students rather than 320 students.

Section 3: MULTI-MODAL NETWORK EVALUATION

A CTR study is required if the project generates at least 100 peak hour person trips or 25 vehicle trips in the peak direction (highest of inbound or outbound) in any study period. Existing site traffic, pass-by, TDM, internal capture or other reductions may not be taken in the calculation to determine if the project meets these thresholds. However, they may be taken in the TIA, as appropriate, if a study is triggered. Analyses in the Multi-Modal Network Evaluation section are required in all CTRs, unless otherwise specified. A Transportation Statement may only require some of the following sections depending on the specifics of the project and zoning action.

The requirement for a CTR may be waived if site is within ½ mile from Metrorail or ¼ mile from Priority Transit, the total vehicle parking supply below level expected within ¼ mile of Metrorail Station (see Table 2), maximum 100 parking spaces, an Enhanced TDM Plan is implemented, site access and loading design are acceptable, there is a complete pedestrian network in the vicinity of the site, and meets all ZR16 bike parking and locker/shower requirements. Additional criteria may be found in the Low Impact Development Exemption section of *Guidance for CTR*.

CATEGORY & GUIDELINES	CONSULTANT PROPOSAL	DDOT COMMENTS
Strategic Planning Elements Identify relevant planning efforts and demonstrate how the proposed action is consistent with District-wide planning documents, as well as localized studies. Note in scoping form any recommendations from these documents relevant to the development proposal. The evaluation will consider at least the following high level/District-wide documents: • MoveDC and its relevant modal elements • DDOT Livability Study (relevant to the project) • OP Small Area Plans (relevant to the project) • DC Highway Plan (shown on official plat) • District of Columbia Comprehensive Plan • Vision Zero Action Plan • Capital Bikeshare Development Plan • Washington Metropolitan Area Transit Authority's (WMATA) Metrorail and Metrobus Plans • DDOT Corridor studies (e.g., Transit Development Plan, Streetscape Design Plans and Guidelines) *Details on additional relevant plans and studies may be provided by the DDOT Case Manager.*	The following relevant studies will be utilized throughout the creation of the CTR: • DDOT Design and Engineering Manual • District of Columbia Zoning Regulations of 2016 • District of Columbia Pedestrian Master Plan • District of Columbia Bicycle Master Plan • DDOT Public Realm Design Guide • MoveDC Plan • SustainableDC Plan • Transportation Improvement Program (TIP) for the Washington Metropolitan Region (prepared by the National Capitol Region Transportation Research Board)	Noted.
Pedestrian Network Evaluate the condition of the existing pedestrian network and forecast the project's impact. Evaluation must include, at a minimum, critical walking routes, sidewalk widths, network completeness, whether facilities meet DDOT and ADA standards, and whether pedestrian signal timings are adequate (within vehicle study area). *Study area will include, at a minimum, all roadway segments and multi-use trails within a ¼ mile radius from the site, with a focus on connectivity to Metrorail, transit stops, schools, and major activity centers.*	A discussion of the existing pedestrian facilities will include an approximate ¼ mile radius of the center of the site. Specific information will be provided regarding major pedestrian generators and destinations. Additionally, relevant information from the Pedestrian Element of MoveDC will be included. Figure 5 shows the proposed pedestrian study area and identifies major pedestrian generators within the ¼ mile radius. A more detailed graphic will be included in the CTR showing existing pedestrian facilities and missing sidewalks in the pedestrian study area. ☒ *Scoping Graphic: Pedestrian Study Area w/Walking Routes to Transit, Schools, Activity Centers – see Figure 5 for Preliminary Pedestrian Study Area – more detailed information will be added to the graphic for the CTR.*	Noted.

Bicycle Network Evaluate the condition of the existing bicycle network and forecast the project's impact, including to Capital Bikeshare (CaBi). Evaluation must include, at a minimum, bicycle network completeness, types of facilities, and adequacy of CaBi locations and availability. Bikeshare station demand data can be obtained from the *CaBi Tracker* website. *Study area will include, at a minimum, all roadway segments and multi-use trails within a ½ mile radius from the site, with a focus on connectivity to Metrorail, transit stops, schools, major activity centers, and other bicycle trails or facilities.* *Note where bike lanes conflict with access to the site or on-street loading movements associated with the project.* *If a CaBi station is currently located along the site frontage, the Applicant must assume the station will stay in place after the development has been constructed and must be designed in the public space plans. If it is not physically possible to stay in place, then DDOT expects the Applicant to demonstrate this hardship, propose a viable alternative location, and fund the station relocation. The minimum size of a new CaBi station is 19 docks with 12 bikes.*	A discussion of the existing and proposed bicycle facilities within ½ mile radius of the proposed development will be provided. Relevant information from the Bicycle Element of MoveDC will be included. Figure 6 show the existing bicycle network. ☒ *Scoping Graphic: Bicycle Study Area w/Bicycling Routes to Transit, Schools, Activity Centers – see Figure 6 for Preliminary Bicycle Study Area.*	Noted.
Transit Network Evaluate, at a minimum, existing transit stop locations, adjacent bus routes and Metro headways, planned transit improvements, and an assessment of existing transit stop conditions (e.g., ADA compliance, bus shelters, benches, wayfinding, etc.). For Metrorail stations, refer to the 2009 *WMATA Station Site and Access Planning Manual*, as well as various station capacity studies. *Study area is 1.0 mile for Metrorail stations and ½ mile for Streetcar, Circulator, and WMATA buses.* *All existing bus stops and shelters must be accommodated during construction, assumed to be returned to the original location after construction, and designed into the public space plans. If a bus stop and/or shelter must be moved then the Applicant will fund the relocation and obtain approval from DDOT and WMATA for the new location. Applicant must fund the electrification of all new or relocated shelters.*	The nearest Metro Station (Tenleytown – AU) is located approximately ⅓ mile from the proposed development. The Tenleytown -AU station provides access to WMATA Red Line. Metrobus stops serving routes M4 and N2 are located on Nebraska Ave at Van Ness St NW. ☒ *Scoping Graphic: Transit Study Area with Adjacent Routes and Stations – see Figure 5 for Preliminary Transit Study Area – more detail will be added for the CTR* ☒ *Scoping Graphic: Screenshots from DDOT transit maps showing where the site falls within buffers from Metrorail and Priority Transit – see Figures 7A and 7B*	Please include an overview of all transit schedules and stops for services provided within the study area for Metrorail Stations and a half-mile study area for Metrobus routes. Noted. Please assess the two bus stops near the campus. If they are not up to standards, we would like the Applicant to propose upgrades to them. Noted.
Safety Analysis Qualitatively evaluate safety conditions at intersections and along blocks within the vehicle study area. *Perform a review of DDOT Vision Action Plan. Note whether any study intersections have been identified by DDOT as high crash locations, if any safety studies have been previously conducted, and discuss the recommendations. Depending on the results of the TIA, DDOT may require improvements to nearby intersections previously identified as having known safety issues.*		Please include this in the CTR. Noted.

Curbside Management Propose a curbside management plan that is consistent with current DDOT policies and practices. The curbside management plan must delineate existing and proposed on-street parking designations/restrictions, including but not limited to pick-up/drop-off zones, commercial loading zones, multi-space meters, RPP, and net change in number of on-street spaces as a result of the proposal. *Note that the preliminary curbside management plan will not be approved by DDOT during the zoning process. Applicant must submit a more detailed signage and marking plan via TOPS for formal review and approval by DDOT-PGTD during public space permitting. DDOT expects the Applicant to fund the installation of multi-space meters on blocks where meters are required.*	The existing curbside management within two blocks of the site is shown on Figure 8. Any proposed changes to the curbside management will be documented in the CTR. ☒ *Scoping Graphic: Existing Curbside Designations (min. 2 block radius of site) – see Figure 8*	How will the expansion of the existing curb cut and the addition of a new curb cut affect street parking on Nebraska Avenue? How many parking spaces will this eliminate? A preliminary evaluation indicates only one space would be lost on Nebraska Avenue. A detailed evaluation will be conducted and included in the CTR.
Pick-Up and Drop-Off Plan This plan is required for all schools and daycares with 20 or more students. It may also be required for churches, hotels, or any other use expected to have significant pick-up and drop-off operations, as necessary. The plan will identify pick-up and drop-off locations and demonstrate adequate circulation so that the flow of bicycles and vehicles is not impeded and queueing does not occur through the pedestrian realm. *DDOT will require this plan for schools and daycares currently in operation even if the relief requested from the BZA is not related to a student cap increase.*	PUDO is proposed to be accommodated on site, as shown on Figure 2.	Please analyze proposed pick-up and drop-off operations and explain any potential for the operations to block adequate circulation of vehicles and bicycles. Noted.
On-Street Parking Occupancy Study This analysis is required if BZA relief from 5 or more on-site vehicle parking spaces is being requested. It may also be required as part of a ZC or permitting case if DDOT has concerns about site-generated vehicles parking in adjacent residential neighborhoods. *Vehicle parking occupancy counts will be collected hourly during periods of peak demand. These are typically the weekday evening period (6-10 PM) for residential developments, weekday morning period (7-9 AM) if within ¼ mile of Metrorail, and weekend peak periods if there is a commercial component. Parking availability must be assessed a maximum of 2 blocks in each direction from the site, unless otherwise agreed upon. Also include inventory of off-street parking garages in vicinity of site.*	NA ☐ *Scoping Graphic: Study Area/Block Faces*	Noted.
Parking Garage Queueing Analysis If site contains 150 or more vehicle parking spaces <u>and</u> direct access to a public street, evaluate on-site vehicle queueing demand and provide analysis demonstrating parking entrance and ramps can properly process vehicles without queuing onto public streets. Provide proposed parking supply, queuing analysis, and physical controls to parking area, if applicable.	NA	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, subjection to DDOT-PGTD approval. This section is typically only required for uses that generate significant tourist activity (hotels, museums, cruises, etc.).	NA	Noted.

Section 4: TRAFFIC IMPACT ANALYSIS (TIA)

The TIA component of a CTR is required when a development generates 25 or more peak hour vehicle trips in the peak direction (higher of either inbound or outbound vehicles in any study peak period), after mode split is applied. Existing site traffic, pass-by, TDM, internal capture or other reductions may not be applied when calculating whether a TIA is required. Applicable reductions may be used in the multi-modal trip generation summary and assignment of trips within the TIA, as appropriate. A standalone TIA may also be required if the project proposes a change to roadway capacity, operations, or directionality; has a site access challenge; or as otherwise deemed necessary by DDOT.

CATEGORY & GUIDELINES	CONSULTANT PROPOSAL	DDOT COMMENTS
TIA Study Area and Data Collection Identify study intersections commensurate with the impact of the proposed project and the travel demand it will generate. Study area must include all major signalized and unsignalized intersections, intersections expected to realize large numbers of new traffic, and intersections that may experience changing traffic patterns. Additional guidance on selecting study intersections is provided in DEM 38.3.2. *Turning Movement Counts (TMC) will be collected in 15-minute increments during the weekday morning (6:30 AM to 9:30 AM) and evening (4:00 PM to 7:00 PM) peak periods on Tuesdays through Thursdays during non-holiday weeks, while schools and Congress are in session, the Fed govt is not in a shutdown, and weather is not an issue, unless otherwise agreed upon. Saturday mid-day peak period (generally 11:00 AM to 1:00 PM) will be studied if development program is retail-heavy. TMCs will include vehicles, pedestrians, bicyclists, and % truck traffic. TMCs will be collected at all existing site driveways and reported as existing conditions in trip generation summary.* *Previously collected TMCs may be used if they are less than 2 years old at the time of study submission. DDOT may require counts be refreshed once TMCs reach 3 years old or if a major transportation or land use change occurs. A growth rate will be applied to TMCs older than 12 months to create present year Existing Conditions.*	Proposed Study intersections 1. Van Ness St/ 42nd St 2. Van Ness St / Nebraska Avenue 3. Van Ness St / Wisconsin Avenue 4. Nebraska Avenue / Warren St 5. Tenley Circle / Wisconsin Avenue Traffic counts for Intersections #2-5 will be taken from the CTR recently submitted for American University's Campus Plan. The counts were conducted in February 2020. Traffic counts for Intersection #1 were obtained from the DDOT – Howard University Traffic Data Center and were conducted in January 2016. Traffic counts for Intersection #1 will be grown to year 2020 to reflect current conditions. ☒ *Scoping Graphic: Study Intersections – see Figure 9* ☒ *Provide hard copies of TMCs in CTR appendix and electronic copies in DDOT-required spreadsheet format at time of submission.*	Please include the Warren Street NW and 42nd Street NW intersections. The intersection of 42nd Street and Warren Street will be included in the analysis.

TIA Study Scenarios

Propose an appropriate set of scenarios to analyze. Note the anticipated build-out year and project phasing. Analysis scenarios to be considered:

- Existing Conditions (Current Year)
- Background Conditions (No-Build)
- Total Future Conditions (With Development)
- Total Future Conditions (With Development and Mitigation)
- Additional Scenarios For Each Phase, as necessary
- Total Future Conditions (+5 Years), as required
- Long Range +20 Years Planning Scenario, as required

The following scenarios will be analyzed:

1. Existing Conditions (Current Year)
2. 2026 Background Conditions (No-Build)
3. 2026 Total Future Conditions (With Development)
4. 2026 Total Future Conditions (With Development and Mitigation, if necessary)

Noted.

TIA Methodology

Propose an appropriate methodology for the capacity analysis including the type of software program to be used. Per DEM 38.3.5.1, HCM methodology will be used to determine Level of Service (LOS), v/c, and vehicle queue lengths. LOS must be reported by intersection approach and v/c by lane group. DDOT prefers Synchro 9 or newer software for capacity and queueing analyses. SimTraffic (10 simulations averaged) should be used to further evaluate an observed queueing issue and determine a solution, as necessary.

DDOT's required standard Synchro and SimTraffic inputs/settings are provided in Appendix H.

Merge/weave/diverge analysis is required if any of the study intersections include a highway, freeway, or Interstate ramp (DEM 38.3.5.3). HCS software should be used for this analysis.

Synchro v.10 will be used to conduct the AM and PM weekday peak level of service/capacity analyses (HCM 2000 results will be reported) and Synchro files will be provided with the study submittal. Existing signal timings will be requested from DDOT and utilized in the analyses. Synchro v.10 will also be used to determine the expected AM and PM weekday peak queue lengths (the 50th percentile and the 95th percentile queues will be reported). The available storage lengths will be measured from the approach stop bar to the nearest intersection or end of turn lane, as appropriate.

☒ *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.*

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.

No improvements are known within the study area.

☐ *Scoping Graphic: Locations of background transportation network improvements*

Considering the number of nearby developments listed under the Local Traffic Growth section, please verify if any of these developments are prompting any network improvements.
Noted.

Local Traffic Growth

List and map developments to be analyzed as local background growth. This will include known matter-of-right and zoning-approved developments within ¼ mile of site and others more than ¼ mile from site if their traffic is distributed through study intersections. Document the portions of developments anticipated to open by the projected build-out year.

Project Name/Location	Development Program	Estimated completion
Upton Place – 4000 Wisconsin Avenue NW	700 residential units with 126 kSF of retail	2023
City Ridge – 3900 Wisconsin Avenue NW	750 residential units and 250 kSF retail	2021
Sidwell Friends Campus Consolidation – 3825 Wisconsin Avenue NW	increase in student cap from 850 to 1250 students and faculty/staff cap from 190 to 310	2024
Broadcast – 4620-4624 Wisconsin Avenue NW	146 residential units with 11 kSF retail	2020
Dancing Crab – 4615 Wisconsin Avenue NW	41 residential units with 5 kSF retail	Unknown

See comments above.

The Ladybird – 4330 48th Street NW	219 residential units, 18 ksF retail	2021

☒ *Scoping Graphic: Background development projects near study area – see Figure 10*

☒ *Scoping Table: Completion amounts/portions occupied of background developments*

Regional Traffic Growth

Propose a methodology to account for growth in regional travel demand passing through the study area. An appropriate methodology could include reviewing historic AADT traffic counts, MWCOG model growth rates, data from other planning studies, or recently conducted nearby CTRs. These sources should only be used as a guide.

Generally, maximum annually compounding growth rates of 0.5% in peak direction and 2.0% in non-peak direction are acceptable. Growth rates based should be based on DDOT historical data from 10+ years, if available. Adjustments to the rates may be necessary depending on the amount of traffic assumed from local background developments or if there were recent changes to the transportation network.

Roadway	DDOT ADT				
	2018	2017	2016	2015	2014
Nebraska Avenue NW	16,000	16,000	15,886	18,600	18,000
Van Ness Street NW	4,000	4,000	3,946	3,800	3,700
Wisconsin Avenue NW	29,000	29,000	28,674	27,900	32,100

Roadway	CALCULATED GROWTH RATE				
	2014 - 2018	2014 - 2017	2014 - 2016	2014 - 2015	2016 - 2018
Nebraska Avenue NW	-2.90%	-3.85%	-6.06%	3.33%	0.36%
Van Ness Street NW	1.97%	2.63%	3.27%	2.70%	0.68%
Wisconsin Avenue NW	-2.51%	-3.33%	-5.49%	-13.08%	0.57%

Based on the calculated growth rates summarized above, a growth rate of 0.5% per year will be used for Nebraska Avenue and Wisconsin Avenue and a growth rate of 1.0% per year will be used for Van Ness Street.

☒ *Scoping Table: Projected regional growth assumptions (dependent on methodology), show growth rates by facility, direction, and time of day*

☐ *Scoping Graphic: Projected regional growth assumptions (dependent on methodology), show growth rates by facility, direction, and time of day*

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 appropriate routing assumptions.

The agreed upon trip distribution methodology may not be revised between scoping and CTR submission without concurrence by DDOT Case Manager.

Given the District's urban context and grid network, a small portion of trips (up to 5% of trips through an intersection) may be re-routed from their original routes to an alternate route due to traffic congestion.

Student zip codes were obtained from the River School and were used to determine trip distribution patterns to/from the site. The resulting distributions are shown on Figure 11A. A heat map of the zip codes is shown on Figure 11B.

☒ *Scoping Graphic(s): Percentage Distribution by Land Use, Direction, Time of Day - see Figure 11A*

Please ensure that the percentage of vehicles turning is clear at driveway and intersection.
Noted. A detailed trip distribution figure will be included in the CTR.

Section 5: MITIGATION

The completed CTR must detail all proposed mitigations. The purpose of discussing mitigation at the scoping stage is to highlight DDOT's Significant Impact Policy, DDOT's approach to mitigation, and to give the Applicant an opportunity to gain initial feedback on potential mitigations that may ultimately be proposed. Any mitigation strategies discussed and included in the *Scoping Form* are considered non-binding until formally evaluated in the study and committed to as part of a related action.

CATEGORY & GUIDELINES	CONSULTANT PROPOSAL	DDOT COMMENTS
DDOT Significant Impact Policy Vehicle Parking Supply DDOT considers a high parking provision as an 'impact' that needs to be mitigated since it is a permanent site feature that encourages additional driving and yield vehicle trips in the future that were not contemplated in the study. Appropriate mitigations include reducing vehicle parking, implementing substantive TDM strategies, off-site non-automotive network upgrades, and making monetary contributions to DDOT for non-auto improvements. See Table 2 to determine if a site is over-parked based on land use and distance to transit. Capacity Impacts at Intersections All site-generated vehicular impacts to the transportation network during study peak hours must be mitigated, per DEM 38.3.5, if any of the following occur: • Degradation of an approach or intersection to LOS E or F or intersection v/c ratio increases to 1.0 or greater from Background to Total Future Conditions. • If an approach or intersection exceeds LOS E or F or movement/lane group exceeds 1.0 v/c ratio under Background Conditions then an increase in delay or v/c ratio by 5% or more under Total Future Conditions. • If 95th percentile vehicle queuing length exceeds available capacity of approach or turn lane under Total Future Conditions. • If 95th percentile queue length of an approach or turn lane increases by 150 feet or more from Background to Total Future Conditions.	☒ *The Applicant acknowledges DDOT's Significant Impact Policy.* ☒ *The study will comply with all other policies in the Guidance for Comprehensive Transportation Review and the Category & Guidelines column of this Scoping Form not explicitly documented in the Consultant Proposal or DDOT Comments columns.* ☒ *The study will include all of the required graphics, tables, and deliverables for the relevant sections determined during scoping, as shown in Table 1 of Guidance for Comprehensive Transportation Review.*	Noted.
DDOT Approach to Mitigation DDOT's approach to mitigation is to first establish optimal site design and operations to support efficient site circulation. When these efforts alone cannot properly mitigate an action's impact, reducing on-site vehicle parking, implementing TDM measures, making upgrades to the pedestrian, bicycle, and transit networks to encourage use of non-automotive modes, or monetary contribution to DDOT for non-auto improvements must be proposed. Only when these options are exhausted will DDOT consider capacity-increasing changes to the roadway network because such changes often have detrimental impacts on non-	☒ *The Applicant acknowledges DDOT's approach to mitigation that prioritizes (in order of DDOT preference) optimal site design, reducing vehicle parking, implementing more TDM strategies, making non-automotive network improvements, and making a monetary contribution to DDOT for non-auto improvements before considering options that increase roadway capacity or alter roadway operations.*	Noted.

automotive travel and are often contrary to the District's multi-modal transportation goals.		
Transportation Demand Management (TDM) A TDM Plan is typically required to offset site-generated impacts to the transportation network or in situations where a site provides more parking than DDOT determines is practical for the use and surrounding context. TDM strategies are also an integral part of the District's transportation options. As such, a Baseline TDM plan is required in all CTRs regardless of impacts to the network. An Enhanced Plan or greater is required if the site is over-parked per Table 2 or there are roadway impact identified. Sample TDM plans by land use and tier can be found in Appendix C. *Document all existing TDM strategies being implemented on-site (even outside of a formal TDM Plan) and those being proposed and committed to by the Applicant. Elements of the TDM Plan included in CTR must be broken down by land use and user (i.e., employee, faculty, resident, visitor, etc.).*	☒ *The Applicant will include at least a Baseline TDM Plan. The TDM plan will increase to Enhanced Plan or beyond depending on the parking ratio and other impacts identified in the study.*	Noted.
Performance Monitoring Plan (PMP) DDOT may require a PMP in situations where anticipated vehicle trips are large in magnitude, unpredictable, or necessitate a vehicle trip cap. Typically, this is required for schools expected to have a significant amount of single occupancy vehicle trips or very large developments. The monitoring plan will establish thresholds for new trips a project can generate, define post-completion evaluation criteria and methodology, determine the frequency of reporting, and establish potential remediating measures (e.g., adjust trip caps or implement additional TDM strategies). *Document any existing performance monitoring Plans in effect and any proposed changes.*	To be determined based on results of the CTR.	Noted.
Roadway Operational and Geometric Changes Describe all proposed roadway operational and geometric changes in CTR with supporting analysis and warrants in the study appendix. Detail must be provided on any ROW implications of proposed mitigations. All proposed changes in traffic control must be conducted following the procedures outlined in the *Manual of Uniform Traffic Control Devices* (MUTCD). *Note any preliminary ideas being considered.*	Any operational or geometric changes will be discussed in the CTR.	Noted.

Section 6: ADDITIONAL TOPICS FOR DISCUSSION DURING SCOPING

CATEGORY & GUIDELINES	CONSULTANT PROPOSAL	DDOT COMMENTS
ANC Discussions and Feedback Provide an update on the status of Community Benefits Agreement, any ANC concerns, or other concerns expressed by the community.	The project team has met with the adjacent neighbor to the north to discuss site access and circulation, and the adjacent neighbor has expressed support for the current plan.	Noted.
Miscellaneous Items for Discussion These items could include relevant on-going discussions with other agencies and stakeholders or seeking direction other types of analyses to be included (i.e., traffic calming proposal, TOPP, TMP).	The project team has met several times with HPO and has had discussions with the Chairperson of ANC 3E regarding the project.	Noted.

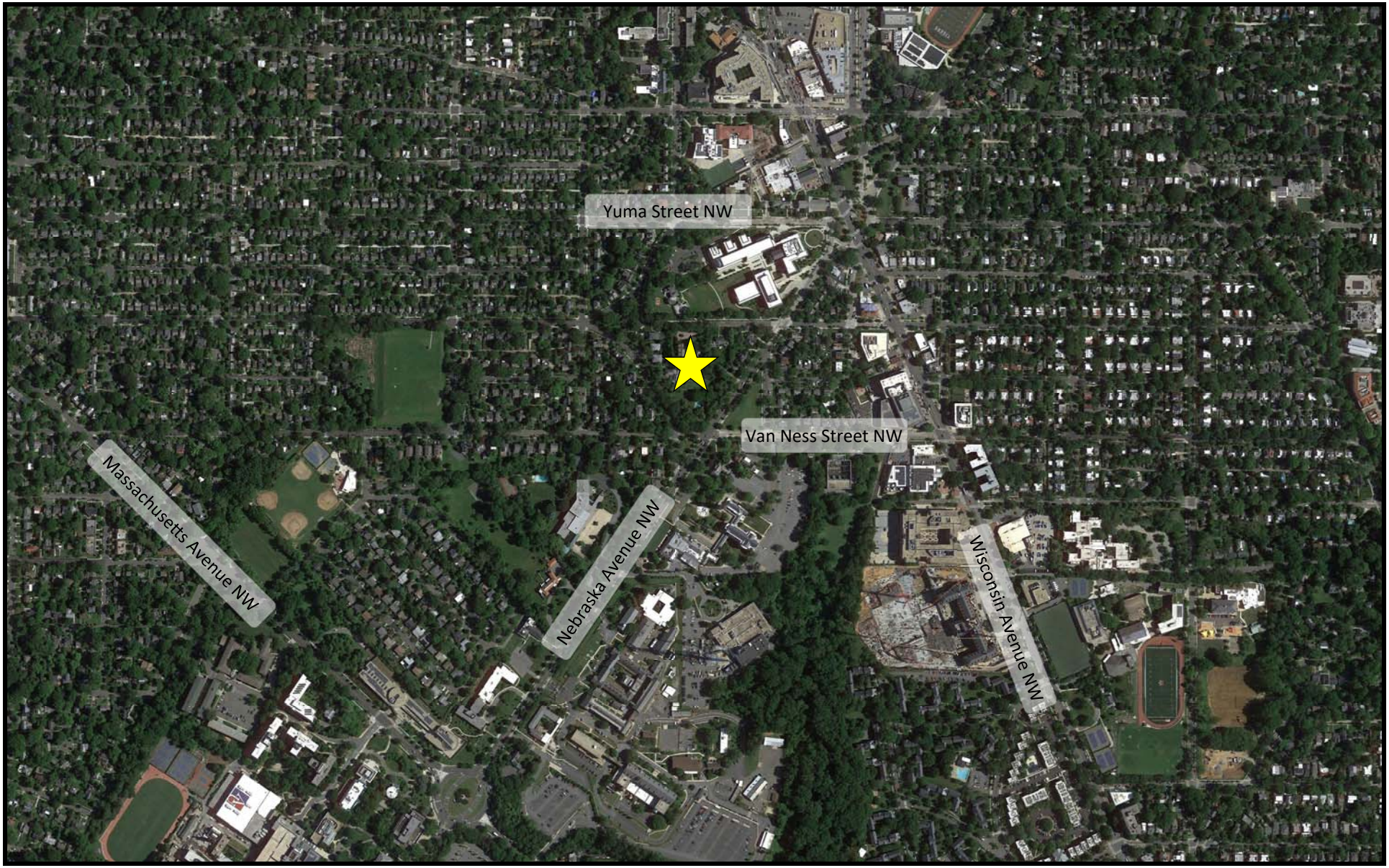


Figure 1
Site Location

Site

NORTH

The River School
Washington, DC

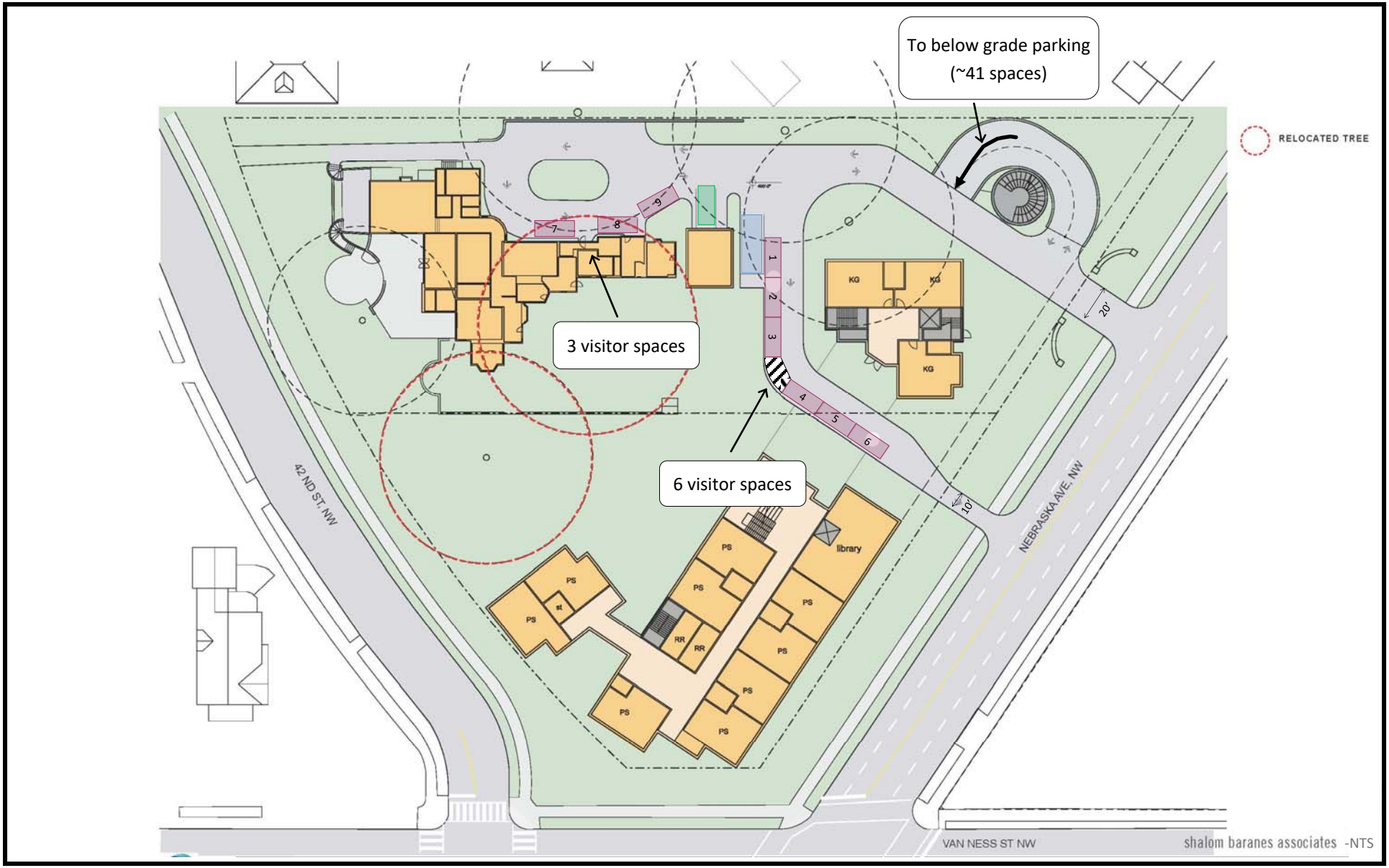


Figure 2A
Site Circulation
Non-PUDO Hours

Service/Delivery Space
30' Loading Berth

NORTH
The River School
Washington, DC

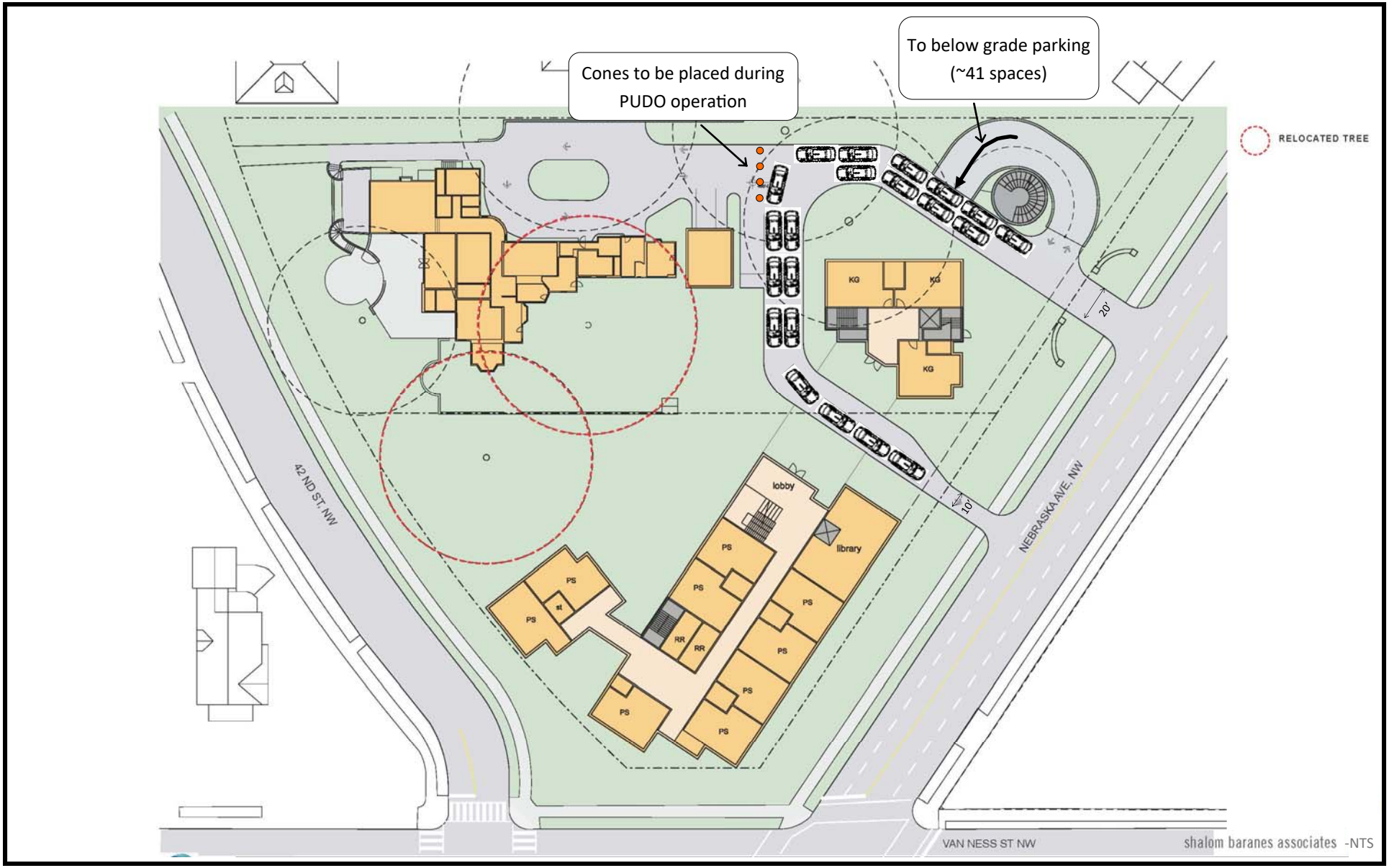


Figure 2B
PUDO Circulation

NORTH

The River School
Washington, DC

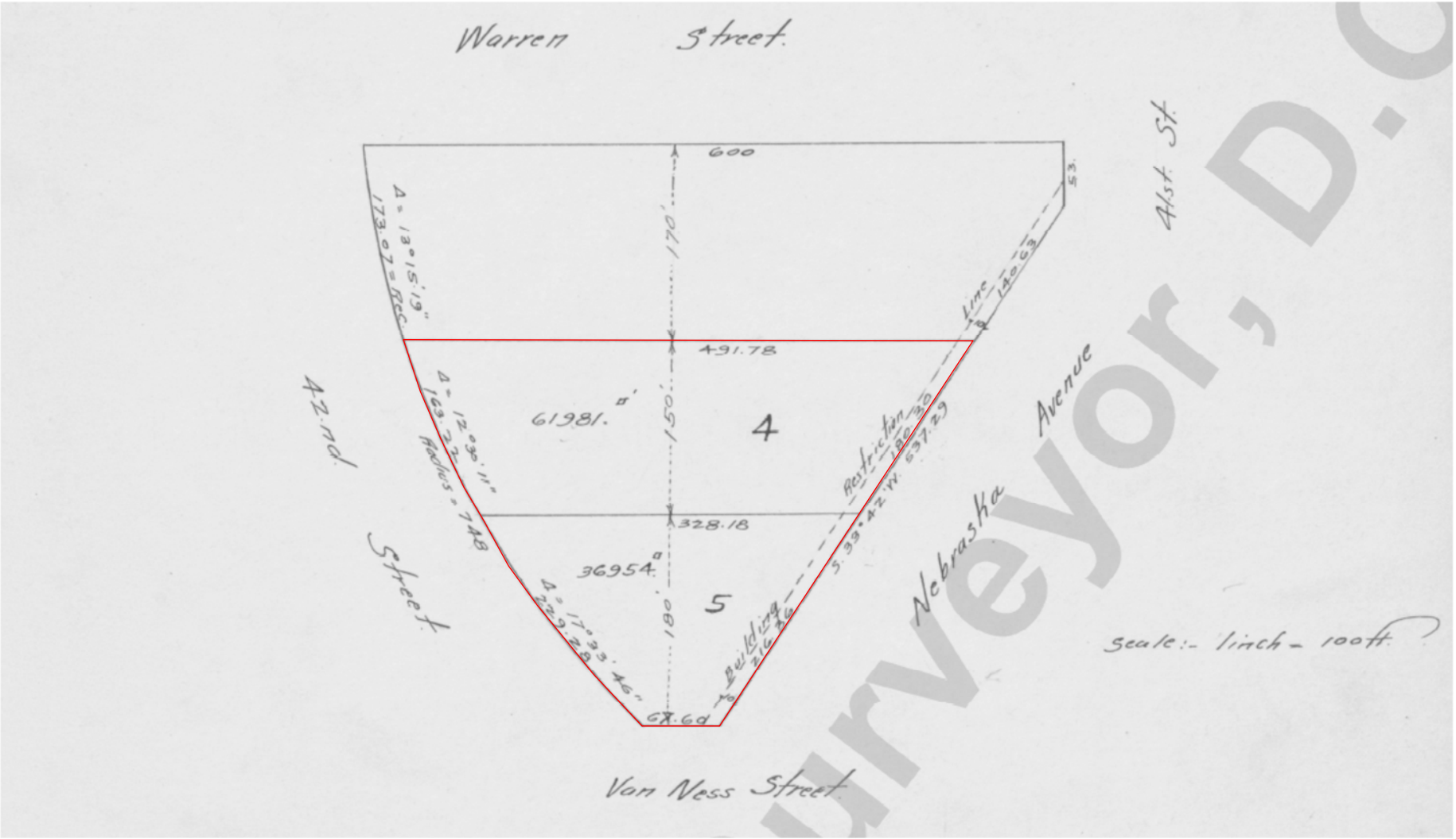
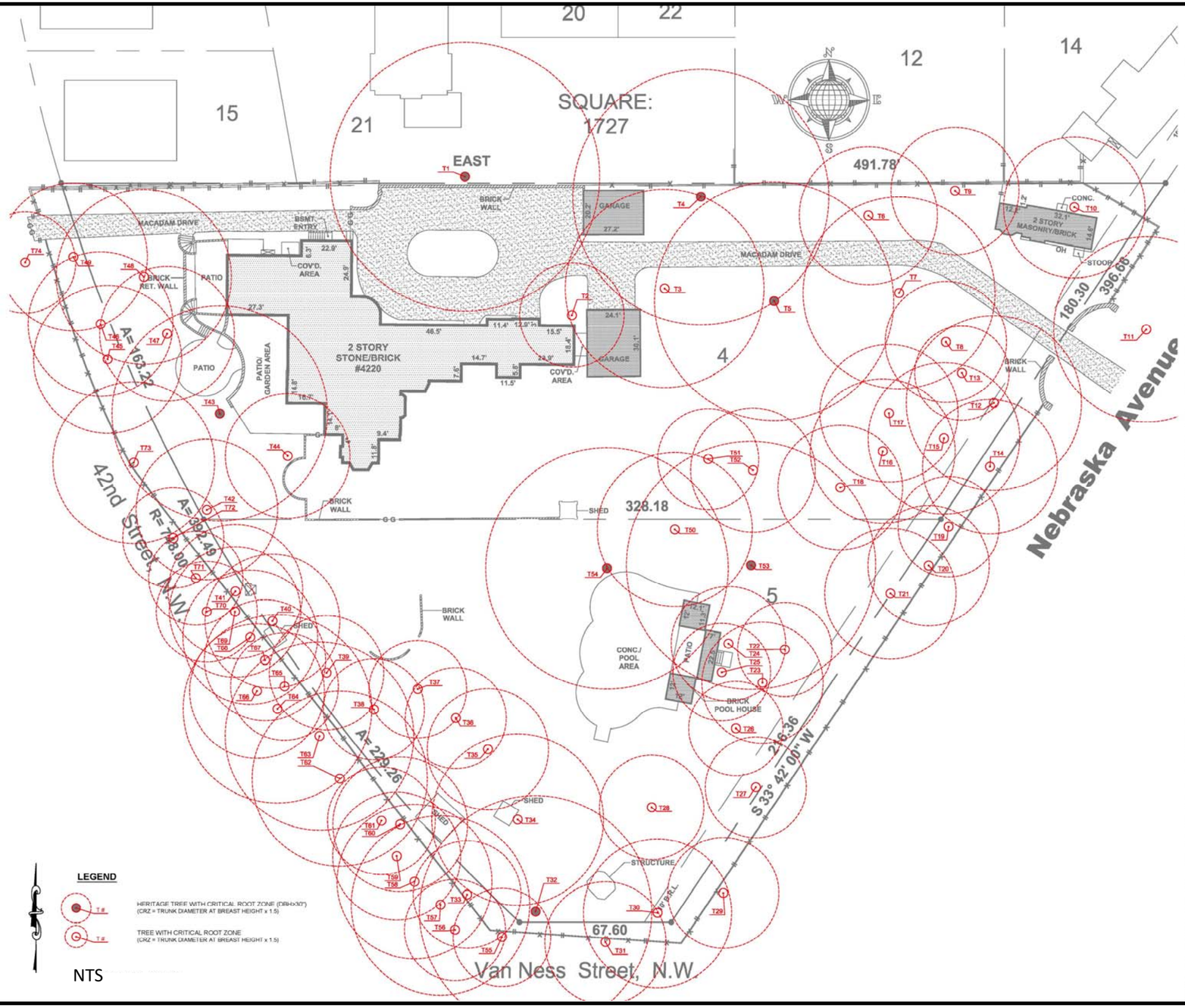


Figure 3
Site Plat

NORTH

The River School
Washington, DC



AMT TREE SURVEY

JUNE 24, 2020

Project Name: 4220 Nebraska Avenue				Date: June 2020		Hazardous Tree Assessment					
Tree #	Botanical Name	Common Name	DBH	Trunk Circum Formula	Live Crown Ratio (0-100%)	Probability of Failure (1-4)	Size of Defective Part(s) (1-3)	Probability of Target Impact (1-3)	Subjective Risk Factors (0-2)	Total Risk Rating Score (3-10)	NOTES
1	*Acer saccharinum*	*silver maple*	40.0	125.7	70	2	3	3	1	9	Behind brick wall; compacted root zone (in pavement); twin leader; minor dieback
2	*Juniperus virginiana*	*Eastern red cedar*	15.5	48.7	80	1	1	3	1	6	Beside house; compacted root zone (in pavement); electrical equipment on trunk
3	*Fagus grandifolia*	*American beech*	29.5	92.7	85	1	1	3	0	5	Electrical equipment on trunk
4	*Quercus alba*	*White oak*	38.0	119.4	66	2	1	2	0	5	
5	*Fagus grandifolia*	*American beech*	35.5	111.5	90	2	3	2	1	8	Broken leader; electrical equipment
6	*Pinus strobus*	*Eastern white pine*	20.5	64.4	66	2.5	1	2	1	6.5	
7	*Fagus grandifolia*	*American beech*	28.5	89.5	85	1	1	2	0	4	
8	*Pinus strobus*	*Eastern white pine*	18.0	56.5	60	2.5	1	2	1	6.5	Slightly leaning
9	*Juniperus virginiana*	*Eastern red cedar*	19.0	59.7	50	2	2	3	1	8	Major euontmous vines on trunk and in canopy
10	*Juniperus virginiana*	*Eastern red cedar*	21.0	66.0	45	2	2	3	1	8	Major poison ivy; small canopy
11	*Ulmus americana*	*American elm*	27.5	86.4	60	2.5	3	3	1	9.5	Broken leader; major wound; overhead wires
12	*Pinus strobus*	*Eastern white pine*	26.0	81.7	30	2	2	2	1	7	Broken limbs; dieback; English ivy
13	*Pinus strobus*	*Eastern white pine*	14.0	44.0	70	2	1	2	0	5	
14	*Pinus strobus*	*Eastern white pine*	20.0	62.8	66	2	1	2	1	6	Major poison ivy
15	*Cedrus atlantica*	*Atlas cedar*	22.5	70.7	40	1	1	1	0	3	
16	*Magnolia grandiflora*	*Southern magnolia*	21.5	67.5	70	1	1	1	0	3	
17	*Magnolia grandiflora*	*Southern magnolia*	20.5	64.4	80	1	1	1	0	3	Multiple trunk (7", 11.5", 15.5")
18	*Juniperus virginiana*	*Eastern red cedar*	18.5	58.1	40	2	3	1	1	7	
19	*Magnolia grandiflora*	*Southern magnolia*	15.0	47.1	90	1	1	3	0	5	Slightly leaning
20	*Liriodendron tulipifera*	*tulip poplar*	18.0	56.5	45	2.5	2	2	1	7.5	Thin canopy; minor dieback; broken limbs
21	*Liriodendron tulipifera*	*tulip poplar*	19.5	61.3	50	2	2	2	1	7	Thin canopy; minor dieback; broken limbs
22	*Pinus strobus*	*Eastern white pine*	14.0	44.0	40	2	1	2	1	6	Thin canopy
23	*Pinus strobus*	*Eastern white pine*	18.0	56.5	60	1.5	1	2	1	5.5	
24	*Cupressus × leylandii*	*Leyland cypress*	17.0	53.4	85	1.5	2	3	0	6.5	
25	*Cupressus × leylandii*	*Leyland cypress*	14.5	45.6	75	1.5	1	3	0	5.5	
26	*Acer rubrum*	*red maple*	14.0	44.0	66	1	1	1	0	3	Cable bracing for adjacent tree
27	*Juniperus virginiana*	*Eastern red cedar*	15.0	47.1	50	2.5	3	2	1	8.5	Cable bracing for adjacent tree; girdled trunk
28	*Pinus strobus*	*Eastern white pine*	15.5	48.7	60	2	1	1	0	4	
29	*Pinus strobus*	*Eastern white pine*	16.5	51.8	30	2	2	3	1	8	Leaning; thin canopy; bamboo
30	*Quercus palustris*	*pin oak*	22.0	69.1	50	1	1	2	0	4	
31	*Quercus palustris*	*pin oak*	18.0	56.5	55	1	2	3	0	6	Beside fence
32	*Quercus rubra*	*Northern red oak*	34.5	108.4	15	3	3	2	2	10	Major pruning; fruiting bodies; dieback
33	*Quercus rubra*	*Northern red oak*	16.0	50.3	10	3	2	2	2	9	Major dieback; ivy
34	*Acer rubrum*	*red maple*	25.5	80.1	66	1.5	1	1	1	4.5	Multiple leaders in canopy; minor dieback
35	*Pinus strobus*	*Eastern white pine*	18.0	56.5	66	1.5	1	1	1	4.5	
36	*Cupressus × leylandii*	*Leyland cypress*	15.0	47.1	66	3	1	2	1.5	7.5	Leaning; heaving root plate; major ivy
37	*Cupressus × leylandii*	*Leyland cypress*	14.5	45.6	66	2	2	2	1	7	Major ivy
38	*Juniperus virginiana*	*Eastern red cedar*	15.0	47.1	50	1	1	1	0	3	
39	*Tsuga canadensis*	*Eastern hemlock*	17.0	53.4	50	2	3	1	1	7	Multiple trunk (8", 10", 11.5"); dieback; thin canopy
40	*Pinus strobus*	*Eastern white pine*	20.0	62.8	55	2	1	1	1	5	
41	*Quercus phellos*	*willow oak*	20.0	62.8	20	3	3	1	2	9	Major dieback; major ivy
42	*Juniperus virginiana*	*Eastern red cedar*	21.0	66.0	70	1	2	1	0	4	Electrical
43	*Acer rubrum*	*red maple*	32.0	100.5	75	2	2	3	0	7	Electrical; girdled limb; pruning cuts; thin canopy; minor dieback
44	*Cupressus × leylandii*	*Leyland cypress*	18.5	58.1	80	1	2	3	0	6	Double trunk (10", 15.5")
45	*Pinus strobus*	*Eastern white pine*	22.0	69.1	40	2	2	2	1	7	
46	*Pinus strobus*	*Eastern white pine*	21.5	67.5	40	2	2	2	1	7	
47	*Juniperus virginiana*	*Eastern red cedar*	20.0	62.8	50	1	1	2	0	4	
48	*Pinus strobus*	*Eastern white pine*	26.0	81.7	55	2	2	2	1	7	Major vines; broken limbs
49	*Prunus serotina*	*black cherry*	22.0	69.1	50	2	3	2	1	8	Broken limbs; thin canopy; poor form
50	*Picea abies*	*Norway spruce*	23.0	72.3	30	2	2	3	0	7	Conduit, light, guy wire; bamboo
51	*Prunus serrulata*	*flowering cherry*	15.0	47.1	66	1	1	1	0	3	
52	*Prunus serrulata*	*flowering cherry*	18.5	58.1	60	1	1	1	0	3	Electrical
53	*Liriodendron tulipifera*	*tulip poplar*	37.0	116.2	70	1	2	2	1	6	Vines
54	*Juglans nigra*	*black walnut*	36.0	113.1	70	1	2	3	1	7	Wysteria vine; electrical
55	*Quercus rubra*	*Northern red oak*	14.5	45.6	50	3	2	3	1	9	Major dieback
56	*Ulmus americana*	*American elm*	15.0	47.1	70	1	1	3	0	5	
57	*Quercus rubra*	*Northern red oak*	26.5	83.3	50	4	3	3	2	12	Major wound at base; leaning
58	*Quercus rubra*	*Northern red oak*	23.0	72.3	50	2	2	3	0	7	Thin canopy
59	*Quercus rubra*	*Northern red oak*	19.0	59.7	50	2	2	3	1	8	Vines; thin canopy
60	*Quercus rubra*	*Northern red oak*	20.0	62.8	40	2	3	2	2	9	Major ivy; thin canopy; dieback
61	*Ulmus americana*	*American elm*	16.0	50.3	45	3	2	1	1	7	Major ivy; leaning
62	*Quercus rubra*	*Northern red oak*	26.0	81.7	50	2.5	2	2	1	7.5	Major vines; minor dieback; thin canopy
63	*Quercus rubra*	*Northern red oak*	28.0	88.0	40	2.5	2	1	1	6.5	Major vines; dieback; thin canopy
64	*Quercus rubra*	*Northern red oak*	28.0	88.0	40	2.5	2	2	1	7.5	Major vines; dieback; thin canopy
65	*Quercus rubra*	*Northern red oak*	16.0	50.3	30	3.5	3	3	1	10.5	
66	*Quercus rubra*	*Northern red oak*	20.0	62.8	50	2	2	3	0	7	Double trunk (10", 17.5")
67	*Quercus rubra*	*Northern red oak*	18.0	56.5	40	2	2	3	1	8	Ivy on trunk; thin canopy
68	*Quercus rubra*	*Northern red oak*	20.0	62.8	50	2	2	3	1	8	Leaning
69	*Prunus serotina*	*black cherry*	19.5	61.3	30	3	3	3	1	10	Dieback
70	*Quercus rubra*	*Northern red oak*	15.0	47.1	55	2	2	3	0	7	Dieback
71	*Quercus rubra*	*Northern red oak*	14.0	44.0	40	2	2	3	1	8	Major vines
72	*Quercus rubra*	*Northern red oak*	15.0	47.1	50	2	2	3	1	8	Major vines, dieback
73	*Quercus phellos*	*willow oak*	24.0	75.4	75	1	1	3	0	5	
74	*Quercus rubra*	*Northern red oak*	15.0	47.1	25	3	2	3	2	10	Major dieback, vines

Figure 4

Tree Inventory

NORTH

The River School
Washington, DC

Figure 5
Preliminary Pedestrian and Transit Study Area

Site
Bus Stop (Route Number)

NORTH

The River School
Washington, DC

Figure 6
Bicycle Study Area

Site

NORTH

The River School
Washington, DC

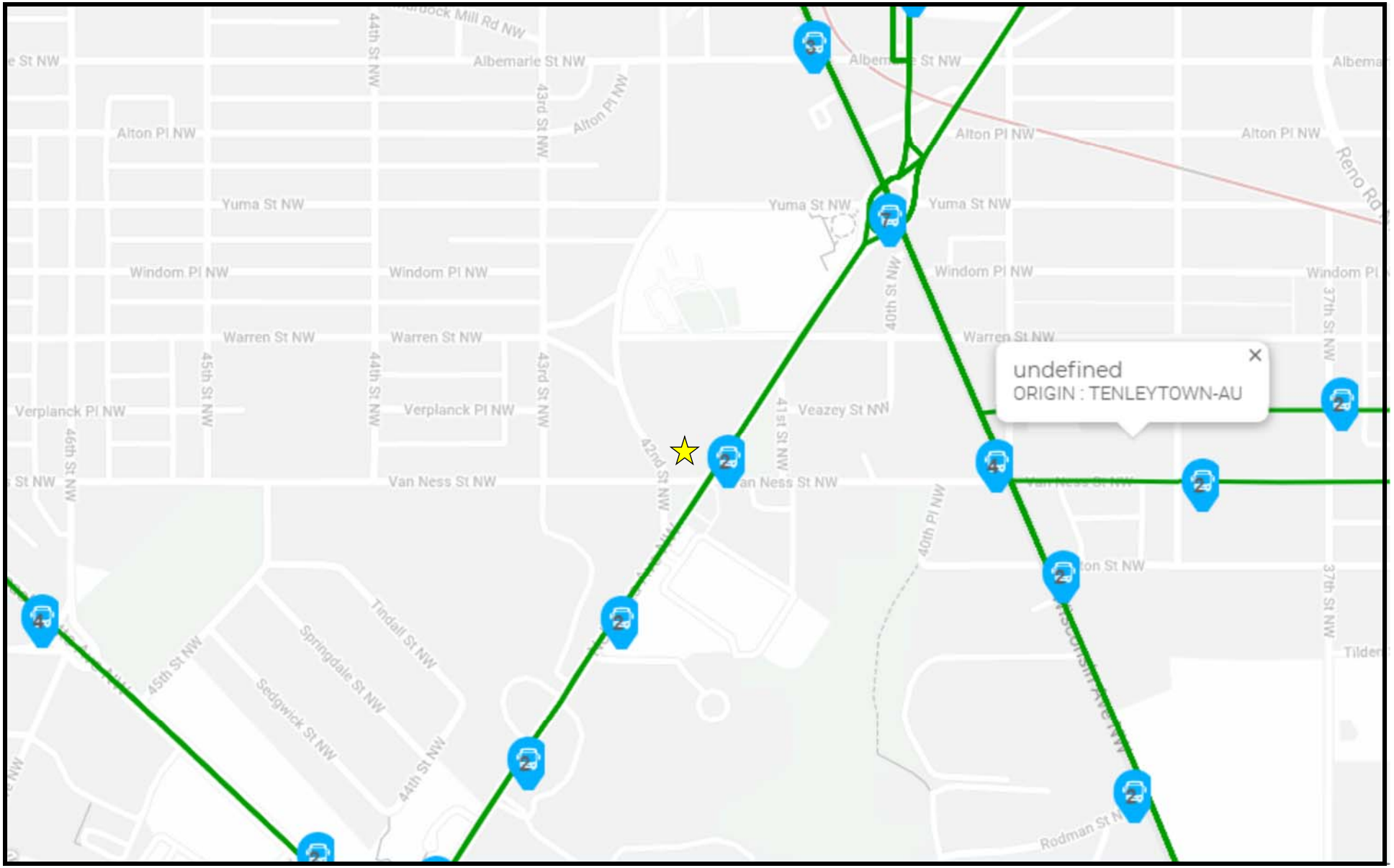


Figure 7A
DDOT Bus Map

Site

NORTH

The River School
Washington, DC

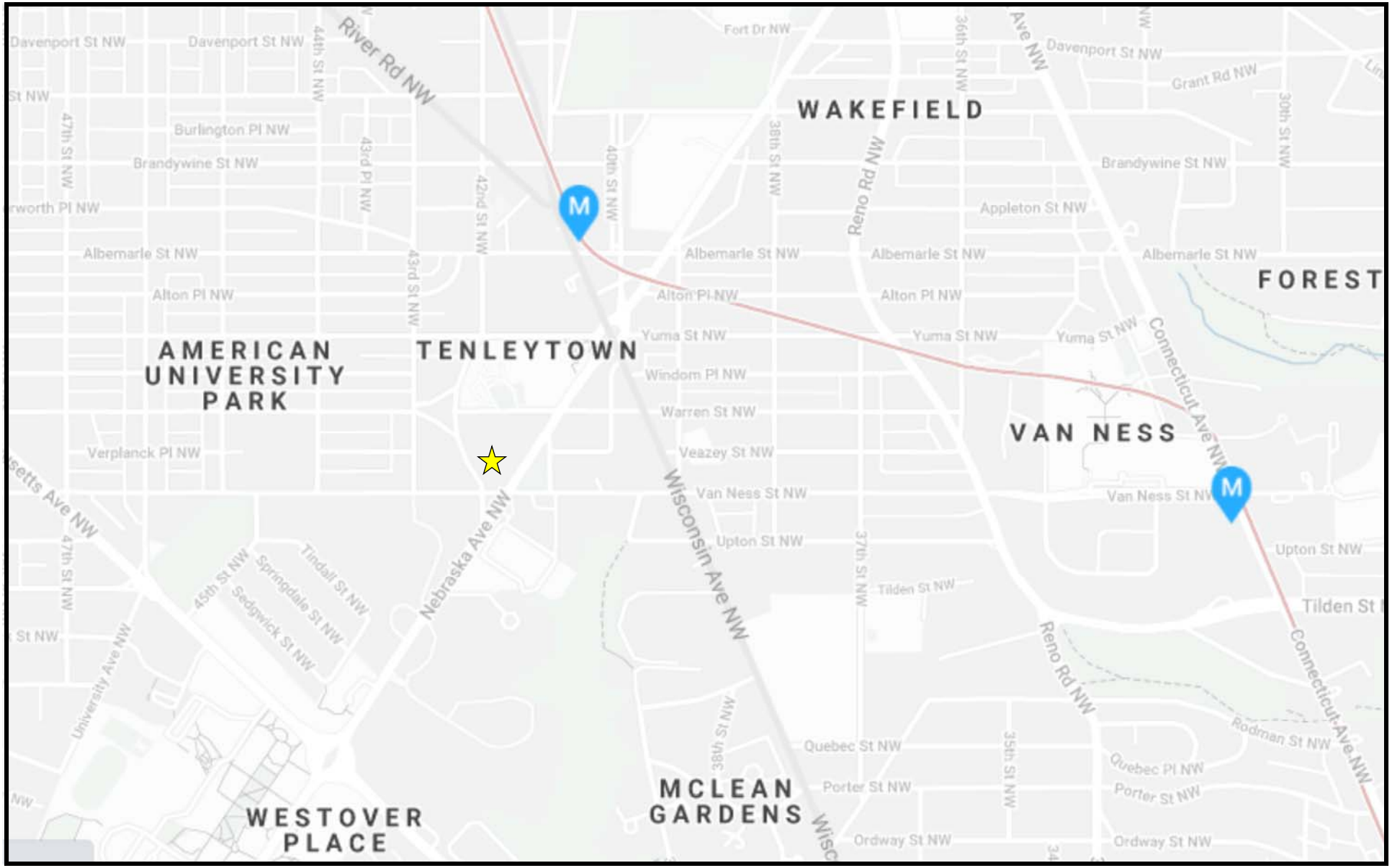
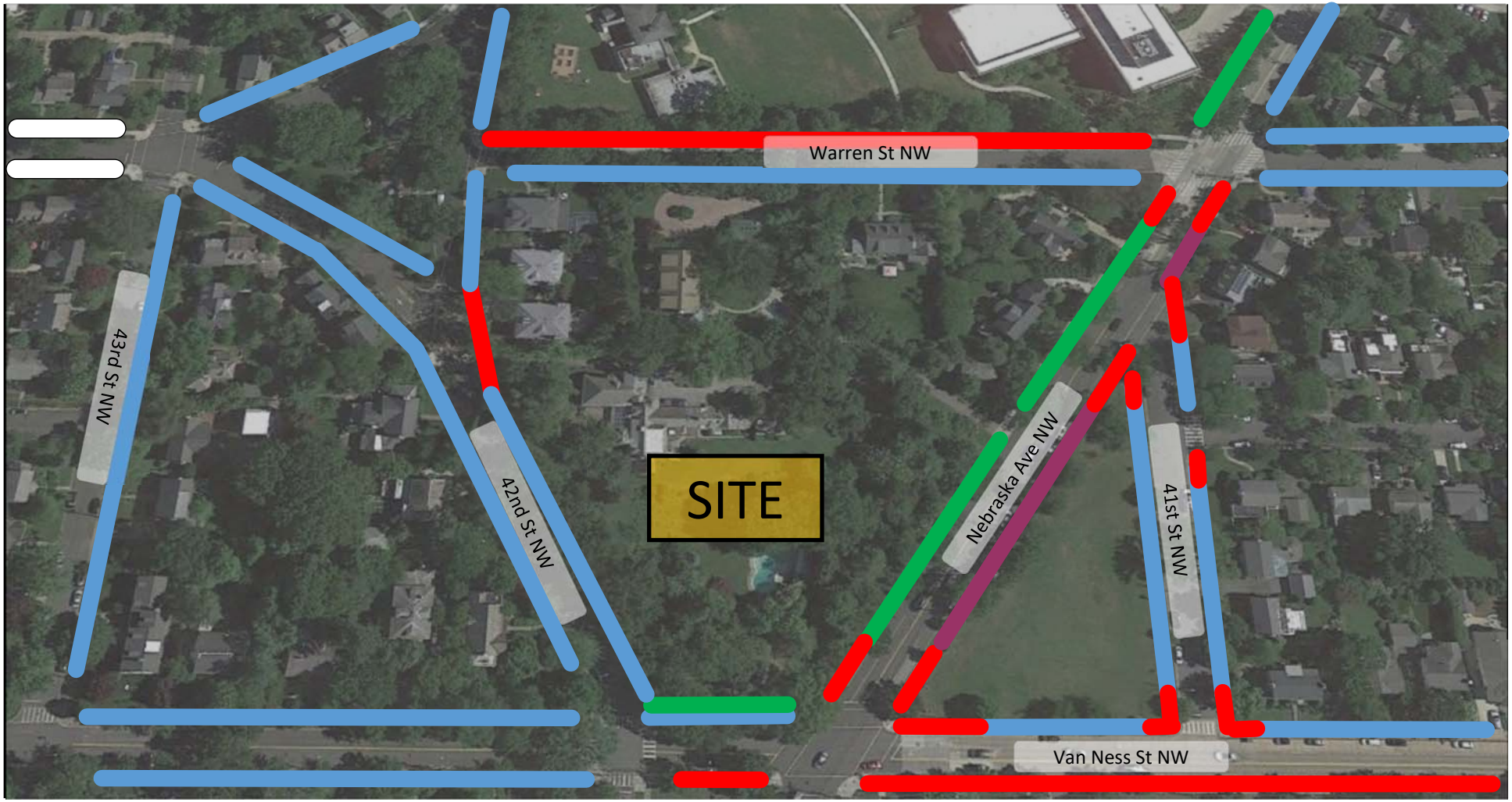


Figure 7B
DDOT Rail Map

Site

NORTH

The River School
Washington, DC



No Restriction

Two Hour Parking Limit in Zone 3 7AM-8:30 PM Monday—Friday Zone3 Permit Holders Exempt

No Standing or Parking 7-9:30 AM Monday—Friday

No Standing or Parking 4-6:30 PM Monday—Friday

No Parking

Figure 8
Parking Restrictions

NORTH

The River School
Washington, DC

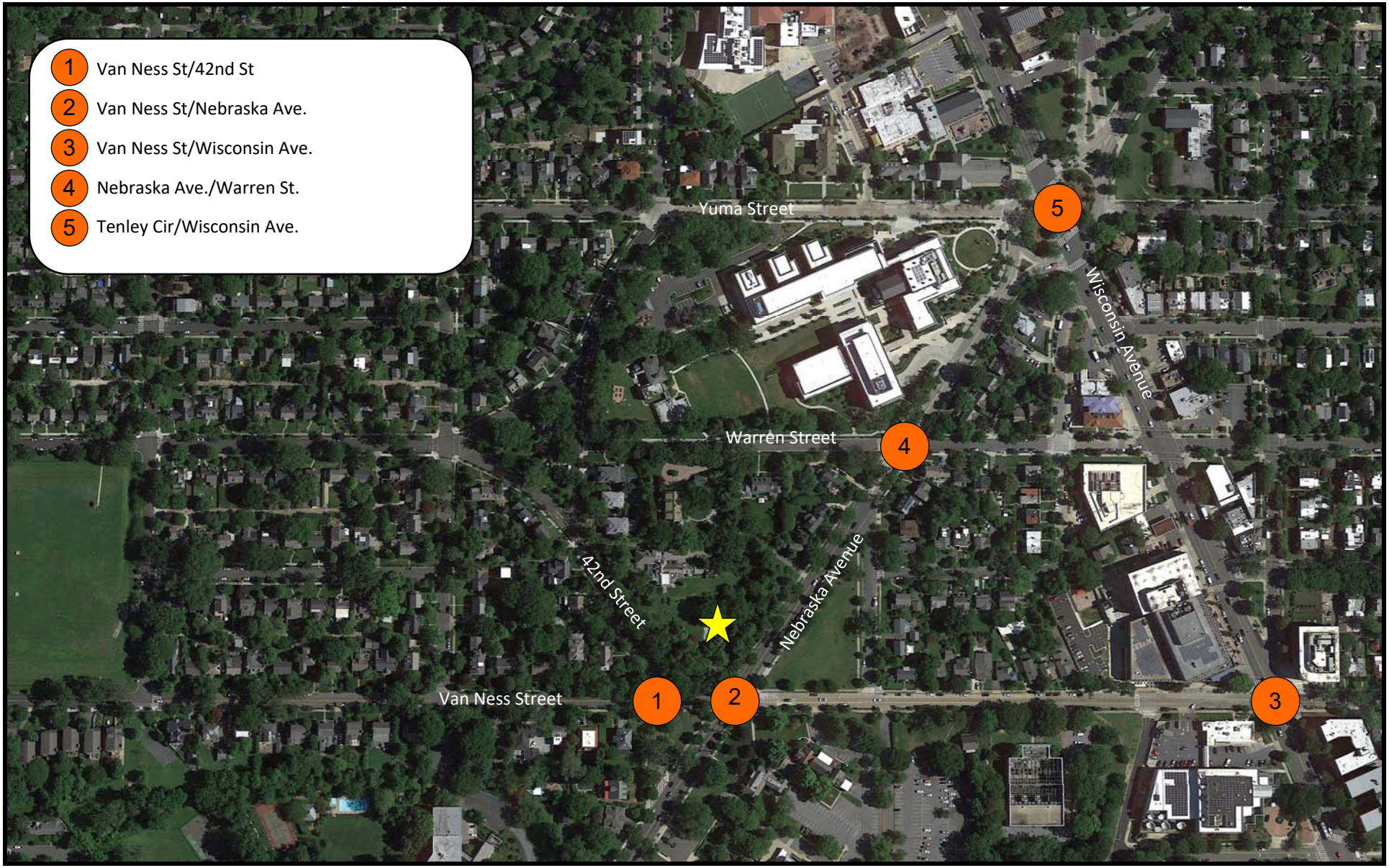


Figure 9
Proposed Study Area

Site

NORTH

The River School
Washington, DC

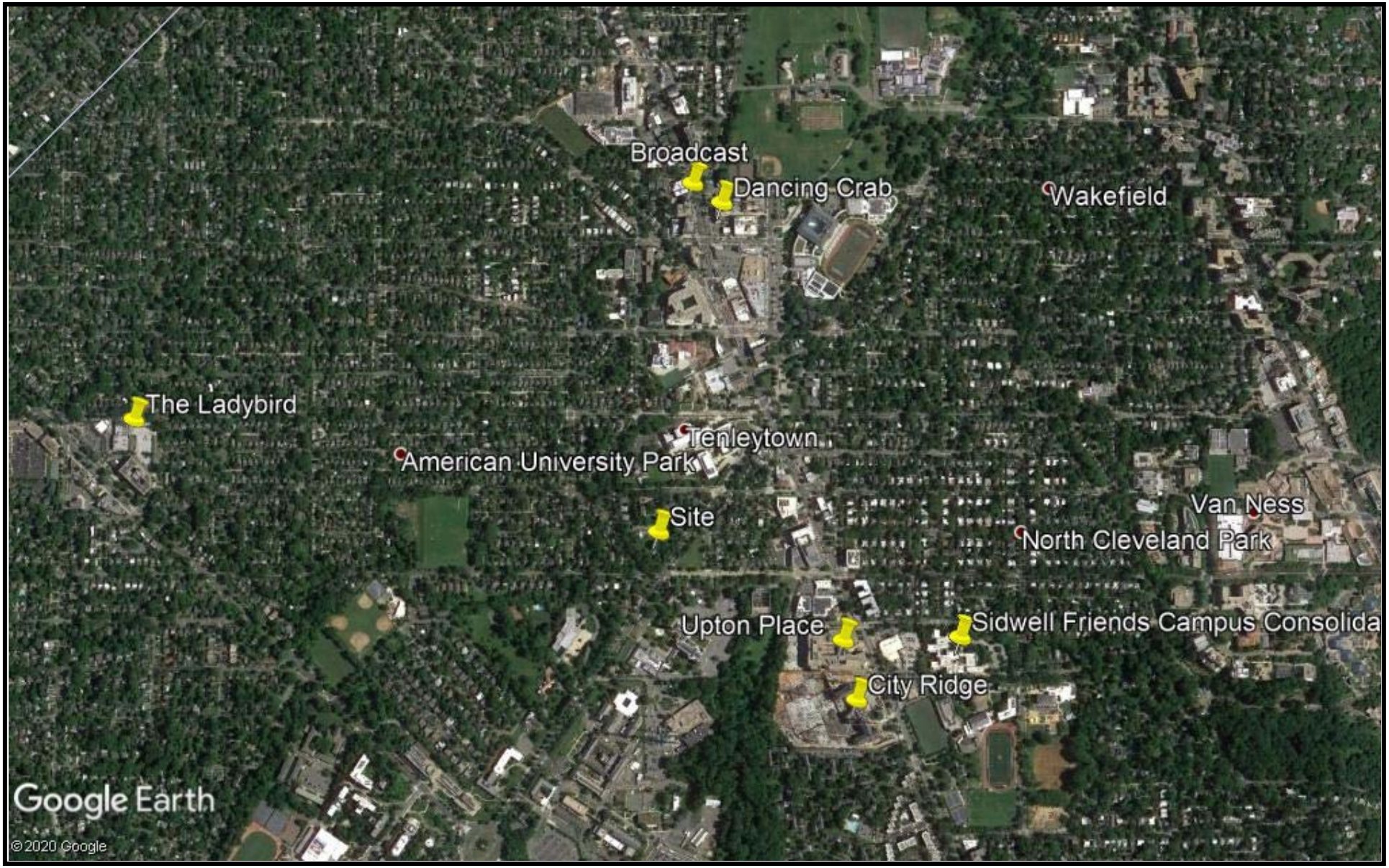


Figure 10
Pipeline Locations

NORTH

The River School
Washington, DC

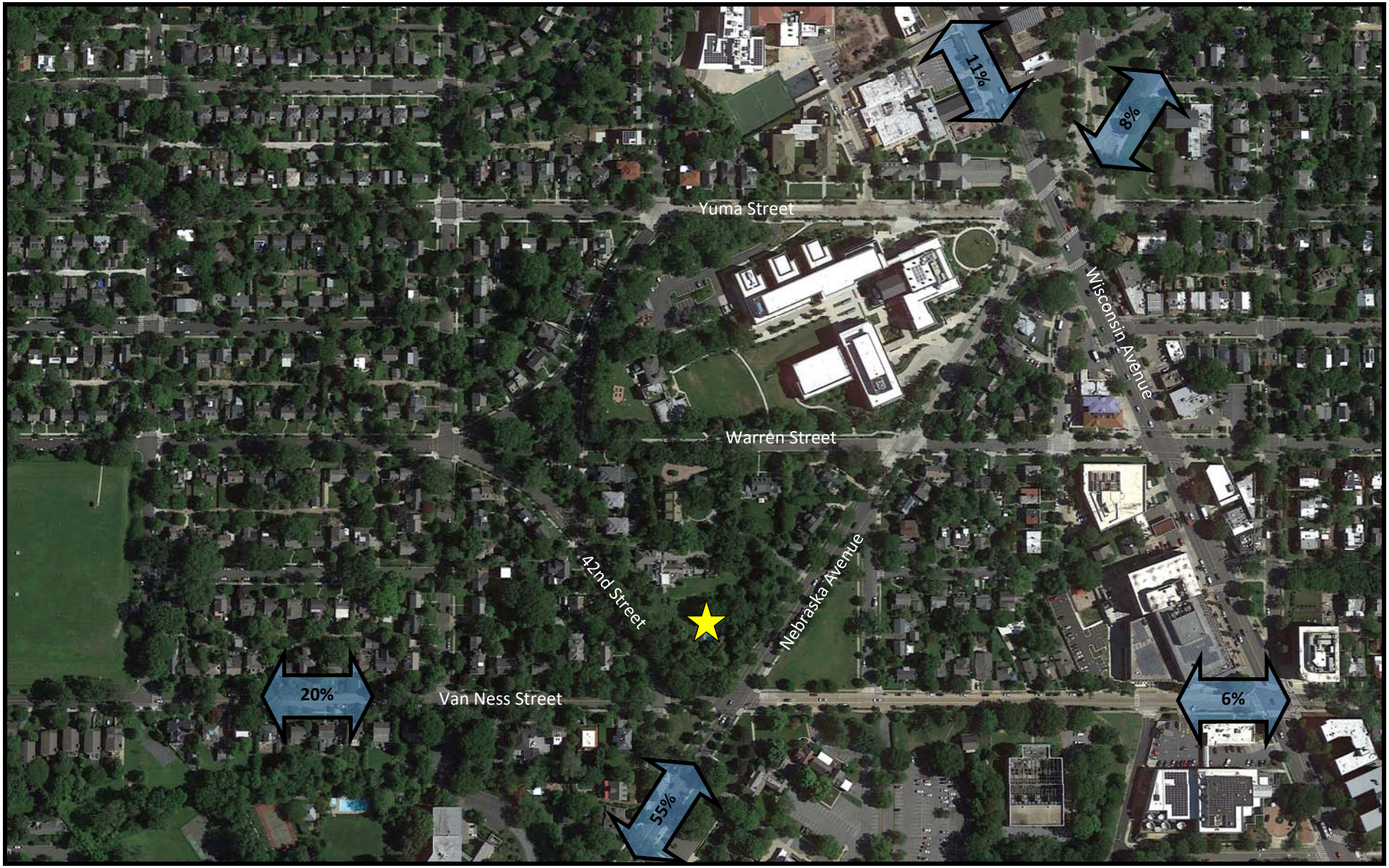
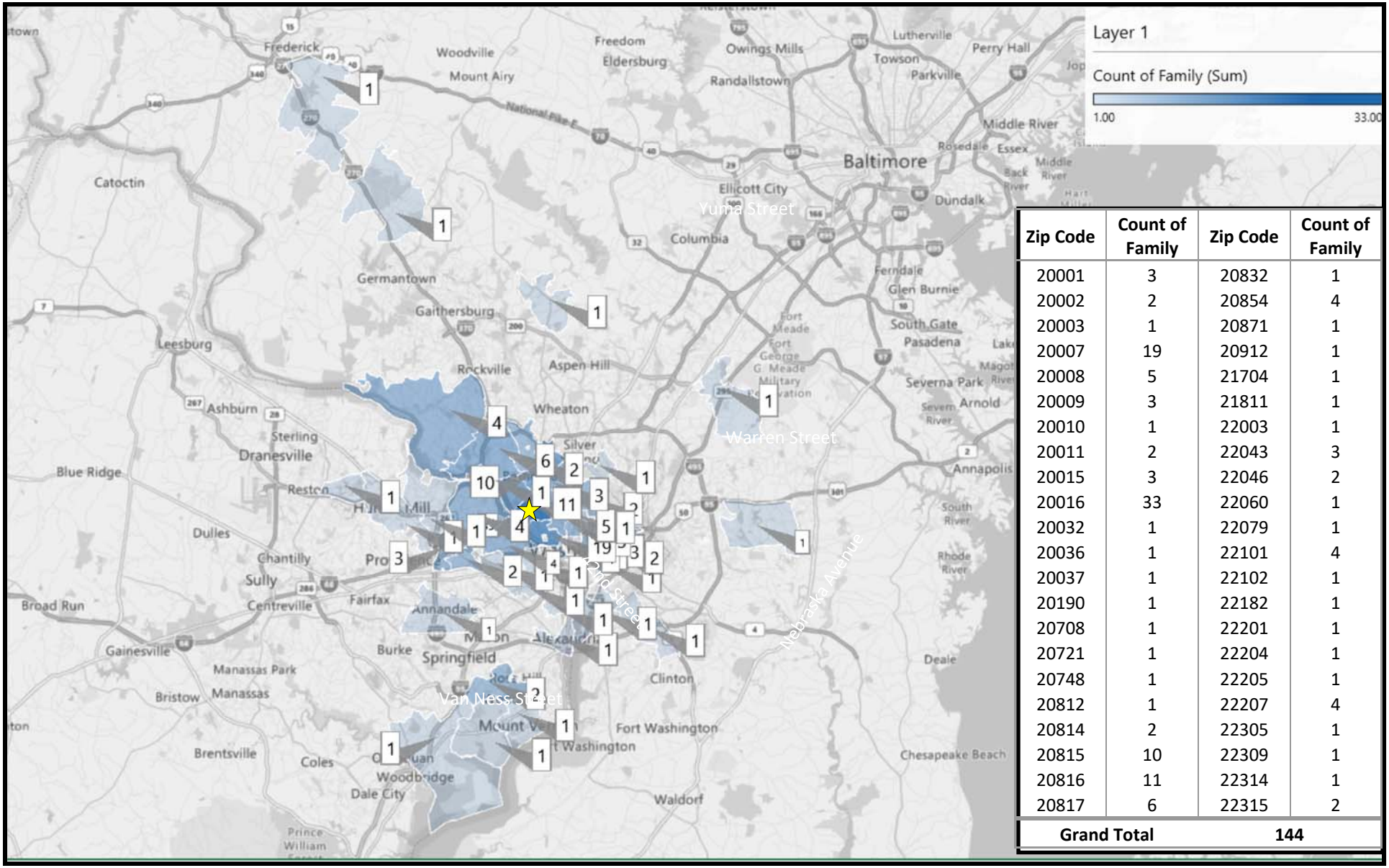


Figure 11A
Proposed Site Trip Distributions

Site

NORTH

The River School
Washington, DC



Zip Code	Count of Family	Zip Code	Count of Family
20001	3	20832	1
20002	2	20854	4
20003	1	20871	1
20007	19	20912	1
20008	5	21704	1
20009	3	21811	1
20010	1	22003	1
20011	2	22043	3
20015	3	22046	2
20016	33	22060	1
20032	1	22079	1
20036	1	22101	4
20037	1	22102	1
20190	1	22182	1
20708	1	22201	1
20721	1	22204	1
20748	1	22205	1
20812	1	22207	4
20814	2	22305	1
20815	10	22309	1
20816	11	22314	1
20817	6	22315	2
Grand Total		**144**	

Figure 11B
Student Zip Code Locations

Site

NORTH

The River School
Washington, DC

Jami L. Milanovich

From: Streagle, Andrew <astreagle@amtengineering.com>
Sent: Monday, November 16, 2020 11:15 AM
To: Ertem, Munevver (DDOT)
Cc: Chuko, Michael (DDOT); Smith, Aaron; Just, Daniel (DDOT)
Subject: RE: Heritage tree moving coordination question

Thank you Vera! This is helpful. We have worked with Chris before on other projects.

We'll keep you all informed as the project moves along.

Andy

Andrew Streagle RLA, ISA
Senior Project Manager

P 301-881-2545 | **D** 301-545-2614 | **C** 410-215-0683
W www.amtengineering.com

From: Ertem, Munevver (DDOT) <munevver.ertem@dc.gov>
Sent: Friday, November 13, 2020 5:17 PM
To: Streagle, Andrew <astreagle@amtengineering.com>
Cc: Chuko, Michael (DDOT) <michael.chuko@dc.gov>; Smith, Aaron <ASMITH@amtengineering.com>; Just, Daniel (DDOT) <daniel.just@dc.gov>
Subject: Re: Heritage tree moving coordination question

Hi Andy,
You can find information and sample letters to provide for Heritage Tree Relocation on our hub site:

https://ddot-urban-forestry-dcgis.hub.arcgis.com/pages/tree-preservation

protection measures, arborist narrative, commitment letter (see below).

Any tree with a circumference of 100 inches
Protection Amendment Act of 2016. Howeve

Many complicated projects have benefited f
field arborist. This may include, but not limite
architect, general contractor, landscape arch
documenting that they will be contacted to s
and to discuss onsite tree preservation.

Fannie Mae project Tree mover contacts:

Paul Cox: paulcox@treemover.com
Chris Cowles: CCowles@wetlands.com 301-370-9656

You can see an article on our hub site, next to the sample letters , "in The News' box.

Please take a look at these sites, contact Chris Cowles and Paul Cox for a consultation. Please let me know if you have any questions.

We are looking forward to see another successful tree relocation in the District.

Thanks,
Vera

Munevver Ertem
Supervisory Urban Forester
Urban Forestry Division
District Department of Transportation
55 M Street SE, Suite 400
Washington, DC 20003
o. 202.671.5133
m. 202.507.3422
f. 202.671.5103
e. munevver.ertem@dc.gov
w. ddottrees.com
Please call 311 or visit https://311.dc.gov/ for service

From: Streagle, Andrew <astreagle@amtengineering.com>
Sent: Friday, November 13, 2020 3:27 PM
To: Ertem, Munevver (DDOT) <munevver.ertem@dc.gov>
Cc: Chuko, Michael (DDOT) <michael.chuko@dc.gov>; Smith, Aaron <ASMITH@amtengineering.com>; Just, Daniel (DDOT) <daniel.just@dc.gov>
Subject: RE: Heritage tree moving coordination question

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Hi Vera,

We wanted to follow up about this project and let you all know that it is moving forward. As such, we wanted to get an idea of the level of confidence on the UFD side for being able to move the two trees we discussed on the site (black walnut and tulip poplar). Are there any things we can get working on as far as the process for getting the tree moves approved? Also are there any other things we should be aware of now?

One final thing, you all had mentioned that you might have some information on who moved the trees at Fannie Mae. Any insight you can offer is greatly appreciated.

Thank you in advance for your continued help. Hope you are doing well!

Andy

Andrew Streagle RLA, ISA
Senior Project Manager

P 301-881-2545 | **D** 301-545-2614 | **C** 410-215-0683
W www.amtengineering.com

From: Ertem, Munevver (DDOT) <munevver.ertem@dc.gov>
Sent: Tuesday, August 18, 2020 11:55 AM
To: Streagle, Andrew <astreagle@amtengineering.com>
Cc: Chuko, Michael (DDOT) <michael.chuko@dc.gov>; Smith, Aaron <ASMITH@amtengineering.com>; Just, Daniel (DDOT) <daniel.just@dc.gov>
Subject: Re: Heritage tree moving coordination question

See you then. Let's meet and see the tree if it is a good candidate to remove it first.

Thanks,
Vera
Munevver Ertem
Supervisory Urban Forester
Urban Forestry Division
District Department of Transportation
55 M Street SE, Suite 400
Washington, DC 20003
o. 202.671.5133
m. 202.507.3422
f. 202.671.5103
e. munevver.ertem@dc.gov
w. ddot.dc.gov
https://urban-forestry-dcgis.opendata.arcgis.com/

Please call 311 or visit https://311.dc.gov/ for service

On Aug 18, 2020, at 11:52 AM, Streagle, Andrew <astreagle@amtengineering.com> wrote:

CAUTION: This email originated from outside of the DC Government. Do not click on links or open attachments unless you recognize the sender and know that the content is safe. If you believe that this email is suspicious, please forward to phishing@dc.gov for additional analysis by OCTO Security Operations Center (SOC).

Hi Vera,

10:00 AM tomorrow would be great! I will let folks on our end know.

Do you need any additional information right now?

Thank you!

Andy

Andrew Streagle RLA, ISA
Senior Project Manager

P 301-881-2545 | **D** 301-545-2614 | **C** 410-215-0683
W www.amtengineering.com

From: Ertem, Munevver (DDOT) <munevver.ertem@dc.gov>
Sent: Tuesday, August 18, 2020 11:50 AM
To: Streagle, Andrew <astreagle@amtengineering.com>
Cc: Chuko, Michael (DDOT) <michael.chuko@dc.gov>; Smith, Aaron <ASMITH@amtengineering.com>; Just, Daniel (DDOT) <daniel.just@dc.gov>
Subject: Re: Heritage tree moving coordination question

Hi Andrew,
Would 10:00 am work for you?
I am available between 8:00 am and 12:30 pm

Thanks,
Vera
Munevver Ertem
Supervisory Urban Forester
Urban Forestry Division
District Department of Transportation
55 M Street SE, Suite 400
Washington, DC 20003
o. 202.671.5133
m. 202.507.3422
f. 202.671.5103
e. munevver.ertem@dc.gov
w. ddot.dc.gov
https://urban-forestry-dcgis.opendata.arcgis.com/

Please call 311 or visit https://311.dc.gov/ for service

On Aug 18, 2020, at 11:46 AM, Streagle, Andrew <astreagle@amtengineering.com> wrote:

CAUTION: This email originated from outside of the DC Government. Do not click on links or open attachments unless you recognize the sender and know that the content is safe. If you believe that this email is suspicious, please forward to phishing@dc.gov for additional analysis by OCTO Security Operations Center (SOC).

Morning Vera & Michael,

We wanted to confirm if tomorrow morning will work for a site meeting. Please let us know a preferred time. Thanks!

Andy

Andrew Streagle RLA, ISA
Senior Project Manager

P 301-881-2545 | **D** 301-545-2614 | **C** 410-215-0683
W www.amtengineering.com

From: Streagle, Andrew
Sent: Monday, August 17, 2020 1:33 PM
To: Chuko, Michael (DDOT) <michael.chuko@dc.gov>
Cc: Ertem, Munevver (DDOT) <munevver.ertem@dc.gov>; Smith, Aaron <ASMITH@amtengineering.com>; Just, Daniel (DDOT) <daniel.just@dc.gov>
Subject: RE: Heritage tree moving coordination question

Hi All:

Our architect partners can do Wednesday between 9 and 11 (earlier end is preferred). Will that work with you all?

Andy

Andrew Streagle RLA, ISA
Senior Project Manager

P 301-881-2545 | **D** 301-545-2614 | **C** 410-215-0683
W www.amtengineering.com

From: Chuko, Michael (DDOT) <michael.chuko@dc.gov>
Sent: Friday, August 14, 2020 12:44 PM
To: Streagle, Andrew <astreagle@amtengineering.com>
Cc: Ertem, Munevver (DDOT) <munevver.ertem@dc.gov>; Smith, Aaron <ASMITH@amtengineering.com>; Just, Daniel (DDOT) <daniel.just@dc.gov>
Subject: Re: Heritage tree moving coordination question

Wednesday or Friday next week would be good for me.

Regards,
Michael Chuko
Arborist | DDOT Urban Forestry Division
o. 202-671-5133
m. 202-527-4149
e. michael.chuko@dc.gov
w. ddot.dc.gov

> On Aug 14, 2020, at 11:37 AM, Streagle, Andrew <astreagle@amtengineering.com> wrote:

CAUTION: This email originated from outside of the DC Government. Do not click on links or open attachments unless you recognize the sender and know that the content is safe. If you believe that this email is suspicious, please forward to phishing@dc.gov for additional analysis by OCTO Security Operations Center (SOC).

Good Morning Vera,

The site is at 4220 Nebraska Avenue, NW (in yellow below).

I understand we are looking at moving two trees. As to the destination, it would be off-site, potentially onto the City owned parcel (800) across the street (bounded by Nebraska, Van Ness and 41st).

What day and time will work best for you all? I am booked up on Thursday 8/20 next week, but am open any other day and time.

Andy

<image003.jpg>

Andrew Streagle RLA, ISA
Senior Project Manager

P 301-881-2545 | **D** 301-545-2614 | **C** 410-215-0683
W www.amtengineering.com

From: Ertem, Munevver (DDOT) <munevver.ertem@dc.gov>
Sent: Thursday, August 13, 2020 10:04 AM
To: Streagle, Andrew <astreagle@amtengineering.com>
Cc: Chuko, Michael (DDOT) <michael.chuko@dc.gov>; Smith, Aaron <ASMITH@amtengineering.com>; Just, Daniel (DDOT) <daniel.just@dc.gov>
Subject: Re: Heritage tree moving coordination question

Good morning Andrew,
Could you send us the address, please? We can meet on site to inspect the tree, where it will be removed. I assume it will be on the same lot.

Thanks,
Vera
Munevver Ertem
Supervisory Urban Forester
Urban Forestry Division
District Department of Transportation
55 M Street SE, Suite 400
Washington, DC 20003
o. 202.671.5133
m. 202.507.3422
f. 202.671.5103
e. munevver.ertem@dc.gov

w. ddot.dc.gov
https://urban-forestry-dcgis.opendata.arcgis.com/

Please call 311 or visit https://311.dc.gov/ for service

On Aug 13, 2020, at 10:01 AM, Streagle, Andrew <astreagle@amtengineering.com> wrote:

CAUTION: This email originated from outside of the DC Government. Do not click on links or open attachments unless you recognize the sender and know that the content is safe. If you believe that this email is suspicious, please forward to phishing@dc.gov for additional analysis by OCTO Security Operations Center (SOC).

Good Morning Michael & Munevver,

We wanted to check in with you about setting up a time to meet and talk about the tree moving process. Thanks!

Andy

Andrew Streagle RLA, ISA
Senior Project Manager

P 301-881-2545 | **D** 301-545-2614 | **C** 410-215-0683
W www.amtengineering.com

From: Streagle, Andrew
Sent: Monday, August 10, 2020 11:31 AM
To: Chuko, Michael (DDOT) <michael.chuko@dc.gov>; Ertem, Munevver (DDOT) <munevver.ertem@dc.gov>
Cc: Smith, Aaron <ASMITH@amtengineering.com>
Subject: RE: Heritage tree moving coordination question

Good Morning Michael & Munevver,

As you can see below, we have a project where the owner is considering moving some heritage trees. We are looking for some guidance on where to start coordination of the process and what it entails. We look forward to working with you. Thank you in advance for your help!

Andy

Andrew Streagle RLA, ISA
Senior Project Manager

P 301-881-2545 | **D** 301-545-2614 | **C** 410-215-0683
W www.amtengineering.com

From: Babra, Ranjit (DDOT) <ranjit.babra@dc.gov>
Sent: Monday, August 10, 2020 11:26 AM
To: Streagle, Andrew <astreagle@amtengineering.com>; Smith, Aaron <ASMITH@amtengineering.com>
Cc: Chuko, Michael (DDOT) <michael.chuko@dc.gov>; Ertem, Munevver (DDOT) <munevver.ertem@dc.gov>
Subject: Re: Heritage tree moving coordination question

Hello Andrew—thank s for the heads up. I have copied the arborists whom exercise this area.

Good luck,

Thanks,

Ranjit
202.507.2505

Sent from my telephone

> On Aug 10, 2020, at 8:21 AM, Streagle, Andrew <astreagle@amtengineering.com> wrote:
>
> **CAUTION:** This email originated from outside of the DC Government. Do not click on links or open attachments unless you recognize the sender and know that the content is safe. If you believe that this email is suspicious, please forward to phishing@dc.gov for additional analysis by OCTO Security Operations Center (SOC).
>
> Good Morning Ranjit,
>
> We are working on a project where the owner is considering moving some heritage trees. Is there a process to go through to move these big trees?

The property is near AU in NW, but I wasn't sure if that was your area or someone else's. I figured you or someone else from the department would want to do a site visit to start.

Let me know how we move forward from here. Thanks and hope you have been doing well!

Andy

Andrew Streagle RLA, ISA
Senior Project Manager

P 301-881-2545 | **D** 301-545-2614 | **C** 410-215-0683
W www.amtengineering.com

For the latest information on the District Government's response to COVID-19 (Coronavirus), please visit coronavirus.dc.gov.

APPENDIX B
TRAFFIC COUNT DATA

Intersection #1

Wells + Associates, Inc.

McLean, Virginia

Turning Movement Count - All Vehicles

PROJECT: Georgetown Day School
W+A JOB NO: 6348
INTERSECTION: River Rd. & 42nd Street
LOCATION: Washington, DC

DATE: 11/19/2014
DAY: Wednesday
WEATHER: clear
COUNTED BY: Howard
INPUTED BY: agan

SOUTHBOUND ROAD: 42nd Street NW
NORTHBOUND ROAD: 42nd Street NW
WESTBOUND ROAD: River Road NW
EASTBOUND ROAD: River Road NW

Time	Eastbound 42nd Street NW					Southbound River Road NW					Westbound 42nd Street NW					Northbound River Road NW					East & West	North & South	Total
Period	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF	Right	Thru	Left	Total	PHF			
AM 15 Minute Volumes																							
7:00 AM - 7:15 AM	15	65	0	80		0	21	4	25		0	0	4	4		0	17	7	24		84	49	133
7:15 AM - 7:30 AM	16	62	0	78		1	23	1	25		5	0	1	6		0	12	7	19		84	44	128
7:30 AM - 7:45 AM	13	64	0	77		0	54	4	58		5	0	3	8		0	35	8	43		85	101	186
7:45 AM - 8:00 AM	16	57	0	73		0	39	4	43		5	0	3	8		0	31	9	40		81	83	164
8:00 AM - 8:15 AM	13	61	2	76		3	47	5	55		7	0	2	9		1	29	10	40		85	95	180
8:15 AM - 8:30 AM	19	50	0	69		0	41	3	44		4	0	4	8		0	37	14	51		77	95	172
8:30 AM - 8:45 AM	12	61	0	73		1	46	1	48		1	0	12	13		0	21	17	38		86	86	172
8:45 AM - 9:00 AM	19	53	2	74		2	16	6	24		8	0	4	12		1	22	10	33		86	57	143
9:00 AM - 9:15 AM	9	55	0	64		2	19	3	24		7	0	6	13		0	21	14	35		77	59	136
9:15 AM - 9:30 AM	12	38	0	50		3	20	1	24		5	0	4	9		0	22	9	31		59	55	114
9:30 AM - 9:45 AM	8	29	1	38		0	18	0	18		2	0	1	3		0	20	4	24		41	42	83
9:45 AM - 10:00 AM	9	47	0	56		1	19	4	24		3	0	3	6		1	14	8	23		62	47	109
Total	161	642	5	808		13	363	36	412		52	0	47	99		3	281	117	401		907	813	1720
AM One Hour Volumes																							
7:00 AM - 8:00 AM	60	248	0	308	0.96	1	137	13	151	0.65	15	0	11	26	0.81	0	95	31	126	0.73	334	277	611
7:15 AM - 8:15 AM	58	244	2	304	0.97	4	163	14	181	0.78	22	0	9	31	0.86	1	107	34	142	0.83	335	323	658
7:30 AM - 8:30 AM	**61**	**232**	**2**	**295**	**0.96**	**3**	**181**	**16**	**200**	**0.86**	**21**	**0**	**12**	**33**	**0.92**	**1**	**132**	**41**	**174**	**0.85**	**328**	**374**	**702**
7:45 AM - 8:45 AM	60	229	2	291	0.96	4	173	13	190	0.86	17	0	21	38	0.73	1	118	50	169	0.83	329	359	688
8:00 AM - 9:00 AM	63	225	4	292	0.96	6	150	15	171	0.78	20	0	22	42	0.81	2	109	51	162	0.79	334	333	667
8:15 AM - 9:15 AM	59	219	2	280	0.95	5	122	13	140	0.73	20	0	26	46	0.88	1	101	55	157	0.77	326	297	623
8:30 AM - 9:30 AM	52	207	2	261	0.88	8	101	11	120	0.63	21	0	26	47	0.90	1	86	50	137	0.90	308	257	565
8:45 AM - 9:45 AM	48	175	3	226	0.76	7	73	10	90	0.94	22	0	15	37	0.71	1	85	37	123	0.88	263	213	476
9:00 AM - 10:00 AM	38	169	1	208	0.81	6	76	8	90	0.94	17	0	14	31	0.60	1	77	35	113	0.81	239	203	442
PM 15 Minute Volumes																							
2:00 PM - 2:15 PM	14	36	0	50		0	19	4	23		2	0	7	9		0	15	12	27		59	50	109
2:15 PM - 2:30 PM	9	28	0	37		1	24	3	28		7	0	5	12		0	22	16	38		49	66	115
2:30 PM - 2:45 PM	6	32	2	40		2	25	1	28		10	0	10	20		0	25	12	37		60	65	125
2:45 PM - 3:00 PM	12	32	2	46		0	38	0	38		6	0	7	13		1	20	18	39		59	77	136
3:00 PM - 3:15 PM	9	23	0	32		2	36	8	46		9	0	12	21		1	26	16	43		53	89	142
3:15 PM - 3:30 PM	15	27	0	42		1	42	5	48		7	0	7	14		0	30	12	42		56	90	146
3:30 PM - 3:45 PM	15	40	1	56		0	32	3	35		7	0	7	14		0	26	16	42		70	77	147
3:45 PM - 4:00 PM	12	41	1	54		1	40	7	48		7	0	15	22		0	19	17	36		76	84	160
4:00 PM - 4:15 PM	10	32	0	42		2	29	4	35		9	0	9	18		0	25	18	43		60	78	138
4:15 PM - 4:30 PM	10	40	1	51		2	27	2	31		9	0	7	16		0	19	26	45		67	76	143
4:30 PM - 4:45 PM	7	33	1	41		2	24	2	28		8	0	4	12		1	21	19	41		53	69	122
4:45 PM - 5:00 PM	10	39	0	49		0	26	2	28		10	0	11	21		0	33	15	48		70	76	146
5:00 PM - 5:15 PM	16	47	2	65		0	44	3	47		9	0	17	26		0	28	20	48		91	95	186
5:15 PM - 5:30 PM	10	33	0	43		1	32	3	36		5	0	5	10		0	23	17	40		53	76	129
5:30 PM - 5:45 PM	14	37	1	52		2	43	0	45		8	0	3	11		1	27	15	43		63	88	151
5:45 PM - 6:00 PM	16	50	0	66		0	29	5	34		2	0	5	7		0	27	18	45		73	79	152
6:00 PM - 6:15 PM	15	54	0	69		1	36	2	39		3	0	5	8		0	22	14	36		77	75	152
6:15 PM - 6:30 PM	7	55	0	62		0	41	2	43		1	0	2	3		0	17	22	39		65	82	147
6:30 PM - 6:45 PM	14	42	0	56		0	29	4	33		5	0	6	11		1	22	20	43		67	76	143
6:45 PM - 7:00 PM	16	49	2	67		0	31	0	31		2	0	12	14		0	15	21	36		81	67	148
Total	145	511	7	663		10	391	29	430		71	0	86	157		3	279	225	507		820	937	1757
PM One Hour Volumes																							
2:00 PM - 3:00 PM	41	128	4	173	0.87	3	106	8	117	0.77	25	0	29	54	0.68	1	82	58	141	0.90	227	258	485
2:15 PM - 3:15 PM	36	115	4	155	0.84	5	123	12	140	0.76	32	0	34	66	0.79	2	93	62	157	0.91	221	297	518
2:30 PM - 3:30 PM	42	114	4	160	0.87	5	141	14	160	0.83	32	0	36	68	0.81	2	101	58	161	0.94	228	321	549
2:45 PM - 3:45 PM	51	122	3	176	0.79	3	148	16	167	0.87	29	0	33	62	0.74	2	102	62	166	0.97	238	333	571
3:00 PM - 4:00 PM	**51**	**131**	**2**	**184**	**0.82**	**4**	**150**	**23**	**177**	**0.92**	**30**	**0**	**41**	**71**	**0.81**	**1**	**101**	**61**	**163**	**0.95**	**255**	**340**	**595**
3:15 PM - 4:15 PM	52	140	2	194	0.87	4	143	19	166	0.86	30	0	38	68	0.77	0	100	63	163	0.95	262	329	591
3:30 PM - 4:30 PM	47	153	3	203	0.91	5	128	16	149	0.78	32	0	38	70	0.80	0	89	77	166	0.92	273	315	588
3:45 PM - 4:45 PM	39	146	3	188	0.87	7	120	15	142	0.74	33	0	35	68	0.77	1	84	80	165	0.92	256	307	563
4:00 PM - 5:00 PM	37	144	2	183	0.90	6	106	10	122	0.87	36	0	31	67	0.80	1	98	78	177	0.92	250	299	549
4:15 PM - 5:15 PM	43	159	4	206	0.79	4	121	9	134	0.71	36	0	39	75	0.72	1	101	80	182	0.95	281	316	597
4:30 PM - 5:30 PM	43	152	3	198	0.76	3	126	10	139	0.74	32	0	37	69	0.66	1	105	71	177	0.92	267	316	583
4:45 PM - 5:45 PM	50	156	3	209	0.80	3	145	8	156	0.83	32	0	36	68	0.65	1	111	67	179	0.93	277	335	612
5:00 PM - 6:00 PM	**56**	**167**	**3**	**226**	**0.86**	**3**	**148**	**11**	**162**	**0.86**	**24**	**0**	**30**	**54**	**0.52**	**1**	**105**	**70**	**176**	**0.92**	**280**	**338**	**618**
5:15 PM - 6:15 PM	55	174	1	230	0.83	4	140	10	154	0.86	18	0	18	36	0.82	1	99	64	164	0.91	266	318	584
5:30 PM - 6:30 PM	52	196	1	249	0.90	3	149	9	161	0.89	14	0	15	29	0.66	1	93	69	163	0.91	278	324	602
5:45 PM - 6:45 PM	52	201	0	253	0.92	1	135	13	149	0.87	11	0	18	29	0.66	1	88	74	163	0.91	282	312	594
6:00 PM - 7:00 PM	52	200	2	254	0.92	1	137	8	146	0.85	11	0	25	36	0.64	1	76	77	154	0.90	290	300	590

Intersection #1

Wells + Associates, Inc.

McLean, Virginia

Turning Movement Count - Bicycles

PROJECT:	Georgetown Day School	**DATE:**	11/19/2014	**SOUTHBOUND ROAD:**	42nd Street NW
W+A JOB NO:	6348	**DAY:**	Wednesday	**NORTHBOUND ROAD:**	42nd Street NW
INTERSECTION:	River Rd. & 42nd Street	**WEATHER:**	clear	**WESTBOUND ROAD:**	River Road NW
LOCATION:	Washington, DC	**COUNTED BY:**	Howard	**EASTBOUND ROAD:**	River Road NW
		INPUTED BY:	agan		

Time	Eastbound 42nd Street NW				Southbound River Road NW				Westbound 42nd Street NW				Northbound River Road NW				East & West	North & South	Total
Period	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total			
AM 15 Minute Volumes																			
7:00 AM - 7:15 AM		1		1				0		1		1				0	2	0	2
7:15 AM - 7:30 AM		1		1				0				0				0	1	0	1
7:30 AM - 7:45 AM				0		2		2				0				0	0	2	2
7:45 AM - 8:00 AM				0				0				0				0	0	0	0
8:00 AM - 8:15 AM		1		1				0		1		1				0	2	0	2
8:15 AM - 8:30 AM				0				0				0				0	0	0	0
8:30 AM - 8:45 AM		1		1				0				0				0	1	0	1
8:45 AM - 9:00 AM				0				0				0				0	0	0	0
9:00 AM - 9:15 AM		1		1				0				0				0	1	0	1
9:15 AM - 9:30 AM				0		1		1				0				0	0	1	1
9:30 AM - 9:45 AM				0				0				0		1		1	0	1	1
9:45 AM - 10:00 AM				0				0				0				0	0	0	0
Total	0	5	0	5	0	3	0	3	0	2	0	2	0	1	0	1	7	4	11
AM One Hour Volumes																			
7:00 AM - 8:00 AM	0	2	0	2	0	2	0	2	0	1	0	1	0	0	0	0	3	2	5
7:15 AM - 8:15 AM	0	2	0	2	0	2	0	2	0	1	0	1	0	0	0	0	3	2	5
7:30 AM - 8:30 AM	**0**	**1**	**0**	**1**	**0**	**2**	**0**	**2**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**2**	**2**	**4**
7:45 AM - 8:45 AM	0	2	0	2	0	0	0	0	0	1	0	1	0	0	0	0	3	0	3
8:00 AM - 9:00 AM	0	2	0	2	0	0	0	0	0	1	0	1	0	0	0	0	3	0	3
8:15 AM - 9:15 AM	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
8:30 AM - 9:30 AM	0	2	0	2	0	1	0	1	0	0	0	0	0	0	0	0	2	1	3
8:45 AM - 9:45 AM	0	1	0	1	0	1	0	1	0	0	0	0	0	1	0	1	1	2	3
9:00 AM - 10:00 AM	0	1	0	1	0	1	0	1	0	0	0	0	0	1	0	1	1	2	3
PM 15 Minute Volumes																			
2:00 PM - 2:15 PM		1		1				0		1		1		1		1	2	1	3
2:15 PM - 2:30 PM				0				0				0				0	0	0	0
2:30 PM - 2:45 PM	1			1				0				0				0	1	0	1
2:45 PM - 3:00 PM				0				0				0				0	0	0	0
3:00 PM - 3:15 PM				0				0				0				0	0	0	0
3:15 PM - 3:30 PM				0				0				0				0	0	0	0
3:30 PM - 3:45 PM				0				0				0		1	1	2	0	2	2
3:45 PM - 4:00 PM	1			1				0				0				0	1	0	1
4:00 PM - 4:15 PM				0				0			1	1				0	1	0	1
4:15 PM - 4:30 PM				0				0				0				0	0	0	0
4:30 PM - 4:45 PM				0		1		1				0				0	0	1	1
4:45 PM - 5:00 PM				0				0				0				0	0	0	0
5:00 PM - 5:15 PM				0				0				0		1		1	0	1	1
5:15 PM - 5:30 PM				0				0			1	1				0	1	0	1
5:30 PM - 5:45 PM				0				0		2		2		1		1	2	1	3
5:45 PM - 6:00 PM				0				0				0				0	0	0	0
6:00 PM - 6:15 PM				0				0		1		1				0	1	0	1
6:15 PM - 6:30 PM				0			1	1				0				0	0	1	1
6:30 PM - 6:45 PM				0				0				0				0	0	0	0
6:45 PM - 7:00 PM				0				0				0				0	0	0	0
Total	2	1	0	0	0	1	1	2	0	4	2	5	0	4	1	2	5	4	9
PM One Hour Volumes																			
2:00 PM - 3:00 PM	1	1	0	2	0	0	0	0	0	1	0	1	0	1	0	1	3	1	4
2:15 PM - 3:15 PM	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
2:30 PM - 3:30 PM	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
2:45 PM - 3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	2	2
3:00 PM - 4:00 PM	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**2**	**1**	**2**	**3**
3:15 PM - 4:15 PM	1	0	0	1	0	0	0	0	0	0	1	1	0	1	1	2	2	2	4
3:30 PM - 4:30 PM	1	0	0	1	0	0	0	0	0	0	1	1	0	1	1	2	2	2	4
3:45 PM - 4:45 PM	1	0	0	1	0	1	0	1	0	0	1	1	0	0	0	0	2	1	3
4:00 PM - 5:00 PM	0	0	0	0	0	1	0	1	0	0	1	1	0	0	0	0	1	1	2
4:15 PM - 5:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	0	2	2
4:30 PM - 5:30 PM	0	0	0	0	0	1	0	1	0	0	1	1	0	1	0	1	1	2	3
4:45 PM - 5:45 PM	0	0	0	0	0	0	0	0	0	2	1	3	0	2	0	2	3	2	5
5:00 PM - 6:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**3**	**0**	**2**	**0**	**2**	**3**	**2**	**5**
5:15 PM - 6:15 PM	0	0	0	0	0	0	0	0	0	3	1	4	0	1	0	1	4	1	5
5:30 PM - 6:30 PM	0	0	0	0	0	0	1	1	0	3	0	3	0	1	0	1	3	2	5
5:45 PM - 6:45 PM	0	0	0	0	0	0	1	1	0	1	0	1	0	0	0	0	1	1	2
6:00 PM - 7:00 PM	0	0	0	0	0	0	1	1	0	1	0	1	0	0	0	0	1	1	2

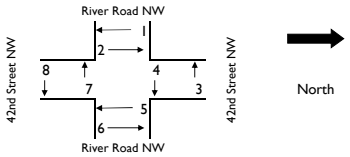
Intersection #1

Wells + Associates, Inc.

McLean, Virginia

Pedestrian Volume Survey

PROJECT: Georgetown Day School
W+A JOB NO: 6348
INTERSECTION: River Rd. & 42nd Street
LOCATION: Washington, DC
DATE: 11/19/2014
DAY: Wednesday
WEATHER: clear
COUNTED BY: Howard
INPUTED BY: agan



Time Period	Movement 1	2	3	4	5	6	7	8	1 + 2	3 + 4	5 + 6	7+ 8	Total
AM 15 Minute Volumes													
7:00 AM - 7:15 AM	1		1	3	1		1	5					
7:15 AM - 7:30 AM		1			2	1	1	5					
7:30 AM - 7:45 AM		1	5	1	1	1	2	4					
7:45 AM - 8:00 AM	2	3	3	3	2	1	4	6					
8:00 AM - 8:15 AM	3	2	8	10	2	1		22					
8:15 AM - 8:30 AM	2	7	5	7				20					
8:30 AM - 8:45 AM	6	3		6	7			11					
8:45 AM - 9:00 AM	3	1	2	5			2	10					
9:00 AM - 9:15 AM	4	3	5	3			2	8					
9:15 AM - 9:30 AM	2	1	2	4	1		1	6					
9:30 AM - 9:45 AM			1	2	1			2					
9:45 AM - 10:00 AM				5	3			3					
Total	23	22	32	49	20	4	13	102					
AM One Hour Volumes													
7:00 AM - 8:00 AM	3	5	9	7	6	3	8	20	8	16	9	28	61
7:15 AM - 8:15 AM	5	7	16	14	7	4	7	37	12	30	11	44	97
7:30 AM - 8:30 AM	**7**	**13**	**21**	**21**	**5**	**3**	**6**	**52**	**20**	**42**	**8**	**58**	**128**
7:45 AM - 8:45 AM	13	15	16	26	11	2	4	59	28	42	13	63	146
8:00 AM - 9:00 AM	14	13	15	28	9	1	2	63	27	43	10	65	145
8:15 AM - 9:15 AM	15	14	12	21	7	0	4	49	29	33	7	53	122
8:30 AM - 9:30 AM	15	8	9	18	8	0	5	35	23	27	8	40	98
8:45 AM - 9:45 AM	9	5	10	14	2	0	5	26	14	24	2	31	71
9:00 AM - 10:00 AM	6	4	8	14	5	0	3	19	10	22	5	22	59
PM 15 Minute Volumes													
2:00 PM - 2:15 PM	2	1	8	3	1	7	1	1					
2:15 PM - 2:30 PM	2		4	1	1	1	2	1					
2:30 PM - 2:45 PM	4	2	3		1	1	3	2					
2:45 PM - 3:00 PM	1	1	7	3	2	1	1	5					
3:00 PM - 3:15 PM	4	4	1	2	1		4	2					
3:15 PM - 3:30 PM	7	3	3	5	1	2	1	2					
3:30 PM - 3:45 PM	14	6	7	1	2	4	4	2					
3:45 PM - 4:00 PM	5	4	2	4		2	7	3					
4:00 PM - 4:15 PM	2		2	2	1	1	2	1					
4:15 PM - 4:30 PM	4	1	3	1			5	4					
4:30 PM - 4:45 PM	1	3	5	5	2	2	9	1					
4:45 PM - 5:00 PM	2	12		1		1	11	3					
5:00 PM - 5:15 PM	3	10	6		1	4	3	4					
5:15 PM - 5:30 PM	4	3	5			3	4	4					
5:30 PM - 5:45 PM	1	2	5			2	6	1					
5:45 PM - 6:00 PM	6	3	6	1	1	4	18	6					
6:00 PM - 6:15 PM	1	8	4	1		3	5	3					
6:15 PM - 6:30 PM	2	4	9	2			4	1					
6:30 PM - 6:45 PM	1		2			3	9	3					
6:45 PM - 7:00 PM		1		3	2		6						
Total	66	68	82	35	16	41	105	49					
PM One Hour Volumes													
2:00 PM - 3:00 PM	9	4	22	7	5	10	7	9	13	29	15	16	73
2:15 PM - 3:15 PM	11	7	15	6	5	3	10	10	18	21	8	20	67
2:30 PM - 3:30 PM	16	10	14	10	5	4	9	11	26	24	9	20	79
2:45 PM - 3:45 PM	26	14	18	11	6	7	10	11	40	29	13	21	103
3:00 PM - 4:00 PM	**30**	**17**	**13**	**12**	**4**	**8**	**16**	**9**	**47**	**25**	**12**	**25**	**109**
3:15 PM - 4:15 PM	28	13	14	12	4	9	14	8	41	26	13	22	102
3:30 PM - 4:30 PM	25	11	14	8	3	7	18	10	36	22	10	28	96
3:45 PM - 4:45 PM	12	8	12	12	3	5	23	9	20	24	8	32	84
4:00 PM - 5:00 PM	9	16	10	9	3	4	27	9	25	19	7	36	87
4:15 PM - 5:15 PM	10	26	14	7	3	7	28	12	36	21	10	40	107
4:30 PM - 5:30 PM	10	28	16	6	3	10	27	12	38	22	13	39	112
4:45 PM - 5:45 PM	10	27	16	1	1	10	24	12	37	17	11	36	101
5:00 PM - 6:00 PM	**14**	**18**	**22**	**1**	**2**	**13**	**31**	**15**	**32**	**23**	**15**	**46**	**116**
5:15 PM - 6:15 PM	12	16	20	2	1	12	33	14	28	22	13	47	110
5:30 PM - 6:30 PM	10	17	24	4	1	9	33	11	27	28	10	44	109
5:45 PM - 6:45 PM	10	15	21	4	1	10	36	13	25	25	11	49	110
6:00 PM - 7:00 PM	4	13	15	6	2	6	24	7	17	21	8	31	77

Intersection #1

Wells + Associates, Inc.

McLean, Virginia

Heavy Vehicle Percentages

PROJECT:	Georgetown Day School	**DATE:**	11/19/2014	**SOUTHBOUND ROAD:**	42nd Street NW
W+A JOB NO:	6348	**DAY:**	Wednesday	**NORTHBOUND ROAD:**	42nd Street NW
INTERSECTION:	River Rd. & 42nd Street	**WEATHER:**	clear	**WESTBOUND ROAD:**	River Road NW
LOCATION:	Washington, DC	**COUNTED BY:**	Howard	**EASTBOUND ROAD:**	River Road NW
		INPUTED BY:	agan		

Time Period	Northbound 42nd Street NW				Southbound 42nd Street NW				Westbound River Road NW				Eastbound River Road NW			
	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total	Left	Thru	Right	Total
AM One Hour Heavy Vehicle Percentages																
7:00 AM - 8:00 AM	10%	0%		2%	0%	1%	0%	1%	0%		7%	4%		5%	0%	4%
7:15 AM - 8:15 AM	6%	0%	0%	1%	0%	1%	0%	1%	0%		5%	3%	0%	4%	0%	3%
7:30 AM - 8:30 AM	**2%**	**0%**	**0%**	**1%**	**0%**	**1%**	**0%**	**1%**	**0%**		**5%**	**3%**	**0%**	**5%**	**2%**	**4%**
7:45 AM - 8:45 AM	0%	0%	0%	0%	0%	1%	0%	1%	0%		6%	3%	0%	6%	3%	5%
8:00 AM - 9:00 AM	0%	0%	0%	0%	0%	1%	0%	1%	0%		5%	2%	0%	6%	3%	5%
8:15 AM - 9:15 AM	0%	0%	0%	0%	8%	1%	0%	1%	0%		10%	4%	0%	8%	3%	7%
8:30 AM - 9:30 AM	0%	1%	0%	1%	9%	0%	0%	1%	0%		10%	4%	0%	7%	4%	6%
8:45 AM - 9:45 AM	0%	1%	0%	1%	10%	1%	0%	2%	0%		9%	5%	0%	7%	4%	7%
9:00 AM - 10:00 AM	0%	1%	0%	1%	13%	1%	0%	2%	0%		6%	3%	0%	7%	8%	7%
PM One Hour Heavy Vehicle Percentages																
2:00 PM - 3:00 PM	0%	0%	0%	0%	13%	0%	0%	1%	0%		0%	0%	0%	3%	0%	2%
2:15 PM - 3:15 PM	0%	2%	0%	1%	8%	1%	0%	1%	0%		0%	0%	0%	4%	0%	3%
2:30 PM - 3:30 PM	0%	2%	0%	1%	0%	1%	0%	1%	0%		0%	0%	0%	2%	0%	1%
2:45 PM - 3:45 PM	0%	2%	0%	1%	0%	1%	0%	1%	0%		0%	0%	0%	3%	0%	2%
3:00 PM - 4:00 PM	0%	2%	0%	1%	0%	1%	0%	1%	0%		0%	0%	0%	5%	0%	3%
3:15 PM - 4:15 PM	2%	0%		1%	0%	1%	0%	1%	0%		0%	0%	0%	4%	0%	3%
3:30 PM - 4:30 PM	3%	0%		1%	0%	1%	0%	1%	0%		3%	1%	0%	4%	0%	3%
3:45 PM - 4:45 PM	3%	0%	0%	1%	0%	1%	0%	1%	0%		3%	1%	0%	2%	3%	2%
4:00 PM - 5:00 PM	3%	0%	0%	1%	0%	1%	0%	1%	0%		3%	1%	0%	1%	3%	1%
4:15 PM - 5:15 PM	1%	0%	0%	1%	0%	0%	0%	0%	0%		3%	1%	0%	0%	2%	0%
4:30 PM - 5:30 PM	0%	0%	0%	0%	10%	0%	0%	1%	0%		0%	0%	0%	1%	2%	1%
4:45 PM - 5:45 PM	0%	0%	0%	0%	13%	0%	0%	1%	0%		0%	0%	0%	1%	0%	1%
5:00 PM - 6:00 PM	**0%**	**0%**	**0%**	**0%**	**9%**	**0%**	**0%**	**1%**	**0%**		**0%**	**0%**	**0%**	**1%**	**0%**	**1%**
5:15 PM - 6:15 PM	0%	0%	0%	0%	10%	0%	0%	1%	0%		0%	0%	0%	2%	2%	2%
5:30 PM - 6:30 PM	0%	0%	0%	0%	0%	0%	0%	0%	0%		0%	0%	0%	2%	2%	2%
5:45 PM - 6:45 PM	0%	0%	0%	0%	0%	0%	0%	0%	0%		0%	0%		1%	2%	1%
6:00 PM - 7:00 PM	0%	0%	0%	0%	0%	1%	0%	1%	0%		0%	0%	0%	1%	2%	1%

Intersection #2

Multimodal Turning Movement Count Report

Project Name : American University Data Collection
Project # : 3
Location Washington DC
Data Source: Excel Consultants LLC

Analysis Period: STUDY_PERIOD 06:30 AM to 09:30 AM
Date of Counts: Thursday, February 27, 2020
Weather: Partly Cloudy

Volumes Displayed as: 1. Intersection Peak (vehicle)
Intersection Peak Hour (all vehicles): 07:45 AM to 08:45 AM
System Peak Hour (all vehicles): 07:30 AM to 08:30 AM
User-Defined Peak Hour: 07:30 AM to 08:30 AM

Intersection: 1. 42nd Street & Albemarle Street

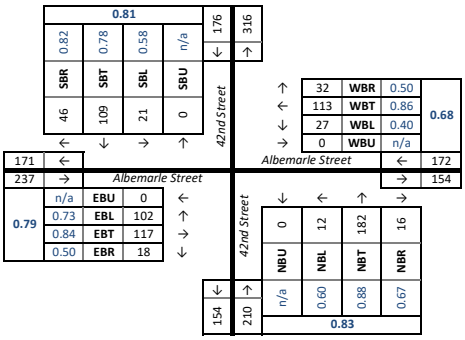
ALL VEHICLES	Southbound					Westbound					Northbound					Eastbound				
Roadway:	42nd Street					Albemarle Street					42nd Street					Albemarle Street				
Movement:	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds
06:30 AM to 06:45 AM	0	0	2	3	1	0	0	10	2	1	0	0	3	0	0	0	3	5	0	1
06:45 AM to 07:00 AM	0	1	7	6	2	0	1	14	1	2	0	0	9	1	3	0	5	7	1	15
07:00 AM to 07:15 AM	1	2	10	3	1	0	0	9	5	5	0	2	9	0	1	0	11	9	2	3
07:15 AM to 07:30 AM	0	5	17	7	3	0	0	14	3	3	0	1	17	3	4	0	9	25	2	15
07:30 AM to 07:45 AM	0	3	13	9	4	0	2	21	5	10	0	2	41	3	5	0	24	23	0	11
07:45 AM to 08:00 AM	0	2	31	14	7	0	3	33	1	18	0	2	36	4	10	0	27	33	2	21
08:00 AM to 08:15 AM	0	4	15	12	10	0	2	21	7	28	0	2	50	5	16	0	17	22	2	30
08:15 AM to 08:30 AM	0	9	28	7	37	0	5	29	8	87	0	3	44	1	34	0	35	35	5	37
08:30 AM to 08:45 AM	0	6	35	13	75	0	17	30	16	140	0	5	52	6	58	0	23	27	9	71
08:45 AM to 09:00 AM	0	2	28	10	14	0	5	34	2	21	0	5	33	4	7	0	21	35	5	31
09:00 AM to 09:15 AM	0	3	19	13	10	0	3	14	6	13	0	2	18	2	5	0	17	13	4	21
09:15 AM to 09:30 AM	0	6	16	9	8	0	2	23	12	9	0	0	24	1	5	0	12	15	2	18
09:30 AM to 09:45 AM																				
09:45 AM to 10:00 AM																				
10:00 AM to 10:15 AM																				
10:15 AM to 10:30 AM																				
10:30 AM to 10:45 AM																				
10:45 AM to 11:00 AM																				
11:00 AM to 11:15 AM																				
11:15 AM to 11:30 AM																				
INT. PEAK HR (ALL VEH)	176				129	172				273	210				118	237				159
07:45 AM to 08:45 AM	0	21	109	46		0	27	113	32		0	12	182	16		0	102	117	18	
Peak Hour Factor (PHF) Overall 0.83	U	Left	Thru	Right	SB	U	Left	Thru	Right	WB	U	Left	Thru	Right	NB	U	Left	Thru	Right	EB
	n/a	0.58	0.78	0.82	0.81	n/a	0.40	0.86	0.50	0.68	n/a	0.60	0.88	0.67	0.83	n/a	0.73	0.84	0.50	0.79

HEAVY VEHICLES (FHWA 4+)	Southbound					Westbound					Northbound					Eastbound				
Roadway:	42nd Street					Albemarle Street					42nd Street					Albemarle 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	0		0	0	0	0	
06:45 AM to 07:00 AM	0	0	0	0		0	0	1	0		0	0	0	0		0	0	0	0	
07:00 AM to 07:15 AM	0	0	2	0		0	0	0	0		0	0	0	0		0	0	1	0	
07:15 AM to 07:30 AM	0	0	1	0		0	0	1	0		0	0	0	0		0	0	2	0	
07:30 AM to 07:45 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	1	0	
07:45 AM to 08:00 AM	0	0	2	0		0	0	1	0		0	0	0	1		0	0	0	0	
08:00 AM to 08:15 AM	0	0	0	0		0	0	1	0		0	0	1	0		0	0	0	0	
08:15 AM to 08:30 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
08:30 AM to 08:45 AM	0	0	0	2		0	0	1	0		0	0	0	0		0	0	0	0	
08:45 AM to 09:00 AM	0	0	0	0		0	0	1	0		0	0	1	0		0	0	0	0	
09:00 AM to 09:15 AM	0	0	0	0		0	0	0	0		0	0	0	1		0	1	1	0	
09:15 AM to 09:30 AM	0	0	1	1		0	1	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																				
INT. PEAK HR (ALL VEH)	4					3					2					0				
07:45 AM to 08:45 AM	0	0	2	2		0	0	3	0		0	0	1	1		0	0	0	0	
Heavy Vehicle % (PHV):	0.0%	0.0%	1.8%	4.3%	2.3%	0.0%	0.0%	2.7%	0.0%	1.7%	0.0%	0.0%	0.5%	6.3%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%
INT. PEAK HR (HV ONLY)	4					4					2					3				
08:30 AM to 09:30 AM	0	0	1	3		0	1	3	0		0	0	1	1		0	1	2	0	
Heavy Vehicle % (PHV):	0.0%	0.0%	1.0%	6.7%	2.5%	0.0%	3.7%	3.0%	0.0%	2.4%	0.0%	0.0%	0.8%	7.7%	1.3%	0.0%	1.4%	2.2%	0.0%	1.6%

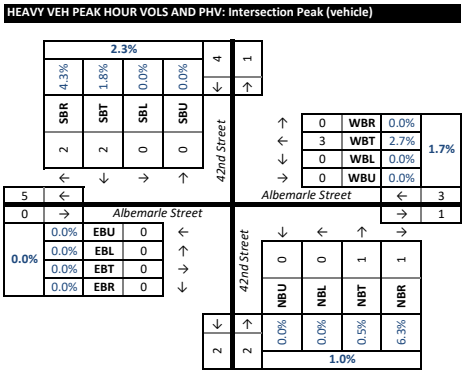
BICYCLES	Southbound				Westbound				Northbound				Eastbound			
Roadway:	42nd Street				Albemarle Street				42nd Street				Albemarle Street			
Movement:	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right
06:30 AM to 06:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45 AM to 07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00 AM to 07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM to 07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
07:30 AM to 07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
07:45 AM to 08:00 AM	0	0	1	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	0	0
08:15 AM to 08:30 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
08:30 AM to 08:45 AM	0	0	1	0	0	0	1	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	4	0	0	0	1	0
09:00 AM to 09:15 AM	0	0	1	0	0	0	1	0	0	0	1	0	0	0	0	0
09:15 AM to 09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:30 AM to 09:45 AM																
09:45 AM to 10:00 AM																
10:00 AM to 10:15 AM																
10:15 AM to 10:30 AM																
10:30 AM to 10:45 AM																
10:45 AM to 11:00 AM																
11:00 AM to 11:15 AM																
11:15 AM to 11:30 AM																
INT. PEAK HR (ALL VEH)	2				2				0				3			
07:45 AM to 08:45 AM	0	0	2	0	0	0	2	0	0	0	0	0	0	0	3	0
INT. PEAK HR (BIKES)	2				3				5				2			
08:15 AM to 09:15 AM	0	0	2	0	0	0	3	0	0	0	5	0	0	0	2	0

DATA COLLECTION NOTES :

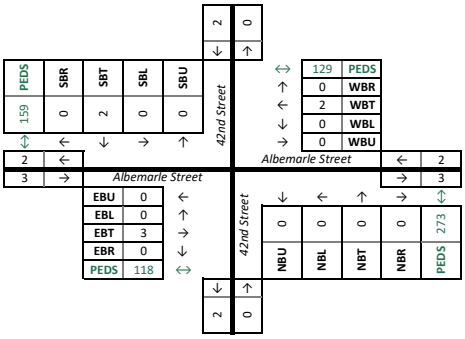
VEHICLE PEAK HOUR VOLS AND PHF: Intersection Peak (vehicle)



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



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

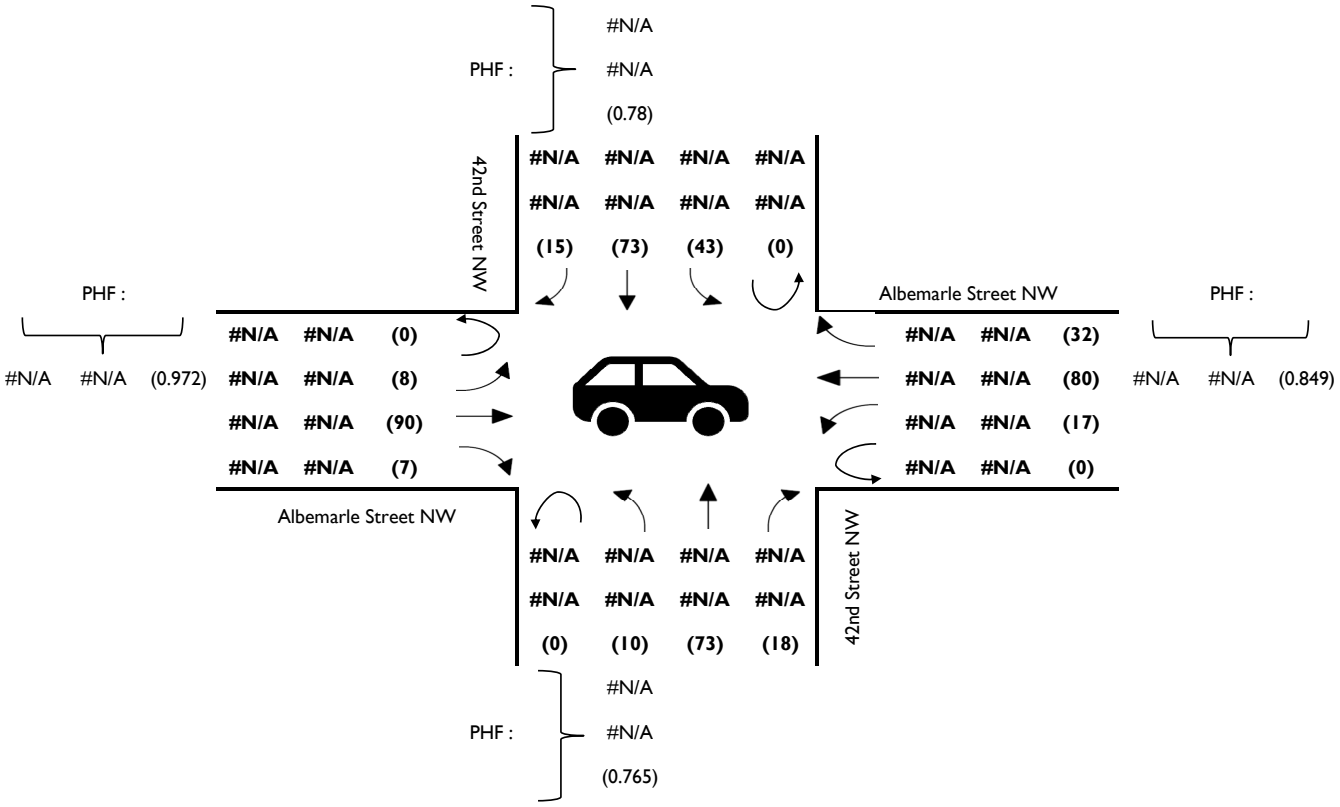


Intersection #2

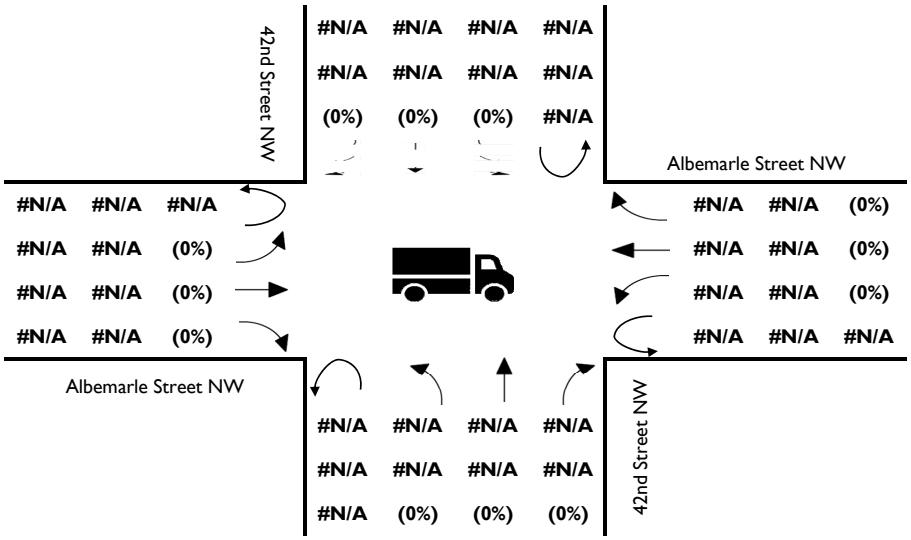
PEAK HOUR TRAFFIC COUNT SUMMARY

Location:	Albemarle St. & 42nd Street NW	AM Peak Hour:	None
	Washington,DC	Midday Peak Hour:	None
Date of Count:	5/18/2021	PM Peak Hour:	3:00 PM - 4:00 PM

Peak Hour - Vehicle Counts



Peak Hour - Heavy Vehicle %

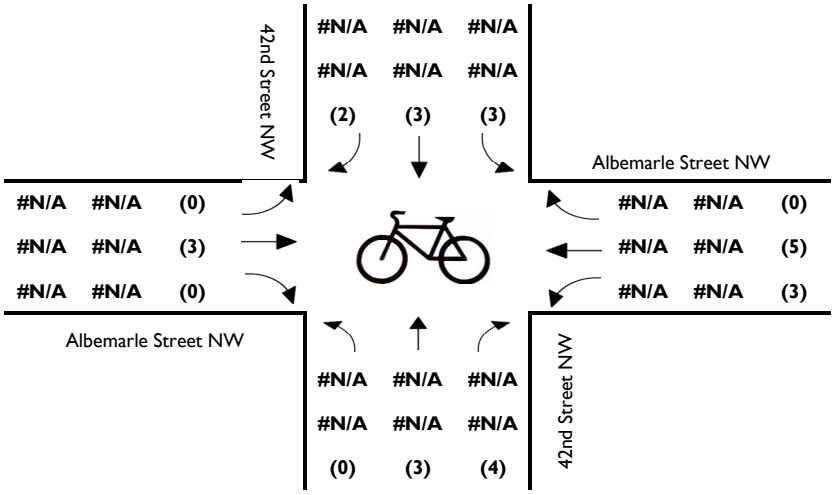


Intersection #2

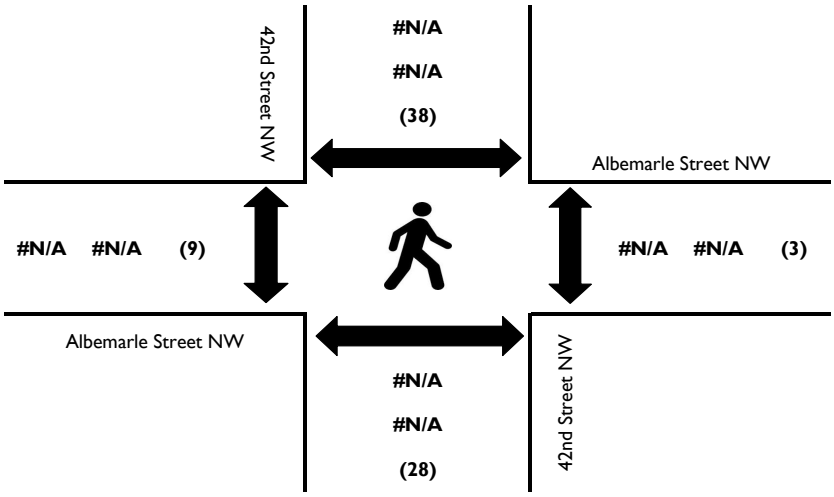
PEAK HOUR TRAFFIC COUNT SUMMARY

Location:	Albemarle St. & 42nd Street NW	AM Peak Hour:	None
	Washington,DC	Midday Peak Hour:	None
Date of Count:	5/18/2021	PM Peak Hour:	3:00 PM - 4:00 PM

Peak Hour - Bicycles



Peak Hour - Pedestrians



Intersection #2

·lls + Associates,Inc

Tysons, Virginia

Turning Movement Count - Total Vehicles

PROJECT: The River school
W+A JOB NO: 8182
INTERSECTION: Albemarle St. & 42nd Street NW
LOCATION: Washington,DC

DATE: 5/18/2021
DAY: Tuesday
WEATHER: clear
COUNTED BY: Agan
INPUTED BY: Agan

SOUTHBOUND ROAD: 42nd Street NW
NORTHBOUND ROAD: 42nd Street NW
WESTBOUND ROAD: Albemarle Street NW
EASTBOUND ROAD: Albemarle Street NW

Time	Southbound 42nd Street NW						Westbound Albemarle Street NW						Northbound 42nd Street NW						Eastbound Albemarle Street NW						North & South	East & West	Total
Period	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF			
15 Minute Volumes																											
2:00 PM - 2:15 PM	3	14	7	0	24		7	12	4	0	23		4	23	2	0	29		1	16	1	0	18		53	41	94
2:15 PM - 2:30 PM	5	13	8	0	26		13	18	2	0	33		6	17	5	0	28		0	13	4	0	17		54	50	104
2:30 PM - 2:45 PM	8	14	14	0	36		8	11	1	0	20		6	17	4	0	27		2	22	3	0	27		63	47	110
2:45 PM - 3:00 PM	1	15	13	0	29		10	14	9	0	33		4	15	3	0	22		2	19	2	0	23		51	56	107
3:00 PM - 3:15 PM	4	27	11	0	42		7	14	5	0	26		4	15	1	0	20		2	24	1	0	27		62	53	115
3:15 PM - 3:30 PM	4	17	12	0	33		17	14	5	0	36		5	14	4	0	23		0	22	3	0	25		56	61	117
3:30 PM - 3:45 PM	4	15	8	0	27		3	22	4	0	29		5	27	1	0	33		2	24	1	0	27		60	56	116
3:45 PM - 4:00 PM	3	14	12	0	29		5	30	3	0	38		4	17	4	0	25		3	20	3	0	26		54	64	118
Total	32	129	85	0	246		70	135	33	0	238		38	145	24	0	207		12	160	18	0	190		453	428	881
One Hour Volumes																											
2:00 PM - 3:00 PM	17	56	42	0	115	0.799	38	55	16	0	109	0.826	20	72	14	0	106	0.914	5	70	10	0	85	0.787	221	194	415
2:15 PM - 3:15 PM	18	69	46	0	133	0.792	38	57	17	0	112	0.848	20	64	13	0	97	0.866	6	78	10	0	94	0.87	230	206	436
2:30 PM - 3:30 PM	17	73	50	0	140	0.833	42	53	20	0	115	0.799	19	61	12	0	92	0.852	6	87	9	0	102	0.944	232	217	449
2:45 PM - 3:45 PM	13	74	44	0	131	0.78	37	64	23	0	124	0.861	18	71	9	0	98	0.742	6	89	7	0	102	0.944	229	226	455
3:00 PM - 4:00 PM	15	73	43	0	131	0.78	32	80	17	0	129	0.849	18	73	10	0	101	0.765	7	90	8	0	105	0.972	232	234	466

Intersection #2

Wells + Associates, Inc.

Tysons, Virginia

Turning Movement Count - Bicycles

PROJECT:	The River school	**DATE:**	5/18/2021	**SOUTHBOUND ROAD:**	42nd Street NW
W+A JOB NO:	8182	**DAY:**	Tuesday	**NORTHBOUND ROAD:**	42nd Street NW
INTERSECTION:	Albemarle St. & 42nd Street NW	**WEATHER:**	clear	**WESTBOUND ROAD:**	Albemarle Street NW
LOCATION:	Washington,DC	**COUNTED BY:**	Agan	**EASTBOUND ROAD:**	Albemarle Street NW
		INPUTED BY:	Agan		

Time	Southbound 42nd Street NW				Westbound Albemarle Street NW				Northbound 42nd Street NW				Eastbound Albemarle Street NW				North & South	East & West	Total
Period	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total			
15 Minute Volumes																			
2:00 PM - 2:15 PM				0				0				0				0	0	0	0
2:15 PM - 2:30 PM				0				0		1	1	2		3		3	2	3	5
2:30 PM - 2:45 PM				0				0				0				0	0	0	0
2:45 PM - 3:00 PM		2	1	3				0				0				0	3	0	3
3:00 PM - 3:15 PM		1	1	2			2	2	3			3		1		1	5	3	8
3:15 PM - 3:30 PM				0		3		3	1	1		2				0	2	3	5
3:30 PM - 3:45 PM	2		2	4		1		1		1		1		1		1	5	2	7
3:45 PM - 4:00 PM		2		2		1	1	2		1		1		1		1	3	3	6
Total	2	5	4	11	0	5	3	8	4	4	1	9	0	6	0	6	20	14	34
One Hour Volumes																			
2:00 PM - 3:00 PM	0	2	1	3	0	0	0	0	0	1	1	2	0	3	0	3	5	3	8
2:15 PM - 3:15 PM	0	3	2	5	0	0	2	2	3	1	1	5	0	4	0	4	10	6	16
2:30 PM - 3:30 PM	0	3	2	5	0	3	2	5	4	1	0	5	0	1	0	1	10	6	16
2:45 PM - 3:45 PM	2	3	4	9	0	4	2	6	4	2	0	6	0	2	0	2	15	8	23
3:00 PM - 4:00 PM	2	3	3	8	0	5	3	8	4	3	0	7	0	3	0	3	15	11	26

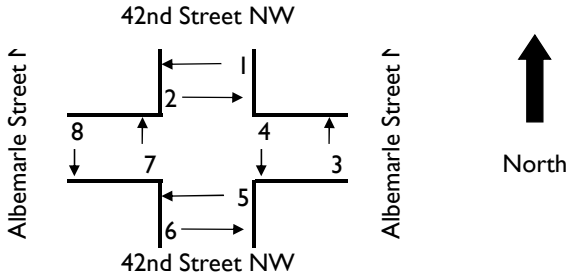
Intersection #2

Wells + Associates, Inc.

Tysons, Virginia

Pedestrian Volume Survey

PROJECT: The River school
W + A JOB NO: 8182
INTERSECTION: Albemarle St. & 42nd Street NW
LOCATION: Washington,DC
DATE: 5/18/2021
DAY: Tuesday
WEATHER: clear
COUNTED BY: Agan
INPUTED BY: Agan



Time Period		Movement 1	2	3	4	5	6	7	8	1 + 2	3 + 4	5 + 6	7+ 8	Total
15 Minute Volumes														
2:00 PM	- 2:15 PM	5	1	1	2	2	2	3	1	6	3	4	4	17
2:15 PM	- 2:30 PM	5	9	2	6	7	1		1	14	8	8	1	31
2:30 PM	- 2:45 PM	4	9	1	1	2	1	3		13	2	3	3	21
2:45 PM	- 3:00 PM		4	4		13	3		3	4	4	16	3	27
3:00 PM	- 3:15 PM	3	5			1	4		1	8	0	5	1	14
3:15 PM	- 3:30 PM	11					4		4	11	0	4	4	19
3:30 PM	- 3:45 PM	3	2		1	2	1		1	5	1	3	1	10
3:45 PM	- 4:00 PM	6	8	2		13	3	2	1	14	2	16	3	35
Total		37	38	10	10	40	19	8	12	75	20	59	20	174
One Hour Volumes														
2:00 PM	- 3:00 PM	14	23	8	9	24	7	6	5	37	17	31	11	96
2:15 PM	- 3:15 PM	12	27	7	7	23	9	3	5	39	14	32	8	93
2:30 PM	- 3:30 PM	18	18	5	1	16	12	3	8	36	6	28	11	81
2:45 PM	- 3:45 PM	17	11	4	1	16	12	0	9	28	5	28	9	70
3:00 PM	- 4:00 PM	23	15	2	1	16	12	2	7	38	3	28	9	78

Intersection #2

Multimodal Turning Movement Count Report

Project Name : American University Data Collection
Project # : 3
Location Washington DC
Data Source: Excel Consultants LLC

Analysis Period: STUDY_PERIOD 04:00 PM to 07:00 PM
Date of Counts: Thursday, February 27, 2020
Weather: Partly Cloudy

Volumes Displayed as: 1. Intersection Peak (vehicle)
Intersection Peak Hour (all vehicles): 05:00 PM to 06:00 PM
System Peak Hour (all vehicles): 05:00 PM to 06:00 PM
User-Defined Peak Hour: 05:00 PM to 06:00 PM

Intersection: 1. 42nd Street & Albemarle Street

ALL VEHICLES

Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	42nd Street					Albemarle Street					42nd Street					Albemarle Street				
Movement:	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds
04:00 PM to 04:15 PM	0	6	19	12	7	0	1	21	11	11	0	2	19	1	6	0	16	6	6	14
04:15 PM to 04:30 PM	0	8	21	13	6	0	1	15	11	22	0	1	26	2	6	0	15	13	0	19
04:30 PM to 04:45 PM	1	6	17	9	14	0	4	15	10	24	0	1	15	1	19	0	11	16	3	13
04:45 PM to 05:00 PM	0	5	16	8	34	0	6	27	11	21	0	2	37	0	19	0	15	24	4	18
05:00 PM to 05:15 PM	0	8	27	7	25	0	5	23	17	26	0	1	23	2	8	0	25	19	2	19
05:15 PM to 05:30 PM	0	5	21	10	28	0	4	25	13	43	0	1	24	1	18	0	13	22	6	22
05:30 PM to 05:45 PM	1	9	22	16	4	0	4	31	9	27	0	2	43	1	8	0	14	21	2	28
05:45 PM to 06:00 PM	0	7	24	11	26	0	9	39	11	32	0	0	21	0	13	0	14	28	4	24
06:00 PM to 06:15 PM	0	8	25	12	7	0	3	26	12	24	0	1	22	2	19	0	14	13	2	27
06:15 PM to 06:30 PM	0	9	26	14	5	0	1	26	7	9	0	0	43	2	7	0	11	14	2	29
06:30 PM to 06:45 PM	0	7	25	9	5	0	1	27	14	8	0	1	19	2	8	0	8	17	7	15
06:45 PM to 07:00 PM	0	4	18	6	2	0	3	23	6	10	0	2	22	1	2	0	13	10	4	21
07:00 PM to 07:15 PM																				
07:15 PM to 07:30 PM																				
07:30 PM to 07:45 PM																				
07:45 PM to 08:00 PM																				
08:00 PM to 08:15 PM																				
08:15 PM to 08:30 PM																				
08:30 PM to 08:45 PM																				
08:45 PM to 09:00 PM																				
INT. PEAK HR (ALL VEH)	168				83	190				128	119				47	170				93
05:00 PM to 06:00 PM	1	29	94	44		0	22	118	50		0	4	111	4		0	66	90	14	
Peak Hour Overall	U	Left	Thru	Right	**SB**	U	Left	Thru	Right	**WB**	U	Left	Thru	Right	**NB**	U	Left	Thru	Right	**EB**
Factor (PHF) 0.92	0.25	0.81	0.87	0.69	**0.88**	n/a	0.61	0.76	0.74	**0.81**	n/a	0.50	0.65	0.50	**0.65**	n/a	0.66	0.80	0.58	**0.92**

HEAVY VEHICLES (FHWA 4+)

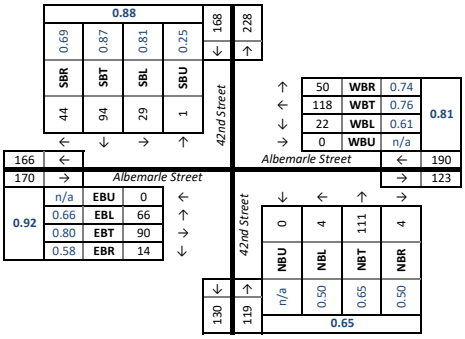
Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	42nd Street					Albemarle Street					42nd Street					Albemarle Street				
Movement:	U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right	
04:00 PM to 04:15 PM	0	0	0	0		0	0	0	0		0	1	0	0		0	0	0	0	
04:15 PM to 04:30 PM	0	0	1	0		0	0	0	0		0	0	0	0		0	0	0	0	
04:30 PM to 04:45 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
04:45 PM to 05:00 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	1	0	
05:00 PM to 05:15 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
05:15 PM to 05:30 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
05:30 PM to 05:45 PM	0	0	0	0		0	0	1	1		0	0	0	0		0	0	0	0	
05:45 PM to 06:00 PM	0	0	0	1		0	0	0	0		0	0	0	0		0	0	0	0	
06:00 PM to 06:15 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
06:15 PM to 06:30 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
06:30 PM to 06:45 PM	0	0	0	1		0	0	0	0		0	0	0	0		0	0	0	0	
06:45 PM to 07:00 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
07:00 PM to 07:15 PM																				
07:15 PM to 07:30 PM																				
07:30 PM to 07:45 PM																				
07:45 PM to 08:00 PM																				
08:00 PM to 08:15 PM																				
08:15 PM to 08:30 PM																				
08:30 PM to 08:45 PM																				
08:45 PM to 09:00 PM																				
INT. PEAK HR (ALL VEH)	1					2					0					0				
05:00 PM to 06:00 PM	0	0	0	1		0	0	1	1		0	0	0	0		0	0	0	0	
Heavy Vehicle % (PHV):	0.0%	0.0%	0.0%	2.3%	**0.6%**	0.0%	0.0%	0.8%	2.0%	**1.1%**	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	0.0%	0.0%	**0.0%**
INT. PEAK HR (HV ONLY)	1					0					1					1				
04:00 PM to 05:00 PM	0	0	1	0		0	0	0	0		0	1	0	0		0	0	1	0	
Heavy Vehicle % (PHV):	0.0%	0.0%	1.4%	0.0%	**0.7%**	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	16.7%	0.0%	0.0%	**0.9%**	0.0%	0.0%	1.7%	0.0%	**0.8%**

BICYCLES

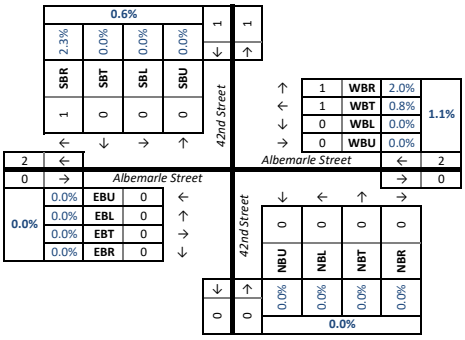
Direction:	Southbound				Westbound				Northbound				Eastbound			
Roadway:	42nd Street				Albemarle Street				42nd Street				Albemarle Street			
Movement:	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right
04:00 PM to 04:15 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM to 04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
04:30 PM to 04:45 PM	0	0	1	0	0	0	0	0	0	0	1	0	0	1	0	0
04:45 PM to 05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM to 05:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
05:15 PM to 05:30 PM	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0
05:30 PM to 05:45 PM	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM to 06:00 PM	0	0	2	0	0	0	1	0	0	0	1	0	0	0	0	0
06:00 PM to 06:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
06:15 PM to 06:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30 PM to 06:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
06:45 PM to 07:00 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00 PM to 07:15 PM																
07:15 PM to 07:30 PM																
07:30 PM to 07:45 PM																
07:45 PM to 08:00 PM																
08:00 PM to 08:15 PM																
08:15 PM to 08:30 PM																
08:30 PM to 08:45 PM																
08:45 PM to 09:00 PM																
INT. PEAK HR (ALL VEH)	4				3				2				0			
05:00 PM to 06:00 PM	0	1	3	0	0	1	2	0	0	0	2	0	0	0	0	0
INT. PEAK HR (BIKES)	4				3				2				0			
05:00 PM to 06:00 PM	0	1	3	0	0	1	2	0	0	0	2	0	0	0	0	0

DATA COLLECTION NOTES :

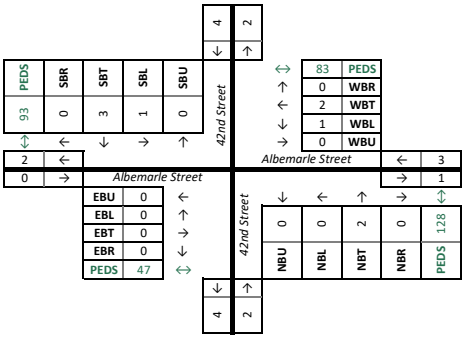
VEHICLE PEAK HOUR VOLS AND PHF: Intersection Peak (vehicle)



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



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



Intersection #3

Multimodal Turning Movement Count Report

Project Name : American University Data Collection
Project # : 3
Location Washington DC
Data Source: Excel Consultants LLC

Analysis Period: STUDY_PERIOD 06:30 AM to 09:30 AM
Date of Counts: Thursday, February 27, 2020
Weather: Partly Cloudy

Volumes Displayed as: 1. Intersection 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. 42nd Street & Yuma Street

ALL VEHICLES

Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	42nd Street					Yuma Street					42nd Street					Yuma 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	1	5	0	3	0	0	5	1	0	0	0	13	2	1	0	0	4	0	1
06:45 AM to 07:00 AM	0	0	6	0	0	0	0	8	2	0	0	0	14	3	0	0	0	3	1	1
07:00 AM to 07:15 AM	0	1	10	0	0	0	0	10	2	1	1	1	13	3	4	0	0	4	2	2
07:15 AM to 07:30 AM	0	6	24	1	1	0	1	10	0	2	0	1	15	5	6	0	0	11	2	3
07:30 AM to 07:45 AM	0	7	16	0	5	0	4	12	6	0	0	2	22	6	3	0	3	21	0	1
07:45 AM to 08:00 AM	0	8	26	3	4	1	2	18	1	2	0	2	33	12	8	0	1	31	3	2
08:00 AM to 08:15 AM	0	6	16	0	18	0	3	15	1	2	0	1	22	7	2	1	2	11	1	11
08:15 AM to 08:30 AM	0	14	21	5	16	0	9	22	2	6	0	3	23	15	2	0	16	30	1	9
08:30 AM to 08:45 AM	0	14	14	2	24	0	9	26	6	4	0	2	36	11	0	0	12	39	1	14
08:45 AM to 09:00 AM	0	8	37	3	7	0	6	20	7	2	0	5	30	7	2	0	1	28	6	1
09:00 AM to 09:15 AM	0	3	10	2	4	0	4	13	4	0	0	2	14	3	1	0	2	23	0	3
09:15 AM to 09:30 AM	0	3	17	2	4	0	7	8	4	0	0	5	27	11	1	0	1	16	2	1
09:30 AM to 09:45 AM																				
09:45 AM to 10:00 AM																				
10:00 AM to 10:15 AM																				
10:15 AM to 10:30 AM																				
10:30 AM to 10:45 AM																				
10:45 AM to 11:00 AM																				
11:00 AM to 11:15 AM																				
11:15 AM to 11:30 AM																				
INT. PEAK HR (ALL VEH)	140				65	126				14	162				6	149				35
08:00 AM to 09:00 AM	0	42	88	10		0	27	83	16		0	11	111	40		1	31	108	9	
Peak Hour Factor (PHF) Overall 0.84	U	Left	Thru	Right	**SB**	U	Left	Thru	Right	**WB**	U	Left	Thru	Right	**NB**	U	Left	Thru	Right	**EB**
	n/a	0.75	0.59	0.50	**0.73**	n/a	0.75	0.80	0.57	**0.77**	n/a	0.55	0.77	0.67	**0.83**	0.25	0.48	0.69	0.38	**0.72**

HEAVY VEHICLES (FHWA 4+)

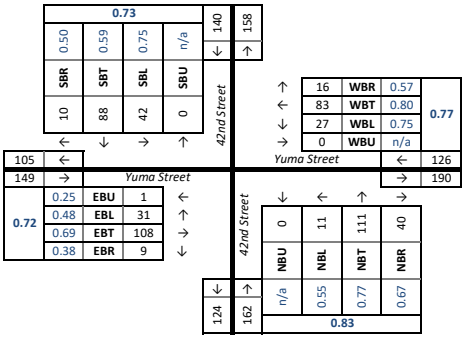
Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	42nd Street					Yuma Street					42nd Street					Yuma Street				
Movement:	U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right	
06:30 AM to 06:45 AM	0	0	0	0		0	0	0	0		0	0	1	1		0	0	0	0	
06:45 AM to 07:00 AM	0	0	0	0		0	0	0	0		0	0	1	0		0	0	0	0	
07:00 AM to 07:15 AM	0	0	1	0		0	0	0	0		0	0	0	0		0	0	1	0	
07:15 AM to 07:30 AM	0	0	2	0		0	0	2	0		0	0	2	0		0	0	0	0	
07:30 AM to 07:45 AM	0	0	0	1		0	0	0	1		0	0	2	0		0	1	0	0	
07:45 AM to 08:00 AM	0	0	0	1		0	0	2	0		0	0	2	0		0	0	0	0	
08:00 AM to 08:15 AM	0	0	0	0		0	0	0	0		0	0	1	0		0	0	1	0	
08:15 AM to 08:30 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
08:30 AM to 08:45 AM	0	0	0	0		0	0	0	0		0	0	1	0		0	0	0	0	
08:45 AM to 09:00 AM	0	0	0	0		0	1	1	0		0	0	1	0		0	0	1	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	2	1		0	2	0	0		0	0	1	1		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																				
INT. PEAK HR (ALL VEH)	0					2					3					2				
08:00 AM to 09:00 AM	0	0	0	0		0	1	1	0		0	0	3	0		0	0	2	0	
Heavy Vehicle % (PHV):	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	3.7%	1.2%	0.0%	**1.6%**	0.0%	0.0%	2.7%	0.0%	**1.9%**	0.0%	0.0%	1.9%	0.0%	**1.3%**
INT. PEAK HR (HV ONLY)	5					5					6					2				
07:00 AM to 08:00 AM	0	0	3	2		0	0	4	1		0	0	6	0		0	1	1	0	
Heavy Vehicle % (PHV):	0.0%	0.0%	3.9%	50.0%	**4.9%**	0.0%	0.0%	8.0%	11.1%	**7.5%**	0.0%	0.0%	7.2%	0.0%	**5.2%**	0.0%	25.0%	1.5%	0.0%	**2.6%**

BICYCLES

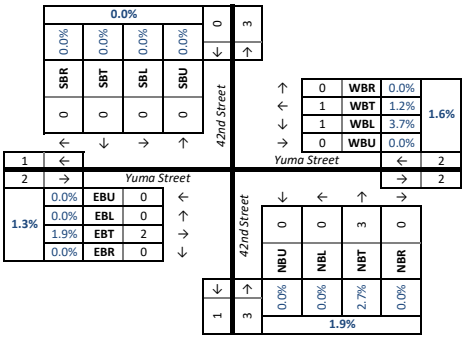
Direction:	Southbound				Westbound				Northbound				Eastbound			
Roadway:	42nd Street				Yuma Street				42nd Street				Yuma Street			
Movement:	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right
06:30 AM to 06:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45 AM to 07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00 AM to 07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM to 07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM to 07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
07:45 AM to 08:00 AM	0	1	2	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	1	0	0	0	0
08:15 AM to 08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM to 08:45 AM	0	0	2	0	0	0	1	0	0	0	1	0	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	1	0	0	0	0	0	0	0	1	0	0	0	0	0
09:15 AM to 09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:30 AM to 09:45 AM																
09:45 AM to 10:00 AM																
10:00 AM to 10:15 AM																
10:15 AM to 10:30 AM																
10:30 AM to 10:45 AM																
10:45 AM to 11:00 AM																
11:00 AM to 11:15 AM																
11:15 AM to 11:30 AM																
INT. PEAK HR (ALL VEH)	3				1				3				0			
08:00 AM to 09:00 AM	0	0	3	0	0	0	1	0	0	0	2	1	0	0	0	0
INT. PEAK HR (BIKES)	5				2				2				0			
07:45 AM to 08:45 AM	0	1	4	0	0	0	2	0	0	0	1	1	0	0	0	0

DATA COLLECTION NOTES :

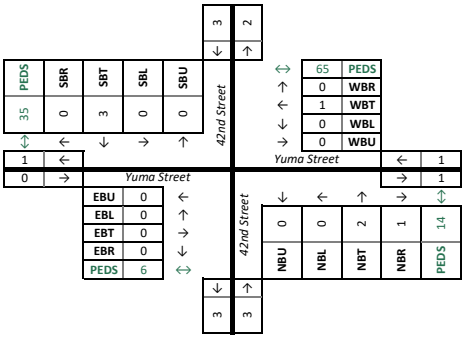
VEHICLE PEAK HOUR VOLS AND PHF: Intersection Peak (vehicle)



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



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

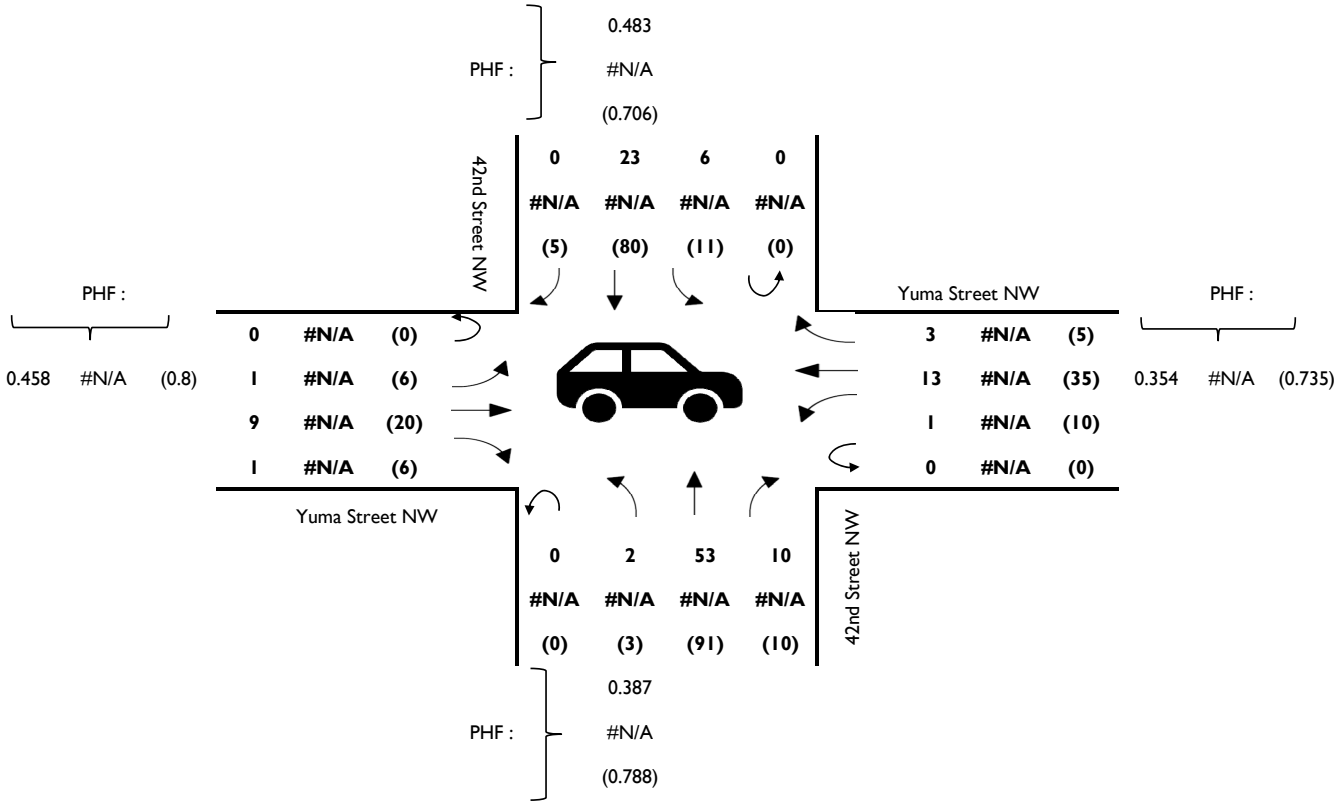


Intersection #3

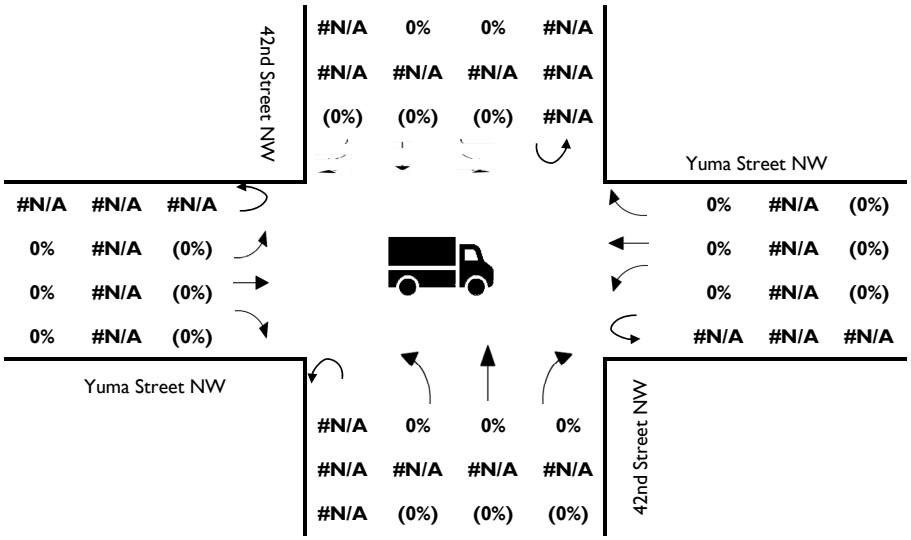
PEAK HOUR TRAFFIC COUNT SUMMARY

Location:	42nd Street & Yuma St.	AM Peak Hour:	7:00 AM - 8:00 AM
	Washington,DC	Midday Peak Hour:	None
Date of Count:	5/19/2021	PM Peak Hour:	3:00 PM - 4:00 PM

Peak Hour - Vehicle Counts

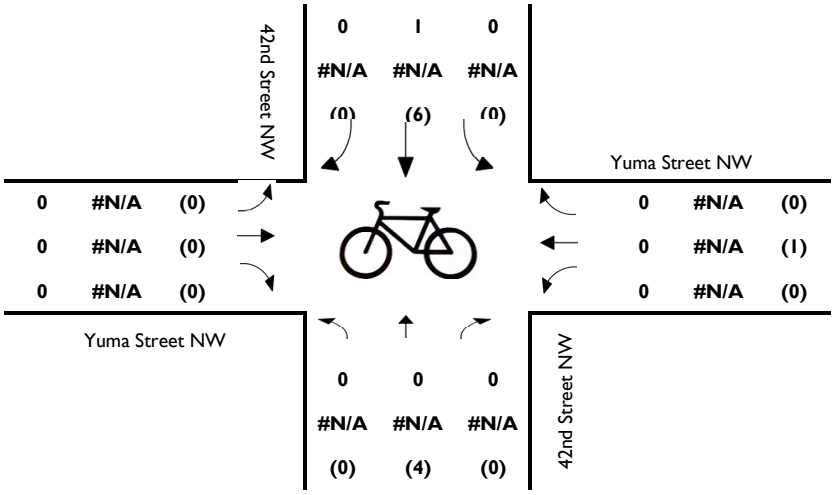


Peak Hour - Heavy Vehicle %

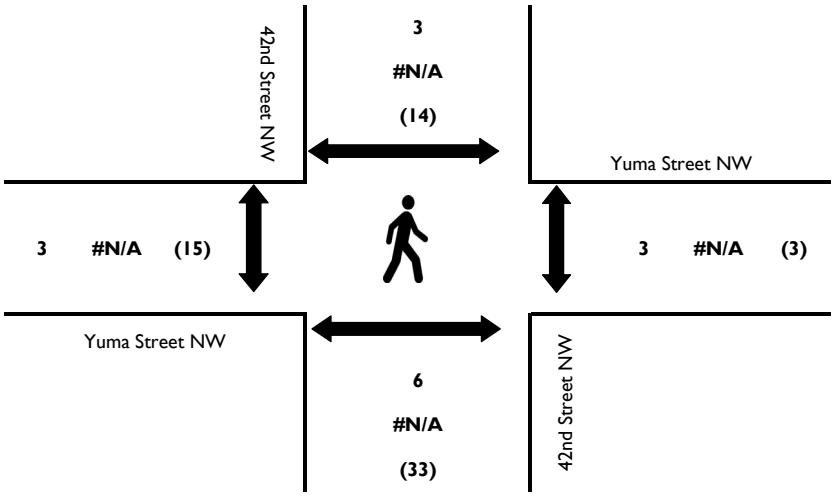


Intersection #3

Peak Hour - Bicycles



Peak Hour - Pedestrians



Intersection #3

Wells + Associates,Inc

Tysons, Virginia

Turning Movement Count - Total Vehicles

PROJECT: The River School
W+A JOB NO: 8182
INTERSECTION: 42nd Street & Yuma St.
LOCATION: Washington,DC

DATE: 5/19/2021
DAY: Wednesday
WEATHER: clear
COUNTED BY: Michael
INPUTED BY: Agan

SOUTHBOUND ROAD: 42nd Street NW
NORTHBOUND ROAD: 42nd Street NW
WESTBOUND ROAD: Yuma Street NW
EASTBOUND ROAD: Yuma Street NW

Time	Southbound 42nd Street NW						Westbound Yuma Street NW						Northbound 42nd Street NW						Eastbound Yuma Street NW						North & South	East & West	Total
Period	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF			
15 Minute Volumes																											
6:00 AM - 6:15 AM	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0
6:15 AM - 6:30 AM	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0
6:30 AM - 6:45 AM	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0
6:45 AM - 7:00 AM	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0
7:00 AM - 7:15 AM	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0
7:15 AM - 7:30 AM	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0
7:30 AM - 7:45 AM	0	11	3	0	14		0	5	0	0	5		5	18	0	0	23		0	5	1	0	6		37	11	48
7:45 AM - 8:00 AM	0	12	3	0	15		3	8	1	0	12		5	35	2	0	42		1	4	0	0	5		57	17	74
8:00 AM - 8:15 AM	0	18	3	0	21		3	3	0	0	6		6	26	0	0	32		0	5	0	0	5		53	11	64
8:15 AM - 8:30 AM	1	15	2	0	18		5	3	4	0	12		4	12	2	0	18		0	6	1	0	7		36	19	55
8:30 AM - 8:45 AM	0	20	4	0	24		1	4	4	0	9		8	22	2	0	32		0	12	3	0	15		56	24	80
8:45 AM - 9:00 AM	2	7	6	0	15		6	7	7	0	20		7	23	2	0	32		1	5	0	0	6		47	26	73
9:00 AM - 9:15 AM	0	12	3	0	15		3	8	0	0	11		8	10	0	0	18		2	6	1	0	9		33	20	53
9:15 AM - 9:30 AM	0	12	2	0	14		3	6	1	0	10		5	15	0	0	20		1	7	0	0	8		34	18	52
2:00 PM - 2:15 PM	1	10	3	0	14		1	6	0	0	7		4	26	1	0	31		0	10	0	0	10		45	17	62
2:15 PM - 2:30 PM	0	16	2	0	18		4	5	3	0	12		3	24	0	0	27		0	1	0	0	1		45	13	58
2:30 PM - 2:45 PM	0	12	2	0	14		2	3	2	0	7		1	26	3	0	30		0	3	2	0	5		44	12	56
2:45 PM - 3:00 PM	0	16	3	0	19		0	10	0	0	10		3	24	0	0	27		0	8	1	0	9		46	19	65
3:00 PM - 3:15 PM	1	31	2	0	34		0	11	2	0	13		0	18	1	0	19		2	5	1	0	8		53	21	74
3:15 PM - 3:30 PM	1	19	2	0	22		1	5	3	0	9		1	19	0	0	20		2	5	3	0	10		42	19	61
3:30 PM - 3:45 PM	1	16	4	0	21		2	8	1	0	11		2	29	1	0	32		1	4	1	0	6		53	17	70
3:45 PM - 4:00 PM	2	14	3	0	19		2	11	4	0	17		7	25	1	0	33		1	6	1	0	8		52	25	77
Total	9	241	47	0	297		36	103	32	0	171		69	352	15	0	436		11	92	15	0	118		733	289	1022
One Hour Volumes																											
6:00 AM - 7:00 AM	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0
6:15 AM - 7:15 AM	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0
6:30 AM - 7:30 AM	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0
6:45 AM - 7:45 AM	0	11	3	0	14	0.25	0	5	0	0	5	0.25	5	18	0	0	23	0.25	0	5	1	0	6	0.25	37	11	48
7:00 AM - 8:00 AM	0	23	6	0	29	0.483	3	13	1	0	17	0.354	10	53	2	0	65	0.387	1	9	1	0	11	0.458	94	28	122
7:15 AM - 8:15 AM	0	41	9	0	50	0.595	6	16	1	0	23	0.479	16	79	2	0	97	0.577	1	14	1	0	16	0.667	147	39	186
7:30 AM - 8:30 AM	1	56	11	0	68	0.81	11	19	5	0	35	0.729	20	91	4	0	115	0.685	1	20	2	0	23	0.821	183	58	241
7:45 AM - 8:45 AM	1	65	12	0	78	0.813	12	18	9	0	39	0.813	23	95	6	0	124	0.738	1	27	4	0	32	0.533	202	71	273
8:00 AM - 9:00 AM	3	60	15	0	78	0.813	15	17	15	0	47	0.588	25	83	6	0	114	0.891	1	28	4	0	33	0.55	192	80	272
8:15 AM - 9:15 AM	3	54	15	0	72	0.75	15	22	15	0	52	0.65	27	67	6	0	100	0.781	3	29	5	0	37	0.617	172	89	261
8:30 AM - 9:30 AM	2	51	15	0	68	0.708	13	25	12	0	50	0.625	28	70	4	0	102	0.797	4	30	4	0	38	0.633	170	88	258
2:00 PM - 3:00 PM	1	54	10	0	65	0.855	7	24	5	0	36	0.75	11	100	4	0	115	0.927	0	22	3	0	25	0.625	180	61	241
2:15 PM - 3:15 PM	1	75	9	0	85	0.625	6	29	7	0	42	0.808	7	92	4	0	103	0.858	2	17	4	0	23	0.639	188	65	253
2:30 PM - 3:30 PM	2	78	9	0	89	0.654	3	29	7	0	39	0.75	5	87	4	0	96	0.8	4	21	7	0	32	0.8	185	71	256
2:45 PM - 3:45 PM	3	82	11	0	96	0.706	3	34	6	0	43	0.827	6	90	2	0	98	0.766	5	22	6	0	33	0.825	194	76	270
3:00 PM - 4:00 PM	5	80	11	0	96	0.706	5	35	10	0	50	0.735	10	91	3	0	104	0.788	6	20	6	0	32	0.8	200	82	282

Intersection #3

Wells + Associates, Inc.

Tysons, Virginia

Turning Movement Count - Bicycles

PROJECT:	The River School	**DATE:**	5/19/2021	**SOUTHBOUND ROAD:**	42nd Street NW
W+A JOB NO:	8182	**DAY:**	Wednesday	**NORTHBOUND ROAD:**	42nd Street NW
INTERSECTION:	42nd Street & Yuma St.	**WEATHER:**	clear	**WESTBOUND ROAD:**	Yuma Street NW
LOCATION:	Washington,DC	**COUNTED BY:**	Michael	**EASTBOUND ROAD:**	Yuma Street NW
		INPUTED BY:	Agan		

Time	Southbound 42nd Street NW				Westbound Yuma Street NW				Northbound 42nd Street NW				Eastbound Yuma Street NW				North & South	East & West	Total
Period	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total			
15 Minute Volumes																			
7:30 AM - 7:45 AM				0				0				0				0	0	0	0
7:45 AM - 8:00 AM		1		1				0				0		1		1	1	1	2
8:00 AM - 8:15 AM		1		1				0				0		1		1	1	1	2
8:15 AM - 8:30 AM			2	2		1		1				0				0	2	1	3
8:30 AM - 8:45 AM			1	1				0		1		1				0	2	0	2
8:45 AM - 9:00 AM				0		2		2				0			2	2	0	4	4
9:00 AM - 9:15 AM				0		1		1				0				0	0	1	1
9:15 AM - 9:30 AM		2		2				0				0				0	2	0	2
2:00 PM - 2:15 PM				0				0				0				0	0	0	0
2:15 PM - 2:30 PM				0				0				0				0	0	0	0
2:30 PM - 2:45 PM				0				0		2		2				0	2	0	2
2:45 PM - 3:00 PM		1	2	3				0				0				0	3	0	3
3:00 PM - 3:15 PM		2		2				0		1		1				0	3	0	3
3:15 PM - 3:30 PM				0				0		2		2				0	2	0	2
3:30 PM - 3:45 PM				0				0		1		1				0	1	0	1
3:45 PM - 4:00 PM		4		4		1		1				0				0	4	1	5
Total	0	11	5	16	0	5	0	5	0	7	0	7	0	2	2	4	23	9	32
One Hour Volumes																			
6:00 AM - 7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM - 7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM - 8:00 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1	1	1	2
7:15 AM - 8:15 AM	0	2	0	2	0	0	0	0	0	0	0	0	0	2	0	2	2	2	4
7:30 AM - 8:30 AM	0	2	2	4	0	1	0	1	0	0	0	0	0	2	0	2	4	3	7
7:45 AM - 8:45 AM	0	2	3	5	0	1	0	1	0	1	0	1	0	2	0	2	6	3	9
8:00 AM - 9:00 AM	0	1	3	4	0	3	0	3	0	1	0	1	0	1	2	3	5	6	11
8:15 AM - 9:15 AM	0	0	3	3	0	4	0	4	0	1	0	1	0	0	2	2	4	6	10
8:30 AM - 9:30 AM	0	2	1	3	0	3	0	3	0	1	0	1	0	0	2	2	4	5	9
2:00 PM - 3:00 PM	0	1	2	3	0	0	0	0	0	2	0	2	0	0	0	0	5	0	5
2:15 PM - 3:15 PM	0	3	2	5	0	0	0	0	0	3	0	3	0	0	0	0	8	0	8
2:30 PM - 3:30 PM	0	3	2	5	0	0	0	0	0	5	0	5	0	0	0	0	10	0	10
2:45 PM - 3:45 PM	0	3	2	5	0	0	0	0	0	4	0	4	0	0	0	0	9	0	9
3:00 PM - 4:00 PM	0	6	0	6	0	1	0	1	0	4	0	4	0	0	0	0	10	1	11

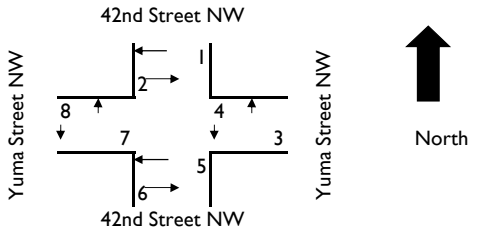
Intersection #3

Wells + Associates, Inc.

Tysons, Virginia

Pedestrian Volume Survey

PROJECT: The River School
W + A JOB NO: 8182
INTERSECTION: 42nd Street & Yuma St.
LOCATION: Washington,DC
DATE: 5/19/2021
DAY: Wednesday
WEATHER: clear
COUNTED BY: Michael
INPUTED BY: Agan



Time Period		Movement 1	2	3	4	5	6	7	8	1 + 2	3 + 4	5 + 6	7+ 8	Total
15 Minute Volumes														
7:30 AM	- 7:45 AM	1	2			1	1	1	2	3	0	2	3	8
7:45 AM	- 8:00 AM			2	1		4			0	3	4	0	7
8:00 AM	- 8:15 AM				1	2	1		1	0	1	3	1	5
8:15 AM	- 8:30 AM	1		2	1	2	1	1		1	3	3	1	8
8:30 AM	- 8:45 AM	1		1	1	2	1	1	1	1	2	3	2	8
8:45 AM	- 9:00 AM	2	2	2	2	2	1	3		4	4	3	3	14
9:00 AM	- 9:15 AM		2		17		1		3	2	17	1	3	23
9:15 AM	- 9:30 AM		2	1	1		1			2	2	1	0	5
2:00 PM	- 2:15 PM	6		1			1		4	6	1	1	4	12
2:15 PM	- 2:30 PM	6	1	1	2	3	1	1	2	7	3	4	3	17
2:30 PM	- 2:45 PM			1					2	0	1	0	2	3
2:45 PM	- 3:00 PM	12	20		1	3			2	32	1	3	2	38
3:00 PM	- 3:15 PM	2	5			5	12	6	5	7	0	17	11	35
3:15 PM	- 3:30 PM	2			1	2	10			2	1	12	0	15
3:30 PM	- 3:45 PM				1		1		1	0	1	1	1	3
3:45 PM	- 4:00 PM		5		1	2	1	3		5	1	3	3	12
Total		33	39	11	30	24	37	16	23	72	41	61	39	213
One Hour Volumes														
6:00 AM	- 7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM	- 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM	- 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM	- 7:45 AM	1	2	0	0	1	1	1	2	3	0	2	3	8
7:00 AM	- 8:00 AM	1	2	2	1	1	5	1	2	3	3	6	3	15
7:15 AM	- 8:15 AM	1	2	2	2	3	6	1	3	3	4	9	4	20
7:30 AM	- 8:30 AM	2	2	4	3	5	7	2	3	4	7	12	5	28
7:45 AM	- 8:45 AM	2	0	5	4	6	7	2	2	2	9	13	4	28
8:00 AM	- 9:00 AM	4	2	5	5	8	4	5	2	6	10	12	7	35
8:15 AM	- 9:15 AM	4	4	5	21	6	4	5	4	8	26	10	9	53
8:30 AM	- 9:30 AM	3	6	4	21	4	4	4	4	9	25	8	8	50
2:00 PM	- 3:00 PM	24	21	3	3	6	2	1	10	45	6	8	11	70
2:15 PM	- 3:15 PM	20	26	2	3	11	13	7	11	46	5	24	18	93
2:30 PM	- 3:30 PM	16	25	1	2	10	22	6	9	41	3	32	15	91
2:45 PM	- 3:45 PM	16	25	0	3	10	23	6	8	41	3	33	14	91
3:00 PM	- 4:00 PM	4	10	0	3	9	24	9	6	14	3	33	15	65

Intersection #3

Multimodal Turning Movement Count Report

Project Name : American University Data Collection
Project # : 3
Location Washington DC
Data Source: Excel Consultants LLC

Analysis Period: STUDY_PERIOD 04:00 PM to 07:00 PM
Date of Counts: Thursday, February 27, 2020
Weather: Partly Cloudy

Volumes Displayed as: 1. Intersection Peak (vehicle)
Intersection Peak Hour (all vehicles): 05:00 PM to 06:00 PM
System Peak Hour (all vehicles): 05:00 PM to 06:00 PM
User-Defined Peak Hour: 05:00 PM to 06:00 PM

Intersection: 1. 42nd Street & Yuma Street

ALL VEHICLES

Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	42nd Street					Yuma Street					42nd Street					Yuma Street				
Movement:	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds
04:00 PM to 04:15 PM	0	1	19	1	2	0	5	15	4	0	0	3	30	3	2	0	0	23	2	0
04:15 PM to 04:30 PM	0	1	16	0	2	0	4	8	6	3	0	1	14	6	0	0	3	11	1	1
04:30 PM to 04:45 PM	0	2	20	2	7	0	5	15	8	5	0	0	18	6	2	0	2	14	0	2
04:45 PM to 05:00 PM	0	4	24	3	4	0	6	14	4	2	0	3	39	4	1	0	3	16	0	2
05:00 PM to 05:15 PM	0	4	22	2	3	0	7	25	8	3	0	1	28	7	2	0	4	15	1	2
05:15 PM to 05:30 PM	0	5	23	5	5	0	4	20	5	3	0	3	26	7	1	0	3	18	1	1
05:30 PM to 05:45 PM	0	5	29	1	7	0	5	23	11	1	0	3	28	14	4	0	1	17	1	6
05:45 PM to 06:00 PM	0	7	24	2	4	0	8	31	14	0	0	3	36	8	0	0	2	11	0	2
06:00 PM to 06:15 PM	0	6	18	3	1	0	4	23	8	5	0	4	28	3	1	0	5	6	0	2
06:15 PM to 06:30 PM	0	2	21	2	7	0	1	17	4	0	0	2	30	0	0	0	1	12	2	4
06:30 PM to 06:45 PM	0	2	20	0	8	0	2	16	4	1	0	5	38	4	1	0	3	14	1	3
06:45 PM to 07:00 PM	0	3	9	1	3	0	1	10	0	0	0	0	27	3	0	0	4	10	0	1
07:00 PM to 07:15 PM																				
07:15 PM to 07:30 PM																				
07:30 PM to 07:45 PM																				
07:45 PM to 08:00 PM																				
08:00 PM to 08:15 PM																				
08:15 PM to 08:30 PM																				
08:30 PM to 08:45 PM																				
08:45 PM to 09:00 PM																				
INT. PEAK HR (ALL VEH)	129				19	161				7	164				7	74				11
05:00 PM to 06:00 PM	0	21	98	10		0	24	99	38		0	10	118	36		0	10	61	3	
Peak Hour Factor (PHF) Overall 0.90	U	Left	Thru	Right	**SB**	U	Left	Thru	Right	**WB**	U	Left	Thru	Right	**NB**	U	Left	Thru	Right	**EB**
	n/a	0.75	0.84	0.50	**0.92**	n/a	0.75	0.80	0.68	**0.76**	n/a	0.83	0.82	0.64	**0.87**	n/a	0.63	0.85	0.75	**0.84**

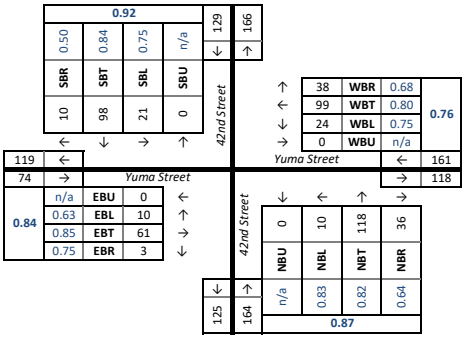
HEAVY VEHICLES (FHWA 4+)

Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	42nd Street					Yuma Street					42nd Street					Yuma Street				
Movement:	U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right	
04:00 PM to 04:15 PM	0	0	0	0		0	0	1	0		0	0	0	0		0	0	2	1	
04:15 PM to 04:30 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
04:30 PM to 04:45 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
04:45 PM to 05:00 PM	0	1	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
05:00 PM to 05:15 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
05:15 PM to 05:30 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
05:30 PM to 05:45 PM	0	0	0	0		0	0	0	0		0	0	1	0		0	0	0	0	
05:45 PM to 06:00 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
06:00 PM to 06:15 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
06:15 PM to 06:30 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
06:30 PM to 06:45 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
06:45 PM to 07:00 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
07:00 PM to 07:15 PM																				
07:15 PM to 07:30 PM																				
07:30 PM to 07:45 PM																				
07:45 PM to 08:00 PM																				
08:00 PM to 08:15 PM																				
08:15 PM to 08:30 PM																				
08:30 PM to 08:45 PM																				
08:45 PM to 09:00 PM																				
INT. PEAK HR (ALL VEH)	0					0					1					0				
05:00 PM to 06:00 PM	0	0	0	0		0	0	0	0		0	0	1	0		0	0	0	0	
Heavy Vehicle % (PHV):	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	0.8%	0.0%	**0.6%**	0.0%	0.0%	0.0%	0.0%	**0.0%**
INT. PEAK HR (HV ONLY)	1					1					0					3				
04:00 PM to 05:00 PM	0	1	0	0		0	0	1	0		0	0	0	0		0	0	2	1	
Heavy Vehicle % (PHV):	0.0%	12.5%	0.0%	0.0%	**1.1%**	0.0%	0.0%	1.9%	0.0%	**1.1%**	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	3.1%	33.3%	**4.0%**

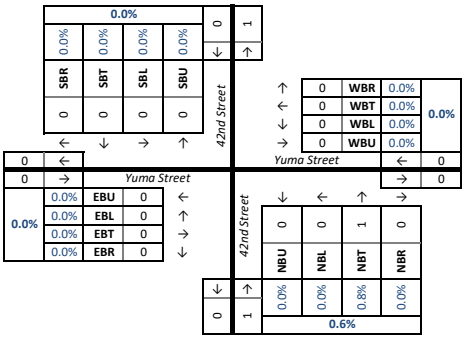
BICYCLES

Direction:	Southbound				Westbound				Northbound				Eastbound			
Roadway:	42nd Street				Yuma Street				42nd Street				Yuma Street			
Movement:	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right
04:00 PM to 04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM to 04:30 PM	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0
04:30 PM to 04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM to 05:00 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
05:00 PM to 05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM to 05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM to 05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM to 06:00 PM	0	0	1	1	0	0	0	0	0	0	1	0	0	0	0	0
06:00 PM to 06:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
06:15 PM to 06:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
06:30 PM to 06:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
06:45 PM to 07:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00 PM to 07:15 PM																
07:15 PM to 07:30 PM																
07:30 PM to 07:45 PM																
07:45 PM to 08:00 PM																
08:00 PM to 08:15 PM																
08:15 PM to 08:30 PM																
08:30 PM to 08:45 PM																
08:45 PM to 09:00 PM																
INT. PEAK HR (ALL VEH)	2				0				1				0			
05:00 PM to 06:00 PM	0	0	1	1	0	0	0	0	0	0	1	0	0	0	0	0
INT. PEAK HR (BIKES)	3				1				2				1			
05:45 PM to 06:45 PM	0	0	2	1	0	1	0	0	0	0	2	0	0	0	0	1

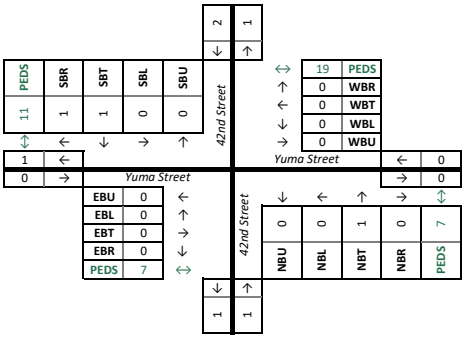
VEHICLE PEAK HOUR VOLS AND PHF: Intersection Peak (vehicle)



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



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



DATA COLLECTION NOTES :

Intersection #4

Multimodal Turning Movement Count Report

Project Name : American University Data Collection
Project # : 3
Location Washington DC
Data Source: Excel Consultants LLC

Analysis Period: STUDY_PERIOD 06:30 AM to 09:30 AM
Date of Counts: Thursday, February 27, 2020
Weather: Partly Cloudy

Volumes Displayed as: 1. Intersection Peak (vehicle)
Intersection Peak Hour (all vehicles): 08:00 AM to 09:00 AM
System Peak Hour (all vehicles): 07:30 AM to 08:30 AM
User-Defined Peak Hour: 07:30 AM to 08:30 AM

Intersection: 1. 42nd Street & /Warren St (North)

ALL VEHICLES

Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	42nd Street										42nd Street					Warren St (North)				
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	5	0	0	0	0	0	0	0	0	0	9	0	0	0	0	0	0	0
06:45 AM to 07:00 AM	0	0	6	0	0	0	0	0	0	0	0	0	18	0	0	0	0	0	0	0
07:00 AM to 07:15 AM	0	0	6	3	1	0	0	0	0	0	0	0	19	0	1	0	2	0	0	0
07:15 AM to 07:30 AM	0	0	23	1	0	0	0	0	0	0	0	0	19	0	0	0	3	0	0	0
07:30 AM to 07:45 AM	0	0	19	4	0	0	0	0	0	0	0	0	24	0	0	0	3	0	2	0
07:45 AM to 08:00 AM	0	0	23	2	2	0	0	0	0	0	0	0	45	0	1	0	6	0	1	1
08:00 AM to 08:15 AM	1	0	19	5	3	0	0	0	0	0	0	0	33	0	0	0	3	0	3	0
08:15 AM to 08:30 AM	0	0	28	7	0	0	0	0	0	0	0	0	36	0	0	0	11	0	1	0
08:30 AM to 08:45 AM	0	0	20	4	0	0	0	0	0	0	0	0	32	0	0	0	17	0	0	0
08:45 AM to 09:00 AM	1	0	35	5	0	0	0	0	0	0	0	1	41	0	0	0	6	0	2	0
09:00 AM to 09:15 AM	0	0	21	4	2	0	0	0	0	0	0	2	12	0	1	0	3	0	2	0
09:15 AM to 09:30 AM	0	0	24	2	2	0	0	0	0	0	0	1	39	1	0	0	6	0	0	0
09:30 AM to 09:45 AM																				
09:45 AM to 10:00 AM																				
10:00 AM to 10:15 AM																				
10:15 AM to 10:30 AM																				
10:30 AM to 10:45 AM																				
10:45 AM to 11:00 AM																				
11:00 AM to 11:15 AM																				
11:15 AM to 11:30 AM																				
INT. PEAK HR (ALL VEH)	125				3	0				0	143				0	43				0
08:00 AM to 09:00 AM	2	0	102	21		0	0	0	0		0	1	142	0		0	37	0	6	
Peak Hour Factor (PHF) Overall 0.85	U 0.50	Left n/a	Thru 0.73	Right 0.75	**SB 0.76**	U n/a	Left n/a	Thru n/a	Right n/a	**WB n/a**	U n/a	Left 0.25	Thru 0.87	Right n/a	**NB 0.85**	U n/a	Left 0.54	Thru n/a	Right 0.50	**EB 0.63**

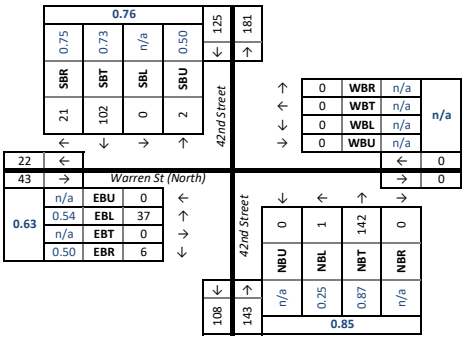
HEAVY VEHICLES (FHWA 4+)

Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	42nd Street										42nd Street					Warren St (North)				
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	1	0		0	0	0	0	
06:45 AM to 07:00 AM	0	0	0	0		0	0	0	0		0	0	1	0		0	0	0	0	
07:00 AM to 07:15 AM	0	0	1	0		0	0	0	0		0	0	0	0		0	0	0	0	
07:15 AM to 07:30 AM	0	0	1	0		0	0	0	0		0	0	1	0		0	0	0	0	
07:30 AM to 07:45 AM	0	0	1	1		0	0	0	0		0	0	2	0		0	0	0	1	
07:45 AM to 08:00 AM	0	0	0	0		0	0	0	0		0	0	1	0		0	0	0	0	
08:00 AM to 08:15 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
08:15 AM to 08:30 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
08:30 AM to 08:45 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
08:45 AM to 09:00 AM	0	0	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	1	0	0		0	0	0	0	
09:15 AM to 09:30 AM	0	0	2	0		0	0	0	0		0	0	0	0		0	1	0	0	
09:30 AM to 09:45 AM																				
09:45 AM to 10:00 AM																				
10:00 AM to 10:15 AM																				
10:15 AM to 10:30 AM																				
10:30 AM to 10:45 AM																				
10:45 AM to 11:00 AM																				
11:00 AM to 11:15 AM																				
11:15 AM to 11:30 AM																				
INT. PEAK HR (ALL VEH)	0					0					0					0				
08:00 AM to 09:00 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
Heavy Vehicle % (PHV):	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	0.0%	0.0%	**0.0%**
INT. PEAK HR (HV ONLY)	4					0					4					1				
06:45 AM to 07:45 AM	0	0	3	1		0	0	0	0		0	0	4	0		0	0	0	1	
Heavy Vehicle % (PHV):	0.0%	0.0%	5.6%	12.5%	**6.5%**	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	5.0%	0.0%	**5.0%**	0.0%	0.0%	0.0%	50.0%	**10.0%**

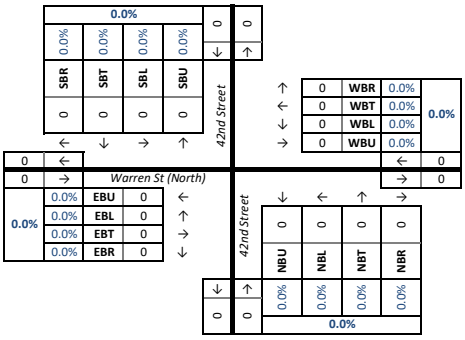
BICYCLES

Direction:	Southbound				Westbound				Northbound				Eastbound			
Roadway:	42nd Street								42nd Street				Warren St (North)			
Movement:	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right
06:30 AM to 06:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45 AM to 07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00 AM to 07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM to 07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM to 07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM to 08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM to 08:15 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM to 08:30 AM	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:00 AM to 09:15 AM	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0
09:15 AM to 09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:30 AM to 09:45 AM																
09:45 AM to 10:00 AM																
10:00 AM to 10:15 AM																
10:15 AM to 10:30 AM																
10:30 AM to 10:45 AM																
10:45 AM to 11:00 AM																
11:00 AM to 11:15 AM																
11:15 AM to 11:30 AM																
INT. PEAK HR (ALL VEH)	2				0				1				0			
08:00 AM to 09:00 AM	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0
INT. PEAK HR (BIKES)	2				0				2				0			
08:15 AM to 09:15 AM	0	0	2	0	0	0	0	0	0	0	2	0	0	0	0	0

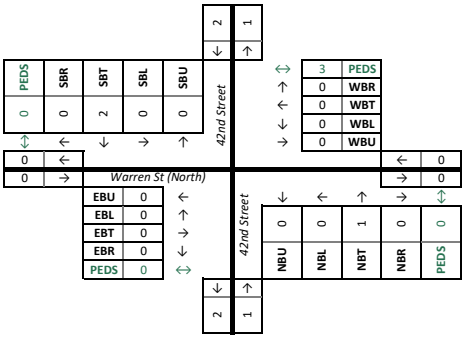
VEHICLE PEAK HOUR VOLS AND PHF: Intersection Peak (vehicle)



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



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



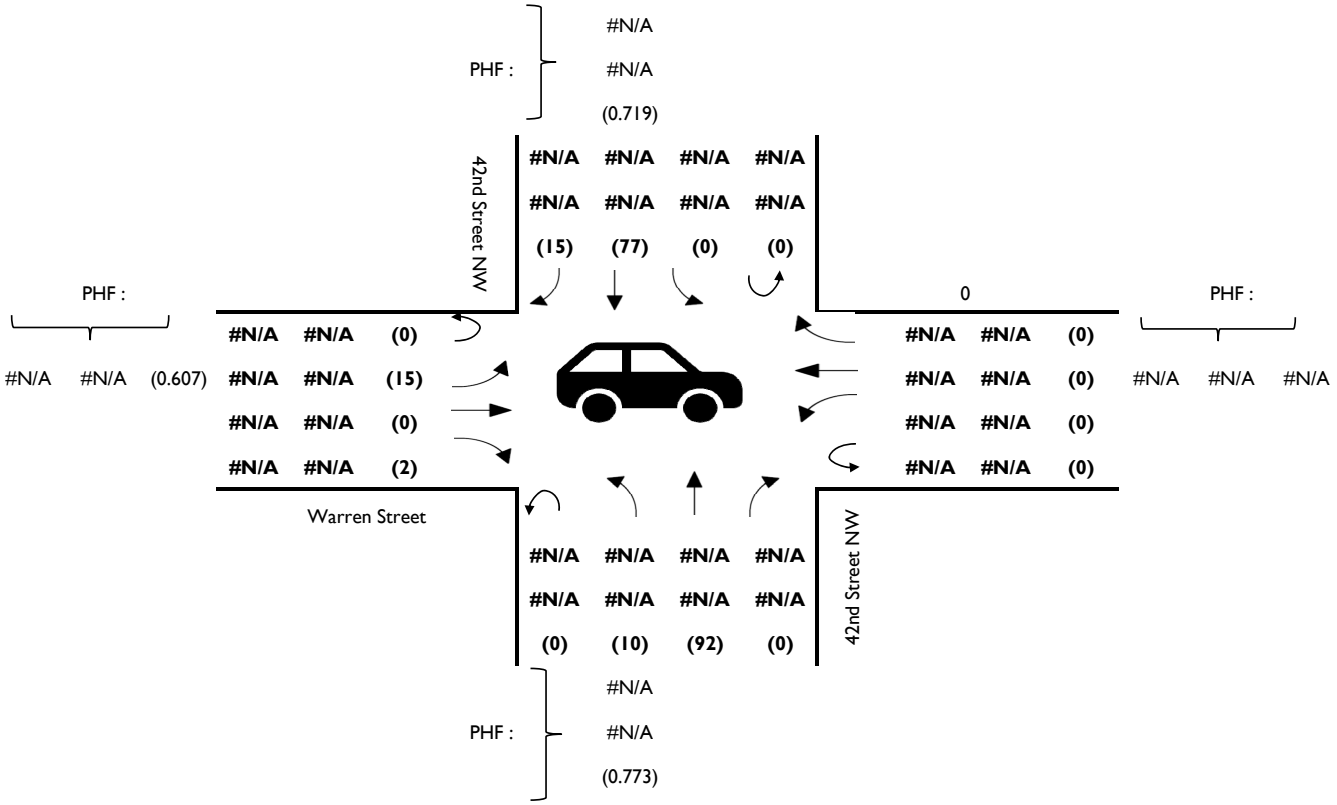
DATA COLLECTION NOTES :

Intersection #4

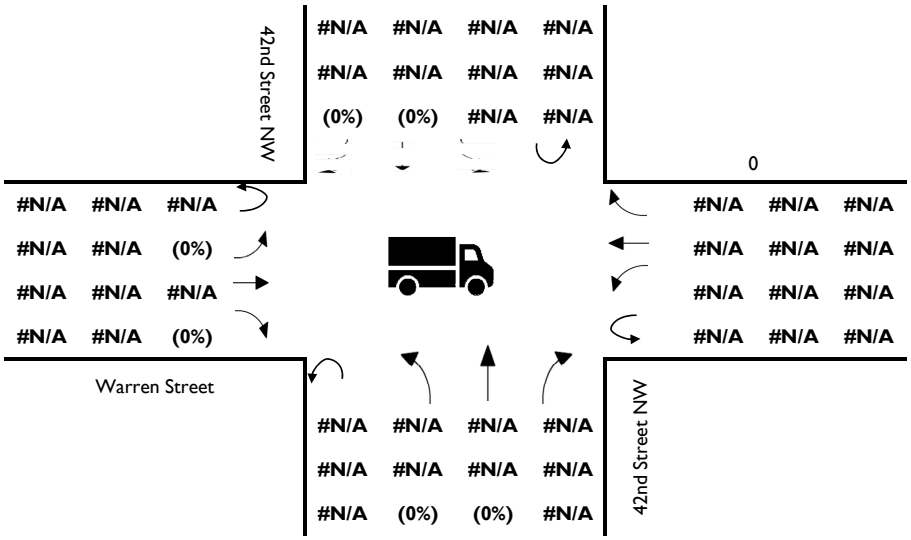
PEAK HOUR TRAFFIC COUNT SUMMARY

Location:	42nd Street & Warren St.- North Washington,DC	AM Peak Hour:	None
		Midday Peak Hour:	None
Date of Count:	5/18/2021	PM Peak Hour:	3:00 PM - 4:00 PM

Peak Hour - Vehicle Counts

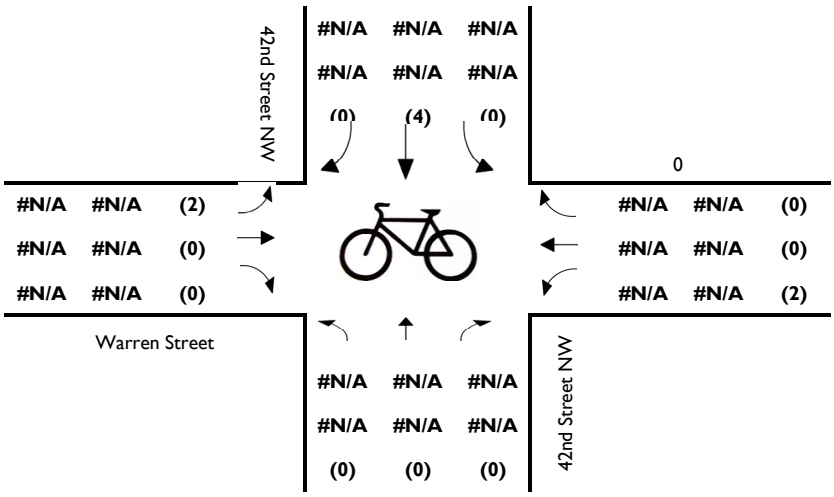


Peak Hour - Heavy Vehicle %

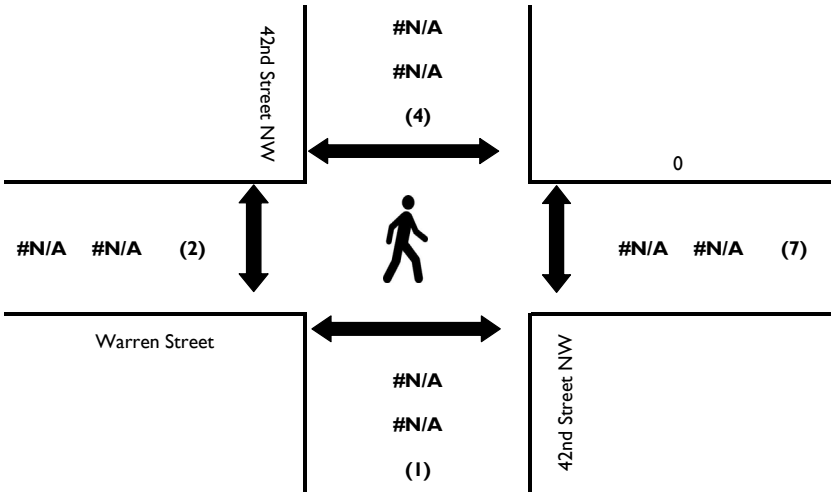


Intersection #4

Peak Hour - Bicycles



Peak Hour - Pedestrians



Intersection #4

Wells + Associates,Inc

Tysons, Virginia

Turning Movement Count - Total Vehicles

PROJECT: The River school
W+A JOB NO: 8182
INTERSECTION: 42nd Street & Warren St.- North
LOCATION: Washington,DC

DATE: 5/18/2021
DAY: Tuesday
WEATHER: clear
COUNTED BY: Agan
INPUTED BY: Agan

SOUTHBOUND ROAD: 42nd Street NW
NORTHBOUND ROAD: 42nd Street NW
WESTBOUND ROAD: 0
EASTBOUND ROAD: Warren Street

Time	Southbound 42nd Street NW						Westbound 0						Northbound 42nd Street NW						Eastbound Warren Street						North & South	East & West	Total
Period	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF			
15 Minute Volumes																											
2:00 PM - 2:15 PM	0	13	0	0	13		0	0	0	0	0		0	29	1	0	30		0	0	1	0	1		43	1	44
2:15 PM - 2:30 PM	6	13	0	0	19		0	0	0	0	0		0	25	0	0	25		0	0	3	0	3		44	3	47
2:30 PM - 2:45 PM	2	13	0	0	15		0	0	0	0	0		0	25	1	0	26		1	0	5	0	6		41	6	47
2:45 PM - 3:00 PM	2	17	0	0	19		0	0	0	0	0		0	21	0	0	21		0	0	4	0	4		40	4	44
3:00 PM - 3:15 PM	4	28	0	0	32		0	0	0	0	0		0	21	3	0	24		0	0	0	0	0		56	0	56
3:15 PM - 3:30 PM	6	20	0	0	26		0	0	0	0	0		0	15	2	0	17		0	0	4	0	4		43	4	47
3:30 PM - 3:45 PM	0	16	0	0	16		0	0	0	0	0		0	29	4	0	33		1	0	6	0	7		49	7	56
3:45 PM - 4:00 PM	5	13	0	0	18		0	0	0	0	0		0	27	1	0	28		1	0	5	0	6		46	6	52
Total	25	133	0	0	158		0	0	0	0	0		0	192	12	0	204		3	0	28	0	31		362	31	393
One Hour Volumes																											
2:00 PM - 3:00 PM	10	56	0	0	66	0.868	0	0	0	0	0		0	100	2	0	102	0.85	1	0	13	0	14	0.583	168	14	182
2:15 PM - 3:15 PM	14	71	0	0	85	0.664	0	0	0	0	0		0	92	4	0	96	0.923	1	0	12	0	13	0.542	181	13	194
2:30 PM - 3:30 PM	14	78	0	0	92	0.719	0	0	0	0	0		0	82	6	0	88	0.846	1	0	13	0	14	0.583	180	14	194
2:45 PM - 3:45 PM	12	81	0	0	93	0.727	0	0	0	0	0		0	86	9	0	95	0.72	1	0	14	0	15	0.536	188	15	203
3:00 PM - 4:00 PM	15	77	0	0	92	0.719	0	0	0	0	0		0	92	10	0	102	0.773	2	0	15	0	17	0.607	194	17	211

Intersection #4

Wells + Associates, Inc.

Tysons, Virginia

Turning Movement Count - Bicycles

PROJECT:	The River school	**DATE:**	5/18/2021	**SOUTHBOUND ROAD:**	42nd Street NW
W+A JOB NO:	8182	**DAY:**	Tuesday	**NORTHBOUND ROAD:**	42nd Street NW
INTERSECTION:	42nd Street & Warren St.- North	**WEATHER:**	clear	**WESTBOUND ROAD:**	0
LOCATION:	Washington,DC	**COUNTED BY:**	Agan	**EASTBOUND ROAD:**	Warren Street
		INPUTED BY:	Agan		

Time Period	Southbound 42nd Street NW				Westbound 0				Northbound 42nd Street NW				Eastbound Warren Street				North & South	East & West	Total
	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total			
15 Minute Volumes																			
2:00 PM - 2:15 PM				0				0				0				0	0	0	0
2:15 PM - 2:30 PM				0			1	1				0				0	0	1	1
2:30 PM - 2:45 PM				0			1	1				0				0	0	1	1
2:45 PM - 3:00 PM		1		1				0				0			1	1	1	1	2
3:00 PM - 3:15 PM		1		1			1	1				0			1	1	1	2	3
3:15 PM - 3:30 PM				0			1	1				0				0	0	1	1
3:30 PM - 3:45 PM				0				0				0				0	0	0	0
3:45 PM - 4:00 PM		3		3				0				0			1	1	3	1	4
Total	0	5	0	5	0	0	4	4	0	0	0	0	0	0	3	3	5	7	12
One Hour Volumes																			
2:00 PM - 3:00 PM	0	1	0	1	0	0	2	2	0	0	0	0	0	0	1	1	1	3	4
2:15 PM - 3:15 PM	0	2	0	2	0	0	3	3	0	0	0	0	0	0	2	2	2	5	7
2:30 PM - 3:30 PM	0	2	0	2	0	0	3	3	0	0	0	0	0	0	2	2	2	5	7
2:45 PM - 3:45 PM	0	2	0	2	0	0	2	2	0	0	0	0	0	0	2	2	2	4	6
3:00 PM - 4:00 PM	0	4	0	4	0	0	2	2	0	0	0	0	0	0	2	2	4	4	8

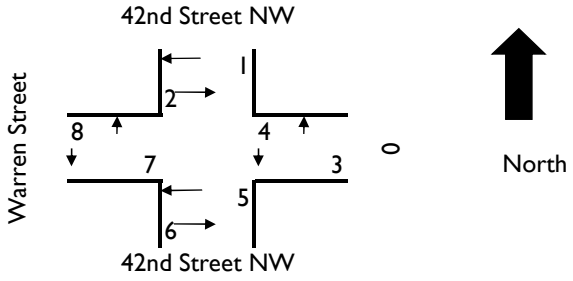
Intersection #4

Wells + Associates, Inc.

Tysons, Virginia

Pedestrian Volume Survey

PROJECT: The River school
W + A JOB NO: 8182
INTERSECTION: 42nd Street & Warren St.- North
LOCATION: Washington,DC
DATE: 5/18/2021
DAY: Tuesday
WEATHER: clear
COUNTED BY: Agan
INPUTED BY: Agan



Time Period	Movement 1	2	3	4	5	6	7	8	1 + 2	3 + 4	5 + 6	7+ 8	Total
15 Minute Volumes													
2:00 PM - 2:15 PM	2		3	2				1	2	5	0	1	8
2:15 PM - 2:30 PM			1	2	1				0	3	1	0	4
2:30 PM - 2:45 PM			2	1	1		1		0	3	1	1	5
2:45 PM - 3:00 PM			1	1					0	2	0	0	2
3:00 PM - 3:15 PM		1		1					1	1	0	0	2
3:15 PM - 3:30 PM		2		2					2	2	0	0	4
3:30 PM - 3:45 PM				1				1	0	1	0	1	2
3:45 PM - 4:00 PM	1		1	2		1	1		1	3	1	1	6
Total	3	3	8	12	2	1	2	2	6	20	3	4	33
One Hour Volumes													
2:00 PM - 3:00 PM	2	0	7	6	2	0	1	1	2	13	2	2	19
2:15 PM - 3:15 PM	0	1	4	5	2	0	1	0	1	9	2	1	13
2:30 PM - 3:30 PM	0	3	3	5	1	0	1	0	3	8	1	1	13
2:45 PM - 3:45 PM	0	3	1	5	0	0	0	1	3	6	0	1	10
3:00 PM - 4:00 PM	1	3	1	6	0	1	1	1	4	7	1	2	14

Intersection #4

Multimodal Turning Movement Count Report

Project Name : American University Data Collection
Project # : 3
Location Washington DC
Data Source: Excel Consultants LLC

Analysis Period: STUDY_PERIOD 04:00 PM to 07:00 PM
Date of Counts: Thursday, February 27, 2020
Weather: Partly Cloudy

Volumes Displayed as: 1. Intersection Peak (vehicle)
Intersection Peak Hour (all vehicles): 05:15 PM to 06:15 PM
System Peak Hour (all vehicles): 05:00 PM to 06:00 PM
User-Defined Peak Hour: 05:00 PM to 06:00 PM

Intersection: 1. 42nd Street & /Warren St (North)

ALL VEHICLES

Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	42nd Street										42nd Street					Warren St (North)				
Movement:	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds
04:00 PM to 04:15 PM	0	0	19	4	0	0	0	0	0	0	0	0	30	0	0	0	3	0	0	0
04:15 PM to 04:30 PM	0	0	18	5	0	0	0	0	0	0	0	0	22	0	0	0	3	0	0	0
04:30 PM to 04:45 PM	0	0	23	2	1	0	0	0	0	0	0	1	17	0	0	0	4	0	0	0
04:45 PM to 05:00 PM	0	0	23	5	2	0	0	0	0	0	0	0	35	0	0	0	6	0	0	0
05:00 PM to 05:15 PM	0	0	27	2	0	0	0	0	0	0	0	1	30	0	0	0	4	0	0	0
05:15 PM to 05:30 PM	0	0	25	6	0	0	0	0	0	0	0	0	35	0	0	0	5	0	0	0
05:30 PM to 05:45 PM	0	0	27	4	2	0	0	0	0	0	0	2	36	0	0	0	3	0	0	0
05:45 PM to 06:00 PM	0	0	26	9	0	0	0	0	0	0	0	0	37	0	0	0	4	0	0	0
06:00 PM to 06:15 PM	0	0	24	3	5	0	0	0	0	0	0	1	38	0	0	0	1	0	0	0
06:15 PM to 06:30 PM	1	0	20	3	0	0	0	0	0	0	0	0	29	0	0	0	3	0	0	0
06:30 PM to 06:45 PM	0	0	17	4	0	0	0	0	0	0	0	0	30	0	0	0	3	0	0	0
06:45 PM to 07:00 PM	0	0	12	2	0	0	0	0	0	0	0	2	29	0	0	0	3	0	2	0
07:00 PM to 07:15 PM																				
07:15 PM to 07:30 PM																				
07:30 PM to 07:45 PM																				
07:45 PM to 08:00 PM																				
08:00 PM to 08:15 PM																				
08:15 PM to 08:30 PM																				
08:30 PM to 08:45 PM																				
08:45 PM to 09:00 PM																				
INT. PEAK HR (ALL VEH)	124				7	0				0	149				0	13				0
05:15 PM to 06:15 PM	0	0	102	22		0	0	0	0		0	3	146	0		0	13	0	0	
Peak Hour Factor (PHF) Overall 0.94	U	Left	Thru	Right	SB	U	Left	Thru	Right	WB	U	Left	Thru	Right	NB	U	Left	Thru	Right	EB
	n/a	n/a	0.94	0.61	0.89	n/a	n/a	n/a	n/a	n/a	n/a	0.38	0.96	n/a	0.96	n/a	0.65	n/a	n/a	0.65

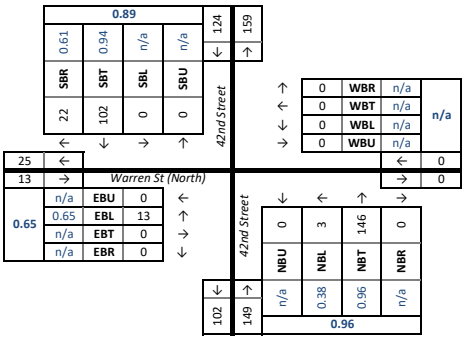
HEAVY VEHICLES (FHWA 4+)

Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	42nd Street										42nd Street					Warren St (North)				
Movement:	U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right	
04:00 PM to 04:15 PM	0	0	1	0		0	0	0	0		0	0	0	0		0	0	0	0	
04:15 PM to 04:30 PM	0	0	1	0		0	0	0	0		0	0	0	0		0	0	0	0	
04:30 PM to 04:45 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
04:45 PM to 05:00 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
05:00 PM to 05:15 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
05:15 PM to 05:30 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
05:30 PM to 05:45 PM	0	0	0	0		0	0	0	0		0	0	1	0		0	0	0	0	
05:45 PM to 06:00 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
06:00 PM to 06:15 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
06:15 PM to 06:30 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
06:30 PM to 06:45 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
06:45 PM to 07:00 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
07:00 PM to 07:15 PM																				
07:15 PM to 07:30 PM																				
07:30 PM to 07:45 PM																				
07:45 PM to 08:00 PM																				
08:00 PM to 08:15 PM																				
08:15 PM to 08:30 PM																				
08:30 PM to 08:45 PM																				
08:45 PM to 09:00 PM																				
INT. PEAK HR (ALL VEH)	0					0					1					0				
05:15 PM to 06:15 PM	0	0	0	0		0	0	0	0		0	0	1	0		0	0	0	0	
Heavy Vehicle % (PHV):	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	0.0%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%
INT. PEAK HR (HV ONLY)	2					0					0					0				
04:00 PM to 05:00 PM	0	0	2	0		0	0	0	0		0	0	0	0		0	0	0	0	
Heavy Vehicle % (PHV):	0.0%	0.0%	2.4%	0.0%	2.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

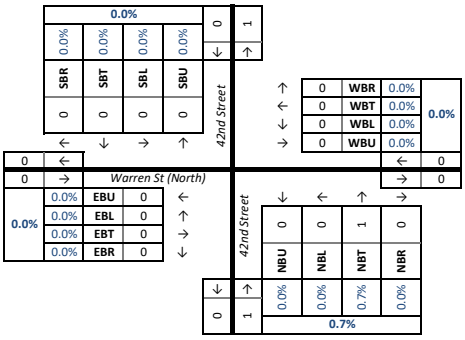
BICYCLES

Direction:	Southbound				Westbound				Northbound				Eastbound			
Roadway:	42nd Street								42nd Street				Warren St (North)			
Movement:	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right
04:00 PM to 04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM to 04:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM to 04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM to 05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM to 05:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
05:15 PM to 05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM to 05:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
05:45 PM to 06:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
06:00 PM to 06:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15 PM to 06:30 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
06:30 PM to 06:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45 PM to 07:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00 PM to 07:15 PM																
07:15 PM to 07:30 PM																
07:30 PM to 07:45 PM																
07:45 PM to 08:00 PM																
08:00 PM to 08:15 PM																
08:15 PM to 08:30 PM																
08:30 PM to 08:45 PM																
08:45 PM to 09:00 PM																
INT. PEAK HR (ALL VEH)	0				0				2				0			
05:15 PM to 06:15 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
INT. PEAK HR (BIKES)	0				0				3				0			
05:00 PM to 06:00 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0

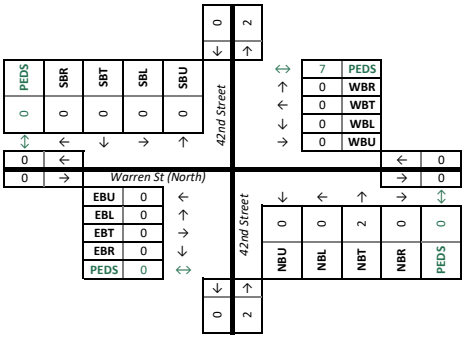
VEHICLE PEAK HOUR VOLS AND PHF: Intersection Peak (vehicle)



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



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



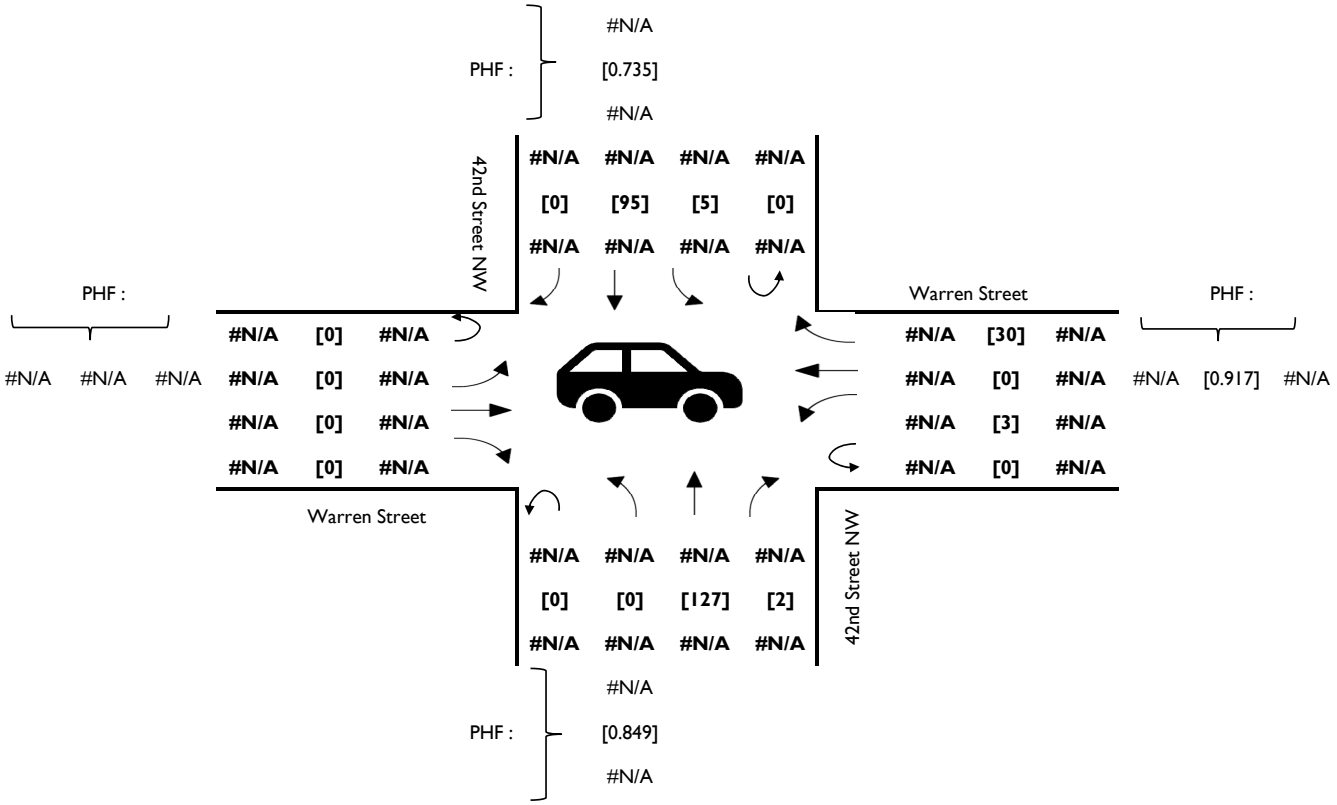
DATA COLLECTION NOTES :

Intersection #5

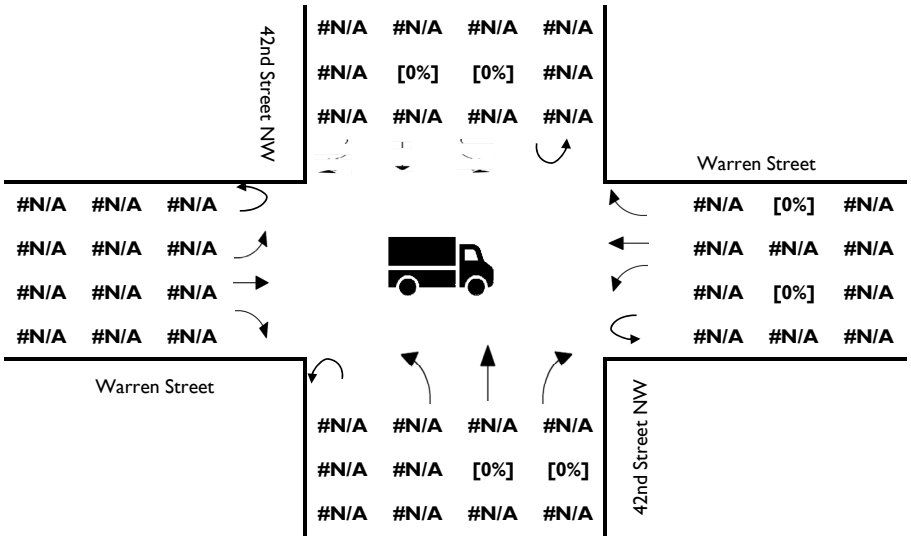
PEAK HOUR TRAFFIC COUNT SUMMARY

Location:	Warren St. & 42nd Street NW Washington,DC	AM Peak Hour:	None
		Midday Peak Hour:	2:45 PM - 3:45 PM
Date of Count:	5/18/2021	PM Peak Hour:	None

Peak Hour - Vehicle Counts

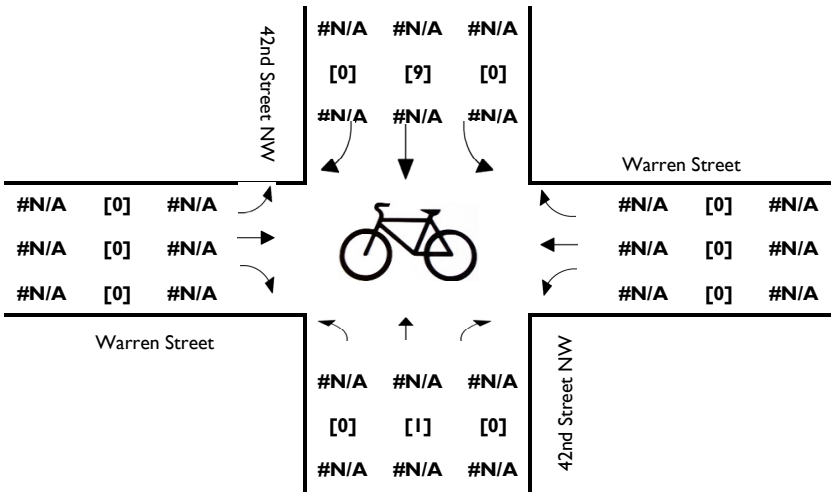


Peak Hour - Heavy Vehicle %

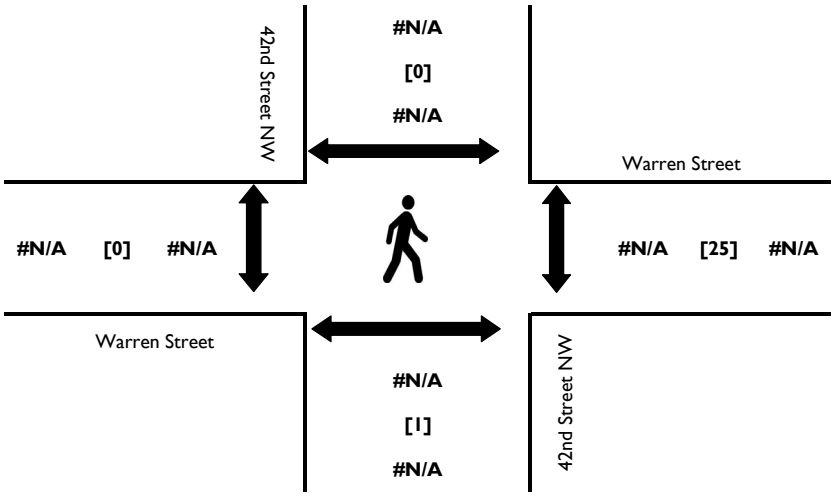


Intersection #5

Peak Hour - Bicycles



Peak Hour - Pedestrians



Intersection #5

Wells + Associates,Inc

Tysons, Virginia

Turning Movement Count - Total Vehicles

PROJECT: The River school
W+A JOB NO: 8182
INTERSECTION: Warren St. & 42nd Street NW
LOCATION: Washington,DC

DATE: 5/18/2021
DAY: Tuesday
WEATHER: clear
COUNTED BY: Agan
INPUTED BY: Agan

SOUTHBOUND ROAD: 42nd Street NW
NORTHBOUND ROAD: 42nd Street NW
WESTBOUND ROAD: Warren Street
EASTBOUND ROAD: Warren Street

Time	Southbound 42nd Street NW						Westbound Warren Street						Northbound 42nd Street NW						Eastbound Warren Street						North & South	East & West	Total
Period	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF			
15 Minute Volumes																											
2:00 PM - 2:15 PM	0	13	1	0	14		1	0	1	0	2		0	36	0	0	36		0	0	0	0	0		50	2	52
2:15 PM - 2:30 PM	0	12	2	0	14		4	0	1	0	5		1	26	0	0	27		0	0	0	0	0		41	5	46
2:30 PM - 2:45 PM	0	13	0	0	13		2	0	1	0	3		1	23	0	0	24		0	0	0	0	0		37	3	40
2:45 PM - 3:00 PM	0	17	0	0	17		9	0	0	0	9		2	30	0	0	32		0	0	0	0	0		49	9	58
3:00 PM - 3:15 PM	0	23	2	0	25		7	0	1	0	8		0	38	0	0	38		0	0	0	0	0		63	8	71
3:15 PM - 3:30 PM	0	23	1	0	24		7	0	1	0	8		0	33	0	0	33		0	0	0	0	0		57	8	65
3:30 PM - 3:45 PM	0	32	2	0	34		7	0	1	0	8		0	26	0	0	26		0	0	0	0	0		60	8	68
3:45 PM - 4:00 PM	0	27	4	0	31		3	0	0	0	3		0	22	0	0	22		0	0	0	0	0		53	3	56
Total	0	160	12	0	172		40	0	6	0	46		4	234	0	0	238		0	0	0	0	0		410	46	456
One Hour Volumes																											
2:00 PM - 3:00 PM	0	55	3	0	58	0.853	16	0	3	0	19	0.528	4	115	0	0	119	0.826	0	0	0	0	0		177	19	196
2:15 PM - 3:15 PM	0	65	4	0	69	0.69	22	0	3	0	25	0.694	4	117	0	0	121	0.796	0	0	0	0	0		190	25	215
2:30 PM - 3:30 PM	0	76	3	0	79	0.79	25	0	3	0	28	0.778	3	124	0	0	127	0.836	0	0	0	0	0		206	28	234
2:45 PM - 3:45 PM	0	95	5	0	100	0.735	30	0	3	0	33	0.917	2	127	0	0	129	0.849	0	0	0	0	0		229	33	262
3:00 PM - 4:00 PM	0	105	9	0	114	0.838	24	0	3	0	27	0.844	0	119	0	0	119	0.783	0	0	0	0	0		233	27	260

Intersection #5

Wells + Associates, Inc.

Tysons, Virginia

Turning Movement Count - Bicycles

PROJECT:	The River school	**DATE:**	5/18/2021	**SOUTHBOUND ROAD:**	42nd Street NW
W+A JOB NO:	8182	**DAY:**	Tuesday	**NORTHBOUND ROAD:**	42nd Street NW
INTERSECTION:	Warren St. & 42nd Street NW	**WEATHER:**	clear	**WESTBOUND ROAD:**	Warren Street
LOCATION:	Washington,DC	**COUNTED BY:**	Agan	**EASTBOUND ROAD:**	Warren Street
		INPUTED BY:	Agan		

Time	Southbound 42nd Street NW				Westbound Warren Street				Northbound 42nd Street NW				Eastbound Warren Street				North & South	East & West	Total
Period	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total			
15 Minute Volumes																			
2:00 PM - 2:15 PM		1		1				0				0				0	1	0	1
2:15 PM - 2:30 PM		1	1	2				0		3		3				0	5	0	5
2:30 PM - 2:45 PM		2		2				0				0				0	2	0	2
2:45 PM - 3:00 PM		2		2				0		1		1				0	3	0	3
3:00 PM - 3:15 PM		2		2				0				0				0	2	0	2
3:15 PM - 3:30 PM		2		2				0				0				0	2	0	2
3:30 PM - 3:45 PM		3		3				0				0				0	3	0	3
3:45 PM - 4:00 PM				0				0				0				0	0	0	0
Total	0	13	1	14	0	0	0	0	0	4	0	4	0	0	0	0	18	0	18
One Hour Volumes																			
2:00 PM - 3:00 PM	0	6	1	7	0	0	0	0	0	4	0	4	0	0	0	0	11	0	11
2:15 PM - 3:15 PM	0	7	1	8	0	0	0	0	0	4	0	4	0	0	0	0	12	0	12
2:30 PM - 3:30 PM	0	8	0	8	0	0	0	0	0	1	0	1	0	0	0	0	9	0	9
2:45 PM - 3:45 PM	0	9	0	9	0	0	0	0	0	1	0	1	0	0	0	0	10	0	10
3:00 PM - 4:00 PM	0	7	0	7	0	0	0	0	0	0	0	0	0	0	0	0	7	0	7

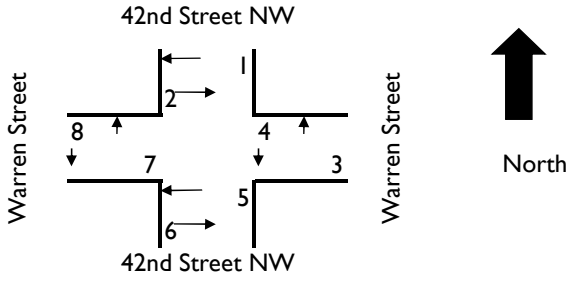
Intersection #5

Wells + Associates, Inc.

Tysons, Virginia

Pedestrian Volume Survey

PROJECT: The River school
W + A JOB NO: 8182
INTERSECTION: Warren St. & 42nd Street NW
LOCATION: Washington,DC
DATE: 5/18/2021
DAY: Tuesday
WEATHER: clear
COUNTED BY: Agan
INPUTED BY: Agan



Time Period	Movement 1	2	3	4	5	6	7	8	1 + 2	3 + 4	5 + 6	7+ 8	Total
15 Minute Volumes													
2:00 PM - 2:15 PM			2	1	6				0	3	6	0	9
2:15 PM - 2:30 PM			2	2					0	4	0	0	4
2:30 PM - 2:45 PM					1				0	0	1	0	1
2:45 PM - 3:00 PM			2						0	2	0	0	2
3:00 PM - 3:15 PM			4	5					0	9	0	0	9
3:15 PM - 3:30 PM			4	3					0	7	0	0	7
3:30 PM - 3:45 PM			1	6		1			0	7	1	0	8
3:45 PM - 4:00 PM			3	3					0	6	0	0	6
Total	0	0	18	20	7	1	0	0	0	38	8	0	46
One Hour Volumes													
2:00 PM - 3:00 PM	0	0	6	3	7	0	0	0	0	9	7	0	16
2:15 PM - 3:15 PM	0	0	8	7	1	0	0	0	0	15	1	0	16
2:30 PM - 3:30 PM	0	0	10	8	1	0	0	0	0	18	1	0	19
2:45 PM - 3:45 PM	0	0	11	14	0	1	0	0	0	25	1	0	26
3:00 PM - 4:00 PM	0	0	12	17	0	1	0	0	0	29	1	0	30

Intersection #6

Multimodal Turning Movement Count Report

Project Name : American University Data Collection
Project # : 3
Location Washington DC
Data Source: Excel Consultants LLC

Analysis Period: STUDY_PERIOD 06:30 AM to 09:30 AM
Date of Counts: Thursday, February 27, 2020
Weather: Partly Cloudy

Volumes Displayed as: 1. Intersection Peak (vehicle)
Intersection Peak Hour (all vehicles): 08:00 AM to 09:00 AM
System Peak Hour (all vehicles): 07:30 AM to 08:30 AM
User-Defined Peak Hour: 07:30 AM to 08:30 AM

Intersection: 1. 42nd Street & /Warren St (South)

ALL VEHICLES

Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	42nd Street										42nd Street					Warren St (South)				
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	4	0	0	0	0	0	0	0	0	2	8	0	0	0	0	0	0	0
06:45 AM to 07:00 AM	0	0	6	0	0	0	0	0	0	0	0	0	15	0	0	0	0	0	1	0
07:00 AM to 07:15 AM	0	0	5	0	0	0	0	0	0	0	0	1	22	0	0	0	0	0	3	0
07:15 AM to 07:30 AM	0	0	17	0	0	0	0	0	0	0	0	2	13	0	4	0	1	0	2	0
07:30 AM to 07:45 AM	0	0	24	2	0	0	0	0	0	0	0	1	24	0	0	0	1	0	7	0
07:45 AM to 08:00 AM	0	0	18	1	0	0	0	0	0	0	0	2	23	0	0	0	4	0	10	0
08:00 AM to 08:15 AM	0	0	14	0	0	0	0	0	0	0	0	1	29	0	2	0	8	0	8	0
08:15 AM to 08:30 AM	0	0	28	0	0	0	0	0	0	0	0	2	34	0	0	0	1	0	10	0
08:30 AM to 08:45 AM	0	0	21	1	0	0	0	0	0	0	0	3	30	0	3	0	7	0	9	0
08:45 AM to 09:00 AM	0	0	29	0	0	0	0	0	0	0	0	3	30	0	1	0	2	0	13	0
09:00 AM to 09:15 AM	0	0	19	1	0	0	0	0	0	0	0	4	17	0	0	0	2	0	5	0
09:15 AM to 09:30 AM	0	0	19	1	0	0	0	0	0	0	0	1	29	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																				
INT. PEAK HR (ALL VEH)	93				0	0				0	132				6	58				0
08:00 AM to 09:00 AM	0	0	92	1		0	0	0	0		0	9	123	0		0	18	0	40	
Peak Hour Overall	U	Left	Thru	Right	**SB**	U	Left	Thru	Right	**WB**	U	Left	Thru	Right	**NB**	U	Left	Thru	Right	**EB**
Factor (PHF) 0.92	n/a	n/a	0.79	0.25	**0.80**	n/a	n/a	n/a	n/a	**n/a**	n/a	0.75	0.90	n/a	**0.92**	n/a	0.56	n/a	0.77	**0.91**

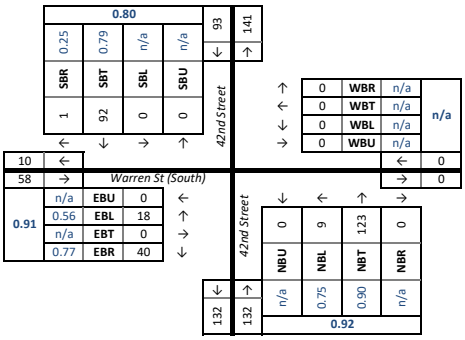
HEAVY VEHICLES (FHWA 4+)

Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	42nd Street										42nd Street					Warren St (South)				
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	2	0		0	0	0	0	
07:00 AM to 07:15 AM	0	0	1	0		0	0	0	0		0	0	0	0		0	0	0	0	
07:15 AM to 07:30 AM	0	0	1	0		0	0	0	0		0	1	0	0		0	0	0	0	
07:30 AM to 07:45 AM	0	0	1	0		0	0	0	0		0	0	1	0		0	0	0	1	
07:45 AM to 08:00 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
08:00 AM to 08:15 AM	0	0	0	0		0	0	0	0		0	0	1	0		0	0	0	0	
08:15 AM to 08:30 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
08:30 AM to 08:45 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
08:45 AM to 09:00 AM	0	0	0	0		0	0	0	0		0	0	1	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	1	0		0	0	0	0		0	0	1	0		0	0	0	0	
09:30 AM to 09:45 AM																				
09:45 AM to 10:00 AM																				
10:00 AM to 10:15 AM																				
10:15 AM to 10:30 AM																				
10:30 AM to 10:45 AM																				
10:45 AM to 11:00 AM																				
11:00 AM to 11:15 AM																				
11:15 AM to 11:30 AM																				
INT. PEAK HR (ALL VEH)	0					0					2					0				
08:00 AM to 09:00 AM	0	0	0	0		0	0	0	0		0	0	2	0		0	0	0	0	
Heavy Vehicle % (PHV):	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	1.6%	0.0%	**1.5%**	0.0%	0.0%	0.0%	0.0%	**0.0%**
INT. PEAK HR (HV ONLY)	3					0					4					1				
06:45 AM to 07:45 AM	0	0	3	0		0	0	0	0		0	1	3	0		0	0	0	1	
Heavy Vehicle % (PHV):	0.0%	0.0%	5.8%	0.0%	**5.6%**	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	25.0%	4.1%	0.0%	**5.1%**	0.0%	0.0%	0.0%	7.7%	**6.7%**

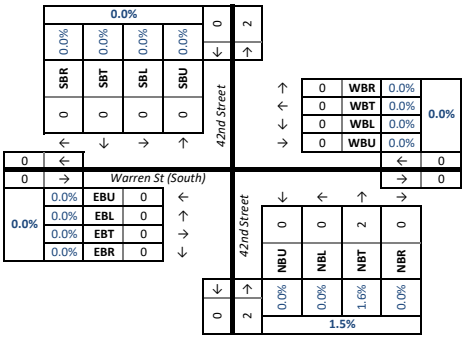
BICYCLES

Direction:	Southbound				Westbound				Northbound				Eastbound			
Roadway:	42nd Street								42nd Street				Warren St (South)			
Movement:	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right
06:30 AM to 06:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45 AM to 07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00 AM to 07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM to 07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
07:30 AM to 07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM to 08:00 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM to 08:15 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM to 08:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
08:30 AM to 08:45 AM	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0
08:45 AM to 09:00 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
09:00 AM to 09:15 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15 AM to 09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:30 AM to 09:45 AM																
09:45 AM to 10:00 AM																
10:00 AM to 10:15 AM																
10:15 AM to 10:30 AM																
10:30 AM to 10:45 AM																
10:45 AM to 11:00 AM																
11:00 AM to 11:15 AM																
11:15 AM to 11:30 AM																
INT. PEAK HR (ALL VEH)	3				0				2				0			
08:00 AM to 09:00 AM	0	0	3	0	0	0	0	0	0	0	2	0	0	0	0	0
INT. PEAK HR (BIKES)	3				0				2				0			
07:45 AM to 08:45 AM	0	0	3	0	0	0	0	0	0	0	2	0	0	0	0	0

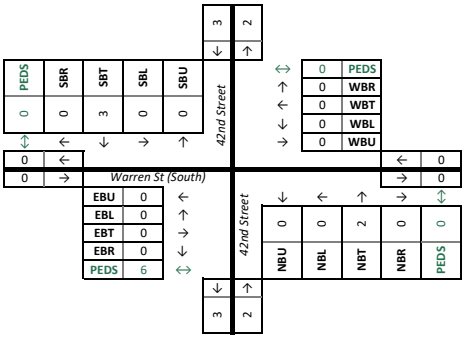
VEHICLE PEAK HOUR VOLS AND PHF: Intersection Peak (vehicle)



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



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



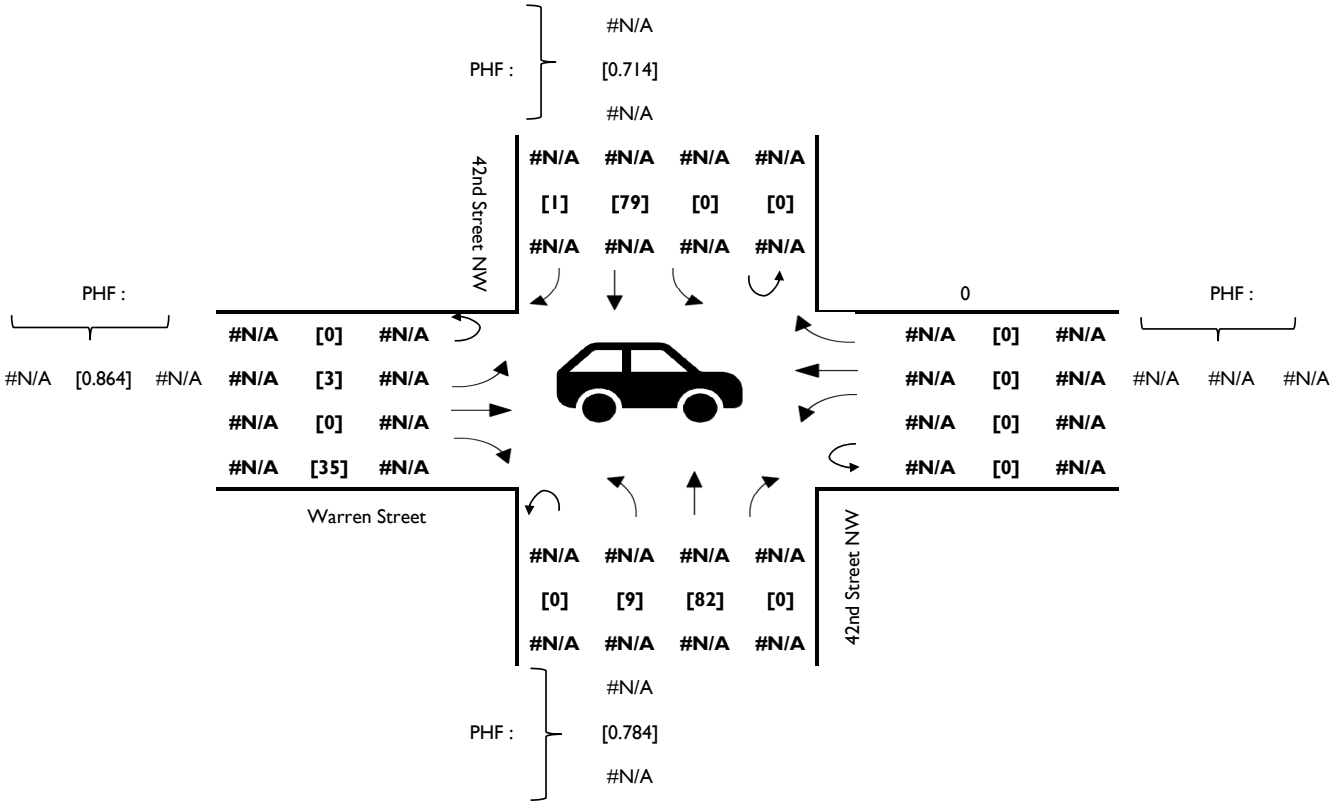
DATA COLLECTION NOTES :

Intersection #6

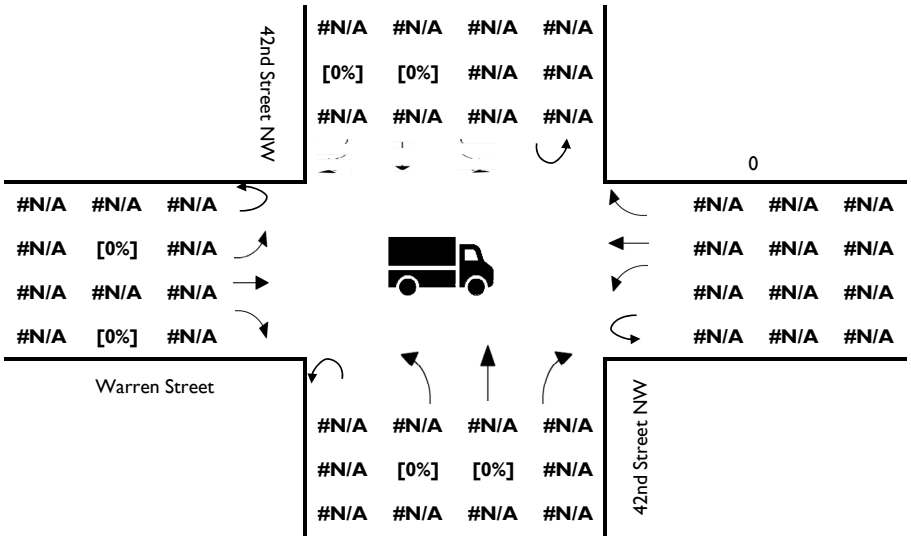
PEAK HOUR TRAFFIC COUNT SUMMARY

Location:	42nd Street & Warren St.- South Washington,DC	AM Peak Hour:	None
		Midday Peak Hour:	2:45 PM - 3:45 PM
Date of Count:	5/18/2021	PM Peak Hour:	None

Peak Hour - Vehicle Counts

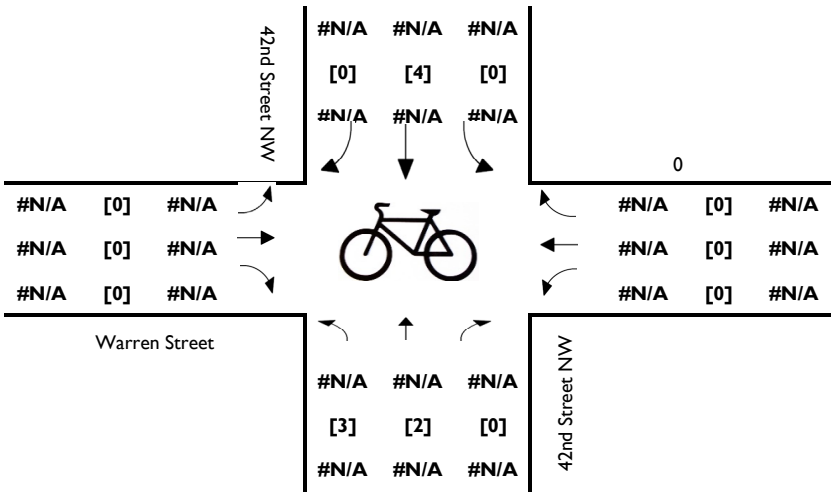


Peak Hour - Heavy Vehicle %

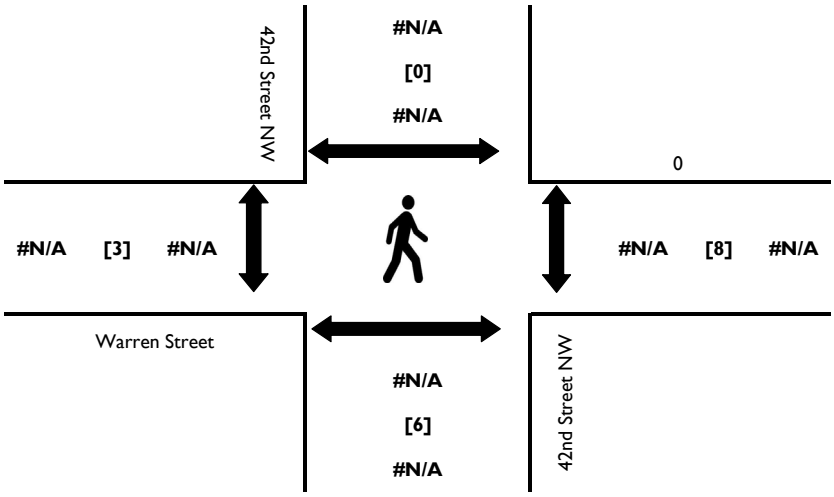


Intersection #6

Peak Hour - Bicycles



Peak Hour - Pedestrians



Intersection #6

Wells + Associates,Inc

Tysons, Virginia

Turning Movement Count - Total Vehicles

PROJECT: The River school
W+A JOB NO: 8182
INTERSECTION: 42nd Street & Warren St.- South
LOCATION: Washington,DC

DATE: 5/18/2021
DAY: Tuesday
WEATHER: clear
COUNTED BY: Agan
INPUTED BY: Agan

SOUTHBOUND ROAD: 42nd Street NW
NORTHBOUND ROAD: 42nd Street NW
WESTBOUND ROAD: 0
EASTBOUND ROAD: Warren Street

Time	Southbound 42nd Street NW						Westbound 0						Northbound 42nd Street NW						Eastbound Warren Street						North & South	East & West	Total
Period	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF			
15 Minute Volumes																											
2:00 PM - 2:15 PM	0	11	0	0	11		0	0	0	0	0		0	26	3	0	29		7	0	0	0	7		40	7	47
2:15 PM - 2:30 PM	0	13	0	0	13		0	0	0	0	0		0	26	2	0	28		8	0	0	0	8		41	8	49
2:30 PM - 2:45 PM	0	14	0	0	14		0	0	0	0	0		0	24	3	0	27		5	0	1	0	6		41	6	47
2:45 PM - 3:00 PM	1	17	0	0	18		0	0	0	0	0		0	19	0	0	19		10	0	0	0	10		37	10	47
3:00 PM - 3:15 PM	0	28	0	0	28		0	0	0	0	0		0	21	7	0	28		9	0	1	0	10		56	10	66
3:15 PM - 3:30 PM	0	19	0	0	19		0	0	0	0	0		0	15	0	0	15		5	0	2	0	7		34	7	41
3:30 PM - 3:45 PM	0	15	0	0	15		0	0	0	0	0		0	27	2	0	29		11	0	0	0	11		44	11	55
3:45 PM - 4:00 PM	2	11	0	0	13		0	0	0	0	0		0	19	3	0	22		6	0	0	0	6		35	6	41
Total	3	129	0	0	132		0	0	0	0	0		0	177	20	0	197		61	0	4	0	65		329	65	394
One Hour Volumes																											
2:00 PM - 3:00 PM	1	55	0	0	56	0.778	0	0	0	0	0		0	95	8	0	103	0.888	30	0	1	0	31	0.775	159	31	190
2:15 PM - 3:15 PM	1	72	0	0	73	0.652	0	0	0	0	0		0	90	12	0	102	0.911	32	0	2	0	34	0.85	175	34	209
2:30 PM - 3:30 PM	1	78	0	0	79	0.705	0	0	0	0	0		0	79	10	0	89	0.795	29	0	4	0	33	0.825	168	33	201
2:45 PM - 3:45 PM	1	79	0	0	80	0.714	0	0	0	0	0		0	82	9	0	91	0.784	35	0	3	0	38	0.864	171	38	209
3:00 PM - 4:00 PM	2	73	0	0	75	0.67	0	0	0	0	0		0	82	12	0	94	0.81	31	0	3	0	34	0.773	169	34	203

Intersection #6

Wells + Associates, Inc.

Tysons, Virginia

Turning Movement Count - Bicycles

PROJECT:	The River school	**DATE:**	5/18/2021	**SOUTHBOUND ROAD:**	42nd Street NW
W+A JOB NO:	8182	**DAY:**	Tuesday	**NORTHBOUND ROAD:**	42nd Street NW
INTERSECTION:	42nd Street & Warren St.- South	**WEATHER:**	clear	**WESTBOUND ROAD:**	0
LOCATION:	Washington,DC	**COUNTED BY:**	Agan	**EASTBOUND ROAD:**	Warren Street
		INPUTED BY:	Agan		

Time Period	Southbound 42nd Street NW				Westbound 0				Northbound 42nd Street NW				Eastbound Warren Street				North & South	East & West	Total
	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total			
15 Minute Volumes																			
2:00 PM - 2:15 PM		1		1				0				0				0	1	0	1
2:15 PM - 2:30 PM				0				0		1		1				0	1	0	1
2:30 PM - 2:45 PM				0				0		1		1				0	1	0	1
2:45 PM - 3:00 PM		1		1				0				0				0	1	0	1
3:00 PM - 3:15 PM		2		2				0		1	2	3				0	5	0	5
3:15 PM - 3:30 PM		1		1				0		1	1	2				0	3	0	3
3:30 PM - 3:45 PM				0				0				0				0	0	0	0
3:45 PM - 4:00 PM		3		3				0				0				0	3	0	3
Total	0	8	0	8	0	0	0	0	0	4	3	7	0	0	0	0	15	0	15
One Hour Volumes																			
2:00 PM - 3:00 PM	0	2	0	2	0	0	0	0	0	2	0	2	0	0	0	0	4	0	4
2:15 PM - 3:15 PM	0	3	0	3	0	0	0	0	0	3	2	5	0	0	0	0	8	0	8
2:30 PM - 3:30 PM	0	4	0	4	0	0	0	0	0	3	3	6	0	0	0	0	10	0	10
2:45 PM - 3:45 PM	0	4	0	4	0	0	0	0	0	2	3	5	0	0	0	0	9	0	9
3:00 PM - 4:00 PM	0	6	0	6	0	0	0	0	0	2	3	5	0	0	0	0	11	0	11

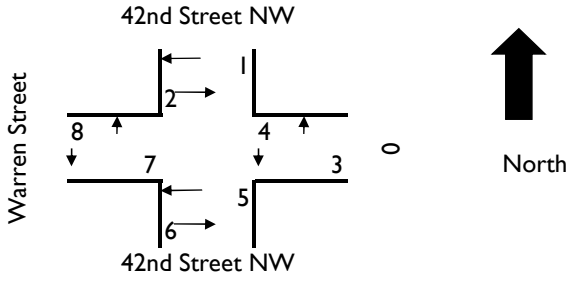
Intersection #6

Wells + Associates, Inc.

Tysons, Virginia

Pedestrian Volume Survey

PROJECT: The River school
W + A JOB NO: 8182
INTERSECTION: 42nd Street & Warren St.- South
LOCATION: Washington,DC
DATE: 5/18/2021
DAY: Tuesday
WEATHER: clear
COUNTED BY: Agan
INPUTED BY: Agan



Time Period	Movement 1	2	3	4	5	6	7	8	1 + 2	3 + 4	5 + 6	7+ 8	Total
15 Minute Volumes													
2:00 PM - 2:15 PM			2	1	1	2			0	3	3	0	6
2:15 PM - 2:30 PM			2	1		2			0	3	2	0	5
2:30 PM - 2:45 PM									0	0	0	0	0
2:45 PM - 3:00 PM				1		1	1		0	1	1	1	3
3:00 PM - 3:15 PM			1	1					0	2	0	0	2
3:15 PM - 3:30 PM				3		3			0	3	3	0	6
3:30 PM - 3:45 PM				2	2		2		0	2	2	2	6
3:45 PM - 4:00 PM				1	1				0	1	1	0	2
Total	0	0	5	10	4	8	3	0	0	15	12	3	30
One Hour Volumes													
2:00 PM - 3:00 PM	0	0	4	3	1	5	1	0	0	7	6	1	14
2:15 PM - 3:15 PM	0	0	3	3	0	3	1	0	0	6	3	1	10
2:30 PM - 3:30 PM	0	0	1	5	0	4	1	0	0	6	4	1	11
2:45 PM - 3:45 PM	0	0	1	7	2	4	3	0	0	8	6	3	17
3:00 PM - 4:00 PM	0	0	1	7	3	3	2	0	0	8	6	2	16

Intersection #6

Multimodal Turning Movement Count Report

Project Name : American University Data Collection
Project # : 3
Location Washington DC
Data Source: Excel Consultants LLC

Analysis Period: STUDY_PERIOD 04:00 PM to 07:00 PM
Date of Counts: Thursday, February 27, 2020
Weather: Partly Cloudy

Volumes Displayed as: 1. Intersection Peak (vehicle)
Intersection Peak Hour (all vehicles): 05:15 PM to 06:15 PM
System Peak Hour (all vehicles): 05:00 PM to 06:00 PM
User-Defined Peak Hour: 05:00 PM to 06:00 PM

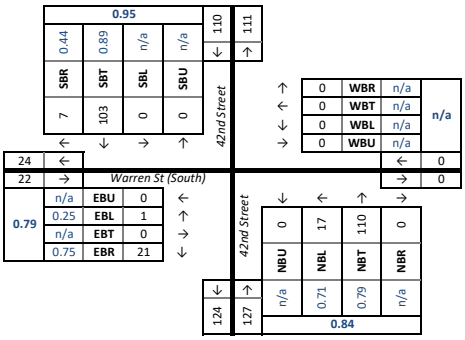
Intersection: 1. 42nd Street & /Warren St (South)

ALL VEHICLES	Southbound					Westbound					Northbound					Eastbound				
Roadway:	42nd Street										42nd Street					Warren St (South)				
Movement:	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds
04:00 PM to 04:15 PM	0	0	20	1	0	0	0	0	0	0	0	4	26	0	0	0	0	0	4	0
04:15 PM to 04:30 PM	0	0	19	0	0	0	0	0	0	0	0	2	15	0	2	0	0	0	7	0
04:30 PM to 04:45 PM	0	0	22	0	0	0	0	0	0	0	0	2	14	0	5	0	0	0	5	0
04:45 PM to 05:00 PM	0	0	25	0	0	0	0	0	0	0	0	2	25	0	1	0	0	0	1	0
05:00 PM to 05:15 PM	0	0	28	0	0	0	0	0	0	0	0	2	24	0	0	0	0	0	2	1
05:15 PM to 05:30 PM	0	0	28	1	0	0	0	0	0	0	0	4	26	0	6	0	1	0	6	0
05:30 PM to 05:45 PM	0	0	29	0	2	0	0	0	0	0	0	4	22	0	0	0	0	0	5	0
05:45 PM to 06:00 PM	0	0	22	4	0	0	0	0	0	0	0	3	35	0	2	0	0	0	3	0
06:00 PM to 06:15 PM	0	0	24	2	0	0	0	0	0	0	0	6	27	0	1	0	0	0	7	0
06:15 PM to 06:30 PM	0	0	14	0	0	0	0	0	0	0	0	4	21	0	1	0	0	0	4	0
06:30 PM to 06:45 PM	0	0	22	2	0	0	0	0	0	0	0	5	31	0	0	0	2	0	6	0
06:45 PM to 07:00 PM	0	0	13	1	0	0	0	0	0	0	0	2	30	0	0	0	0	0	4	0
07:00 PM to 07:15 PM																				
07:15 PM to 07:30 PM																				
07:30 PM to 07:45 PM																				
07:45 PM to 08:00 PM																				
08:00 PM to 08:15 PM																				
08:15 PM to 08:30 PM																				
08:30 PM to 08:45 PM																				
08:45 PM to 09:00 PM																				
INT. PEAK HR (ALL VEH)	110				2	0				0	127				9	22				0
05:15 PM to 06:15 PM	0	0	103	7		0	0	0	0		0	17	110	0		0	1	0	21	
Peak Hour Factor (PHF) Overall 0.97	U	Left	Thru	Right	SB	U	Left	Thru	Right	WB	U	Left	Thru	Right	NB	U	Left	Thru	Right	EB
	n/a	n/a	0.89	0.44	0.95	n/a	n/a	n/a	n/a	n/a	n/a	0.71	0.79	n/a	0.84	n/a	0.25	n/a	0.75	0.79

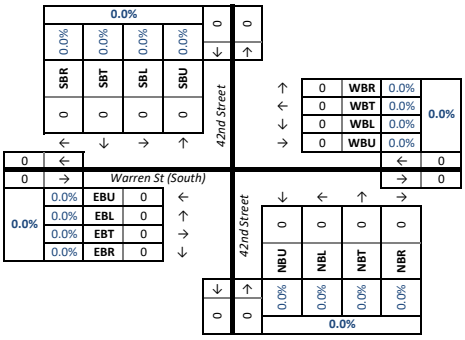
HEAVY VEHICLES (FHWA 4+)	Southbound					Westbound					Northbound					Eastbound				
Roadway:	42nd Street										42nd Street					Warren St (South)				
Movement:	U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right	
04:00 PM to 04:15 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
04:15 PM to 04:30 PM	0	0	1	0		0	0	0	0		0	0	0	0		0	0	0	0	
04:30 PM to 04:45 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
04:45 PM to 05:00 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
05:00 PM to 05:15 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
05:15 PM to 05:30 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
05:30 PM to 05:45 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
05:45 PM to 06:00 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
06:00 PM to 06:15 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
06:15 PM to 06:30 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
06:30 PM to 06:45 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
06:45 PM to 07:00 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
07:00 PM to 07:15 PM																				
07:15 PM to 07:30 PM																				
07:30 PM to 07:45 PM																				
07:45 PM to 08:00 PM																				
08:00 PM to 08:15 PM																				
08:15 PM to 08:30 PM																				
08:30 PM to 08:45 PM																				
08:45 PM to 09:00 PM																				
INT. PEAK HR (ALL VEH)	0					0					0					0				
05:15 PM to 06:15 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
Heavy Vehicle % (PHV):	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
INT. PEAK HR (HV ONLY)	1					0					0					0				
04:00 PM to 05:00 PM	0	0	1	0		0	0	0	0		0	0	0	0		0	0	0	0	
Heavy Vehicle % (PHV):	0.0%	0.0%	1.2%	0.0%	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

BICYCLES	Southbound				Westbound				Northbound				Eastbound			
Roadway:	42nd Street								42nd Street				Warren St (South)			
Movement:	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right
04:00 PM to 04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
04:15 PM to 04:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
04:30 PM to 04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM to 05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM to 05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM to 05:30 PM	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0
05:30 PM to 05:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
05:45 PM to 06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00 PM to 06:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15 PM to 06:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30 PM to 06:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45 PM to 07:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00 PM to 07:15 PM																
07:15 PM to 07:30 PM																
07:30 PM to 07:45 PM																
07:45 PM to 08:00 PM																
08:00 PM to 08:15 PM																
08:15 PM to 08:30 PM																
08:30 PM to 08:45 PM																
08:45 PM to 09:00 PM																
INT. PEAK HR (ALL VEH)	1				0				2				0			
05:15 PM to 06:15 PM	0	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0
INT. PEAK HR (BIKES)	1				0				2				0			
04:45 PM to 05:45 PM	0	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0

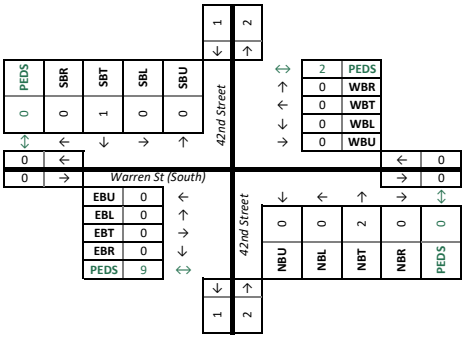
VEHICLE PEAK HOUR VOLS AND PHF: Intersection Peak (vehicle)



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



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



DATA COLLECTION NOTES :

Intersection #7

Peak Hour Data for Intersection

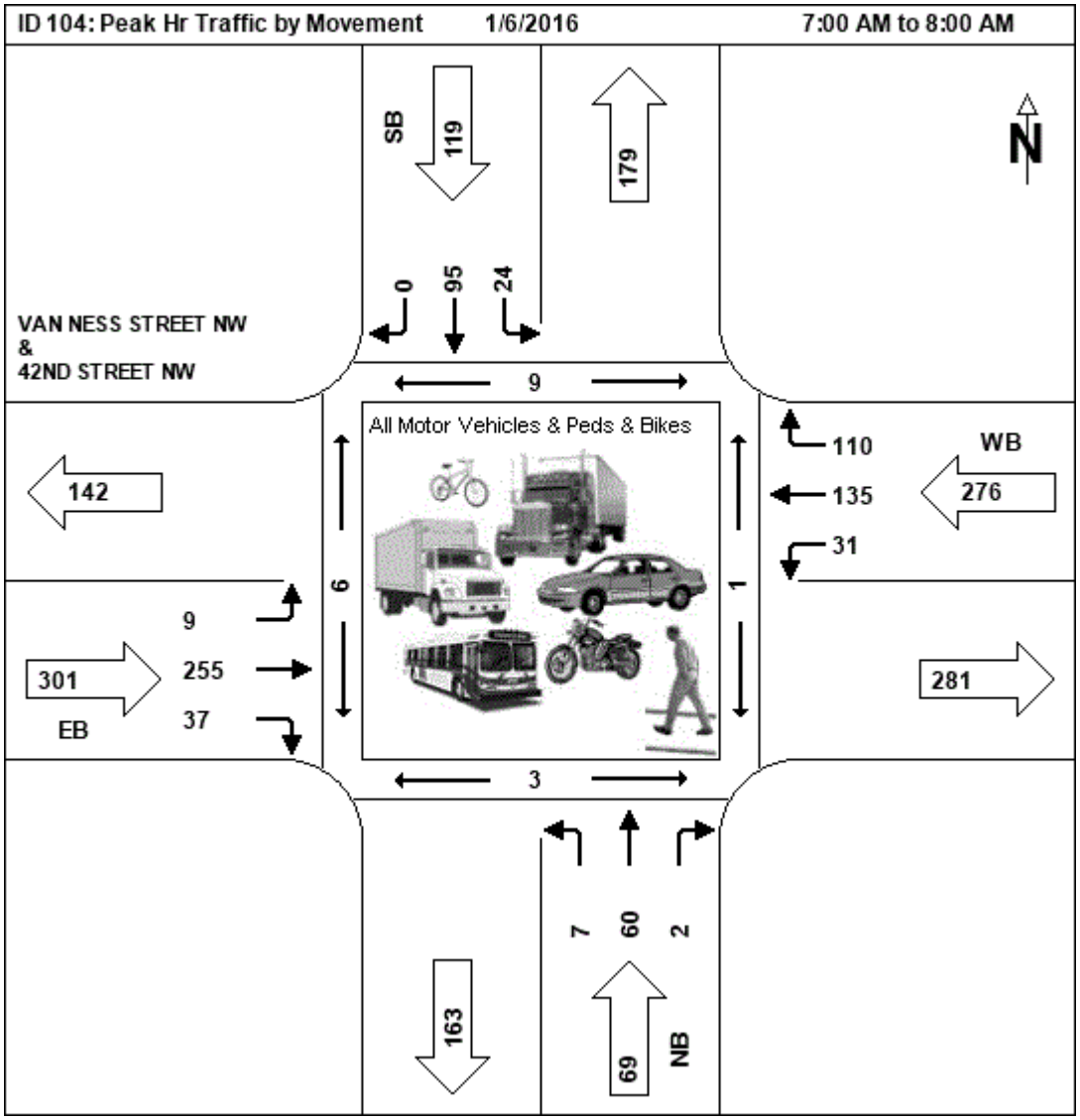
Int ID: 104
Community: -
Road 1: VAN NESS STREET NW
Road 2: 42ND STREET NW
Corridor:
Road 3:
Road 4:

|<< < > >>| 1-1 of 1

AM Peak Hour
01/06/2016

Start Time	NB Left	NB Thru	NB Right	NB Ped	NB App Total	EB Left	EB Thru	EB Right	EB Ped	EB App Total	SB Left	SB Thru	SB Right	SB Ped	SB App Total	WB Left	WB Thru	WB Right	WB Ped	WB App Total	Int Total
7:00 AM	0	11	0	0	11	3	65	12	1	80	6	24	0	2	30	8	44	32	3	84	205
7:15 AM	1	14	1	0	16	1	64	6	1	71	8	27	0	0	35	15	42	27	3	84	206
7:30 AM	5	17	0	1	22	3	62	10	0	75	7	21	0	4	28	7	21	20	1	48	173
7:45 AM	1	18	1	0	20	2	64	9	1	75	3	23	0	0	26	1	28	31	2	60	181
Total	7	60	2	1	69	9	255	37	3	301	24	95	0	6	119	31	135	110	9	276	765
PHF	0.35	0.83	0.50		0.78	0.75	0.98	0.77		0.94	0.75	0.88			0.85	0.52	0.77	0.86		0.82	
HV %	0	0	0			0	0	3			0	2				0	0	0			

☑ Cars ☑ Trucks ☑ Pedestrians ☑ Bikes



PM Peak Hour
01/06/2016

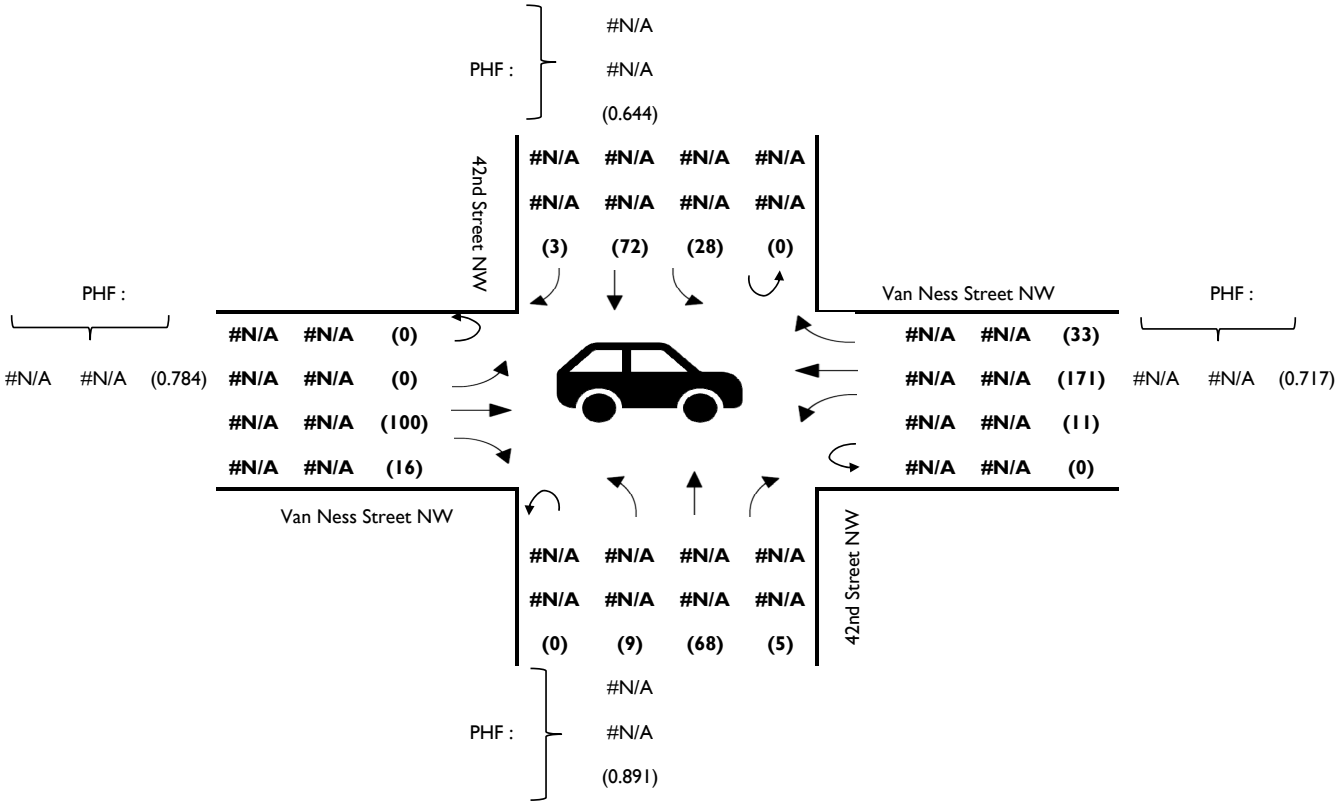
Start Time	NB Left	NB Thru	NB Right	NB Ped	NB App Total	EB Left	EB Thru	EB Right	EB Ped	EB App Total	SB Left	SB Thru	SB Right	SB Ped	SB App Total	WB Left	WB Thru	WB Right	WB Ped	WB App Total	Int Total
5:00 PM	3	26	1	0	30	0	24	3	1	27	10	39	0	0	49	9	62	18	0	89	195

Intersection #7

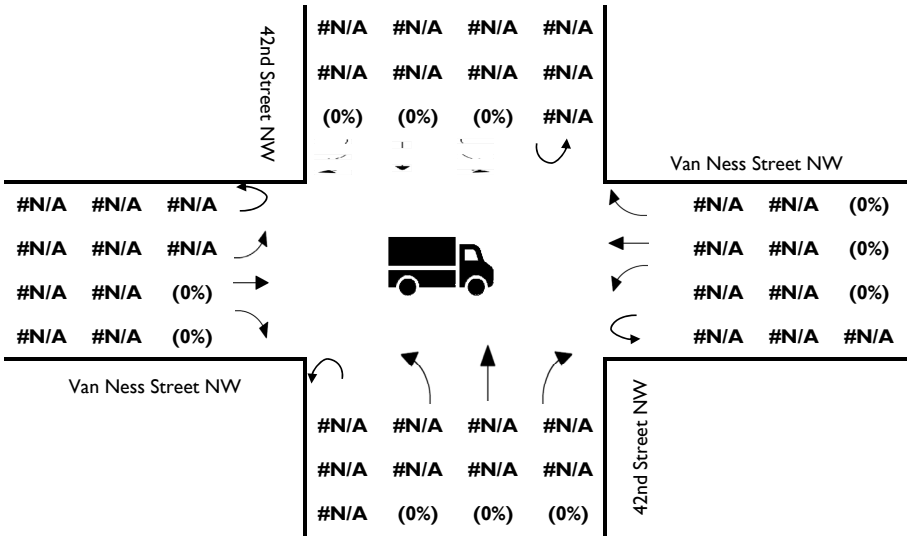
PEAK HOUR TRAFFIC COUNT SUMMARY

Location:	42nd Street & Van Ness St.	AM Peak Hour:	None
	Washington,DC	Midday Peak Hour:	None
Date of Count:	5/18/2021	PM Peak Hour:	3:00 PM - 4:00 PM

Peak Hour - Vehicle Counts

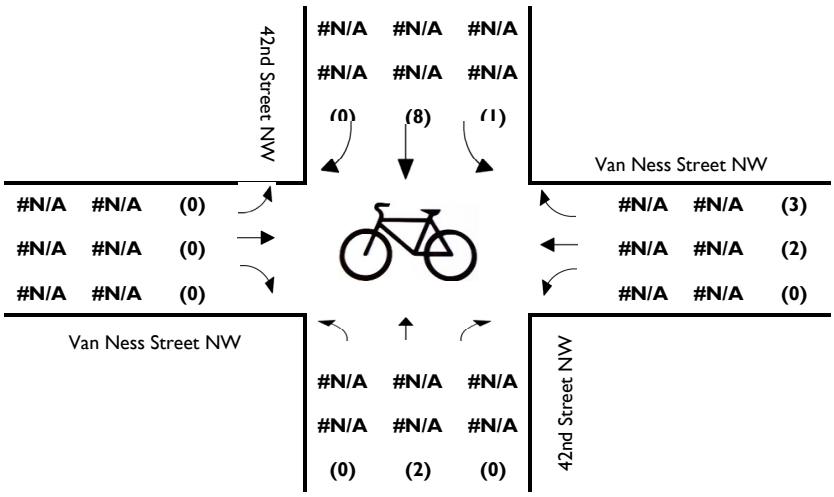


Peak Hour - Heavy Vehicle %

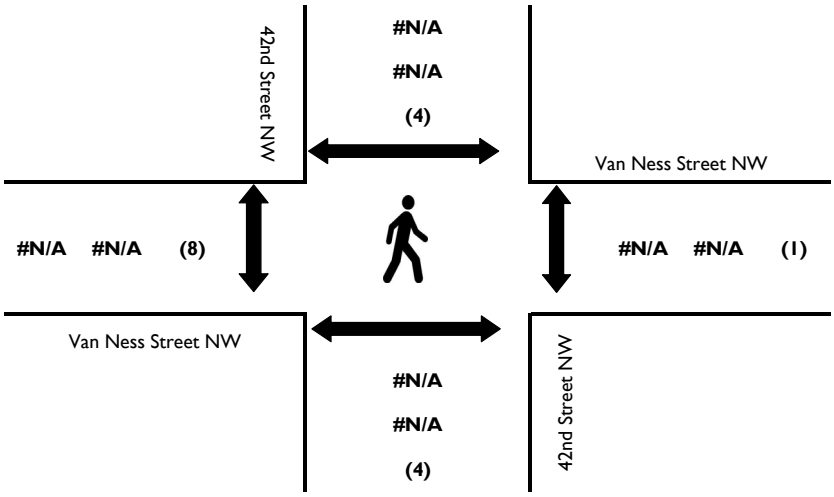


Intersection #7

Peak Hour - Bicycles



Peak Hour - Pedestrians



Intersection #7

Wells + Associates,Inc

Tysons, Virginia

Turning Movement Count - Total Vehicles

PROJECT: The River school
W+A JOB NO: 8182
INTERSECTION: 42nd Street & Van Ness St.
LOCATION: Washington,DC

DATE: 5/18/2021
DAY: Tuesday
WEATHER: clear
COUNTED BY: Agan
INPUTED BY: Agan

SOUTHBOUND ROAD: 42nd Street NW
NORTHBOUND ROAD: 42nd Street NW
WESTBOUND ROAD: Van Ness Street NW
EASTBOUND ROAD: Van Ness Street NW

Time	Southbound 42nd Street NW						Westbound Van Ness Street NW						Northbound 42nd Street NW						Eastbound Van Ness Street NW						North & South	East & West	Total
Period	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF			
15 Minute Volumes																											
2:00 PM - 2:15 PM	0	12	6	0	18		9	17	0	0	26		1	19	3	0	23		3	25	1	0	29		41	55	96
2:15 PM - 2:30 PM	0	18	4	0	22		5	29	0	0	34		0	19	2	0	21		4	20	2	0	26		43	60	103
2:30 PM - 2:45 PM	0	16	3	0	19		4	26	4	0	34		1	22	4	0	27		3	21	1	0	25		46	59	105
2:45 PM - 3:00 PM	0	20	4	0	24		6	31	1	0	38		1	12	4	0	17		3	18	2	0	23		41	61	102
3:00 PM - 3:15 PM	2	28	10	0	40		4	22	2	0	28		0	22	1	0	23		4	33	0	0	37		63	65	128
3:15 PM - 3:30 PM	1	18	4	0	23		3	39	5	0	47		2	15	3	0	20		1	21	0	0	22		43	69	112
3:30 PM - 3:45 PM	0	17	8	0	25		14	58	3	0	75		1	17	4	0	22		4	29	0	0	33		47	108	155
3:45 PM - 4:00 PM	0	9	6	0	15		12	52	1	0	65		2	14	1	0	17		7	17	0	0	24		32	89	121
Total	3	138	45	0	186		57	274	16	0	347		8	140	22	0	170		29	184	6	0	219		356	566	922
One Hour Volumes																											
2:00 PM - 3:00 PM	0	66	17	0	83	0.865	24	103	5	0	132	0.868	3	72	13	0	88	0.815	13	84	6	0	103	0.888	171	235	406
2:15 PM - 3:15 PM	2	82	21	0	105	0.656	19	108	7	0	134	0.882	2	75	11	0	88	0.815	14	92	5	0	111	0.75	193	245	438
2:30 PM - 3:30 PM	3	82	21	0	106	0.663	17	118	12	0	147	0.782	4	71	12	0	87	0.806	11	93	3	0	107	0.723	193	254	447
2:45 PM - 3:45 PM	3	83	26	0	112	0.7	27	150	11	0	188	0.627	4	66	12	0	82	0.891	12	101	2	0	115	0.777	194	303	497
3:00 PM - 4:00 PM	3	72	28	0	103	0.644	33	171	11	0	215	0.717	5	68	9	0	82	0.891	16	100	0	0	116	0.784	185	331	516

Intersection #7

Wells + Associates, Inc.

Tysons, Virginia

Turning Movement Count - Bicycles

PROJECT:	The River school	**DATE:**	5/18/2021	**SOUTHBOUND ROAD:**	42nd Street NW
W+A JOB NO:	8182	**DAY:**	Tuesday	**NORTHBOUND ROAD:**	42nd Street NW
INTERSECTION:	42nd Street & Van Ness St.	**WEATHER:**	clear	**WESTBOUND ROAD:**	Van Ness Street NW
LOCATION:	Washington,DC	**COUNTED BY:**	Agan	**EASTBOUND ROAD:**	Van Ness Street NW
		INPUTED BY:	Agan		

Time	Southbound 42nd Street NW				Westbound Van Ness Street NW				Northbound 42nd Street NW				Eastbound Van Ness Street NW				North & South	East & West	Total
Period	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total			
15 Minute Volumes																			
2:00 PM - 2:15 PM				0				0		1		1		2		2	1	2	3
2:15 PM - 2:30 PM				0				0		1		1		2		2	1	2	3
2:30 PM - 2:45 PM				0				0		1		1				0	1	0	1
2:45 PM - 3:00 PM		2		2	1			1				0				0	2	1	3
3:00 PM - 3:15 PM		2	1	3	1			1		2		2				0	5	1	6
3:15 PM - 3:30 PM		2		2	1	1		2				0				0	2	2	4
3:30 PM - 3:45 PM				0	1			1				0				0	0	1	1
3:45 PM - 4:00 PM		4		4		1		1				0				0	4	1	5
Total	0	10	1	11	4	2	0	6	0	5	0	5	0	4	0	4	16	10	26
One Hour Volumes																			
2:00 PM - 3:00 PM	0	2	0	2	1	0	0	1	0	3	0	3	0	4	0	4	5	5	10
2:15 PM - 3:15 PM	0	4	1	5	2	0	0	2	0	4	0	4	0	2	0	2	9	4	13
2:30 PM - 3:30 PM	0	6	1	7	3	1	0	4	0	3	0	3	0	0	0	0	10	4	14
2:45 PM - 3:45 PM	0	6	1	7	4	1	0	5	0	2	0	2	0	0	0	0	9	5	14
3:00 PM - 4:00 PM	0	8	1	9	3	2	0	5	0	2	0	2	0	0	0	0	11	5	16

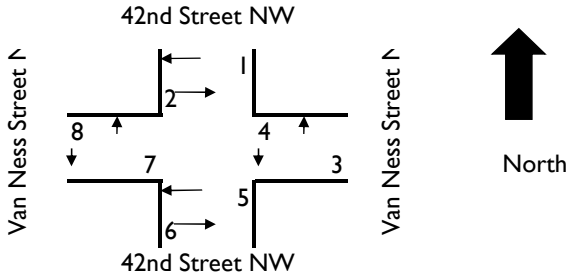
Intersection #7

Vells + Associates, Inc.

Tysons, Virginia

Pedestrian Volume Survey

PROJECT: The River school
W + A JOB NO: 8182
INTERSECTION: 42nd Street & Van Ness St.
LOCATION: Washington,DC
DATE: 5/18/2021
DAY: Tuesday
WEATHER: clear
COUNTED BY: Agan
INPUTED BY: Agan

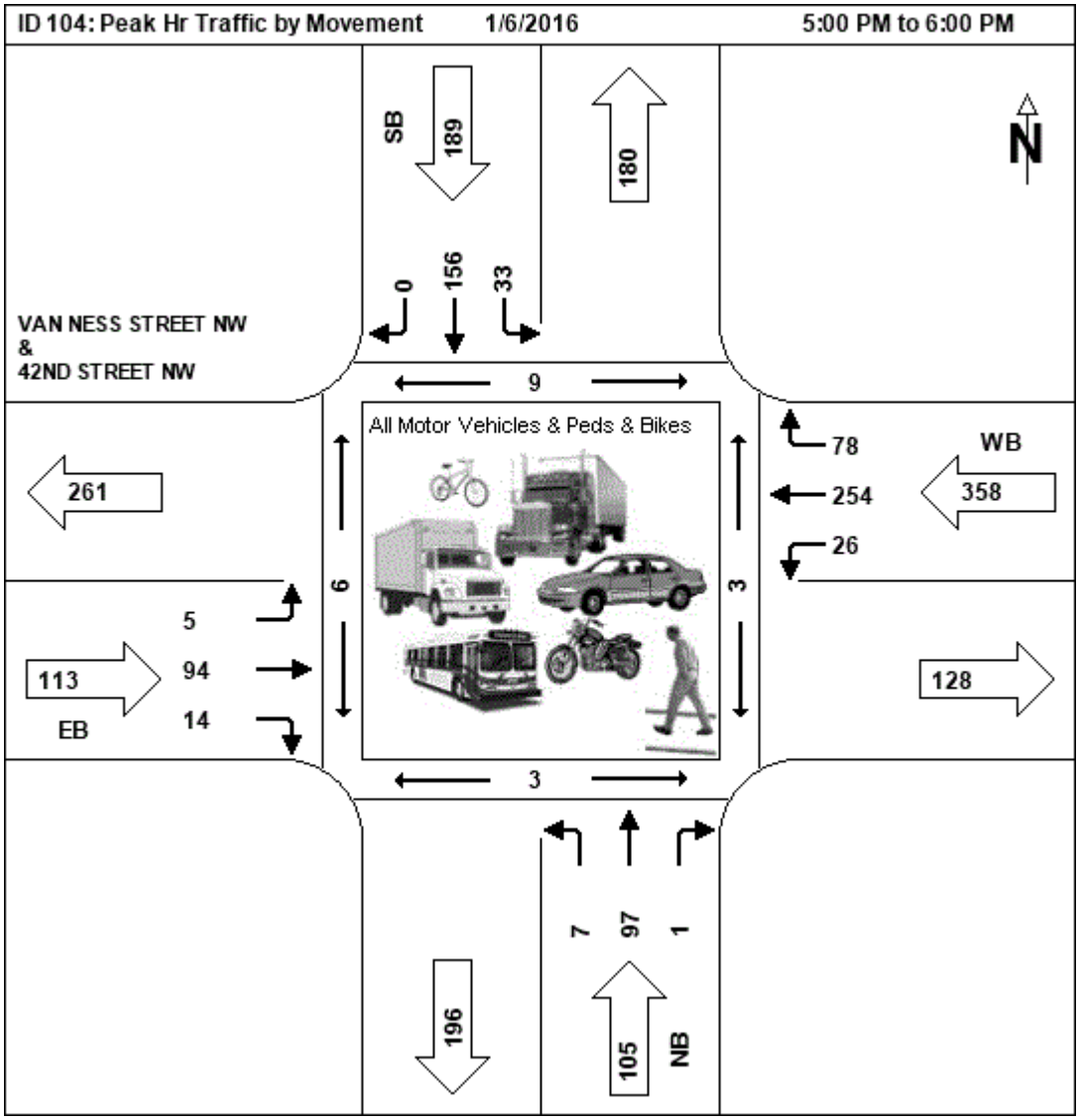


Time Period	Movement 1	2	3	4	5	6	7	8	1 + 2	3 + 4	5 + 6	7+ 8	Total
15 Minute Volumes													
2:00 PM - 2:15 PM	2				2	1		5	2	0	3	5	10
2:15 PM - 2:30 PM		1							1	0	0	0	1
2:30 PM - 2:45 PM	1				2		1		1	0	2	1	4
2:45 PM - 3:00 PM	3	2				2		1	5	0	2	1	8
3:00 PM - 3:15 PM								1	0	0	0	1	1
3:15 PM - 3:30 PM					3	1		3	0	0	4	3	7
3:30 PM - 3:45 PM	1	1		1				2	2	1	0	2	5
3:45 PM - 4:00 PM	2						1	1	2	0	0	2	4
Total	9	4	0	1	7	4	2	13	13	1	11	15	40
One Hour Volumes													
2:00 PM - 3:00 PM	6	3	0	0	4	3	1	6	9	0	7	7	23
2:15 PM - 3:15 PM	4	3	0	0	2	2	1	2	7	0	4	3	14
2:30 PM - 3:30 PM	4	2	0	0	5	3	1	5	6	0	8	6	20
2:45 PM - 3:45 PM	4	3	0	1	3	3	0	7	7	1	6	7	21
3:00 PM - 4:00 PM	3	1	0	1	3	1	1	7	4	1	4	8	17

Intersection #7

5:15 PM	1	18	0	2	19	1	30	2	0	33	7	40	0	3	47	9	61	12	7	82	181
5:30 PM	1	25	0	1	26	3	28	4	0	35	11	31	0	2	42	2	68	26	0	96	199
5:45 PM	2	28	0	0	30	1	12	5	2	18	5	46	0	1	51	6	63	22	2	91	190
Total	7	97	1	3	105	5	94	14	3	113	33	156	0	6	189	26	254	78	9	358	765
PHF	0.58	0.87	0.25		0.88	0.42	0.78	0.70		0.81	0.75	0.85			0.93	0.72	0.93	0.75		0.93	
HV %	0	1	0			0	0	0			0	0				0	0	0			

☑ Cars ☑ Trucks ☑ Pedestrians ☑ Bikes



Intersection #8

Peak Hour Data for Intersection

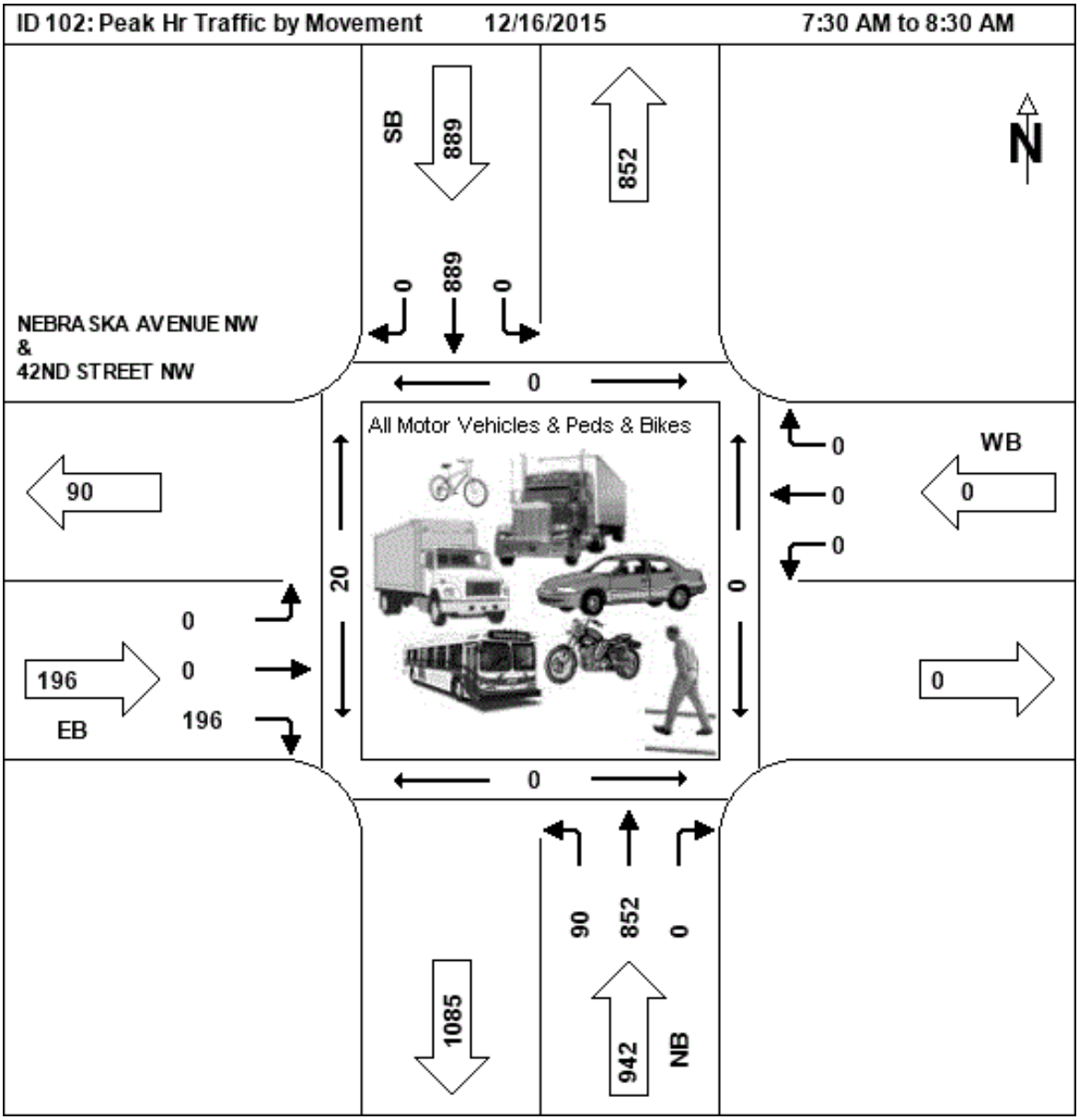
Int ID:	102		
Community:	-	**Corridor:**	
Road 1:	NEBRASKA AVENUE NW	**Road 3:**	
Road 2:	42ND STREET NW	**Road 4:**	

|<< < > >>| 1-1 of 1

AM Peak Hour
12/16/2015

Start Time	NB Left	NB Thru	NB Right	NB Ped	App Total	EB Left	EB Thru	EB Right	EB Ped	App Total	SB Left	SB Thru	SB Right	SB Ped	App Total	Int Total
7:30 AM	15	203	0	0	218	0	0	37	0	37	0	207	0	6	207	462
7:45 AM	27	215	0	0	242	0	0	61	0	61	0	245	0	3	245	548
8:00 AM	27	202	0	0	229	0	0	45	0	45	0	233	0	5	233	507
8:15 AM	21	232	0	0	253	0	0	53	0	53	0	204	0	6	204	510
Total	90	852	0	0	942	0	0	196	0	196	0	889	0	20	889	2027
PHF	0.83	0.92			0.93			0.80		0.80		0.91			0.91	
HV %	2	5						2				4				

☑ Cars ☑ Trucks ☑ Pedestrians ☑ Bikes

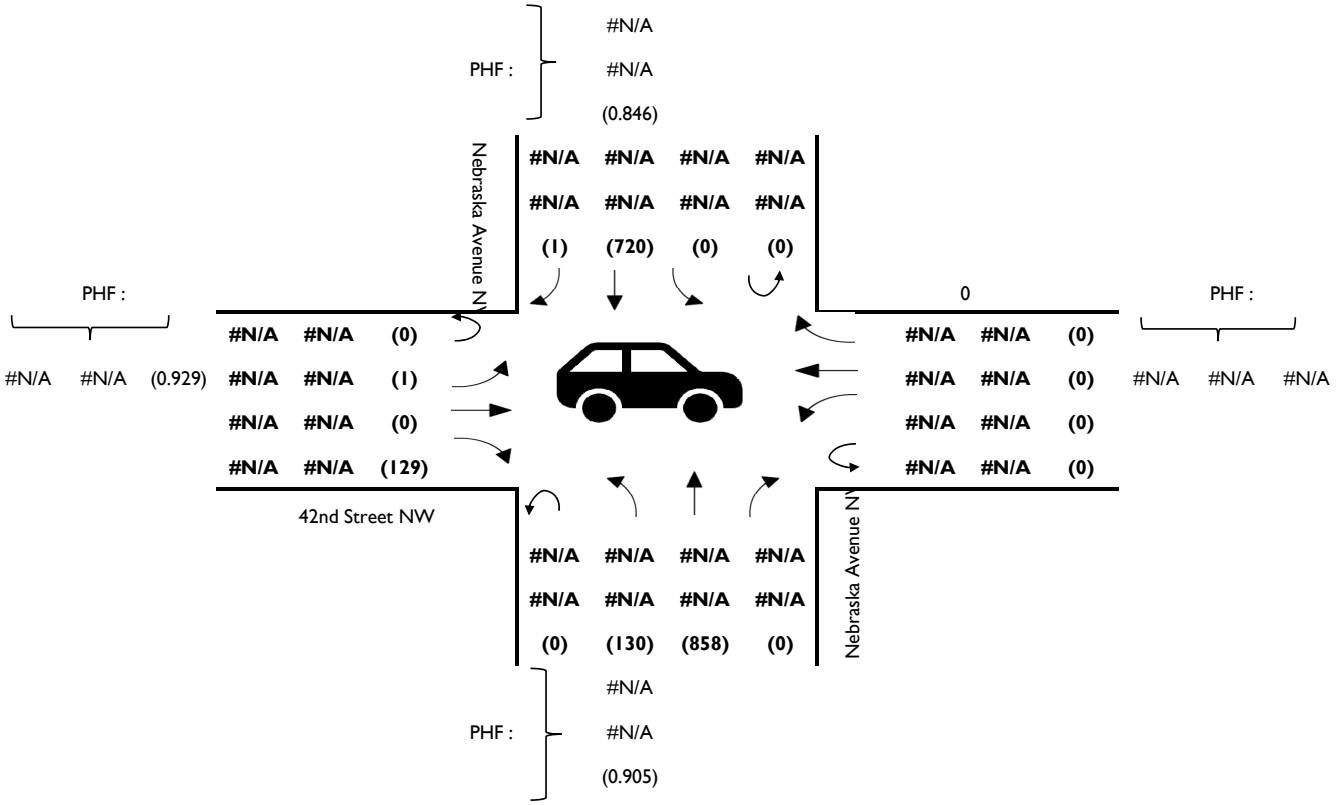


Intersection #8

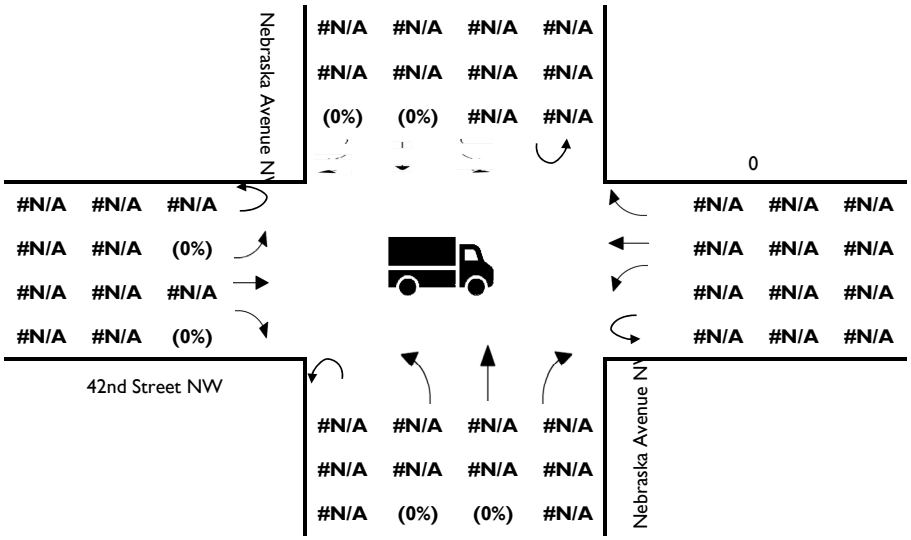
PEAK HOUR TRAFFIC COUNT SUMMARY

Location:	Nebraska Ave. & 42nd Street NW	AM Peak Hour:	None
	Washington,DC	Midday Peak Hour:	None
Date of Count:	5/20/2021	PM Peak Hour:	3:00 PM - 4:00 PM

Peak Hour - Vehicle Counts

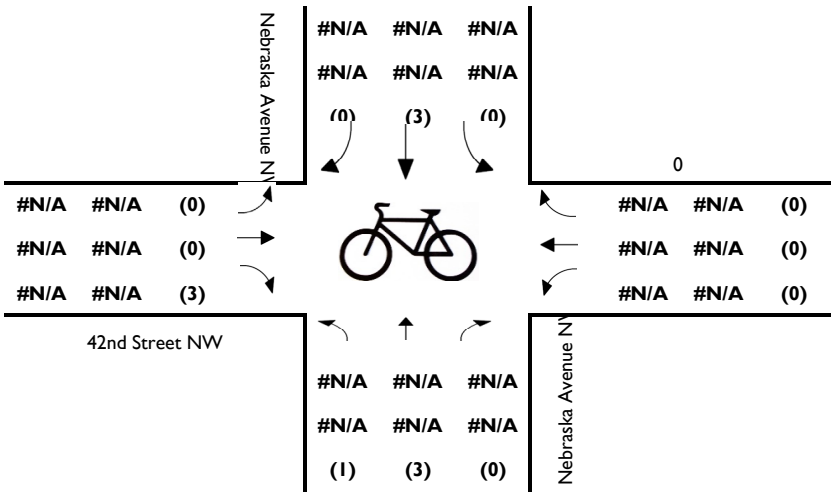


Peak Hour - Heavy Vehicle %

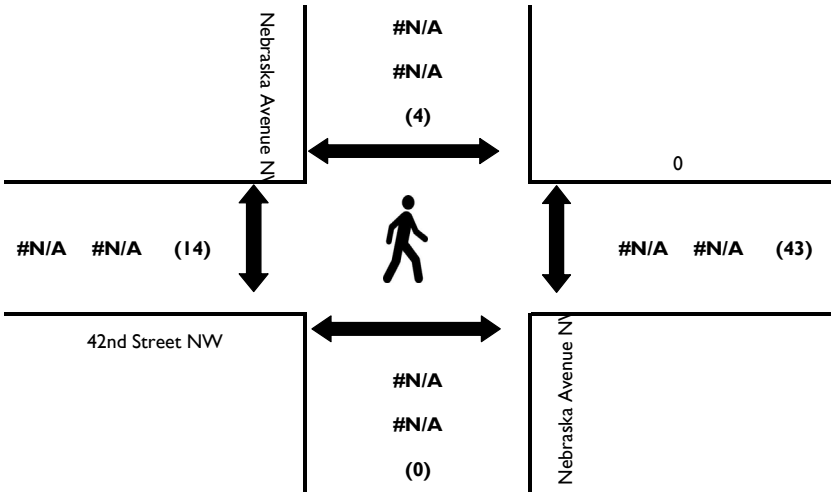


Intersection #8

Peak Hour - Bicycles



Peak Hour - Pedestrians



Intersection #8

Wells + Associates,Inc

Tysons, Virginia

Turning Movement Count - Total Vehicles

PROJECT: The River school
W+A JOB NO: 8182
INTERSECTION: Nebraska Ave. & 42nd Street NW
LOCATION: Washington,DC

DATE: 5/20/2021
DAY: Thursday
WEATHER: clear
COUNTED BY: Agan
INPUTED BY: Agan

SOUTHBOUND ROAD: Nebraska Avenue NW
NORTHBOUND ROAD: Nebraska Avenue NW
WESTBOUND ROAD: 0
EASTBOUND ROAD: 42nd Street NW

Time	Southbound Nebraska Avenue NW						Westbound 0						Northbound Nebraska Avenue NW						Eastbound 42nd Street NW						North & South	East & West	Total
Period	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF			
15 Minute Volumes																											
2:00 PM - 2:15 PM	1	152	0	0	153		0	0	0	0	0		0	140	25	0	165		16	0	1	0	17		318	17	335
2:15 PM - 2:30 PM	0	164	0	0	164		0	0	0	0	0		0	136	26	0	162		21	0	0	0	21		326	21	347
2:30 PM - 2:45 PM	0	172	0	0	172		0	0	0	0	0		0	165	20	0	185		23	0	0	0	23		357	23	380
2:45 PM - 3:00 PM	0	185	0	0	185		0	0	0	0	0		0	182	28	0	210		15	0	0	0	15		395	15	410
3:00 PM - 3:15 PM	0	160	0	0	160		0	0	0	0	0		0	226	47	0	273		33	0	0	0	33		433	33	466
3:15 PM - 3:30 PM	1	177	0	0	178		0	0	0	0	0		0	214	35	0	249		31	0	0	0	31		427	31	458
3:30 PM - 3:45 PM	0	213	0	0	213		0	0	0	0	0		0	232	28	0	260		30	0	1	0	31		473	31	504
3:45 PM - 4:00 PM	0	170	0	0	170		0	0	0	0	0		0	186	20	0	206		35	0	0	0	35		376	35	411
Total	2	1393	0	0	1395		0	0	0	0	0		0	1481	229	0	1710		204	0	2	0	206		3105	206	3311
One Hour Volumes																											
2:00 PM - 3:00 PM	1	673	0	0	674	0.911	0	0	0	0	0		0	623	99	0	722	0.86	75	0	1	0	76	0.826	1396	76	1472
2:15 PM - 3:15 PM	0	681	0	0	681	0.92	0	0	0	0	0		0	709	121	0	830	0.76	92	0	0	0	92	0.697	1511	92	1603
2:30 PM - 3:30 PM	1	694	0	0	695	0.939	0	0	0	0	0		0	787	130	0	917	0.84	102	0	0	0	102	0.773	1612	102	1714
2:45 PM - 3:45 PM	1	735	0	0	736	0.864	0	0	0	0	0		0	854	138	0	992	0.908	109	0	1	0	110	0.833	1728	110	1838
3:00 PM - 4:00 PM	1	720	0	0	721	0.846	0	0	0	0	0		0	858	130	0	988	0.905	129	0	1	0	130	0.929	1709	130	1839

Intersection #8

Wells + Associates, Inc.

Tysons, Virginia

Turning Movement Count - Bicycles

PROJECT:	The River school	**DATE:**	5/20/2021	**SOUTHBOUND ROAD:**	Nebraska Avenue NW
W+A JOB NO:	8182	**DAY:**	Thursday	**NORTHBOUND ROAD:**	Nebraska Avenue NW
INTERSECTION:	Nebraska Ave. & 42nd Street NW	**WEATHER:**	clear	**WESTBOUND ROAD:**	0
LOCATION:	Washington,DC	**COUNTED BY:**	Agan	**EASTBOUND ROAD:**	42nd Street NW
		INPUTED BY:	Agan		

Time	Southbound Nebraska Avenue NW				Westbound 0				Northbound Nebraska Avenue NW				Eastbound 42nd Street NW				North & South	East & West	Total
Period	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total			
15 Minute Volumes																			
2:00 PM - 2:15 PM		1		1				0				0				0	1	0	1
2:15 PM - 2:30 PM		1		1				0				0				0	1	0	1
2:30 PM - 2:45 PM				0				0		1		1				0	1	0	1
2:45 PM - 3:00 PM		1		1				0		3	1	4				0	5	0	5
3:00 PM - 3:15 PM				0				0		1		1				0	1	0	1
3:15 PM - 3:30 PM		1		1				0			1	1				0	2	0	2
3:30 PM - 3:45 PM		1		1				0		2		2	3			3	3	3	6
3:45 PM - 4:00 PM		1		1				0				0				0	1	0	1
Total	0	6	0	6	0	0	0	0	0	7	2	9	3	0	0	3	15	3	18
One Hour Volumes																			
2:00 PM - 3:00 PM	0	3	0	3	0	0	0	0	0	4	1	5	0	0	0	0	8	0	8
2:15 PM - 3:15 PM	0	2	0	2	0	0	0	0	0	5	1	6	0	0	0	0	8	0	8
2:30 PM - 3:30 PM	0	2	0	2	0	0	0	0	0	5	2	7	0	0	0	0	9	0	9
2:45 PM - 3:45 PM	0	3	0	3	0	0	0	0	0	6	2	8	3	0	0	3	11	3	14
3:00 PM - 4:00 PM	0	3	0	3	0	0	0	0	0	3	1	4	3	0	0	3	7	3	10

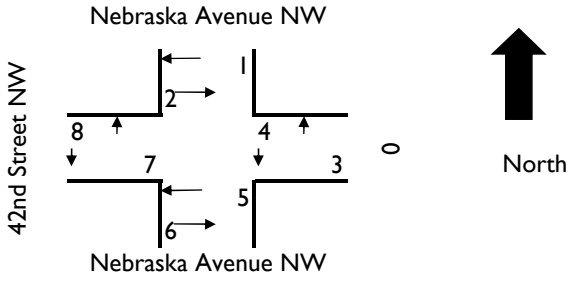
Intersection #8

Wells + Associates, Inc.

Tysons, Virginia

Pedestrian Volume Survey

PROJECT: The River school
W + A JOB NO: 8182
INTERSECTION: Nebraska Ave. & 42nd Street NW
LOCATION: Washington,DC
DATE: 5/20/2021
DAY: Thursday
WEATHER: clear
COUNTED BY: Agan
INPUTED BY: Agan



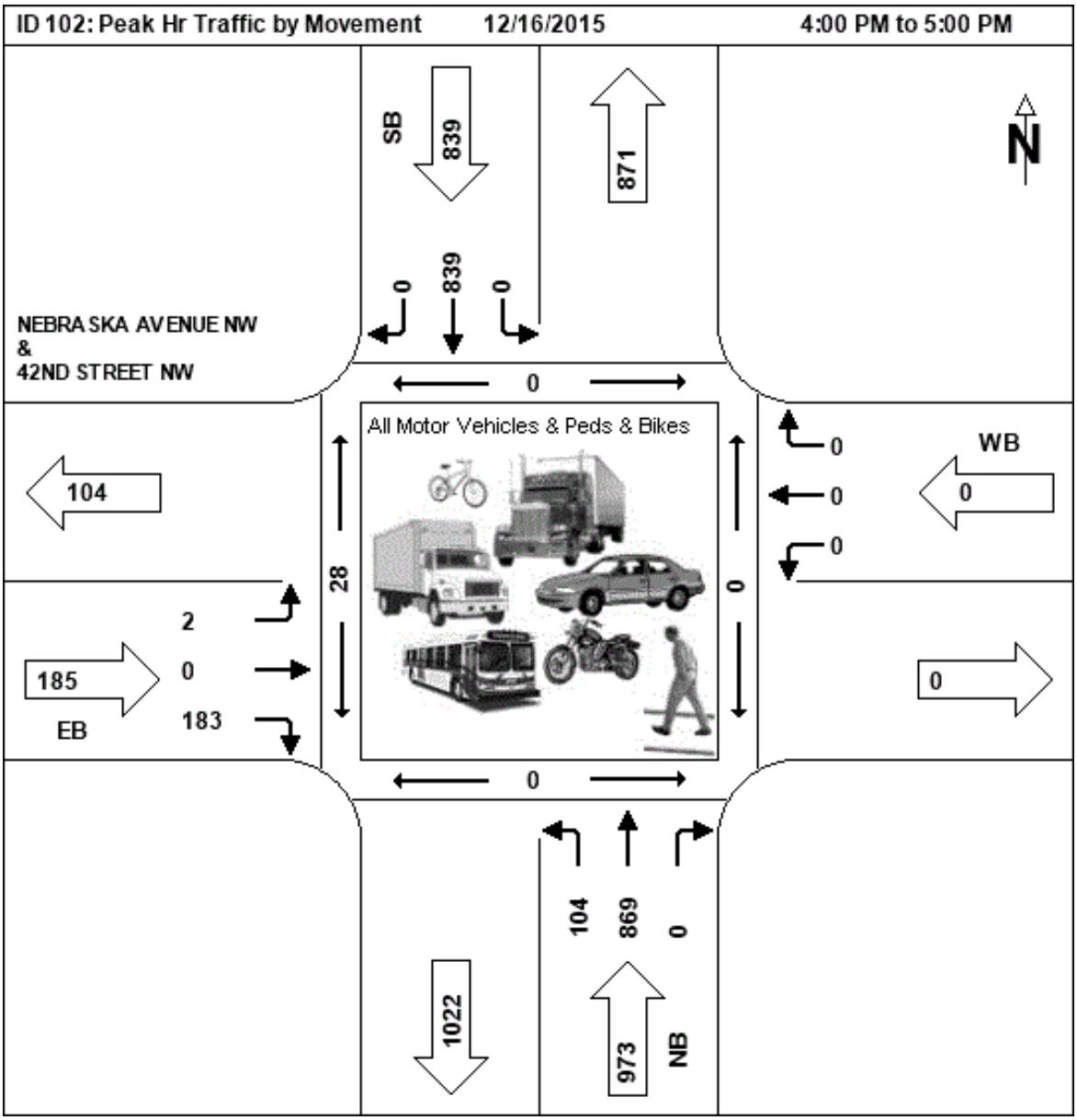
Time Period	Movement 1	2	3	4	5	6	7	8	1 + 2	3 + 4	5 + 6	7+ 8	Total
15 Minute Volumes													
2:00 PM - 2:15 PM			4				2		0	4	0	2	6
2:15 PM - 2:30 PM			2	1				3	0	3	0	3	6
2:30 PM - 2:45 PM				2				1	0	2	0	1	3
2:45 PM - 3:00 PM	1			2			1		1	2	0	1	4
3:00 PM - 3:15 PM			8	3			5	1	0	11	0	6	17
3:15 PM - 3:30 PM	3		19	2				2	3	21	0	2	26
3:30 PM - 3:45 PM				3			1	2	0	3	0	3	6
3:45 PM - 4:00 PM	1		4	4			3		1	8	0	3	12
Total	5	0	37	17	0	0	12	9	5	54	0	21	80
One Hour Volumes													
2:00 PM - 3:00 PM	1	0	6	5	0	0	3	4	1	11	0	7	19
2:15 PM - 3:15 PM	1	0	10	8	0	0	6	5	1	18	0	11	30
2:30 PM - 3:30 PM	4	0	27	9	0	0	6	4	4	36	0	10	50
2:45 PM - 3:45 PM	4	0	27	10	0	0	7	5	4	37	0	12	53
3:00 PM - 4:00 PM	4	0	31	12	0	0	9	5	4	43	0	14	61

Intersection #8

PM Peak Hour
12/16/2015

Start Time	NB Left	NB Thru	NB Right	NB Ped	App Total	EB Left	EB Thru	EB Right	EB Ped	App Total	SB Left	SB Thru	SB Right	SB Ped	App Total	Int Total
4:00 PM	22	237	0	0	259	0	0	53	0	53	0	219	0	8	219	531
4:15 PM	28	210	0	0	238	0	0	42	0	42	0	235	0	12	235	515
4:30 PM	27	214	0	0	241	2	0	45	0	47	0	190	0	6	190	478
4:45 PM	27	208	0	0	235	0	0	43	0	43	0	195	0	2	195	473
Total	104	869	0	0	973	2	0	183	0	185	0	839	0	28	839	1997
PHF	0.93	0.92			0.94	0.25		0.86		0.87		0.89			0.89	
HV %	1	5				0		1				2				

☑ Cars ☑ Trucks ☑ Pedestrians ☑ Bikes



Intersection # 9

Multimodal Turning Movement Count Report

Project Name : American University Data Collection
Project # : 3
Location Washington DC
Data Source: Excel Consultants LLC

Analysis Period: STUDY_PERIOD 06:30 AM to 09:30 AM
Date of Counts: Thursday, February 27, 2020
Weather: Partly Cloudy

Volumes Displayed as: 1. Intersection 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. Van Ness Street & Nebraska Ave

ALL VEHICLES

	Southbound					Westbound					Northbound					Eastbound				
Roadway:	Van Ness Street					Nebraska Ave					Van Ness Street					Nebraska Ave				
Movement:	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds
06:30 AM to 06:45 AM	0	1	6	1	0	0	0	103	3	1	0	18	7	0	0	0	2	69	19	6
06:45 AM to 07:00 AM	0	0	2	0	2	0	0	132	1	0	0	20	10	1	8	0	1	87	19	0
07:00 AM to 07:15 AM	0	1	11	0	0	0	0	130	7	1	0	26	11	0	0	0	6	148	35	0
07:15 AM to 07:30 AM	0	0	33	0	0	0	0	168	9	0	0	32	9	0	3	0	8	104	24	5
07:30 AM to 07:45 AM	0	0	53	0	3	0	2	199	7	0	0	37	27	0	2	0	13	141	51	1
07:45 AM to 08:00 AM	0	4	63	0	5	0	0	176	4	3	0	39	43	1	5	0	19	122	58	6
08:00 AM to 08:15 AM	0	2	59	0	4	0	0	216	9	4	0	37	37	1	4	0	21	130	57	2
08:15 AM to 08:30 AM	0	5	56	0	2	0	3	150	5	0	0	26	33	1	4	0	21	142	56	2
08:30 AM to 08:45 AM	0	12	52	0	4	0	1	173	9	1	0	26	36	1	3	0	24	169	63	0
08:45 AM to 09:00 AM	0	3	47	1	3	0	3	134	13	4	0	25	44	0	2	0	22	150	46	6
09:00 AM to 09:15 AM	0	5	49	0	2	0	1	191	15	2	0	26	25	1	4	0	12	121	40	1
09:15 AM to 09:30 AM	0	4	35	0	6	0	4	165	14	8	0	35	29	1	1	0	16	123	36	4
09:30 AM to 09:45 AM																				
09:45 AM to 10:00 AM																				
10:00 AM to 10:15 AM																				
10:15 AM to 10:30 AM																				
10:30 AM to 10:45 AM																				
10:45 AM to 11:00 AM																				
11:00 AM to 11:15 AM																				
11:15 AM to 11:30 AM																				
INT. PEAK HR (ALL VEH)	253				15	746				8	281				16	882				10
07:45 AM to 08:45 AM	0	23	230	0		0	4	715	27		0	128	149	4		0	85	563	234	
Peak Hour Factor (PHF) Overall	U	Left	Thru	Right	SB	U	Left	Thru	Right	WB	U	Left	Thru	Right	NB	U	Left	Thru	Right	EB
0.95	n/a	0.48	0.91	n/a	0.94	n/a	0.33	0.83	0.75	0.83	n/a	0.82	0.87	1.00	0.85	n/a	0.89	0.83	0.93	0.86

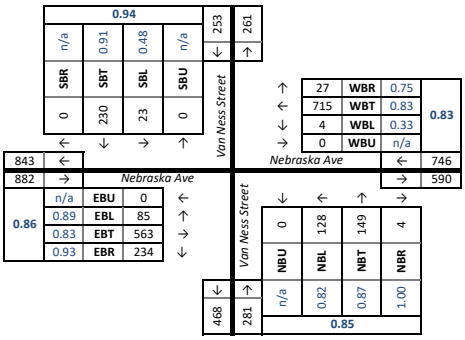
HEAVY VEHICLES (FHWA 4+)

	Southbound				Westbound				Northbound				Eastbound			
Roadway:	Van Ness Street				Nebraska Ave				Van Ness Street				Nebraska Ave			
Movement:	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right
06:30 AM to 06:45 AM	0	0	0	0	0	0	5	0	0	0	0	0	0	0	3	0
06:45 AM to 07:00 AM	0	0	0	0	0	0	5	0	0	0	0	0	0	0	5	0
07:00 AM to 07:15 AM	0	0	0	0	0	0	7	1	0	0	0	0	0	0	8	0
07:15 AM to 07:30 AM	0	0	1	0	0	0	10	0	0	1	0	0	0	1	6	0
07:30 AM to 07:45 AM	0	0	0	0	0	0	9	0	0	2	1	0	0	0	9	1
07:45 AM to 08:00 AM	0	0	0	0	0	0	8	0	0	0	1	0	0	0	11	1
08:00 AM to 08:15 AM	0	0	0	0	0	0	12	0	0	0	0	0	0	0	9	0
08:15 AM to 08:30 AM	0	0	0	0	0	0	11	0	0	1	0	0	0	0	9	1
08:30 AM to 08:45 AM	0	0	0	0	0	0	13	0	0	2	0	0	0	0	10	1
08:45 AM to 09:00 AM	0	0	0	0	0	0	6	0	0	0	0	0	0	0	7	0
09:00 AM to 09:15 AM	0	0	0	0	0	0	13	1	0	0	0	0	0	1	6	1
09:15 AM to 09:30 AM	0	0	0	0	0	0	9	0	0	0	0	0	0	2	14	0
09:30 AM to 09:45 AM																
09:45 AM to 10:00 AM																
10:00 AM to 10:15 AM																
10:15 AM to 10:30 AM																
10:30 AM to 10:45 AM																
10:45 AM to 11:00 AM																
11:00 AM to 11:15 AM																
11:15 AM to 11:30 AM																
INT. PEAK HR (ALL VEH)	0				44				4				42			
07:45 AM to 08:45 AM	0	0	0	0	0	0	44	0	0	3	1	0	0	0	39	3
Heavy Vehicle % (PHV):	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.2%	0.0%	5.9%	0.0%	2.3%	0.7%	0.0%	1.4%	0.0%	0.0%	6.9%	1.3%	4.8%
INT. PEAK HR (HV ONLY)	0				44				4				42			
07:45 AM to 08:45 AM	0	0	0	0	0	0	44	0	0	3	1	0	0	0	39	3
Heavy Vehicle % (PHV):	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.2%	0.0%	5.9%	0.0%	2.3%	0.7%	0.0%	1.4%	0.0%	0.0%	6.9%	1.3%	4.8%

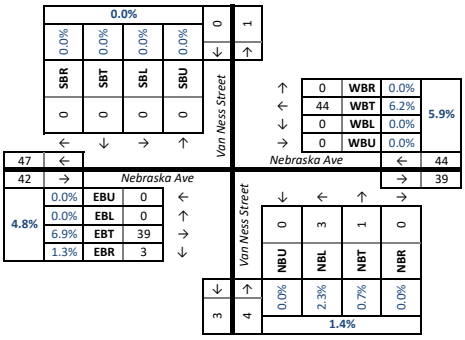
BICYCLES

	Southbound				Westbound				Northbound				Eastbound			
Roadway:	Van Ness Street				Nebraska Ave				Van Ness Street				Nebraska Ave			
Movement:	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right
06:30 AM to 06:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45 AM to 07:00 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
07:00 AM to 07:15 AM	0	0	1	0	0	1	2	0	0	0	1	0	0	0	0	0
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	1	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM to 08:00 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM to 08:15 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM to 08:30 AM	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0
08:30 AM to 08:45 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0
08:45 AM to 09:00 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
09:00 AM to 09:15 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15 AM to 09:30 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
09:30 AM to 09:45 AM																
09:45 AM to 10:00 AM																
10:00 AM to 10:15 AM																
10:15 AM to 10:30 AM																
10:30 AM to 10:45 AM																
10:45 AM to 11:00 AM																
11:00 AM to 11:15 AM																
11:15 AM to 11:30 AM																
INT. PEAK HR (ALL VEH)	5				0				5				0			
07:45 AM to 08:45 AM	0	0	5	0	0	0	0	0	0	1	4	0	0	0	0	0
INT. PEAK HR (BIKES)	6				3				1				0			
07:00 AM to 08:00 AM	0	0	6	0	0	1	2	0	0	0	1	0	0	0	0	0

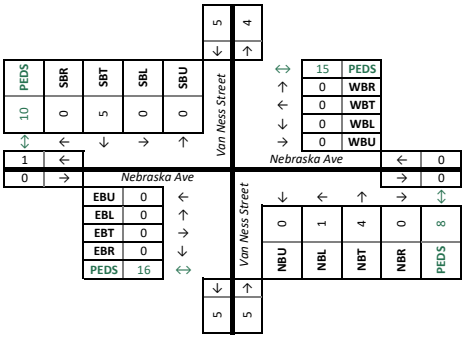
VEHICLE PEAK HOUR VOLS AND PHF: Intersection Peak (vehicle)



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



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



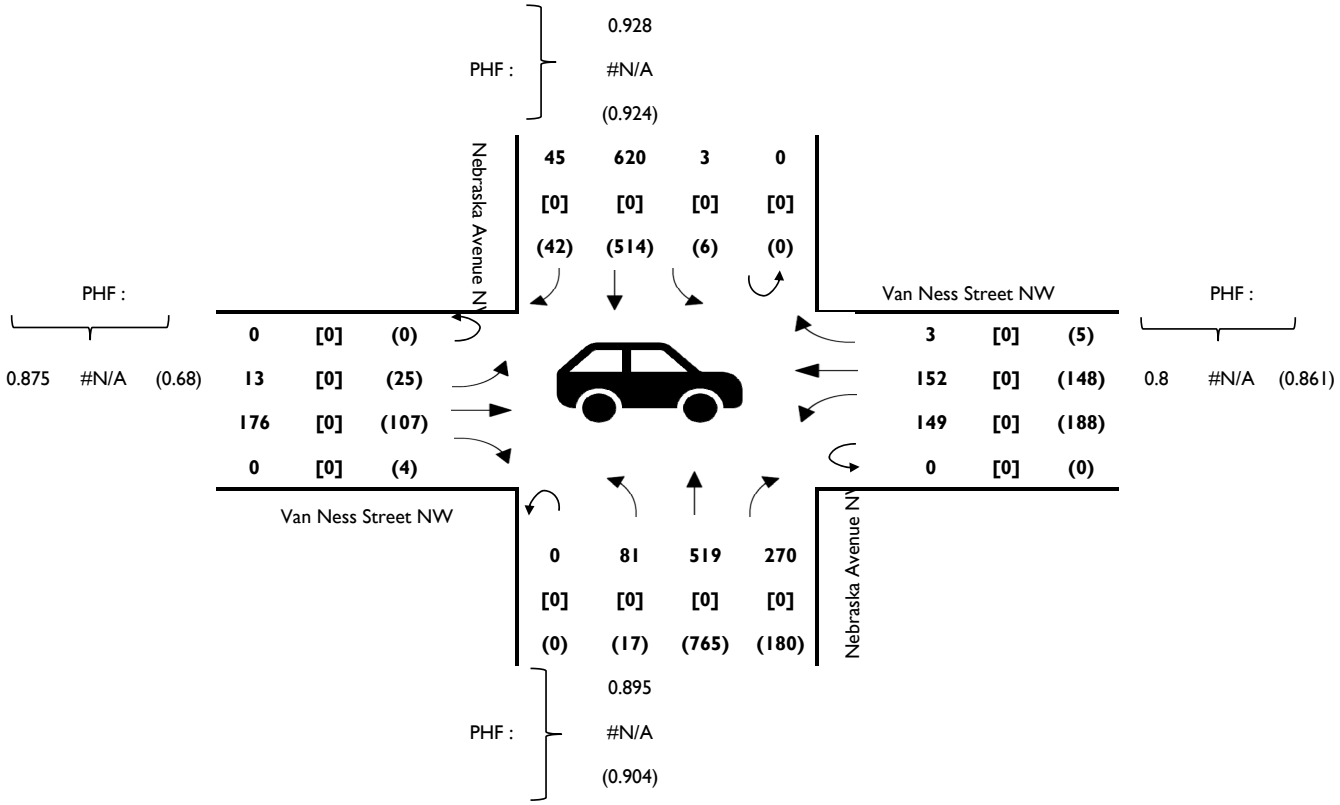
DATA COLLECTION NOTES :

Intersection # 9

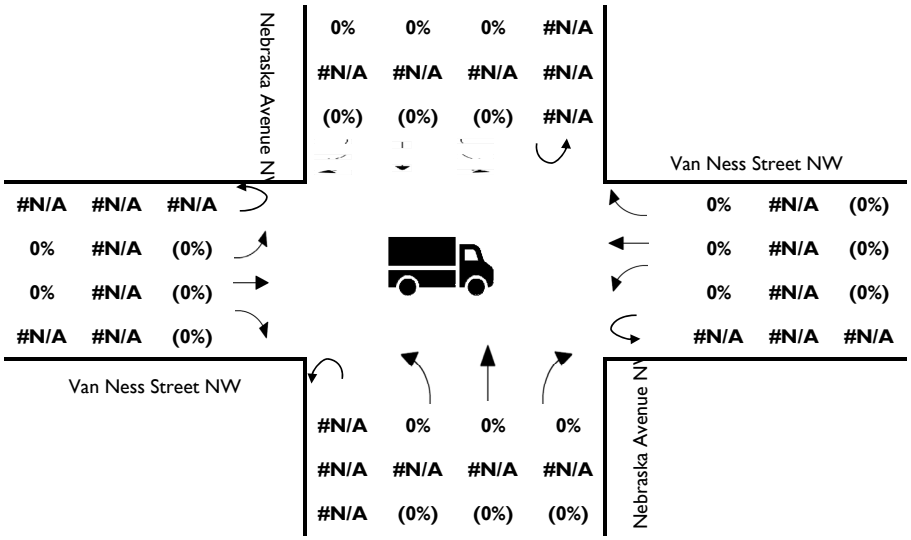
PEAK HOUR TRAFFIC COUNT SUMMARY

Location:	Nebraska Ave. & Van Ness St.	AM Peak Hour:	8:00 AM - 9:00 AM
	Washington,DC	Midday Peak Hour:	12:00 PM - 1:00 PM
Date of Count:	5/19/2021	PM Peak Hour:	3:00 PM - 4:00 PM

Peak Hour - Vehicle Counts

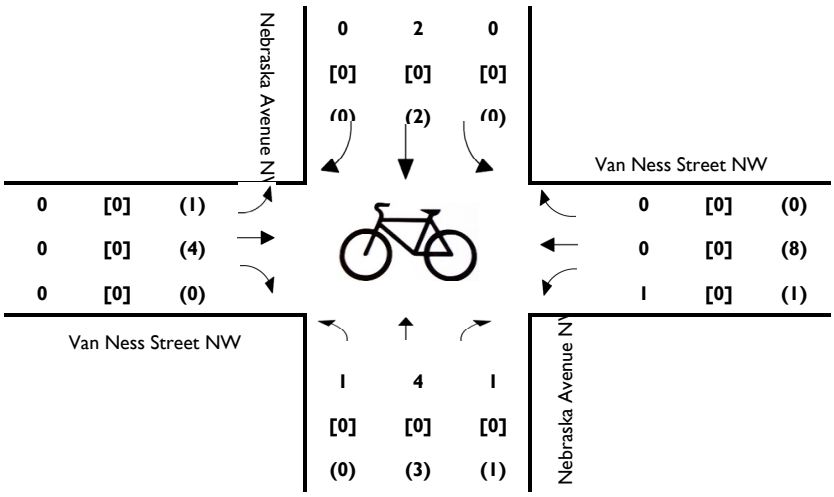


Peak Hour - Heavy Vehicle %

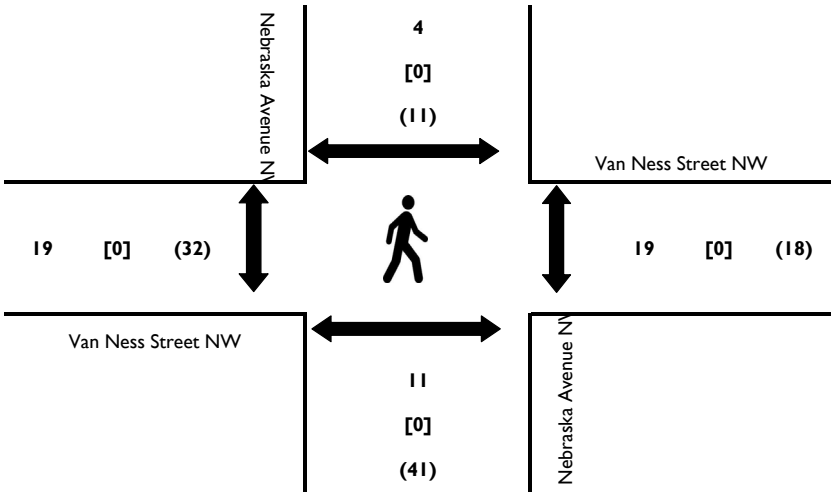


Intersection # 9

Peak Hour - Bicycles



Peak Hour - Pedestrians



Intersection # 9

Wells + Associates,Inc

Tysons, Virginia

Turning Movement Count - Total Vehicles

PROJECT: The River School
W+A JOB NO: 8182
INTERSECTION: Nebraska Ave. & Van Ness St.
LOCATION: Washington,DC

DATE: 5/19/2021
DAY: Wednesday
WEATHER: clear
COUNTED BY: Ramiz & Zilko
INPUTED BY: Agan

SOUTHBOUND ROAD: Nebraska Avenue NW
NORTHBOUND ROAD: Nebraska Avenue NW
WESTBOUND ROAD: Van Ness Street NW
EASTBOUND ROAD: Van Ness Street NW

Time	Southbound Nebraska Avenue NW						Westbound Van Ness Street NW						Northbound Nebraska Avenue NW						Eastbound Van Ness Street NW						North & South	East & West	Total
Period	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF			
15 Minute Volumes																											
7:30 AM - 7:45 AM	4	145	0	0	149		0	11	20	0	31		28	107	7	0	142		0	17	1	0	18		291	49	340
7:45 AM - 8:00 AM	7	168	2	0	177		0	7	22	0	29		36	119	27	0	182		0	16	1	0	17		359	46	405
8:00 AM - 8:15 AM	7	156	1	0	164		0	32	20	0	52		60	102	16	0	178		0	45	3	0	48		342	100	442
8:15 AM - 8:30 AM	11	167	2	0	180		0	28	39	0	67		80	144	19	0	243		0	50	4	0	54		423	121	544
8:30 AM - 8:45 AM	14	154	0	0	168		2	50	43	0	95		67	130	23	0	220		0	47	1	0	48		388	143	531
8:45 AM - 9:00 AM	13	143	0	0	156		1	42	47	0	90		63	143	23	0	229		0	34	5	0	39		385	129	514
9:00 AM - 9:15 AM	13	125	0	0	138		0	30	23	0	53		41	108	11	0	160		0	17	2	0	19		298	72	370
9:15 AM - 9:30 AM	8	96	0	0	104		2	17	23	0	42		41	98	8	0	147		0	13	7	0	20		251	62	313
2:00 PM - 2:15 PM	1	80	2	0	83		6	21	36	0	63		31	111	0	0	142		0	19	1	0	20		225	83	308
2:15 PM - 2:30 PM	3	138	2	0	143		0	30	48	0	78		27	126	0	0	153		0	23	5	0	28		296	106	402
2:30 PM - 2:45 PM	6	122	3	0	131		0	18	52	0	70		29	111	0	0	140		0	21	5	0	26		271	96	367
2:45 PM - 3:00 PM	4	120	2	0	126		2	28	39	0	69		55	157	1	0	213		0	24	7	0	31		339	100	439
3:00 PM - 3:15 PM	8	104	2	0	114		3	29	40	0	72		53	178	5	0	236		1	43	6	0	50		350	122	472
3:15 PM - 3:30 PM	17	135	0	0	152		0	45	52	0	97		59	205	2	0	266		3	23	4	0	30		418	127	545
3:30 PM - 3:45 PM	8	140	1	0	149		1	42	56	0	99		42	200	8	0	250		0	25	10	0	35		399	134	533
3:45 PM - 4:00 PM	9	135	3	0	147		1	32	40	0	73		26	182	2	0	210		0	16	5	0	21		357	94	451
Total	133	2128	20	0	2281		18	462	600	0	1080		738	2221	152	0	3111		4	433	67	0	504		5392	1584	6976
One Hour Volumes																											
7:30 AM - 8:30 AM	29	636	5	0	670	0.931	0	78	101	0	179	0.668	204	472	69	0	745	0.766	0	128	9	0	137	0.634	1415	316	1731
7:45 AM - 8:45 AM	39	645	5	0	689	0.957	2	117	124	0	243	0.639	243	495	85	0	823	0.847	0	158	9	0	167	0.773	1512	410	1922
8:00 AM - 9:00 AM	45	620	3	0	668	0.928	3	152	149	0	304	0.8	270	519	81	0	870	0.895	0	176	13	0	189	0.875	1538	493	2031
8:15 AM - 9:15 AM	51	589	2	0	642	0.892	3	150	152	0	305	0.803	251	525	76	0	852	0.877	0	148	12	0	160	0.741	1494	465	1959
8:30 AM - 9:30 AM	48	518	0	0	566	0.842	5	139	136	0	280	0.737	212	479	65	0	756	0.825	0	111	15	0	126	0.656	1322	406	1728
2:00 PM - 3:00 PM	14	460	9	0	483	0.844	8	97	175	0	280	0.897	142	505	1	0	648	0.761	0	87	18	0	105	0.847	1131	385	1516
2:15 PM - 3:15 PM	21	484	9	0	514	0.899	5	105	179	0	289	0.926	164	572	6	0	742	0.786	1	111	23	0	135	0.675	1256	424	1680
2:30 PM - 3:30 PM	35	481	7	0	523	0.86	5	120	183	0	308	0.794	196	651	8	0	855	0.804	4	111	22	0	137	0.685	1378	445	1823
2:45 PM - 3:45 PM	37	499	5	0	541	0.89	6	144	187	0	337	0.851	209	740	16	0	965	0.907	4	115	27	0	146	0.73	1506	483	1989
3:00 PM - 4:00 PM	42	514	6	0	562	0.924	5	148	188	0	341	0.861	180	765	17	0	962	0.904	4	107	25	0	136	0.68	1524	477	2001

Intersection # 9

Wells + Associates, Inc.

Tysons, Virginia

Turning Movement Count - Bicycles

PROJECT:	The River School	**DATE:**	5/19/2021	**SOUTHBOUND ROAD:**	Nebraska Avenue NW
W+A JOB NO:	8182	**DAY:**	Wednesday	**NORTHBOUND ROAD:**	Nebraska Avenue NW
INTERSECTION:	Nebraska Ave. & Van Ness St.	**WEATHER:**	clear	**WESTBOUND ROAD:**	Van Ness Street NW
LOCATION:	Washington,DC	**COUNTED BY:**	Zilko	**EASTBOUND ROAD:**	Van Ness Street NW
		INPUTED BY:	Agan		

Time	Southbound				Westbound				Northbound				Eastbound				North	East	Total
	Nebraska Avenue NW				Van Ness Street NW				Nebraska Avenue NW				Van Ness Street NW				&	&	
Period	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	South	West	
15 Minute Volumes																			
7:30 AM - 7:45 AM	0	1	0	1	0	3	0	3	0	1	0	1	0	2	0	2	2	5	7
7:45 AM - 8:00 AM	0	2	0	2	0	0	0	0	0	0	0	0	0	1	0	1	2	1	3
8:00 AM - 8:15 AM	0	1	0	1	0	0	0	0	0	1	0	1	0	2	0	2	2	2	4
8:15 AM - 8:30 AM	0	1	0	1	0	1	0	1	1	0	1	2	0	1	0	1	3	2	5
8:30 AM - 8:45 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	2	2
8:45 AM - 9:00 AM	0	0	0	0	0	1	1	2	0	3	0	3	0	1	0	1	3	3	6
9:00 AM - 9:15 AM	0	1	0	1	0	0	0	0	1	0	0	1	0	0	0	0	2	0	2
9:15 AM - 9:30 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	2	2
2:00 PM - 2:15 PM	0	1	0	1	0	1	0	1	0	2	0	2	0	0	0	0	3	1	4
2:15 PM - 2:30 PM	0	0	0	0	0	1	0	1	1	2	0	3	0	0	0	0	3	1	4
2:30 PM - 2:45 PM	0	1	0	1	0	0	0	0	0	1	0	1	0	1	1	2	2	2	4
2:45 PM - 3:00 PM	1	0	0	1	0	2	0	2	1	1	0	2	0	0	0	0	3	2	5
3:00 PM - 3:15 PM	0	0	0	0	0	3	1	4	0	0	0	0	0	1	0	1	0	5	5
3:15 PM - 3:30 PM	0	1	0	1	0	1	0	1	1	1	0	2	0	1	0	1	3	2	5
3:30 PM - 3:45 PM	0	1	0	1	0	1	0	1	0	0	0	0	0	1	1	2	1	3	4
3:45 PM - 4:00 PM	0	0	0	0	0	3	0	3	0	2	0	2	0	1	0	1	2	4	6
Total	1	10	0	11	0	21	2	23	5	14	1	20	0	12	2	14	31	37	68
One Hour Volumes																			
7:30 AM - 8:30 AM	0	5	0	5	0	4	0	4	1	2	1	4	0	6	0	6	9	10	19
7:45 AM - 8:45 AM	0	4	0	4	0	3	0	3	1	1	1	3	0	4	0	4	7	7	14
8:00 AM - 9:00 AM	0	2	0	2	0	4	1	5	1	4	1	6	0	4	0	4	8	9	17
8:15 AM - 9:15 AM	0	2	0	2	0	4	1	5	2	3	1	6	0	2	0	2	8	7	15
8:30 AM - 9:30 AM	0	1	0	1	0	5	1	6	1	3	0	4	0	1	0	1	5	7	12
2:00 PM - 3:00 PM	1	2	0	3	0	4	0	4	2	6	0	8	0	1	1	2	11	6	17
2:15 PM - 3:15 PM	1	1	0	2	0	6	1	7	2	4	0	6	0	2	1	3	8	10	18
2:30 PM - 3:30 PM	1	2	0	3	0	6	1	7	2	3	0	5	0	3	1	4	8	11	19
2:45 PM - 3:45 PM	1	2	0	3	0	7	1	8	2	2	0	4	0	3	1	4	7	12	19
3:00 PM - 4:00 PM	0	2	0	2	0	8	1	9	1	3	0	4	0	4	1	5	6	14	20

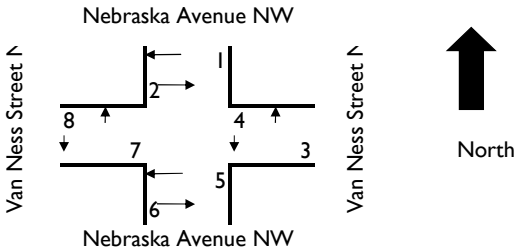
Intersection # 9

Wells + Associates, Inc.

Tysons, Virginia

Pedestrian Volume Survey

PROJECT: The River School
W + A JOB NO: 8182
INTERSECTION: Nebraska Ave. & Van Ness St.
LOCATION: Washington,DC
DATE: 5/19/2021
DAY: Wednesday
WEATHER: clear
COUNTED BY: Ramiz
INPUTED BY: Agan



Time Period	Movement 1	2	3	4	5	6	7	8	1 + 2	3 + 4	5 + 6	7+ 8	Total
15 Minute Volumes													
7:30 AM - 7:45 AM			2	1		3	2	1	0	3	3	3	9
7:45 AM - 8:00 AM	1			1	1			4	1	1	1	4	7
8:00 AM - 8:15 AM	1		3			4	4	5	1	3	4	9	17
8:15 AM - 8:30 AM			6		2	1			0	6	3	0	9
8:30 AM - 8:45 AM	1		4	1	1	3	2	3	1	5	4	5	15
8:45 AM - 9:00 AM		2	2	3			3	2	2	5	0	5	12
9:00 AM - 9:15 AM		2	3		2	1	3	3	2	3	3	6	14
9:15 AM - 9:30 AM		3		1	2		6		3	1	2	6	12
2:00 PM - 2:15 PM	1	3		1	1	1	1	2	4	1	2	3	10
2:15 PM - 2:30 PM	2						2	3	2	0	0	5	7
2:30 PM - 2:45 PM	2	1	2	1	2		2	9	3	3	2	11	19
2:45 PM - 3:00 PM			3	1		9	6	4	0	4	9	10	23
3:00 PM - 3:15 PM	2	3	5		12	6	9	1	5	5	18	10	38
3:15 PM - 3:30 PM	1		5		6	4	2	5	1	5	10	7	23
3:30 PM - 3:45 PM	1	1			4	1	4		2	0	5	4	11
3:45 PM - 4:00 PM	1	2	5	3	2	6	8	3	3	8	8	11	30
Total	13	17	40	13	35	39	54	45	30	53	74	99	256
One Hour Volumes													
7:30 AM - 8:30 AM	2	0	11	2	3	8	6	10	2	13	11	16	42
7:45 AM - 8:45 AM	3	0	13	2	4	8	6	12	3	15	12	18	48
8:00 AM - 9:00 AM	2	2	15	4	3	8	9	10	4	19	11	19	53
8:15 AM - 9:15 AM	1	4	15	4	5	5	8	8	5	19	10	16	50
8:30 AM - 9:30 AM	1	7	9	5	5	4	14	8	8	14	9	22	53
2:00 PM - 3:00 PM	5	4	5	3	3	10	11	18	9	8	13	29	59
2:15 PM - 3:15 PM	6	4	10	2	14	15	19	17	10	12	29	36	87
2:30 PM - 3:30 PM	5	4	15	2	20	19	19	19	9	17	39	38	103
2:45 PM - 3:45 PM	4	4	13	1	22	20	21	10	8	14	42	31	95
3:00 PM - 4:00 PM	5	6	15	3	24	17	23	9	11	18	41	32	102

Intersection #9

Multimodal Turning Movement Count Report

Project Name : American University Data Collection
Project # : 3
Location Washington DC
Data Source: Excel Consultants LLC

Analysis Period: STUDY_PERIOD 04:00 PM to 07:00 PM
Date of Counts: Thursday, February 27, 2020
Weather: Partly Cloudy

Volumes Displayed as: 1. Intersection Peak (vehicle)
Intersection Peak Hour (all vehicles): 04:45 PM to 05:45 PM
System Peak Hour (all vehicles): 05:00 PM to 06:00 PM
User-Defined Peak Hour: 05:00 PM to 06:00 PM

Intersection: 1. Van Ness Street & Nebraska Ave

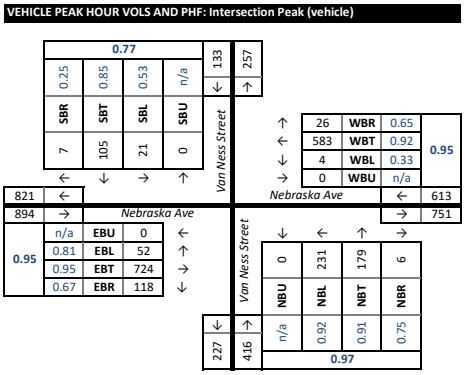
ALL VEHICLES	Southbound					Westbound					Northbound					Eastbound				
Roadway:	Van Ness Street					Nebraska Ave					Van Ness Street					Nebraska Ave				
Movement:	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds
04:00 PM to 04:15 PM	0	5	22	0	0	0	0	147	8	0	0	58	44	2	1	0	11	202	37	4
04:15 PM to 04:30 PM	0	7	32	1	3	0	0	116	8	6	0	61	43	1	9	0	9	174	40	2
04:30 PM to 04:45 PM	0	5	16	2	5	0	0	123	4	0	0	40	34	1	6	0	5	175	32	5
04:45 PM to 05:00 PM	0	4	27	0	3	0	0	146	5	0	0	63	43	1	4	0	16	171	22	1
05:00 PM to 05:15 PM	0	2	18	0	5	0	3	150	9	1	0	59	41	1	7	0	14	181	22	9
05:15 PM to 05:30 PM	0	5	31	7	7	0	0	159	2	7	0	59	46	2	4	0	8	181	44	6
05:30 PM to 05:45 PM	0	10	29	0	11	0	1	128	10	3	0	50	49	2	10	0	14	191	30	7
05:45 PM to 06:00 PM	0	6	27	0	5	0	2	135	10	5	0	52	55	3	6	0	11	159	23	2
06:00 PM to 06:15 PM	0	1	30	1	8	0	1	142	9	2	0	42	44	0	3	0	14	195	30	0
06:15 PM to 06:30 PM	0	5	28	1	0	0	1	125	9	5	0	52	40	1	14	0	9	167	29	12
06:30 PM to 06:45 PM	0	2	20	0	4	0	1	149	6	0	0	47	31	1	2	0	2	187	25	1
06:45 PM to 07:00 PM	0	9	19	0	0	0	0	114	7	0	0	27	16	0	4	0	2	160	32	1
07:00 PM to 07:15 PM																				
07:15 PM to 07:30 PM																				
07:30 PM to 07:45 PM																				
07:45 PM to 08:00 PM																				
08:00 PM to 08:15 PM																				
08:15 PM to 08:30 PM																				
08:30 PM to 08:45 PM																				
08:45 PM to 09:00 PM																				
INT. PEAK HR (ALL VEH)	133				26	613				11	416				25	894				23
04:45 PM to 05:45 PM	0	21	105	7		0	4	583	26		0	231	179	6		0	52	724	118	
Peak Hour Factor (PHF) Overall 0.94	U	Left	Thru	Right	SB 0.77	U	Left	Thru	Right	WB 0.95	U	Left	Thru	Right	NB 0.97	U	Left	Thru	Right	EB 0.95
	n/a	0.53	0.85	0.25		n/a	0.33	0.92	0.65		n/a	0.92	0.91	0.75		n/a	0.81	0.95	0.67	

HEAVY VEHICLES (FHWA 4+)	Southbound					Westbound					Northbound					Eastbound				
Roadway:	Van Ness Street					Nebraska Ave					Van Ness Street					Nebraska Ave				
Movement:	U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right	
04:00 PM to 04:15 PM	0	0	0	0		0	0	8	0		0	0	0	0		0	0	7	0	
04:15 PM to 04:30 PM	0	0	0	0		0	0	6	0		0	0	0	0		0	0	9	0	
04:30 PM to 04:45 PM	0	0	0	0		0	0	6	0		0	0	0	0		0	0	10	1	
04:45 PM to 05:00 PM	0	0	0	0		0	0	10	0		0	1	1	0		0	0	5	0	
05:00 PM to 05:15 PM	0	0	0	0		0	0	6	0		0	1	1	0		0	0	5	0	
05:15 PM to 05:30 PM	0	0	0	0		0	0	7	0		0	0	0	0		0	0	9	1	
05:30 PM to 05:45 PM	0	0	0	0		0	0	5	0		0	0	0	0		0	0	7	1	
05:45 PM to 06:00 PM	0	0	0	0		0	0	5	0		0	0	0	0		0	0	7	0	
06:00 PM to 06:15 PM	0	0	1	0		0	0	7	0		0	0	0	0		0	0	9	0	
06:15 PM to 06:30 PM	0	0	1	0		0	0	6	0		0	0	0	0		0	0	8	1	
06:30 PM to 06:45 PM	0	0	1	0		0	0	4	0		0	1	0	0		0	0	6	0	
06:45 PM to 07:00 PM	0	0	0	0		0	0	6	0		0	0	0	0		0	0	3	0	
07:00 PM to 07:15 PM																				
07:15 PM to 07:30 PM																				
07:30 PM to 07:45 PM																				
07:45 PM to 08:00 PM																				
08:00 PM to 08:15 PM																				
08:15 PM to 08:30 PM																				
08:30 PM to 08:45 PM																				
08:45 PM to 09:00 PM																				
INT. PEAK HR (ALL VEH)	0					28					4					28				
04:45 PM to 05:45 PM	0	0	0	0		0	0	28	0		0	2	2	0		0	0	26	2	
Heavy Vehicle % (PHV):	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.8%	0.0%	4.6%	0.0%	0.9%	1.1%	0.0%	1.0%	0.0%	0.0%	3.6%	1.7%	3.1%
INT. PEAK HR (HV ONLY)	0					30					2					32				
04:00 PM to 05:00 PM	0	0	0	0		0	0	30	0		0	1	1	0		0	0	31	1	
Heavy Vehicle % (PHV):	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.6%	0.0%	5.4%	0.0%	0.5%	0.6%	0.0%	0.5%	0.0%	0.0%	4.3%	0.8%	3.6%

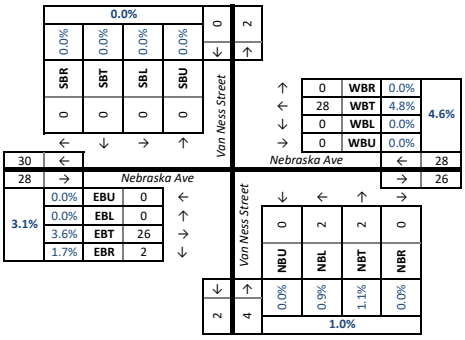
BICYCLES	Southbound				Westbound				Northbound				Eastbound			
Roadway:	Van Ness Street				Nebraska Ave				Van Ness Street				Nebraska Ave			
Movement:	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right
04:00 PM to 04:15 PM	0	0	2	0	0	0	1	0	0	0	1	0	0	0	3	2
04:15 PM to 04:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
04:30 PM to 04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
04:45 PM to 05:00 PM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
05:00 PM to 05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
05:15 PM to 05:30 PM	0	0	3	0	0	0	1	0	0	0	4	1	0	1	0	1
05:30 PM to 05:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
05:45 PM to 06:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00 PM to 06:15 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
06:15 PM to 06:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1
06:30 PM to 06:45 PM	0	0	1	0	0	0	0	0	0	0	2	0	0	0	1	0
06:45 PM to 07:00 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0
07:00 PM to 07:15 PM																
07:15 PM to 07:30 PM																
07:30 PM to 07:45 PM																
07:45 PM to 08:00 PM																
08:00 PM to 08:15 PM																
08:15 PM to 08:30 PM																
08:30 PM to 08:45 PM																
08:45 PM to 09:00 PM																
INT. PEAK HR (ALL VEH)	4				3				5				4			
04:45 PM to 05:45 PM	0	0	4	0	0	0	3	0	0	0	4	1	0	1	2	1
INT. PEAK HR (BIKES)	4				2				5				6			
04:30 PM to 05:30 PM	0	0	4	0	0	0	2	0	0	0	4	1	0	1	3	2

DATA COLLECTION NOTES :

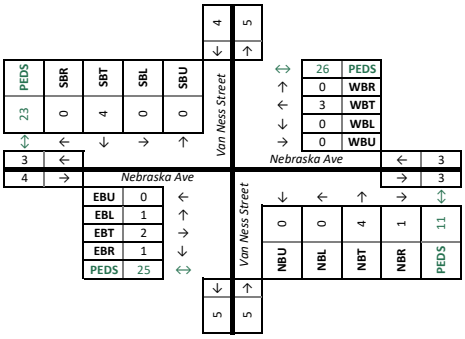
VEHICLE PEAK HOUR VOLS AND PHF: Intersection Peak (vehicle)



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



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



Intersection #10

Wells + Associates,Inc

Tysons, Virginia

Turning Movement Count - Total Vehicles

PROJECT: The River School
W+A JOB NO: 8182
INTERSECTION: Van Ness St. & 41st Street NW
LOCATION: Washington,DC

DATE: 5/18/2021
DAY: Tuesday
WEATHER: clear
COUNTED BY: Agan
INPUTED BY: Agan

SOUTHBOUND ROAD: 41st Street NW
NORTHBOUND ROAD: School Driveway
WESTBOUND ROAD: Van Ness Street NW
EASTBOUND ROAD: Van Ness Street NW

Time	Southbound 41st Street NW						Westbound Van Ness Street NW						Northbound School Driveway						Eastbound Van Ness Street NW						North & South	East & West	Total
Period	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF			
15 Minute Volumes																											
2:00 PM - 2:15 PM	2	0	4	0	6		4	46	2	0	52		10	1	2	0	13		0	44	2	0	46		19	98	117
2:15 PM - 2:30 PM	2	0	2	0	4		4	74	2	0	80		0	2	3	0	5		2	45	2	0	49		9	129	138
2:30 PM - 2:45 PM	1	1	3	0	5		2	72	0	0	74		0	1	4	0	5		1	44	0	0	45		10	119	129
2:45 PM - 3:00 PM	0	0	1	0	1		4	64	0	0	68		3	2	2	0	7		0	44	0	0	44		8	112	120
3:00 PM - 3:15 PM	5	0	0	0	5		4	70	1	0	75		3	6	10	0	19		0	76	1	0	77		24	152	176
3:15 PM - 3:30 PM	2	0	1	0	3		6	107	2	0	115		1	8	3	0	12		1	103	5	0	109		15	224	239
3:30 PM - 3:45 PM	2	0	2	0	4		9	108	0	0	117		4	3	5	0	12		1	91	8	0	100		16	217	233
3:45 PM - 4:00 PM	5	0	1	0	6		6	106	1	0	113		3	7	8	0	18		1	106	1	0	108		24	221	245
4:00 PM - 4:15 PM	4	0	3	0	7		5	101	0	0	106		7	6	14	0	27		4	109	3	0	116		34	222	256
4:15 PM - 4:30 PM	1	1	2	0	4		14	102	8	0	124		3	6	8	0	17		4	50	0	0	54		21	178	199
4:30 PM - 4:45 PM	2	0	4	0	6		2	68	0	0	70		2	2	8	0	12		3	50	3	0	56		18	126	144
4:45 PM - 5:00 PM	2	0	2	0	4		8	68	2	0	78		1	1	3	0	5		1	60	2	0	63		9	141	150
5:00 PM - 5:15 PM	2	0	2	0	4		10	72	0	0	82		2	3	2	0	7		0	45	1	0	46		11	128	139
5:15 PM - 5:30 PM	6	0	0	0	6		5	55	0	0	60		2	1	1	0	4		1	36	3	0	40		10	100	110
5:30 PM - 5:45 PM	1	0	0	0	1		3	75	2	0	80		5	4	4	0	13		1	41	2	0	44		14	124	138
5:45 PM - 6:00 PM	2	1	0	0	3		3	57	0	0	60		1	1	3	0	5		1	45	2	0	48		8	108	116
6:00 PM - 6:15 PM	1	0	1	0	2		5	61	0	0	66		0	0	2	0	2		0	35	0	0	35		4	101	105
6:15 PM - 6:30 PM	2	0	2	0	4		3	47	0	0	50		1	0	0	0	1		0	40	3	0	43		5	93	98
6:30 PM - 6:45 PM	0	0	2	0	2		6	45	0	0	51		0	0	1	0	1		1	43	1	0	45		3	96	99
6:45 PM - 7:00 PM	0	0	2	0	2		1	30	1	0	32		0	1	1	0	2		0	33	4	0	37		4	69	73
Total	42	3	34	0	79		104	1428	21	0	1553		48	55	84	0	187		22	1140	43	0	1205		266	2758	3024
One Hour Volumes																											
2:00 PM - 3:00 PM	5	1	10	0	16	0.667	14	256	4	0	274	0.856	13	6	11	0	30	0.577	3	177	4	0	184	0.939	46	458	504
2:15 PM - 3:15 PM	8	1	6	0	15	0.75	14	280	3	0	297	0.928	6	11	19	0	36	0.474	3	209	3	0	215	0.698	51	512	563
2:30 PM - 3:30 PM	8	1	5	0	14	0.7	16	313	3	0	332	0.722	7	17	19	0	43	0.566	2	267	6	0	275	0.631	57	607	664
2:45 PM - 3:45 PM	9	0	4	0	13	0.65	23	349	3	0	375	0.801	11	19	20	0	50	0.658	2	314	14	0	330	0.757	63	705	768
3:00 PM - 4:00 PM	14	0	4	0	18	0.75	25	391	4	0	420	0.897	11	24	26	0	61	0.803	3	376	15	0	394	0.904	79	814	893
3:15 PM - 4:15 PM	13	0	7	0	20	0.714	26	422	3	0	451	0.964	15	24	30	0	69	0.639	7	409	17	0	433	0.933	89	884	973
3:30 PM - 4:30 PM	12	1	8	0	21	0.75	34	417	9	0	460	0.927	17	22	35	0	74	0.685	10	356	12	0	378	0.815	95	838	933
3:45 PM - 4:45 PM	12	1	10	0	23	0.821	27	377	9	0	413	0.833	15	21	38	0	74	0.685	12	315	7	0	334	0.72	97	747	844
4:00 PM - 5:00 PM	9	1	11	0	21	0.75	29	339	10	0	378	0.762	13	15	33	0	61	0.565	12	269	8	0	289	0.623	82	667	749
4:15 PM - 5:15 PM	7	1	10	0	18	0.75	34	310	10	0	354	0.714	8	12	21	0	41	0.603	8	205	6	0	219	0.869	59	573	632
4:30 PM - 5:30 PM	12	0	8	0	20	0.833	25	263	2	0	290	0.884	7	7	14	0	28	0.583	5	191	9	0	205	0.813	48	495	543
4:45 PM - 5:45 PM	11	0	4	0	15	0.625	26	270	4	0	300	0.915	10	9	10	0	29	0.558	3	182	8	0	193	0.766	44	493	537
5:00 PM - 6:00 PM	11	1	2	0	14	0.583	21	259	2	0	282	0.86	10	9	10	0	29	0.558	3	167	8	0	178	0.927	43	460	503
5:15 PM - 6:15 PM	10	1	1	0	12	0.5	16	248	2	0	266	0.831	8	6	10	0	24	0.462	3	157	7	0	167	0.87	36	433	469
5:30 PM - 6:30 PM	6	1	3	0	10	0.625	14	240	2	0	256	0.8	7	5	9	0	21	0.404	2	161	7	0	170	0.885	31	426	457
5:45 PM - 6:45 PM	5	1	5	0	11	0.688	17	210	0	0	227	0.86	2	1	6	0	9	0.45	2	163	6	0	171	0.891	20	398	418
6:00 PM - 7:00 PM	3	0	7	0	10	0.625	15	183	1	0	199	0.754	1	1	4	0	6	0.75	1	151	8	0	160	0.889	16	359	375

Intersection #10

Wells + Associates, Inc.

Tysons, Virginia

Turning Movement Count - Bicycles

PROJECT:	The River School	**DATE:**	5/18/2021	**SOUTHBOUND ROAD:**	41st Street NW
W+A JOB NO:	8182	**DAY:**	Tuesday	**NORTHBOUND ROAD:**	School Driveway
INTERSECTION:	Van Ness St. & 41st Street NW	**WEATHER:**	clear	**WESTBOUND ROAD:**	Van Ness Street NW
LOCATION:	Washington,DC	**COUNTED BY:**	Agan	**EASTBOUND ROAD:**	Van Ness Street NW
		INPUTED BY:	Agan		

Time	Southbound 41st Street NW				Westbound Van Ness Street NW				Northbound School Driveway				Eastbound Van Ness Street NW				North & South	East & West	Total
Period	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total			
15 Minute Volumes																			
2:00 PM - 2:15 PM		1		1				0				0		3		3	1	3	4
2:15 PM - 2:30 PM				0				0				0				0	0	0	0
2:30 PM - 2:45 PM				0		1		1				0		1		1	0	2	2
2:45 PM - 3:00 PM				0		1		1				0		1		1	0	2	2
3:00 PM - 3:15 PM				0	1	2		3				0				0	0	3	3
3:15 PM - 3:30 PM				0		5		5				0		1		1	0	6	6
3:30 PM - 3:45 PM				0		1		1				0		1		1	0	2	2
3:45 PM - 4:00 PM			1	1		2		2				0				0	1	2	3
4:00 PM - 4:15 PM				0				0				0				0	0	0	0
4:15 PM - 4:30 PM				0		2		2				0		1		1	0	3	3
4:30 PM - 4:45 PM				0		1		1				0		1		1	0	2	2
4:45 PM - 5:00 PM				0				0				0				0	0	0	0
5:00 PM - 5:15 PM				0		2		2				0		2		2	0	4	4
5:15 PM - 5:30 PM				0				0				0		1		1	0	1	1
5:30 PM - 5:45 PM				0		1		1				0		2		2	0	3	3
5:45 PM - 6:00 PM				0				0				0				0	0	0	0
6:00 PM - 6:15 PM				0		2	1	3	1			1		6		6	1	9	10
6:15 PM - 6:30 PM				0		2		2				0		2		2	0	4	4
6:30 PM - 6:45 PM				0		2		2				0				0	0	2	2
6:45 PM - 7:00 PM				0				0				0				0	0	0	0
Total	0	1	1	2	1	24	1	26	1	0	0	1	0	22	0	22	3	48	51
One Hour Volumes																			
2:00 PM - 3:00 PM	0	1	0	1	0	2	0	2	0	0	0	0	0	5	0	5	1	7	8
2:15 PM - 3:15 PM	0	0	0	0	1	4	0	5	0	0	0	0	0	2	0	2	0	7	7
2:30 PM - 3:30 PM	0	0	0	0	1	9	0	10	0	0	0	0	0	3	0	3	0	13	13
2:45 PM - 3:45 PM	0	0	0	0	1	9	0	10	0	0	0	0	0	3	0	3	0	13	13
3:00 PM - 4:00 PM	0	0	1	1	1	10	0	11	0	0	0	0	0	2	0	2	1	13	14
3:15 PM - 4:15 PM	0	0	1	1	0	8	0	8	0	0	0	0	0	2	0	2	1	10	11
3:30 PM - 4:30 PM	0	0	1	1	0	5	0	5	0	0	0	0	0	2	0	2	1	7	8
3:45 PM - 4:45 PM	0	0	1	1	0	5	0	5	0	0	0	0	0	2	0	2	1	7	8
4:00 PM - 5:00 PM	0	0	0	0	0	3	0	3	0	0	0	0	0	2	0	2	0	5	5
4:15 PM - 5:15 PM	0	0	0	0	0	5	0	5	0	0	0	0	0	4	0	4	0	9	9
4:30 PM - 5:30 PM	0	0	0	0	0	3	0	3	0	0	0	0	0	4	0	4	0	7	7
4:45 PM - 5:45 PM	0	0	0	0	0	3	0	3	0	0	0	0	0	5	0	5	0	8	8
5:00 PM - 6:00 PM	0	0	0	0	0	3	0	3	0	0	0	0	0	5	0	5	0	8	8
5:15 PM - 6:15 PM	0	0	0	0	0	3	1	4	1	0	0	1	0	9	0	9	1	13	14
5:30 PM - 6:30 PM	0	0	0	0	0	5	1	6	1	0	0	1	0	10	0	10	1	16	17
5:45 PM - 6:45 PM	0	0	0	0	0	6	1	7	1	0	0	1	0	8	0	8	1	15	16
6:00 PM - 7:00 PM	0	0	0	0	0	6	1	7	1	0	0	1	0	8	0	8	1	15	16

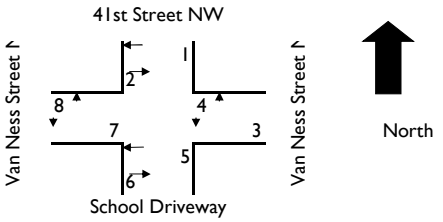
Intersection #10

Wells + Associates, Inc.

Tysons, Virginia

Pedestrian Volume Survey

PROJECT: The River School
W + A JOB NO: 8182
INTERSECTION: Van Ness St. & 41st Street NW
LOCATION: Washington,DC
DATE: 5/18/2021
DAY: Tuesday
WEATHER: clear
COUNTED BY: Agan
INPUTED BY: Agan



Time Period	Movement 1	2	3	4	5	6	7	8	1 + 2	3 + 4	5 + 6	7+ 8	Total
15 Minute Volumes													
2:00 PM - 2:15 PM	3								3	0	0	0	3
2:15 PM - 2:30 PM	1	2			5				3	0	5	0	8
2:30 PM - 2:45 PM	3	1			4	2			4	0	6	0	10
2:45 PM - 3:00 PM		1	2	2	1	1		1	1	4	2	1	8
3:00 PM - 3:15 PM	2		2						2	2	0	0	4
3:15 PM - 3:30 PM	4		6		3	1			4	6	4	0	14
3:30 PM - 3:45 PM	2	1	1	1	4	1	1	1	3	2	5	2	12
3:45 PM - 4:00 PM			2		5	2	1		0	2	7	1	10
4:00 PM - 4:15 PM					2				0	0	2	0	2
4:15 PM - 4:30 PM	1	1			1				2	0	1	0	3
4:30 PM - 4:45 PM	1	2			2	9			3	0	11	0	14
4:45 PM - 5:00 PM	3				3	3			3	0	6	0	9
5:00 PM - 5:15 PM	2		1		6	2			2	1	8	0	11
5:15 PM - 5:30 PM	1				5	5			1	0	10	0	11
5:30 PM - 5:45 PM			1	2	1	2			0	3	3	0	6
5:45 PM - 6:00 PM	4	1			7	4			5	0	11	0	16
6:00 PM - 6:15 PM		1	1		4	2			1	1	6	0	8
6:15 PM - 6:30 PM	1				1	1			1	0	2	0	3
6:30 PM - 6:45 PM		2			3	3			2	0	6	0	8
6:45 PM - 7:00 PM		1			3	3			1	0	6	0	7
Total	28	13	16	5	60	41	2	2	41	21	101	4	167
One Hour Volumes													
2:00 PM - 3:00 PM	7	4	2	2	10	3	0	1	11	4	13	1	29
2:15 PM - 3:15 PM	6	4	4	2	10	3	0	1	10	6	13	1	30
2:30 PM - 3:30 PM	9	2	10	2	8	4	0	1	11	12	12	1	36
2:45 PM - 3:45 PM	8	2	11	3	8	3	1	2	10	14	11	3	38
3:00 PM - 4:00 PM	8	1	11	1	12	4	2	1	9	12	16	3	40
3:15 PM - 4:15 PM	6	1	9	1	14	4	2	1	7	10	18	3	38
3:30 PM - 4:30 PM	3	2	3	1	12	3	2	1	5	4	15	3	27
3:45 PM - 4:45 PM	2	3	2	0	10	11	1	0	5	2	21	1	29
4:00 PM - 5:00 PM	5	3	0	0	8	12	0	0	8	0	20	0	28
4:15 PM - 5:15 PM	7	3	1	0	12	14	0	0	10	1	26	0	37
4:30 PM - 5:30 PM	7	2	1	0	16	19	0	0	9	1	35	0	45
4:45 PM - 5:45 PM	6	0	2	2	15	12	0	0	6	4	27	0	37
5:00 PM - 6:00 PM	7	1	2	2	19	13	0	0	8	4	32	0	44
5:15 PM - 6:15 PM	5	2	2	2	17	13	0	0	7	4	30	0	41
5:30 PM - 6:30 PM	5	2	2	2	13	9	0	0	7	4	22	0	33
5:45 PM - 6:45 PM	5	4	1	0	15	10	0	0	9	1	25	0	35
6:00 PM - 7:00 PM	1	4	1	0	11	9	0	0	5	1	20	0	26

Intersection #11

Multimodal Turning Movement Count Report

Project Name : American University Data Collection
Project # : 3
Location Washington DC
Data Source: Excel Consultants LLC

Analysis Period: STUDY_PERIOD 06:30 AM to 09:30 AM
Date of Counts: Thursday, February 27, 2020
Weather: Partly Cloudy

Volumes Displayed as: 1. Intersection 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. Wisconsin Ave & Van Ness Street

ALL VEHICLES

Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	Wisconsin Ave					Van Ness Street					Wisconsin Ave					Van Ness 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	5	195	5	3	0	5	17	4	6	0	2	92	2	3	0	2	14	6	20
06:45 AM to 07:00 AM	0	2	207	8	4	0	7	30	9	7	0	5	102	4	3	0	7	15	4	6
07:00 AM to 07:15 AM	0	1	262	9	2	0	3	25	4	6	0	2	129	4	11	0	7	20	8	8
07:15 AM to 07:30 AM	0	1	304	8	7	0	8	40	4	16	0	0	160	0	14	0	8	25	10	9
07:30 AM to 07:45 AM	0	1	378	4	6	0	6	46	4	13	0	2	163	8	1	0	1	54	11	8
07:45 AM to 08:00 AM	0	0	388	9	11	0	12	73	19	14	0	3	230	9	4	0	3	70	17	36
08:00 AM to 08:15 AM	0	1	323	8	7	0	12	50	11	9	0	0	215	10	0	0	10	47	16	14
08:15 AM to 08:30 AM	0	0	397	15	8	0	14	51	10	5	0	0	192	12	0	0	17	58	16	11
08:30 AM to 08:45 AM	0	1	342	22	12	0	11	52	6	8	0	0	182	14	2	0	9	76	15	15
08:45 AM to 09:00 AM	0	1	414	18	14	0	22	54	9	8	0	0	208	6	11	0	6	59	9	13
09:00 AM to 09:15 AM	0	6	309	19	13	0	13	44	5	1	0	0	142	7	9	0	13	55	8	3
09:15 AM to 09:30 AM	0	1	288	11	10	0	14	53	9	4	0	3	150	2	0	0	8	55	20	14
09:30 AM to 09:45 AM																				
09:45 AM to 10:00 AM																				
10:00 AM to 10:15 AM																				
10:15 AM to 10:30 AM																				
10:30 AM to 10:45 AM																				
10:45 AM to 11:00 AM																				
11:00 AM to 11:15 AM																				
11:15 AM to 11:30 AM																				
INT. PEAK HR (ALL VEH)	1506				38	321				36	867				6	354				76
07:45 AM to 08:45 AM	0	2	1450	54		0	49	226	46		0	3	819	45		0	39	251	64	
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) 0.91	n/a	0.50	0.91	0.61	**0.91**	n/a	0.88	0.77	0.61	**0.77**	n/a	0.25	0.89	0.80	**0.90**	n/a	0.57	0.83	0.94	**0.89**

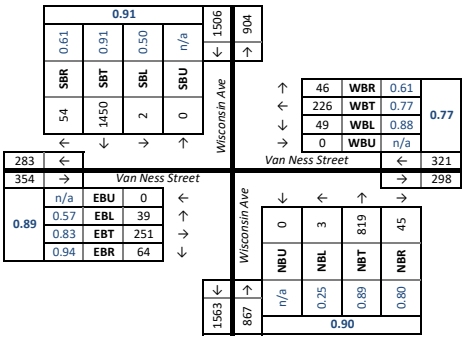
HEAVY VEHICLES (FHWA 4+)

Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	Wisconsin Ave					Van Ness Street					Wisconsin Ave					Van Ness 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	12	0		0	0	0	0		0	0	9	0		0	0	0	0	
06:45 AM to 07:00 AM	0	1	14	0		0	0	0	0		0	0	12	0		0	0	0	0	
07:00 AM to 07:15 AM	0	0	19	0		0	0	0	0		0	0	7	0		0	0	0	0	
07:15 AM to 07:30 AM	0	1	11	0		0	0	0	1		0	0	9	0		0	0	0	0	
07:30 AM to 07:45 AM	0	1	13	1		0	0	1	1		0	0	8	0		0	0	1	0	
07:45 AM to 08:00 AM	0	0	15	0		0	0	1	0		0	0	11	0		0	0	0	1	
08:00 AM to 08:15 AM	0	1	16	0		0	1	0	0		0	0	15	0		0	0	0	0	
08:15 AM to 08:30 AM	0	0	20	0		0	0	1	0		0	0	10	0		0	0	1	0	
08:30 AM to 08:45 AM	0	0	12	1		0	0	1	0		0	0	18	0		0	0	1	1	
08:45 AM to 09:00 AM	0	1	20	0		0	0	0	0		0	0	7	0		0	0	0	0	
09:00 AM to 09:15 AM	0	2	16	0		0	1	0	0		0	0	14	0		0	0	0	0	
09:15 AM to 09:30 AM	0	0	11	0		0	0	0	0		0	1	14	0		0	0	0	0	
09:30 AM to 09:45 AM																				
09:45 AM to 10:00 AM																				
10:00 AM to 10:15 AM																				
10:15 AM to 10:30 AM																				
10:30 AM to 10:45 AM																				
10:45 AM to 11:00 AM																				
11:00 AM to 11:15 AM																				
11:15 AM to 11:30 AM																				
INT. PEAK HR (ALL VEH)	65					4					54					4				
07:45 AM to 08:45 AM	0	1	63	1		0	1	3	0		0	0	54	0		0	0	2	2	
Heavy Vehicle % (PHV):	0.0%	50.0%	4.3%	1.9%	**4.3%**	0.0%	2.0%	1.3%	0.0%	**1.2%**	0.0%	0.0%	6.6%	0.0%	**6.2%**	0.0%	0.0%	0.8%	3.1%	**1.1%**
INT. PEAK HR (HV ONLY)	65					4					54					4				
07:45 AM to 08:45 AM	0	1	63	1		0	1	3	0		0	0	54	0		0	0	2	2	
Heavy Vehicle % (PHV):	0.0%	50.0%	4.3%	1.9%	**4.3%**	0.0%	2.0%	1.3%	0.0%	**1.2%**	0.0%	0.0%	6.6%	0.0%	**6.2%**	0.0%	0.0%	0.8%	3.1%	**1.1%**

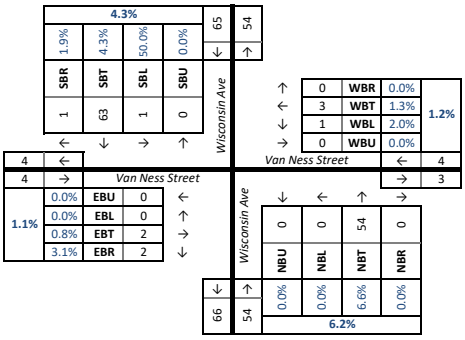
BICYCLES

Direction:	Southbound				Westbound				Northbound				Eastbound			
Roadway:	Wisconsin Ave				Van Ness Street				Wisconsin Ave				Van Ness 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	0	0	0	0	1	0	0	0	0	0
06:45 AM to 07:00 AM	0	0	3	0	0	0	0	0	0	0	1	0	0	0	0	0
07:00 AM to 07:15 AM	0	0	1	0	0	0	0	0	0	1	0	0	0	0	1	0
07:15 AM to 07:30 AM	0	0	1	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	1	1	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	1	0	0	0	1	0
08:15 AM to 08:30 AM	0	0	1	0	0	0	2	0	0	0	0	0	0	0	1	0
08:30 AM to 08:45 AM	0	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0
08:45 AM to 09:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
09:00 AM to 09:15 AM	0	0	1	0	0	0	0	0	0	0	3	0	0	0	0	0
09:15 AM to 09:30 AM	0	0	2	0	0	0	2	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																
INT. PEAK HR (ALL VEH)	6				5				3				4			
07:45 AM to 08:45 AM	0	1	5	0	0	0	5	0	0	0	3	0	0	0	4	0
INT. PEAK HR (BIKES)	6				5				3				4			
07:45 AM to 08:45 AM	0	1	5	0	0	0	5	0	0	0	3	0	0	0	4	0

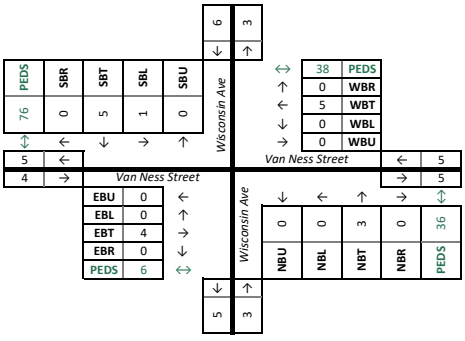
VEHICLE PEAK HOUR VOLS AND PHF: Intersection Peak (vehicle)



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



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



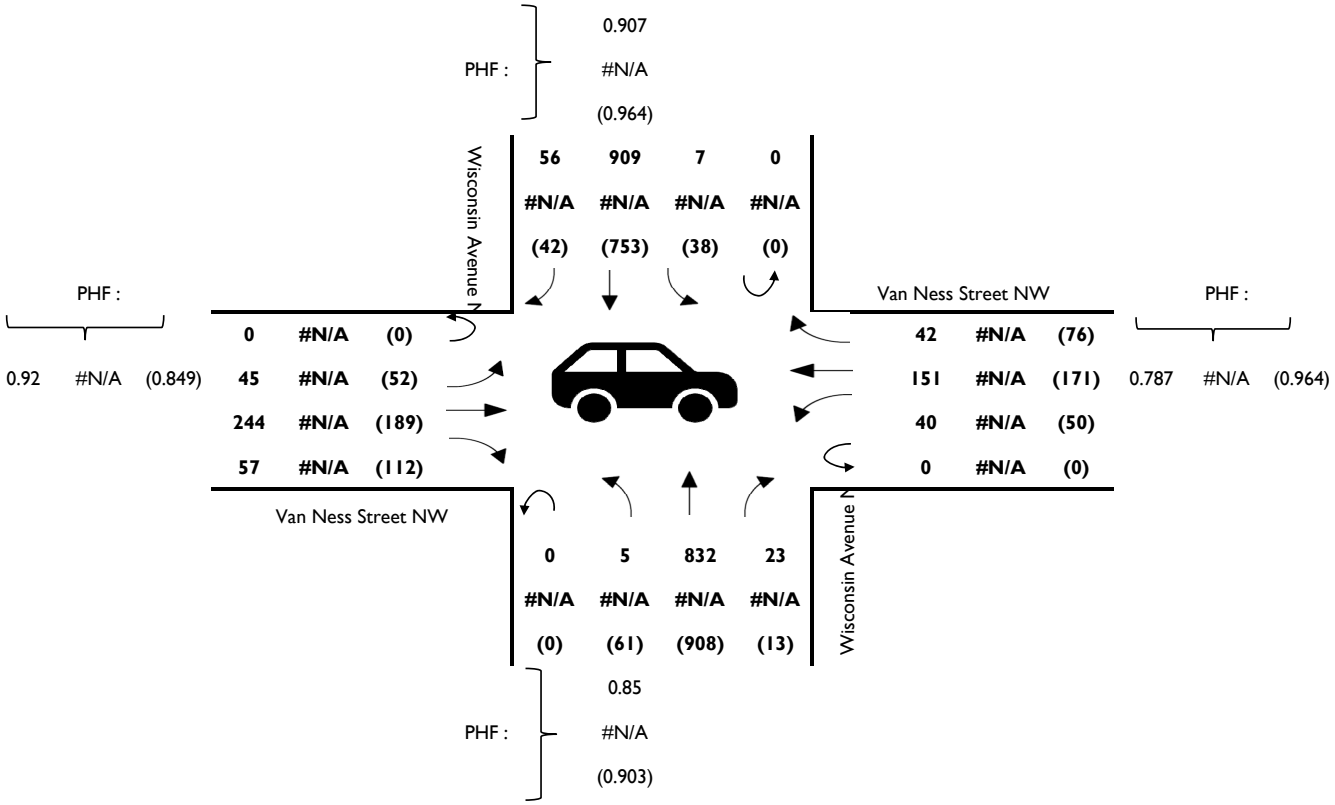
DATA COLLECTION NOTES :

Intersection #11

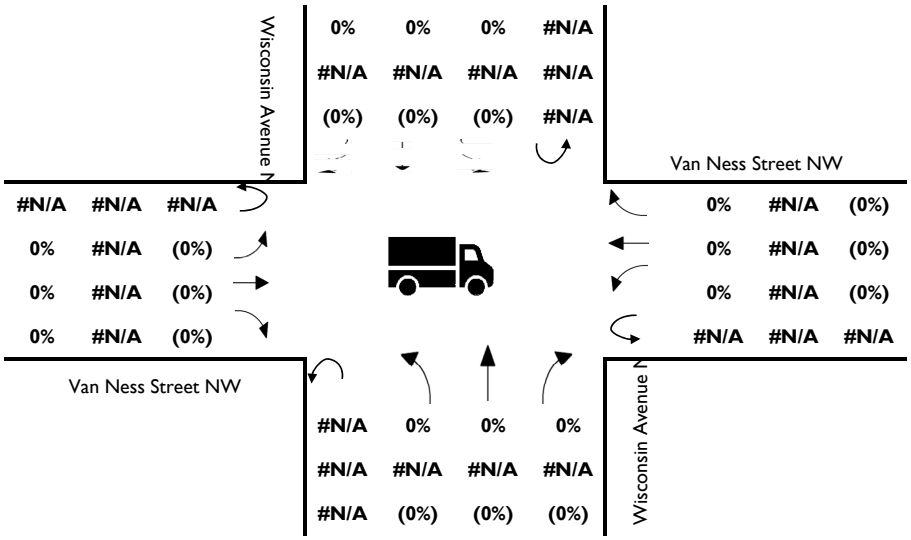
PEAK HOUR TRAFFIC COUNT SUMMARY

Location:	Wisconsin Ave. & Van Ness St.	AM Peak Hour:	8:00 AM - 9:00 AM
	Washington,DC	Midday Peak Hour:	None
Date of Count:	5/19/2021	PM Peak Hour:	3:00 PM - 4:00 PM

Peak Hour - Vehicle Counts

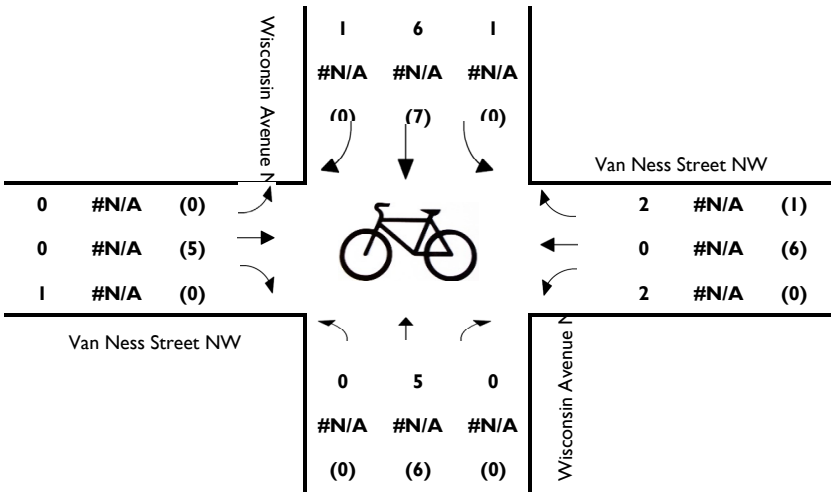


Peak Hour - Heavy Vehicle %

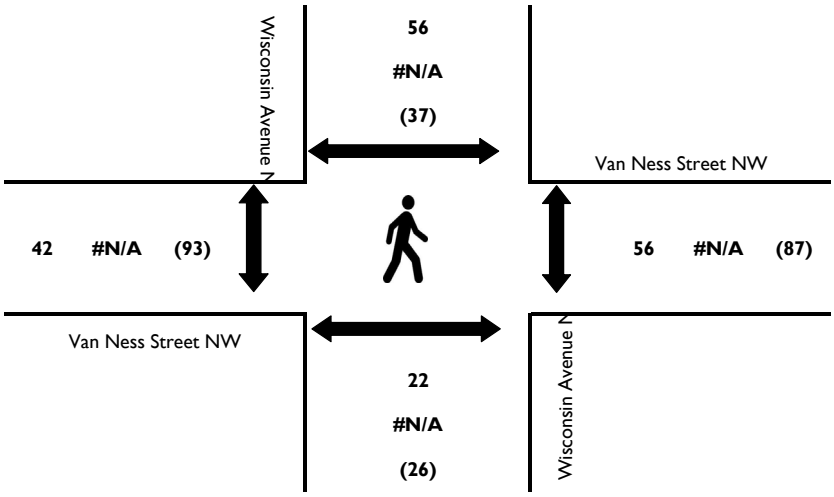


Intersection #11

Peak Hour - Bicycles



Peak Hour - Pedestrians



Intersection #11

Wells + Associates,Inc

Tysons, Virginia

Turning Movement Count - Total Vehicles

PROJECT: The River School
W+A JOB NO: 8182
INTERSECTION: Wisconsin Ave. & Van Ness St.
LOCATION: Washington,DC

DATE: 5/19/2021
DAY: Wednesday
WEATHER: clear
COUNTED BY: Ramiz & Majda
INPUTED BY: Agan

SOUTHBOUND ROAD: Wisconsin Avenue NW
NORTHBOUND ROAD: Wisconsin Avenue NW
WESTBOUND ROAD: Van Ness Street NW
EASTBOUND ROAD: Van Ness Street NW

Time	Southbound Wisconsin Avenue NW						Westbound Van Ness Street NW						Northbound Wisconsin Avenue NW						Eastbound Van Ness Street NW						North & South	East & West	Total
Period	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF			
15 Minute Volumes																											
7:30 AM - 7:45 AM	11	203	2	0	216		5	24	8	0	37		1	123	2	0	126		5	22	11	0	38		342	75	417
7:45 AM - 8:00 AM	15	269	2	0	286		10	41	6	0	57		3	136	3	0	142		8	22	5	0	35		428	92	520
8:00 AM - 8:15 AM	12	254	2	0	268		13	34	9	0	56		3	188	1	0	192		24	53	12	0	89		460	145	605
8:15 AM - 8:30 AM	14	219	3	0	236		7	40	9	0	56		7	245	1	0	253		10	57	15	0	82		489	138	627
8:30 AM - 8:45 AM	22	216	0	0	238		9	32	6	0	47		6	193	1	0	200		14	71	9	0	94		438	141	579
8:45 AM - 9:00 AM	8	220	2	0	230		13	45	16	0	74		7	206	2	0	215		9	63	9	0	81		445	155	600
9:00 AM - 9:15 AM	11	192	0	0	203		9	30	14	0	53		12	135	2	0	149		13	39	7	0	59		352	112	464
9:15 AM - 9:30 AM	17	203	6	0	226		4	20	6	0	30		8	110	9	0	127		16	38	13	0	67		353	97	450
2:00 PM - 2:15 PM	10	179	10	0	199		11	21	13	0	45		2	219	0	0	221		16	34	18	0	68		420	113	533
2:15 PM - 2:30 PM	17	161	9	0	187		12	45	7	0	64		6	204	6	0	216		8	26	13	0	47		403	111	514
2:30 PM - 2:45 PM	14	187	8	0	209		10	38	6	0	54		6	215	2	0	223		14	33	8	0	55		432	109	541
2:45 PM - 3:00 PM	9	181	10	0	200		11	41	19	0	71		5	222	7	0	234		16	43	13	0	72		434	143	577
3:00 PM - 3:15 PM	14	192	8	0	214		20	41	15	0	76		4	236	9	0	249		11	39	15	0	65		463	141	604
3:15 PM - 3:30 PM	7	194	15	0	216		17	43	10	0	70		5	192	19	0	216		26	53	12	0	91		432	161	593
3:30 PM - 3:45 PM	11	175	4	0	190		16	48	13	0	77		1	224	20	0	245		39	41	13	0	93		435	170	605
3:45 PM - 4:00 PM	10	192	11	0	213		23	39	12	0	74		3	256	13	0	272		36	56	12	0	104		485	178	663
Total	202	3237	92	0	3531		190	582	169	0	941		79	3104	97	0	3280		265	690	185	0	1140		6811	2081	8892
One Hour Volumes																											
7:30 AM - 8:30 AM	52	945	9	0	1006	0.879	35	139	32	0	206	0.904	14	692	7	0	713	0.705	47	154	43	0	244	0.685	1719	450	2169
7:45 AM - 8:45 AM	63	958	7	0	1028	0.899	39	147	30	0	216	0.947	19	762	6	0	787	0.778	56	203	41	0	300	0.798	1815	516	2331
8:00 AM - 9:00 AM	56	909	7	0	972	0.907	42	151	40	0	233	0.787	23	832	5	0	860	0.85	57	244	45	0	346	0.92	1832	579	2411
8:15 AM - 9:15 AM	55	847	5	0	907	0.953	38	147	45	0	230	0.777	32	779	6	0	817	0.807	46	230	40	0	316	0.84	1724	546	2270
8:30 AM - 9:30 AM	58	831	8	0	897	0.942	35	127	42	0	204	0.689	33	644	14	0	691	0.803	52	211	38	0	301	0.801	1588	505	2093
2:00 PM - 3:00 PM	50	708	37	0	795	0.951	44	145	45	0	234	0.824	19	860	15	0	894	0.955	54	136	52	0	242	0.84	1689	476	2165
2:15 PM - 3:15 PM	54	721	35	0	810	0.946	53	165	47	0	265	0.872	21	877	24	0	922	0.926	49	141	49	0	239	0.83	1732	504	2236
2:30 PM - 3:30 PM	44	754	41	0	839	0.971	58	163	50	0	271	0.891	20	865	37	0	922	0.926	67	168	48	0	283	0.777	1761	554	2315
2:45 PM - 3:45 PM	41	742	37	0	820	0.949	64	173	57	0	294	0.955	15	874	55	0	944	0.948	92	176	53	0	321	0.863	1764	615	2379
3:00 PM - 4:00 PM	42	753	38	0	833	0.964	76	171	50	0	297	0.964	13	908	61	0	982	0.903	112	189	52	0	353	0.849	1815	650	2465

Intersection #11

Wells + Associates, Inc.

Tysons, Virginia

Turning Movement Count - Bicycles

PROJECT: The River School
W+A JOB NO: 8182
INTERSECTION: Wisconsin Ave. & Van Ness St.
LOCATION: Washington,DC

DATE: 5/19/2021
DAY: Wednesday
WEATHER: clear
COUNTED BY: Amar
INPUTED BY: Agan

SOUTHBOUND ROAD: Wisconsin Avenue NW
NORTHBOUND ROAD: Wisconsin Avenue NW
WESTBOUND ROAD: Van Ness Street NW
EASTBOUND ROAD: Van Ness Street NW

Time Period	Southbound Wisconsin Avenue NW				Westbound Van Ness Street NW				Northbound Wisconsin Avenue NW				Eastbound Van Ness Street NW				North & South	East & West	Total
	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total			
15 Minute Volumes																			
7:30 AM - 7:45 AM	1	0	0	1	0	1	1	2	0	1	0	1	0	1	0	1	2	3	5
7:45 AM - 8:00 AM	0	2	1	3	0	0	0	0	0	0	0	0	0	1	0	1	3	1	4
8:00 AM - 8:15 AM	1	2	0	3	0	1	0	1	0	1	0	1	1	0	0	1	4	2	6
8:15 AM - 8:30 AM	0	1	1	2	1	0	0	1	0	0	0	0	0	1	0	1	2	2	4
8:30 AM - 8:45 AM	0	2	0	2	1	2	1	4	0	2	0	2	0	0	0	0	4	4	8
8:45 AM - 9:00 AM	0	1	0	1	0	1	1	2	0	2	0	2	0	1	0	1	3	3	6
9:00 AM - 9:15 AM	0	1	0	1	0	1	0	1	0	2	0	2	0	0	1	1	3	2	5
9:15 AM - 9:30 AM	0	0	1	1	0	0	0	0	0	2	0	2	0	1	0	1	3	1	4
2:00 PM - 2:15 PM	0	7	0	7	0	0	0	0	0	1	0	1	1	2	0	3	8	3	11
2:15 PM - 2:30 PM	0	16	0	16	0	0	0	0	0	1	0	1	2	0	0	2	17	2	19
2:30 PM - 2:45 PM	0	1	1	2	0	1	0	1	0	4	1	5	0	2	0	2	7	3	10
2:45 PM - 3:00 PM	0	2	0	2	0	0	0	0	0	4	0	4	0	0	1	1	6	1	7
3:00 PM - 3:15 PM	0	2	0	2	0	2	0	2	0	0	0	0	0	1	0	1	2	3	5
3:15 PM - 3:30 PM	0	2	0	2	0	1	0	1	0	4	0	4	0	2	0	2	6	3	9
3:30 PM - 3:45 PM	0	1	0	1	1	0	0	1	0	1	0	1	0	1	0	1	2	2	4
3:45 PM - 4:00 PM	0	2	0	2	0	3	0	3	0	1	0	1	0	1	0	1	3	4	7
Total	2	42	4	48	3	13	3	19	0	26	1	27	4	14	2	20	75	39	114
One Hour Volumes																			
7:30 AM - 8:30 AM	2	5	2	9	1	2	1	4	0	2	0	2	1	3	0	4	11	8	19
7:45 AM - 8:45 AM	1	7	2	10	2	3	1	6	0	3	0	3	1	2	0	3	13	9	22
8:00 AM - 9:00 AM	1	6	1	8	2	4	2	8	0	5	0	5	1	2	0	3	13	11	24
8:15 AM - 9:15 AM	0	5	1	6	2	4	2	8	0	6	0	6	0	2	1	3	12	11	23
8:30 AM - 9:30 AM	0	4	1	5	1	4	2	7	0	8	0	8	0	2	1	3	13	10	23
2:00 PM - 3:00 PM	0	26	1	27	0	1	0	1	0	10	1	11	3	4	1	8	38	9	47
2:15 PM - 3:15 PM	0	21	1	22	0	3	0	3	0	9	1	10	2	3	1	6	32	9	41
2:30 PM - 3:30 PM	0	7	1	8	0	4	0	4	0	12	1	13	0	5	1	6	21	10	31
2:45 PM - 3:45 PM	0	7	0	7	1	3	0	4	0	9	0	9	0	4	1	5	16	9	25
3:00 PM - 4:00 PM	0	7	0	7	1	6	0	7	0	6	0	6	0	5	0	5	13	12	25

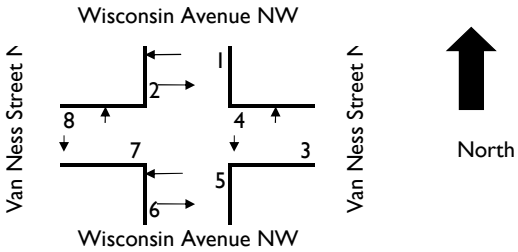
Intersection #11

Wells + Associates, Inc.

Tysons, Virginia

Pedestrian Volume Survey

PROJECT: The River School
W + A JOB NO: 8182
INTERSECTION: Wisconsin Ave. & Van Ness St.
LOCATION: Washington,DC
DATE: 5/19/2021
DAY: Wednesday
WEATHER: clear
COUNTED BY: Amar
INPUTED BY: Agan



Time Period	Movement 1	2	3	4	5	6	7	8	1 + 2	3 + 4	5 + 6	7+ 8	Total
15 Minute Volumes													
7:30 AM - 7:45 AM	1	1	4	2	2	3	7	5	2	6	5	12	25
7:45 AM - 8:00 AM	7	5	10	5	1	1	7	3	12	15	2	10	39
8:00 AM - 8:15 AM	6	7	2	6	2	1	4	5	13	8	3	9	33
8:15 AM - 8:30 AM	14	5	6	5	5	1	5	4	19	11	6	9	45
8:30 AM - 8:45 AM	4	5	4	12	4	4	9	5	9	16	8	14	47
8:45 AM - 9:00 AM	8	7	15	6	1	4	3	7	15	21	5	10	51
9:00 AM - 9:15 AM	5	4	8	2	1	1	3	5	9	10	2	8	29
9:15 AM - 9:30 AM	2	4	4	10	3	4	5	8	6	14	7	13	40
2:00 PM - 2:15 PM	1	2	15	2		4	4	2	3	17	4	6	30
2:15 PM - 2:30 PM	2	4	4	11	1		5	1	6	15	1	6	28
2:30 PM - 2:45 PM	3	5	8	7	6	2	9	5	8	15	8	14	45
2:45 PM - 3:00 PM	8	6	13	5	3	1	7	7	14	18	4	14	50
3:00 PM - 3:15 PM	3	1	15	8	2	1	15	8	4	23	3	23	53
3:15 PM - 3:30 PM	2	6	13	2	3	8	8	3	8	15	11	11	45
3:30 PM - 3:45 PM	3	11	25	5		6	47	5	14	30	6	52	102
3:45 PM - 4:00 PM	9	2	14	5	4	2	4	3	11	19	6	7	43
Total	78	75	160	93	38	43	142	76	153	253	81	218	705
One Hour Volumes													
7:30 AM - 8:30 AM	28	18	22	18	10	6	23	17	46	40	16	40	142
7:45 AM - 8:45 AM	31	22	22	28	12	7	25	17	53	50	19	42	164
8:00 AM - 9:00 AM	32	24	27	29	12	10	21	21	56	56	22	42	176
8:15 AM - 9:15 AM	31	21	33	25	11	10	20	21	52	58	21	41	172
8:30 AM - 9:30 AM	19	20	31	30	9	13	20	25	39	61	22	45	167
2:00 PM - 3:00 PM	14	17	40	25	10	7	25	15	31	65	17	40	153
2:15 PM - 3:15 PM	16	16	40	31	12	4	36	21	32	71	16	57	176
2:30 PM - 3:30 PM	16	18	49	22	14	12	39	23	34	71	26	62	193
2:45 PM - 3:45 PM	16	24	66	20	8	16	77	23	40	86	24	100	250
3:00 PM - 4:00 PM	17	20	67	20	9	17	74	19	37	87	26	93	243

Intersection #11

Multimodal Turning Movement Count Report

Project Name : American University Data Collection
Project # : 3
Location Washington DC
Data Source: Excel Consultants LLC

Analysis Period: STUDY_PERIOD 04:00 PM to 07:00 PM
Date of Counts: Thursday, February 27, 2020
Weather: Partly Cloudy

Volumes Displayed as: 1. Intersection Peak (vehicle)
Intersection Peak Hour (all vehicles): 05:00 PM to 06:00 PM
System Peak Hour (all vehicles): 05:00 PM to 06:00 PM
User-Defined Peak Hour: 05:00 PM to 06:00 PM

Intersection: 1. Wisconsin Ave & Van Ness Street

ALL VEHICLES

Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	Wisconsin Ave					Van Ness Street					Wisconsin Ave					Van Ness Street				
Movement:	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds
04:00 PM to 04:15 PM	0	3	232	16	12	0	9	70	9	17	0	2	221	9	24	0	16	38	23	29
04:15 PM to 04:30 PM	0	2	186	10	6	0	13	56	15	7	0	1	225	7	11	0	11	45	14	23
04:30 PM to 04:45 PM	0	0	211	12	3	0	14	55	8	18	0	1	243	4	9	0	14	44	13	24
04:45 PM to 05:00 PM	0	1	196	12	3	0	11	62	8	11	0	0	254	12	6	0	7	39	13	17
05:00 PM to 05:15 PM	0	2	187	13	15	0	11	70	13	16	0	2	278	5	15	0	12	55	18	17
05:15 PM to 05:30 PM	0	2	253	10	6	0	6	72	10	31	0	2	301	7	28	0	8	63	13	21
05:30 PM to 05:45 PM	0	1	211	17	10	0	14	72	12	15	0	0	281	6	5	0	13	55	17	25
05:45 PM to 06:00 PM	0	1	271	13	8	0	11	51	8	7	0	3	278	2	8	0	18	43	13	13
06:00 PM to 06:15 PM	0	1	208	11	12	0	13	44	12	17	0	4	261	4	3	0	12	60	13	13
06:15 PM to 06:30 PM	0	2	260	9	3	0	7	49	13	19	0	2	241	6	8	0	10	35	11	17
06:30 PM to 06:45 PM	0	6	184	9	6	0	11	49	11	10	0	3	223	1	8	0	8	35	11	8
06:45 PM to 07:00 PM	0	8	194	8	5	0	10	25	8	12	0	6	218	4	8	0	15	38	7	20
07:00 PM to 07:15 PM																				
07:15 PM to 07:30 PM																				
07:30 PM to 07:45 PM																				
07:45 PM to 08:00 PM																				
08:00 PM to 08:15 PM																				
08:15 PM to 08:30 PM																				
08:30 PM to 08:45 PM																				
08:45 PM to 09:00 PM																				
INT. PEAK HR (ALL VEH)	981				39	350				69	1165				56	328				76
05:00 PM to 06:00 PM	0	6	922	53		0	42	265	43		0	7	1138	20		0	51	216	61	
Peak Hour Factor (PHF) Overall 0.95	U	Left	Thru	Right	SB	U	Left	Thru	Right	WB	U	Left	Thru	Right	NB	U	Left	Thru	Right	EB
	n/a	0.75	0.85	0.78	0.86	n/a	0.75	0.92	0.83	0.89	n/a	0.58	0.95	0.71	0.94	n/a	0.71	0.86	0.85	0.96

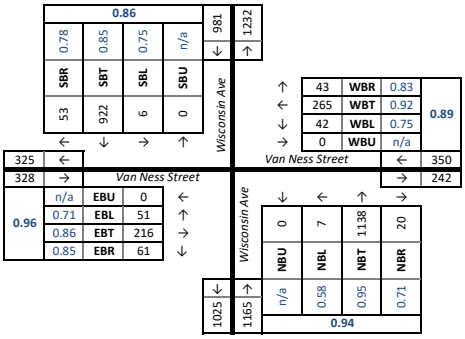
HEAVY VEHICLES (FHWA 4+)

Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	Wisconsin Ave					Van Ness Street					Wisconsin Ave					Van Ness Street				
Movement:	U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right	
04:00 PM to 04:15 PM	0	0	13	0		0	0	0	0		0	0	6	0		0	0	0	1	
04:15 PM to 04:30 PM	0	1	9	0		0	0	0	0		0	0	6	0		0	0	0	0	
04:30 PM to 04:45 PM	0	0	8	0		0	1	0	0		0	0	12	0		0	0	0	1	
04:45 PM to 05:00 PM	0	1	10	1		0	0	0	0		0	0	12	0		0	0	0	0	
05:00 PM to 05:15 PM	0	1	6	1		0	1	0	1		0	0	8	0		0	1	0	0	
05:15 PM to 05:30 PM	0	2	11	0		0	0	0	0		0	0	7	0		0	0	0	0	
05:30 PM to 05:45 PM	0	1	5	0		0	0	0	0		0	0	11	0		0	0	0	0	
05:45 PM to 06:00 PM	0	1	8	0		0	0	0	0		0	0	10	0		0	0	0	0	
06:00 PM to 06:15 PM	0	1	9	0		0	1	0	0		0	0	5	0		0	0	0	0	
06:15 PM to 06:30 PM	0	2	4	0		0	2	0	0		0	0	6	0		0	0	0	0	
06:30 PM to 06:45 PM	0	0	4	1		0	0	0	0		0	0	8	0		0	0	0	0	
06:45 PM to 07:00 PM	0	0	5	0		0	0	0	0		0	0	10	0		0	0	0	0	
07:00 PM to 07:15 PM																				
07:15 PM to 07:30 PM																				
07:30 PM to 07:45 PM																				
07:45 PM to 08:00 PM																				
08:00 PM to 08:15 PM																				
08:15 PM to 08:30 PM																				
08:30 PM to 08:45 PM																				
08:45 PM to 09:00 PM																				
INT. PEAK HR (ALL VEH)	36					2					36					1				
05:00 PM to 06:00 PM	0	5	30	1		0	1	0	1		0	0	36	0		0	1	0	0	
Heavy Vehicle % (PHV):	0.0%	83.3%	3.3%	1.9%	3.7%	0.0%	2.4%	0.0%	2.3%	0.6%	0.0%	0.0%	3.2%	0.0%	3.1%	0.0%	2.0%	0.0%	0.0%	0.3%
INT. PEAK HR (HV ONLY)	41					3					39					2				
04:30 PM to 05:30 PM	0	4	35	2		0	2	0	1		0	0	39	0		0	1	0	1	
Heavy Vehicle % (PHV):	0.0%	80.0%	4.1%	4.3%	4.6%	0.0%	4.8%	0.0%	2.6%	0.9%	0.0%	0.0%	3.6%	0.0%	3.5%	0.0%	2.4%	0.0%	1.8%	0.7%

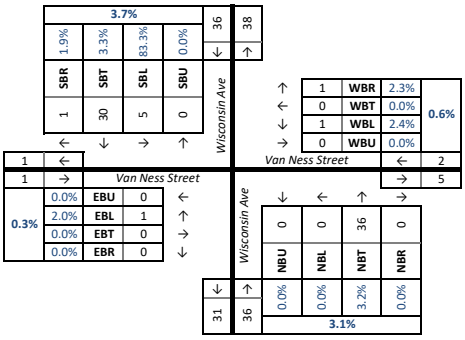
BICYCLES

Direction:	Southbound				Westbound				Northbound				Eastbound			
Roadway:	Wisconsin Ave				Van Ness Street				Wisconsin Ave				Van Ness Street			
Movement:	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right
04:00 PM to 04:15 PM	0	0	2	0	0	0	0	0	0	0	1	0	0	0	1	0
04:15 PM to 04:30 PM	0	0	2	0	0	0	2	0	0	0	0	0	0	0	2	0
04:30 PM to 04:45 PM	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1	0
04:45 PM to 05:00 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0
05:00 PM to 05:15 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
05:15 PM to 05:30 PM	0	0	1	0	0	0	1	0	0	0	1	0	0	0	4	0
05:30 PM to 05:45 PM	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0
05:45 PM to 06:00 PM	0	0	3	0	0	0	0	0	0	0	3	0	0	0	1	0
06:00 PM to 06:15 PM	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0
06:15 PM to 06:30 PM	0	0	0	0	0	0	1	0	0	0	2	0	0	0	1	0
06:30 PM to 06:45 PM	0	0	1	0	0	0	1	0	0	0	3	0	0	0	2	0
06:45 PM to 07:00 PM	0	0	1	0	0	0	0	0	0	0	4	0	0	2	2	0
07:00 PM to 07:15 PM																
07:15 PM to 07:30 PM																
07:30 PM to 07:45 PM																
07:45 PM to 08:00 PM																
08:00 PM to 08:15 PM																
08:15 PM to 08:30 PM																
08:30 PM to 08:45 PM																
08:45 PM to 09:00 PM																
INT. PEAK HR (ALL VEH)	4				2				7				5			
05:00 PM to 06:00 PM	0	0	4	0	0	0	2	0	0	0	7	0	0	0	5	0
INT. PEAK HR (BIKES)	4				2				10				7			
06:00 PM to 07:00 PM	0	0	4	0	0	0	2	0	0	0	10	0	0	2	5	0

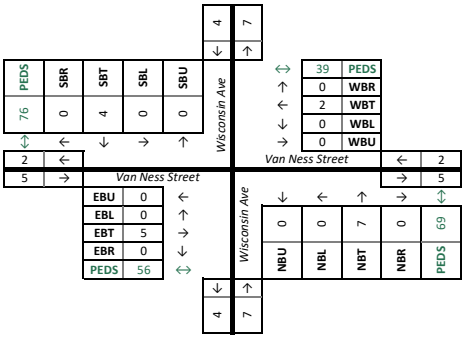
VEHICLE PEAK HOUR VOLS AND PHF: Intersection Peak (vehicle)



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



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



DATA COLLECTION NOTES :

Intersection #12-1

Multimodal Turning Movement Count Report

Project Name : American University Data Collection
Project # : 3
Location Washington DC
Data Source: Excel Consultants LLC

Analysis Period: STUDY_PERIOD 06:30 AM to 09:30 AM
Date of Counts: Thursday, February 27, 2020
Weather: Partly Cloudy

Volumes Displayed as: 1. Intersection 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. Wisconsin Ave /Wisconsin Ave/South & Tenley Circle

ALL VEHICLES

Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	Wisconsin Ave					Tenley Circle					Wisconsin Ave/South					Tenley Circle				
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	182	0	1	0	0	0	0	4	0	0	66	10	3	0	26	40	11	3
06:45 AM to 07:00 AM	0	0	226	0	2	0	0	0	0	11	0	0	95	22	2	0	39	44	5	4
07:00 AM to 07:15 AM	0	0	270	0	0	0	0	0	0	3	0	0	100	29	2	0	56	84	8	4
07:15 AM to 07:30 AM	0	0	360	0	0	0	0	0	0	13	0	0	139	29	0	0	45	89	15	8
07:30 AM to 07:45 AM	0	0	405	0	0	0	0	0	0	12	0	0	142	19	5	0	49	106	12	9
07:45 AM to 08:00 AM	0	0	442	0	0	0	0	0	0	12	0	0	199	38	2	0	57	122	20	13
08:00 AM to 08:15 AM	0	0	362	0	4	0	0	0	0	8	0	0	213	33	6	0	39	109	12	4
08:15 AM to 08:30 AM	0	0	408	0	0	0	0	0	0	19	0	0	168	32	9	0	58	125	14	19
08:30 AM to 08:45 AM	0	0	380	0	1	0	0	0	0	29	0	0	154	33	6	0	74	142	23	25
08:45 AM to 09:00 AM	0	0	409	0	2	0	0	0	0	12	0	0	216	28	7	0	67	95	18	13
09:00 AM to 09:15 AM	0	0	321	0	0	0	0	0	0	19	0	0	138	34	6	0	57	114	18	4
09:15 AM to 09:30 AM	0	0	315	0	1	0	0	0	0	15	0	0	151	27	9	0	51	78	16	10
09:30 AM to 09:45 AM																				
09:45 AM to 10:00 AM																				
10:00 AM to 10:15 AM																				
10:15 AM to 10:30 AM																				
10:30 AM to 10:45 AM																				
10:45 AM to 11:00 AM																				
11:00 AM to 11:15 AM																				
11:15 AM to 11:30 AM																				
INT. PEAK HR (ALL VEH)	1592				5	0				68	870				23	795				61
07:45 AM to 08:45 AM	0	0	1592	0		0	0	0	0		0	0	734	136		0	228	498	69	
Peak Hour Factor (PHF) Overall 0.93	U	Left	Thru	Right	SB	U	Left	Thru	Right	WB	U	Left	Thru	Right	NB	U	Left	Thru	Right	EB
	n/a	n/a	0.90	n/a	0.90	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.86	0.89	0.88	n/a	0.77	0.88	0.75	0.83

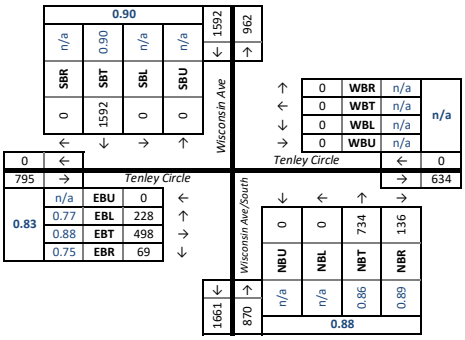
HEAVY VEHICLES (FHWA 4+)

Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	Wisconsin Ave					Tenley Circle					Wisconsin Ave/South					Tenley Circle				
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	9	0		0	0	0	0		0	0	2	6		0	0	4	0	
06:45 AM to 07:00 AM	0	0	17	0		0	0	0	0		0	0	6	3		0	2	3	0	
07:00 AM to 07:15 AM	0	0	19	0		0	0	0	0		0	0	5	7		0	2	4	0	
07:15 AM to 07:30 AM	0	0	14	0		0	0	0	0		0	0	10	4		0	1	5	2	
07:30 AM to 07:45 AM	0	0	12	0		0	0	0	0		0	0	7	2		0	5	5	0	
07:45 AM to 08:00 AM	0	0	19	0		0	0	0	0		0	0	11	5		0	3	9	0	
08:00 AM to 08:15 AM	0	0	16	0		0	0	0	0		0	0	10	4		0	2	6	2	
08:15 AM to 08:30 AM	0	0	17	0		0	0	0	0		0	0	7	4		0	2	8	0	
08:30 AM to 08:45 AM	0	0	13	0		0	0	0	0		0	0	11	5		0	2	8	1	
08:45 AM to 09:00 AM	0	0	21	0		0	0	0	0		0	0	7	5		0	0	7	0	
09:00 AM to 09:15 AM	0	0	16	0		0	0	0	0		0	0	10	4		0	2	9	0	
09:15 AM to 09:30 AM	0	0	10	0		0	0	0	0		0	0	10	4		0	5	7	0	
09:30 AM to 09:45 AM																				
09:45 AM to 10:00 AM																				
10:00 AM to 10:15 AM																				
10:15 AM to 10:30 AM																				
10:30 AM to 10:45 AM																				
10:45 AM to 11:00 AM																				
11:00 AM to 11:15 AM																				
11:15 AM to 11:30 AM																				
INT. PEAK HR (ALL VEH)	65					0					57					43				
07:45 AM to 08:45 AM	0	0	65	0		0	0	0	0		0	0	39	18		0	9	31	3	
Heavy Vehicle % (PHV):	0.0%	0.0%	4.1%	0.0%	4.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.3%	13.2%	6.6%	0.0%	3.9%	6.2%	4.3%	5.4%
INT. PEAK HR (HV ONLY)	65					0					57					43				
07:45 AM to 08:45 AM	0	0	65	0		0	0	0	0		0	0	39	18		0	9	31	3	
Heavy Vehicle % (PHV):	0.0%	0.0%	4.1%	0.0%	4.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.3%	13.2%	6.6%	0.0%	3.9%	6.2%	4.3%	5.4%

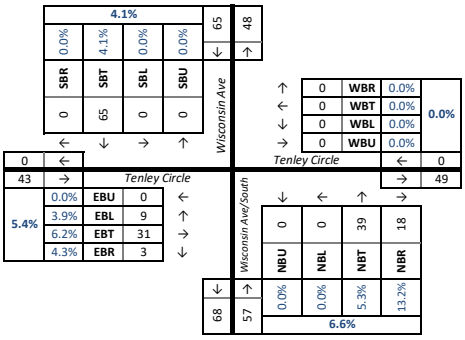
BICYCLES

Direction:	Southbound				Westbound				Northbound				Eastbound			
Roadway:	Wisconsin Ave				Tenley Circle				Wisconsin Ave/South				Tenley Circle			
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	1	0	0	0	0	0
06:45 AM to 07:00 AM	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0
07:00 AM to 07:15 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM to 07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM to 07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
07:45 AM to 08:00 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0
08:00 AM to 08:15 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM to 08:30 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM to 08:45 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	1
08:45 AM to 09:00 AM	0	0	3	0	0	0	0	0	0	0	3	0	0	0	0	0
09:00 AM to 09:15 AM	0	0	1	0	0	0	0	0	0	0	1	0	0	1	0	0
09:15 AM to 09:30 AM	0	0	2	0	0	0	0	0	0	0	2	0	0	0	0	0
09:30 AM to 09:45 AM																
09:45 AM to 10:00 AM																
10:00 AM to 10:15 AM																
10:15 AM to 10:30 AM																
10:30 AM to 10:45 AM																
10:45 AM to 11:00 AM																
11:00 AM to 11:15 AM																
11:15 AM to 11:30 AM																
INT. PEAK HR (ALL VEH)	3				0				6				1			
07:45 AM to 08:45 AM	0	0	3	0	0	0	0	0	0	0	6	0	0	0	0	1
INT. PEAK HR (BIKES)	6				0				9				2			
08:30 AM to 09:30 AM	0	0	6	0	0	0	0	0	0	0	9	0	0	1	0	1

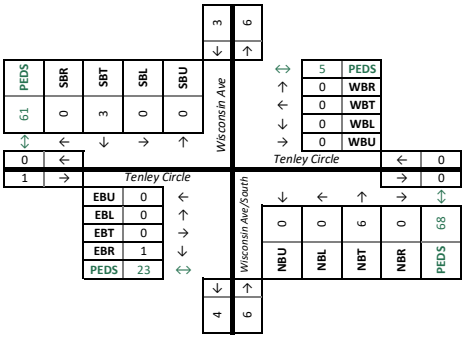
VEHICLE PEAK HOUR VOLS AND PHF: Intersection Peak (vehicle)



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



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



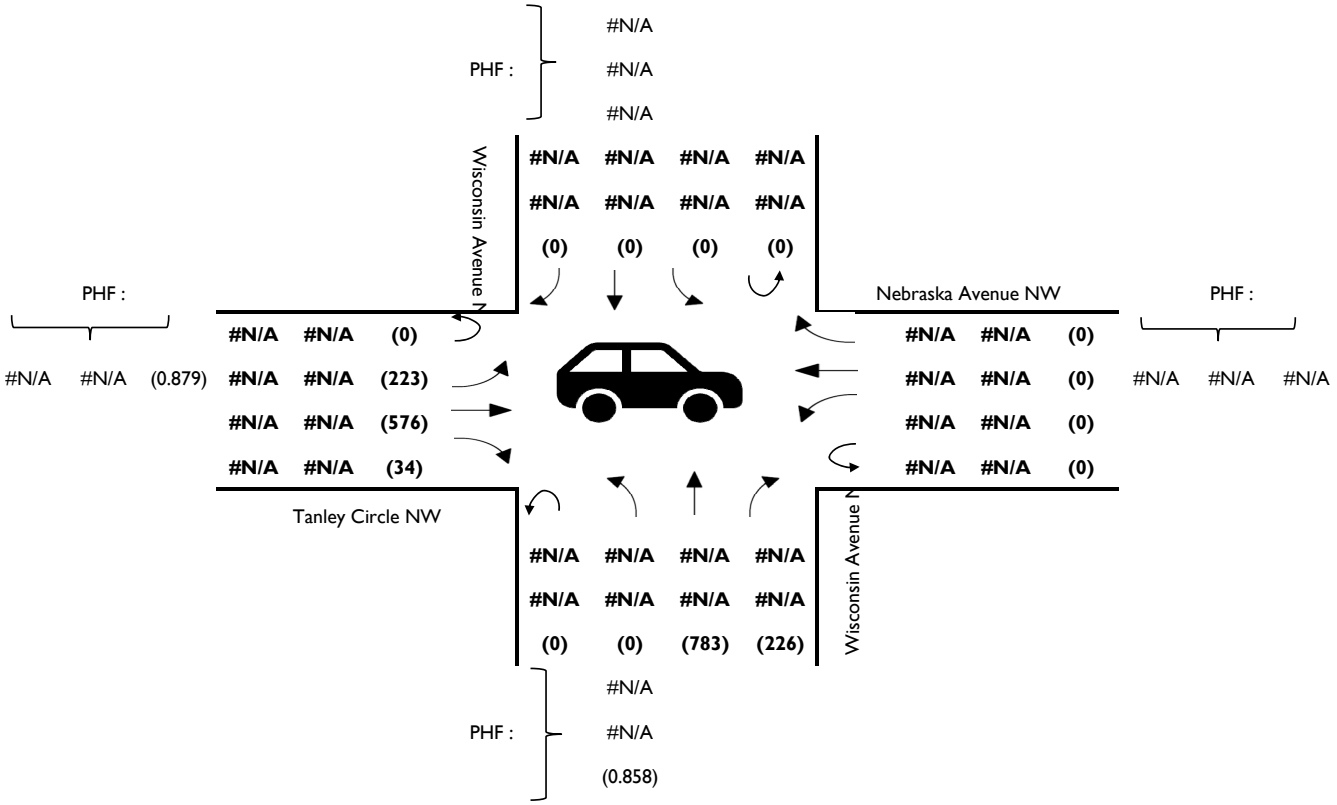
DATA COLLECTION NOTES :

Intersection #12-1

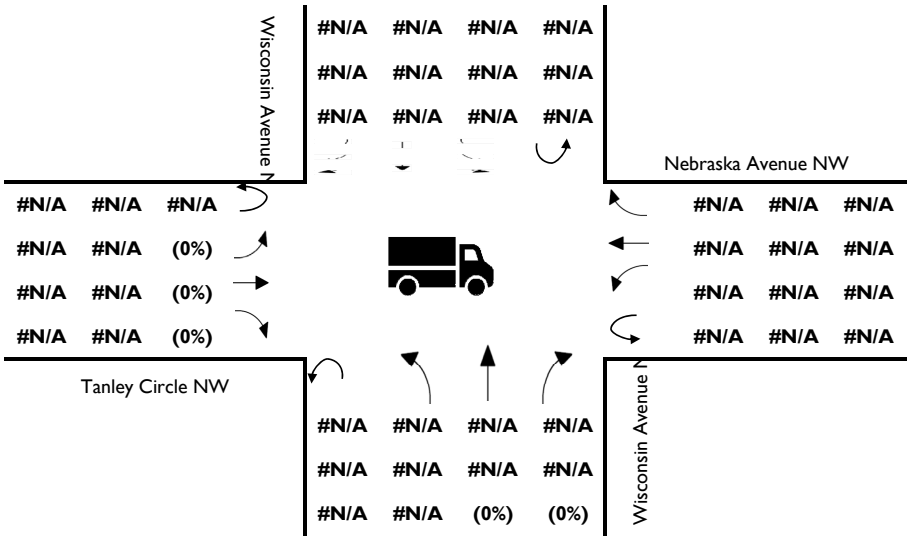
PEAK HOUR TRAFFIC COUNT SUMMARY

Location:	Wisconsin Ave. & Tanley Cir.- South	AM Peak Hour:	None
	Washington,DC	Midday Peak Hour:	None
Date of Count:	5/18/2021	PM Peak Hour:	3:00 PM - 4:00 PM

Peak Hour - Vehicle Counts

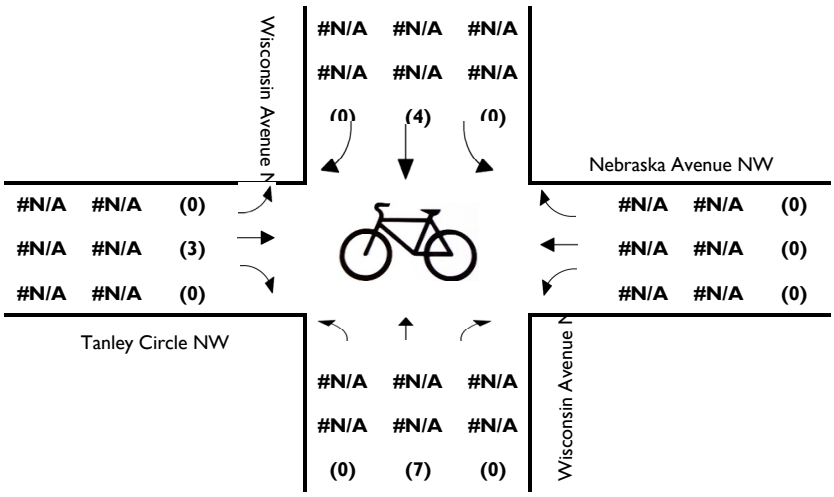


Peak Hour - Heavy Vehicle %

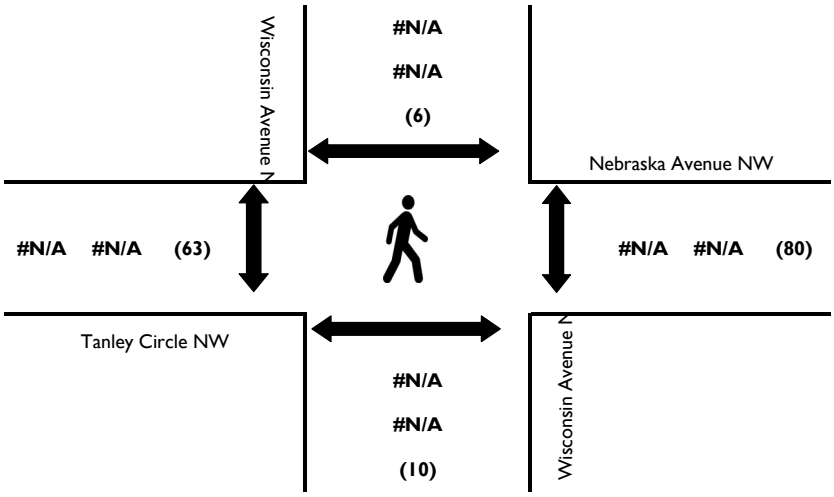


Intersection #12-1

Peak Hour - Bicycles



Peak Hour - Pedestrians



Intersection #12-1

Wells + Associates,Inc

Tysons, Virginia

Turning Movement Count - Total Vehicles

PROJECT: The River school
W+A JOB NO: 8182
INTERSECTION: Wisconsin Ave. & Tanley Cir.- South
LOCATION: Washington,DC

DATE: 5/18/2021
DAY: Tuesday
WEATHER: clear
COUNTED BY: Agan
INPUTED BY: Agan

SOUTHBOUND ROAD: Wisconsin Avenue NW
NORTHBOUND ROAD: Wisconsin Avenue NW
WESTBOUND ROAD: Nebraska Avenue NW
EASTBOUND ROAD: Tanley Circle NW

Time	Southbound Wisconsin Avenue NW						Westbound Nebraska Avenue NW						Northbound Wisconsin Avenue NW						Eastbound Tanley Circle NW						North & South	East & West	Total
Period	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF			
15 Minute Volumes																											
2:00 PM - 2:15 PM	0	0	0	0	0		0	0	0	0	0		42	121	0	0	163		11	90	33	0	134		163	134	297
2:15 PM - 2:30 PM	0	0	0	0	0		0	0	0	0	0		53	184	0	0	237		11	76	36	0	123		237	123	360
2:30 PM - 2:45 PM	0	0	0	0	0		0	0	0	0	0		45	160	0	0	205		17	80	40	0	137		205	137	342
2:45 PM - 3:00 PM	0	0	0	0	0		0	0	0	0	0		48	166	0	0	214		8	104	36	0	148		214	148	362
3:00 PM - 3:15 PM	0	0	0	0	0		0	0	0	0	0		63	161	0	0	224		8	145	47	0	200		224	200	424
3:15 PM - 3:30 PM	0	0	0	0	0		0	0	0	0	0		53	195	0	0	248		12	134	57	0	203		248	203	451
3:30 PM - 3:45 PM	0	0	0	0	0		0	0	0	0	0		47	196	0	0	243		6	170	61	0	237		243	237	480
3:45 PM - 4:00 PM	0	0	0	0	0		0	0	0	0	0		63	231	0	0	294		8	127	58	0	193		294	193	487
Total	0	0	0	0	0		0	0	0	0	0		414	1414	0	0	1828		81	926	368	0	1375		1828	1375	3203
One Hour Volumes																											
2:00 PM - 3:00 PM	0	0	0	0	0		0	0	0	0	0		188	631	0	0	819	0.864	47	350	145	0	542	0.916	819	542	1361
2:15 PM - 3:15 PM	0	0	0	0	0		0	0	0	0	0		209	671	0	0	880	0.928	44	405	159	0	608	0.76	880	608	1488
2:30 PM - 3:30 PM	0	0	0	0	0		0	0	0	0	0		209	682	0	0	891	0.898	45	463	180	0	688	0.847	891	688	1579
2:45 PM - 3:45 PM	0	0	0	0	0		0	0	0	0	0		211	718	0	0	929	0.936	34	553	201	0	788	0.831	929	788	1717
3:00 PM - 4:00 PM	0	0	0	0	0		0	0	0	0	0		226	783	0	0	1009	0.858	34	576	223	0	833	0.879	1009	833	1842

Intersection #12-1

Wells + Associates, Inc.

Tysons, Virginia

Turning Movement Count - Bicycles

PROJECT: The River school
W+A JOB NO: 8182
INTERSECTION: Wisconsin Ave. & Tanley Cir.- South
LOCATION: Washington,DC

DATE: 5/18/2021
DAY: Tuesday
WEATHER: clear
COUNTED BY: Agan
INPUTED BY: Agan

SOUTHBOUND ROAD: Wisconsin Avenue NW
NORTHBOUND ROAD: Wisconsin Avenue NW
WESTBOUND ROAD: Nebraska Avenue NW
EASTBOUND ROAD: Tanley Circle NW

Time Period	Southbound Wisconsin Avenue NW				Westbound Nebraska Avenue NW				Northbound Wisconsin Avenue NW				Eastbound Tanley Circle NW				North & South	East & West	Total
	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total			
15 Minute Volumes																			
2:00 PM - 2:15 PM		1		1				0		2		2				0	3	0	3
2:15 PM - 2:30 PM		1		1				0		2		2				0	3	0	3
2:30 PM - 2:45 PM		1		1				0				0		1		1	1	1	2
2:45 PM - 3:00 PM		2		2				0		2		2				0	4	0	4
3:00 PM - 3:15 PM				0				0		1		1				0	1	0	1
3:15 PM - 3:30 PM		1		1				0				0		1		1	1	1	2
3:30 PM - 3:45 PM				0				0		3		3				0	3	0	3
3:45 PM - 4:00 PM		3		3				0		3		3		2		2	6	2	8
Total	0	9	0	9	0	0	0	0	0	13	0	13	0	4	0	4	22	4	26
One Hour Volumes																			
2:00 PM - 3:00 PM	0	5	0	5	0	0	0	0	0	6	0	6	0	1	0	1	11	1	12
2:15 PM - 3:15 PM	0	4	0	4	0	0	0	0	0	5	0	5	0	1	0	1	9	1	10
2:30 PM - 3:30 PM	0	4	0	4	0	0	0	0	0	3	0	3	0	2	0	2	7	2	9
2:45 PM - 3:45 PM	0	3	0	3	0	0	0	0	0	6	0	6	0	1	0	1	9	1	10
3:00 PM - 4:00 PM	0	4	0	4	0	0	0	0	0	7	0	7	0	3	0	3	11	3	14

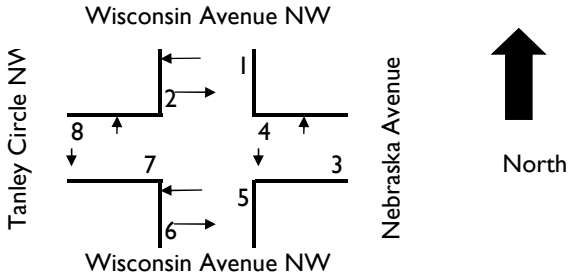
Intersection #12-1

Wells + Associates, Inc.

Tysons, Virginia

Pedestrian Volume Survey

PROJECT: The River school
W + A JOB NO: 8182
INTERSECTION: Wisconsin Ave. & Tanley Cir.- Soutl
LOCATION: Washington,DC
DATE: 5/18/2021
DAY: Tuesday
WEATHER: clear
COUNTED BY: Agan
INPUTED BY: Agan



Time Period	Movement 1	2	3	4	5	6	7	8	1 + 2	3 + 4	5 + 6	7+ 8	Total
15 Minute Volumes													
2:00 PM - 2:15 PM		1	7	7	3		5	10	1	14	3	15	33
2:15 PM - 2:30 PM	1		7	8	4	4	6	6	1	15	8	12	36
2:30 PM - 2:45 PM	2	2	6	5	2	2	10	8	4	11	4	18	37
2:45 PM - 3:00 PM	3	2	14	11		2	9	11	5	25	2	20	52
3:00 PM - 3:15 PM	1		10	6	1		6	3	1	16	1	9	27
3:15 PM - 3:30 PM	1		13	14	1		7	8	1	27	1	15	44
3:30 PM - 3:45 PM		4	6	16	2	2	6	11	4	22	4	17	47
3:45 PM - 4:00 PM			6	9		4	12	10	0	15	4	22	41
Total	8	9	69	76	13	14	61	67	17	145	27	128	317

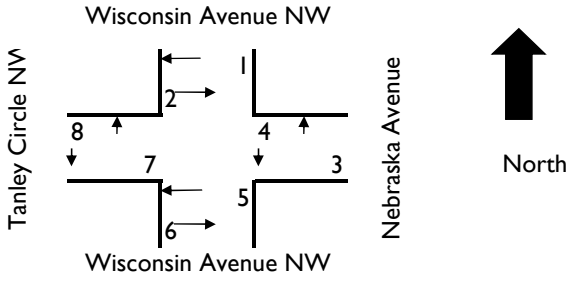
Intersection #12-1

Wells + Associates, Inc.

Tysons, Virginia

Pedestrian Volume Survey

PROJECT: The River school
W + A JOB NO: 8182
INTERSECTION: Wisconsin Ave. & Tanley Cir.- Soutl
LOCATION: Washington,DC
DATE: 5/18/2021
DAY: Tuesday
WEATHER: clear
COUNTED BY: Agan
INPUTED BY: Agan



Time Period	Movement 1	2	3	4	5	6	7	8	1 + 2	3 + 4	5 + 6	7+ 8	Total
One Hour Volumes													
2:00 PM - 3:00 PM	6	5	34	31	9	8	30	35	11	65	17	65	158
2:15 PM - 3:15 PM	7	4	37	30	7	8	31	28	11	67	15	59	152
2:30 PM - 3:30 PM	7	4	43	36	4	4	32	30	11	79	8	62	160
2:45 PM - 3:45 PM	5	6	43	47	4	4	28	33	11	90	8	61	170
3:00 PM - 4:00 PM	2	4	35	45	4	6	31	32	6	80	10	63	159

Intersection #12-1

Multimodal Turning Movement Count Report

Project Name : American University Data Collection
Project # : 3
Location Washington DC
Data Source: Excel Consultants LLC

Analysis Period: STUDY_PERIOD 04:00 PM to 07:00 PM
Date of Counts: Thursday, February 27, 2020
Weather: Partly Cloudy

Volumes Displayed as: 1. Intersection Peak (vehicle)
Intersection Peak Hour (all vehicles): 05:15 PM to 06:15 PM
System Peak Hour (all vehicles): 05:00 PM to 06:00 PM
User-Defined Peak Hour: 05:00 PM to 06:00 PM

Intersection: 1. Wisconsin Ave /Wisconsin Ave/South & Tenley Circle

ALL VEHICLES

Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	Wisconsin Ave					Tenley Circle					Wisconsin Ave/South					Tenley Circle				
Movement:	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds
04:00 PM to 04:15 PM	0	0	215	0	0	0	0	0	0	28	0	0	183	37	12	0	60	185	12	18
04:15 PM to 04:30 PM	0	1	216	0	0	0	0	0	0	34	0	0	209	61	6	0	61	164	8	16
04:30 PM to 04:45 PM	0	1	230	0	0	0	0	0	0	23	0	0	190	41	13	0	42	177	11	14
04:45 PM to 05:00 PM	0	0	225	0	1	0	0	0	0	24	0	0	208	77	13	0	37	149	4	30
05:00 PM to 05:15 PM	0	1	198	0	1	0	0	0	0	23	0	0	202	57	16	0	48	169	6	12
05:15 PM to 05:30 PM	0	0	291	0	5	0	0	0	0	19	0	0	237	91	13	0	49	165	12	21
05:30 PM to 05:45 PM	0	0	237	0	4	0	0	0	0	33	0	0	217	68	29	0	59	184	19	19
05:45 PM to 06:00 PM	0	0	278	0	1	0	0	0	0	35	0	0	231	61	10	0	51	150	16	23
06:00 PM to 06:15 PM	0	0	223	0	6	0	0	0	0	30	0	0	218	51	6	0	47	167	14	17
06:15 PM to 06:30 PM	0	0	268	0	2	0	0	0	0	38	0	0	208	57	7	0	57	166	18	27
06:30 PM to 06:45 PM	0	0	211	0	6	0	0	0	0	16	0	0	178	45	25	0	47	124	11	10
06:45 PM to 07:00 PM	0	0	212	0	0	0	0	0	0	14	0	0	195	59	1	0	47	135	10	16
07:00 PM to 07:15 PM																				
07:15 PM to 07:30 PM																				
07:30 PM to 07:45 PM																				
07:45 PM to 08:00 PM																				
08:00 PM to 08:15 PM																				
08:15 PM to 08:30 PM																				
08:30 PM to 08:45 PM																				
08:45 PM to 09:00 PM																				
INT. PEAK HR (ALL VEH)	1029				16	0				117	1174				58	933				80
05:15 PM to 06:15 PM	0	0	1029	0		0	0	0	0		0	0	903	271		0	206	666	61	
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	n/a	0.88	n/a	**0.88**	n/a	n/a	n/a	n/a	**n/a**	n/a	n/a	0.95	0.74	**0.89**	n/a	0.87	0.90	0.80	**0.89**

HEAVY VEHICLES (FHWA 4+)

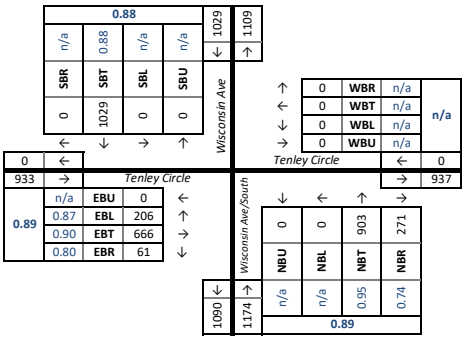
Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	Wisconsin Ave					Tenley Circle					Wisconsin Ave/South					Tenley Circle				
Movement:	U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right	
04:00 PM to 04:15 PM	0	0	10	0		0	0	0	0		0	0	4	1		0	2	7	0	
04:15 PM to 04:30 PM	0	0	10	0		0	0	0	0		0	0	3	5		0	3	7	0	
04:30 PM to 04:45 PM	0	0	10	0		0	0	0	0		0	0	9	3		0	2	8	1	
04:45 PM to 05:00 PM	0	0	11	0		0	0	0	0		0	0	3	7		0	0	7	0	
05:00 PM to 05:15 PM	0	0	8	0		0	0	0	0		0	0	6	3		0	1	4	0	
05:15 PM to 05:30 PM	0	0	14	0		0	0	0	0		0	0	8	5		0	3	6	0	
05:30 PM to 05:45 PM	0	0	3	0		0	0	0	0		0	0	7	8		0	1	8	0	
05:45 PM to 06:00 PM	0	0	6	0		0	0	0	0		0	0	9	2		0	1	7	0	
06:00 PM to 06:15 PM	0	0	10	0		0	0	0	0		0	0	4	4		0	2	6	0	
06:15 PM to 06:30 PM	0	0	5	0		0	0	0	0		0	0	2	3		0	1	8	0	
06:30 PM to 06:45 PM	0	0	3	0		0	0	0	0		0	0	8	2		0	0	5	0	
06:45 PM to 07:00 PM	0	0	3	0		0	0	0	0		0	0	10	4		0	1	3	0	
07:00 PM to 07:15 PM																				
07:15 PM to 07:30 PM																				
07:30 PM to 07:45 PM																				
07:45 PM to 08:00 PM																				
08:00 PM to 08:15 PM																				
08:15 PM to 08:30 PM																				
08:30 PM to 08:45 PM																				
08:45 PM to 09:00 PM																				
INT. PEAK HR (ALL VEH)	33					0					47					34				
05:15 PM to 06:15 PM	0	0	33	0		0	0	0	0		0	0	28	19		0	7	27	0	
Heavy Vehicle % (PHV):	0.0%	0.0%	3.2%	0.0%	**3.2%**	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	3.1%	7.0%	**4.0%**	0.0%	3.4%	4.1%	0.0%	**3.6%**
INT. PEAK HR (HV ONLY)	43					0					44					32				
04:30 PM to 05:30 PM	0	0	43	0		0	0	0	0		0	0	26	18		0	6	25	1	
Heavy Vehicle % (PHV):	0.0%	0.0%	4.6%	0.0%	**4.5%**	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	3.1%	6.8%	**4.0%**	0.0%	3.4%	3.8%	3.0%	**3.7%**

BICYCLES

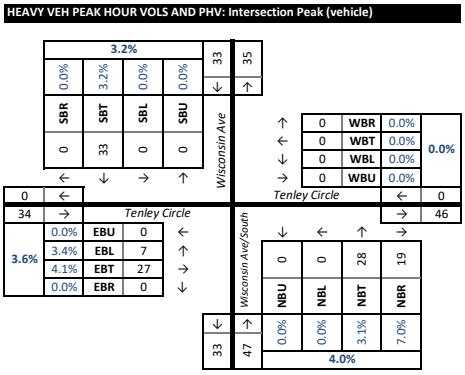
Direction:	Southbound				Westbound				Northbound				Eastbound			
Roadway:	Wisconsin Ave				Tenley Circle				Wisconsin Ave/South				Tenley Circle			
Movement:	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right
04:00 PM to 04:15 PM	0	0	1	0	0	0	0	0	0	0	3	0	0	1	0	0
04:15 PM to 04:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM to 04:45 PM	0	0	2	0	0	1	0	0	0	0	0	0	0	0	0	0
04:45 PM to 05:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM to 05:15 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
05:15 PM to 05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
05:30 PM to 05:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
05:45 PM to 06:00 PM	0	0	4	0	0	0	0	0	0	0	4	1	0	0	0	0
06:00 PM to 06:15 PM	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0
06:15 PM to 06:30 PM	0	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0
06:30 PM to 06:45 PM	0	0	1	0	0	0	0	0	0	0	2	1	0	0	1	0
06:45 PM to 07:00 PM	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0
07:00 PM to 07:15 PM																
07:15 PM to 07:30 PM																
07:30 PM to 07:45 PM																
07:45 PM to 08:00 PM																
08:00 PM to 08:15 PM																
08:15 PM to 08:30 PM																
08:30 PM to 08:45 PM																
08:45 PM to 09:00 PM																
INT. PEAK HR (ALL VEH)	5				0				7				1			
05:15 PM to 06:15 PM	0	0	5	0	0	0	0	0	0	0	6	1	0	0	0	1
INT. PEAK HR (BIKES)	7				0				11				1			
05:45 PM to 06:45 PM	0	0	7	0	0	0	0	0	0	0	9	2	0	0	1	0

DATA COLLECTION NOTES :

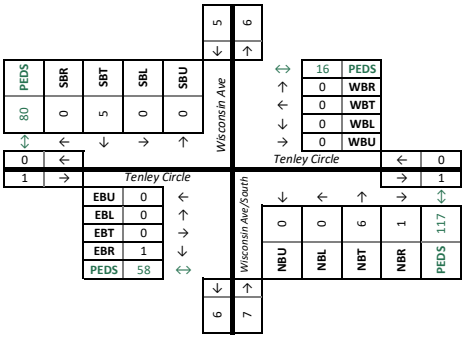
VEHICLE PEAK HOUR VOLS AND PHF: Intersection Peak (vehicle)



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



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



Intersection #12-5

Multimodal Turning Movement Count Report

Project Name :	American University Data Collection	**Analysis Period:**	STUDY_PERIOD 06:30 AM to 09:30 AM	Volumes Displayed as:	1. Intersection Peak (vehicle)
Project # :	3	**Date of Counts:**	Thursday, February 27, 2020	Intersection Peak Hour (all vehicles):	07:45 AM to 08:45 AM
Location	Washington DC	**Weather:**	Partly Cloudy	System Peak Hour (all vehicles):	07:30 AM to 08:30 AM
Data Source:	Excel Consultants LLC			User-Defined Peak Hour:	07:30 AM to 08:30 AM

Intersection: 1. Wisconsin Ave/North/Wisconsin Ave & Tenley Circle

ALL VEHICLES

Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	Wisconsin Ave/North					Tenley Circle					Wisconsin Ave					Tenley Circle				
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	109	12	1	0	73	117	10	7	0	0	92	0	1	0	0	0	0	2
06:45 AM to 07:00 AM	0	0	158	28	0	0	68	131	7	11	0	0	134	0	1	0	0	0	0	8
07:00 AM to 07:15 AM	0	0	191	30	5	0	79	132	10	13	0	0	156	0	0	0	0	0	0	2
07:15 AM to 07:30 AM	0	0	281	34	7	0	79	173	7	9	0	0	184	0	0	0	0	0	0	6
07:30 AM to 07:45 AM	0	0	329	34	6	0	76	205	5	22	0	0	191	0	2	0	0	0	0	10
07:45 AM to 08:00 AM	0	0	389	56	10	0	53	182	7	19	0	0	256	0	0	0	0	0	0	13
08:00 AM to 08:15 AM	0	0	300	66	11	0	62	195	8	23	0	0	252	0	2	0	0	0	0	6
08:15 AM to 08:30 AM	0	0	348	92	15	0	60	157	10	26	0	0	226	0	1	0	0	0	0	19
08:30 AM to 08:45 AM	0	0	312	73	10	0	68	178	4	35	0	0	228	0	1	0	0	0	0	19
08:45 AM to 09:00 AM	0	0	348	56	15	0	61	124	1	27	0	0	283	0	4	0	0	0	0	11
09:00 AM to 09:15 AM	0	0	262	52	20	0	59	190	8	19	0	0	195	0	1	0	0	0	0	11
09:15 AM to 09:30 AM	0	0	257	49	13	0	58	178	8	24	0	1	201	0	0	0	0	0	0	15
09:30 AM to 09:45 AM																				
09:45 AM to 10:00 AM																				
10:00 AM to 10:15 AM																				
10:15 AM to 10:30 AM																				
10:30 AM to 10:45 AM																				
10:45 AM to 11:00 AM																				
11:00 AM to 11:15 AM																				
11:15 AM to 11:30 AM																				
INT. PEAK HR (ALL VEH)	1636				46	984				103	962				4	0				57
07:45 AM to 08:45 AM	0	0	1349	287		0	243	712	29		0	0	962	0		0	0	0	0	
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) 0.95	n/a	n/a	0.87	0.78	**0.92**	n/a	0.89	0.91	0.73	**0.93**	n/a	n/a	0.94	n/a	**0.94**	n/a	n/a	n/a	n/a	**n/a**

HEAVY VEHICLES (FHWA 4+)

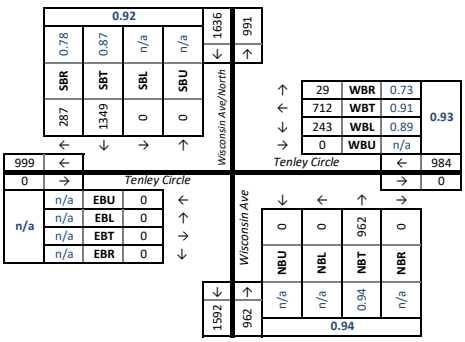
Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	Wisconsin Ave/North					Tenley Circle					Wisconsin Ave					Tenley Circle				
Movement:	U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right	
06:30 AM to 06:45 AM	0	0	6	0		0	3	4	1		0	0	2	0		0	0	0	0	
06:45 AM to 07:00 AM	0	0	13	1		0	4	4	0		0	0	8	0		0	0	0	0	
07:00 AM to 07:15 AM	0	0	15	1		0	4	6	1		0	0	7	0		0	0	0	0	
07:15 AM to 07:30 AM	0	0	10	1		0	4	9	0		0	0	11	0		0	0	0	0	
07:30 AM to 07:45 AM	0	0	11	3		0	1	8	0		0	0	12	0		0	0	0	0	
07:45 AM to 08:00 AM	0	0	15	1		0	4	7	0		0	0	14	0		0	0	0	0	
08:00 AM to 08:15 AM	0	0	12	5		0	4	9	0		0	0	12	0		0	0	0	0	
08:15 AM to 08:30 AM	0	0	15	1		0	2	8	1		0	0	9	0		0	0	0	0	
08:30 AM to 08:45 AM	0	0	9	2		0	4	11	0		0	0	13	0		0	0	0	0	
08:45 AM to 09:00 AM	0	0	18	2		0	3	4	0		0	0	7	0		0	0	0	0	
09:00 AM to 09:15 AM	0	0	15	3		0	1	12	0		0	0	12	0		0	0	0	0	
09:15 AM to 09:30 AM	0	0	7	3		0	3	8	0		0	0	15	0		0	0	0	0	
09:30 AM to 09:45 AM																				
09:45 AM to 10:00 AM																				
10:00 AM to 10:15 AM																				
10:15 AM to 10:30 AM																				
10:30 AM to 10:45 AM																				
10:45 AM to 11:00 AM																				
11:00 AM to 11:15 AM																				
11:15 AM to 11:30 AM																				
INT. PEAK HR (ALL VEH)	60					50					48					0				
07:45 AM to 08:45 AM	0	0	51	9		0	14	35	1		0	0	48	0		0	0	0	0	
Heavy Vehicle % (PHV):	0.0%	0.0%	3.8%	3.1%	**3.7%**	0.0%	5.8%	4.9%	3.4%	**5.1%**	0.0%	0.0%	5.0%	0.0%	**5.0%**	0.0%	0.0%	0.0%	0.0%	**0.0%**
INT. PEAK HR (HV ONLY)	60					50					48					0				
07:45 AM to 08:45 AM	0	0	51	9		0	14	35	1		0	0	48	0		0	0	0	0	
Heavy Vehicle % (PHV):	0.0%	0.0%	3.8%	3.1%	**3.7%**	0.0%	5.8%	4.9%	3.4%	**5.1%**	0.0%	0.0%	5.0%	0.0%	**5.0%**	0.0%	0.0%	0.0%	0.0%	**0.0%**

BICYCLES

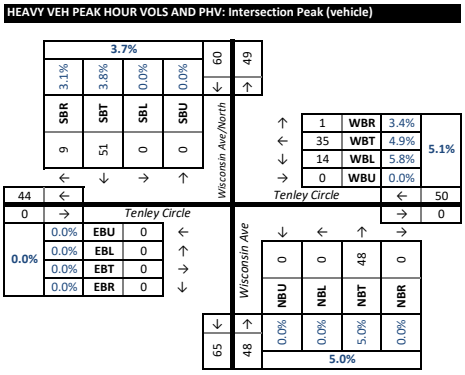
Direction:	Southbound				Westbound				Northbound				Eastbound			
Roadway:	Wisconsin Ave/North				Tenley Circle				Wisconsin Ave				Tenley Circle			
Movement:	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right
06:30 AM to 06:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
06:45 AM to 07:00 AM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00 AM to 07:15 AM	0	0	3	1	0	0	0	0	0	0	1	0	0	0	0	0
07:15 AM to 07:30 AM	0	0	1	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	1	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	2	0	0	0	0	0
08:00 AM to 08:15 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM to 08:30 AM	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0
08:30 AM to 08:45 AM	0	0	1	0	0	0	1	0	0	0	1	0	0	0	0	0
08:45 AM to 09:00 AM	0	0	4	0	0	0	0	0	0	0	2	0	0	0	0	0
09:00 AM to 09:15 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0
09:15 AM to 09:30 AM	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0
09:30 AM to 09:45 AM																
09:45 AM to 10:00 AM																
10:00 AM to 10:15 AM																
10:15 AM to 10:30 AM																
10:30 AM to 10:45 AM																
10:45 AM to 11:00 AM																
11:00 AM to 11:15 AM																
11:15 AM to 11:30 AM																
INT. PEAK HR (ALL VEH)	4				1				4				0			
07:45 AM to 08:45 AM	0	0	4	0	0	0	1	0	0	0	4	0	0	0	0	0
INT. PEAK HR (BIKES)	7				1				8				0			
08:30 AM to 09:30 AM	0	0	7	0	0	0	1	0	0	0	8	0	0	0	0	0

DATA COLLECTION NOTES :

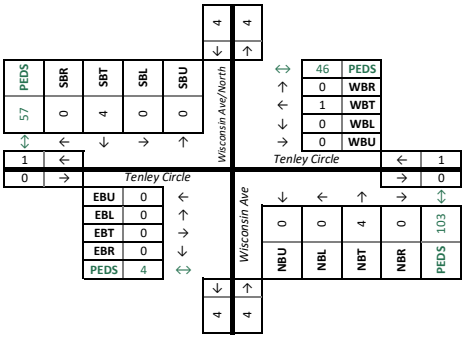
VEHICLE PEAK HOUR VOLS AND PHF: Intersection Peak (vehicle)



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



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

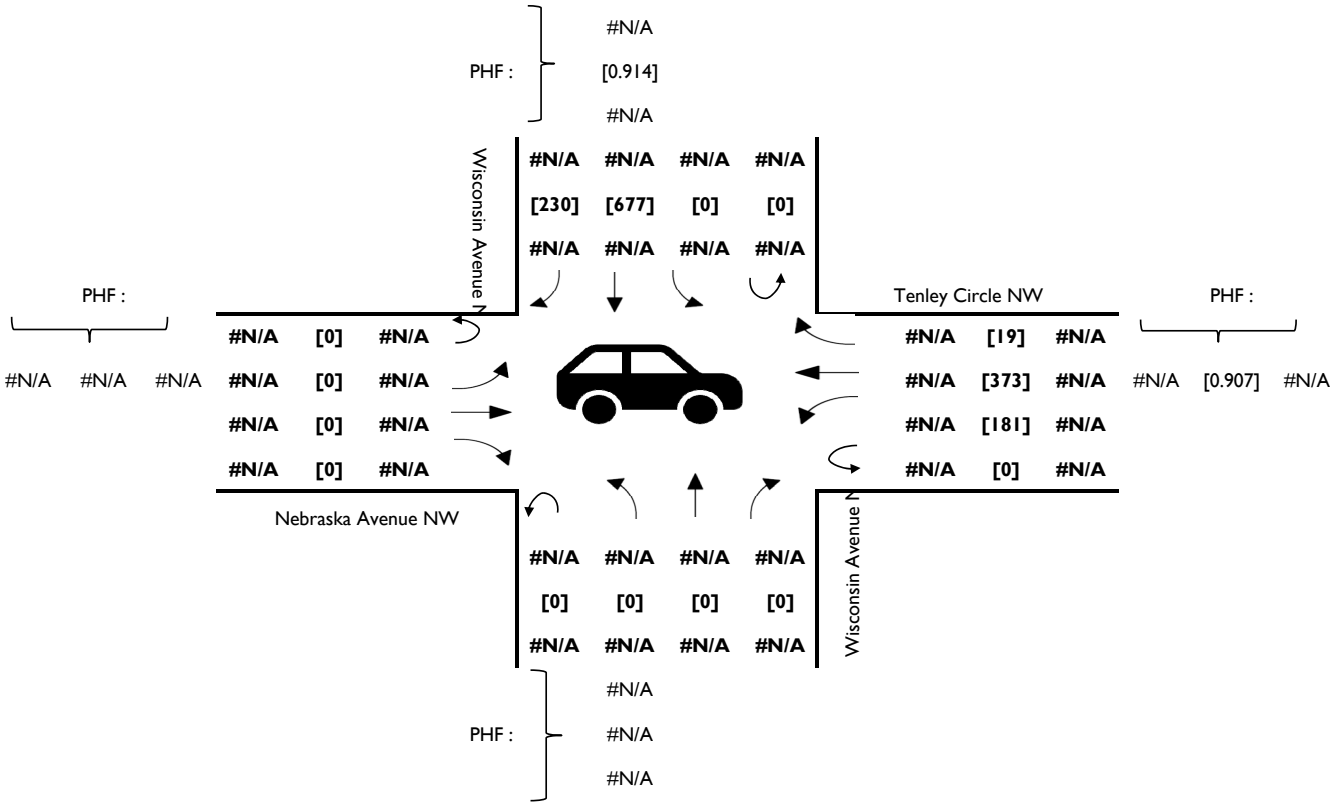


Intersection #12-5

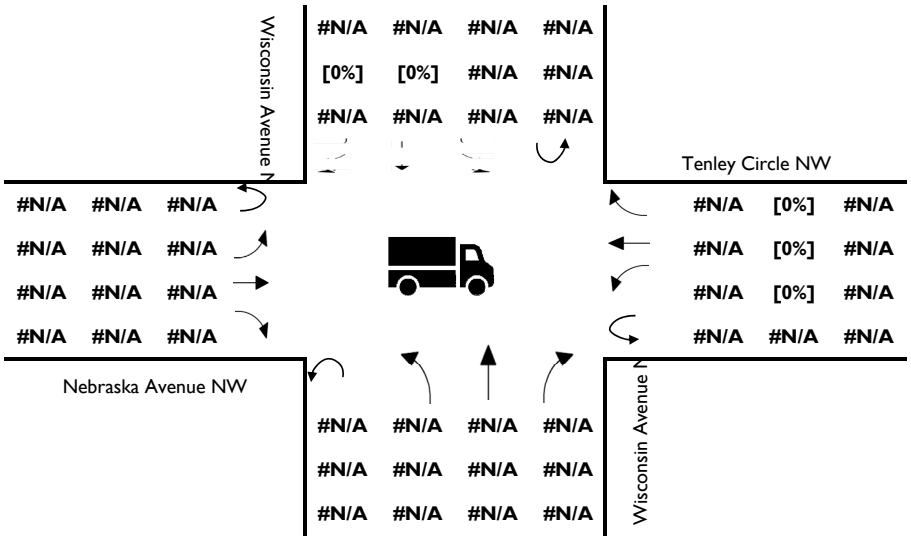
PEAK HOUR TRAFFIC COUNT SUMMARY

Location:	Wisconsin Ave. & Tanley Cir.- North	AM Peak Hour:	None
	Washington,DC	Midday Peak Hour:	2:45 PM - 3:45 PM
Date of Count:	5/18/2021	PM Peak Hour:	None

Peak Hour - Vehicle Counts

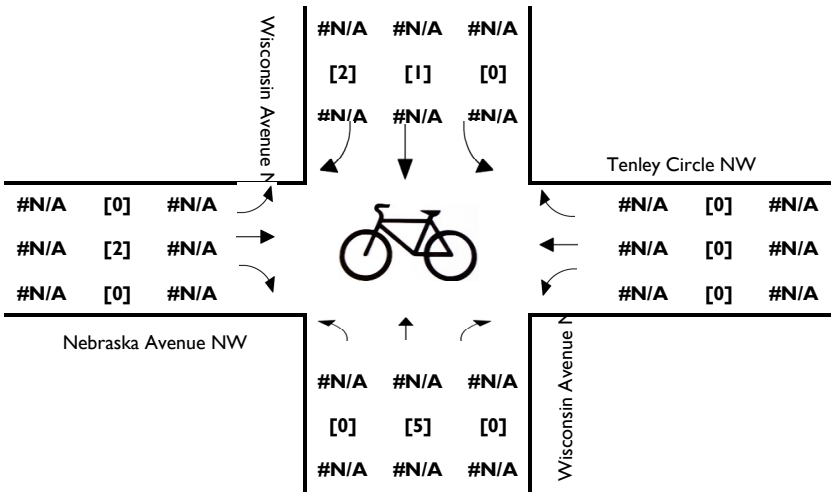


Peak Hour - Heavy Vehicle %

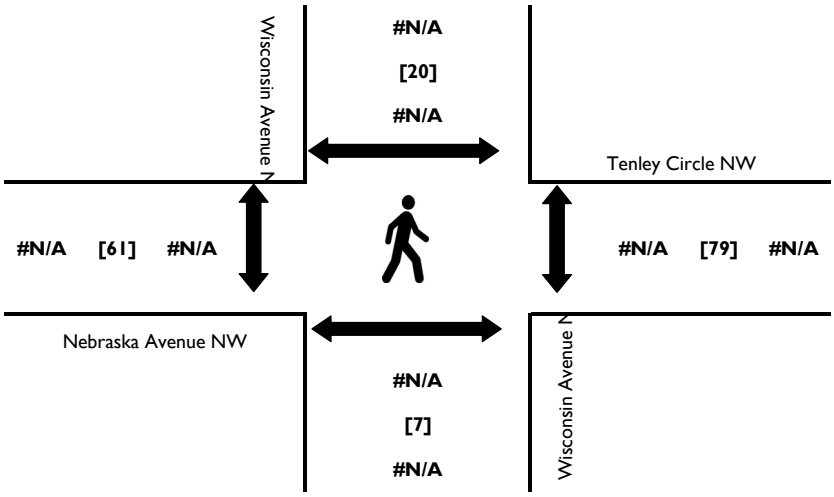


Intersection #12-5

Peak Hour - Bicycles



Peak Hour - Pedestrians



Intersection #12-5

Wells + Associates,Inc

Tysons, Virginia

Turning Movement Count - Total Vehicles

PROJECT: The River school
W+A JOB NO: 8182
INTERSECTION: Wisconsin Ave. & Tanley Cir.- North
LOCATION: Washington,DC

DATE: 5/18/2021
DAY: Tuesday
WEATHER: clear
COUNTED BY: Agan
INPUTED BY: Agan

SOUTHBOUND ROAD: Wisconsin Avenue NW
NORTHBOUND ROAD: Wisconsin Avenue NW
WESTBOUND ROAD: Tenley Circle NW
EASTBOUND ROAD: Nebraska Avenue NW

Time	Southbound Wisconsin Avenue NW						Westbound Tenley Circle NW						Northbound Wisconsin Avenue NW						Eastbound Nebraska Avenue NW						North & South	East & West	Total
Period	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF			
15 Minute Volumes																											
2:00 PM - 2:15 PM	34	148	0	0	182		6	69	56	0	131		0	0	0	0	0		0	0	0	0	0		182	131	313
2:15 PM - 2:30 PM	52	161	0	0	213		6	92	25	0	123		0	0	0	0	0		0	0	0	0	0		213	123	336
2:30 PM - 2:45 PM	47	148	0	0	195		8	86	42	0	136		0	0	0	0	0		0	0	0	0	0		195	136	331
2:45 PM - 3:00 PM	57	187	0	0	244		3	95	46	0	144		0	0	0	0	0		0	0	0	0	0		244	144	388
3:00 PM - 3:15 PM	52	196	0	0	248		4	91	40	0	135		0	0	0	0	0		0	0	0	0	0		248	135	383
3:15 PM - 3:30 PM	66	162	0	0	228		5	83	48	0	136		0	0	0	0	0		0	0	0	0	0		228	136	364
3:30 PM - 3:45 PM	55	132	0	0	187		7	104	47	0	158		0	0	0	0	0		0	0	0	0	0		187	158	345
3:45 PM - 4:00 PM	53	155	0	0	208		5	90	43	0	138		0	0	0	0	0		0	0	0	0	0		208	138	346
Total	416	1289	0	0	1705		44	710	347	0	1101		0	0	0	0	0		0	0	0	0	0		1705	1101	2806
One Hour Volumes																											
2:00 PM - 3:00 PM	190	644	0	0	834	0.855	23	342	169	0	534	0.927	0	0	0	0	0		0	0	0	0	0		834	534	1368
2:15 PM - 3:15 PM	208	692	0	0	900	0.907	21	364	153	0	538	0.934	0	0	0	0	0		0	0	0	0	0		900	538	1438
2:30 PM - 3:30 PM	222	693	0	0	915	0.922	20	355	176	0	551	0.957	0	0	0	0	0		0	0	0	0	0		915	551	1466
2:45 PM - 3:45 PM	230	677	0	0	907	0.914	19	373	181	0	573	0.907	0	0	0	0	0		0	0	0	0	0		907	573	1480
3:00 PM - 4:00 PM	226	645	0	0	871	0.878	21	368	178	0	567	0.897	0	0	0	0	0		0	0	0	0	0		871	567	1438

Intersection #12-5

Wells + Associates, Inc.

Tysons, Virginia

Turning Movement Count - Bicycles

PROJECT: The River school
W+A JOB NO: 8182
INTERSECTION: Wisconsin Ave. & Tanley Cir.- North
LOCATION: Washington,DC

DATE: 5/18/2021
DAY: Tuesday
WEATHER: clear
COUNTED BY: Agan
INPUTED BY: Agan

SOUTHBOUND ROAD: Wisconsin Avenue NW
NORTHBOUND ROAD: Wisconsin Avenue NW
WESTBOUND ROAD: Tenley Circle NW
EASTBOUND ROAD: Nebraska Avenue NW

Time	Southbound Wisconsin Avenue NW				Westbound Tenley Circle NW				Northbound Wisconsin Avenue NW				Eastbound Nebraska Avenue NW				North & South	East & West	Total
Period	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total			
15 Minute Volumes																			
2:00 PM - 2:15 PM	1	1		2				0		1		1				0	3	0	3
2:15 PM - 2:30 PM		1		1		1		1		3		3				0	4	1	5
2:30 PM - 2:45 PM	1			1				0				0			1	1	1	1	2
2:45 PM - 3:00 PM		1		1				0		1		1		1		1	2	1	3
3:00 PM - 3:15 PM				0				0		1		1				0	1	0	1
3:15 PM - 3:30 PM				0				0				0		1		1	0	1	1
3:30 PM - 3:45 PM	2			2				0		3		3				0	5	0	5
3:45 PM - 4:00 PM		2		2		1		1		3		3		1	1	2	5	3	8
Total	4	5	0	9	0	2	0	2	0	12	0	12	0	3	2	5	21	7	28
One Hour Volumes																			
2:00 PM - 3:00 PM	2	3	0	5	0	1	0	1	0	5	0	5	0	1	1	2	10	3	13
2:15 PM - 3:15 PM	1	2	0	3	0	1	0	1	0	5	0	5	0	1	1	2	8	3	11
2:30 PM - 3:30 PM	1	1	0	2	0	0	0	0	0	2	0	2	0	2	1	3	4	3	7
2:45 PM - 3:45 PM	2	1	0	3	0	0	0	0	0	5	0	5	0	2	0	2	8	2	10
3:00 PM - 4:00 PM	2	2	0	4	0	1	0	1	0	7	0	7	0	2	1	3	11	4	15

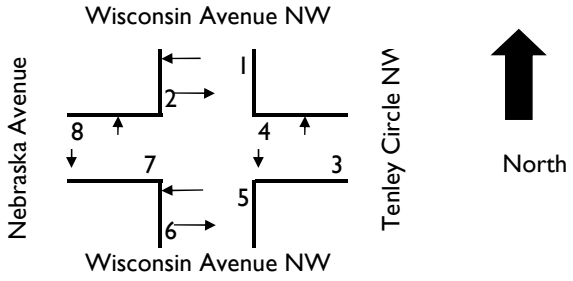
Intersection #12-5

Wells + Associates, Inc.

Tysons, Virginia

Pedestrian Volume Survey

PROJECT: The River school
W + A JOB NO: 8182
INTERSECTION: Wisconsin Ave. & Tanley Cir.- Nort
LOCATION: Washington,DC
DATE: 5/18/2021
DAY: Tuesday
WEATHER: clear
COUNTED BY: Agan
INPUTED BY: Agan



Time Period		Movement 1	2	3	4	5	6	7	8	1 + 2	3 + 4	5 + 6	7+ 8	Total
15 Minute Volumes														
2:00 PM	- 2:15 PM	4	1	10	8			3	9	5	18	0	12	35
2:15 PM	- 2:30 PM	5	5	8	6			7	5	10	14	0	12	36
2:30 PM	- 2:45 PM	5		5	7	1		11	6	5	12	1	17	35
2:45 PM	- 3:00 PM	3	5	8	12			11	11	8	20	0	22	50
3:00 PM	- 3:15 PM	1	3	9	3	2	1	7	1	4	12	3	8	27
3:15 PM	- 3:30 PM	2	3	14	14	1	2	7	7	5	28	3	14	50
3:30 PM	- 3:45 PM	1	2	6	13		1	8	9	3	19	1	17	40
3:45 PM	- 4:00 PM	2	3	6	8	1	1	13	6	5	14	2	19	40
Total		23	22	66	71	5	5	67	54	45	137	10	121	313
One Hour Volumes														
2:00 PM	- 3:00 PM	17	11	31	33	1	0	32	31	28	64	1	63	156
2:15 PM	- 3:15 PM	14	13	30	28	3	1	36	23	27	58	4	59	148
2:30 PM	- 3:30 PM	11	11	36	36	4	3	36	25	22	72	7	61	162
2:45 PM	- 3:45 PM	7	13	37	42	3	4	33	28	20	79	7	61	167
3:00 PM	- 4:00 PM	6	11	35	38	4	5	35	23	17	73	9	58	157

Intersection #12-5

Multimodal Turning Movement Count Report

Project Name :	American University Data Collection	**Analysis Period:**	STUDY_PERIOD 04:00 PM to 07:00 PM
Project # :	3	**Date of Counts:**	Thursday, February 27, 2020
Location	Washington DC	**Weather:**	Partly Cloudy
Data Source:	Excel Consultants LLC		

Volumes Displayed as:	1. Intersection Peak (vehicle)	
Intersection Peak Hour (all vehicles):	05:15 PM	to 06:15 PM
System Peak Hour (all vehicles):	05:00 PM	to 06:00 PM
User-Defined Peak Hour:	05:00 PM	to 06:00 PM

Intersection: 1. Wisconsin Ave/North/Wisconsin Ave & Tenley Circle

ALL VEHICLES

Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	Wisconsin Ave/North					Tenley Circle					Wisconsin Ave					Tenley Circle				
Movement:	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds
04:00 PM to 04:15 PM	0	0	167	51	16	0	48	125	10	47	0	0	243	0	4	0	0	0	0	15
04:15 PM to 04:30 PM	0	0	159	48	10	0	58	114	8	35	0	0	270	0	5	0	0	0	0	18
04:30 PM to 04:45 PM	0	0	165	65	14	0	66	109	7	34	0	1	231	0	2	0	0	0	0	9
04:45 PM to 05:00 PM	0	0	185	74	20	0	40	115	6	23	0	0	245	0	3	0	0	0	0	25
05:00 PM to 05:15 PM	0	0	145	65	24	0	54	164	4	47	0	1	249	0	0	0	0	0	0	26
05:15 PM to 05:30 PM	0	0	227	49	10	0	64	150	12	24	0	0	286	0	1	0	0	0	0	14
05:30 PM to 05:45 PM	0	0	184	58	40	0	53	142	11	41	0	0	276	0	0	0	0	0	0	31
05:45 PM to 06:00 PM	0	0	222	78	14	0	56	131	5	43	0	0	282	0	1	0	0	0	0	29
06:00 PM to 06:15 PM	0	0	156	57	13	0	67	132	6	37	0	1	264	0	2	0	0	0	0	24
06:15 PM to 06:30 PM	0	0	201	60	2	0	67	104	6	45	0	0	265	0	5	0	0	0	0	21
06:30 PM to 06:45 PM	0	0	148	60	8	0	63	123	7	30	0	0	225	0	2	0	0	0	0	11
06:45 PM to 07:00 PM	0	0	177	61	9	0	35	93	13	27	0	0	242	0	16	0	0	0	0	22
07:00 PM to 07:15 PM																				
07:15 PM to 07:30 PM																				
07:30 PM to 07:45 PM																				
07:45 PM to 08:00 PM																				
08:00 PM to 08:15 PM																				
08:15 PM to 08:30 PM																				
08:30 PM to 08:45 PM																				
08:45 PM to 09:00 PM																				
INT. PEAK HR (ALL VEH)	1031				77	829				145	1109				4	0				98
05:15 PM to 06:15 PM	0	0	789	242		0	240	555	34		0	1	1108	0		0	0	0	0	
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) 0.94	n/a	n/a	0.87	0.78	**0.86**	n/a	0.90	0.93	0.71	**0.92**	n/a	0.25	0.97	n/a	**0.97**	n/a	n/a	n/a	n/a	**n/a**

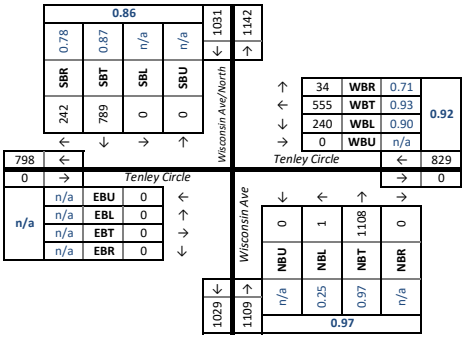
HEAVY VEHICLES (FHWA 4+)

Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	Wisconsin Ave/North					Tenley Circle					Wisconsin Ave					Tenley Circle				
Movement:	U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right	
04:00 PM to 04:15 PM	0	0	8	2		0	2	6	0		0	0	6	0		0	0	0	0	
04:15 PM to 04:30 PM	0	0	7	0		0	3	3	0		0	0	6	0		0	0	0	0	
04:30 PM to 04:45 PM	0	0	7	2		0	3	7	0		0	0	11	0		0	0	0	0	
04:45 PM to 05:00 PM	0	0	8	1		0	3	6	0		0	0	3	0		0	0	0	0	
05:00 PM to 05:15 PM	0	0	6	0		0	2	4	0		0	0	7	0		0	0	0	0	
05:15 PM to 05:30 PM	0	0	11	1		0	3	6	1		0	0	11	0		0	0	0	0	
05:30 PM to 05:45 PM	0	0	0	0		0	3	5	0		0	0	8	0		0	0	0	0	
05:45 PM to 06:00 PM	0	0	4	1		0	2	6	0		0	0	10	0		0	0	0	0	
06:00 PM to 06:15 PM	0	0	6	2		0	4	5	0		0	0	6	0		0	0	0	0	
06:15 PM to 06:30 PM	0	0	3	0		0	2	7	0		0	0	3	0		0	0	0	0	
06:30 PM to 06:45 PM	0	0	2	1		0	1	5	0		0	0	8	0		0	0	0	0	
06:45 PM to 07:00 PM	0	0	2	1		0	1	7	0		0	0	11	0		0	0	0	0	
07:00 PM to 07:15 PM																				
07:15 PM to 07:30 PM																				
07:30 PM to 07:45 PM																				
07:45 PM to 08:00 PM																				
08:00 PM to 08:15 PM																				
08:15 PM to 08:30 PM																				
08:30 PM to 08:45 PM																				
08:45 PM to 09:00 PM																				
INT. PEAK HR (ALL VEH)	25					35					35					0				
05:15 PM to 06:15 PM	0	0	21	4		0	12	22	1		0	0	35	0		0	0	0	0	
Heavy Vehicle % (PHV):	0.0%	0.0%	2.7%	1.7%	**2.4%**	0.0%	5.0%	4.0%	2.9%	**4.2%**	0.0%	0.0%	3.2%	0.0%	**3.2%**	0.0%	0.0%	0.0%	0.0%	**0.0%**
INT. PEAK HR (HV ONLY)	36					35					32					0				
04:30 PM to 05:30 PM	0	0	32	4		0	11	23	1		0	0	32	0		0	0	0	0	
Heavy Vehicle % (PHV):	0.0%	0.0%	4.4%	1.6%	**3.7%**	0.0%	4.9%	4.3%	3.4%	**4.4%**	0.0%	0.0%	3.2%	0.0%	**3.2%**	0.0%	0.0%	0.0%	0.0%	**0.0%**

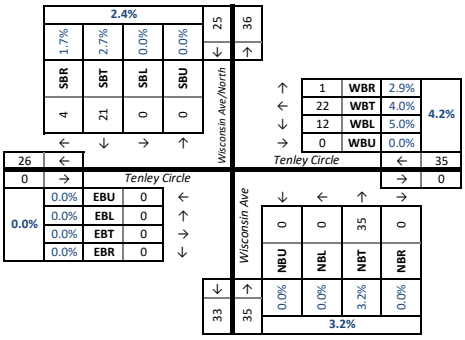
BICYCLES

Direction:	Southbound				Westbound				Northbound				Eastbound			
Roadway:	Wisconsin Ave/North				Tenley Circle				Wisconsin Ave				Tenley Circle			
Movement:	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right
04:00 PM to 04:15 PM	0	0	1	0	0	0	0	0	0	0	4	0	0	0	0	0
04:15 PM to 04:30 PM	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0
04:30 PM to 04:45 PM	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0
04:45 PM to 05:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM to 05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM to 05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM to 05:45 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
05:45 PM to 06:00 PM	0	0	4	1	0	0	1	0	0	1	2	0	0	0	0	0
06:00 PM to 06:15 PM	0	0	3	0	0	1	1	0	0	0	1	0	0	0	0	0
06:15 PM to 06:30 PM	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0
06:30 PM to 06:45 PM	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0
06:45 PM to 07:00 PM	0	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0
07:00 PM to 07:15 PM																
07:15 PM to 07:30 PM																
07:30 PM to 07:45 PM																
07:45 PM to 08:00 PM																
08:00 PM to 08:15 PM																
08:15 PM to 08:30 PM																
08:30 PM to 08:45 PM																
08:45 PM to 09:00 PM																
INT. PEAK HR (ALL VEH)	8				3				6				0			
05:15 PM to 06:15 PM	0	0	7	1	0	1	2	0	0	1	5	0	0	0	0	0
INT. PEAK HR (BIKES)	10				4				6				0			
05:45 PM to 06:45 PM	0	0	9	1	0	1	3	0	0	1	5	0	0	0	0	0

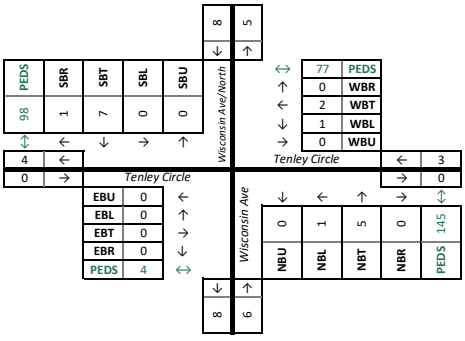
VEHICLE PEAK HOUR VOLS AND PHF: Intersection Peak (vehicle)



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



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



DATA COLLECTION NOTES :

Intersection #12-6

Multimodal Turning Movement Count Report

Project Name : American University Data Collection
Project # : 3
Location Washington DC
Data Source: Excel Consultants LLC

Analysis Period: STUDY_PERIOD 06:30 AM to 09:30 AM
Date of Counts: Thursday, February 27, 2020
Weather: Partly Cloudy

Volumes Displayed as: 1. Intersection Peak (vehicle)
Intersection Peak Hour (all vehicles): 07:45 AM to 08:45 AM
System Peak Hour (all vehicles): 07:30 AM to 08:30 AM
User-Defined Peak Hour: 07:30 AM to 08:30 AM

Intersection: 1. Yuma Street/ & Tenley Circle

ALL VEHICLES

Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	Yuma Street					Tenley Circle										Tenley Circle				
Movement:	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds
06:30 AM to 06:45 AM	0	0	0	1	5	0	0	122	7	0	0	0	0	0	0	0	0	0	0	0
06:45 AM to 07:00 AM	0	0	0	4	9	0	0	141	18	0	0	0	0	0	0	0	0	0	0	0
07:00 AM to 07:15 AM	0	0	0	5	8	0	0	142	20	0	0	0	0	0	0	0	0	0	0	0
07:15 AM to 07:30 AM	0	0	0	23	11	0	0	191	16	0	0	0	0	0	0	0	0	0	0	0
07:30 AM to 07:45 AM	0	0	0	25	11	0	0	214	25	0	0	0	0	0	0	0	0	0	0	0
07:45 AM to 08:00 AM	0	0	0	34	27	0	0	204	34	0	0	0	0	0	0	0	0	0	0	0
08:00 AM to 08:15 AM	0	0	0	20	26	0	0	233	28	0	0	0	0	0	0	0	0	0	0	0
08:15 AM to 08:30 AM	0	0	0	33	24	0	0	203	46	0	0	0	0	0	0	0	0	0	0	0
08:30 AM to 08:45 AM	0	0	0	45	27	0	0	207	44	0	0	0	0	0	0	0	0	0	0	0
08:45 AM to 09:00 AM	0	0	0	45	18	0	0	179	21	0	0	0	0	0	0	0	0	0	0	0
09:00 AM to 09:15 AM	0	0	0	31	49	0	0	202	20	0	0	0	0	0	0	0	0	0	0	0
09:15 AM to 09:30 AM	0	0	0	12	36	0	0	213	15	0	0	0	0	0	0	0	0	0	0	0
09:30 AM to 09:45 AM																				
09:45 AM to 10:00 AM																				
10:00 AM to 10:15 AM																				
10:15 AM to 10:30 AM																				
10:30 AM to 10:45 AM																				
10:45 AM to 11:00 AM																				
11:00 AM to 11:15 AM																				
11:15 AM to 11:30 AM																				
INT. PEAK HR (ALL VEH)	132				104	999				0	0				0	0				0
07:45 AM to 08:45 AM	0	0	0	132		0	0	847	152		0	0	0	0		0	0	0	0	
Peak Hour Factor (PHF) Overall 0.96	U	Left	Thru	Right	SB	U	Left	Thru	Right	WB	U	Left	Thru	Right	NB	U	Left	Thru	Right	EB
	n/a	n/a	n/a	0.73	0.73	n/a	n/a	0.91	0.83	0.96	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

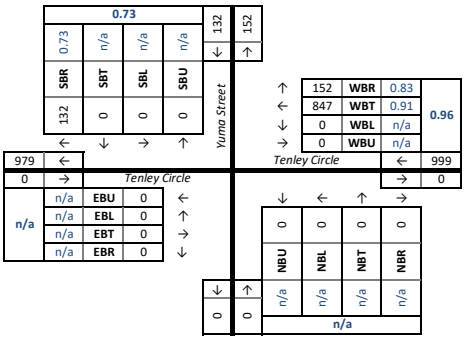
HEAVY VEHICLES (FHWA 4+)

Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	Yuma Street					Tenley Circle										Tenley Circle				
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	4	0		0	0	0	0		0	0	0	0	
06:45 AM to 07:00 AM	0	0	0	0		0	0	5	0		0	0	0	0		0	0	0	0	
07:00 AM to 07:15 AM	0	0	0	0		0	0	7	0		0	0	0	0		0	0	0	0	
07:15 AM to 07:30 AM	0	0	0	1		0	0	9	1		0	0	0	0		0	0	0	0	
07:30 AM to 07:45 AM	0	0	0	0		0	0	11	0		0	0	0	0		0	0	0	0	
07:45 AM to 08:00 AM	0	0	0	0		0	0	8	0		0	0	0	0		0	0	0	0	
08:00 AM to 08:15 AM	0	0	0	1		0	0	13	1		0	0	0	0		0	0	0	0	
08:15 AM to 08:30 AM	0	0	0	0		0	0	9	0		0	0	0	0		0	0	0	0	
08:30 AM to 08:45 AM	0	0	0	0		0	0	13	0		0	0	0	0		0	0	0	0	
08:45 AM to 09:00 AM	0	0	0	0		0	0	6	0		0	0	0	0		0	0	0	0	
09:00 AM to 09:15 AM	0	0	0	0		0	0	14	1		0	0	0	0		0	0	0	0	
09:15 AM to 09:30 AM	0	0	0	0		0	0	10	1		0	0	0	0		0	0	0	0	
09:30 AM to 09:45 AM																				
09:45 AM to 10:00 AM																				
10:00 AM to 10:15 AM																				
10:15 AM to 10:30 AM																				
10:30 AM to 10:45 AM																				
10:45 AM to 11:00 AM																				
11:00 AM to 11:15 AM																				
11:15 AM to 11:30 AM																				
INT. PEAK HR (ALL VEH)	1					44					0					0				
07:45 AM to 08:45 AM	0	0	0	1		0	0	43	1		0	0	0	0		0	0	0	0	
Heavy Vehicle % (PHV):	0.0%	0.0%	0.0%	0.8%	0.8%	0.0%	0.0%	5.1%	0.7%	4.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
INT. PEAK HR (HV ONLY)	2					43					0					0				
07:15 AM to 08:15 AM	0	0	0	2		0	0	41	2		0	0	0	0		0	0	0	0	
Heavy Vehicle % (PHV):	0.0%	0.0%	0.0%	2.0%	2.0%	0.0%	0.0%	4.9%	1.9%	4.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

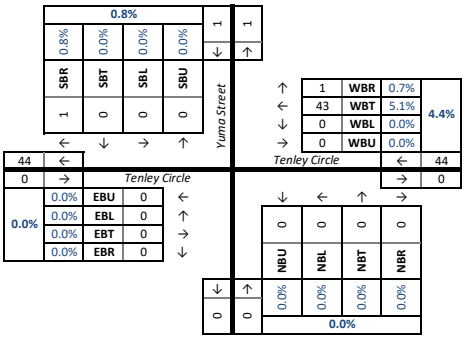
BICYCLES

Direction:	Southbound				Westbound				Northbound				Eastbound			
Roadway:	Yuma Street				Tenley Circle								Tenley Circle			
Movement:	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right
06:30 AM to 06:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45 AM to 07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00 AM to 07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM to 07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM to 07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM to 08:00 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM to 08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM to 08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM to 08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM to 09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:00 AM to 09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15 AM to 09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:30 AM to 09:45 AM																
09:45 AM to 10:00 AM																
10:00 AM to 10:15 AM																
10:15 AM to 10:30 AM																
10:30 AM to 10:45 AM																
10:45 AM to 11:00 AM																
11:00 AM to 11:15 AM																
11:15 AM to 11:30 AM																
INT. PEAK HR (ALL VEH)	1				0				0				0			
07:45 AM to 08:45 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
INT. PEAK HR (BIKES)	1				0				0				0			
07:00 AM to 08:00 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0

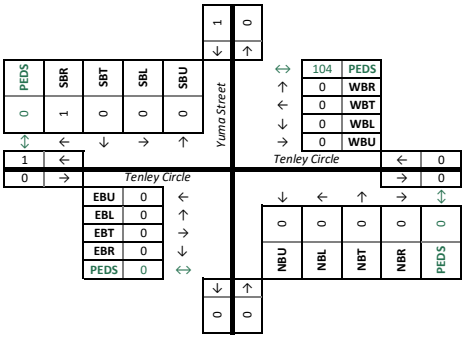
VEHICLE PEAK HOUR VOLS AND PHF: Intersection Peak (vehicle)



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



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



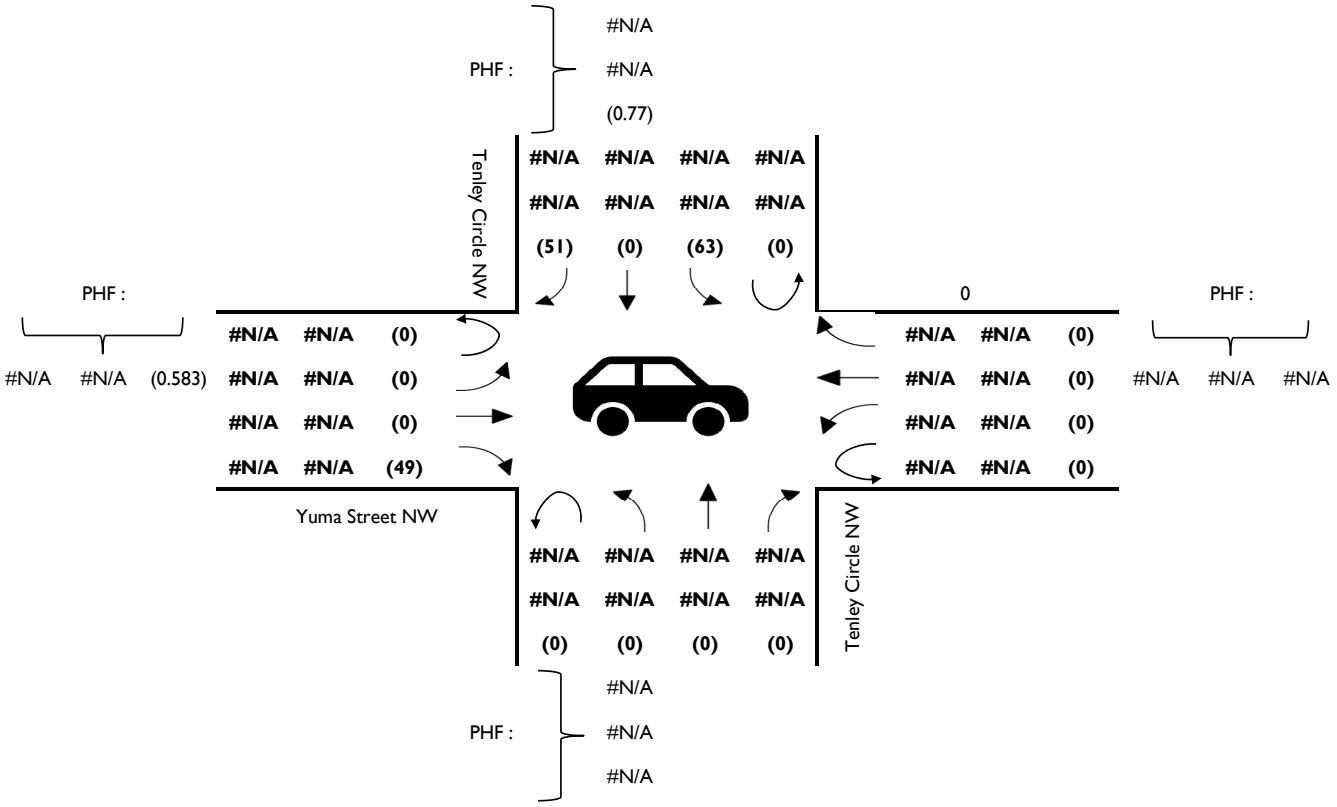
DATA COLLECTION NOTES :

Intersection #12-6

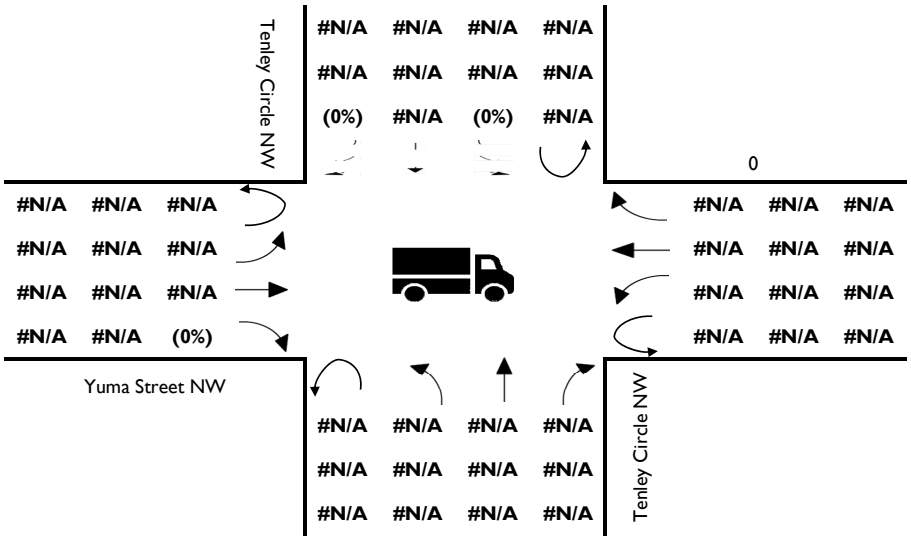
PEAK HOUR TRAFFIC COUNT SUMMARY

Location:	Yuma St. & Tenley Cir.- West Washington, DC	AM Peak Hour:	None
		Midday Peak Hour:	None
Date of Count:	5/18/2021	PM Peak Hour:	3:00 PM - 4:00 PM

Peak Hour - Vehicle Counts

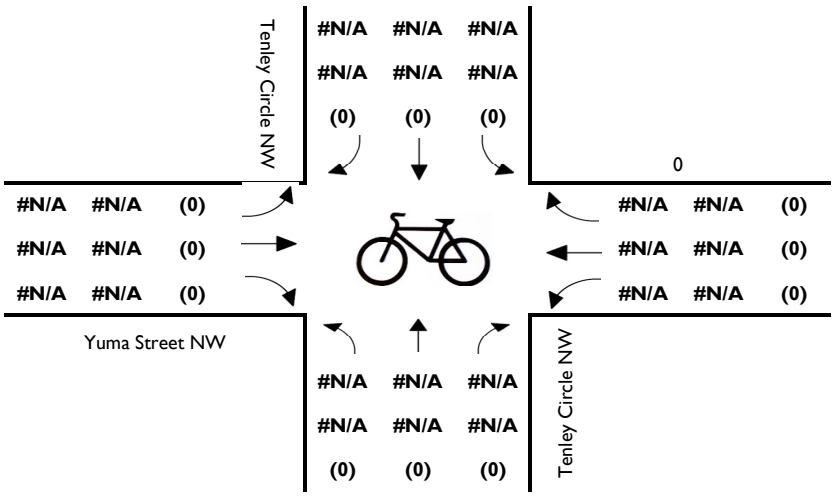


Peak Hour - Heavy Vehicle %

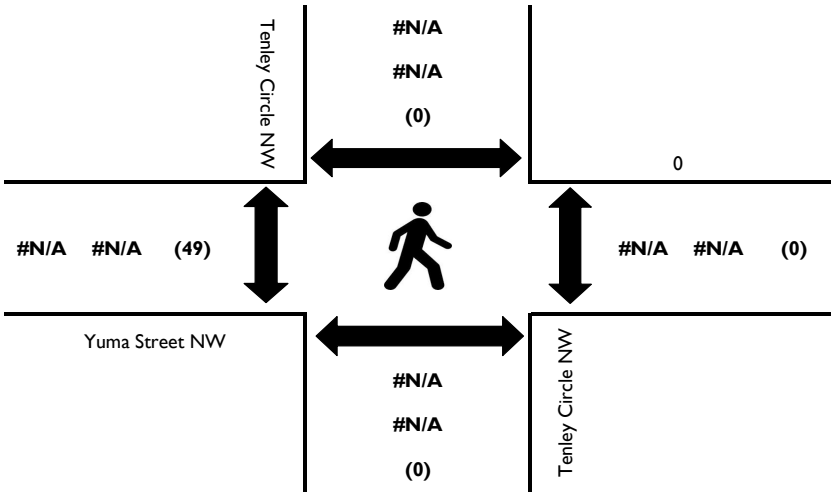


Intersection #12-6

Peak Hour - Bicycles



Peak Hour - Pedestrians



Intersection #12-6

Wells + Associates,Inc

Tysons, Virginia

Turning Movement Count - Total Vehicles

PROJECT: The River school
W+A JOB NO: 8182
INTERSECTION: Yuma St. & Tenley Cir.- West
LOCATION: Washington,DC

DATE: 5/18/2021
DAY: Tuesday
WEATHER: clear
COUNTED BY: Agan
INPUTED BY: Agan

SOUTHBOUND ROAD: Tenley Circle NW
NORTHBOUND ROAD: Tenley Circle NW
WESTBOUND ROAD: 0
EASTBOUND ROAD: Yuma Street NW

Time	Southbound Tenley Circle NW						Westbound 0						Northbound Tenley Circle NW						Eastbound Yuma Street NW						North & South	East & West	Total
Period	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF			
15 Minute Volumes																											
2:00 PM - 2:15 PM	5	0	12	0	17		0	0	0	0	0		0	0	0	0	0		9	0	0	0	9		17	9	26
2:15 PM - 2:30 PM	5	0	11	0	16		0	0	0	0	0		0	0	0	0	0		5	0	0	0	5		16	5	21
2:30 PM - 2:45 PM	9	0	11	0	20		0	0	0	0	0		0	0	0	0	0		5	0	0	0	5		20	5	25
2:45 PM - 3:00 PM	11	0	5	0	16		0	0	0	0	0		0	0	0	0	0		5	0	0	0	5		16	5	21
3:00 PM - 3:15 PM	14	0	13	0	27		0	0	0	0	0		0	0	0	0	0		13	0	0	0	13		27	13	40
3:15 PM - 3:30 PM	11	0	26	0	37		0	0	0	0	0		0	0	0	0	0		21	0	0	0	21		37	21	58
3:30 PM - 3:45 PM	18	0	12	0	30		0	0	0	0	0		0	0	0	0	0		7	0	0	0	7		30	7	37
3:45 PM - 4:00 PM	8	0	12	0	20		0	0	0	0	0		0	0	0	0	0		8	0	0	0	8		20	8	28
Total	81	0	102	0	183		0	0	0	0	0		0	0	0	0	0		73	0	0	0	73		183	73	256
One Hour Volumes																											
2:00 PM - 3:00 PM	30	0	39	0	69	0.863	0	0	0	0	0		0	0	0	0	0		24	0	0	0	24	0.667	69	24	93
2:15 PM - 3:15 PM	39	0	40	0	79	0.731	0	0	0	0	0		0	0	0	0	0		28	0	0	0	28	0.538	79	28	107
2:30 PM - 3:30 PM	45	0	55	0	100	0.676	0	0	0	0	0		0	0	0	0	0		44	0	0	0	44	0.524	100	44	144
2:45 PM - 3:45 PM	54	0	56	0	110	0.743	0	0	0	0	0		0	0	0	0	0		46	0	0	0	46	0.548	110	46	156
3:00 PM - 4:00 PM	51	0	63	0	114	0.77	0	0	0	0	0		0	0	0	0	0		49	0	0	0	49	0.583	114	49	163

Intersection #12-6

Wells + Associates, Inc.

Tysons, Virginia

Turning Movement Count - Bicycles

PROJECT:	The River school	**DATE:**	5/18/2021	**SOUTHBOUND ROAD:**	Tenley Circle NW
W+A JOB NO:	8182	**DAY:**	Tuesday	**NORTHBOUND ROAD:**	Tenley Circle NW
INTERSECTION:	Yuma St. & Tenley Cir.- West	**WEATHER:**	clear	**WESTBOUND ROAD:**	0
LOCATION:	Washington,DC	**COUNTED BY:**	Agan	**EASTBOUND ROAD:**	Yuma Street NW
		INPUTED BY:	Agan		

Time Period	Southbound Tenley Circle NW				Westbound 0				Northbound Tenley Circle NW				Eastbound Yuma Street NW				North & South	East & West	Total
	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total			
15 Minute Volumes																			
2:00 PM - 2:15 PM				0				0				0				0	0	0	0
2:15 PM - 2:30 PM				0				0				0				0	0	0	0
2:30 PM - 2:45 PM				0				0				0				0	0	0	0
2:45 PM - 3:00 PM				0				0				0				0	0	0	0
3:00 PM - 3:15 PM				0				0				0				0	0	0	0
3:15 PM - 3:30 PM				0				0				0				0	0	0	0
3:30 PM - 3:45 PM				0				0				0				0	0	0	0
3:45 PM - 4:00 PM				0				0				0				0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
One Hour Volumes																			
2:00 PM - 3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM - 3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM - 3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM - 3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM - 4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

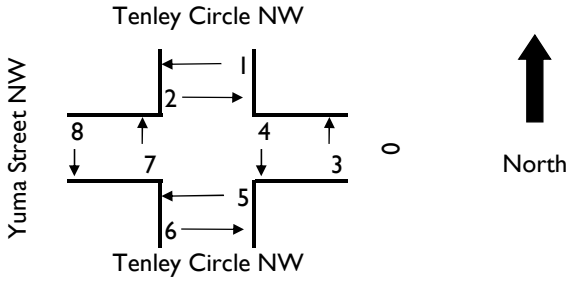
Intersection #12-6

Wells + Associates, Inc.

Tysons, Virginia

Pedestrian Volume Survey

PROJECT: The River school
W + A JOB NO: 8182
INTERSECTION: Yuma St. & Tenley Cir.- West
LOCATION: Washington,DC
DATE: 5/18/2021
DAY: Tuesday
WEATHER: clear
COUNTED BY: Agan
INPUTED BY: Agan



Time Period	Movement 1	2	3	4	5	6	7	8	1 + 2	3 + 4	5 + 6	7+ 8	Total
15 Minute Volumes													
2:00 PM - 2:15 PM							2	5	0	0	0	7	7
2:15 PM - 2:30 PM							4	6	0	0	0	10	10
2:30 PM - 2:45 PM								7	0	0	0	7	7
2:45 PM - 3:00 PM							5	8	0	0	0	13	13
3:00 PM - 3:15 PM							9	5	0	0	0	14	14
3:15 PM - 3:30 PM							6	6	0	0	0	12	12
3:30 PM - 3:45 PM							10	4	0	0	0	14	14
3:45 PM - 4:00 PM							8	1	0	0	0	9	9
Total	0	0	0	0	0	0	44	42	0	0	0	86	86
One Hour Volumes													
2:00 PM - 3:00 PM	0	0	0	0	0	0	11	26	0	0	0	37	37
2:15 PM - 3:15 PM	0	0	0	0	0	0	18	26	0	0	0	44	44
2:30 PM - 3:30 PM	0	0	0	0	0	0	20	26	0	0	0	46	46
2:45 PM - 3:45 PM	0	0	0	0	0	0	30	23	0	0	0	53	53
3:00 PM - 4:00 PM	0	0	0	0	0	0	33	16	0	0	0	49	49

Intersection #12-6

Multimodal Turning Movement Count Report

Project Name :	American University Data Collection	**Analysis Period:**	STUDY_PERIOD 04:00 PM to 07:00 PM
Project # :	3	**Date of Counts:**	Thursday, February 27, 2020
Location	Washington DC	**Weather:**	Partly Cloudy
Data Source:	Excel Consultants LLC		

Volumes Displayed as:	1. Intersection Peak (vehicle)	
Intersection Peak Hour (all vehicles):	05:00 PM	to 06:00 PM
System Peak Hour (all vehicles):	05:00 PM	to 06:00 PM
User-Defined Peak Hour:	05:00 PM	to 06:00 PM

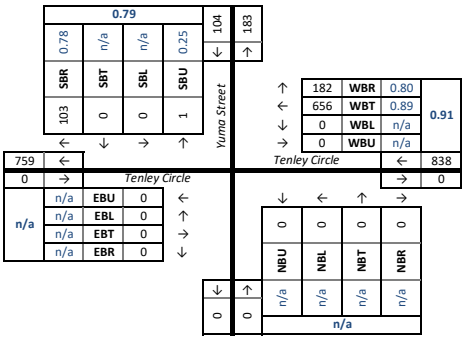
Intersection: 1. Yuma Street/ & Tenley Circle

ALL VEHICLES	Southbound					Westbound					Northbound					Eastbound				
Roadway:	Yuma Street					Tenley Circle										Tenley Circle				
Movement:	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds
04:00 PM to 04:15 PM	0	0	0	20	37	0	0	158	18	0	0	0	0	0	0	0	0	0	0	0
04:15 PM to 04:30 PM	0	0	0	3	27	0	0	140	22	0	0	0	0	0	0	0	0	0	0	0
04:30 PM to 04:45 PM	0	0	0	12	14	0	0	147	28	0	0	0	0	0	0	0	0	0	0	0
04:45 PM to 05:00 PM	0	0	0	10	43	0	0	167	22	0	0	0	0	0	0	0	0	0	0	0
05:00 PM to 05:15 PM	0	0	0	20	60	0	0	184	46	0	0	0	0	0	0	0	0	0	0	0
05:15 PM to 05:30 PM	0	0	0	33	66	0	0	165	34	0	0	0	0	0	0	0	0	0	0	0
05:30 PM to 05:45 PM	0	0	0	20	84	0	0	155	45	0	0	0	0	0	0	0	0	0	0	0
05:45 PM to 06:00 PM	1	0	0	30	57	0	0	152	57	0	0	0	0	0	0	0	0	0	0	0
06:00 PM to 06:15 PM	0	0	0	23	61	0	0	160	30	0	0	0	0	0	0	0	0	0	0	0
06:15 PM to 06:30 PM	0	0	0	16	16	0	0	140	24	0	0	0	0	0	0	0	0	0	0	0
06:30 PM to 06:45 PM	0	0	0	16	26	0	0	158	25	0	0	0	0	0	0	0	0	0	0	0
06:45 PM to 07:00 PM	0	0	0	16	23	0	0	142	12	0	0	0	0	0	0	0	0	0	0	0
07:00 PM to 07:15 PM																				
07:15 PM to 07:30 PM																				
07:30 PM to 07:45 PM																				
07:45 PM to 08:00 PM																				
08:00 PM to 08:15 PM																				
08:15 PM to 08:30 PM																				
08:30 PM to 08:45 PM																				
08:45 PM to 09:00 PM																				
INT. PEAK HR (ALL VEH)	104				267	838				0	0				0	0				0
05:00 PM to 06:00 PM	1	0	0	103		0	0	656	182		0	0	0	0		0	0	0	0	
Peak Hour Factor (PHF) Overall	U	Left	Thru	Right	**SB**	U	Left	Thru	Right	**WB**	U	Left	Thru	Right	**NB**	U	Left	Thru	Right	**EB**
0.94	0.25	n/a	n/a	0.78	**0.79**	n/a	n/a	0.89	0.80	**0.91**	n/a	n/a	n/a	n/a	**n/a**	n/a	n/a	n/a	n/a	**n/a**

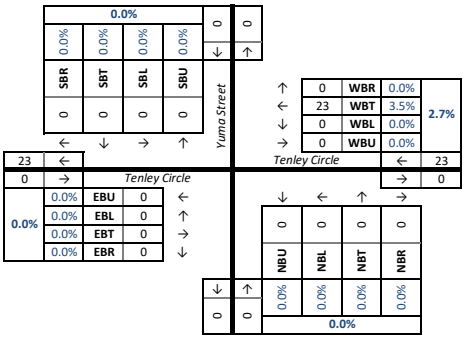
HEAVY VEHICLES (FHWA 4+)	Southbound					Westbound					Northbound					Eastbound				
Roadway:	Yuma Street					Tenley Circle										Tenley Circle				
Movement:	U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right	
04:00 PM to 04:15 PM	0	0	0	0		0	0	8	0		0	0	0	0		0	0	0	0	
04:15 PM to 04:30 PM	0	0	0	0		0	0	2	1		0	0	0	0		0	0	0	0	
04:30 PM to 04:45 PM	0	0	0	0		0	0	9	0		0	0	0	0		0	0	0	0	
04:45 PM to 05:00 PM	0	0	0	0		0	0	7	0		0	0	0	0		0	0	0	0	
05:00 PM to 05:15 PM	0	0	0	0		0	0	4	0		0	0	0	0		0	0	0	0	
05:15 PM to 05:30 PM	0	0	0	0		0	0	7	0		0	0	0	0		0	0	0	0	
05:30 PM to 05:45 PM	0	0	0	0		0	0	5	0		0	0	0	0		0	0	0	0	
05:45 PM to 06:00 PM	0	0	0	0		0	0	7	0		0	0	0	0		0	0	0	0	
06:00 PM to 06:15 PM	0	0	0	1		0	0	7	0		0	0	0	0		0	0	0	0	
06:15 PM to 06:30 PM	0	0	0	0		0	0	7	0		0	0	0	0		0	0	0	0	
06:30 PM to 06:45 PM	0	0	0	0		0	0	6	0		0	0	0	0		0	0	0	0	
06:45 PM to 07:00 PM	0	0	0	0		0	0	8	0		0	0	0	0		0	0	0	0	
07:00 PM to 07:15 PM																				
07:15 PM to 07:30 PM																				
07:30 PM to 07:45 PM																				
07:45 PM to 08:00 PM																				
08:00 PM to 08:15 PM																				
08:15 PM to 08:30 PM																				
08:30 PM to 08:45 PM																				
08:45 PM to 09:00 PM																				
INT. PEAK HR (ALL VEH)	0					23					0					0				
05:00 PM to 06:00 PM	0	0	0	0		0	0	23	0		0	0	0	0		0	0	0	0	
Heavy Vehicle % (PHV):	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	3.5%	0.0%	**2.7%**	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	0.0%	0.0%	**0.0%**
INT. PEAK HR (HV ONLY)	1					28					0					0				
06:00 PM to 07:00 PM	0	0	0	1		0	0	28	0		0	0	0	0		0	0	0	0	
Heavy Vehicle % (PHV):	0.0%	0.0%	0.0%	1.4%	**1.4%**	0.0%	0.0%	4.7%	0.0%	**4.1%**	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	0.0%	0.0%	**0.0%**

BICYCLES	Southbound				Westbound				Northbound				Eastbound			
Roadway:	Yuma Street				Tenley Circle								Tenley Circle			
Movement:	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right
04:00 PM to 04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM to 04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM to 04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM to 05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM to 05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM to 05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM to 05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM to 06:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
06:00 PM to 06:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15 PM to 06:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30 PM to 06:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45 PM to 07:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00 PM to 07:15 PM																
07:15 PM to 07:30 PM																
07:30 PM to 07:45 PM																
07:45 PM to 08:00 PM																
08:00 PM to 08:15 PM																
08:15 PM to 08:30 PM																
08:30 PM to 08:45 PM																
08:45 PM to 09:00 PM																
INT. PEAK HR (ALL VEH)	0				1				0				0			
05:00 PM to 06:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
INT. PEAK HR (BIKES)	0				1				0				0			
05:00 PM to 06:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0

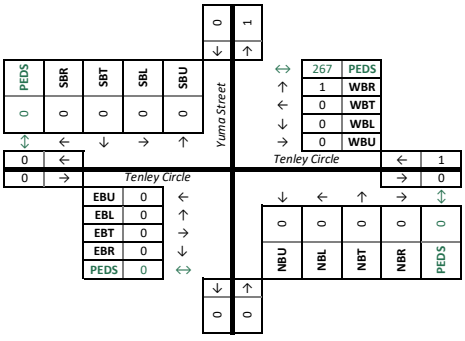
VEHICLE PEAK HOUR VOLS AND PHF: Intersection Peak (vehicle)



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



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



DATA COLLECTION NOTES :

Intersection #12-7

Multimodal Turning Movement Count Report

Project Name : American University Data Collection
Project # : 3
Location Washington DC
Data Source: Excel Consultants LLC

Analysis Period: STUDY_PERIOD 06:30 AM to 09:30 AM
Date of Counts: Thursday, February 27, 2020
Weather: Partly Cloudy

Volumes Displayed as: 1. Intersection Peak (vehicle)
Intersection Peak Hour (all vehicles): 07:45 AM to 08:45 AM
System Peak Hour (all vehicles): 07:30 AM to 08:30 AM
User-Defined Peak Hour: 07:30 AM to 08:30 AM

Intersection: 1. Tenley Circle & /Nebraska Ave

ALL VEHICLES

Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	Tenley Circle										Tenley Circle					Nebraska Ave				
Movement:	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds
06:30 AM to 06:45 AM	0	0	10	113	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	5	140	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	9	138	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	29	185	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	23	216	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	27	211	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM to 08:15 AM	0	0	19	234	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM to 08:30 AM	0	0	33	203	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM to 08:45 AM	0	0	36	216	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM to 09:00 AM	0	0	31	193	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	33	200	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	22	203	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:30 AM to 09:45 AM																				
09:45 AM to 10:00 AM																				
10:00 AM to 10:15 AM																				
10:15 AM to 10:30 AM																				
10:30 AM to 10:45 AM																				
10:45 AM to 11:00 AM																				
11:00 AM to 11:15 AM																				
11:15 AM to 11:30 AM																				
INT. PEAK HR (ALL VEH)	979				0	0				0	0				0	0				0
07:45 AM to 08:45 AM	0	0	115	864		0	0	0	0		0	0	0	0		0	0	0	0	
Peak Hour Factor (PHF) Overall 0.97	U n/a	Left n/a	Thru 0.80	Right 0.92	SB 0.97	U n/a	Left n/a	Thru n/a	Right n/a	WB n/a	U n/a	Left n/a	Thru n/a	Right n/a	NB n/a	U n/a	Left n/a	Thru n/a	Right n/a	EB n/a

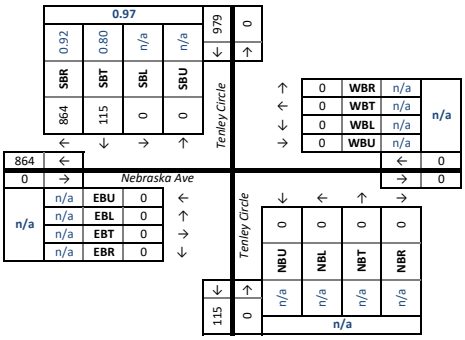
HEAVY VEHICLES (FHWA 4+)

Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	Tenley Circle										Tenley Circle					Nebraska Ave				
Movement:	U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right	
06:30 AM to 06:45 AM	0	0	0	4		0	0	0	0		0	0	0	0		0	0	0	0	
06:45 AM to 07:00 AM	0	0	0	5		0	0	0	0		0	0	0	0		0	0	0	0	
07:00 AM to 07:15 AM	0	0	1	6		0	0	0	0		0	0	0	0		0	0	0	0	
07:15 AM to 07:30 AM	0	0	1	9		0	0	0	0		0	0	0	0		0	0	0	0	
07:30 AM to 07:45 AM	0	0	0	11		0	0	0	0		0	0	0	0		0	0	0	0	
07:45 AM to 08:00 AM	0	0	0	8		0	0	0	0		0	0	0	0		0	0	0	0	
08:00 AM to 08:15 AM	0	0	1	13		0	0	0	0		0	0	0	0		0	0	0	0	
08:15 AM to 08:30 AM	0	0	1	8		0	0	0	0		0	0	0	0		0	0	0	0	
08:30 AM to 08:45 AM	0	0	0	13		0	0	0	0		0	0	0	0		0	0	0	0	
08:45 AM to 09:00 AM	0	0	2	4		0	0	0	0		0	0	0	0		0	0	0	0	
09:00 AM to 09:15 AM	0	0	3	11		0	0	0	0		0	0	0	0		0	0	0	0	
09:15 AM to 09:30 AM	0	0	0	10		0	0	0	0		0	0	0	0		0	0	0	0	
09:30 AM to 09:45 AM																				
09:45 AM to 10:00 AM																				
10:00 AM to 10:15 AM																				
10:15 AM to 10:30 AM																				
10:30 AM to 10:45 AM																				
10:45 AM to 11:00 AM																				
11:00 AM to 11:15 AM																				
11:15 AM to 11:30 AM																				
INT. PEAK HR (ALL VEH)	44					0					0					0				
07:45 AM to 08:45 AM	0	0	2	42		0	0	0	0		0	0	0	0		0	0	0	0	
Heavy Vehicle % (PHV):	0.0%	0.0%	1.7%	4.9%	4.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
INT. PEAK HR (HV ONLY)	44					0					0					0				
07:45 AM to 08:45 AM	0	0	2	42		0	0	0	0		0	0	0	0		0	0	0	0	
Heavy Vehicle % (PHV):	0.0%	0.0%	1.7%	4.9%	4.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

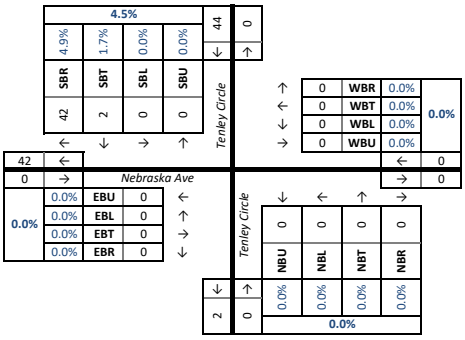
BICYCLES

Direction:	Southbound				Westbound				Northbound				Eastbound			
Roadway:	Tenley Circle								Tenley Circle				Nebraska Ave			
Movement:	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right
06:30 AM to 06:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45 AM to 07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00 AM to 07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM to 08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM to 08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM to 09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:00 AM to 09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15 AM to 09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:30 AM to 09:45 AM																
09:45 AM to 10:00 AM																
10:00 AM to 10:15 AM																
10:15 AM to 10:30 AM																
10:30 AM to 10:45 AM																
10:45 AM to 11:00 AM																
11:00 AM to 11:15 AM																
11:15 AM to 11:30 AM																
INT. PEAK HR (ALL VEH)	0				0				0				0			
07:45 AM to 08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INT. PEAK HR (BIKES)	0				0				0				0			
06:30 AM to 07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

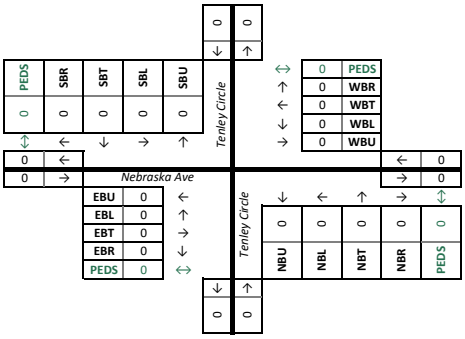
VEHICLE PEAK HOUR VOLS AND PHF: Intersection Peak (vehicle)



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



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



DATA COLLECTION NOTES :

Intersection #12-7

Multimodal Turning Movement Count Report

Project Name : American University Data Collection
Project # : 3
Location Washington DC
Data Source: Excel Consultants LLC

Analysis Period: STUDY_PERIOD 04:00 PM to 07:00 PM
Date of Counts: Thursday, February 27, 2020
Weather: Partly Cloudy

Volumes Displayed as: 1. Intersection Peak (vehicle)
Intersection Peak Hour (all vehicles): 05:00 PM to 06:00 PM
System Peak Hour (all vehicles): 05:00 PM to 06:00 PM
User-Defined Peak Hour: 05:00 PM to 06:00 PM

Intersection: 1. Tenley Circle & /Nebraska Ave

ALL VEHICLES

Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	Tenley Circle										Tenley Circle					Nebraska Ave				
Movement:	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds
04:00 PM to 04:15 PM	0	0	31	147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM to 04:30 PM	0	0	22	121	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM to 04:45 PM	0	0	30	129	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM to 05:00 PM	0	0	19	158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM to 05:15 PM	0	0	26	178	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM to 05:30 PM	0	0	36	162	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM to 05:45 PM	0	0	21	154	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM to 06:00 PM	0	0	28	154	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00 PM to 06:15 PM	0	0	33	150	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15 PM to 06:30 PM	0	0	23	133	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30 PM to 06:45 PM	0	0	27	147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45 PM to 07:00 PM	0	0	20	138	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00 PM to 07:15 PM																				
07:15 PM to 07:30 PM																				
07:30 PM to 07:45 PM																				
07:45 PM to 08:00 PM																				
08:00 PM to 08:15 PM																				
08:15 PM to 08:30 PM																				
08:30 PM to 08:45 PM																				
08:45 PM to 09:00 PM																				
INT. PEAK HR (ALL VEH)	759				0	0				0	0				0	0				0
05:00 PM to 06:00 PM	0	0	111	648		0	0	0	0		0	0	0	0		0	0	0	0	
Peak Hour Factor (PHF) Overall	U	Left	Thru	Right	**SB**	U	Left	Thru	Right	**WB**	U	Left	Thru	Right	**NB**	U	Left	Thru	Right	**EB**
0.93	n/a	n/a	0.77	0.91	**0.93**	n/a	n/a	n/a	n/a	**n/a**	n/a	n/a	n/a	n/a	**n/a**	n/a	n/a	n/a	n/a	**n/a**

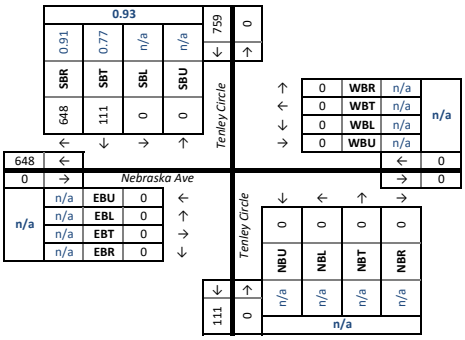
HEAVY VEHICLES (FHWA 4+)

Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	Tenley Circle										Tenley Circle					Nebraska Ave				
Movement:	U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right	
04:00 PM to 04:15 PM	0	0	0	8		0	0	0	0		0	0	0	0		0	0	0	0	
04:15 PM to 04:30 PM	0	0	1	1		0	0	0	0		0	0	0	0		0	0	0	0	
04:30 PM to 04:45 PM	0	0	3	6		0	0	0	0		0	0	0	0		0	0	0	0	
04:45 PM to 05:00 PM	0	0	0	7		0	0	0	0		0	0	0	0		0	0	0	0	
05:00 PM to 05:15 PM	0	0	0	4		0	0	0	0		0	0	0	0		0	0	0	0	
05:15 PM to 05:30 PM	0	0	0	7		0	0	0	0		0	0	0	0		0	0	0	0	
05:30 PM to 05:45 PM	0	0	0	5		0	0	0	0		0	0	0	0		0	0	0	0	
05:45 PM to 06:00 PM	0	0	0	7		0	0	0	0		0	0	0	0		0	0	0	0	
06:00 PM to 06:15 PM	0	0	0	8		0	0	0	0		0	0	0	0		0	0	0	0	
06:15 PM to 06:30 PM	0	0	0	7		0	0	0	0		0	0	0	0		0	0	0	0	
06:30 PM to 06:45 PM	0	0	0	6		0	0	0	0		0	0	0	0		0	0	0	0	
06:45 PM to 07:00 PM	0	0	0	8		0	0	0	0		0	0	0	0		0	0	0	0	
07:00 PM to 07:15 PM																				
07:15 PM to 07:30 PM																				
07:30 PM to 07:45 PM																				
07:45 PM to 08:00 PM																				
08:00 PM to 08:15 PM																				
08:15 PM to 08:30 PM																				
08:30 PM to 08:45 PM																				
08:45 PM to 09:00 PM																				
INT. PEAK HR (ALL VEH)	23					0					0					0				
05:00 PM to 06:00 PM	0	0	0	23		0	0	0	0		0	0	0	0		0	0	0	0	
Heavy Vehicle % (PHV):	0.0%	0.0%	0.0%	3.5%	**3.0%**	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	0.0%	0.0%	**0.0%**
INT. PEAK HR (HV ONLY)	29					0					0					0				
06:00 PM to 07:00 PM	0	0	0	29		0	0	0	0		0	0	0	0		0	0	0	0	
Heavy Vehicle % (PHV):	0.0%	0.0%	0.0%	5.1%	**4.3%**	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%	0.0%	0.0%	**0.0%**

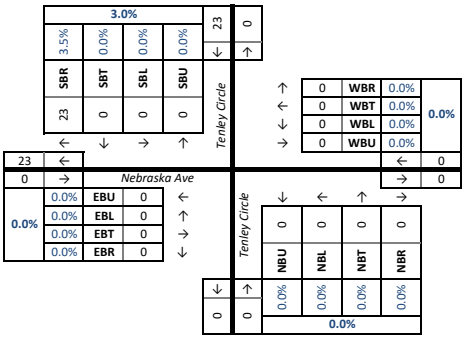
BICYCLES

Direction:	Southbound				Westbound				Northbound				Eastbound			
Roadway:	Tenley Circle								Tenley Circle				Nebraska Ave			
Movement:	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right
04:00 PM to 04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM to 04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM to 04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM to 05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM to 05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM to 05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM to 05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM to 06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00 PM to 06:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15 PM to 06:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30 PM to 06:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45 PM to 07:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00 PM to 07:15 PM																
07:15 PM to 07:30 PM																
07:30 PM to 07:45 PM																
07:45 PM to 08:00 PM																
08:00 PM to 08:15 PM																
08:15 PM to 08:30 PM																
08:30 PM to 08:45 PM																
08:45 PM to 09:00 PM																
INT. PEAK HR (ALL VEH)	0				0				0				0			
05:00 PM to 06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INT. PEAK HR (BIKES)	0				0				0				0			
04:00 PM to 05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

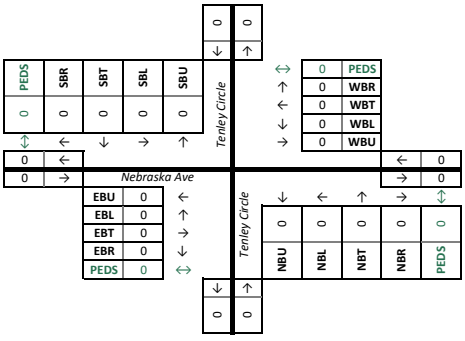
VEHICLE PEAK HOUR VOLS AND PHF: Intersection Peak (vehicle)



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



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



DATA COLLECTION NOTES :

Intersection #13

Multimodal Turning Movement Count Report

Project Name : American University Data Collection
Project # : 3
Location Washington DC
Data Source: Excel Consultants LLC

Analysis Period: STUDY_PERIOD 06:30 AM to 09:30 AM
Date of Counts: Thursday, February 27, 2020
Weather: Partly Cloudy

Volumes Displayed as: 1. Intersection 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. Warren Street & Nebraska Ave

ALL VEHICLES

Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	Warren Street					Nebraska Ave					Warren Street					Nebraska Ave				
Movement:	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds
06:30 AM to 06:45 AM	0	0	0	0	1	0	0	110	0	0	0	0	1	0	3	0	0	63	3	0
06:45 AM to 07:00 AM	0	0	0	0	2	0	2	131	0	0	0	1	1	0	6	0	3	85	0	0
07:00 AM to 07:15 AM	0	0	0	1	2	0	2	139	0	1	0	2	0	0	0	1	1	139	3	0
07:15 AM to 07:30 AM	0	0	2	1	2	1	0	174	1	2	0	2	0	0	1	0	4	107	2	0
07:30 AM to 07:45 AM	0	0	4	0	3	0	3	217	6	2	0	3	1	0	2	0	6	137	0	1
07:45 AM to 08:00 AM	0	0	6	2	3	0	0	195	0	1	0	1	0	1	3	0	4	132	1	0
08:00 AM to 08:15 AM	0	1	9	4	9	0	0	232	1	1	0	4	1	2	3	0	2	146	2	2
08:15 AM to 08:30 AM	0	0	4	1	3	0	4	187	3	0	0	2	3	0	6	0	4	178	3	1
08:30 AM to 08:45 AM	0	2	9	2	2	0	6	172	1	0	0	3	0	1	5	0	2	173	7	0
08:45 AM to 09:00 AM	0	0	9	3	5	0	7	153	3	1	0	4	0	2	3	0	7	160	2	0
09:00 AM to 09:15 AM	0	1	2	1	3	0	4	218	3	0	0	7	0	1	1	0	0	139	6	2
09:15 AM to 09:30 AM	0	1	4	1	5	0	2	172	10	1	0	5	1	1	3	0	6	110	5	0
09:30 AM to 09:45 AM																				
09:45 AM to 10:00 AM																				
10:00 AM to 10:15 AM																				
10:15 AM to 10:30 AM																				
10:30 AM to 10:45 AM																				
10:45 AM to 11:00 AM																				
11:00 AM to 11:15 AM																				
11:15 AM to 11:30 AM																				
INT. PEAK HR (ALL VEH)	44				19	769				2	22				17	686				3
08:00 AM to 09:00 AM	0	3	31	10		0	17	744	8		0	13	4	5		0	15	657	14	
Peak Hour Factor (PHF) Overall 0.94	U	Left	Thru	Right	SB 0.79	U	Left	Thru	Right	WB 0.83	U	Left	Thru	Right	NB 0.79	U	Left	Thru	Right	EB 0.93
	n/a	0.38	0.86	0.63		n/a	0.61	0.80	0.67		n/a	0.81	0.33	0.63		n/a	0.54	0.92	0.50	

HEAVY VEHICLES (FHWA 4+)

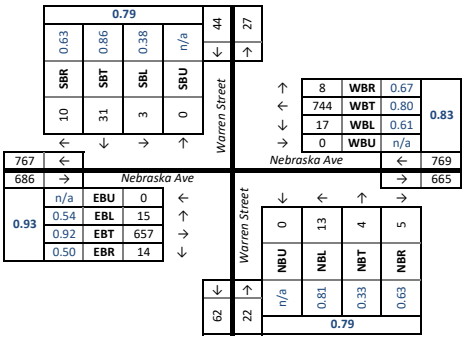
Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	Warren Street					Nebraska Ave					Warren Street					Nebraska Ave				
Movement:	U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right	
06:30 AM to 06:45 AM	0	0	0	0		0	0	5	0		0	0	1	0		0	0	3	0	
06:45 AM to 07:00 AM	0	0	0	0		0	0	5	0		0	0	0	0		0	0	5	0	
07:00 AM to 07:15 AM	0	0	0	0		0	0	8	0		0	0	0	0		0	1	6	1	
07:15 AM to 07:30 AM	0	0	0	0		0	0	8	0		0	0	0	0		0	1	7	0	
07:30 AM to 07:45 AM	0	0	1	0		0	0	10	0		0	0	0	0		0	2	10	0	
07:45 AM to 08:00 AM	0	0	0	0		0	0	7	0		0	0	0	0		0	1	11	0	
08:00 AM to 08:15 AM	0	0	0	0		0	0	11	0		0	0	0	0		0	0	10	0	
08:15 AM to 08:30 AM	0	0	0	0		0	0	11	0		0	0	0	0		0	0	9	0	
08:30 AM to 08:45 AM	0	0	0	0		0	0	11	0		0	1	0	0		0	1	12	1	
08:45 AM to 09:00 AM	0	0	0	0		0	0	5	0		0	0	0	0		0	0	7	0	
09:00 AM to 09:15 AM	0	0	0	0		0	1	13	0		0	0	0	0		0	0	8	0	
09:15 AM to 09:30 AM	0	0	0	0		0	1	10	0		0	0	0	0		0	0	13	0	
09:30 AM to 09:45 AM																				
09:45 AM to 10:00 AM																				
10:00 AM to 10:15 AM																				
10:15 AM to 10:30 AM																				
10:30 AM to 10:45 AM																				
10:45 AM to 11:00 AM																				
11:00 AM to 11:15 AM																				
11:15 AM to 11:30 AM																				
INT. PEAK HR (ALL VEH)	0					38					1					40				
08:00 AM to 09:00 AM	0	0	0	0		0	0	38	0		0	1	0	0		0	1	38	1	
Heavy Vehicle % (PHV):	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.1%	0.0%	4.9%	0.0%	7.7%	0.0%	0.0%	4.5%	0.0%	6.7%	5.8%	7.1%	5.8%
INT. PEAK HR (HV ONLY)	0					40					1					45				
07:45 AM to 08:45 AM	0	0	0	0		0	0	40	0		0	1	0	0		0	2	42	1	
Heavy Vehicle % (PHV):	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.1%	0.0%	5.0%	0.0%	10.0%	0.0%	0.0%	5.6%	0.0%	16.7%	6.7%	7.7%	6.9%

BICYCLES

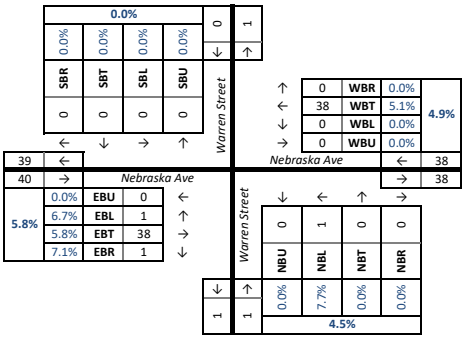
Direction:	Southbound				Westbound				Northbound				Eastbound			
Roadway:	Warren Street				Nebraska Ave				Warren Street				Nebraska Ave			
Movement:	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right
06:30 AM to 06:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45 AM to 07:00 AM	0	0	0	0	0	0	1	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	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	1	0
07:45 AM to 08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM to 08:15 AM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
08:15 AM to 08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM to 08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM to 09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
09:00 AM to 09:15 AM	0	0	0	0	0	1	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	0	0	0	0	0	0
09:30 AM to 09:45 AM																
09:45 AM to 10:00 AM																
10:00 AM to 10:15 AM																
10:15 AM to 10:30 AM																
10:30 AM to 10:45 AM																
10:45 AM to 11:00 AM																
11:00 AM to 11:15 AM																
11:15 AM to 11:30 AM																
INT. PEAK HR (ALL VEH)	0				0				2				1			
08:00 AM to 09:00 AM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0
INT. PEAK HR (BIKES)	0				2				0				1			
06:45 AM to 07:45 AM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0

DATA COLLECTION NOTES :

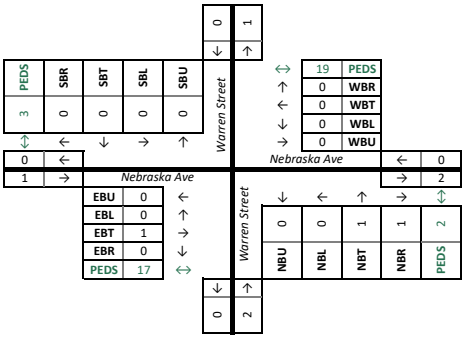
VEHICLE PEAK HOUR VOLS AND PHF: Intersection Peak (vehicle)



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



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

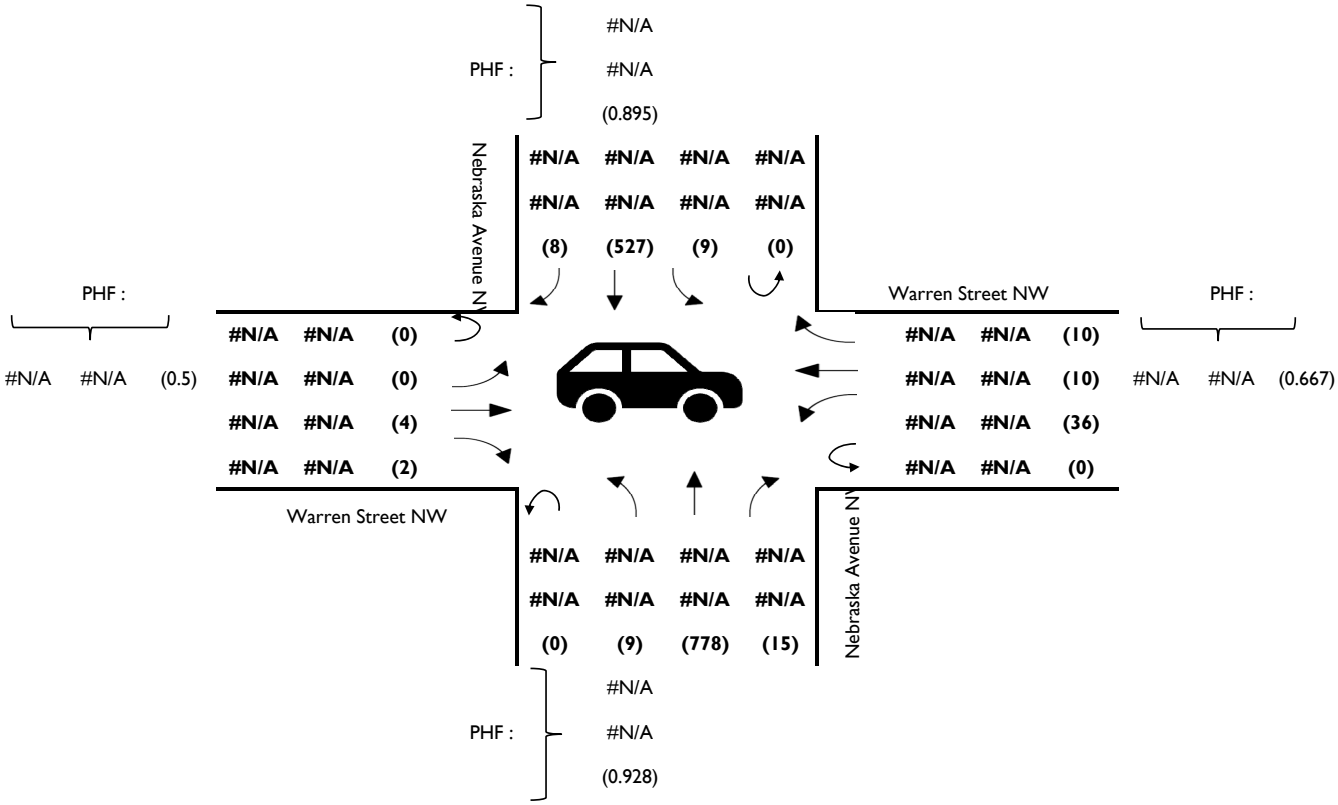


Intersection #13

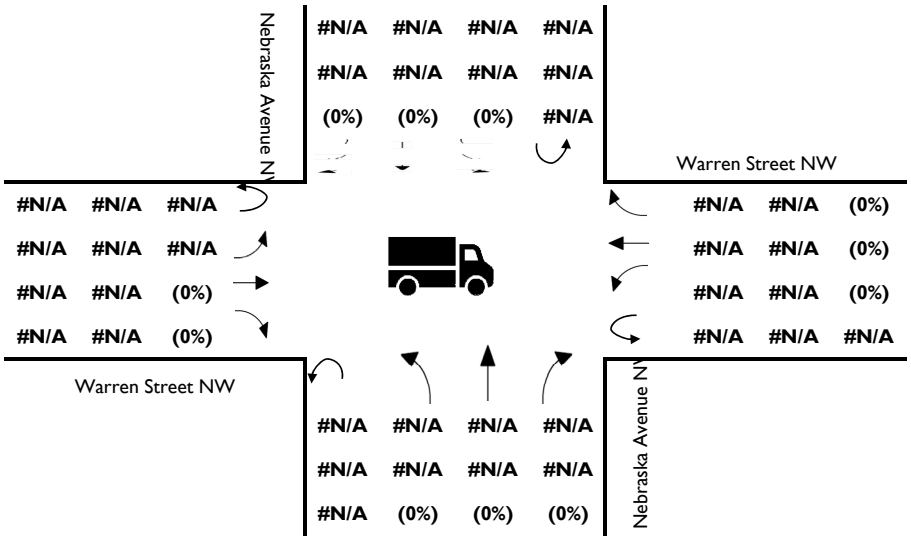
PEAK HOUR TRAFFIC COUNT SUMMARY

Location:	Nebraska Ave. & Warren St.	AM Peak Hour:	None
	Washington,DC	Midday Peak Hour:	None
Date of Count:	5/19/2021	PM Peak Hour:	3:00 PM - 4:00 PM

Peak Hour - Vehicle Counts

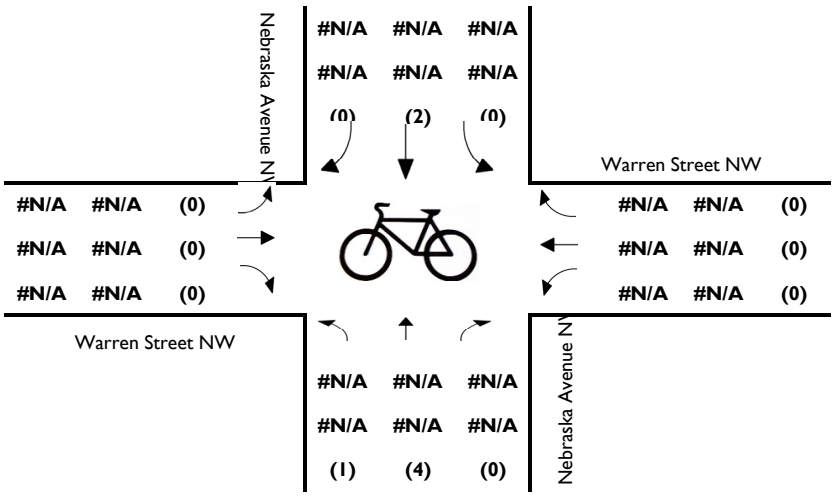


Peak Hour - Heavy Vehicle %

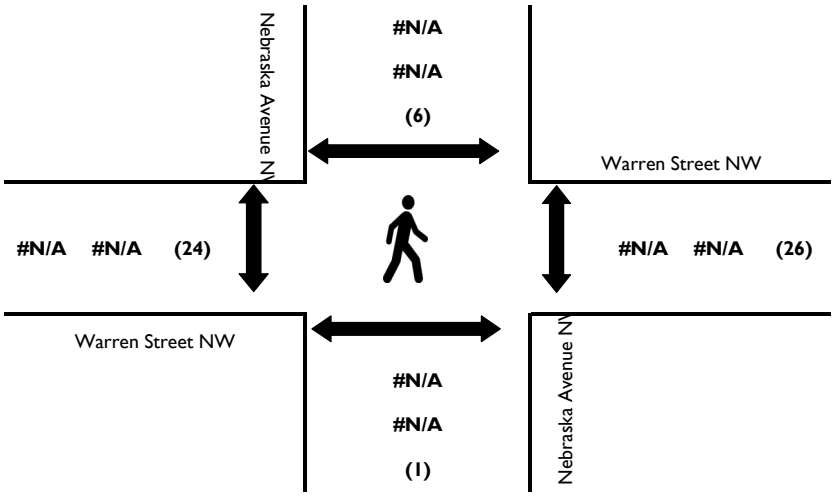


Intersection #13

Peak Hour - Bicycles



Peak Hour - Pedestrians



Intersection #13

Wells + Associates,Inc

Tysons, Virginia

Turning Movement Count - Total Vehicles

PROJECT: The River School
W+A JOB NO: 8182
INTERSECTION: Nebraska Ave. & Warren St.
LOCATION: Washington,DC

DATE: 5/19/2021
DAY: Wednesday
WEATHER: clear
COUNTED BY: Michael & Amar
INPUTED BY: Agan

SOUTHBOUND ROAD: Nebraska Avenue NW
NORTHBOUND ROAD: Nebraska Avenue NW
WESTBOUND ROAD: Warren Street NW
EASTBOUND ROAD: Warren Street NW

Time	Southbound Nebraska Avenue NW						Westbound Warren Street NW						Northbound Nebraska Avenue NW						Eastbound Warren Street NW						North & South	East & West	Total
Period	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF			
15 Minute Volumes																											
7:30 AM - 7:45 AM	0	155	3	0	158		1	1	3	0	5		3	107	3	0	113		0	1	0	0	1		271	6	277
7:45 AM - 8:00 AM	2	181	3	0	186		1	1	4	0	6		4	105	6	0	115		3	1	0	0	4		301	10	311
8:00 AM - 8:15 AM	0	166	0	0	166		1	2	2	0	5		6	116	2	0	124		0	1	0	0	1		290	6	296
8:15 AM - 8:30 AM	1	186	1	0	188		2	0	6	0	8		7	152	2	0	161		1	0	0	0	1		349	9	358
8:30 AM - 8:45 AM	0	178	2	0	180		1	2	2	0	5		3	146	2	0	151		2	1	0	0	3		331	8	339
8:45 AM - 9:00 AM	1	148	1	0	150		0	1	5	0	6		7	143	3	0	153		1	1	0	0	2		303	8	311
9:00 AM - 9:15 AM	0	133	1	0	134		2	2	4	0	8		6	111	2	0	119		0	0	0	0	0		253	8	261
9:15 AM - 9:30 AM	0	110	1	0	111		2	0	4	0	6		4	100	1	0	105		0	0	2	0	2		216	8	224
2:00 PM - 2:15 PM	1	82	1	0	84		1	2	5	0	8		3	114	3	0	120		1	1	1	0	3		204	11	215
2:15 PM - 2:30 PM	2	138	0	0	140		2	1	10	0	13		3	120	1	0	124		0	0	2	0	2		264	15	279
2:30 PM - 2:45 PM	2	125	0	0	127		1	2	4	0	7		4	110	0	0	114		0	2	3	0	5		241	12	253
2:45 PM - 3:00 PM	4	144	1	0	149		1	1	2	0	4		5	146	1	0	152		0	0	0	0	0		301	4	305
3:00 PM - 3:15 PM	4	116	0	0	120		3	2	9	0	14		4	181	1	0	186		0	2	0	0	2		306	16	322
3:15 PM - 3:30 PM	4	145	3	0	152		1	3	8	0	12		7	199	3	0	209		0	0	0	0	0		361	12	373
3:30 PM - 3:45 PM	0	127	3	0	130		4	3	14	0	21		1	212	3	0	216		1	0	0	0	1		346	22	368
3:45 PM - 4:00 PM	0	139	3	0	142		2	2	5	0	9		3	186	2	0	191		1	2	0	0	3		333	12	345
Total	21	2273	23	0	2317		25	25	87	0	137		70	2248	35	0	2353		10	12	8	0	30		4670	167	4837
One Hour Volumes																											
7:30 AM - 8:30 AM	3	688	7	0	698	0.928	5	4	15	0	24	0.75	20	480	13	0	513	0.797	4	3	0	0	7	0.438	1211	31	1242
7:45 AM - 8:45 AM	3	711	6	0	720	0.957	5	5	14	0	24	0.75	20	519	12	0	551	0.856	6	3	0	0	9	0.563	1271	33	1304
8:00 AM - 9:00 AM	2	678	4	0	684	0.91	4	5	15	0	24	0.75	23	557	9	0	589	0.915	4	3	0	0	7	0.583	1273	31	1304
8:15 AM - 9:15 AM	2	645	5	0	652	0.867	5	5	17	0	27	0.844	23	552	9	0	584	0.907	4	2	0	0	6	0.5	1236	33	1269
8:30 AM - 9:30 AM	1	569	5	0	575	0.799	5	5	15	0	25	0.781	20	500	8	0	528	0.863	3	2	2	0	7	0.583	1103	32	1135
2:00 PM - 3:00 PM	9	489	2	0	500	0.839	5	6	21	0	32	0.615	15	490	5	0	510	0.839	1	3	6	0	10	0.5	1010	42	1052
2:15 PM - 3:15 PM	12	523	1	0	536	0.899	7	6	25	0	38	0.679	16	557	3	0	576	0.774	0	4	5	0	9	0.45	1112	47	1159
2:30 PM - 3:30 PM	14	530	4	0	548	0.901	6	8	23	0	37	0.661	20	636	5	0	661	0.791	0	4	3	0	7	0.35	1209	44	1253
2:45 PM - 3:45 PM	12	532	7	0	551	0.906	9	9	33	0	51	0.607	17	738	8	0	763	0.883	1	2	0	0	3	0.375	1314	54	1368
3:00 PM - 4:00 PM	8	527	9	0	544	0.895	10	10	36	0	56	0.667	15	778	9	0	802	0.928	2	4	0	0	6	0.5	1346	62	1408

Intersection #13

Wells + Associates, Inc.

Tysons, Virginia

Turning Movement Count - Bicycles

PROJECT:	The River School	**DATE:**	5/19/2021	**SOUTHBOUND ROAD:**	Nebraska Avenue NW
W+A JOB NO:	8182	**DAY:**	Wednesday	**NORTHBOUND ROAD:**	Nebraska Avenue NW
INTERSECTION:	Nebraska Ave. & Warren St.	**WEATHER:**	clear	**WESTBOUND ROAD:**	Warren Street NW
LOCATION:	Washington,DC	**COUNTED BY:**	Michael	**EASTBOUND ROAD:**	Warren Street NW
		INPUTED BY:	Agan		

Time	Southbound				Westbound				Northbound				Eastbound				North	East	Total
	Nebraska Avenue NW				Warren Street NW				Nebraska Avenue NW				Warren Street NW				&	&	
Period	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	South	West	
15 Minute Volumes																			
7:30 AM - 7:45 AM		1		1				0		1		1				0	2	0	2
7:45 AM - 8:00 AM		2		2				0				0				0	2	0	2
8:00 AM - 8:15 AM		2		2				0		1		1				0	3	0	3
8:15 AM - 8:30 AM				0				0				0				0	0	0	0
8:30 AM - 8:45 AM				0				0				0				0	0	0	0
8:45 AM - 9:00 AM				0				0		2		2				0	2	0	2
9:00 AM - 9:15 AM		1		1				0				0				0	1	0	1
9:15 AM - 9:30 AM				0				0				0				0	0	0	0
2:00 PM - 2:15 PM				0				0		1		1				0	1	0	1
2:15 PM - 2:30 PM				0				0		1		1				0	1	0	1
2:30 PM - 2:45 PM				0				0		1		1				0	1	0	1
2:45 PM - 3:00 PM		1		1				0				0				0	1	0	1
3:00 PM - 3:15 PM				0				0		2		2				0	2	0	2
3:15 PM - 3:30 PM		1		1				0				0				0	1	0	1
3:30 PM - 3:45 PM		1		1				0				0				0	1	0	1
3:45 PM - 4:00 PM				0				0		2	1	3				0	3	0	3
Total	0	9	0	9	0	0	0	0	0	11	1	12	0	0	0	0	21	0	21
One Hour Volumes																			
7:30 AM - 8:30 AM	0	5	0	5	0	0	0	0	0	2	0	2	0	0	0	0	7	0	7
7:45 AM - 8:45 AM	0	4	0	4	0	0	0	0	0	1	0	1	0	0	0	0	5	0	5
8:00 AM - 9:00 AM	0	2	0	2	0	0	0	0	0	3	0	3	0	0	0	0	5	0	5
8:15 AM - 9:15 AM	0	1	0	1	0	0	0	0	0	2	0	2	0	0	0	0	3	0	3
8:30 AM - 9:30 AM	0	1	0	1	0	0	0	0	0	2	0	2	0	0	0	0	3	0	3
2:00 PM - 3:00 PM	0	1	0	1	0	0	0	0	0	3	0	3	0	0	0	0	4	0	4
2:15 PM - 3:15 PM	0	1	0	1	0	0	0	0	0	4	0	4	0	0	0	0	5	0	5
2:30 PM - 3:30 PM	0	2	0	2	0	0	0	0	0	3	0	3	0	0	0	0	5	0	5
2:45 PM - 3:45 PM	0	3	0	3	0	0	0	0	0	2	0	2	0	0	0	0	5	0	5
3:00 PM - 4:00 PM	0	2	0	2	0	0	0	0	0	4	1	5	0	0	0	0	7	0	7

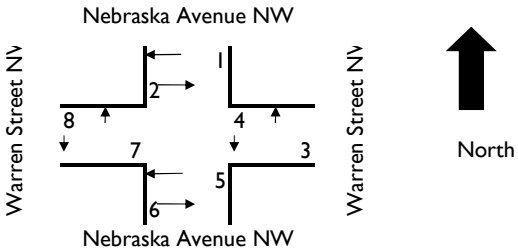
Intersection #13

Wells + Associates, Inc.

Tysons, Virginia

Pedestrian Volume Survey

PROJECT: The River School
W + A JOB NO: 8182
INTERSECTION: Nebraska Ave. & Warren St.
LOCATION: Washington,DC
DATE: 5/19/2021
DAY: Wednesday
WEATHER: clear
COUNTED BY: Michael
INPUTED BY: Agan



Time Period	Movement 1	2	3	4	5	6	7	8	1 + 2	3 + 4	5 + 6	7+ 8	Total
15 Minute Volumes													
7:30 AM - 7:45 AM			2	1	2		5		0	3	2	5	10
7:45 AM - 8:00 AM		1	3	1	1	1	3	6	1	4	2	9	16
8:00 AM - 8:15 AM	4		4			1	4	6	4	4	1	10	19
8:15 AM - 8:30 AM			2	1	3		2	2	0	3	3	4	10
8:30 AM - 8:45 AM	1	1	4	2	1	2	2	4	2	6	3	6	17
8:45 AM - 9:00 AM		1	2	3	2		5	6	1	5	2	11	19
9:00 AM - 9:15 AM	1		3				4	5	1	3	0	9	13
9:15 AM - 9:30 AM			2	1			6	1	0	3	0	7	10
2:00 PM - 2:15 PM			1	2			3	4	0	3	0	7	10
2:15 PM - 2:30 PM			1				2	1	0	1	0	3	4
2:30 PM - 2:45 PM			1	1			3	9	0	2	0	12	14
2:45 PM - 3:00 PM		1	5	1			6	5	1	6	0	11	18
3:00 PM - 3:15 PM	1			4	1		7		1	4	1	7	13
3:15 PM - 3:30 PM	1	3	1	5			1	5	4	6	0	6	16
3:30 PM - 3:45 PM	1		3	7			4		1	10	0	4	15
3:45 PM - 4:00 PM			4	2			5	2	0	6	0	7	13
Total	9	7	38	31	10	4	62	56	16	69	14	118	217
One Hour Volumes													
7:30 AM - 8:30 AM	4	1	11	3	6	2	14	14	5	14	8	28	55
7:45 AM - 8:45 AM	5	2	13	4	5	4	11	18	7	17	9	29	62
8:00 AM - 9:00 AM	5	2	12	6	6	3	13	18	7	18	9	31	65
8:15 AM - 9:15 AM	2	2	11	6	6	2	13	17	4	17	8	30	59
8:30 AM - 9:30 AM	2	2	11	6	3	2	17	16	4	17	5	33	59
2:00 PM - 3:00 PM	0	1	8	4	0	0	14	19	1	12	0	33	46
2:15 PM - 3:15 PM	1	1	7	6	1	0	18	15	2	13	1	33	49
2:30 PM - 3:30 PM	2	4	7	11	1	0	17	19	6	18	1	36	61
2:45 PM - 3:45 PM	3	4	9	17	1	0	18	10	7	26	1	28	62
3:00 PM - 4:00 PM	3	3	8	18	1	0	17	7	6	26	1	24	57

Intersection #13

Multimodal Turning Movement Count Report

Project Name : American University Data Collection
Project # : 3
Location Washington DC
Data Source: Excel Consultants LLC

Analysis Period: STUDY_PERIOD 04:00 PM to 07:00 PM
Date of Counts: Thursday, February 27, 2020
Weather: Partly Cloudy

Volumes Displayed as: 1. Intersection Peak (vehicle)
Intersection Peak Hour (all vehicles): 04:45 PM to 05:45 PM
System Peak Hour (all vehicles): 05:00 PM to 06:00 PM
User-Defined Peak Hour: 05:00 PM to 06:00 PM

Intersection: 1. Warren Street & Nebraska Ave

ALL VEHICLES

Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	Warren Street					Nebraska Ave					Warren Street					Nebraska Ave				
Movement:	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds	U	Left	Thru	Right	Peds
04:00 PM to 04:15 PM	0	0	0	1	8	0	4	171	4	2	0	8	2	1	6	0	3	226	6	0
04:15 PM to 04:30 PM	0	1	0	0	10	1	6	127	2	1	0	4	1	3	6	0	5	192	5	1
04:30 PM to 04:45 PM	0	0	0	0	11	0	4	138	2	5	0	2	1	1	11	0	3	189	5	1
04:45 PM to 05:00 PM	0	0	0	0	11	0	1	166	5	1	0	3	2	0	2	0	3	180	7	0
05:00 PM to 05:15 PM	0	0	1	0	16	0	9	172	6	5	0	4	1	0	6	0	3	195	4	1
05:15 PM to 05:30 PM	0	0	0	1	22	1	10	193	9	2	0	7	0	5	1	0	5	223	7	1
05:30 PM to 05:45 PM	0	0	0	2	12	0	8	118	7	2	0	4	4	5	2	0	7	188	5	0
05:45 PM to 06:00 PM	0	0	0	0	11	0	4	145	8	4	0	8	2	4	6	1	4	175	3	1
06:00 PM to 06:15 PM	0	1	1	0	18	0	7	147	13	3	0	3	2	2	5	0	3	195	6	2
06:15 PM to 06:30 PM	0	1	0	1	5	0	1	135	2	1	0	5	2	1	3	0	1	183	4	0
06:30 PM to 06:45 PM	0	0	1	2	9	1	3	149	4	0	0	5	2	1	4	0	1	171	1	2
06:45 PM to 07:00 PM	0	0	2	0	8	0	3	130	1	2	0	4	2	1	6	0	3	175	9	2
07:00 PM to 07:15 PM																				
07:15 PM to 07:30 PM																				
07:30 PM to 07:45 PM																				
07:45 PM to 08:00 PM																				
08:00 PM to 08:15 PM																				
08:15 PM to 08:30 PM																				
08:30 PM to 08:45 PM																				
08:45 PM to 09:00 PM																				
INT. PEAK HR (ALL VEH)	4				61	705				10	35				11	827				2
04:45 PM to 05:45 PM	0	0	1	3		1	28	649	27		0	18	7	10		0	18	786	23	
Peak Hour Factor (PHF) Overall 0.85	U	Left	Thru	Right	SB	U	Left	Thru	Right	WB	U	Left	Thru	Right	NB	U	Left	Thru	Right	EB
	n/a	n/a	0.25	0.38	0.50	0.25	0.70	0.84	0.75	0.83	n/a	0.64	0.44	0.50	0.67	n/a	0.64	0.88	0.82	0.88

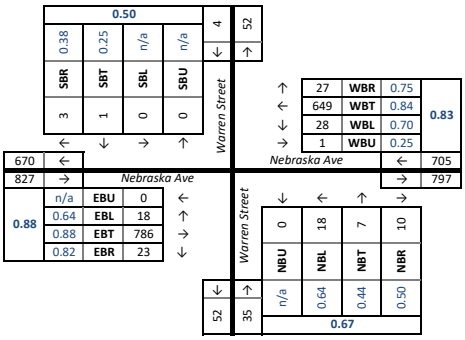
HEAVY VEHICLES (FHWA 4+)

Direction:	Southbound					Westbound					Northbound					Eastbound				
Roadway:	Warren Street					Nebraska Ave					Warren Street					Nebraska Ave				
Movement:	U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right		U	Left	Thru	Right	
04:00 PM to 04:15 PM	0	0	0	0		0	0	7	0		0	0	0	0		0	0	9	0	
04:15 PM to 04:30 PM	0	0	0	0		0	0	4	0		0	0	0	0		0	0	9	0	
04:30 PM to 04:45 PM	0	0	0	0		0	0	6	0		0	0	0	0		0	0	8	0	
04:45 PM to 05:00 PM	0	0	0	0		0	0	9	0		0	0	0	0		0	0	7	0	
05:00 PM to 05:15 PM	0	0	0	0		0	0	4	0		0	0	0	0		0	0	5	0	
05:15 PM to 05:30 PM	0	0	0	0		0	0	9	0		0	1	0	0		0	0	11	0	
05:30 PM to 05:45 PM	0	0	0	0		0	0	4	0		0	0	0	0		0	0	8	0	
05:45 PM to 06:00 PM	0	0	0	0		0	0	7	0		0	0	0	0		0	0	7	0	
06:00 PM to 06:15 PM	0	0	0	0		0	1	6	0		0	0	0	0		0	0	10	1	
06:15 PM to 06:30 PM	0	0	0	0		0	0	6	0		0	0	0	0		0	0	8	0	
06:30 PM to 06:45 PM	0	0	0	0		0	0	5	0		0	0	0	0		0	0	7	0	
06:45 PM to 07:00 PM	0	0	0	0		0	0	6	0		0	0	0	0		0	0	3	0	
07:00 PM to 07:15 PM																				
07:15 PM to 07:30 PM																				
07:30 PM to 07:45 PM																				
07:45 PM to 08:00 PM																				
08:00 PM to 08:15 PM																				
08:15 PM to 08:30 PM																				
08:30 PM to 08:45 PM																				
08:45 PM to 09:00 PM																				
INT. PEAK HR (ALL VEH)	0					26					1					31				
04:45 PM to 05:45 PM	0	0	0	0		0	0	26	0		0	1	0	0		0	0	31	0	
Heavy Vehicle % (PHV):	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.0%	0.0%	3.7%	0.0%	5.6%	0.0%	0.0%	2.9%	0.0%	0.0%	3.9%	0.0%	3.7%
INT. PEAK HR (HV ONLY)	0					27					1					37				
05:15 PM to 06:15 PM	0	0	0	0		0	1	26	0		0	1	0	0		0	0	36	1	
Heavy Vehicle % (PHV):	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.4%	4.3%	0.0%	4.0%	0.0%	4.5%	0.0%	0.0%	2.2%	0.0%	0.0%	4.6%	4.8%	4.5%

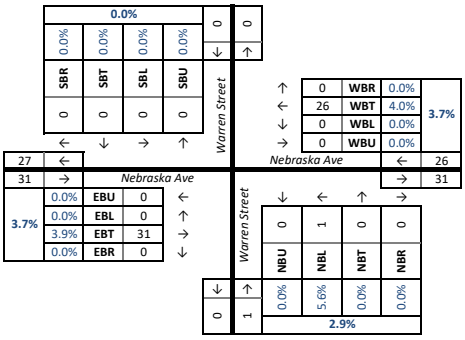
BICYCLES

Direction:	Southbound				Westbound				Northbound				Eastbound			
Roadway:	Warren Street				Nebraska Ave				Warren Street				Nebraska Ave			
Movement:	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right
04:00 PM to 04:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0
04:15 PM to 04:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
04:30 PM to 04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM to 05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM to 05:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0
05:15 PM to 05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM to 05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
05:45 PM to 06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00 PM to 06:15 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0
06:15 PM to 06:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
06:30 PM to 06:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45 PM to 07:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00 PM to 07:15 PM																
07:15 PM to 07:30 PM																
07:30 PM to 07:45 PM																
07:45 PM to 08:00 PM																
08:00 PM to 08:15 PM																
08:15 PM to 08:30 PM																
08:30 PM to 08:45 PM																
08:45 PM to 09:00 PM																
INT. PEAK HR (ALL VEH)	0				0				1				2			
04:45 PM to 05:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2	0
INT. PEAK HR (BIKES)	0				2				0				3			
05:30 PM to 06:30 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	3	0

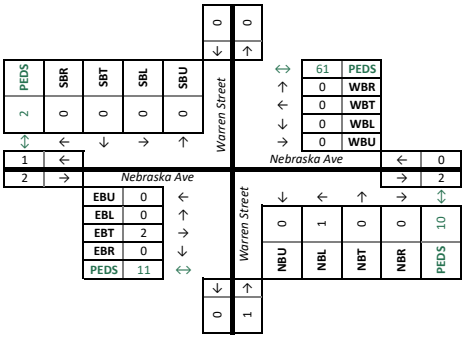
VEHICLE PEAK HOUR VOLS AND PHF: Intersection Peak (vehicle)



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



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



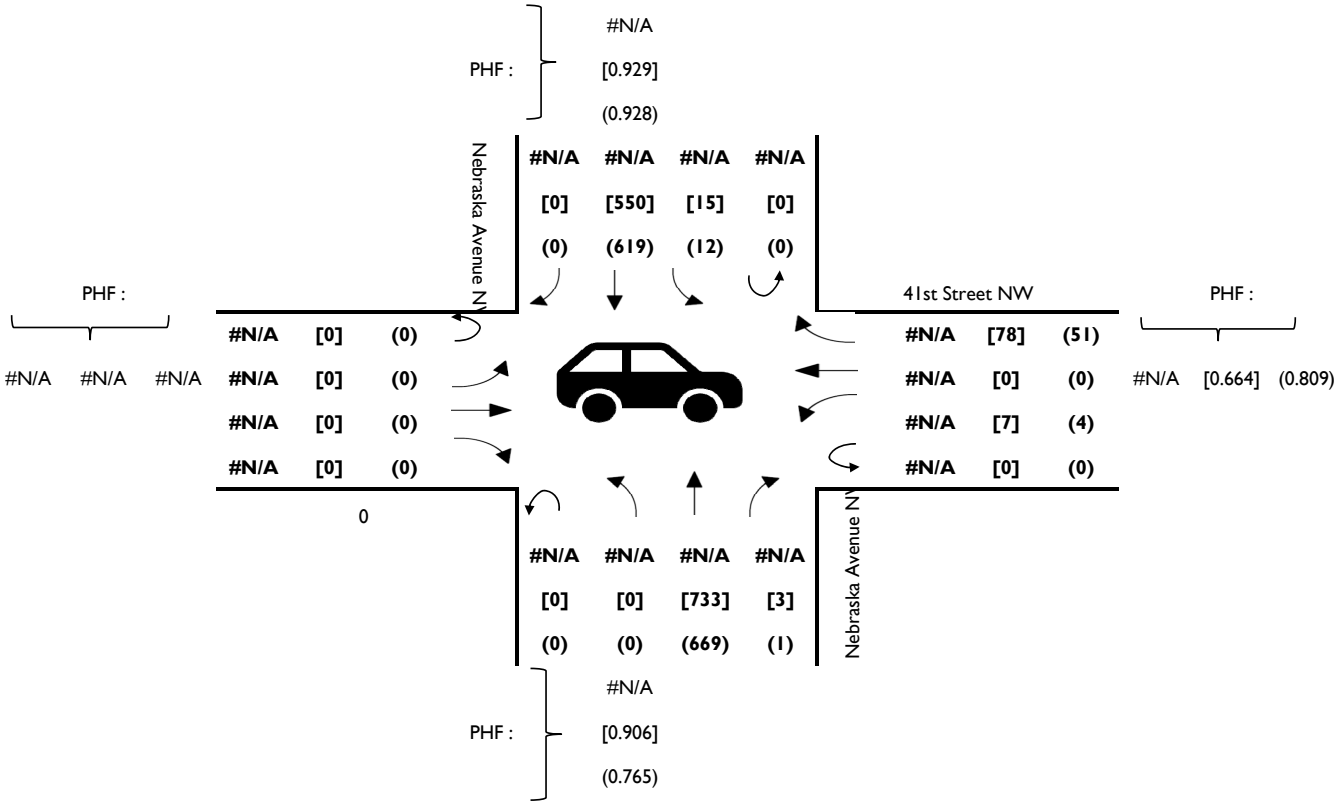
DATA COLLECTION NOTES :

Intersection #14

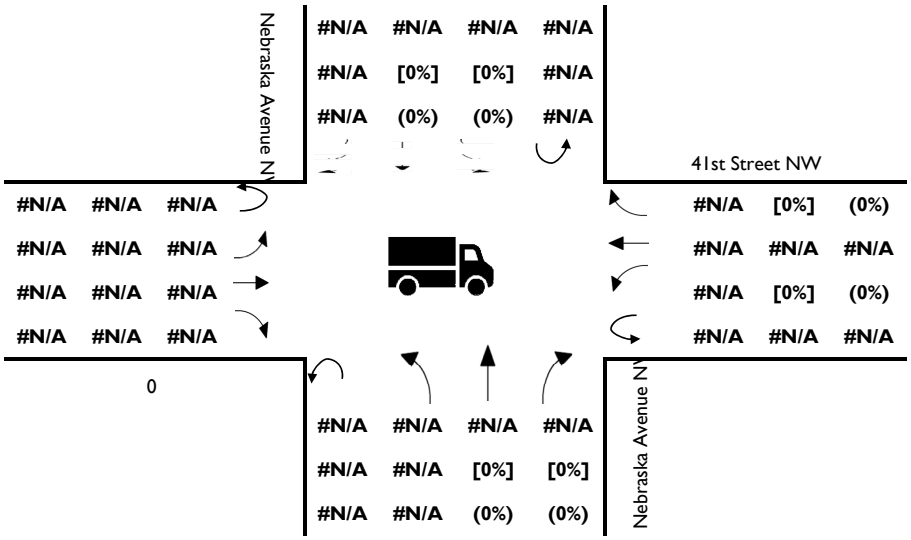
PEAK HOUR TRAFFIC COUNT SUMMARY

Location:	Nebraska Ave. & 41st Street NW	AM Peak Hour:	None
	Washington,DC	Midday Peak Hour:	3:00 PM - 4:00 PM
Date of Count:	5/18/2021	PM Peak Hour:	4:00 PM - 5:00 PM

Peak Hour - Vehicle Counts

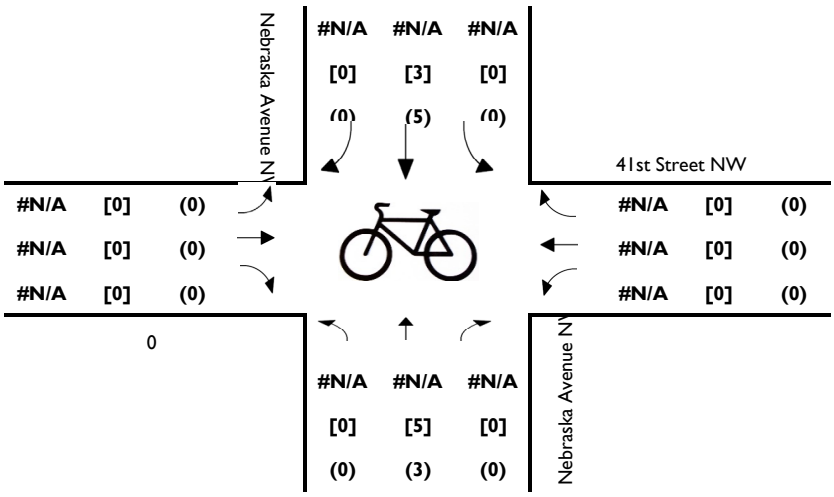


Peak Hour - Heavy Vehicle %

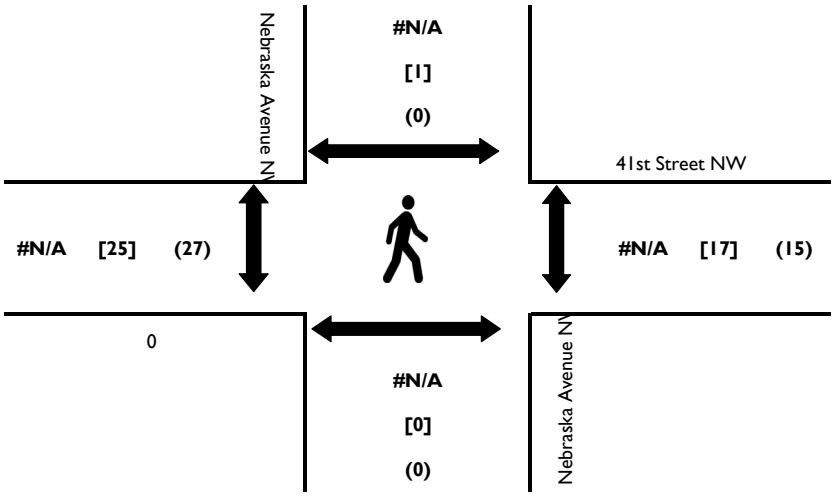


Intersection #14

Peak Hour - Bicycles



Peak Hour - Pedestrians



Intersection #14

Wells + Associates,Inc

Tysons, Virginia

Turning Movement Count - Total Vehicles

PROJECT: The River School
W+A JOB NO: 8182
INTERSECTION: Nebraska Ave. & 41st Street NW
LOCATION: Washington,DC

DATE: 5/18/2021
DAY: Tuesday
WEATHER: clear
COUNTED BY: Agan
INPUTED BY: Agan

SOUTHBOUND ROAD: Nebraska Avenue NW
NORTHBOUND ROAD: Nebraska Avenue NW
WESTBOUND ROAD: 41st Street NW
EASTBOUND ROAD: 0

Time	Southbound Nebraska Avenue NW						Westbound 41st Street NW						Northbound Nebraska Avenue NW						Eastbound 0						North & South	East & West	Total
Period	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF	Right	Thru	Left	U-Turn	Total	PHF			
15 Minute Volumes																											
2:00 PM - 2:15 PM	0	98	1	0	99		5	0	1	0	6		0	106	0	0	106		0	0	0	0	0		205	6	211
2:15 PM - 2:30 PM	0	142	0	0	142		4	0	1	0	5		1	116	0	0	117		0	0	0	0	0		259	5	264
2:30 PM - 2:45 PM	0	131	2	0	133		2	0	2	0	4		0	123	0	0	123		0	0	0	0	0		256	4	260
2:45 PM - 3:00 PM	0	125	17	0	142		6	0	1	0	7		1	155	0	0	156		0	0	0	0	0		298	7	305
3:00 PM - 3:15 PM	0	127	5	0	132		7	0	2	0	9		0	186	0	0	186		0	0	0	0	0		318	9	327
3:15 PM - 3:30 PM	0	135	5	0	140		30	0	2	0	32		1	174	0	0	175		0	0	0	0	0		315	32	347
3:30 PM - 3:45 PM	0	149	3	0	152		22	0	3	0	25		1	202	0	0	203		0	0	0	0	0		355	25	380
3:45 PM - 4:00 PM	0	139	2	0	141		19	0	0	0	19		1	171	0	0	172		0	0	0	0	0		313	19	332
4:00 PM - 4:15 PM	0	169	1	0	170		7	0	2	0	9		0	219	0	0	219		0	0	0	0	0		389	9	398
4:15 PM - 4:30 PM	0	130	2	0	132		12	0	1	0	13		0	171	0	0	171		0	0	0	0	0		303	13	316
4:30 PM - 4:45 PM	0	162	2	0	164		17	0	0	0	17		1	147	0	0	148		0	0	0	0	0		312	17	329
4:45 PM - 5:00 PM	0	158	7	0	165		15	0	1	0	16		0	132	0	0	132		0	0	0	0	0		297	16	313
5:00 PM - 5:15 PM	0	165	1	0	166		13	0	0	0	13		0	182	0	0	182		0	0	0	0	0		348	13	361
5:15 PM - 5:30 PM	0	150	2	0	152		12	0	1	0	13		1	170	0	0	171		0	0	0	0	0		323	13	336
5:30 PM - 5:45 PM	0	151	0	0	151		8	0	0	0	8		0	146	0	0	146		0	0	0	0	0		297	8	305
5:45 PM - 6:00 PM	0	126	2	0	128		7	0	0	0	7		0	127	0	0	127		0	0	0	0	0		255	7	262
6:00 PM - 6:15 PM	0	149	0	0	149		10	0	0	0	10		0	138	0	0	138		0	0	0	0	0		287	10	297
6:15 PM - 6:30 PM	0	122	2	0	124		3	0	0	0	3		0	138	0	0	138		0	0	0	0	0		262	3	265
6:30 PM - 6:45 PM	0	121	0	0	121		3	0	0	0	3		0	113	0	0	113		0	0	0	0	0		234	3	237
6:45 PM - 7:00 PM	0	88	0	0	88		4	0	0	0	4		0	107	0	0	107		0	0	0	0	0		195	4	199
Total	0	2737	54	0	2791		206	0	17	0	223		7	3023	0	0	3030		0	0	0	0	0		5821	223	6044
One Hour Volumes																											
2:00 PM - 3:00 PM	0	496	20	0	516	0.908	17	0	5	0	22	0.786	2	500	0	0	502	0.804	0	0	0	0	0		1018	22	1040
2:15 PM - 3:15 PM	0	525	24	0	549	0.967	19	0	6	0	25	0.694	2	580	0	0	582	0.782	0	0	0	0	0		1131	25	1156
2:30 PM - 3:30 PM	0	518	29	0	547	0.963	45	0	7	0	52	0.406	2	638	0	0	640	0.86	0	0	0	0	0		1187	52	1239
2:45 PM - 3:45 PM	0	536	30	0	566	0.931	65	0	8	0	73	0.57	3	717	0	0	720	0.887	0	0	0	0	0		1286	73	1359
3:00 PM - 4:00 PM	0	550	15	0	565	0.929	78	0	7	0	85	0.664	3	733	0	0	736	0.906	0	0	0	0	0		1301	85	1386
3:15 PM - 4:15 PM	0	592	11	0	603	0.887	78	0	7	0	85	0.664	3	766	0	0	769	0.878	0	0	0	0	0		1372	85	1457
3:30 PM - 4:30 PM	0	587	8	0	595	0.875	60	0	6	0	66	0.66	2	763	0	0	765	0.873	0	0	0	0	0		1360	66	1426
3:45 PM - 4:45 PM	0	600	7	0	607	0.893	55	0	3	0	58	0.763	2	708	0	0	710	0.811	0	0	0	0	0		1317	58	1375
4:00 PM - 5:00 PM	0	619	12	0	631	0.928	51	0	4	0	55	0.809	1	669	0	0	670	0.765	0	0	0	0	0		1301	55	1356
4:15 PM - 5:15 PM	0	615	12	0	627	0.944	57	0	2	0	59	0.868	1	632	0	0	633	0.87	0	0	0	0	0		1260	59	1319
4:30 PM - 5:30 PM	0	635	12	0	647	0.974	57	0	2	0	59	0.868	2	631	0	0	633	0.87	0	0	0	0	0		1280	59	1339
4:45 PM - 5:45 PM	0	624	10	0	634	0.955	48	0	2	0	50	0.781	1	630	0	0	631	0.867	0	0	0	0	0		1265	50	1315
5:00 PM - 6:00 PM	0	592	5	0	597	0.899	40	0	1	0	41	0.788	1	625	0	0	626	0.86	0	0	0	0	0		1223	41	1264
5:15 PM - 6:15 PM	0	576	4	0	580	0.954	37	0	1	0	38	0.731	1	581	0	0	582	0.851	0	0	0	0	0		1162	38	1200
5:30 PM - 6:30 PM	0	548	4	0	552	0.914	28	0	0	0	28	0.7	0	549	0	0	549	0.94	0	0	0	0	0		1101	28	1129
5:45 PM - 6:45 PM	0	518	4	0	522	0.876	23	0	0	0	23	0.575	0	516	0	0	516	0.935	0	0	0	0	0		1038	23	1061
6:00 PM - 7:00 PM	0	480	2	0	482	0.809	20	0	0	0	20	0.5	0	496	0	0	496	0.899	0	0	0	0	0		978	20	998

Intersection #14

Wells + Associates, Inc.

Tysons, Virginia

Turning Movement Count - Bicycles

PROJECT:	The River School	**DATE:**	5/18/2021	**SOUTHBOUND ROAD:**	Nebraska Avenue NW
W+A JOB NO:	8182	**DAY:**	Tuesday	**NORTHBOUND ROAD:**	Nebraska Avenue NW
INTERSECTION:	Nebraska Ave. & 41st Street NW	**WEATHER:**	clear	**WESTBOUND ROAD:**	41st Street NW
LOCATION:	Washington,DC	**COUNTED BY:**	Agan	**EASTBOUND ROAD:**	0
		INPUTED BY:	Agan		

Time Period	Southbound Nebraska Avenue NW				Westbound 41st Street NW				Northbound Nebraska Avenue NW				Eastbound 0				North & South	East & West	Total
	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total	Right	Thru	Left	Total			
15 Minute Volumes																			
2:00 PM - 2:15 PM				0				0				0				0	0	0	0
2:15 PM - 2:30 PM				0				0		2		2				0	2	0	2
2:30 PM - 2:45 PM		1		1				0		1		1				0	2	0	2
2:45 PM - 3:00 PM				0				0		1		1				0	1	0	1
3:00 PM - 3:15 PM				0				0				0				0	0	0	0
3:15 PM - 3:30 PM		1		1				0		2		2				0	3	0	3
3:30 PM - 3:45 PM		1		1				0				0				0	1	0	1
3:45 PM - 4:00 PM		1		1				0		3		3				0	4	0	4
4:00 PM - 4:15 PM		1		1				0				0				0	1	0	1
4:15 PM - 4:30 PM		1		1				0		2		2				0	3	0	3
4:30 PM - 4:45 PM		1		1				0		1		1				0	2	0	2
4:45 PM - 5:00 PM		2		2				0				0				0	2	0	2
5:00 PM - 5:15 PM				0	1			1		2		2				0	2	1	3
5:15 PM - 5:30 PM		2		2				0		3		3				0	5	0	5
5:30 PM - 5:45 PM		1		1				0		1		1				0	2	0	2
5:45 PM - 6:00 PM		3		3				0		1		1				0	4	0	4
6:00 PM - 6:15 PM		2		2				0				0				0	2	0	2
6:15 PM - 6:30 PM		3		3				0		1		1				0	4	0	4
6:30 PM - 6:45 PM				0				0		1		1				0	1	0	1
6:45 PM - 7:00 PM				0				0		3		3				0	3	0	3
Total	0	20	0	20	1	0	0	1	0	24	0	24	0	0	0	0	44	1	45
One Hour Volumes																			
2:00 PM - 3:00 PM	0	1	0	1	0	0	0	0	0	4	0	4	0	0	0	0	5	0	5
2:15 PM - 3:15 PM	0	1	0	1	0	0	0	0	0	4	0	4	0	0	0	0	5	0	5
2:30 PM - 3:30 PM	0	2	0	2	0	0	0	0	0	4	0	4	0	0	0	0	6	0	6
2:45 PM - 3:45 PM	0	2	0	2	0	0	0	0	0	3	0	3	0	0	0	0	5	0	5
3:00 PM - 4:00 PM	0	3	0	3	0	0	0	0	0	5	0	5	0	0	0	0	8	0	8
3:15 PM - 4:15 PM	0	4	0	4	0	0	0	0	0	5	0	5	0	0	0	0	9	0	9
3:30 PM - 4:30 PM	0	4	0	4	0	0	0	0	0	5	0	5	0	0	0	0	9	0	9
3:45 PM - 4:45 PM	0	4	0	4	0	0	0	0	0	6	0	6	0	0	0	0	10	0	10
4:00 PM - 5:00 PM	0	5	0	5	0	0	0	0	0	3	0	3	0	0	0	0	8	0	8
4:15 PM - 5:15 PM	0	4	0	4	1	0	0	1	0	5	0	5	0	0	0	0	9	1	10
4:30 PM - 5:30 PM	0	5	0	5	1	0	0	1	0	6	0	6	0	0	0	0	11	1	12
4:45 PM - 5:45 PM	0	5	0	5	1	0	0	1	0	6	0	6	0	0	0	0	11	1	12
5:00 PM - 6:00 PM	0	6	0	6	1	0	0	1	0	7	0	7	0	0	0	0	13	1	14
5:15 PM - 6:15 PM	0	8	0	8	0	0	0	0	0	5	0	5	0	0	0	0	13	0	13
5:30 PM - 6:30 PM	0	9	0	9	0	0	0	0	0	3	0	3	0	0	0	0	12	0	12
5:45 PM - 6:45 PM	0	8	0	8	0	0	0	0	0	3	0	3	0	0	0	0	11	0	11
6:00 PM - 7:00 PM	0	5	0	5	0	0	0	0	0	5	0	5	0	0	0	0	10	0	10

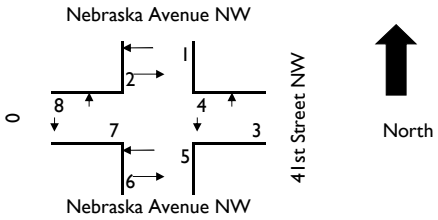
Intersection #14

Wells + Associates, Inc.

Tysons, Virginia

Pedestrian Volume Survey

PROJECT: The River School
W + A JOB NO: 8182
INTERSECTION: Nebraska Ave. & 41st Street NW
LOCATION: Washington,DC
DATE: 5/18/2021
DAY: Tuesday
WEATHER: clear
COUNTED BY: Agan
INPUTED BY: Agan



Time Period	Movement 1	2	3	4	5	6	7	8	1 + 2	3 + 4	5 + 6	7+ 8	Total
15 Minute Volumes													
2:00 PM - 2:15 PM			2	2			3	3	0	4	0	6	10
2:15 PM - 2:30 PM			2				1	5	0	2	0	6	8
2:30 PM - 2:45 PM	1	1	2	1			2	10	2	3	0	12	17
2:45 PM - 3:00 PM			6	1			5	5	0	7	0	10	17
3:00 PM - 3:15 PM	1		3	2			6		1	5	0	6	12
3:15 PM - 3:30 PM			2	1			2	5	0	3	0	7	10
3:30 PM - 3:45 PM			1	1			4		0	2	0	4	6
3:45 PM - 4:00 PM			5	2			6	2	0	7	0	8	15
4:00 PM - 4:15 PM			2				3	3	0	2	0	6	8
4:15 PM - 4:30 PM			1				3	4	0	1	0	7	8
4:30 PM - 4:45 PM			5	2			5		0	7	0	5	12
4:45 PM - 5:00 PM			1	4			3	6	0	5	0	9	14
5:00 PM - 5:15 PM				1			10	2	0	1	0	12	13
5:15 PM - 5:30 PM	1		8	2			7	6	1	10	0	13	24
5:30 PM - 5:45 PM			7	5			1	8	0	12	0	9	21
5:45 PM - 6:00 PM			9	2			4	11	0	11	0	15	26
6:00 PM - 6:15 PM			3	3			1	9	0	6	0	10	16
6:15 PM - 6:30 PM			6	5			1	3	0	11	0	4	15
6:30 PM - 6:45 PM			3				7	5	0	3	0	12	15
6:45 PM - 7:00 PM			6	2			6	5	0	8	0	11	19
Total	3	1	74	36	0	0	80	92	4	110	0	172	286
One Hour Volumes													
2:00 PM - 3:00 PM	1	1	12	4	0	0	11	23	2	16	0	34	52
2:15 PM - 3:15 PM	2	1	13	4	0	0	14	20	3	17	0	34	54
2:30 PM - 3:30 PM	2	1	13	5	0	0	15	20	3	18	0	35	56
2:45 PM - 3:45 PM	1	0	12	5	0	0	17	10	1	17	0	27	45
3:00 PM - 4:00 PM	1	0	11	6	0	0	18	7	1	17	0	25	43
3:15 PM - 4:15 PM	0	0	10	4	0	0	15	10	0	14	0	25	39
3:30 PM - 4:30 PM	0	0	9	3	0	0	16	9	0	12	0	25	37
3:45 PM - 4:45 PM	0	0	13	4	0	0	17	9	0	17	0	26	43
4:00 PM - 5:00 PM	0	0	9	6	0	0	14	13	0	15	0	27	42
4:15 PM - 5:15 PM	0	0	7	7	0	0	21	12	0	14	0	33	47
4:30 PM - 5:30 PM	1	0	14	9	0	0	25	14	1	23	0	39	63
4:45 PM - 5:45 PM	1	0	16	12	0	0	21	22	1	28	0	43	72
5:00 PM - 6:00 PM	1	0	24	10	0	0	22	27	1	34	0	49	84
5:15 PM - 6:15 PM	1	0	27	12	0	0	13	34	1	39	0	47	87
5:30 PM - 6:30 PM	0	0	25	15	0	0	7	31	0	40	0	38	78
5:45 PM - 6:45 PM	0	0	21	10	0	0	13	28	0	31	0	41	72
6:00 PM - 7:00 PM	0	0	18	10	0	0	15	22	0	28	0	37	65

Intersections #12-2, 12-3, and 12-9

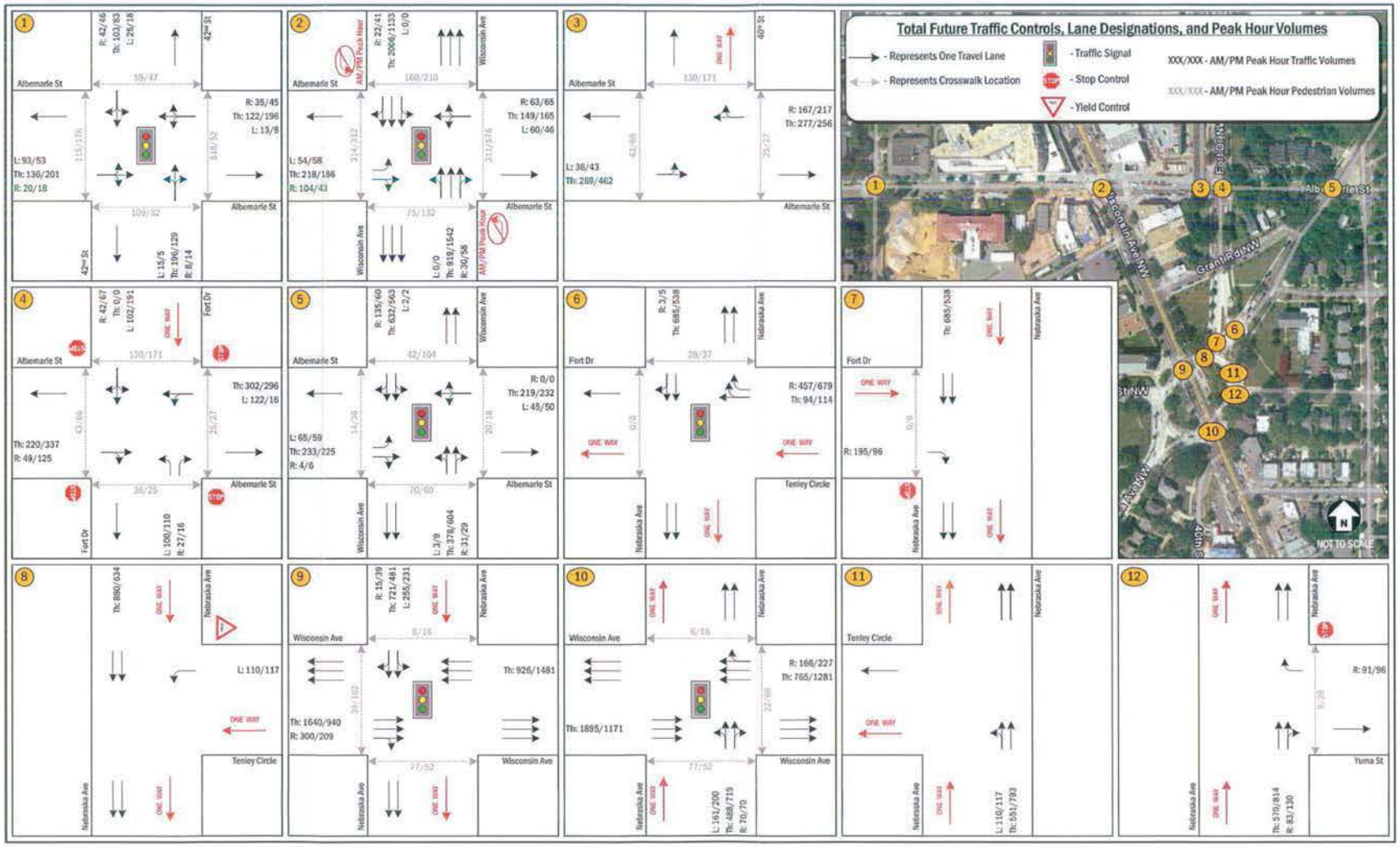
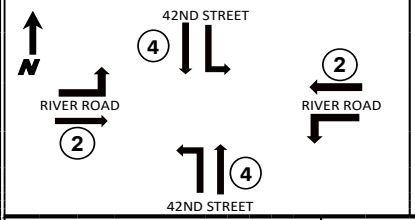


Figure 34: Total Future Traffic Controls, Lane Designations, and Peak Hour Traffic Volumes (1 of 3)

APPENDIX C
EXISTING TRAFFIC SIGNAL TIMINGS

233 Rev - 08/11/2020	42ND STREET AND RIVER ROAD, NW	SHEET 1



DEPARTMENT OF TRANSPORTATION

WASHINGTON, D.C.

TRAFFIC ENGINEERING & SIGNALS DIVISION

ACISA ID	6043	TS-	804-B
ISNUM	1164	S-	1002-A

C + 0 + F = 1
<F + PHASE + INTVL>

INTERVAL		PHASE 1	2	3	4	5	6	7	8
WALK	0				7				
FLASH D/W	1				16				
MIN. GREEN	2		7		10				
TYPE 3 LIMIT	3								
ADD/ VEH	4								
VEH EXTENSION	5		1		1				
MAX GAP	6		1		1				
MIN GAP	7		1		1				
MAXIMUM	8		120		60				
MAXIMUM 2	9								
ADVANCE / DELAY WALK	A				3				
PREEMPT PED. CLEARENCE	B								
CONDITIONAL SERVICE MINIMUM	C								
REDUCE EVERY	D								
YELLOW	E		4		4				
RED CLEAR	F		2		2				

PREEMPT TIMING

< F/1 + E + row >		
EVA DELAY	2	
EVA CLEAR	3	
EVB DELAY	4	
EVB CLEAR	5	
EVC DELAY	6	
EVC CLEAR	7	
EVD DELAY	8	
EVD CLEAR	9	
BUS PRIORITY PARAMETERS		
< F/1 + A + row >		
BUS HEADWAY	C	
BUS DELAY	D	
MAX EARLY GREEN	E	
MAX GREEN EXTN	F	
Min Grn Bef PE Forceoff		
MAX PREEMPT TIME		
Min Time Btwn Same PE		

COORDINATION FUNCTIONS

FUNCTION	PHASE 1	2	3	4	5	6	7	8
LAG PHASES (Check by phases)		X		X				
SYNC PHASES (Check by phases)				X				

NOTES:

C+0+C=1; C + <PLAN> + <FEATURE>

COORDINATION TIMING PLAN

FEATURE		1	2	3	4	5	6	7	8	9
CYCLE TIME	0	80	100	90	100	100	100	120	120	
FORCE OFF 1	1									
FORCE OFF 2	2	50	54	55	54	68	65	83	78	
FORCE OFF 3	3									
FORCE OFF 4	4	0	0	0	0	0	0	0	0	
FORCE OFF 5	5									
FORCE OFF 6	6									
FORCE OFF 7	7									
FORCE OFF 8	8									
OFFSET A	A	6	28	68	28	72	9	77	110	
OFFSET B	B				28					
OFFSET C	C				28					
END PERMISSIVE 1	D	7	7	7	7	7	7	7	7	
PRETIMED (Phases)		ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	
PERM 1 VEH (Phases)		ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	
PERM 1 PED (Phases)		ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	

EVENT	TIME	PLAN	OFFSET	DAY OF WEEK
EVENT 0	0:00	1	A	1234567
EVENT 1	5:00	5	A	23456
EVENT 2	10:00	4	A	23456
EVENT 3	14:00	6	A	23456
EVENT 4	20:00	4	A	23456
EVENT 5	22:00	1	A	23456
EVENT 6	8:00	2	A	1 7
EVENT 7	21:00	1	A	7
EVENT 8	18:00	1	A	1

NOTES:

C + 0 + E = 29

OVERLAP CONFIG

FUNCTION	OL A	OL B	OL C	OL D
SET 1 (Overlapped Phases)				
NEG V				
NEG P				
GREEN EXTENSION				
YELLOW EXTENSION				
RED EXTENSION				

C + 0 + E = 125
E + E + FEATURE

CONFIG DATA PHASE

FEATURE		1	2	3	4	5	6	7	8
OVERLAP FL YEL	9								
EM VEH A	A								
EM VEH B	B								
EM VEH C	C								
EM VEH D	D								
EXTRA I	E	X		X		X			
IC SELECT	F		X						

C + 0 + E = 125
E + F + FEATURE

CONFIG DATA PHASE

FEATURE		1	2	3	4	5	6	7	8
PED 2P	5								
PED 6P	6								
PED 4P	7				X				
PED 8P	8								
PED #P (C1 REDIRECT)									
PED #P (C1 REDIRECT)									
FLASH YELLOW	9		X						
LOW PRIORITY A	A								
LOW PRIORITY B	B								
RESTRICT	E								
EXTRA 2 BITS	F				X				

C + 0 + F = 1
F + F + FEATURE

PHASE FUNCTIONS PHASE

FEATURE		1	2	3	4	5	6	7	8
PERMIT	0		X		X				
RED LOCK	1								
YELLOW LOCK	2								
VEH RECALL	3								
PED RECALL	4				X				
REST IN WALK	6								
RED REST	7								
DOUBLE ENTRY	8								
MAX RECALL	9		X		X				
SOFT RECALL	A								
MAX 2	B								
COND SERVICE	C								
EXT CONT. CALL	D								
YELLOW START UP	E								
FIRST PHASE GRN	F				X				

C + 0 + F = 2
F + F + FEATURE

PHASE FUNCTIONS PHASE

FEATURE		1	2	3	4	5	6	7	8
GREEN FLASH									
FLASH WALK									
ADVANCED WALK					X				
DELAYED WALK									

PREPARED BY: **HNTB / Mead & Hunt**

WORK/SHOP ORDER NO: S-10-20-01

RECOMMENDED BY:

APPROVED BY: Network 3 Retiming 11/06/2020

DATE INSTALLED:

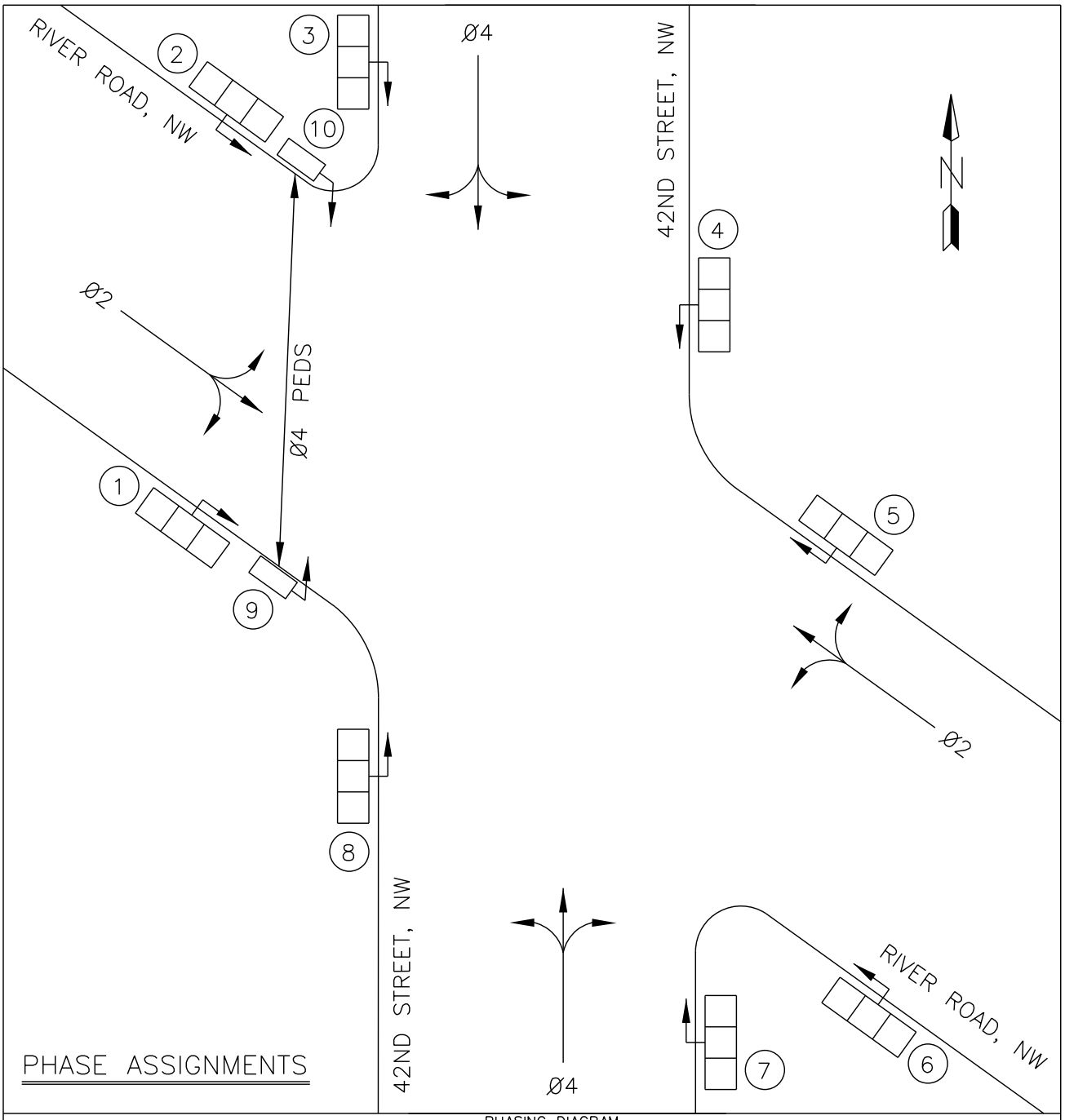
INSTALLED BY:

NOTES:

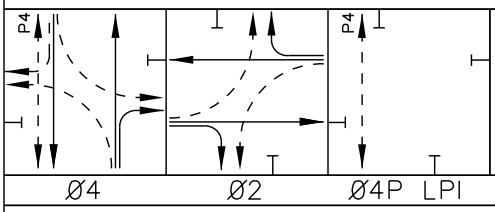
***LPI ON PHASE 4.**

***SET COUNTDOWN SIGNALS TO BEGIN WITH WALK INTERVALS FOR ALL PHASES.**

***PHASE 4 SYNC PHASE.**



PHASING DIAGRAM



FUTURE USE	FUTURE USE	FUTURE USE	FUTURE USE	FUTURE USE

TRAFFIC SIGNAL OPERATION
42ND STREET AND RIVER ROAD, N.W.

ACISA 6043

D.C. DEPARTMENT OF TRANSPORTATION
TRAFFIC ENGINEERING & SIGNALS DIVISION

DESIGNED BY: SAI/HNTB
TRAFFIC SIGNAL DESIGNER

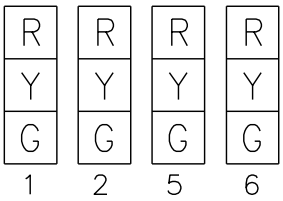
RECOMMENDED BY: _____
TRAFFIC SIGNAL DESIGN PROJECT MANAGER

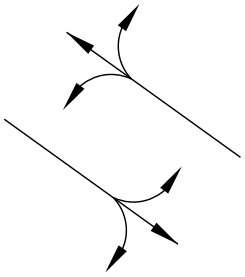
APPROVED BY: _____ Network 3 Retiming 11/06/2020
TRAFFIC SIGNAL PROGRAM MANAGER

T.S. 804-B

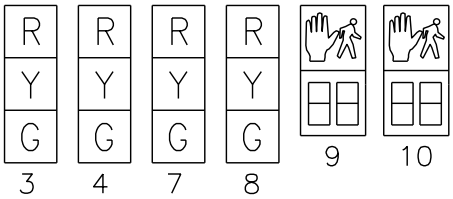
CHECK BY:	S.R./J.W.	DATE:	04/2020
DRAWN BY:	S.C./HNTB	DATE:	04/2020
IN SERVICE:		SCALE:	NONE

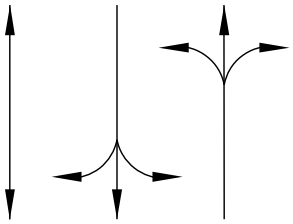
SHEET 1 OF 4





Ø2





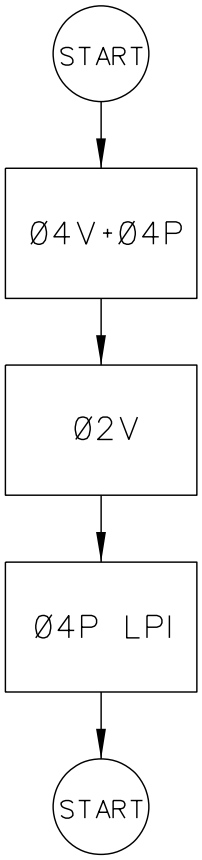
Ø4

TRAFFIC SIGNAL OPERATION 42ND STREET AND RIVER ROAD, N.W.	ACISA 6043
D.C. DEPARTMENT OF TRANSPORTATION TRAFFIC ENGINEERING & SIGNALS DIVISION	T.S. 804-B
CHECK BY: S.R./J.W. DATE: 04/2020	SHEET
DRAWN BY: S.C./HNTB DATE: 04/2020	
IN SERVICE: SCALE: NONE	2 OF 4

DESIGNED BY: SAI/HNTB
TRAFFIC SIGNAL DESIGNER

RECOMMENDED BY: _____
TRAFFIC SIGNAL DESIGN PROJECT MANAGER

APPROVED BY: _____
TRAFFIC SIGNAL PROGRAM MANAGER



PHASE SEQUENCE

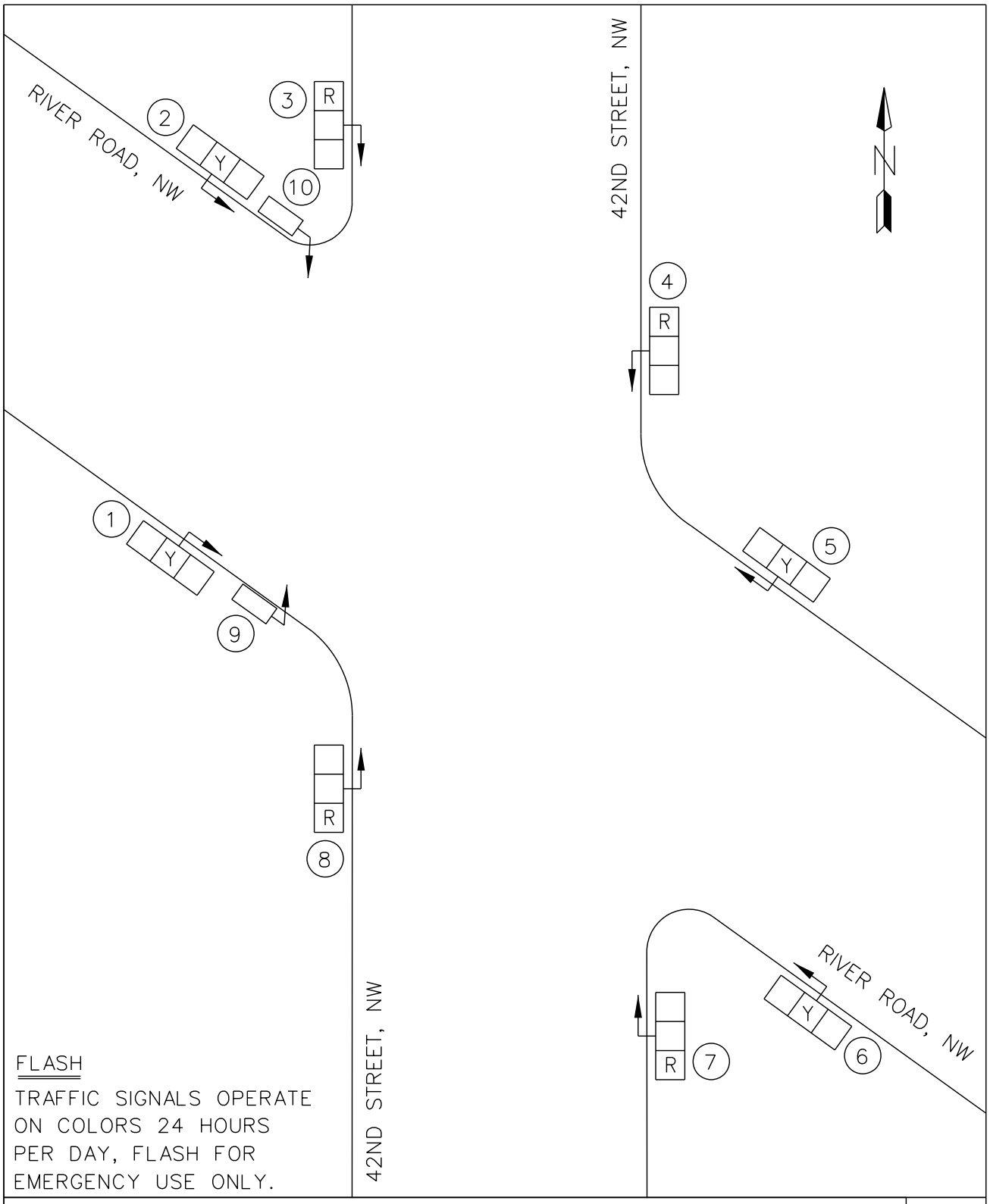
ON RECALL

Ø2V
Ø4V+Ø4P

BY DEMAND ONLY

NONE

TRAFFIC SIGNAL OPERATION 42ND STREET AND RIVER ROAD, N.W.				ACISA 6043
D.C. DEPARTMENT OF TRANSPORTATION TRAFFIC ENGINEERING & SIGNALS DIVISION		DESIGNED BY: SAI/HNTB TRAFFIC SIGNAL DESIGNER		T.S. 804-B
CHECK BY: S.R./J.W.	DATE: 04/2020	RECOMMENDED BY: TRAFFIC SIGNAL DESIGN PROJECT MANAGER		SHEET
DRAWN BY: S.C./HNTB	DATE: 04/2020	APPROVED BY: TRAFFIC SIGNAL PROGRAM MANAGER		3 OF 4
IN SERVICE:	SCALE: NONE			



FLASH

TRAFFIC SIGNALS OPERATE ON COLORS 24 HOURS PER DAY, FLASH FOR EMERGENCY USE ONLY.

TRAFFIC SIGNAL OPERATION
42ND STREET AND RIVER ROAD, N.W.

ACISA 6043

D.C. DEPARTMENT OF TRANSPORTATION
TRAFFIC ENGINEERING & SIGNALS DIVISION

DESIGNED BY: SAI/HNTB
TRAFFIC SIGNAL DESIGNER

RECOMMENDED BY: _____
TRAFFIC SIGNAL DESIGN PROJECT MANAGER

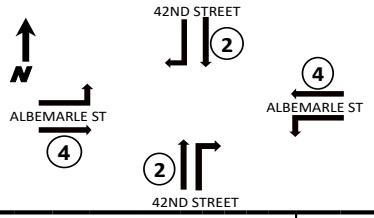
APPROVED BY: _____
TRAFFIC SIGNAL PROGRAM MANAGER

T.S. 804-B

CHECK BY:	S.R./J.W.	DATE:	04/2020
DRAWN BY:	S.C./HNTB	DATE:	04/2020
IN SERVICE:		SCALE:	NONE

SHEET 4 OF 4

233 Rev - 08/11/2020	42ND STREET AND ALBEMARLE STREET, NW	SHEET 3



DEPARTMENT OF TRANSPORTATION

WASHINGTON, D.C.

TRAFFIC ENGINEERING & SIGNALS DIVISION

ACISA ID	6042	TS-	1231-C OPT-1
ISNUM	1163	S-	1328

C + 0 + F = 1
<F + PHASE + INTVL>

INTERVAL		PHASE 1	2	3	4	5	6	7	8
WALK	0		7		7				
FLASH D/W	1		8		6				
MIN. GREEN	2		10		7				
TYPE 3 LIMIT	3								
ADD/ VEH	4								
VEH EXTENSION	5		1		1				
MAX GAP	6		1		1				
MIN GAP	7		1		1				
MAXIMUM	8		110		105				
MAXIMUM 2	9								
ADVANCE / DELAY WALK	A		3		3				
PREEMPT PED. CLEARENCE	B								
CONDITIONAL SERVICE MINIMUM	C								
REDUCE EVERY	D								
YELLOW	E		4		4				
RED CLEAR	F		2		2				

PREEMPT TIMING

< F/1 + E + row >		
EVA DELAY	2	
EVA CLEAR	3	
EVB DELAY	4	
EVB CLEAR	5	
EVC DELAY	6	
EVC CLEAR	7	
EVD DELAY	8	
EVD CLEAR	9	
BUS PRIORITY PARAMETERS		
< F/1 + A + row >		
BUS HEADWAY	C	
BUS DELAY	D	
MAX EARLY GREEN	E	
MAX GREEN EXTN	F	
Min Grn Bef PE Forceoff		
MAX PREEMPT TIME		
Min Time Btwn Same PE		

COORDINATION FUNCTIONS

FUNCTION	PHASE 1	2	3	4	5	6	7	8
LAG PHASES (Check by phases)		X		X				
SYNC PHASES (Check by phases)		X						

NOTES:

C+0+C=1; C + <PLAN> + <FEATURE>

COORDINATION TIMING PLAN

FEATURE		1	2	3	4	5	6	7	8	9
CYCLE TIME	0	40	50	45	50	60	60	75	150	
FORCE OFF 1	1									
FORCE OFF 2	2	0	0	0	0	0	0	0	0	
FORCE OFF 3	3									
FORCE OFF 4	4	19	23	21	23	28	28	33	73	
FORCE OFF 5	5									
FORCE OFF 6	6									
FORCE OFF 7	7									
FORCE OFF 8	8									
OFFSET A	A	23	15	33	15	45	45	30	101	
OFFSET B	B				24					
OFFSET C	C				20					
END PERMISSIVE 1	D	7	7	7	7	7	7	7	7	
PRETIMED (Phases)		ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	
PERM 1 VEH (Phases)		ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	
PERM 1 PED (Phases)		ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	

EVENT	TIME	PLAN	OFFSET	DAY OF WEEK
EVENT 0	0:00	1	A	1234567
EVENT 1	5:00	5	A	23456
EVENT 2	10:00	4	A	23456
EVENT 3	14:00	6	A	23456
EVENT 4	20:00	4	A	23456
EVENT 5	22:00	1	A	23456
EVENT 6	8:00	2	A	1 7
EVENT 7	21:00	1	A	7
EVENT 8	18:00	1	A	1

NOTES:

C + 0 + E = 29

OVERLAP CONFIG

FUNCTION	OL A	OL B	OL C	OL D
SET 1 (Overlapped Phases)				
NEG V				
NEG P				
GREEN EXTENSION				
YELLOW EXTENSION				
RED EXTENSION				

C + 0 + E = 125
E + E + FEATURE

CONFIG DATA PHASE

FEATURE		1	2	3	4	5	6	7	8
OVERLAP FL YEL	9								
EM VEH A	A								
EM VEH B	B								
EM VEH C	C								
EM VEH D	D								
EXTRA I	E	X		X		X			
IC SELECT	F		X						

C + 0 + E = 125
E + F + FEATURE

CONFIG DATA PHASE

FEATURE		1	2	3	4	5	6	7	8
PED 2P	5		X						
PED 6P	6								
PED 4P	7				X				
PED 8P	8								
PED #P (C1 REDIRECT)									
PED #P (C1 REDIRECT)									
FLASH YELLOW	9								
LOW PRIORITY A	A								
LOW PRIORITY B	B								
RESTRICT	E								
EXTRA 2 BITS	F				X				

C + 0 + F = 1
F + F + FEATURE

PHASE FUNCTIONS PHASE

FEATURE		1	2	3	4	5	6	7	8
PERMIT	0		X		X				
RED LOCK	1								
YELLOW LOCK	2								
VEH RECALL	3								
PED RECALL	4		X		X				
REST IN WALK	6								
RED REST	7								
DOUBLE ENTRY	8								
MAX RECALL	9		X		X				
SOFT RECALL	A								
MAX 2	B								
COND SERVICE	C								
EXT CONT. CALL	D								
YELLOW START UP	E								
FIRST PHASE GRN	F		X						

C + 0 + F = 2
F + F + FEATURE

PHASE FUNCTIONS PHASE

FEATURE		1	2	3	4	5	6	7	8
GREEN FLASH									
FLASH WALK									
ADVANCED WALK			X		X				
DELAYED WALK									

PREPARED BY: **HNTB / Mead & Hunt**

WORK/SHOP ORDER NO: S-10-20-01

RECOMMENDED BY:

APPROVED BY: Network 3 Retiming 11/06/2020

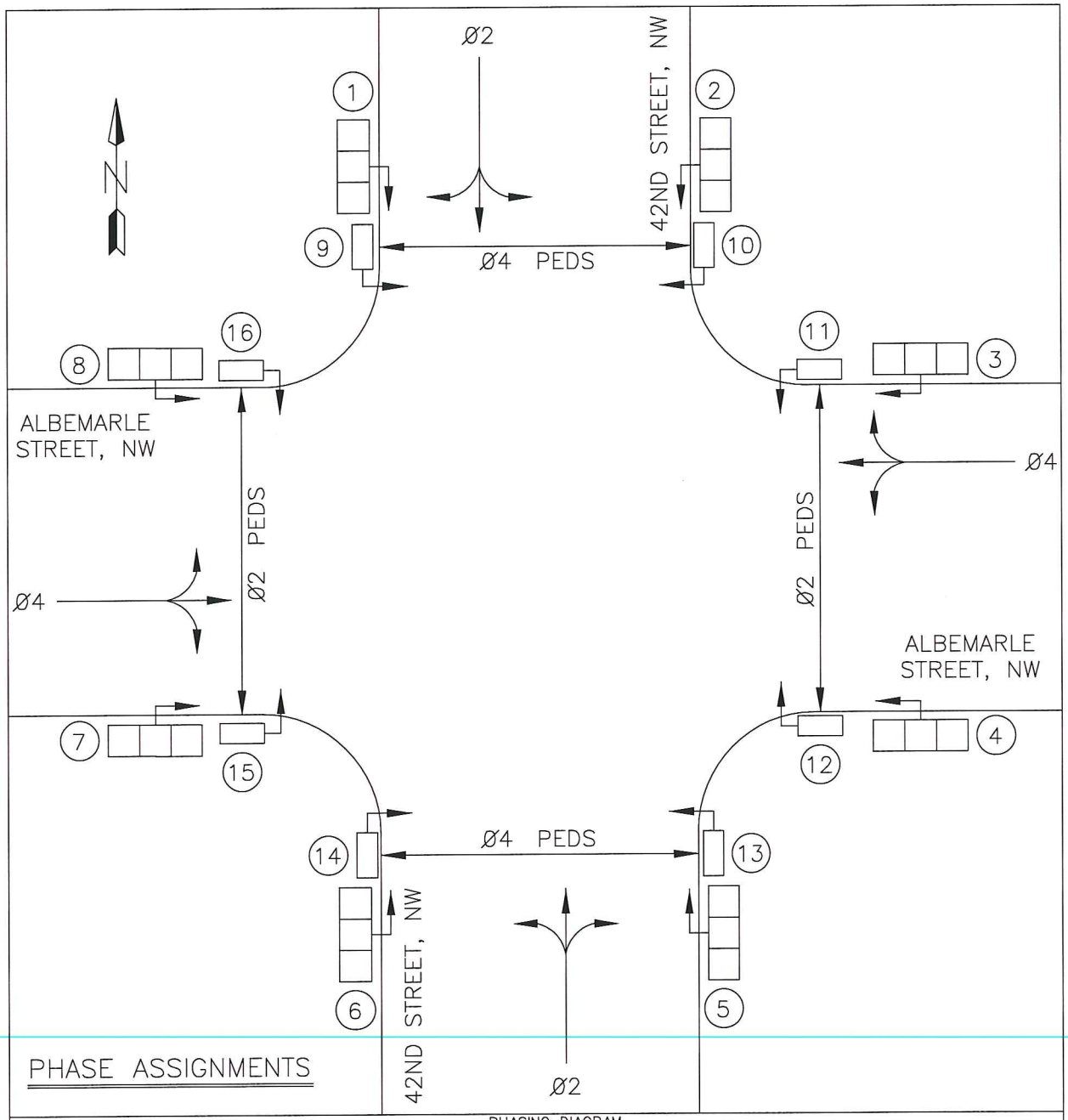
DATE INSTALLED:

INSTALLED BY:

NOTES:

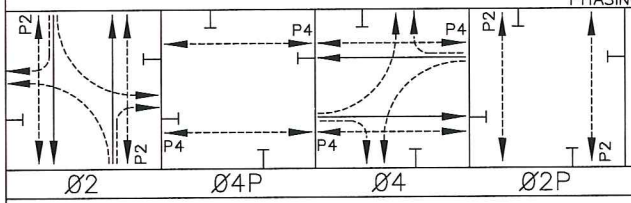
***PHASES 2 AND 4 LPI.**

***SET COUNTDOWN SIGNALS TO BEGIN WITH WALK INTERVALS FOR ALL PHASES.**



PHASE ASSIGNMENTS

PHASING DIAGRAM



FUTURE USE	FUTURE USE	FUTURE USE	FUTURE USE

TRAFFIC SIGNAL OPERATION
42ND STREET AND ALBEMARLE STREET, NW

ACISA
6042

D.C. DEPARTMENT OF TRANSPORTATION
TRANSPORTATION OPERATIONS
ADMINISTRATION

CHECK BY:	K.R.	DATE:	11/18/13
DRAWN BY:	S.C./V.N./SWA	DATE:	11/18/13
IN SERVICE:		SCALE:	NONE

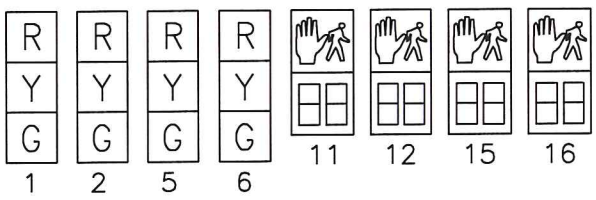
DESIGNED BY:

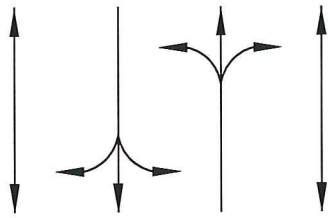
SUBMITTED BY: PROJECT ENGINEER

APPROVED BY: CHIEF, TRAFFIC SIGNALS & ITS

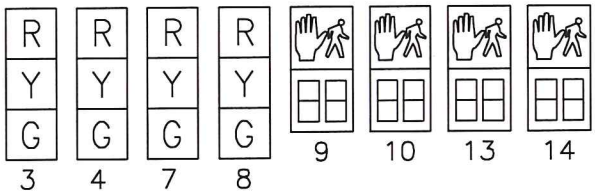
T.S.
1231-C
OPT-1

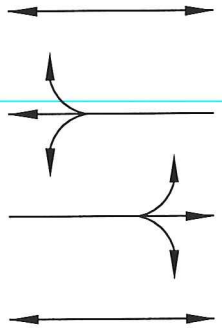
SHEET
1 OF 4





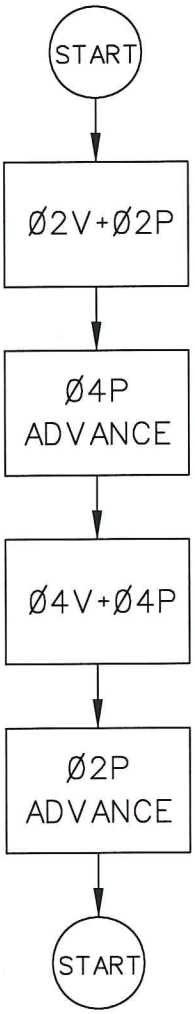
Ø2





Ø4

TRAFFIC SIGNAL OPERATION 42ND STREET AND ALBEMARLE STREET, NW		ACISA 6042
D.C. DEPARTMENT OF TRANSPORTATION TRANSPORTATION OPERATIONS ADMINISTRATION	DESIGNED BY: _____ SUBMITTED BY: _____ PROJECT ENGINEER APPROVED BY: _____ CHIEF, TRAFFIC SIGNALS & ITS	T.S. 1231-C OPT-1
CHECK BY: K.R. DATE: 11/18/13		SHEET
DRAWN BY: S.C./V.N./SWA DATE: 11/18/13		2 OF 4
IN SERVICE: SCALE: NONE		



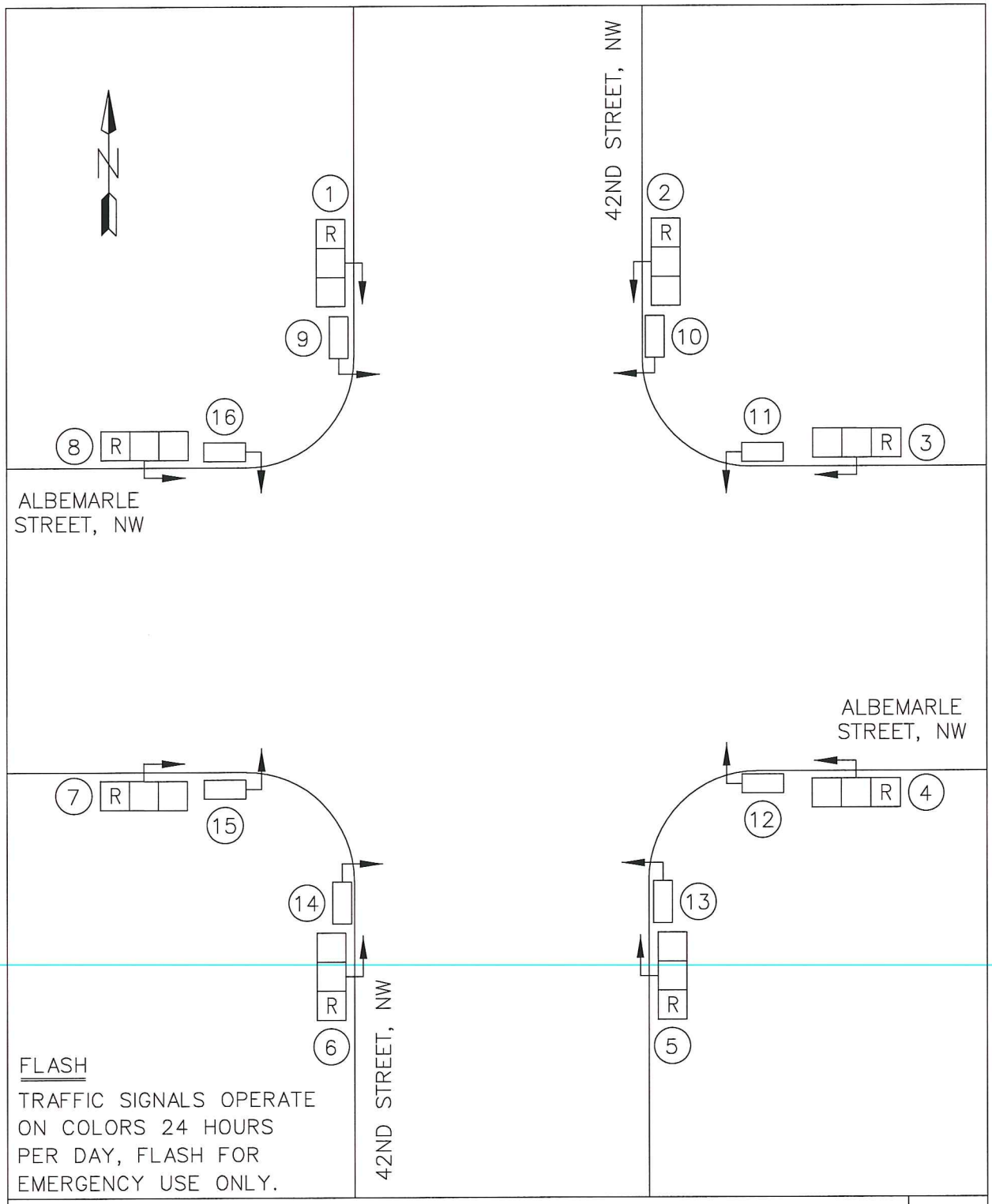
PHASE SEQUENCE

ON RECALL

Ø2V+Ø2P
Ø4V+Ø4P

BY DEMAND ONLY

TRAFFIC SIGNAL OPERATION 42ND STREET AND ALBEMARLE STREET, NW			ACISA 6042
D.C. DEPARTMENT OF TRANSPORTATION TRANSPORTATION OPERATIONS ADMINISTRATION	DESIGNED BY:		T.S. 1231-C OPT-1
CHECK BY: K.R. DATE: 11/18/13	SUBMITTED BY: PROJECT ENGINEER		SHEET
DRAWN BY: S.C./V.N./SWA DATE: 11/18/13	APPROVED BY: CHIEF, TRAFFIC SIGNALS & ITS		3 OF 4
IN SERVICE: SCALE: NONE			

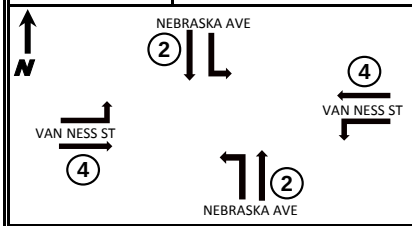


FLASH

TRAFFIC SIGNALS OPERATE ON COLORS 24 HOURS PER DAY, FLASH FOR EMERGENCY USE ONLY.

TRAFFIC SIGNAL OPERATION 42ND STREET AND ALBEMARLE STREET, NW				ACISA 6042
D.C. DEPARTMENT OF TRANSPORTATION TRANSPORTATION OPERATIONS ADMINISTRATION			DESIGNED BY:	T.S. 1231-C OPT-1
CHECK BY: K.R.	DATE: 11/18/13		SUBMITTED BY: PROJECT ENGINEER	SHEET
DRAWN BY: S.C./V.N./SWA	DATE: 11/18/13		APPROVED BY: CHIEF, TRAFFIC SIGNALS & ITS	4 OF 4
IN SERVICE:	SCALE: NONE			

233 Rev - 08/09/2013	NEBRASKA AVENUE AND VAN NESS STREET, NW	SHEET 2



DEPARTMENT OF TRANSPORTATION

WASHINGTON, D.C.

TRANSPORTATION OPERATIONS ADMINISTRATION

ACISA ID	6119	TS-	1103-B OPT-1
ISNUM	1241	S-	216

C + 0 + F = 1
<F + PHASE + INTVL>

INTERVAL		PHASE 1	2	3	4	5	6	7	8
WALK	0		7		7				
FLASH D/W	1		9		10				
MIN. GREEN	2		10		7				
TYPE 3 LIMIT	3								
ADD/ VEH	4								
VEH EXTENSION	5		1		1				
MAX GAP	6		1		1				
MIN GAP	7		1		1				
MAXIMUM	8		120		65				
MAXIMUM 2	9								
ADVANCE / DELAY WALK	A								
PREEMPT PED. CLEARENCE	B								
CONDITIONAL SERVICE MINIMUM	C								
REDUCE EVERY	D								
YELLOW	E		4		4				
RED CLEAR	F		1		1.5				

PHASE TIMING BANK

PREEMPT TIMING

< F/1 + E + row >		
EVA DELAY	2	
EVA CLEAR	3	
EVB DELAY	4	
EVB CLEAR	5	
EVC DELAY	6	
EVC CLEAR	7	
EVD DELAY	8	
EVD CLEAR	9	
BUS PRIORITY PARAMETERS		
< F/1 + A + row >		
BUS HEADWAY	C	
BUS DELAY	D	
MAX EARLY GREEN	E	
MAX GREEN EXTN	F	
Min Grn Bef PE Forceoff		
MAX PREEMPT TIME		
Min Time Btwn Same PE		

COORDINATION FUNCTIONS

FUNCTION	PHASE 1	2	3	4	5	6	7	8
LAG PHASES (Check by phases)		X		X				
SYNC PHASES (Check by phases)		X						

NOTES:

C+0+C=1; C + <PLAN> + <FEATURE>

COORDINATION TIMING PLAN

FEATURE		1	2	3	4	5	6	7	8	9
CYCLE TIME	0	80	100	90	100	120	120	150	150	
FORCE OFF 1	1									
FORCE OFF 2	2	0	0	0	0	0	0	0	0	
FORCE OFF 3	3									
FORCE OFF 4	4	35	42	36	42	41	45	49	57	
FORCE OFF 5	5									
FORCE OFF 6	6									
FORCE OFF 7	7									
FORCE OFF 8	8									
OFFSET A	A	50	88	53	88	99	80	115	24	
END PERMISSIVE 1	D	7	7	7	7	7	7	7	7	
PRETIMED (Phases)		ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	
MAX RECALL (Phases)										
PERM 1 VEH (Phases)		ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	
PERM 1 PED (Phases)		ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	

EVENT	TIME	PLAN	OFFSET	DAY OF WEEK
EVENT 0	0:00	1	A	1234567
EVENT 1	5:00	5	A	23456
EVENT 2	10:00	4	A	23456
EVENT 3	14:00	6	A	23456
EVENT 4	20:00	4	A	23456
EVENT 5	8:00	2	A	1 7
EVENT 6	18:00	1	A	1
EVENT 7				
EVENT 8				

NOTES:

C + 0 + E = 29

FUNCTION	OL A	OL B	OL C	OL D
SET 1 (Overlapped Phases)				
NEG V				
NEG P				
GREEN EXTENSION				
YELLOW EXTENSION				
RED EXTENSION				

OVERLAP CONFIG

C + 0 + E = 125
E + E + FEATURE

FEATURE		PHASE 1	2	3	4	5	6	7	8
OVERLAP FL YEL	9								
EM VEH A	A								
EM VEH B	B								
EM VEH C	C								
EM VEH D	D								
EXTRA I	E	X		X		X			
IC SELECT	F		X						

CONFIG DATA

C + 0 + E = 125
E + F + FEATURE

FEATURE		PHASE 1	2	3	4	5	6	7	8
PED 2P	5		X						
PED 6P	6								
PED 4P	7				X				
PED 8P	8								
PED #P (C1 REDIRECT)									
PED #P (C1 REDIRECT)									
FLASH YELLOW	9		X						
LOW PRIORITY A	A								
LOW PRIORITY B	B								
RESTRICT	E								
EXTRA 2 BITS	F				X				

C + 0 + F = 1
F + F + FEATURE

FEATURE		PHASE 1	2	3	4	5	6	7	8
PERMIT	0		X		X				
RED LOCK	1								
YELLOW LOCK	2								
VEH RECALL	3								
PED RECALL	4		X		X				
REST IN WALK	6								
RED REST	7								
DOUBLE ENTRY	8								
MAX RECALL	9		X		X				
SOFT RECALL	A								
MAX 2	B								
COND SERVICE	C								
EXT CONT. CALL	D								
YELLOW START UP	E								
FIRST PHASE GRN	F		X						

PHASE FUNCTIONS

C + 0 + F = 2
F + F + FEATURE

FEATURE		PHASE 1	2	3	4	5	6	7	8
GREEN FLASH									
FLASH WALK									
ADVANCED WALK									
DELAYED WALK									

PREPARED BY: **Sabra, Wang & Associates, Inc.**

WORK/SHOP ORDER NO: S-07-16-300

APPROVED BY: Darius Raja

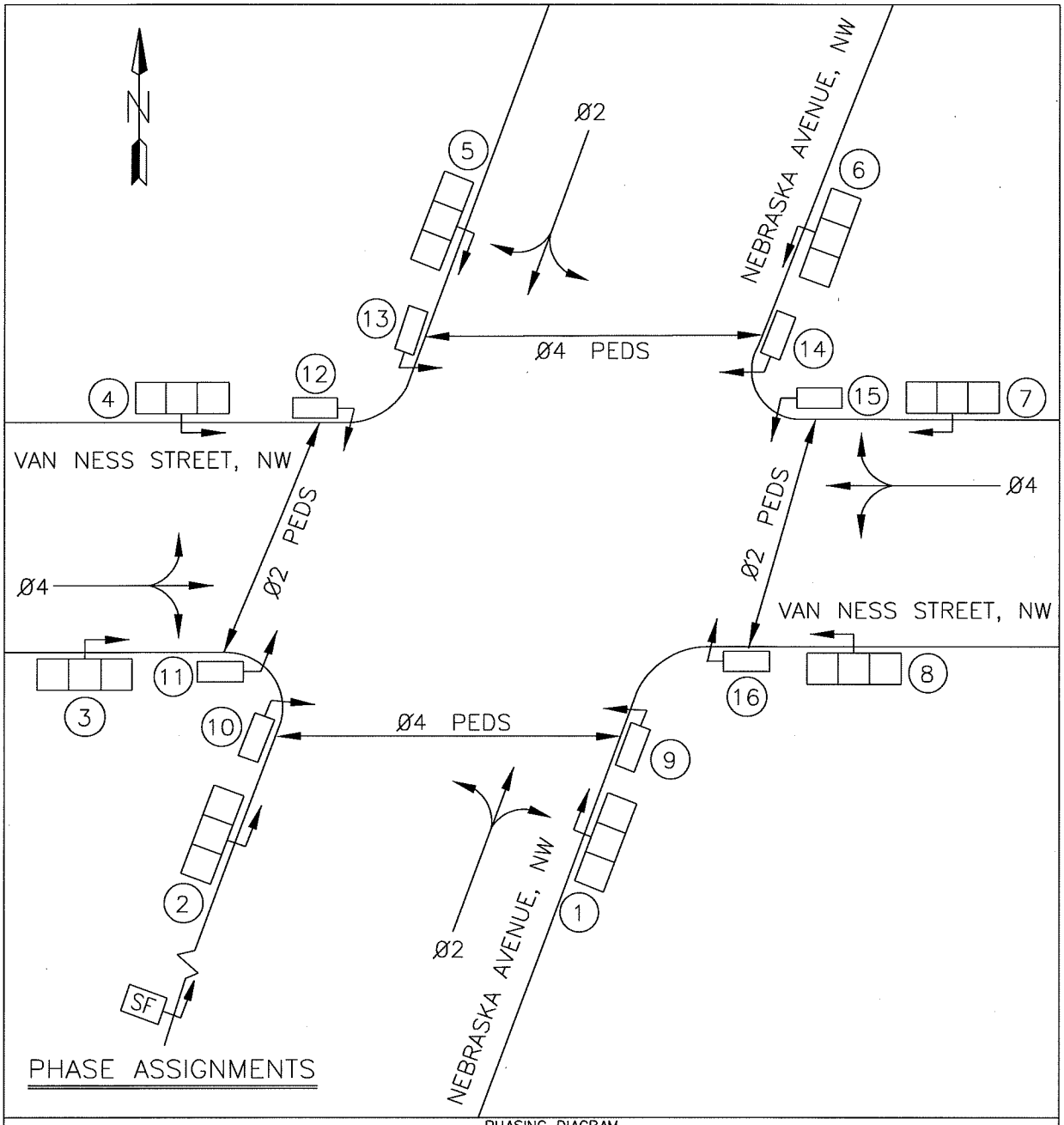
DATE INSTALLED:

INSTALLED BY:

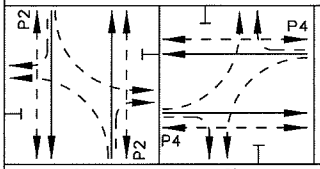
NOTES:

***SCHOOL FLASHER**

***SET COUNTDOWN SIGNALS TO BEGIN WITH WALK INTERVALS FOR ALL PHASES.**



PHASING DIAGRAM

Ø2	Ø4						
		FUTURE USE	FUTURE USE	FUTURE USE	FUTURE USE	FUTURE USE	FUTURE USE

TRAFFIC SIGNAL OPERATION
NEBRASKA AVENUE AND VAN NESS STREET, NW

ACISA 6119

D.C. DEPARTMENT OF TRANSPORTATION
TRANSPORTATION OPERATIONS ADMINISTRATION

DESIGNED BY:

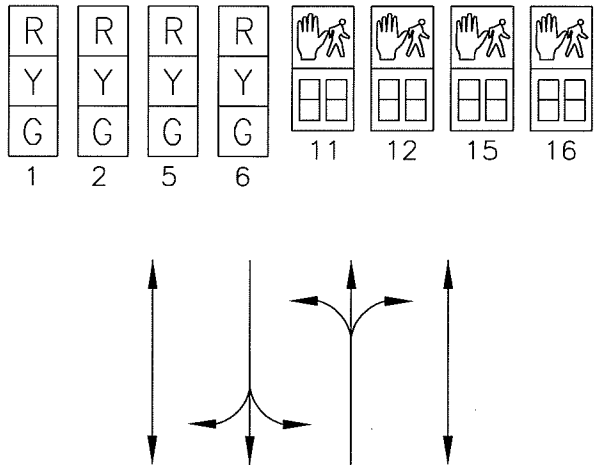
SUBMITTED BY: PROJECT ENGINEER

APPROVED BY: CHIEF, TRAFFIC SIGNALS & ITS

T.S. 1103-B OPT-1

CHECK BY:	K.R.	DATE:	06/02/14
DRAWN BY:	P.M./R.F./SWA	DATE:	06/02/14
IN SERVICE:		SCALE:	NONE

SHEET 1 OF 5



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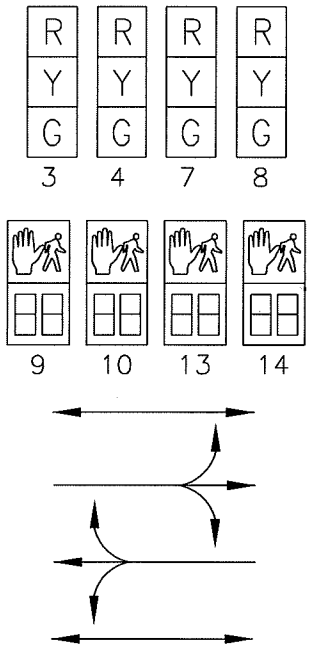

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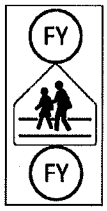


SPECIAL FUNCTION

TRAFFIC SIGNAL OPERATION
NEBRASKA AVENUE AND VAN NESS STREET, NW

ACISA 6119

D.C. DEPARTMENT OF TRANSPORTATION
TRANSPORTATION OPERATIONS ADMINISTRATION

CHECK BY:	K.R.	DATE:	06/02/14
DRAWN BY:	P.M./R.F./SWA	DATE:	06/02/14
IN SERVICE:		SCALE:	NONE

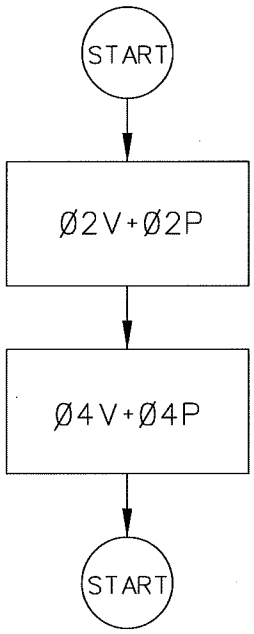
DESIGNED BY: _____

SUBMITTED BY: _____ PROJECT ENGINEER

APPROVED BY: _____ CHIEF, TRAFFIC SIGNALS & ITS

T.S. 1103-B OPT-1

SHEET 2 OF 5



PHASE SEQUENCE

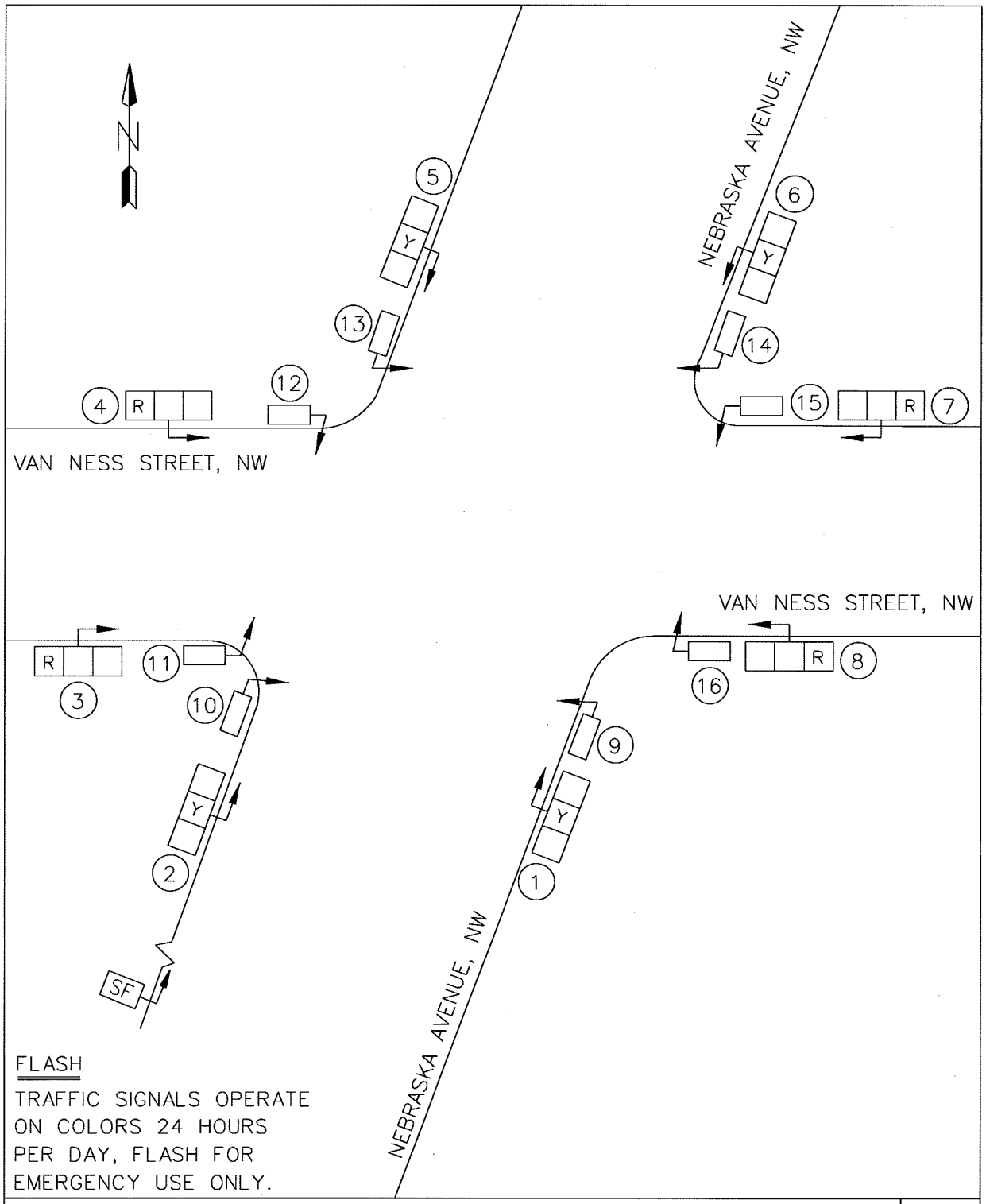
ON RECALL

Ø2V+Ø2P
Ø4V+Ø4P

BY DEMAND ONLY

NONE

TRAFFIC SIGNAL OPERATION NEBRASKA AVENUE AND VAN NESS STREET, NW					ACISA 6119
D.C. DEPARTMENT OF TRANSPORTATION TRANSPORTATION OPERATIONS ADMINISTRATION			DESIGNED BY:		T.S. 1103-B OPT-1
CHECK BY:	K.R.	DATE: 06/02/14	SUBMITTED BY: PROJECT ENGINEER		SHEET
DRAWN BY:	P.M./R.F./SWA	DATE: 06/02/14	APPROVED BY: CHIEF, TRAFFIC SIGNALS & ITS		3 OF 5
IN SERVICE:		SCALE: NONE			

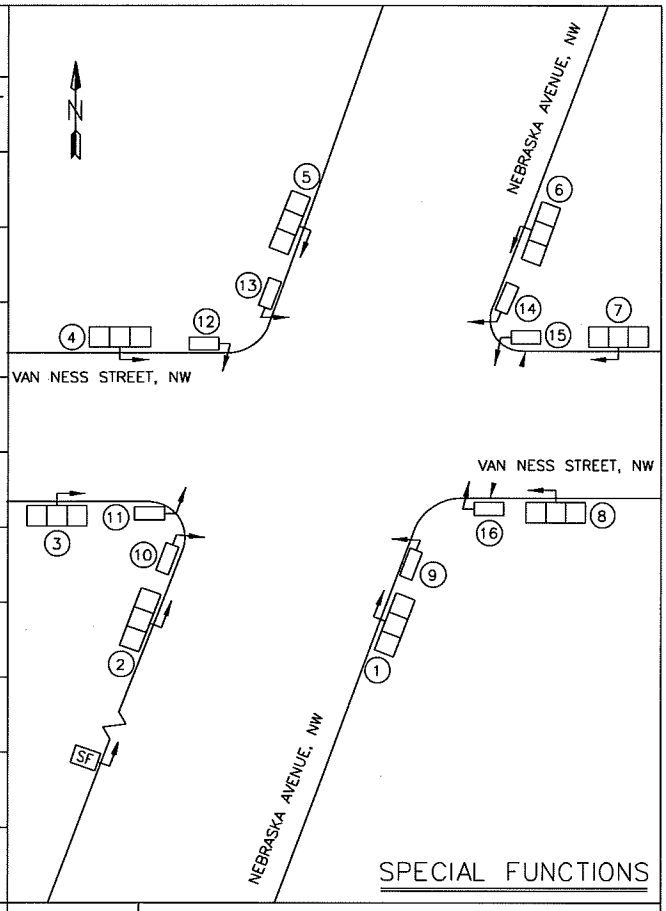


FLASH

TRAFFIC SIGNALS OPERATE ON COLORS 24 HOURS PER DAY, FLASH FOR EMERGENCY USE ONLY.

TRAFFIC SIGNAL OPERATION NEBRASKA AVENUE AND VAN NESS STREET, NW				ACISA 6119
D.C. DEPARTMENT OF TRANSPORTATION TRANSPORTATION OPERATIONS ADMINISTRATION		DESIGNED BY:		T.S. 1103-B OPT-1
CHECK BY: K.R.	DATE: 06/02/14	SUBMITTED BY: PROJECT ENGINEER		SHEET
DRAWN BY: P.M./R.F./SWA	DATE: 06/02/14	APPROVED BY: CHIEF, TRAFFIC SIGNALS & ITS		4 OF 5
IN SERVICE:	SCALE: NONE			

SIGN	IN SERVICE	TIMES
A		8:15AM-9:15AM, 11:15AM-1:15PM, 2:45-3:45PM — SCHOOL DAYS ONLY



SPECIAL FUNCTIONS

SIGN	DESCRIPTION
A	FLASHING BEACON – SCHOOL SIGN

TRAFFIC SIGNAL OPERATION
NEBRASKA AVENUE AND VAN NESS STREET, NW

ACISA 6119

D.C. DEPARTMENT OF TRANSPORTATION
TRANSPORTATION OPERATIONS ADMINISTRATION

CHECK BY:	K.R.	DATE:	06/02/14
DRAWN BY:	P.M./R.F./SWA	DATE:	06/02/14
IN SERVICE:		SCALE:	NONE

DESIGNED BY: _____

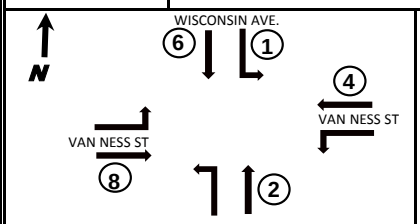
SUBMITTED BY: _____ PROJECT ENGINEER

APPROVED BY: _____ CHIEF, TRAFFIC SIGNALS & ITS

T.S. 1103-B OPT-1

SHEET SPECIAL FUNCTION 5 OF 5

233 Rev - 06/19/2012	WISCONSIN AVENUE AND VAN NESS STREET, NW		SHEET 2



DEPARTMENT OF TRANSPORTATION

WASHINGTON, D.C.

TRANSPORTATION OPERATION ADMINISTRATION

ACISA ID	6152	TS-	751-F
ISNUM	1277	S-	603

C + 0 + F = 1 <F + PHASE + INTVL>		PHASE TIMING BANK PHASE 1	2	3	4	5	6	7	8	PREEMPT TIMING		
INTERVAL										< F/1 + E + row >		
WALK	0		7		7		7			EVA DELAY	2	
FLASH D/W	1		6		18		8			EVA CLEAR	3	
MIN. GREEN	2	5	10		7		10		7	EVB DELAY	4	
TYPE 3 LIMIT	3									EVB CLEAR	5	
ADD/ VEH	4									EVC DELAY	6	
VEH EXTENSION	5	1	1		1		1		1	EVC CLEAR	7	
MAX GAP	6	1	1		1		1		1	EVD DELAY	8	
MIN GAP	7	1	1		1		1		1	EVD CLEAR	9	
MAXIMUM	8	10	115		50		125		50	BUS PRIORITY PARAMETERS		
MAXIMUM 2	9	10	200		75		210		75	< F/1 + A + row >		
ADVANCE / DELAY WALK	A									BUS DELAY	D	
PREEMPT PED. CLEARENCE	B									MAX EARLY GREEN	E	10
CONDITIONAL SERVICE MINIMUM	C									MAX GREEN EXTN	F	10
REDUCE EVERY	D									Min Grn Bef PE Forceoff		
YELLOW	E	4	4		4		4		4	MAX PREEMPT TIME		
RED CLEAR	F	1.5	1.5		2		1.5		2	Min Time Btwn Same PE		

COORDINATION FUNCTIONS	PHASE 1	2	3	4	5	6	7	8
LAG PHASES (Check by phases)		X		X		X		
SYNC PHASES (Check by phases)		X				X		

NOTES:

C+0+C=I ; C + <PLAN> + <FEATURE>		COORDINATION TIMING PLAN 1	2	3	4	5	6	7	8	9
CYCLE TIME	0	80	100	100	100	120	120	150	150	240
FORCE OFF 1	1	43	43	43	43	48	50	55	55	77
FORCE OFF 2	2	0	0	0	0	0	0	0	0	0
FORCE OFF 3	3									
FORCE OFF 4	4	31	31	31	31	36	38	43	43	65
FORCE OFF 5	5									
FORCE OFF 6	6	0	0	0	0	0	0	0	0	0
FORCE OFF 7	7									
FORCE OFF 8	8	31	31	31	31	36	38	43	43	65
OFFSET A	A	42	7	47	7	56	15	65	84	141
END PERMISSIVE 1	D	7	7	7	7	7	7	7	7	7
PRETIMED (PHASES)		ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
MAX RECALL (PHASES)										
PERM 1 VEH (PHASES)		ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL
PERM 1 PED (PHASES)		ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL

EVENT	TIME	PLAN	OFFSET	DAY OF WEEK
EVENT 0	0:00	1	A	1234567
EVENT 1	5:00	5	A	23456
EVENT 2	10:00	4	A	23456
EVENT 3	14:00	6	A	23456
EVENT 4	20:00	4	A	23456
EVENT 5	8:00	2	A	1 7
EVENT 6	18:00	1	A	1
EVENT 7				
EVENT 8				

NOTES:

C + 0 + E = 29 FUNCTION	OVERLAP CONFIG OL A	OL B	OL C	OL D
SET 1 (Overlapped Phases)				
NEG V				
NEG P				
GREEN EXTENSION				
YELLOW EXTENSION				
RED EXTENSION				

C + 0 + E = 125 E + E + FEATURE		CONFIG DATA PHASE 1	2	3	4	5	6	7	8
OVERLAP FL YEL	9								
EM VEH A	A								
EM VEH B	B								
EM VEH C	C								
EM VEH D	D								
EXTRA I	E	X		X		X			
IC SELECT	F		X						

C + 0 + E = 125 E + F + FEATURE		CONFIG DATA PHASE 1	2	3	4	5	6	7	8
PED 2P	5		X						
PED 6P	6						X		
PED 4P	7				X				
PED 8P	8								
FLASH YELLOW	9								
LOW PRIORITY A	A		X						
LOW PRIORITY B	B						X		
LOW PRIORITY C	C								
LOW PRIORITY D	D								
RESTRICT	E								
EXTRA 2 BITS	F				X				

C + 0 + F = 1 F + F + FEATURE		PHASE FUNCTIONS PHASE 1	2	3	4	5	6	7	8
PERMIT	0	X	X		X		X		X
RED LOCK	1								
YELLOW LOCK	2								
VEH RECALL	3								
PED RECALL	4		X		X		X		
REST IN WALK	6								
RED REST	7								
DOUBLE ENTRY	8								
MAX RECALL	9	X	X		X		X		X
SOFT RECALL	A								
MAX 2	B								
COND SERVICE	C								
EXT CONT. CALL	D								
YELLOW START UP	E								
FIRST PHASE GRN	F		X				X		

C + 0 + F = 2 F + F + FEATURE		PHASE FUNCTIONS PHASE 1	2	3	4	5	6	7	8
GREEN FLASH									
FLASH WALK									
ADVANCED WALK									
DELAYED WALK									

PREPARED BY: **Sabra, Wang & Associates, Inc.**

WORK/SHOP ORDER NO: S-07-16-328

APPROVED BY: Waseem Raja

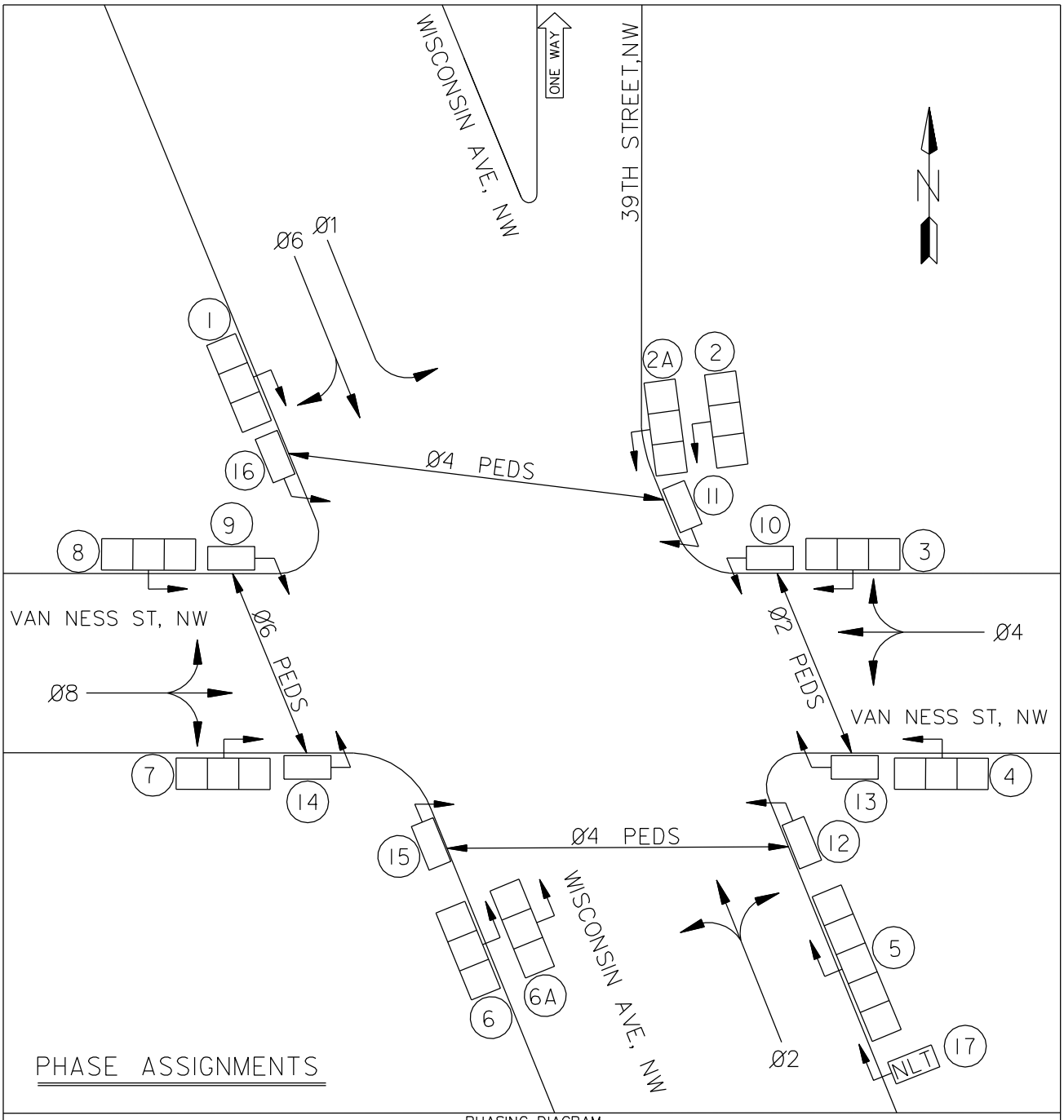
DATE INSTALLED:

INSTALLED BY:

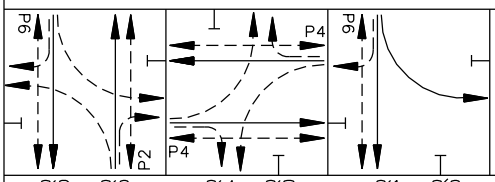
NOTES:

***NO LEFT TURN SB FROM 7:00 AM - 9:30 AM & FROM 4:00 PM TO 6:30 PM MONDAY-FRIDAY EXCEPT BUSES.**
***ASSIGN MAX 2 (COLUMN "B" OF ASSIGNABLE INPUT) TO PLAN #9.**
***SET COUNTDOWN SIGNALS TO BEGIN WITH FDW INTERVALS FOR ALL PHASES.**
***TSP ENABLED FOR NB PHASE 2 (PLAN 6 ONLY) ON CHANNEL A.**
***TSP ENABLED FOR SB PHASE 6 (PLAN 5 ONLY) ON CHANNEL B.**
***TSP CALLS ARE LOW PRIORITY CALLS WITH ASSIGNABLE INPUTS FROM EVA-EVD (C/126 + F + [FEATURE]) AS PINS 47-50, RESPECTIVELY.**

SIGNAL HEADS NO. 2A AND 6A ARE MOUNTED ON 8 FOOT LONG MAST ARMS.



PHASING DIAGRAM



Ø2+Ø6	Ø4+Ø8	Ø1+Ø6	FUTURE USE	FUTURE USE	FUTURE USE	FUTURE USE	FUTURE USE

TRAFFIC SIGNAL OPERATION

WISCONSIN AVENUE AND VAN NESS STREET, N.W.

ACISA 6152

D.C. DEPARTMENT OF TRANSPORTATION
TRANSPORTATION OPERATIONS ADMINISTRATION

DESIGNED BY:

SUBMITTED BY: PROJECT ENGINEER

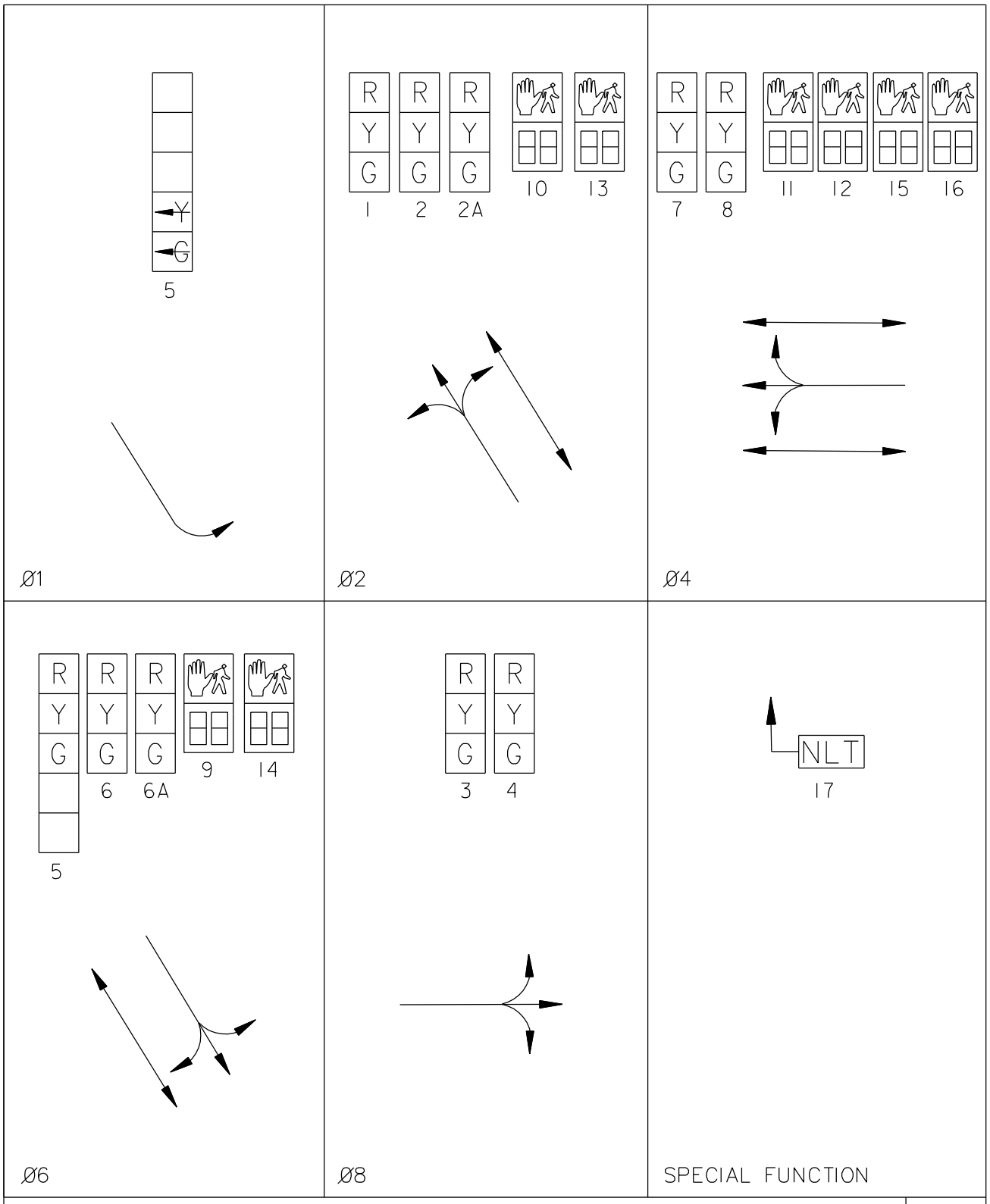
APPROVED BY: CHIEF, TRAFFIC SIGNALS & ITS

T.S. 751-F

SHEET 1 OF 5

CHECK BY:	AYY	DATE:	02/16
DRAWN BY:	AZ	DATE:	02/16
IN SERVICE:		SCALE:	NONE

SIGNAL HEADS NO. 2A AND 6A ARE MOUNTED ON 8 FOOT LONG MAST ARMS.



TRAFFIC SIGNAL OPERATION

WISCONSIN AVENUE AND VAN NESS STREET, N.W.

ACISA 6152

D.C. DEPARTMENT OF TRANSPORTATION
TRANSPORTATION OPERATIONS ADMINISTRATION

CHECK BY:	AYY	DATE:	02/16
DRAWN BY:	AZ	DATE:	02/16
IN SERVICE:		SCALE:	NONE

DESIGNED BY: _____

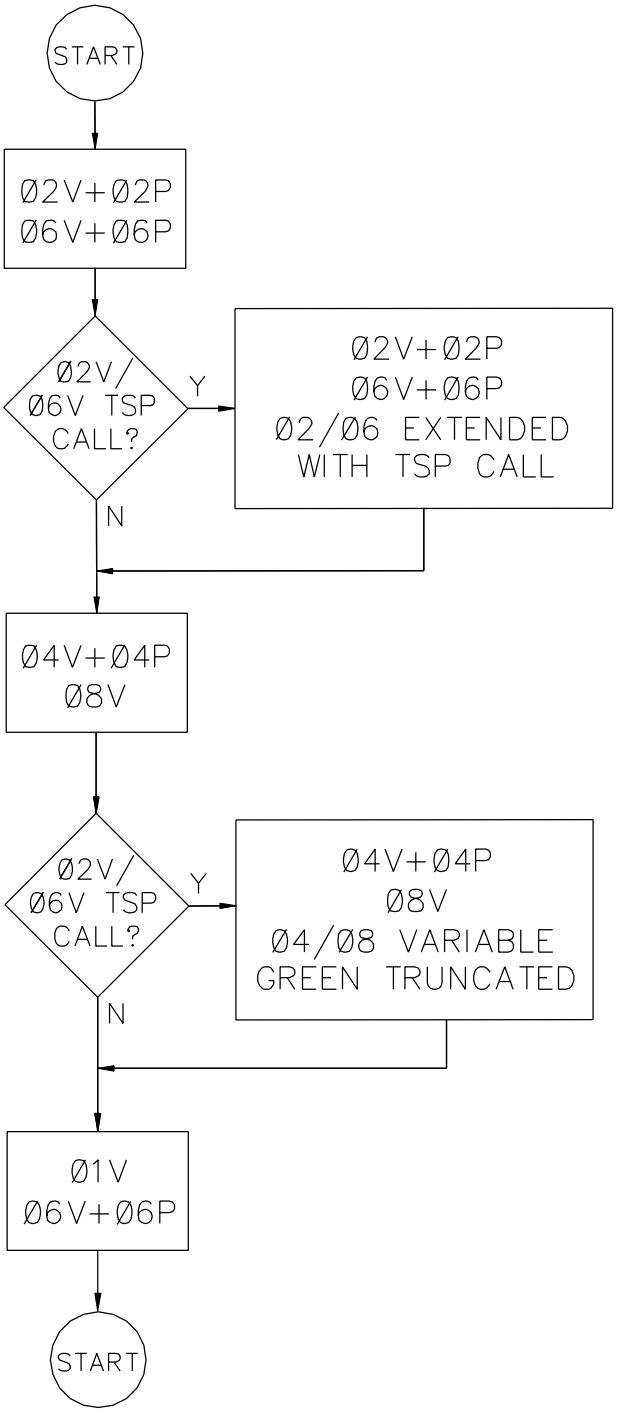
SUBMITTED BY: _____ PROJECT ENGINEER

APPROVED BY: _____ CHIEF, TRAFFIC SIGNALS & ITS

T.S. 751-F

SHEET 2 OF 5

SIGNAL HEADS NO. 2A AND 6A ARE MOUNTED ON 8 FOOT LONG MAST ARMS.



PHASE SEQUENCE

ON RECALL

Ø1V

Ø2V + Ø2P

Ø4V + Ø4P

Ø6V + Ø6P

Ø8V

BY DEMAND ONLY

NONE

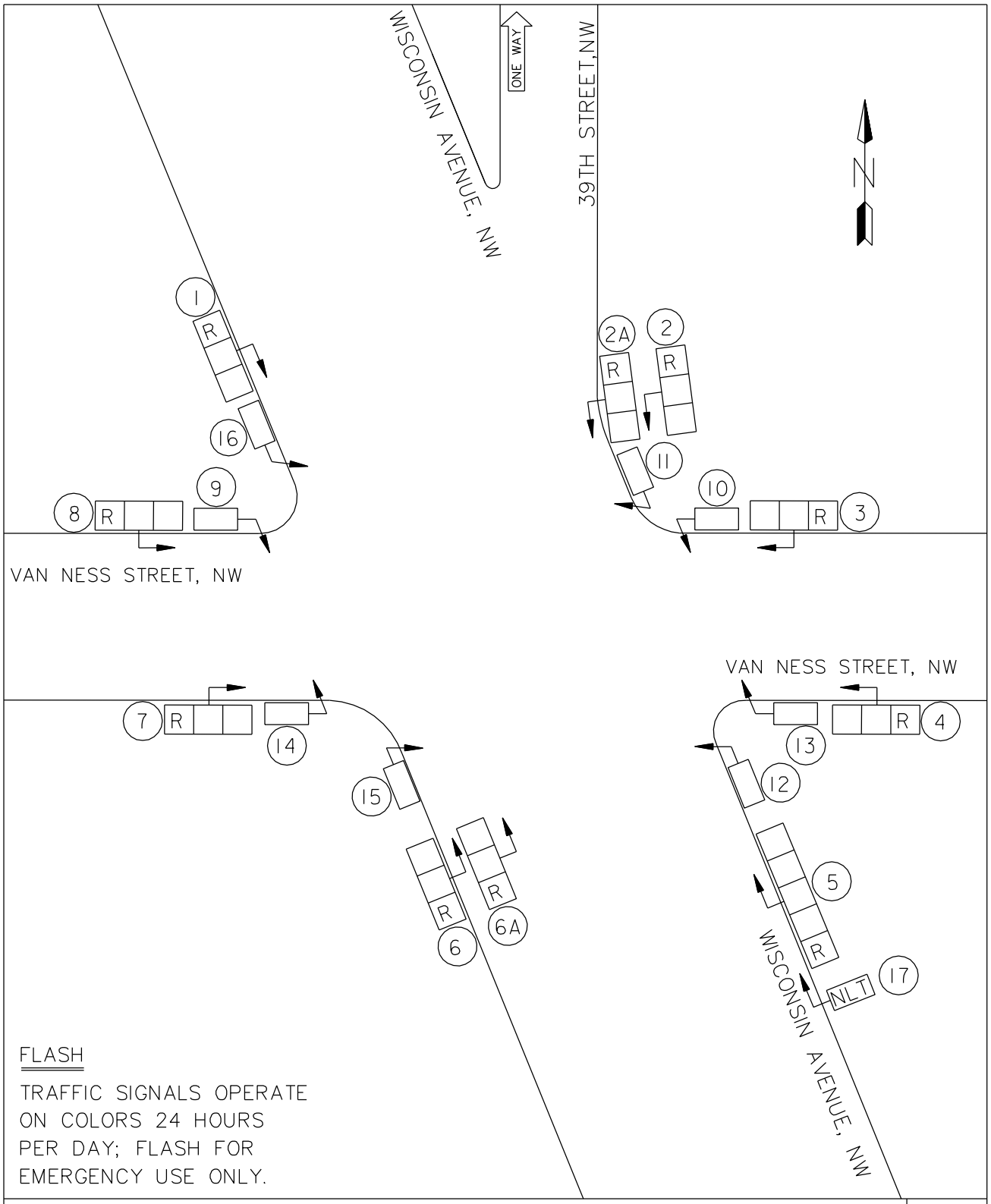
TSP PHASE

Ø2V (PM ONLY)

Ø6V (AM ONLY)

TRAFFIC SIGNAL OPERATION WISCONSIN AVENUE AND VAN NESS STREET, N.W.		ACISA 6152
D.C. DEPARTMENT OF TRANSPORTATION TRANSPORTATION OPERATIONS ADMINISTRATION	DESIGNED BY: _____ SUBMITTED BY: _____ PROJECT ENGINEER APPROVED BY: _____ CHIEF, TRAFFIC SIGNALS & ITS	T.S. 751-F
CHECK BY: AYY DATE: 02/16 DRAWN BY: AZ DATE: 02/16 IN SERVICE: SCALE: NONE		SHEET 3 OF 5

SIGNAL HEADS NO. 2A AND 6A ARE MOUNTED ON 8 FOOT LONG MAST ARMS.



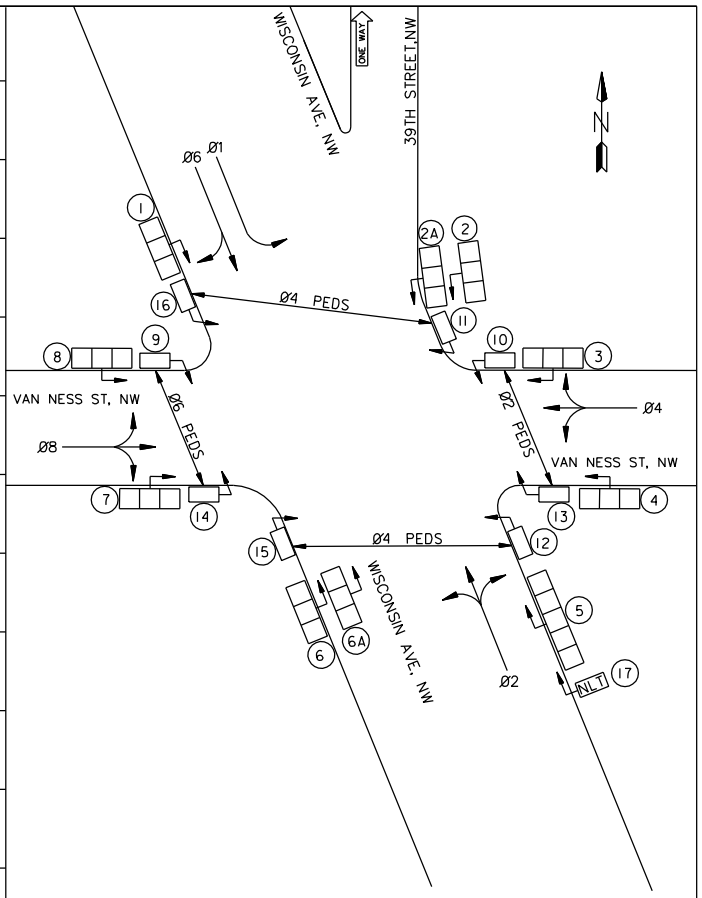
FLASH

TRAFFIC SIGNALS OPERATE ON COLORS 24 HOURS PER DAY; FLASH FOR EMERGENCY USE ONLY.

TRAFFIC SIGNAL OPERATION WISCONSIN AVENUE AND VAN NESS STREET, N.W.	ACISA 6152
D.C. DEPARTMENT OF TRANSPORTATION TRANSPORTATION OPERATIONS ADMINISTRATION	DESIGNED BY: _____ SUBMITTED BY: _____ PROJECT ENGINEER APPROVED BY: _____ CHIEF, TRAFFIC SIGNALS & ITS
T.S. 751-F	
CHECK BY: AYY DATE: 02/16 DRAWN BY: AZ DATE: 02/16 IN SERVICE: SCALE: NONE	SHEET 4 OF 5

SIGNAL HEADS NO. 2A AND 6A ARE MOUNTED ON 8 FOOT LONG MAST ARMS.

SIGN	IN SERVICE	TIMES
17		7:00–9:30AM, 4:00–6:30PM M-F



SPECIAL FUNCTIONS

SIGN	DESCRIPTION
17	LED NO LEFT TURN SIGN

TRAFFIC SIGNAL OPERATION

WISCONSIN AVENUE AND VAN NESS STREET, N.W.

ACISA 6152

D.C. DEPARTMENT OF TRANSPORTATION
TRANSPORTATION OPERATIONS ADMINISTRATION

CHECK BY:	AYY	DATE:	02/16
DRAWN BY:	AZ	DATE:	02/16
IN SERVICE:		SCALE:	NONE

DESIGNED BY: _____

SUBMITTED BY: _____ PROJECT ENGINEER

APPROVED BY: _____ CHIEF, TRAFFIC SIGNALS & ITS

T.S. 751-F

SHEET 5 OF 5

TIMING PLAN SCHEDULE				
EVENT	TIME	PLAN	OFFSET	DAY OF WEEK
EVENT 0	0:00	1	A	1234567
EVENT 1	5:00	5	A	23456
EVENT 2	10:00	4	A	23456
EVENT 3	14:00	6	A	23456
EVENT 4	20:00	4	A	23456
EVENT 5	8:00	2	A	1 7
EVENT 6	18:00	1	A	1
EVENT 7				
EVENT 8				

TS- 749-H.1

WISCONSIN AVENUE AND TENLEY CIRCLE, NW

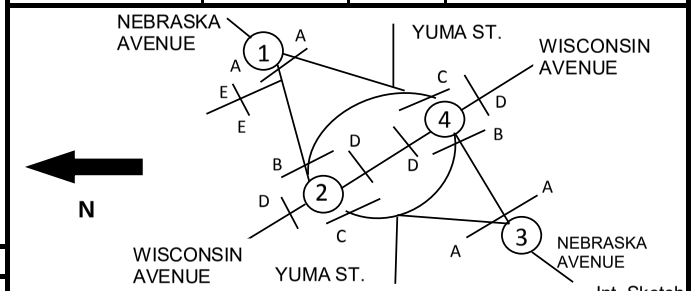
LOCATION

DEPARTMENT OF TRANSPORTATION

WASHINGTON, D.C.

TRAFFIC SERVICES ADMINISTRATION

S-DRAWING NO: S-1071-E SHEET: 3 OF 3



Int. Sketch

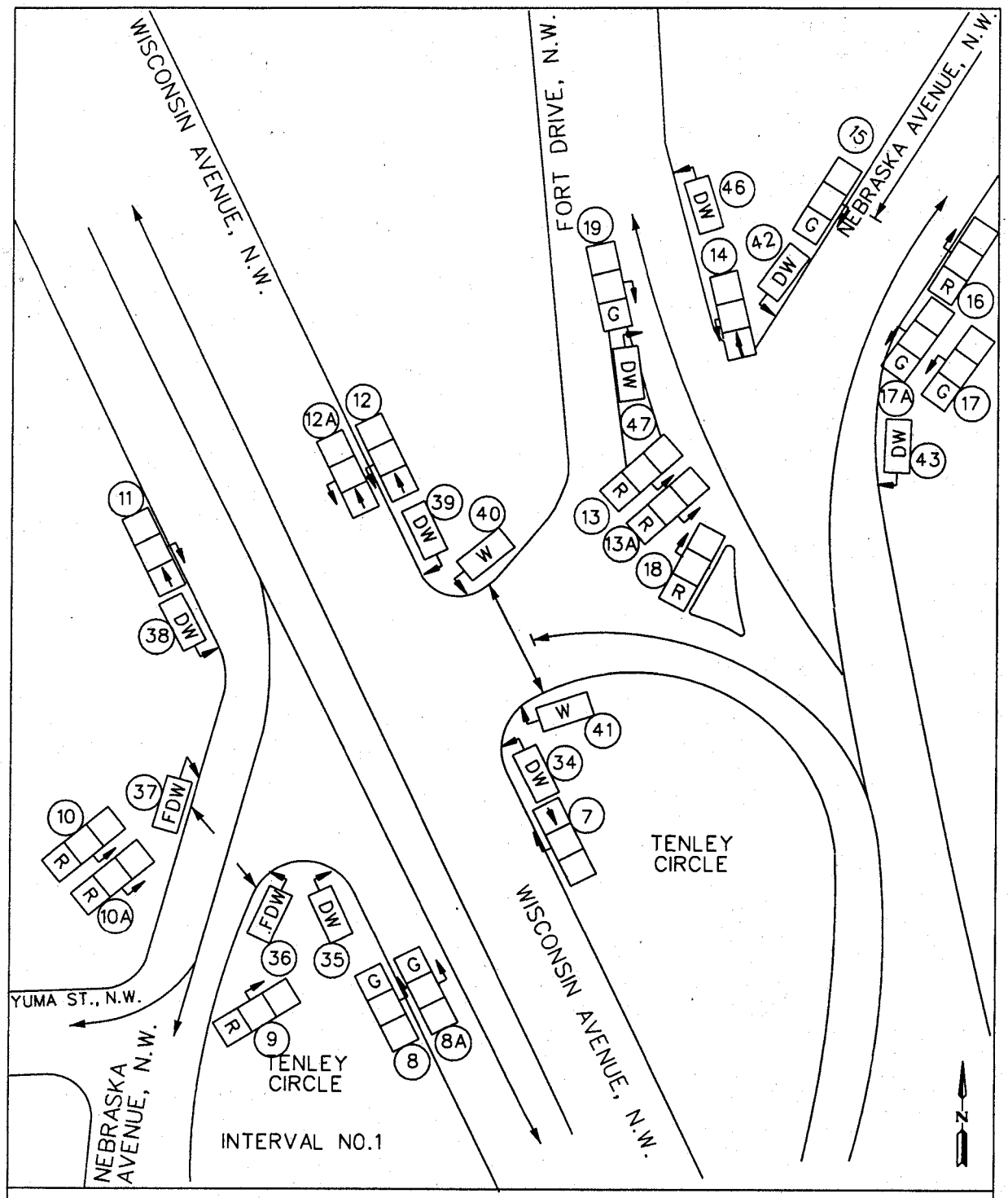
CONTROLLER	ISNUM	ACISA
170	1281	6156

DESCRIPTION (INTERSECTION / STREET / DIRECTION)

1			2			3		4			PEDESTRIAN					INTERVAL TYPE	INTERVAL NUMBER	TIMING PLAN NUMBER 1		2		4		5		6		7		8		9	
NWB	N	S	NWB	SEB	S	N	S	NWB	SEB	N	A	B	C	D	E			S	C	S	C	S	C	S	C	S	C	S	C	S	C	S	C
G	G	R	G	G	R	R	G	G	G	R	DW	W	FDW	DW	DW	F	1	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
G	G	R	G	G	R	R	G	G	G	R	DW	W	FDW	DW	DW	V	2	1	6	5	10	5	10	22	27	15	20	42	47	33	38	53	58
Y	G	R	G	Y	R	R	G	Y	G	R	DW	FDW	DW	DW	DW	F	3	4	10	4	14	4	14	4	31	4	24	4	51	4	42	4	62
R	G	R	G	R	R	G	G	R	G	R	DW	FDW	DW	DW	DW	F	4	3	13	3	17	3	17	3	34	3	27	3	54	3	45	3	65
R	G	G	Y	R	R	G	G	R	Y	R	DW	DW	DW	DW	W	F	5	4	17	4	21	4	21	4	38	4	31	4	58	4	49	4	69
R	G	G	R	R	R	G	G	R	R	R	DW	DW	DW	DW	W	F	6	1	18	1	22	1	22	1	39	1	32	1	59	1	50	1	70
R	G	G	R	R	G	G	G	R	R	G	DW	DW	DW	W	W	F	7	10	28	10	32	10	32	10	49	10	42	10	69	10	60	10	80
R	G	G	R	R	G	G	G	R	R	G	DW	DW	DW	W	W	V	8	1	29	17	49	17	49	20	69	24	66	30	99	33	93	39	119
R	G	G	R	R	G	G	G	R	R	G	DW	DW	DW	FDW	FDW	F	9	4	33	4	53	4	53	4	73	4	70	4	103	4	97	4	123
R	G	Y	R	R	G	Y	G	R	R	G	DW	DW	DW	FDW	DW	F	10	4	37	4	57	4	57	4	77	4	74	4	107	4	101	4	127
R	G	R	R	R	G	R	G	R	R	G	DW	DW	DW	FDW	DW	F	11	5	42	5	62	5	62	5	82	5	79	5	112	5	106	5	132
G	G	R	R	R	Y	R	G	R	R	Y	DW	DW	DW	DW	DW	F	12	4	46	4	66	4	66	4	86	4	83	4	116	4	110	4	136
G	G	R	R	R	R	R	G	R	R	R	DW	DW	DW	DW	DW	F	13	1	47	1	67	1	67	1	87	1	84	1	117	1	111	1	137
G	G	R	G	G	R	R	Y	G	G	R	DW	W	W	DW	DW	F	14	5	52	5	72	5	72	5	92	5	89	5	122	5	116	5	142
G	G	R	G	G	R	R	R	G	G	R	DW	W	W	DW	DW	V	15	5	57	5	77	5	77	5	97	8	97	5	127	11	127	75	217
G	Y	R	G	G	R	R	R	G	G	R	DW	W	W	DW	DW	F	16	4	61	4	81	4	81	4	101	4	101	4	131	4	131	4	221
G	R	R	G	G	R	R	R	G	G	R	DW	W	W	DW	DW	F	17	6	67	6	87	6	87	6	107	6	107	6	137	6	137	6	227
G	R	R	G	G	R	R	R	G	G	R	W	W	W	DW	DW	F	18	6	73	6	93	6	93	6	113	6	113	6	143	6	143	6	233
G	R	R	G	G	R	R	R	G	G	R	W	W	W	DW	DW	V	19	1	74	1	94	1	94	1	114	1	114	1	144	1	144	1	234
G	R	R	G	G	R	R	R	G	G	R	FDW	W	W	DW	DW	F	20	5	79	5	99	5	99	5	119	5	119	5	149	5	149	5	239
G	R	R	G	G	R	R	R	G	G	R	DW	W	W	DW	DW	F	21	1	80	1	100	1	100	1	120	1	120	1	150	1	150	1	240
																	CYCLE LENGTH	80		100		100		120		120		150		150		240	
																	OFFSET A	22		63		63		109		99		124		40		83	

PREPARED BY:	Sabra, Wang & Associates, Inc
DATE TO SHOP:	
WORK OR SHOP ORDER NO: S-07-16-332	
APPROVED BY: Waseem Raja	
DATE INSTALLED:	
INSTALLED BY:	

S=Seconds C=Cummulative secs F=Fixed interval V=Variable Interval ◯ = Force Off (circle the interval)

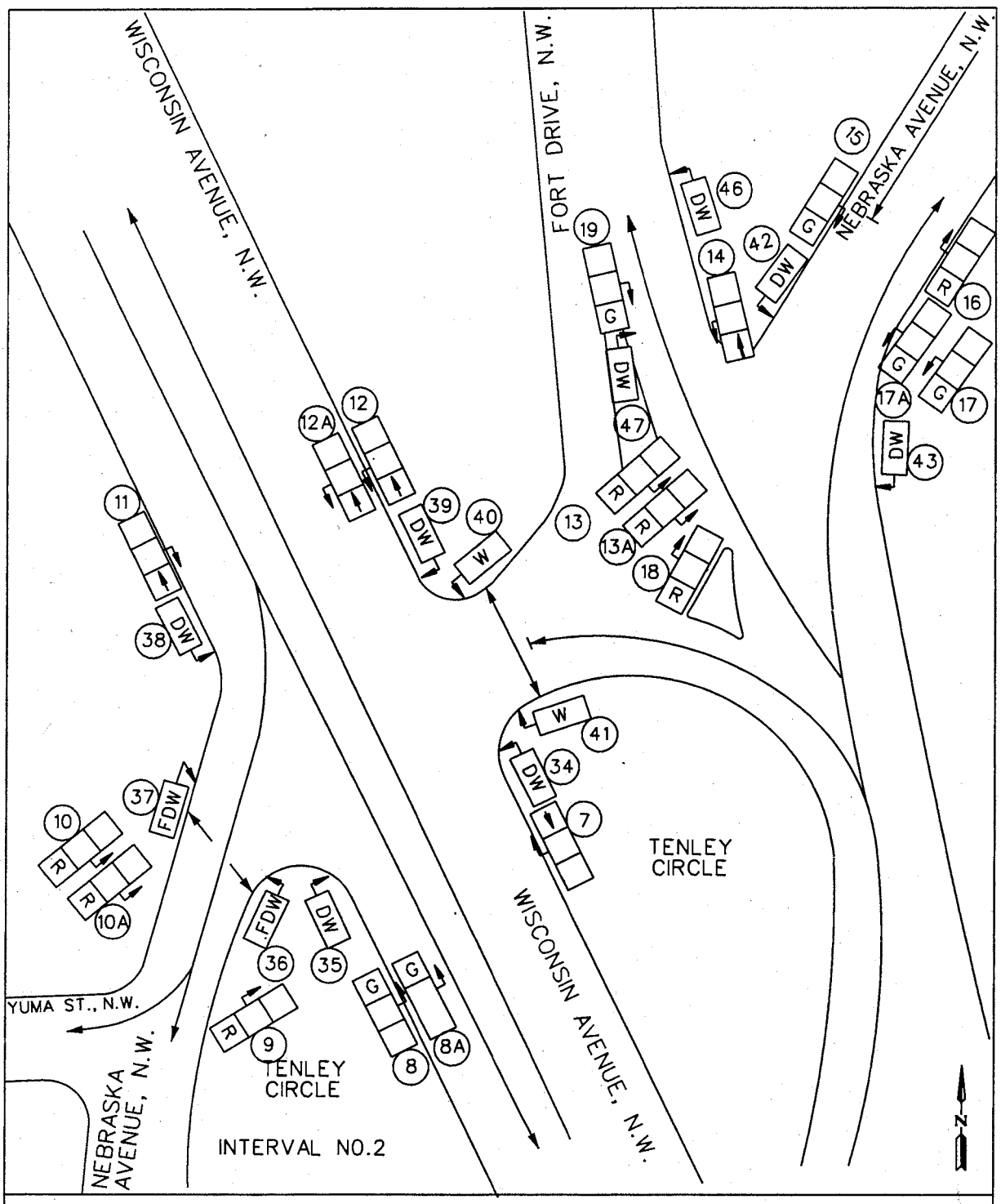


TRAFFIC SIGNAL OPERATION

WISCONSIN AVENUE AND NEBRASKA AVENUE (TENLEY CIRCLE), N.W. EAST SIDE

D.C. DEPARTMENT OF TRANSPORTATION TRAFFIC SERVICES ADMINISTRATION TRAFFIC SIGNAL SYSTEM DIVISION	DESIGNED BY: Arnold Negussie SUBMITTED BY: CHIEF, SIGNAL DESIGN BRANCH	T.S. 749-H 1
CHECKED BY: DATE:	APPROVED BY: William W. McGuire 5/15/06 DIVISION CHIEF	SHEET
DRAWN BY: AN DATE:		
IN SERVICE: SCALE: NONE		1 OF 21

SDGNS

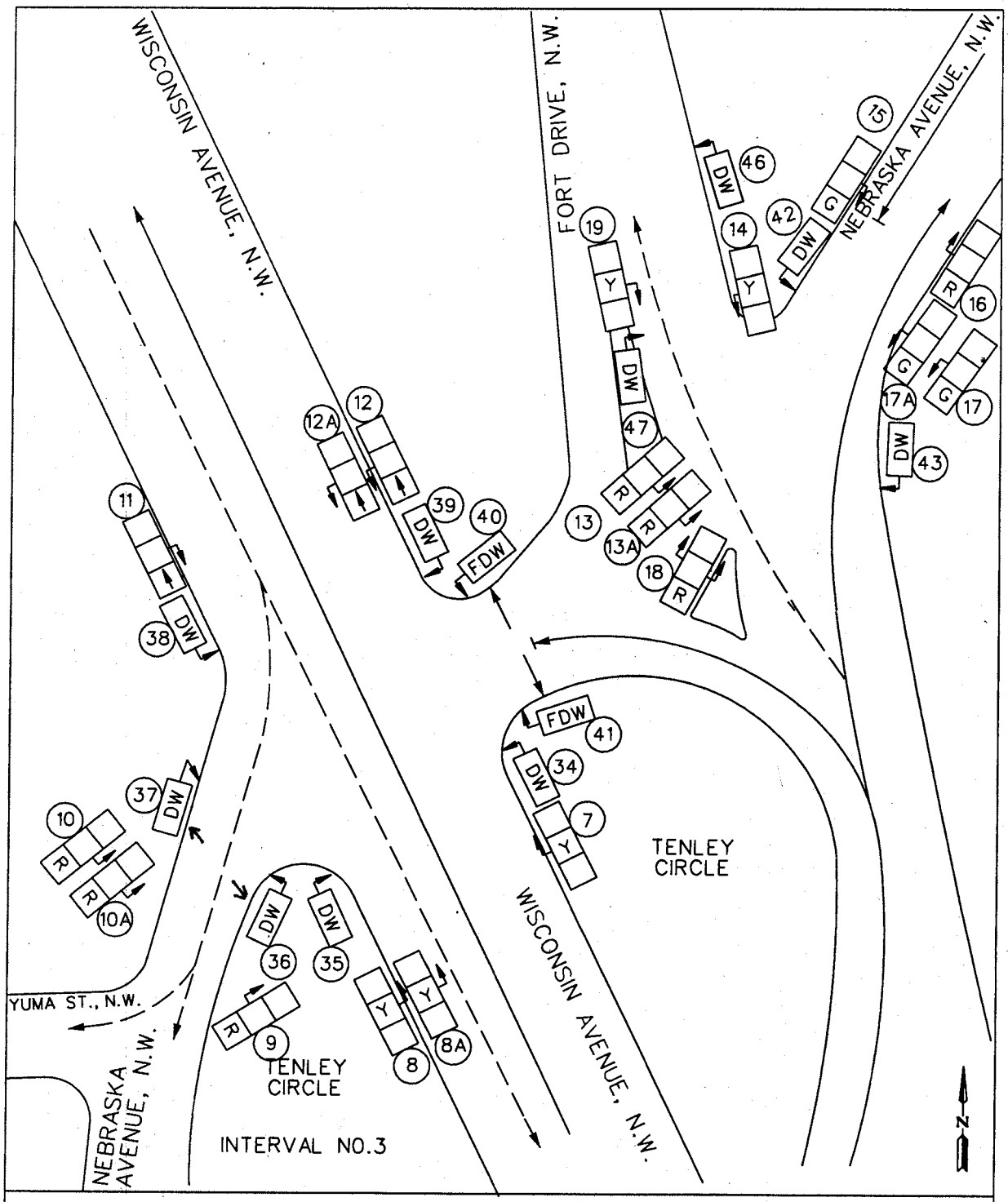


TRAFFIC SIGNAL OPERATION

WISCONSIN AVENUE AND NEBRASKA AVENUE (TENLEY CIRCLE), N.W. EAST SIDE

D.C. DEPARTMENT OF TRANSPORTATION TRAFFIC SERVICES ADMINISTRATION TRAFFIC SIGNAL SYSTEM DIVISION	DESIGNED BY:	T.S. 749-H 1
CHECKED BY: DATE:	SUBMITTED BY: CHIEF, SIGNAL DESIGN BRANCH	SHEET
DRAWN BY: AN DATE:	APPROVED BY: DIVISION CHIEF	2 OF 21
IN SERVICE: SCALE: NONE		

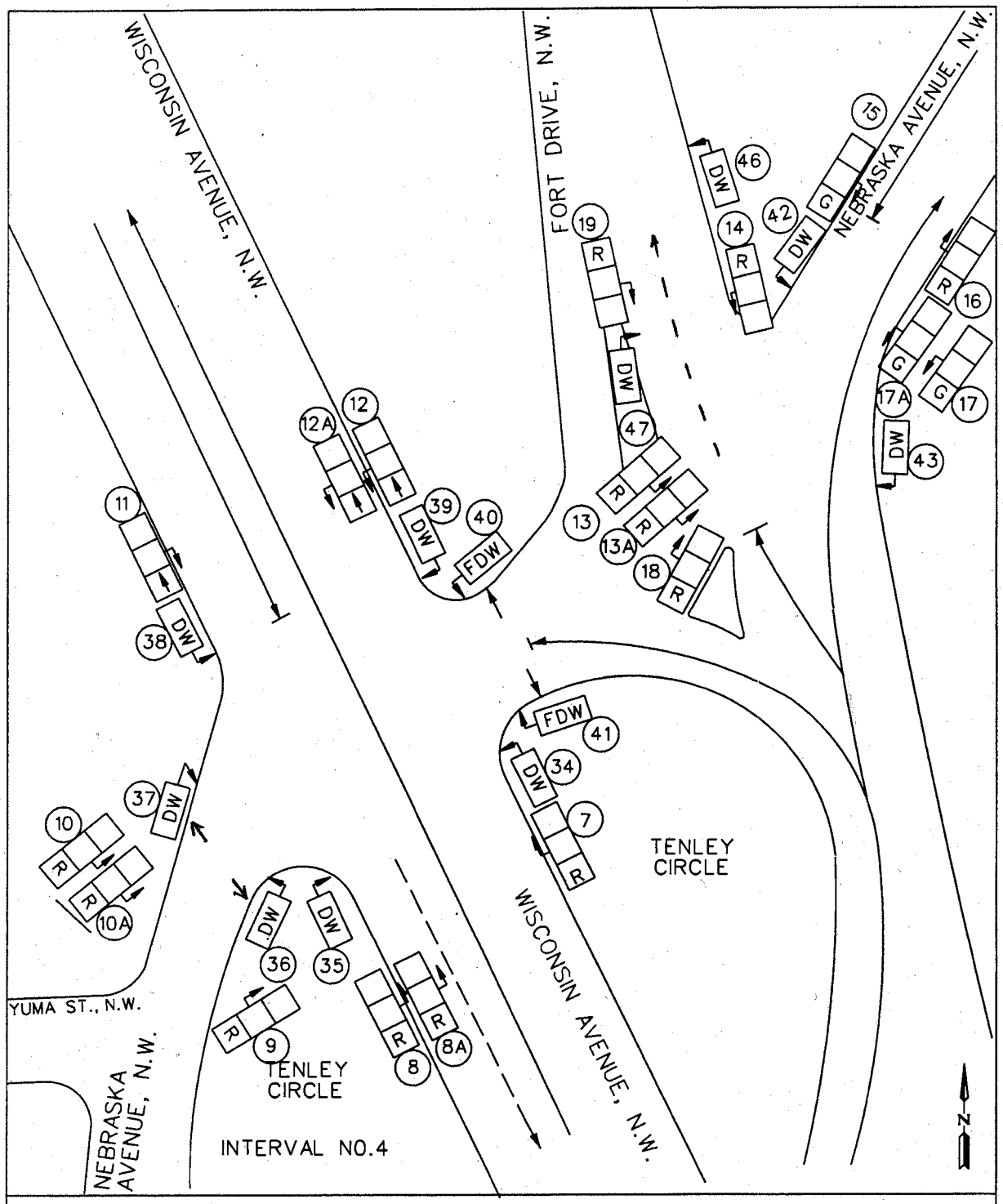
DGN



TRAFFIC SIGNAL OPERATION

WISCONSIN AVENUE AND NEBRASKA AVENUE (TENLEY CIRCLE), N.W. EAST SIDE

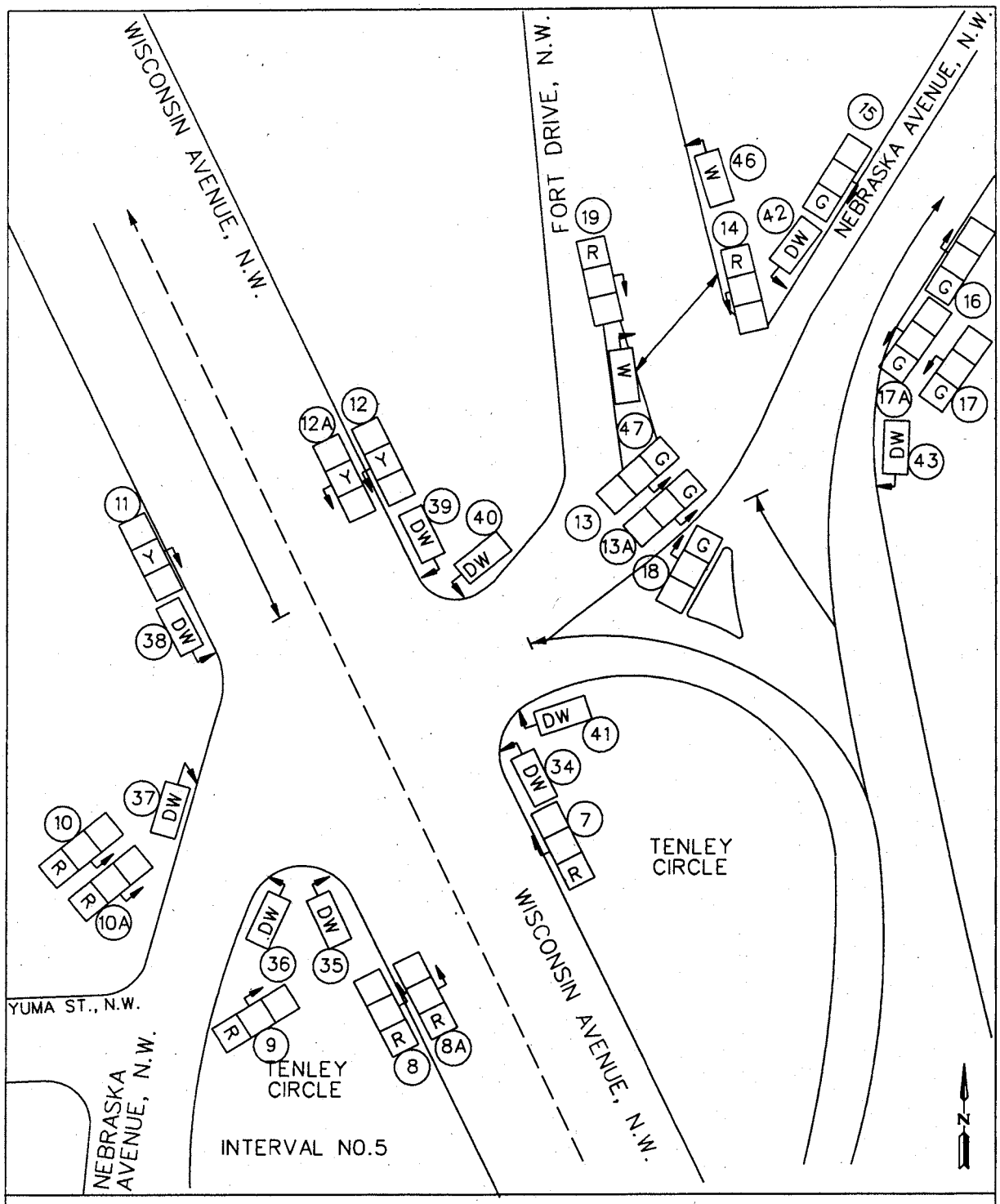
D.C. DEPARTMENT OF TRANSPORTATION TRAFFIC SERVICES ADMINISTRATION TRAFFIC SIGNAL SYSTEM DIVISION	DESIGNED BY:		T.S. 749-H 1
CHECKED BY:	DATE:	SUBMITTED BY: CHIEF, SIGNAL DESIGN BRANCH	SHEET
DRAWN BY: AN	DATE:	APPROVED BY: DIVISION CHIEF	3 OF 21
IN SERVICE:	SCALE: NONE		



TRAFFIC SIGNAL OPERATION

WISCONSIN AVENUE AND NEBRASKA AVENUE (TENLEY CIRCLE), N.W. EAST SIDE

D.C. DEPARTMENT OF TRANSPORTATION TRAFFIC SERVICES ADMINISTRATION TRAFFIC SIGNAL SYSTEM DIVISION	DESIGNED BY:		T.S. 749-H 1
CHECKED BY:	DATE:	SUBMITTED BY: CHIEF, SIGNAL DESIGN BRANCH	SHEET
DRAWN BY: AN	DATE:	APPROVED BY: DIVISION CHIEF	4 OF 21
IN SERVICE:	SCALE: NONE		



TRAFFIC SIGNAL OPERATION

WISCONSIN AVENUE AND NEBRASKA AVENUE (TENLEY CIRCLE), N.W. EAST SIDE

D.C. DEPARTMENT OF TRANSPORTATION TRAFFIC SERVICES ADMINISTRATION TRAFFIC SIGNAL SYSTEM DIVISION		DESIGNED BY:	T.S. 749-H 1
CHECKED BY:	DATE:	SUBMITTED BY: CHIEF, SIGNAL DESIGN BRANCH	SHEET
DRAWN BY: AN	DATE:	APPROVED BY: DIVISION CHIEF	5 OF 21
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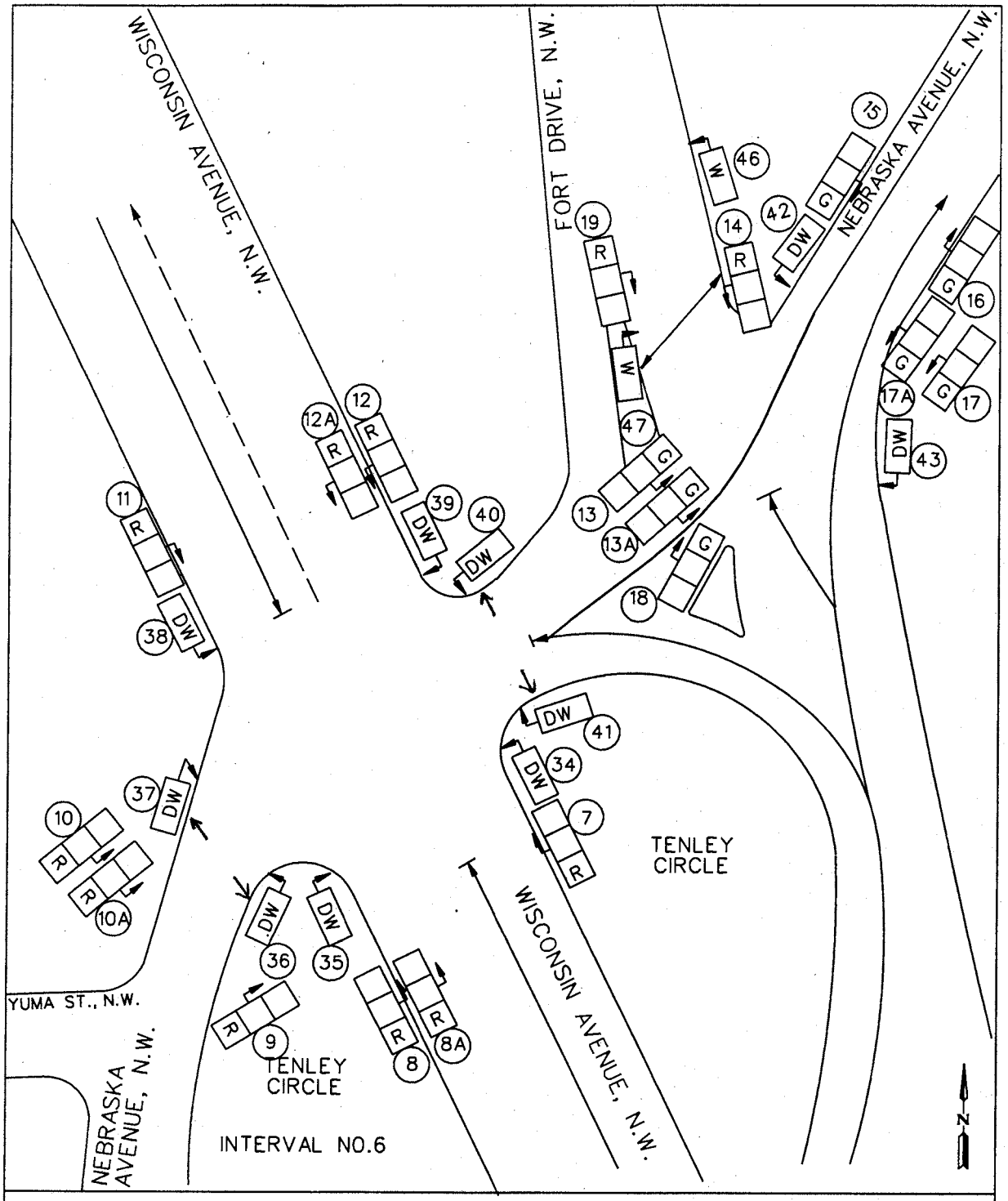

TRAFFIC SIGNAL OPERATION

WISCONSIN AVENUE AND NEBRASKA AVENUE (TENLEY CIRCLE), N.W. EAST SIDE

D.C. DEPARTMENT OF TRANSPORTATION TRAFFIC SERVICES ADMINISTRATION TRAFFIC SIGNAL SYSTEM DIVISION		DESIGNED BY:	T.S. 749-H 1
CHECKED BY:	DATE:	SUBMITTED BY: CHIEF, SIGNAL DESIGN BRANCH	SHEET
DRAWN BY: AN	DATE:	APPROVED BY: DIVISION CHIEF	6 OF 21
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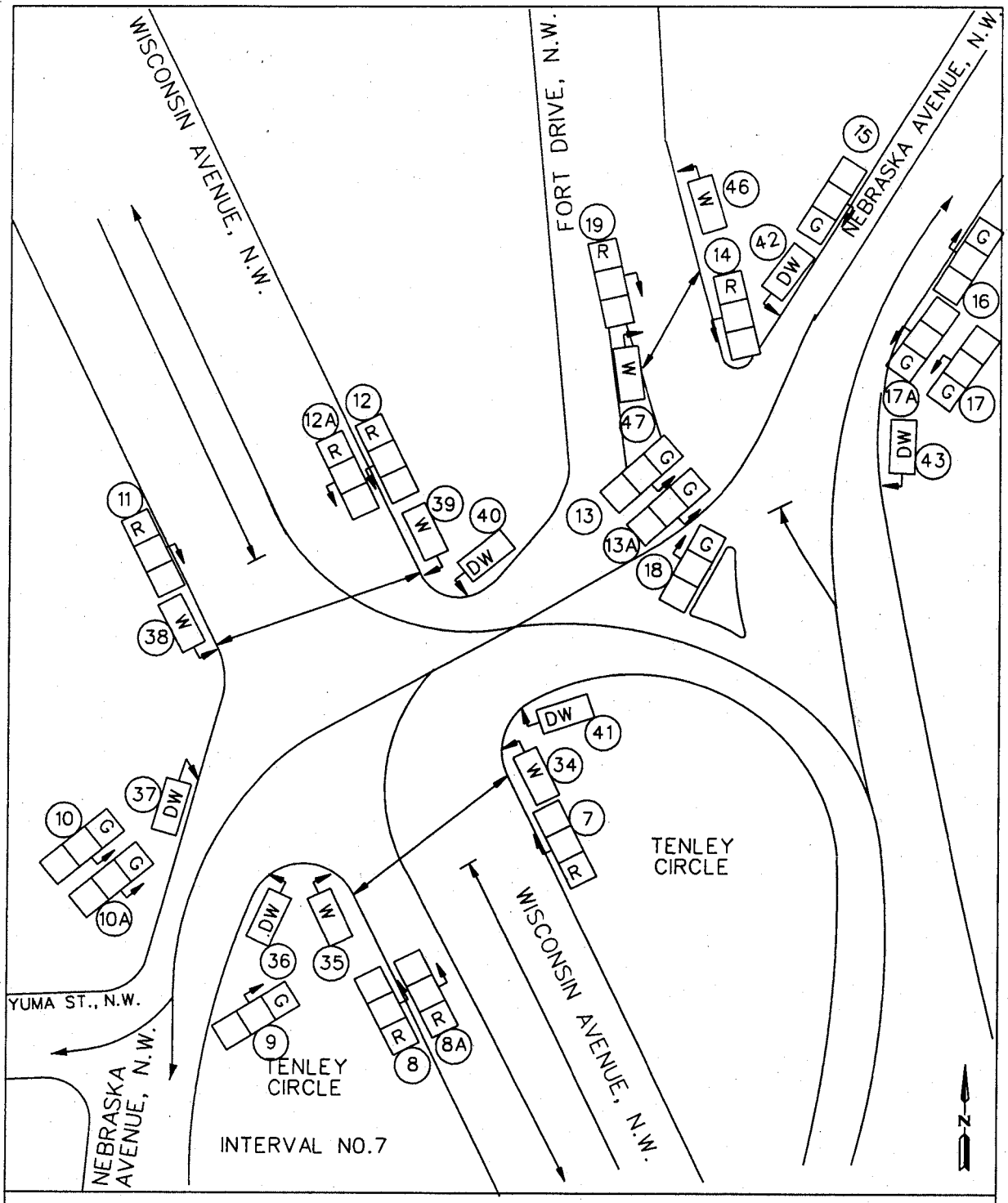

TRAFFIC SIGNAL OPERATION

WISCONSIN AVENUE AND NEBRASKA AVENUE (TENLEY CIRCLE), N.W. EAST SIDE

D.C. DEPARTMENT OF TRANSPORTATION TRAFFIC SERVICES ADMINISTRATION TRAFFIC SIGNAL SYSTEM DIVISION		DESIGNED BY:	T.S. 749-H 1
CHECKED BY:	DATE:	SUBMITTED BY: CHIEF, SIGNAL DESIGN BRANCH	SHEET
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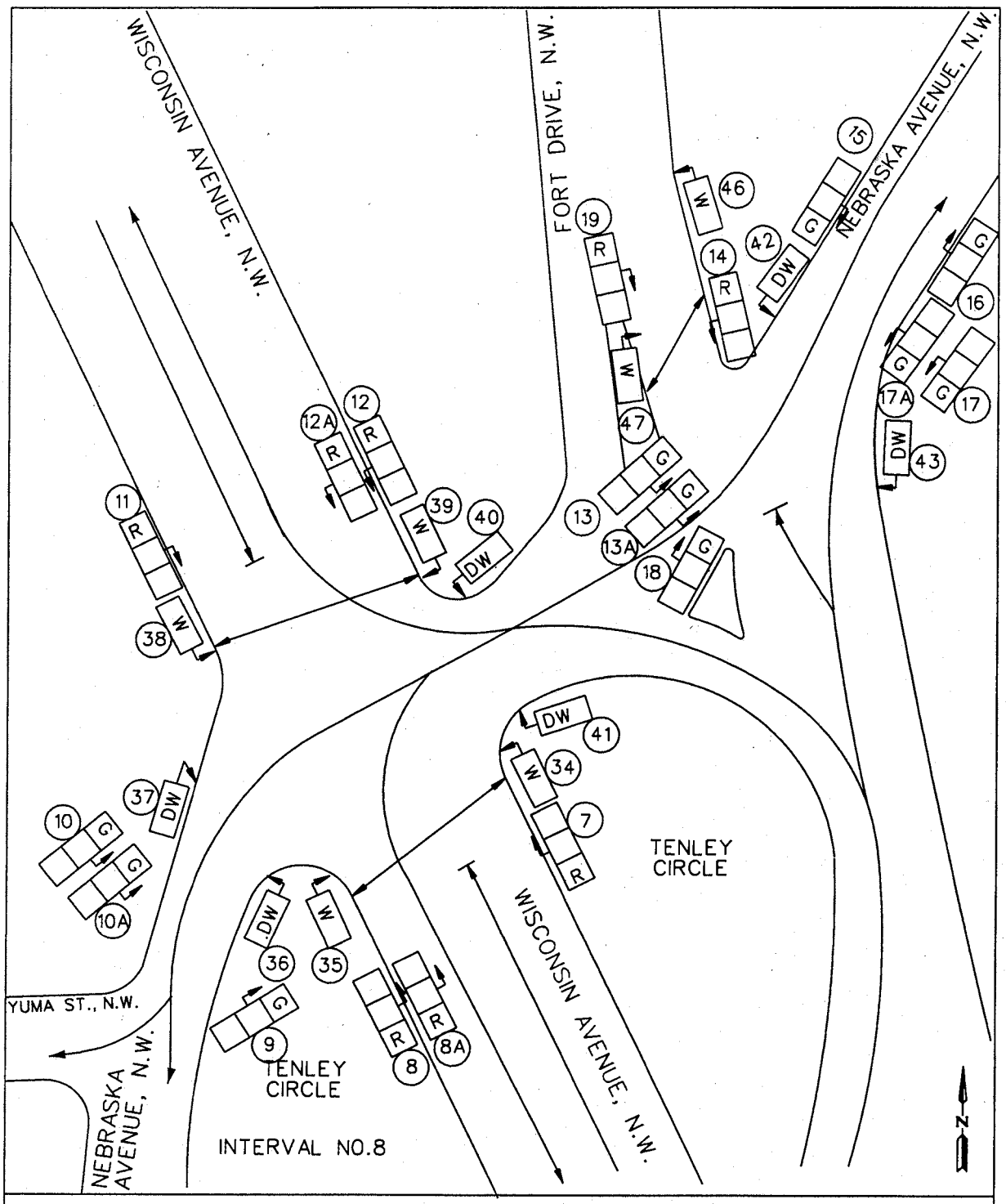

TRAFFIC SIGNAL OPERATION

WISCONSIN AVENUE AND NEBRASKA AVENUE (TENLEY CIRCLE), N.W. EAST SIDE

D.C. DEPARTMENT OF TRANSPORTATION TRAFFIC SERVICES ADMINISTRATION TRAFFIC SIGNAL SYSTEM DIVISION		DESIGNED BY:	T.S. 749-H 1
CHECKED BY:	DATE:	SUBMITTED BY: CHIEF, SIGNAL DESIGN BRANCH	SHEET
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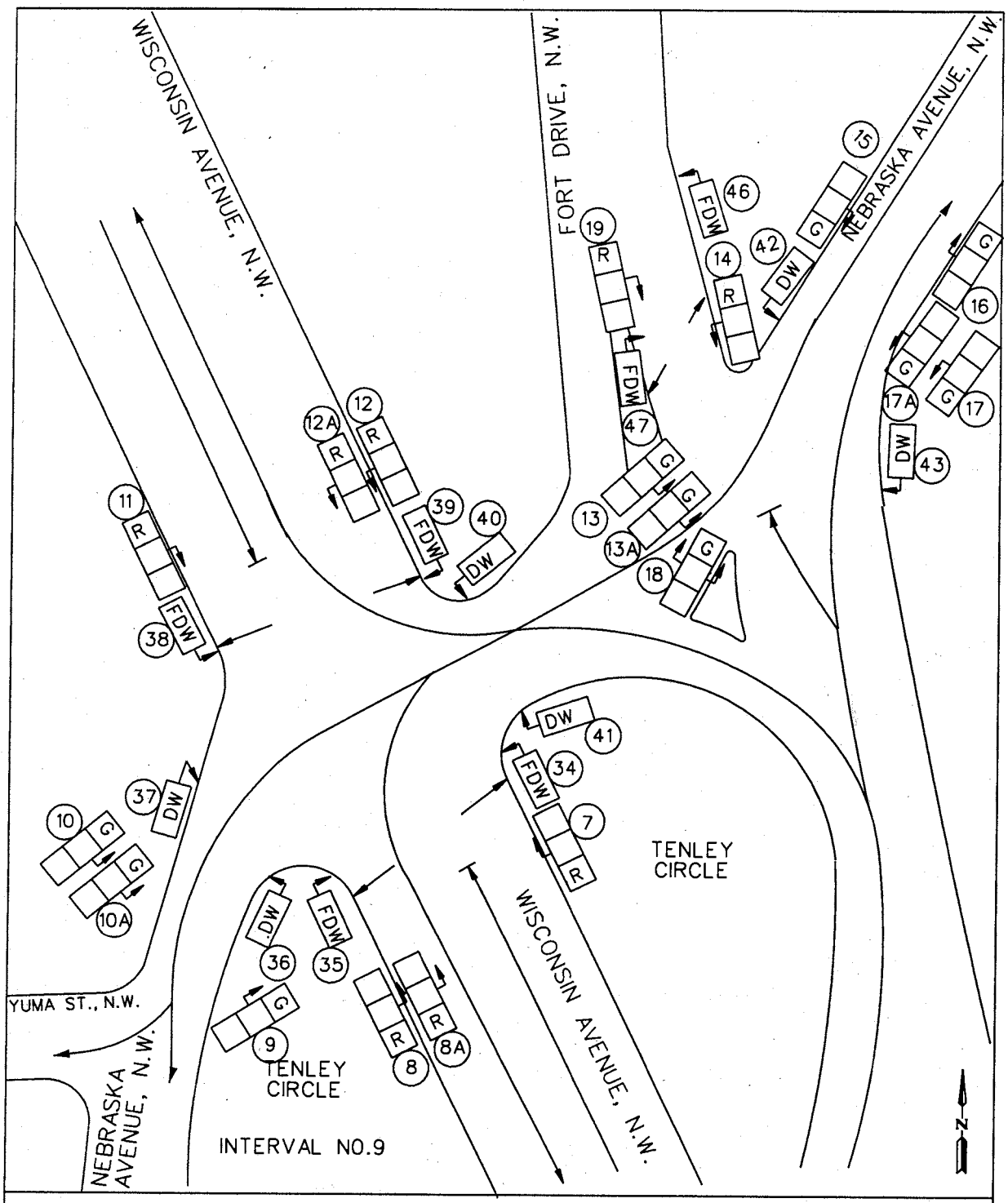

TRAFFIC SIGNAL OPERATION

WISCONSIN AVENUE AND NEBRASKA AVENUE (TENLEY CIRCLE), N.W. EAST SIDE

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CHECKED BY:	DATE:	SUBMITTED BY: CHIEF, SIGNAL DESIGN BRANCH	SHEET
DRAWN BY: AN	DATE:	APPROVED BY: DIVISION CHIEF	9 OF 21
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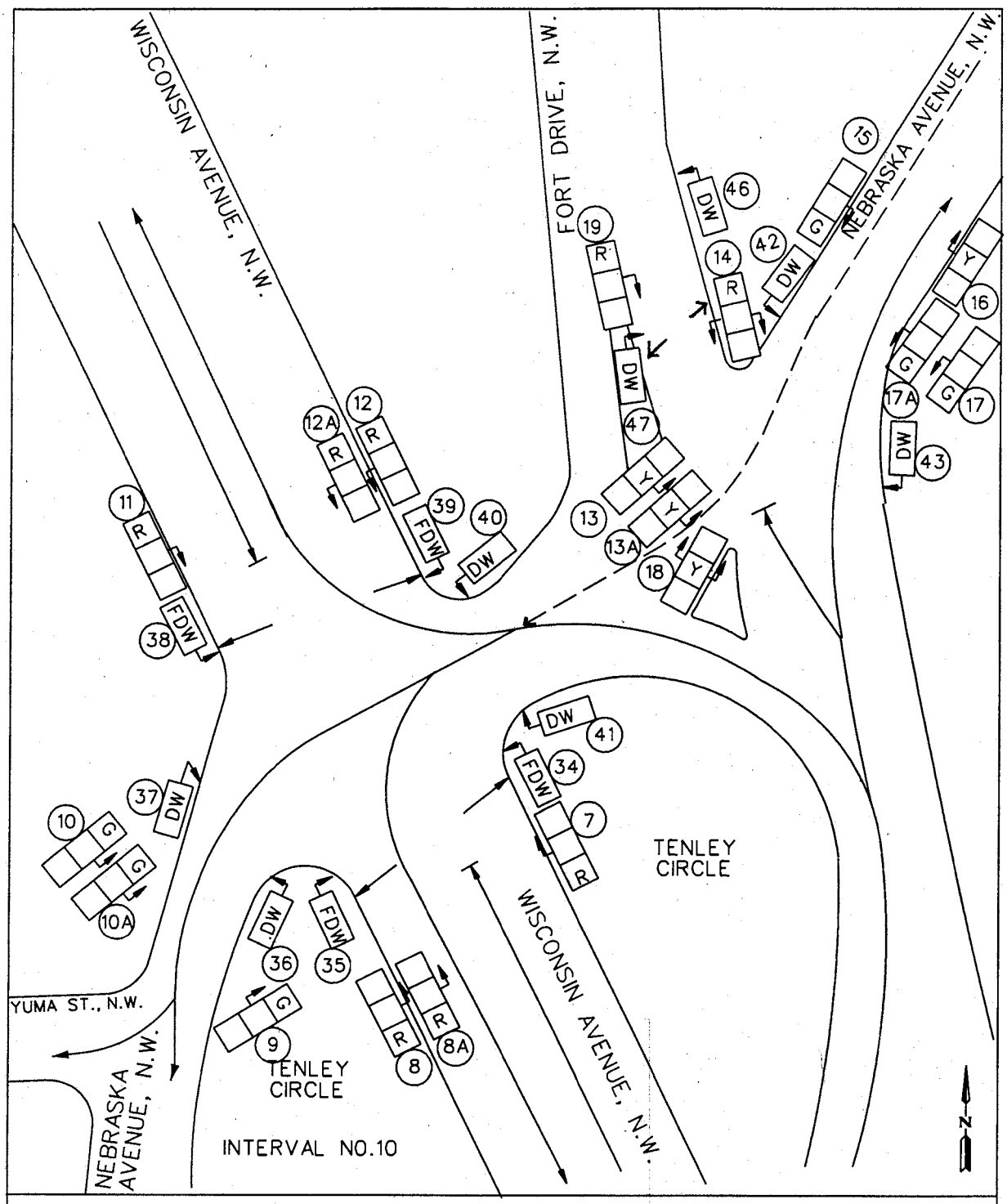

TRAFFIC SIGNAL OPERATION

WISCONSIN AVENUE AND NEBRASKA AVENUE (TENLEY CIRCLE), N.W. EAST SIDE

D.C. DEPARTMENT OF TRANSPORTATION TRAFFIC SERVICES ADMINISTRATION TRAFFIC SIGNAL SYSTEM DIVISION	DESIGNED BY:	T.S. 749-H 1
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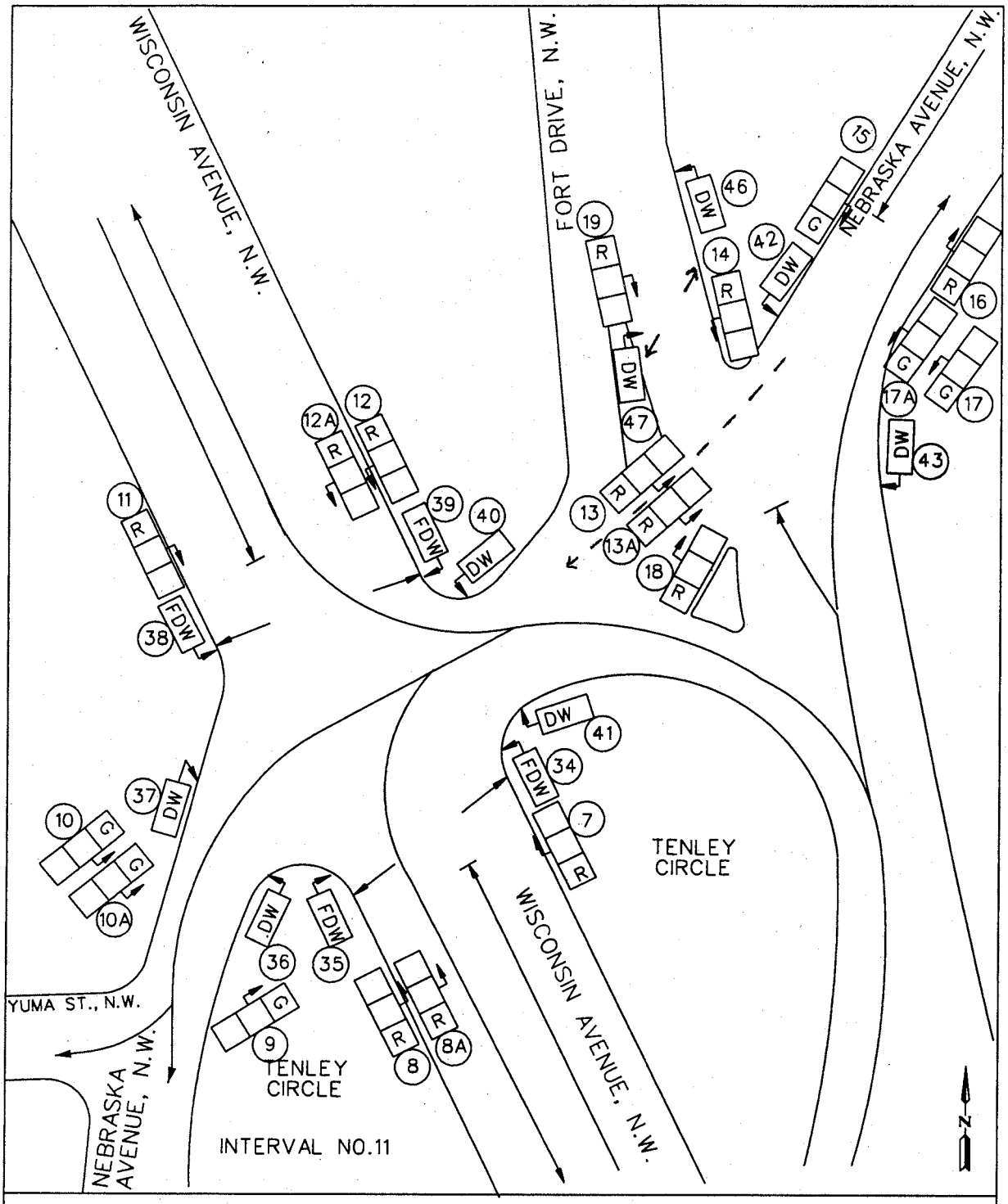

TRAFFIC SIGNAL OPERATION

WISCONSIN AVENUE AND NEBRASKA AVENUE (TENLEY CIRCLE), N.W. EAST SIDE

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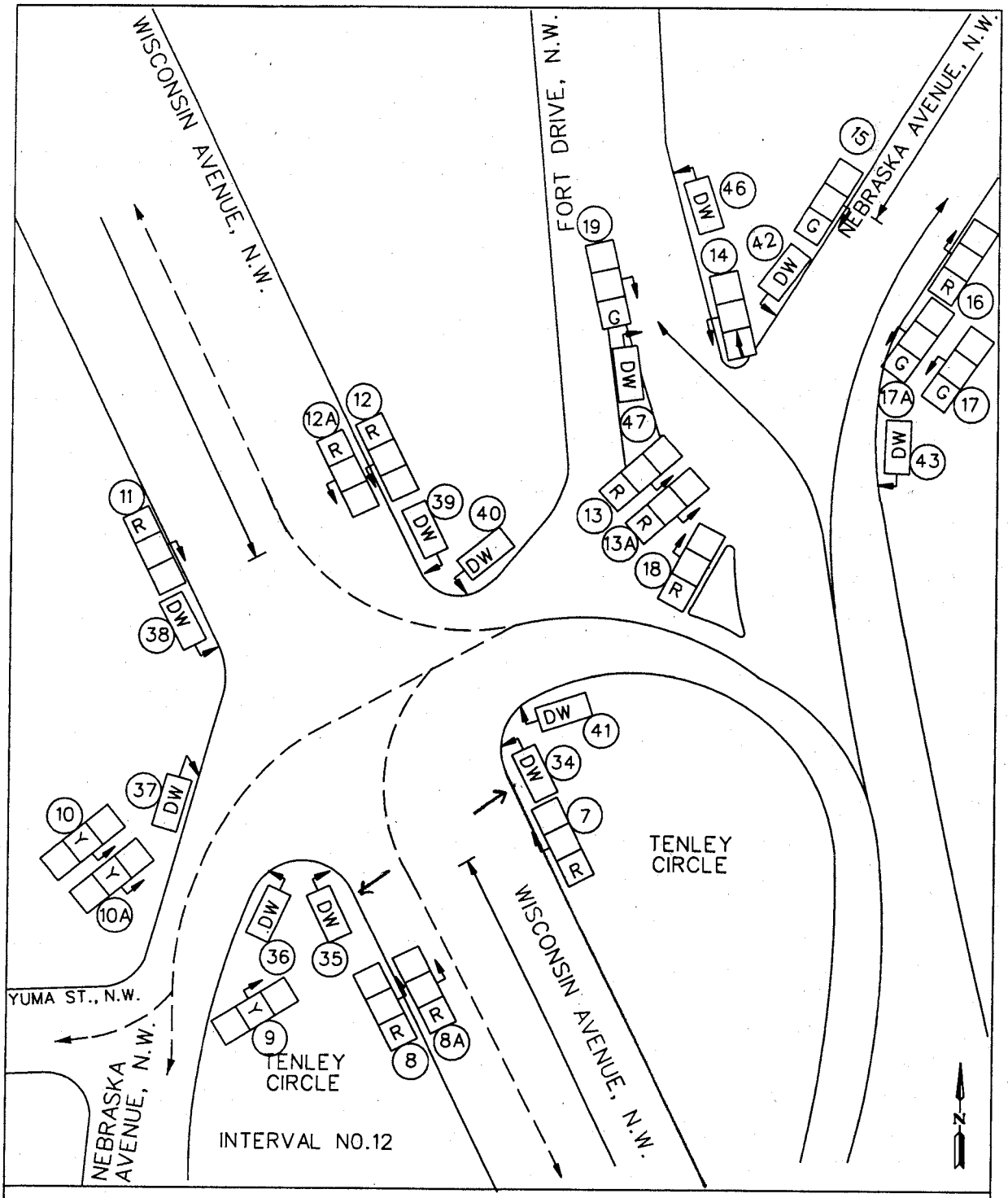

TRAFFIC SIGNAL OPERATION

WISCONSIN AVENUE AND NEBRASKA AVENUE (TENLEY CIRCLE), N.W. EAST SIDE

D.C. DEPARTMENT OF TRANSPORTATION TRAFFIC SERVICES ADMINISTRATION TRAFFIC SIGNAL SYSTEM DIVISION		DESIGNED BY:	T.S. 749-H 1
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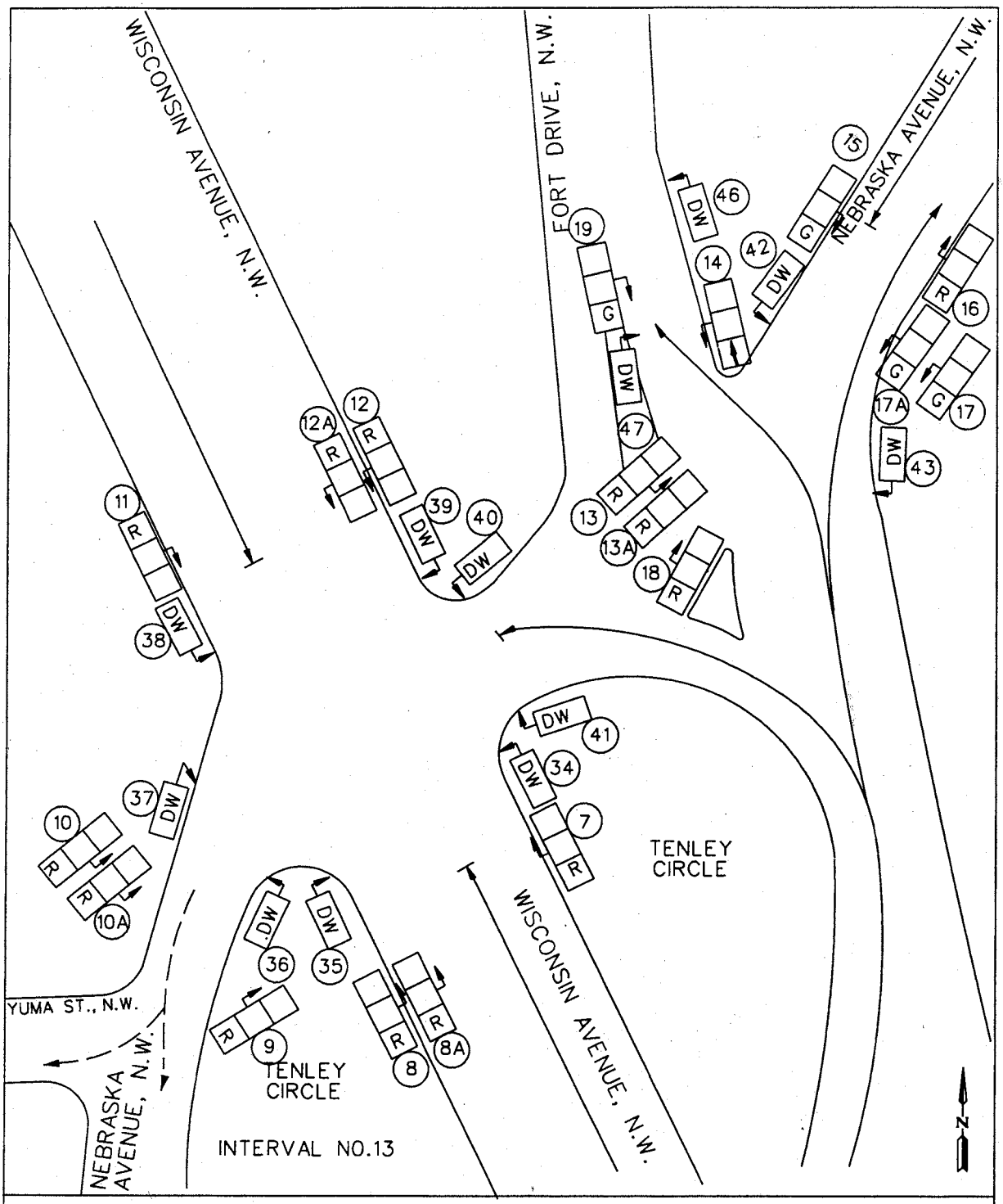

TRAFFIC SIGNAL OPERATION

WISCONSIN AVENUE AND NEBRASKA AVENUE (TENLEY CIRCLE), N.W. EAST SIDE

D.C. DEPARTMENT OF TRANSPORTATION TRAFFIC SERVICES ADMINISTRATION TRAFFIC SIGNAL SYSTEM DIVISION		DESIGNED BY:	T.S. 749-H 1
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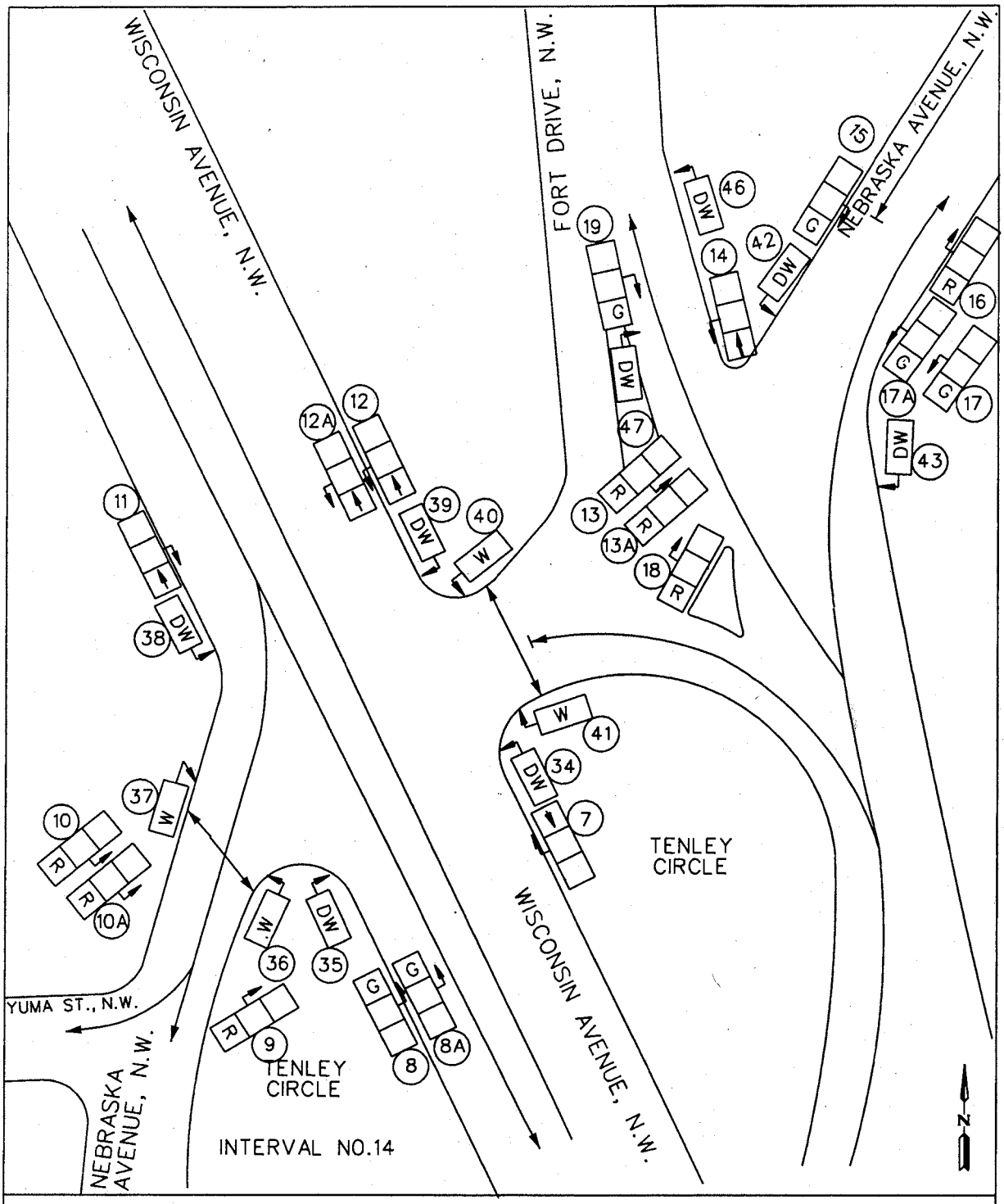

TRAFFIC SIGNAL OPERATION

WISCONSIN AVENUE AND NEBRASKA AVENUE (TENLEY CIRCLE), N.W. EAST SIDE

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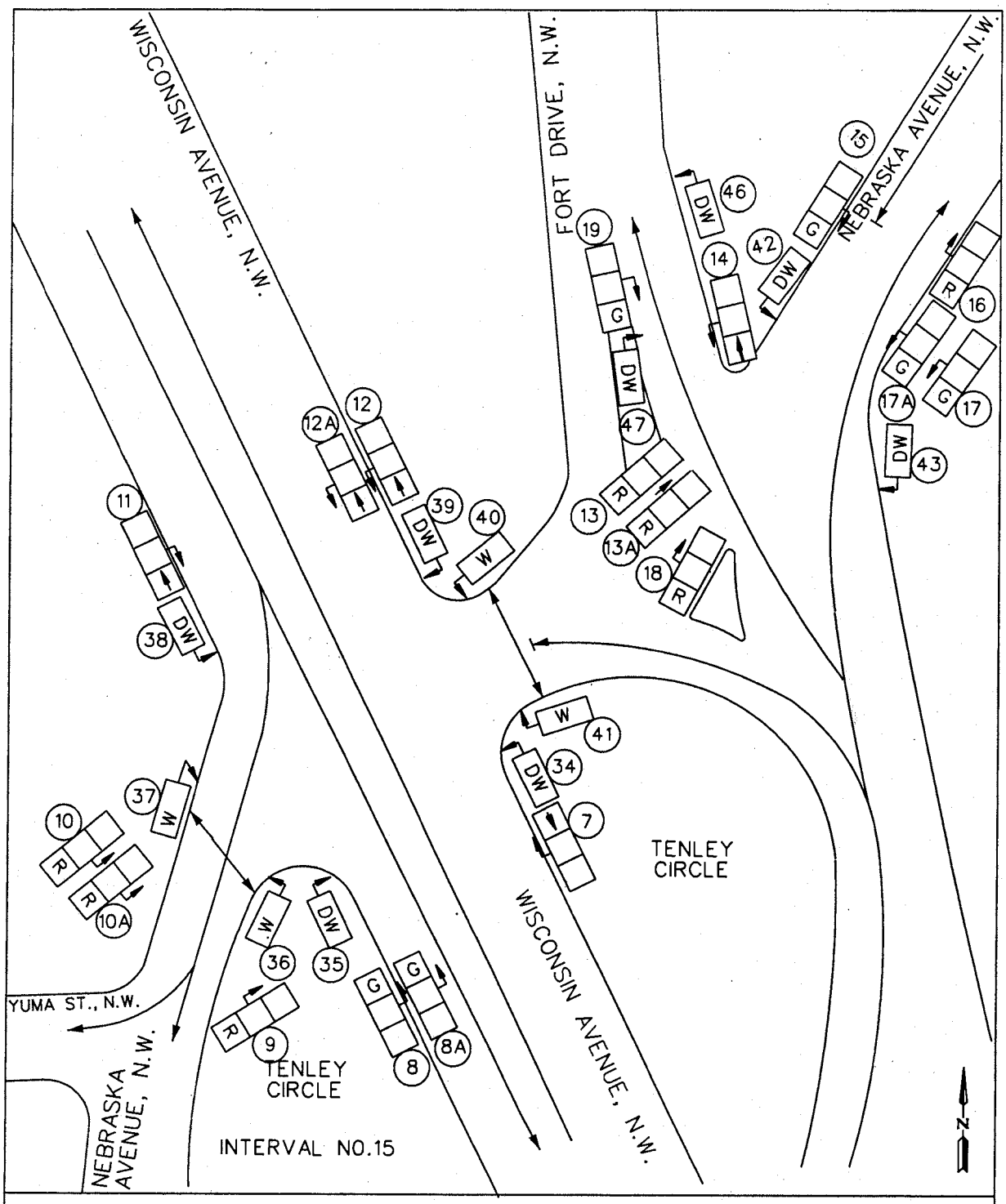

TRAFFIC SIGNAL OPERATION

WISCONSIN AVENUE AND NEBRASKA AVENUE (TENLEY CIRCLE), N.W. EAST SIDE

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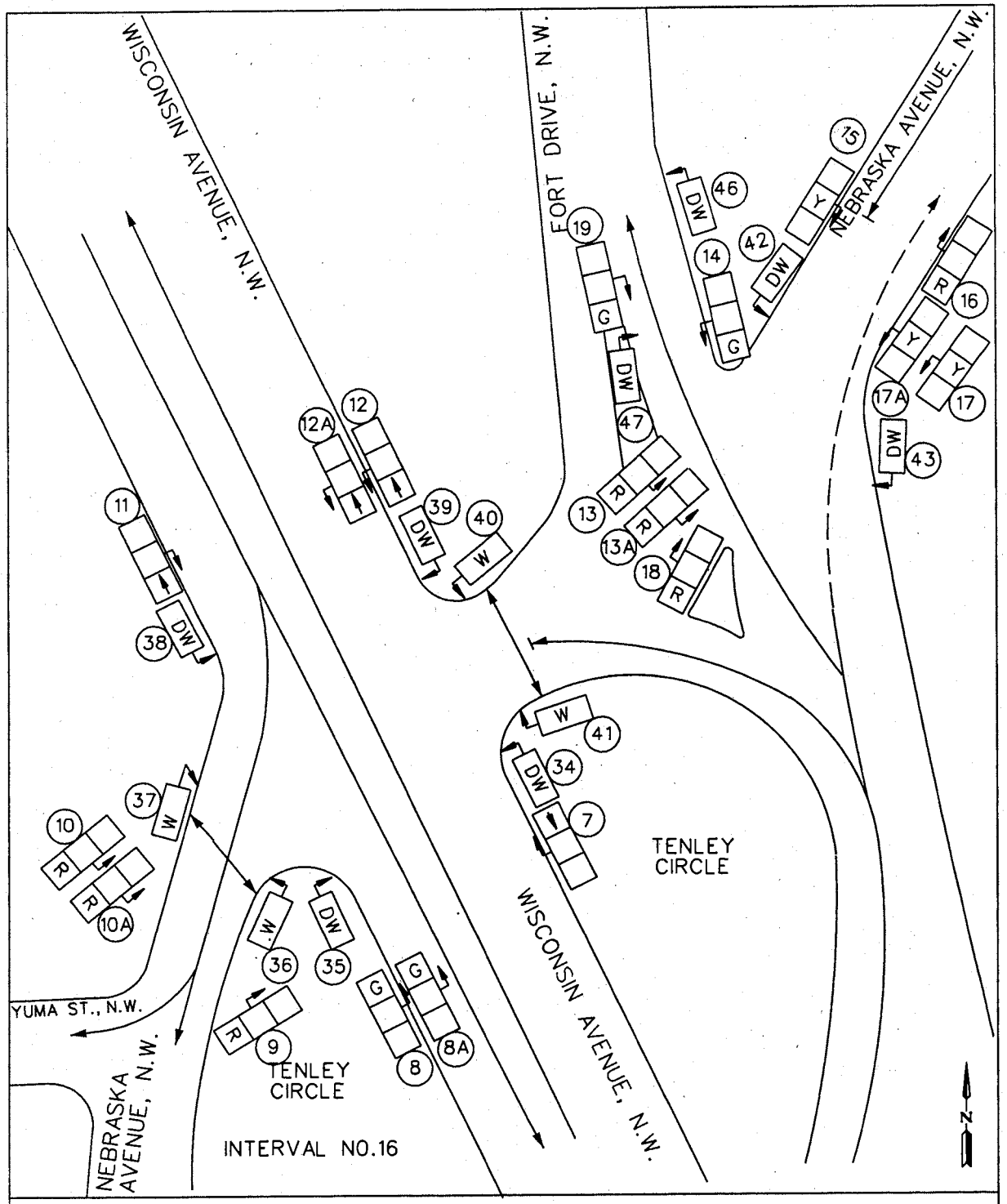

TRAFFIC SIGNAL OPERATION

WISCONSIN AVENUE AND NEBRASKA AVENUE (TENLEY CIRCLE). N.W. EAST SIDE

D.C. DEPARTMENT OF TRANSPORTATION TRAFFIC SERVICES ADMINISTRATION TRAFFIC SIGNAL SYSTEM DIVISION		DESIGNED BY:	T.S. 749-H 1
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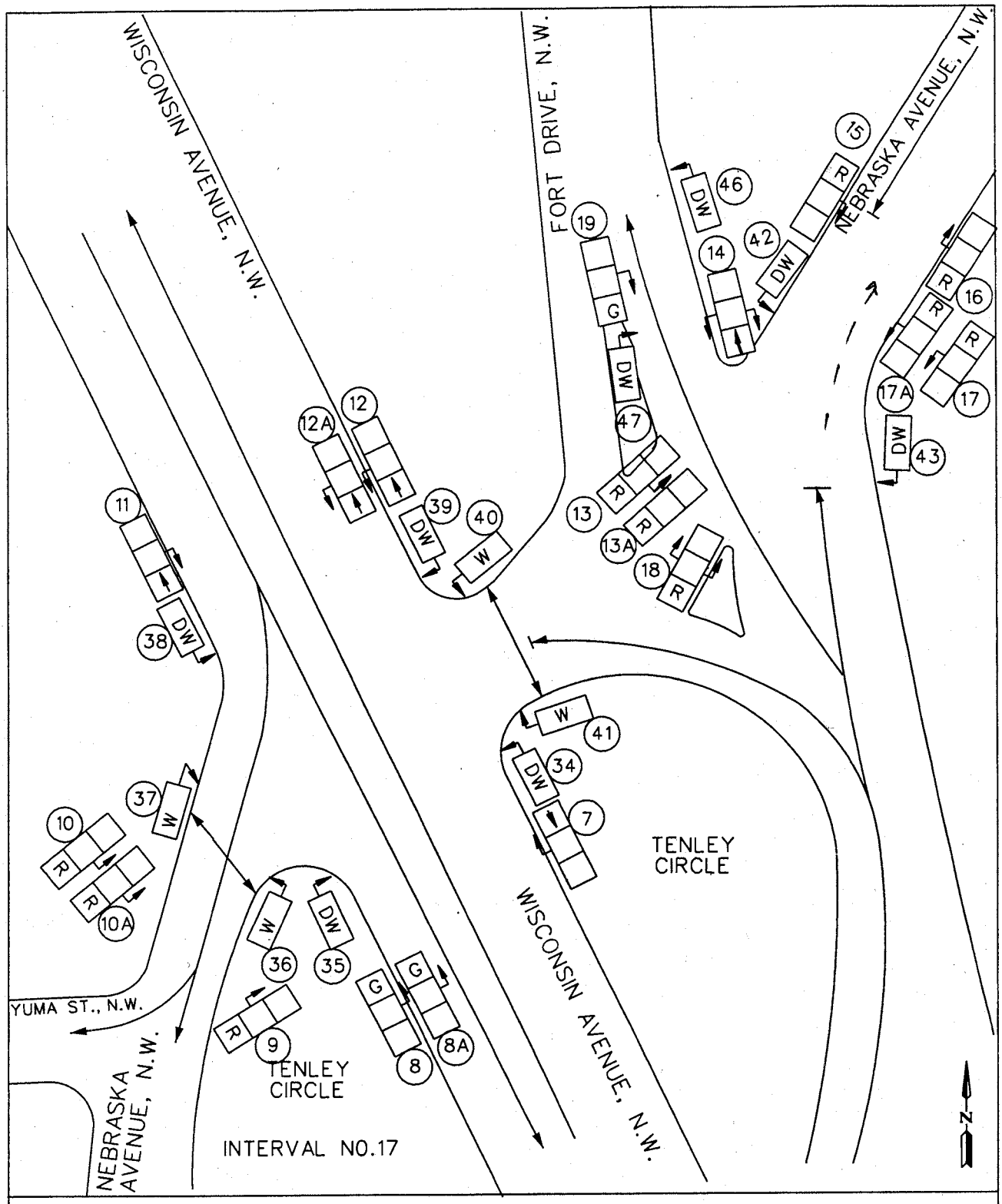

TRAFFIC SIGNAL OPERATION

WISCONSIN AVENUE AND NEBRASKA AVENUE (TENLEY CIRCLE), N.W. EAST SIDE

D.C. DEPARTMENT OF TRANSPORTATION TRAFFIC SERVICES ADMINISTRATION TRAFFIC SIGNAL SYSTEM DIVISION		DESIGNED BY:	T.S. 749-H 1
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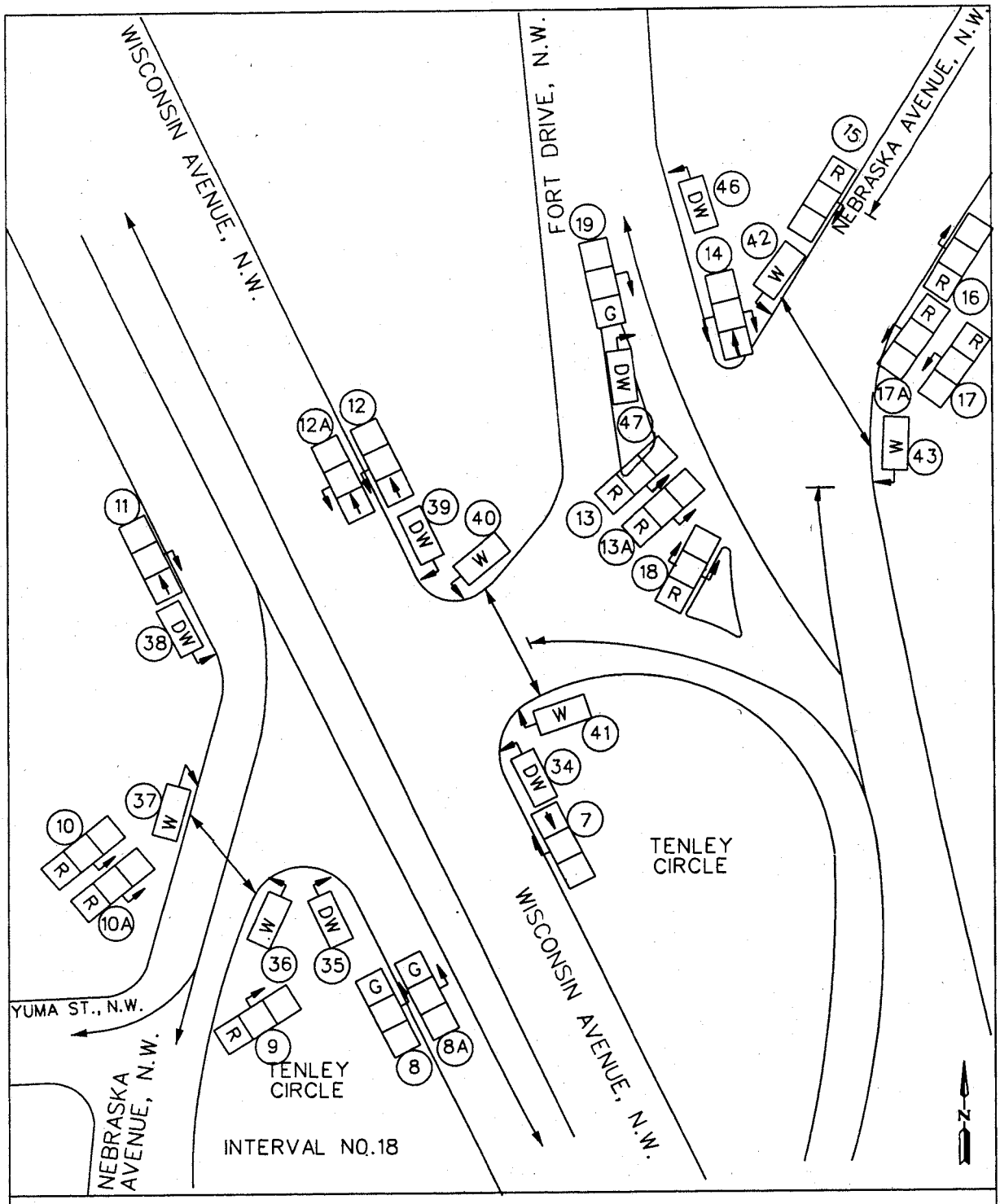

TRAFFIC SIGNAL OPERATION

WISCONSIN AVENUE AND NEBRASKA AVENUE (TENLEY CIRCLE), N.W. EAST SIDE

D.C. DEPARTMENT OF TRANSPORTATION TRAFFIC SERVICES ADMINISTRATION TRAFFIC SIGNAL SYSTEM DIVISION		DESIGNED BY:	T.S. 749-H 1
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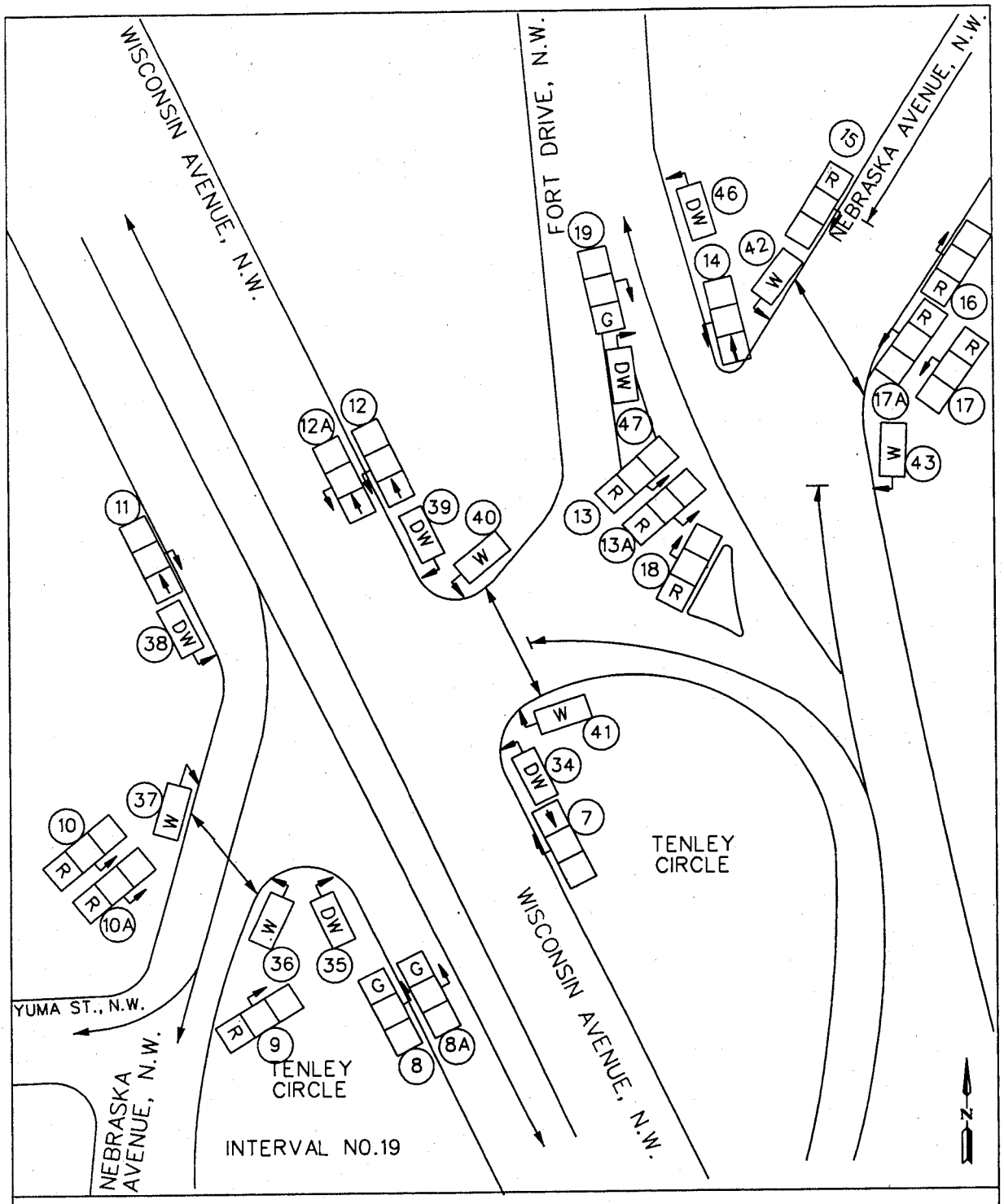

TRAFFIC SIGNAL OPERATION

WISCONSIN AVENUE AND NEBRASKA AVENUE (TENLEY CIRCLE), N.W. EAST SIDE

D.C. DEPARTMENT OF TRANSPORTATION TRAFFIC SERVICES ADMINISTRATION TRAFFIC SIGNAL SYSTEM DIVISION	DESIGNED BY:		T.S. 749-H 1
CHECKED BY: DATE:	SUBMITTED BY: CHIEF, SIGNAL DESIGN BRANCH		SHEET
DRAWN BY: AN DATE:	APPROVED BY: DIVISION CHIEF		19 OF 21
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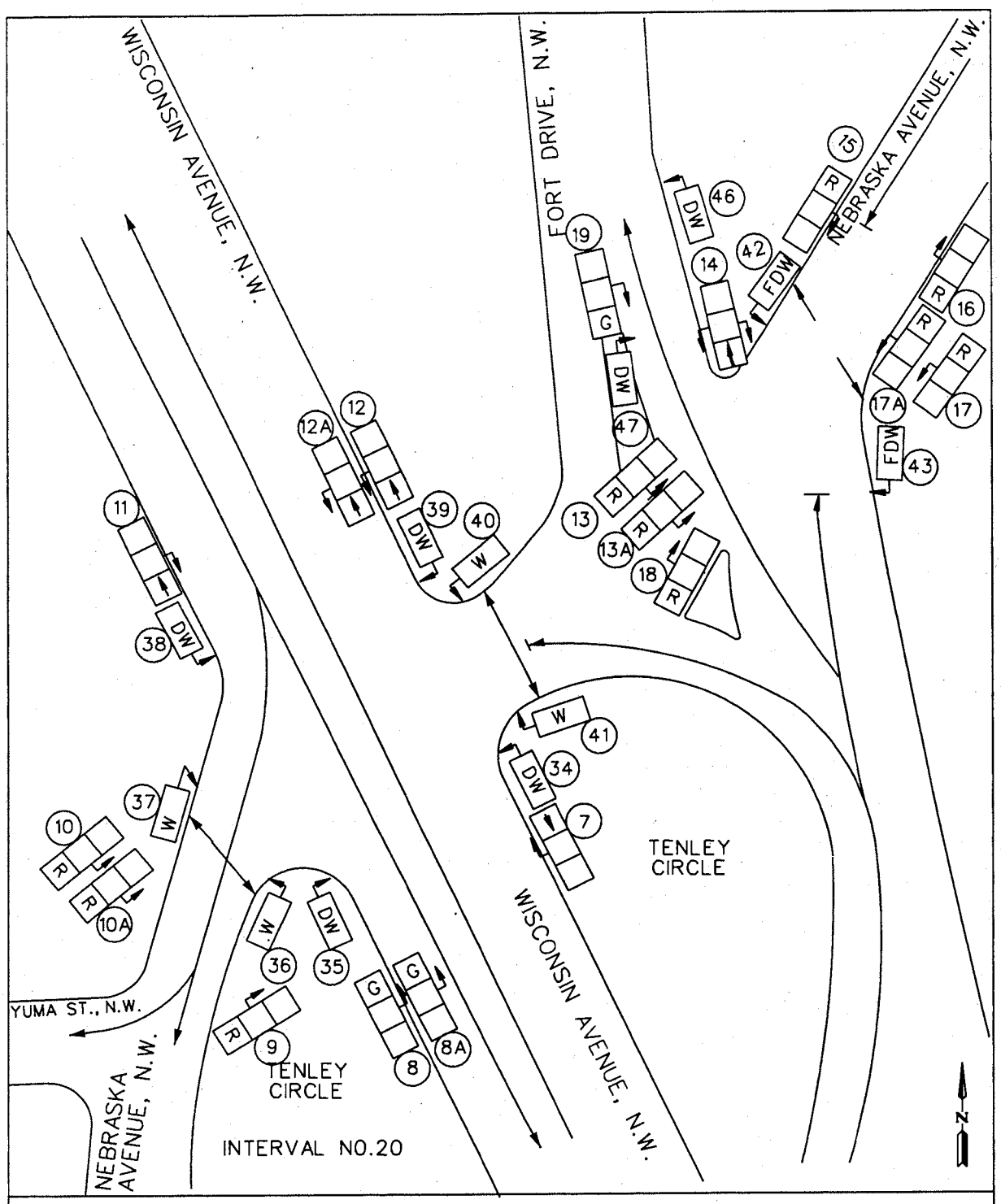

TRAFFIC SIGNAL OPERATION

WISCONSIN AVENUE AND NEBRASKA AVENUE (TENLEY CIRCLE), N.W. EAST SIDE

D.C. DEPARTMENT OF TRANSPORTATION TRAFFIC SERVICES ADMINISTRATION TRAFFIC SIGNAL SYSTEM DIVISION		DESIGNED BY:	T.S. 749-H 1
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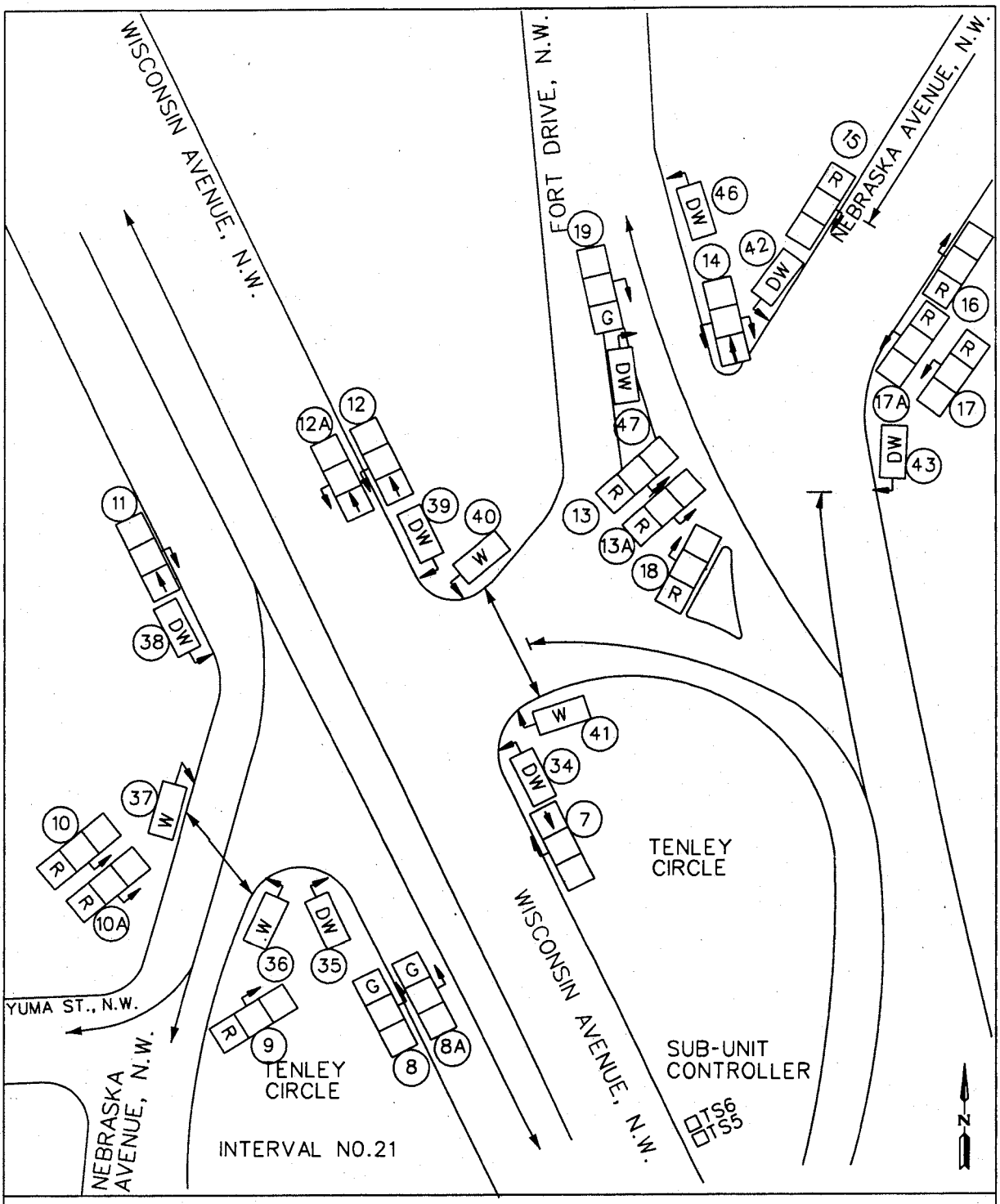

TRAFFIC SIGNAL OPERATION

WISCONSIN AVENUE AND NEBRASKA AVENUE (TENLEY CIRCLE), N.W. EAST SIDE

D.C. DEPARTMENT OF TRANSPORTATION TRAFFIC SERVICES ADMINISTRATION TRAFFIC SIGNAL SYSTEM DIVISION		DESIGNED BY:	T.S. 749-H 1
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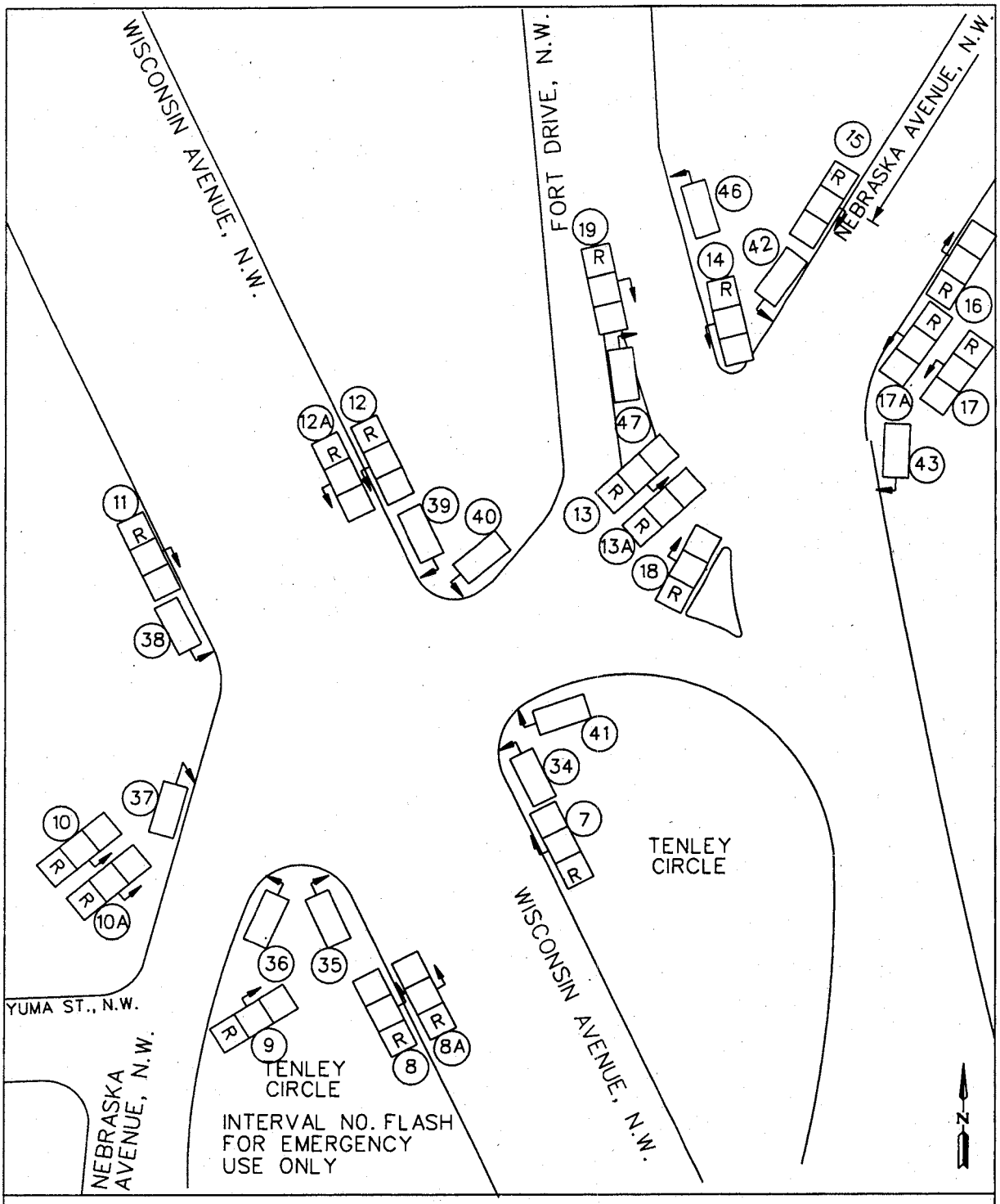
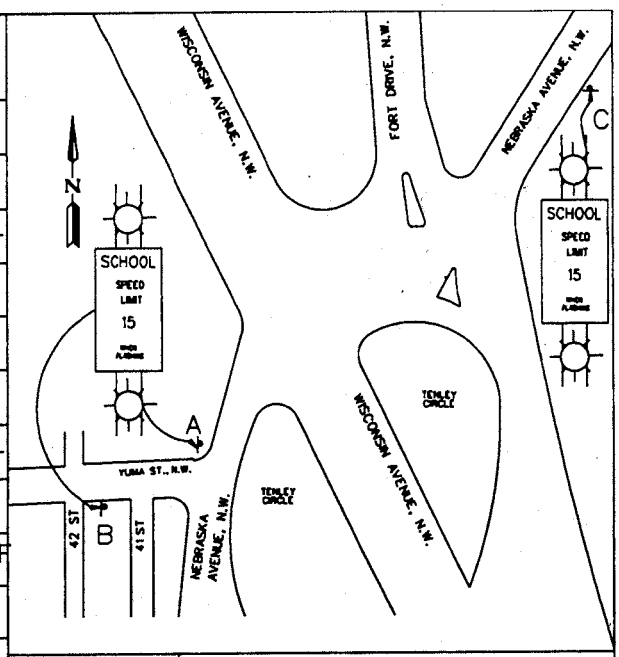


TRAFFIC SIGNAL OPERATION

WISCONSIN AVENUE AND NEBRASKA AVENUE (TENLEY CIRCLE), N.W. EAST SIDE

D.C. DEPARTMENT OF TRANSPORTATION TRAFFIC SERVICES ADMINISTRATION TRAFFIC SIGNAL SYSTEM DIVISION		DESIGNED BY:	T.S. 749-H 1
CHECKED BY:	DATE:	SUBMITTED BY: CHIEF, SIGNAL DESIGN BRANCH	SHEET
DRAWN BY: AN	DATE:	APPROVED BY: DIVISION CHIEF	FLASH
IN SERVICE:	SCALE: NONE		

SIGN	IN SERVICE	TIME
A		8:15AM-9:15AM M-F
		11:15AM-1:15 PM M-F
		2:45PM-3:45PM M-F
B		8:15AM-9:15AM M-F
		11:15AM-1:15 PM M-F
		2:45PM-3:45PM M-F
C		8:00AM-10:00AM M-F



SIGN	DESCRIPTION
A	SCHOOL FLASHER BEACON
B	SCHOOL FLASHER BEACON
C	SCHOOL FLASHER BEACON

TRAFFIC SIGNAL OPERATION

WISCONSIN AVENUE AND NEBRASKA AVENUE (TENLEY CIRCLE), N.W. EAST SIDE

D.C. DEPARTMENT OF TRANSPORTATION
TRAFFIC SERVICES ADMINISTRATION
TRAFFIC SIGNAL SYSTEM DIVISION

DESIGNED BY: Asmelash Negussie

SUBMITTED BY:

CHIEF, SIGNAL DESIGN BRANCH

APPROVED BY: William W. McDonald 5/15/06

DIVISION CHIEF

T.S. 749-H 1

SHEET

FLASH

CHECKED BY: DATE:

DRAWN BY: AN DATE:

IN SERVICE: SCALE: NONE

APPENDIX D
LEVEL OF SERVICE DESCRIPTIONS

Level of Service Criteria for Signalized Intersections

Level of service for signalized intersections is defined in terms of delay, which is a measure of driver discomfort and frustration, fuel consumption, and lost travel time. Specifically, level-of-service (LOS) criteria are stated in terms of the average stopped delay per vehicle for a 15-min analysis period. The criteria are given in Exhibit 1. Delay may be measured in the field or estimated using procedures presented later in this chapter. Delay is a complex measure and is dependent on a number of variables, including the quality of progression, the cycle length, the green ratio, and the *v/c* ratio for the lane group in question.

LOS A describes operations with very low delay, up to 10 sec per vehicle. This level of service occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.

LOS B describes operations with delay greater than 10 and up to 20 sec per vehicle. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of average delay.

Exhibit 1. Level-of-Service Criteria for Signalized Intersections

LEVEL OF SERVICE	STOPPED DELAY PER VEHICLE (SEC)
A	≤10.0
B	> 10.0 and ≤20.0
C	> 20.0 and ≤ 35.0
D	> 35.0 and ≤ 55.0
E	> 55.0 and ≤ 80.0
F	>80.0

LOS C describes operations with delay greater than 20 and up to 35 sec per vehicle. These higher delays may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.

LOS D describes operations with delay greater than 35 and up to 55 sec per vehicle. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high *v/c* ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

LOS E describes operations with delay greater than 55 and up to 80 sec per vehicle. This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high *v/c* ratios. Individual cycle failures are frequent occurrences.

LOS F describes operations with delay in excess of 80 sec per vehicle. This level, considered to be unacceptable to most drivers, often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the intersection. It may also occur at high *v/c* ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

Source: Highway Capacity Manual, 2000. Transportation Research Board, National Research Council

Level of Service Criteria for Stop Sign Controlled Intersections

The level of service criteria are given in Exhibit 2. As used here, control delay is defined as the total elapsed time from the time a vehicle stops at the end of the queue until the vehicle departs from the stop line; this time includes the time required for the vehicle to travel from the last-in-queue position to the first-in-queue position, including deceleration of vehicles from free-flow speed to the speed of vehicles in queue.

The average total delay for any particular minor movement is a function of the service rate or capacity of the approach and the degree of saturation. . . .

Exhibit 2. Level of Service Criteria for TWSC Intersections

LEVEL OF SERVICE	AVERAGE CONTROL DELAY (sec/veh)
A	≤ 10
B	> 10 and ≤ 15
C	> 15 and ≤ 25
D	> 25 and ≤ 35
E	> 35 and ≤ 50
F	> 50

Average total delay less than 10 sec/veh is defined as Level of Service (LOS) A. Follow-up times of less than 5 sec have been measured when there is no conflicting traffic for a minor street movement, so control delays of less than 10 sec/veh are appropriate for low flow conditions. To remain consistent with the AWSC intersection analysis procedure described later in this chapter, a total delay of 50 sec/veh is assumed as the break point between LOS E and F.

The proposed level of service criteria for TWSC intersections are somewhat different from the criteria used for signalized intersections. The primary reason for this difference is that drivers expect different levels of performance from different kinds of transportation facilities. The expectation is that a signalized intersection is designed to carry higher traffic volumes than an unsignalized intersection. Additionally, several driver behavior considerations combine to make delays at signalized intersections less onerous than at unsignalized intersections. For example, drivers at signalized intersections are able to relax during the red interval, where drivers on the minor approaches to unsignalized intersections must remain attentive to the task of identifying acceptable gaps and vehicle conflicts. Also, there is often much more variability in the amount of delay experienced by individual drivers at unsignalized than signalized intersections. For these reasons, it is considered that the total delay threshold for any given level of service is less for an unsignalized intersection than for a signalized intersection. . . .

LOS F exists when there are insufficient gaps of suitable size to allow a side street demand to cross safely through a major street traffic stream. This level of service is generally evident from extremely long total delays experienced by side street traffic and by queueing on the minor approaches. The method, however, is based on a constant critical gap size - that is, the critical gap remains constant, no matter how long the side street motorist waits. LOS F may also appear in the form of side street vehicles' selecting smaller-than-usual gaps. In such cases, safety may be a problem and some disruption to the major traffic stream may result. It is important to note that LOS F may not always result in long queues but may result in adjustments to normal gap acceptance behavior. The latter is more difficult to observe on the field than queueing, which is more obvious.

Source: Highway Capacity Manual, 2000. Transportation Research Board, National Research Council

APPENDIX E
EXISTING LEVELS OF SERVICE AND QUEUE REPORTS

Lane Group	NBT	SBT	SET	NWT
Lane Group Flow (vph)	194	220	323	175
v/c Ratio	0.63	0.70	0.40	0.19
Control Delay	43.6	47.8	10.6	8.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	43.6	47.8	10.6	8.0
Queue Length 50th (ft)	110	128	91	42
Queue Length 95th (ft)	188	#230	146	71
Internal Link Dist (ft)	689	132	177	285
Turn Bay Length (ft)				
Base Capacity (vph)	310	313	800	928
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.63	0.70	0.40	0.19

Intersection Summary

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

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	54	128	1	18	185	4	3	238	63	24	122	18
Future Volume (vph)	54	128	1	18	185	4	3	238	63	24	122	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-4%			5%			7%			-7%	
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		1.00			1.00			0.99			1.00	
Flpb, ped/bikes		0.98			1.00			1.00			1.00	
Frt		1.00			1.00			0.97			0.99	
Flt Protected		0.99			1.00			1.00			0.99	
Satd. Flow (prot)		1559			1292			1252			1548	
Flt Permitted		0.78			0.97			1.00			0.93	
Satd. Flow (perm)		1241			1253			1251			1449	
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)	57	136	1	19	197	4	3	253	67	26	130	19
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	194	0	0	220	0	0	323	0	0	175	0
Confl. Peds. (#/hr)	58		42	42		58	20		8	8		20
Heavy Vehicles (%)	2%	0%	0%	0%	1%	0%	0%	0%	5%	0%	5%	2%
Parking (#/hr)				10	10	10	10	10	10			
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		23.0			23.0			62.0			62.0	
Effective Green, g (s)		25.0			25.0			64.0			64.0	
Actuated g/C Ratio		0.25			0.25			0.64			0.64	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Lane Grp Cap (vph)		310			313			800			927	
v/s Ratio Prot												
v/s Ratio Perm		0.16			c0.18			c0.26			0.12	
v/c Ratio		0.63			0.70			0.40			0.19	
Uniform Delay, d1		33.3			34.1			8.7			7.4	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		9.2			12.4			1.5			0.5	
Delay (s)		42.5			46.6			10.3			7.8	
Level of Service		D			D			B			A	
Approach Delay (s)		42.5			46.6			10.3			7.8	
Approach LOS		D			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	25.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	58.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	286	208	252	211
v/c Ratio	0.60	0.42	0.60	0.60
Control Delay	19.6	15.0	24.0	25.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	19.6	15.0	24.0	25.5
Queue Length 50th (ft)	75	49	75	62
Queue Length 95th (ft)	130	88	127	113
Internal Link Dist (ft)	418	274	520	689
Turn Bay Length (ft)				
Base Capacity (vph)	475	501	417	350
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.60	0.42	0.60	0.60

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	102	117	18	27	113	32	12	182	16	21	109	46
Future Volume (vph)	102	117	18	27	113	32	12	182	16	21	109	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		9%			-8%			-4%			0%	
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		0.98			0.95			0.96			0.90	
Flpb, ped/bikes		0.93			0.98			0.99			0.97	
Frt		0.99			0.97			0.99			0.96	
Flt Protected		0.98			0.99			1.00			0.99	
Satd. Flow (prot)		1340			1243			1277			1107	
Flt Permitted		0.80			0.92			0.98			0.94	
Satd. Flow (perm)		1098			1157			1253			1051	
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	123	141	22	33	136	39	14	219	19	25	131	55
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	286	0	0	208	0	0	252	0	0	211	0
Confl. Peds. (#/hr)	129		118	118		129	159		273	273		159
Heavy Vehicles (%)	0%	0%	0%	0%	3%	0%	0%	1%	6%	0%	2%	4%
Parking (#/hr)				10	10	10	10	10	10	10	10	10
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		24.0			24.0			18.0			18.0	
Effective Green, g (s)		26.0			26.0			20.0			20.0	
Actuated g/C Ratio		0.43			0.43			0.33			0.33	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Lane Grp Cap (vph)		475			501			417			350	
v/s Ratio Prot												
v/s Ratio Perm		c0.26			0.18			c0.20			0.20	
v/c Ratio		0.60			0.42			0.60			0.60	
Uniform Delay, d1		13.0			11.7			16.7			16.7	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		5.6			2.5			6.4			7.5	
Delay (s)		18.6			14.3			23.1			24.2	
Level of Service		B			B			C			C	
Approach Delay (s)		18.6			14.3			23.1			24.2	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	20.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	56.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	9.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	31	108	9	27	83	16	11	111	40	42	88	10
Future Vol, veh/h	31	108	9	27	83	16	11	111	40	42	88	10
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	0	2	0	4	1	0	0	3	0	0	0	0
Mvmt Flow	37	129	11	32	99	19	13	132	48	50	105	12
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.7	9.5	9.5	9.5
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	7%	21%	21%	30%
Vol Thru, %	69%	73%	66%	63%
Vol Right, %	25%	6%	13%	7%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	162	148	126	140
LT Vol	11	31	27	42
Through Vol	111	108	83	88
RT Vol	40	9	16	10
Lane Flow Rate	193	176	150	167
Geometry Grp	1	1	1	1
Degree of Util (X)	0.257	0.243	0.21	0.23
Departure Headway (Hd)	4.79	4.972	5.035	4.969
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	743	715	707	715
Service Time	2.865	3.051	3.117	3.047
HCM Lane V/C Ratio	0.26	0.246	0.212	0.234
HCM Control Delay	9.5	9.7	9.5	9.5
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	1	0.9	0.8	0.9

Intersection	
Intersection Delay, s/veh	3.6
Intersection LOS	A

Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	51	168	145
Demand Flow Rate, veh/h	51	168	145
Vehicles Circulating, veh/h	120	44	1
Vehicles Exiting, veh/h	26	127	211
Ped Vol Crossing Leg, #/h	3	0	3
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	3.3	3.8	3.4
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	LR	LT	TR
Assumed Moves	LR	LT	TR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	51	168	145
Cap Entry Lane, veh/h	1221	1319	1378
Entry HV Adj Factor	1.000	1.000	1.000
Flow Entry, veh/h	51	168	145
Cap Entry, veh/h	1220	1319	1378
V/C Ratio	0.042	0.127	0.105
Control Delay, s/veh	3.3	3.8	3.4
LOS	A	A	A
95th %tile Queue, veh	0	0	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	13	18	125	16	28	80
Future Volume (Veh/h)	13	18	125	16	28	80
Sign Control	Stop		Free			Free
Grade	-4%		1%			1%
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	15	20	140	18	31	90
Pedestrians	5		5			5
Lane Width (ft)	10.0		10.0			10.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	0		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	311	159			163	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	311	159			163	
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	98			98	
cM capacity (veh/h)	667	885			1423	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	35	158	121
Volume Left	15	0	31
Volume Right	20	18	0
cSH	776	1700	1423
Volume to Capacity	0.05	0.09	0.02
Queue Length 95th (ft)	4	0	2
Control Delay (s)	9.9	0.0	2.1
Lane LOS	A		A
Approach Delay (s)	9.9	0.0	2.1
Approach LOS	A		

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	30.5%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	3.4
Intersection LOS	A

Approach	NB	SB	SE
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	144	101	63
Demand Flow Rate, veh/h	147	101	63
Vehicles Circulating, veh/h	20	10	100
Vehicles Exiting, veh/h	143	157	11
Ped Vol Crossing Leg, #/h	6	0	0
Ped Cap Adj	0.999	1.000	1.000
Approach Delay, s/veh	3.6	3.2	3.3
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	LT	TR	LR
Assumed Moves	LT	TR	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	147	101	63
Cap Entry Lane, veh/h	1352	1366	1246
Entry HV Adj Factor	0.982	1.000	1.000
Flow Entry, veh/h	144	101	63
Cap Entry, veh/h	1326	1366	1246
V/C Ratio	0.109	0.074	0.051
Control Delay, s/veh	3.6	3.2	3.3
LOS	A	A	A
95th %tile Queue, veh	0	0	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	265	39	32	140	114	7	62	2	25	99	0
Future Volume (Veh/h)	9	265	39	32	140	114	7	62	2	25	99	0
Sign Control		Free			Free			Stop			Stop	
Grade		6%			-2%			-1%			-2%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	10	285	42	34	151	123	8	67	2	27	106	0
Pedestrians		6			1			3			9	
Lane Width (ft)		10.0			10.0			10.0			10.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					176							
pX, platoon unblocked	0.93						0.93	0.93		0.93	0.93	0.93
vC, conflicting volume	283			330			668	680	310	652	640	228
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	195			330			608	621	310	591	577	135
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			97	82	100	92	72	100
cM capacity (veh/h)	1288			1238			290	363	733	324	382	848

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	337	308	77	133
Volume Left	10	34	8	27
Volume Right	42	123	2	0
cSH	1288	1238	358	368
Volume to Capacity	0.01	0.03	0.22	0.36
Queue Length 95th (ft)	1	2	20	40
Control Delay (s)	0.3	1.1	17.8	20.2
Lane LOS	A	A	C	C
Approach Delay (s)	0.3	1.1	17.8	20.2
Approach LOS			C	C

Intersection Summary			
Average Delay	5.3		
Intersection Capacity Utilization	53.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	92	874	911	0	0	206
Future Volume (Veh/h)	92	874	911	0	0	206
Sign Control		Free	Free		Stop	
Grade		0%	0%		1%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	100	950	990	0	0	224
Pedestrians					20	
Lane Width (ft)					10.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			310			
pX, platoon unblocked	0.87				0.87	0.87
vC, conflicting volume	1010				2160	515
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	707				2032	136
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	87				100	70
cM capacity (veh/h)	759				38	759

Direction, Lane #	EB 1	WB 1	WB 2	SB 1
Volume Total	1050	660	330	224
Volume Left	100	0	0	0
Volume Right	0	0	0	224
cSH	759	1700	1700	759
Volume to Capacity	0.13	0.39	0.19	0.30
Queue Length 95th (ft)	11	0	0	31
Control Delay (s)	3.8	0.0	0.0	11.7
Lane LOS	A			B
Approach Delay (s)	3.8	0.0		11.7
Approach LOS				B

Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	108.9%	ICU Level of Service	G
Analysis Period (min)	15		

Lane Group	EBT	WBL	WBT	NET	SWT
Lane Group Flow (vph)	266	135	161	928	785
v/c Ratio	0.51	0.62	0.33	1.54	0.49
Control Delay	37.2	37.0	22.0	272.3	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	37.2	37.0	22.0	272.3	10.2
Queue Length 50th (ft)	167	101	113	~1008	112
Queue Length 95th (ft)	253	m153	m160	#1261	136
Internal Link Dist (ft)	96		233	230	474
Turn Bay Length (ft)		85			
Base Capacity (vph)	523	217	495	604	1618
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	0.51	0.62	0.33	1.54	0.49

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	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	23	230	0	128	149	4	85	563	234	4	715	27
Future Volume (vph)	23	230	0	128	149	4	85	563	234	4	715	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	10	10	10	10	10	10	10	10	10
Grade (%)		2%			4%			0%			1%	
Total Lost time (s)		3.0		3.0	3.0			3.5			3.5	
Lane Util. Factor		1.00		1.00	1.00			1.00			0.95	
Frpb, ped/bikes		1.00		1.00	1.00			0.98			1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00			1.00	
Frt		1.00		1.00	1.00			0.96			0.99	
Flt Protected		1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)		1682		1457	1541			1114			2715	
Flt Permitted		0.97		0.44	1.00			0.85			0.95	
Satd. Flow (perm)		1632		678	1541			951			2584	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	24	242	0	135	157	4	89	593	246	4	753	28
RTOR Reduction (vph)	0	0	0	0	1	0	0	11	0	0	2	0
Lane Group Flow (vph)	0	266	0	135	160	0	0	917	0	0	783	0
Confl. Peds. (#/hr)	8		10	10		8	15		16	16		15
Confl. Bikes (#/hr)			3			2						
Heavy Vehicles (%)	0%	0%	0%	2%	1%	0%	0%	7%	1%	0%	6%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	20	0	0	20	0
Parking (#/hr)							10	10	10			
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		36.5		36.5	36.5			73.0			73.0	
Effective Green, g (s)		38.5		38.5	38.5			75.0			75.0	
Actuated g/C Ratio		0.32		0.32	0.32			0.62			0.62	
Clearance Time (s)		5.0		5.0	5.0			5.5			5.5	
Lane Grp Cap (vph)		523		217	494			594			1615	
v/s Ratio Prot					0.10							
v/s Ratio Perm		0.16		c0.20				c0.96			0.30	
v/c Ratio		0.51		0.62	0.32			1.54			0.48	
Uniform Delay, d1		33.1		34.6	30.9			22.5			12.1	
Progression Factor		1.00		0.73	0.66			1.00			0.76	
Incremental Delay, d2		3.5		10.3	1.4			253.1			1.0	
Delay (s)		36.6		35.7	21.7			275.6			10.1	
Level of Service		D		D	C			F			B	
Approach Delay (s)		36.6			28.1			275.6			10.1	
Approach LOS		D			C			F			B	

Intersection Summary			
HCM 2000 Control Delay	123.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.5
Intersection Capacity Utilization	117.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	457	3	4	259	20	26	24	11	6	0	20
Future Volume (Veh/h)	14	457	3	4	259	20	26	24	11	6	0	20
Sign Control		Free			Free			Stop			Stop	
Grade		5%			4%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	15	491	3	4	278	22	28	26	12	6	0	22
Pedestrians								10			8	
Lane Width (ft)								10.0			10.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		313			929							
pX, platoon unblocked	0.95			0.89			0.92	0.92	0.89	0.92	0.92	0.95
vC, conflicting volume	308			504			852	848	502	852	839	297
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	239			379			658	655	377	659	644	228
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			91	92	98	98	100	97
cM capacity (veh/h)	1248			1041			326	343	591	310	348	763

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	509	304	66	28
Volume Left	15	4	28	6
Volume Right	3	22	12	22
cSH	1248	1041	363	581
Volume to Capacity	0.01	0.00	0.18	0.05
Queue Length 95th (ft)	1	0	16	4
Control Delay (s)	0.4	0.2	17.1	11.5
Lane LOS	A	A	C	B
Approach Delay (s)	0.4	0.2	17.1	11.5
Approach LOS			C	B

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	SET	NWT
Lane Group Flow (vph)	43	346	54	299	1654	952
v/c Ratio	0.31	0.86	0.49	0.74	0.66	0.69
Control Delay	34.5	47.8	54.0	52.2	3.1	21.7
Queue Delay	0.0	0.0	0.0	0.0	0.2	0.0
Total Delay	34.5	47.8	54.0	52.2	3.2	21.7
Queue Length 50th (ft)	31	273	35	212	43	262
Queue Length 95th (ft)	m39	m278	83	#324	36	341
Internal Link Dist (ft)		849		339	239	287
Turn Bay Length (ft)	70		110			
Base Capacity (vph)	138	401	111	405	2510	1371
Starvation Cap Reductn	0	0	0	0	197	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.86	0.49	0.74	0.72	0.69

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	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	39	251	64	49	226	46	2	1450	54	3	819	45
Future Volume (vph)	39	251	64	49	226	46	2	1450	54	3	819	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		5%			3%			1%			-1%	
Total Lost time (s)	4.0	4.0		4.0	4.0			3.5			3.5	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.91			0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.99			0.99			0.99	
Flpb, ped/bikes	0.97	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.97		1.00	0.97			0.99			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1435	1481		1459	1499			3979			2529	
Flt Permitted	0.34	1.00		0.27	1.00			0.94			0.95	
Satd. Flow (perm)	512	1481		410	1499			3740			2402	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	43	276	70	54	248	51	2	1593	59	3	900	49
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	43	346	0	54	299	0	0	1654	0	0	952	0
Confl. Peds. (#/hr)	38		6	6		38	36		76	76		36
Confl. Bikes (#/hr)						2			5			5
Heavy Vehicles (%)	0%	1%	3%	2%	1%	0%	50%	4%	2%	0%	7%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	20	20	0	0	0
Parking (#/hr)											20	20
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		8			4		1	6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	30.5	30.5		30.5	30.5			78.0			66.5	
Effective Green, g (s)	32.5	32.5		32.5	32.5			80.0			68.5	
Actuated g/C Ratio	0.27	0.27		0.27	0.27			0.67			0.57	
Clearance Time (s)	6.0	6.0		6.0	6.0			5.5			5.5	
Lane Grp Cap (vph)	138	401		111	405			2509			1371	
v/s Ratio Prot		c0.23			0.20			c0.04				
v/s Ratio Perm	0.08			0.13				0.40			c0.40	
v/c Ratio	0.31	0.86		0.49	0.74			0.66			0.69	
Uniform Delay, d1	34.8	41.6		36.7	39.9			11.9			18.3	
Progression Factor	0.89	0.93		1.00	1.00			0.15			1.00	
Incremental Delay, d2	1.9	8.2		14.5	11.4			1.3			2.9	
Delay (s)	33.0	46.8		51.2	51.3			3.1			21.2	
Level of Service	C	D		D	D			A			C	
Approach Delay (s)		45.2			51.3			3.1			21.2	
Approach LOS		D			D			A			C	

Intersection Summary			
HCM 2000 Control Delay	18.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	69.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	13	4	5	3	31	10	15	657	14	17	744	8
Future Volume (Veh/h)	13	4	5	3	31	10	15	657	14	17	744	8
Sign Control		Stop			Stop			Free			Free	
Grade		-4%			6%			-2%			2%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	14	4	5	3	33	11	16	699	15	18	791	9
Pedestrians		19			17			3			2	
Lane Width (ft)		10.0			10.0			10.0			10.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			1			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								726			393	
pX, platoon unblocked	0.91	0.91	0.91	0.91	0.91		0.91					
vC, conflicting volume	1262	1614	422	1197	1610	376	819			731		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1090	1476	167	1019	1473	376	603			731		
tC, single (s)	7.5	6.5	6.9	7.7	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.3			2.2		
p0 queue free %	87	96	99	98	70	98	98			98		
cM capacity (veh/h)	111	109	765	150	109	619	841			872		

Direction, Lane #	EB 1	WB 1	NE 1	NE 2	SW 1	SW 2
Volume Total	23	47	366	364	414	404
Volume Left	14	3	16	0	18	0
Volume Right	5	11	0	15	0	9
cSH	136	138	841	1700	872	1700
Volume to Capacity	0.17	0.34	0.02	0.21	0.02	0.24
Queue Length 95th (ft)	15	35	1	0	2	0
Control Delay (s)	36.8	44.2	0.6	0.0	0.6	0.0
Lane LOS	E	E	A		A	
Approach Delay (s)	36.8	44.2	0.3		0.3	
Approach LOS	E	E				

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	683	3	23	729	7	51
Future Volume (Veh/h)	683	3	23	729	7	51
Sign Control	Free			Free	Yield	
Grade	-1%			2%	2%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	719	3	24	767	7	54
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	554			565		
pX, platoon unblocked					0.92	
vC, conflicting volume			722		1152	720
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			722		1000	720
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		97	85
cM capacity (veh/h)			876		215	370

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	722	280	511	61
Volume Left	0	24	0	7
Volume Right	3	0	0	54
cSH	1700	876	1700	342
Volume to Capacity	0.42	0.03	0.30	0.18
Queue Length 95th (ft)	0	2	0	16
Control Delay (s)	0.0	1.1	0.0	17.8
Lane LOS		A		C
Approach Delay (s)	0.0	0.4		17.8
Approach LOS				C

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	51.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	NBT	SBT	NET
Lane Group Flow (vph)	935	1712	854
v/c Ratio	0.66	0.72	0.94
Control Delay	30.6	6.5	35.9
Queue Delay	0.6	0.8	44.9
Total Delay	31.2	7.3	80.7
Queue Length 50th (ft)	348	82	147
Queue Length 95th (ft)	345	m87	#451
Internal Link Dist (ft)	297	110	29
Turn Bay Length (ft)			
Base Capacity (vph)	1415	2390	911
Starvation Cap Reductn	177	357	172
Spillback Cap Reductn	20	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.76	0.84	1.16

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	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	734	136	0	1592	0	228	498	69	0	0	0
Future Volume (vph)	0	734	136	0	1592	0	228	498	69	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	12	12	12
Grade (%)		1%			-1%			-3%			1%	
Total Lost time (s)		2.0			2.0			7.0				
Lane Util. Factor		0.95			0.91			0.95				
Frpb, ped/bikes		0.99			1.00			1.00				
Flpb, ped/bikes		1.00			1.00			1.00				
Frt		0.98			1.00			0.99				
Flt Protected		1.00			1.00			0.99				
Satd. Flow (prot)		2612			4098			3037				
Flt Permitted		1.00			1.00			0.99				
Satd. Flow (perm)		2612			4098			3037				
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	789	146	0	1712	0	245	535	74	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	935	0	0	1712	0	0	854	0	0	0	0
Confl. Peds. (#/hr)	61		68	68		61	5		23	23		5
Confl. Bikes (#/hr)			4			4			2			
Heavy Vehicles (%)	0%	5%	13%	0%	4%	0%	4%	6%	4%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	20	0	0	0	0	0	0	0
Parking (#/hr)		0	0									
Turn Type		NA			NA		Perm	NA				
Protected Phases		15 6 1			15 6 1 2			3 4				
Permitted Phases							3 4					
Actuated Green, G (s)		60.0			68.0			44.0				
Effective Green, g (s)		58.0			61.0			46.0				
Actuated g/C Ratio		0.48			0.51			0.38				
Clearance Time (s)												
Lane Grp Cap (vph)		1262			2083			1164				
v/s Ratio Prot		0.36			c0.42							
v/s Ratio Perm								0.28				
v/c Ratio		0.74			0.82			0.73				
Uniform Delay, d1		25.0			24.9			31.7				
Progression Factor		1.41			0.30			0.45				
Incremental Delay, d2		3.7			2.1			3.5				
Delay (s)		38.9			9.6			17.8				
Level of Service		D			A			B				
Approach Delay (s)		38.9			9.6			17.8			0.0	
Approach LOS		D			A			B			A	

Intersection Summary			
HCM 2000 Control Delay	19.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	76.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	SBL	SBR	NEL	NER
Lane Configurations						
Traffic Volume (veh/h)	0	97	0	0	587	86
Future Volume (Veh/h)	0	97	0	0	587	86
Sign Control	Yield		Free		Free	
Grade	-4%		0%		1%	
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	0	124	0	0	753	110
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage veh)						
Upstream signal (ft)			187		111	
pX, platoon unblocked						
vC, conflicting volume	808	432	863			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	808	432	863			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	78	100			
cM capacity (veh/h)	319	572	775			

Direction, Lane #	WB 1	NE 1	NE 2
Volume Total	124	502	361
Volume Left	0	0	0
Volume Right	124	0	110
cSH	572	1700	1700
Volume to Capacity	0.22	0.30	0.21
Queue Length 95th (ft)	20	0	0
Control Delay (s)	13.0	0.0	0.0
Lane LOS	B		
Approach Delay (s)	13.0	0.0	
Approach LOS	B		

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	24.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	NBT	SBT	SWT
Lane Group Flow (vph)	1013	1722	1036
v/c Ratio	0.43	0.78	1.17
Control Delay	7.9	24.9	111.2
Queue Delay	0.8	0.3	0.0
Total Delay	8.7	25.2	111.2
Queue Length 50th (ft)	73	370	~506
Queue Length 95th (ft)	m83	435	#620
Internal Link Dist (ft)	110	479	17
Turn Bay Length (ft)			
Base Capacity (vph)	2332	2217	883
Starvation Cap Reductn	922	0	0
Spillback Cap Reductn	0	124	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.72	0.82	1.17

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	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	962	0	0	1349	287	0	0	0	243	712	29
Future Volume (vph)	0	962	0	0	1349	287	0	0	0	243	712	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	11	11	11
Grade (%)		2%			-2%			0%			-1%	
Total Lost time (s)		2.0			2.0						7.0	
Lane Util. Factor		0.91			0.91						0.95	
Frpb, ped/bikes		1.00			0.99						1.00	
Flpb, ped/bikes		1.00			1.00						1.00	
Frt		1.00			0.97						1.00	
Flt Protected		1.00			1.00						0.99	
Satd. Flow (prot)		3999			4092						2944	
Flt Permitted		1.00			1.00						0.99	
Satd. Flow (perm)		3999			4092						2944	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1013	0	0	1420	302	0	0	0	256	749	31
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1013	0	0	1722	0	0	0	0	0	1036	0
Confl. Peds. (#/hr)	57		103	103		57	46		4	4		46
Confl. Bikes (#/hr)			3			3						
Heavy Vehicles (%)	0%	5%	0%	0%	4%	3%	0%	0%	0%	6%	5%	3%
Bus Blockages (#/hr)	0	20	0	0	0	0	0	0	0	0	0	0
Turn Type		NA			NA					Perm	NA	
Protected Phases		15 6 1 2			15 6 1						3 4	
Permitted Phases										3 4		
Actuated Green, G (s)		68.0			60.0						44.0	
Effective Green, g (s)		61.0			58.0						46.0	
Actuated g/C Ratio		0.51			0.48						0.38	
Clearance Time (s)												
Lane Grp Cap (vph)		2032			1977						1128	
v/s Ratio Prot		c0.25			c0.42							
v/s Ratio Perm											0.35	
v/c Ratio		0.50			0.87						0.92	
Uniform Delay, d1		19.4			27.7						35.2	
Progression Factor		0.53			1.00						0.49	
Incremental Delay, d2		0.6			5.6						11.8	
Delay (s)		10.9			33.3						28.9	
Level of Service		B			C						C	
Approach Delay (s)		10.9			33.3			0.0			28.9	
Approach LOS		B			C			A			C	

Intersection Summary			
HCM 2000 Control Delay	26.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	76.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Traffic Volume (veh/h)	0	132	0	0	847	152
Future Volume (Veh/h)	0	132	0	0	847	152
Sign Control	Stop		Free		Free	
Grade	-4%		0%		0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	0	138	0	0	882	158
Pedestrians	104					
Lane Width (ft)	10.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	7					
Right turn flare (veh)						
Median type			None		None	
Median storage veh)						
Upstream signal (ft)			218		110	
pX, platoon unblocked	0.69	0.69	0.69			
vC, conflicting volume	1065	624	1144			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	202	0	317			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	80	100			
cM capacity (veh/h)	496	700	805			

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	138	588	452
Volume Left	0	0	0
Volume Right	138	0	158
cSH	700	1700	1700
Volume to Capacity	0.20	0.35	0.27
Queue Length 95th (ft)	18	0	0
Control Delay (s)	11.4	0.0	0.0
Lane LOS	B		
Approach Delay (s)	11.4	0.0	
Approach LOS	B		

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	36.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	NBT	NBR	SBR	SWT
Lane Group Flow (vph)	108	523	230	787
v/c Ratio	0.13	0.51	0.18	0.70
Control Delay	16.9	2.5	0.3	35.4
Queue Delay	0.0	0.0	0.2	2.4
Total Delay	16.9	2.5	0.5	37.8
Queue Length 50th (ft)	64	2	0	267
Queue Length 95th (ft)	m86	m15	0	342
Internal Link Dist (ft)	1			419
Turn Bay Length (ft)				
Base Capacity (vph)	842	1024	1305	1118
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	527	206
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.13	0.51	0.30	0.86

Intersection Summary

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

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	97	471	0	0	207	0	0	0	0	706	3
Future Volume (vph)	0	97	471	0	0	207	0	0	0	0	706	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			0%			1%	
Total Lost time (s)		2.0	7.0			2.0					2.0	
Lane Util. Factor		0.95	0.95			1.00					0.95	
Frpb, ped/bikes		1.00	1.00			1.00					1.00	
Flpb, ped/bikes		1.00	1.00			1.00					1.00	
Frt		1.00	0.85			0.86					1.00	
Flt Protected		1.00	1.00			1.00					1.00	
Satd. Flow (prot)		1444	1257			1305					2921	
Flt Permitted		1.00	1.00			1.00					1.00	
Satd. Flow (perm)		1444	1257			1305					2921	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	108	523	0	0	230	0	0	0	0	784	3
RTOR Reduction (vph)	0	0	100	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	108	423	0	0	230	0	0	0	0	787	0
Confl. Peds. (#/hr)			7	7			7					7
Bus Blockages (#/hr)	0	6	0	0	0	9	0	0	0	0	6	6
Turn Type		NA	custom			Free					NA	
Protected Phases		4 15 6 1	11 4 15								2 3	
Permitted Phases						Free						
Actuated Green, G (s)		65.0	97.0			120.0					39.0	
Effective Green, g (s)		63.0	97.0			120.0					41.0	
Actuated g/C Ratio		0.52	0.81			1.00					0.34	
Clearance Time (s)												
Lane Grp Cap (vph)		758	1016			1305					998	
v/s Ratio Prot		0.07	c0.34								c0.27	
v/s Ratio Perm						c0.18						
v/c Ratio		0.14	0.42			0.18					0.79	
Uniform Delay, d1		14.6	3.3			0.0					35.6	
Progression Factor		1.45	2.89			1.00					1.00	
Incremental Delay, d2		0.3	1.0			0.3					6.3	
Delay (s)		21.5	10.6			0.3					41.9	
Level of Service		C	B			A					D	
Approach Delay (s)		12.5			0.3			0.0			41.9	
Approach LOS		B			A			A			D	

Intersection Summary			
HCM 2000 Control Delay	24.8	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)	26.0
Intersection Capacity Utilization	45.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	NBT	SBT	SET	NWT
Lane Group Flow (vph)	184	134	353	489
v/c Ratio	0.54	0.41	0.49	0.56
Control Delay	37.3	33.8	13.6	14.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	37.3	33.8	13.6	14.6
Queue Length 50th (ft)	99	69	115	170
Queue Length 95th (ft)	171	126	187	261
Internal Link Dist (ft)	689	132	177	285
Turn Bay Length (ft)				
Base Capacity (vph)	343	329	727	879
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.54	0.41	0.49	0.56

Intersection Summary

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	78	50	47	23	88	16	6	258	71	51	381	32
Future Volume (vph)	78	50	47	23	88	16	6	258	71	51	381	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-4%			5%			7%			-7%	
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		0.99			1.00			0.99			1.00	
Flpb, ped/bikes		0.99			1.00			1.00			1.00	
Frt		0.96			0.98			0.97			0.99	
Flt Protected		0.98			0.99			1.00			0.99	
Satd. Flow (prot)		1485			1256			1200			1545	
Flt Permitted		0.81			0.93			0.99			0.93	
Satd. Flow (perm)		1229			1177			1192			1440	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	82	53	49	24	93	17	6	272	75	54	401	34
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	184	0	0	134	0	0	353	0	0	489	0
Confl. Peds. (#/hr)	8		4	4		8	6		25	25		6
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	5%	5%	5%	5%	5%
Parking (#/hr)				10	10	10	10	10	10			
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		26.0			26.0			59.0			59.0	
Effective Green, g (s)		28.0			28.0			61.0			61.0	
Actuated g/C Ratio		0.28			0.28			0.61			0.61	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Lane Grp Cap (vph)		344			329			727			878	
v/s Ratio Prot												
v/s Ratio Perm		c0.15			0.11			0.30			c0.34	
v/c Ratio		0.53			0.41			0.49			0.56	
Uniform Delay, d1		30.5			29.3			10.8			11.5	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		5.9			3.7			2.3			2.5	
Delay (s)		36.3			33.0			13.1			14.1	
Level of Service		D			C			B			B	
Approach Delay (s)		36.3			33.0			13.1			14.1	
Approach LOS		D			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	19.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	77.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	424	521	138	237
v/c Ratio	0.88	1.32	0.26	0.51
Control Delay	41.9	185.0	13.2	17.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	41.9	185.0	13.2	17.6
Queue Length 50th (ft)	141	~252	31	61
Queue Length 95th (ft)	#293	#416	66	120
Internal Link Dist (ft)	418	274	520	689
Turn Bay Length (ft)				
Base Capacity (vph)	481	394	528	469
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.88	1.32	0.26	0.51

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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	360	28	68	320	128	14	99	24	77	131	27
Future Volume (vph)	32	360	28	68	320	128	14	99	24	77	131	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		9%			-8%			-4%			0%	
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		0.99			0.97			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.99			0.97			0.98			0.98	
Flt Protected		1.00			0.99			0.99			0.98	
Satd. Flow (prot)		1465			1290			1311			1281	
Flt Permitted		0.93			0.87			0.96			0.87	
Satd. Flow (perm)		1374			1126			1269			1126	
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)	32	364	28	69	323	129	14	100	24	78	132	27
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	424	0	0	521	0	0	138	0	0	237	0
Confl. Peds. (#/hr)	38		28	28		38	9		3	3		9
Parking (#/hr)				10	10	10	10	10	10	10	10	10
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		19.0			19.0			23.0			23.0	
Effective Green, g (s)		21.0			21.0			25.0			25.0	
Actuated g/C Ratio		0.35			0.35			0.42			0.42	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Lane Grp Cap (vph)		480			394			528			469	
v/s Ratio Prot												
v/s Ratio Perm		0.31			c0.46			0.11			c0.21	
v/c Ratio		0.88			1.32			0.26			0.51	
Uniform Delay, d1		18.3			19.5			11.5			12.9	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		20.4			161.8			1.2			3.9	
Delay (s)		38.8			181.3			12.7			16.8	
Level of Service		D			F			B			B	
Approach Delay (s)		38.8			181.3			12.7			16.8	
Approach LOS		D			F			B			B	

Intersection Summary			
HCM 2000 Control Delay	88.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	86.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	9.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	24	80	24	40	140	20	4	123	14	20	144	9
Future Vol, veh/h	24	80	24	40	140	20	4	123	14	20	144	9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	26	87	26	43	152	22	4	134	15	22	157	10
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.3	10.1	9.5	9.9
HCM LOS	A	B	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	3%	19%	20%	12%
Vol Thru, %	87%	62%	70%	83%
Vol Right, %	10%	19%	10%	5%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	141	128	200	173
LT Vol	4	24	40	20
Through Vol	123	80	140	144
RT Vol	14	24	20	9
Lane Flow Rate	153	139	217	188
Geometry Grp	1	1	1	1
Degree of Util (X)	0.213	0.193	0.298	0.261
Departure Headway (Hd)	5.007	4.991	4.939	5.003
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	710	711	722	711
Service Time	3.09	3.075	3.016	3.084
HCM Lane V/C Ratio	0.215	0.195	0.301	0.264
HCM Control Delay	9.5	9.3	10.1	9.9
HCM Lane LOS	A	A	B	A
HCM 95th-tile Q	0.8	0.7	1.2	1

Intersection	
Intersection Delay, s/veh	3.8
Intersection LOS	A

Approach	NB	SB	NE
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	147	177	100
Demand Flow Rate, veh/h	150	181	102
Vehicles Circulating, veh/h	90	15	151
Vehicles Exiting, veh/h	163	225	45
Ped Vol Crossing Leg, #/h	1	4	2
Ped Cap Adj	1.000	0.999	1.000
Approach Delay, s/veh	3.9	3.8	3.8
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	LT	TR	LR
Assumed Moves	LT	TR	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	150	181	102
Cap Entry Lane, veh/h	1259	1359	1183
Entry HV Adj Factor	0.982	0.978	0.980
Flow Entry, veh/h	147	177	100
Cap Entry, veh/h	1236	1328	1159
V/C Ratio	0.119	0.133	0.086
Control Delay, s/veh	3.9	3.8	3.8
LOS	A	A	A
95th %tile Queue, veh	0	0	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	3	30	171	3	9	171
Future Volume (Veh/h)	3	30	171	3	9	171
Sign Control	Stop		Free			Free
Grade	-4%		1%			1%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	33	186	3	10	186
Pedestrians	25		1			
Lane Width (ft)	10.0		10.0			
Walking Speed (ft/s)	4.0		4.0			
Percent Blockage	2		0			
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	420	212			214	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	420	212			214	
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	96			99	
cM capacity (veh/h)	576	813			1333	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	36	189	196
Volume Left	3	0	10
Volume Right	33	3	0
cSH	786	1700	1333
Volume to Capacity	0.05	0.11	0.01
Queue Length 95th (ft)	4	0	1
Control Delay (s)	9.8	0.0	0.5
Lane LOS	A		A
Approach Delay (s)	9.8	0.0	0.5
Approach LOS	A		

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	28.2%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	4.5
Intersection LOS	A

Approach	NB	SB	SE
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	156	183	266
Demand Flow Rate, veh/h	159	187	271
Vehicles Circulating, veh/h	22	15	184
Vehicles Exiting, veh/h	433	166	18
Ped Vol Crossing Leg, #/h	6	0	3
Ped Cap Adj	0.999	1.000	1.000
Approach Delay, s/veh	3.7	3.8	5.4
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	LT	TR	LR
Assumed Moves	LT	TR	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	159	187	271
Cap Entry Lane, veh/h	1349	1359	1144
Entry HV Adj Factor	0.982	0.981	0.982
Flow Entry, veh/h	156	183	266
Cap Entry, veh/h	1324	1333	1122
V/C Ratio	0.118	0.138	0.237
Control Delay, s/veh	3.7	3.8	5.4
LOS	A	A	A
95th %tile Queue, veh	0	0	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	135	22	15	231	45	12	92	7	38	97	4
Future Volume (Veh/h)	0	135	22	15	231	45	12	92	7	38	97	4
Sign Control		Free			Free			Stop			Stop	
Grade		6%			-2%			-1%			-2%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	0	163	27	18	278	54	14	111	8	46	117	5
Pedestrians		8			1			4			4	
Lane Width (ft)		10.0			10.0			10.0			10.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					176							
pX, platoon unblocked	0.90						0.90	0.90		0.90	0.90	0.90
vC, conflicting volume	336			194			593	552	182	586	539	317
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	206			194			492	447	182	484	432	185
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			96	75	99	87	74	99
cM capacity (veh/h)	1225			1375			342	447	858	350	456	765

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	190	350	133	168
Volume Left	0	18	14	46
Volume Right	27	54	8	5
cSH	1225	1375	446	426
Volume to Capacity	0.00	0.01	0.30	0.39
Queue Length 95th (ft)	0	1	31	46
Control Delay (s)	0.0	0.5	16.5	18.9
Lane LOS		A	C	C
Approach Delay (s)	0.0	0.5	16.5	18.9
Approach LOS			C	C

Intersection Summary			
Average Delay	6.6		
Intersection Capacity Utilization	52.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	156	1030	864	1	2	232
Future Volume (Veh/h)	156	1030	864	1	2	232
Sign Control		Free	Free		Stop	
Grade		0%	0%		1%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	171	1132	949	1	2	255
Pedestrians			4		14	
Lane Width (ft)			10.0		10.0	
Walking Speed (ft/s)			4.0		4.0	
Percent Blockage			0		1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			310			
pX, platoon unblocked						
vC, conflicting volume	964				2442	489
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	964				2442	489
tC, single (s)	4.2				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	75				90	51
cM capacity (veh/h)	685				19	520

Direction, Lane #	EB 1	WB 1	WB 2	SB 1
Volume Total	1303	633	317	257
Volume Left	171	0	0	2
Volume Right	0	0	1	255
cSH	685	1700	1700	432
Volume to Capacity	0.25	0.37	0.19	0.59
Queue Length 95th (ft)	25	0	0	94
Control Delay (s)	9.4	0.0	0.0	24.8
Lane LOS	A			C
Approach Delay (s)	9.4	0.0		24.8
Approach LOS				C

Intersection Summary			
Average Delay	7.4		
Intersection Capacity Utilization	122.5%	ICU Level of Service	H
Analysis Period (min)	15		

Lane Group	EBT	WBL	WBT	NET	SWT
Lane Group Flow (vph)	199	276	225	1255	733
v/c Ratio	0.38	0.98	0.42	1.87	0.92
Control Delay	31.7	84.0	30.4	419.0	27.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	31.7	84.0	30.4	419.0	27.7
Queue Length 50th (ft)	114	215	147	~1492	311
Queue Length 95th (ft)	182	m#302	m181	#1757	#761
Internal Link Dist (ft)	96		233	230	474
Turn Bay Length (ft)		85			
Base Capacity (vph)	524	281	534	671	800
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	0.38	0.98	0.42	1.87	0.92

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	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	34	144	5	254	200	7	20	918	216	7	617	50
Future Volume (vph)	34	144	5	254	200	7	20	918	216	7	617	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	10	10	10	10	10	10	10	10	10
Grade (%)		2%			4%			0%			1%	
Total Lost time (s)		3.5		3.5	3.5			3.0			3.0	
Lane Util. Factor		1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes		1.00		1.00	1.00			0.98			0.99	
Flpb, ped/bikes		1.00		0.95	1.00			1.00			1.00	
Frt		1.00		1.00	0.99			0.97			0.99	
Flt Protected		0.99		0.95	1.00			1.00			1.00	
Satd. Flow (prot)		1626		1381	1522			1136			1360	
Flt Permitted		0.91		0.55	1.00			0.98			0.99	
Satd. Flow (perm)		1497		806	1522			1116			1341	
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)	37	157	5	276	217	8	22	998	235	8	671	54
RTOR Reduction (vph)	0	1	0	0	1	0	0	7	0	0	2	0
Lane Group Flow (vph)	0	198	0	276	224	0	0	1248	0	0	731	0
Confl. Peds. (#/hr)	11		41	41		11	32		18	18		32
Confl. Bikes (#/hr)			3			2						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	20	0	0	20	0
Parking (#/hr)							10	10	10			
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		40.0		40.0	40.0			69.5			69.5	
Effective Green, g (s)		42.0		42.0	42.0			71.5			71.5	
Actuated g/C Ratio		0.35		0.35	0.35			0.60			0.60	
Clearance Time (s)		5.5		5.5	5.5			5.0			5.0	
Lane Grp Cap (vph)		523		282	532			664			799	
v/s Ratio Prot					0.15							
v/s Ratio Perm		0.13		c0.34				c1.12			0.54	
v/c Ratio		0.38		0.98	0.42			1.88			0.91	
Uniform Delay, d1		29.2		38.6	29.7			24.2			21.5	
Progression Factor		1.00		0.97	0.94			1.00			0.45	
Incremental Delay, d2		2.1		44.2	2.1			401.6			16.1	
Delay (s)		31.3		81.7	30.1			425.8			25.7	
Level of Service		C		F	C			F			C	
Approach Delay (s)		31.3			58.5			425.8			25.7	
Approach LOS		C			E			F			C	

Intersection Summary			
HCM 2000 Control Delay	219.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.54		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.5
Intersection Capacity Utilization	119.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	508	4	5	528	34	26	24	11	4	0	14
Future Volume (Veh/h)	20	508	4	5	528	34	26	24	11	4	0	14
Sign Control		Free			Free			Stop			Stop	
Grade		5%			4%			0%			0%	
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Hourly flow rate (vph)	27	696	5	7	723	47	36	33	15	5	0	19
Pedestrians								20			8	
Lane Width (ft)								10.0			10.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		313			929							
pX, platoon unblocked				0.95			0.95	0.95	0.95	0.95	0.95	
vC, conflicting volume	778			721			1552	1564	718	1552	1544	754
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	778			677			1555	1568	675	1555	1546	754
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			99			54	67	96	92	100	95
cM capacity (veh/h)	834			854			78	99	424	59	102	407

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	728	777	84	24
Volume Left	27	7	36	5
Volume Right	5	47	15	19
cSH	834	854	101	183
Volume to Capacity	0.03	0.01	0.83	0.13
Queue Length 95th (ft)	3	1	116	11
Control Delay (s)	0.9	0.2	123.8	27.6
Lane LOS	A	A	F	D
Approach Delay (s)	0.9	0.2	123.8	27.6
Approach LOS			F	D

Intersection Summary			
Average Delay	7.4		
Intersection Capacity Utilization	57.8%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	SET	NWT
Lane Group Flow (vph)	75	436	73	359	1344	1586
v/c Ratio	0.64	1.08	1.00	0.87	1.15	1.65
Control Delay	60.5	103.4	151.0	63.1	98.3	323.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.5	103.4	151.0	63.1	98.3	323.0
Queue Length 50th (ft)	55	~380	57	264	~242	~938
Queue Length 95th (ft)	m84	m#416	#159	#436	#790	#1078
Internal Link Dist (ft)		849		339	239	287
Turn Bay Length (ft)	70		110			
Base Capacity (vph)	117	405	73	412	1167	959
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.64	1.08	1.00	0.87	1.15	1.65

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	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	70	255	151	68	231	103	57	1130	63	92	1362	20
Future Volume (vph)	70	255	151	68	231	103	57	1130	63	92	1362	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		5%			3%			1%			-1%	
Total Lost time (s)	4.0	4.0		4.0	4.0			3.5			3.5	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.95			0.95	
Frpb, ped/bikes	1.00	0.98		1.00	0.98			0.98			0.99	
Flpb, ped/bikes	0.98	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.94		1.00	0.95			0.99			1.00	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1416	1411		1464	1435			2670			2584	
Flt Permitted	0.27	1.00		0.16	1.00			0.63			0.67	
Satd. Flow (perm)	406	1411		254	1435			1695			1731	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	75	274	162	73	248	111	61	1215	68	99	1465	22
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	75	436	0	73	359	0	0	1344	0	0	1586	0
Confl. Peds. (#/hr)	37		26	26		37	93		87	87		93
Confl. Bikes (#/hr)						2			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	20	20	0	0	0
Parking (#/hr)											20	20
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		8			4		1	6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	32.5	32.5		32.5	32.5			76.0			64.5	
Effective Green, g (s)	34.5	34.5		34.5	34.5			78.0			66.5	
Actuated g/C Ratio	0.29	0.29		0.29	0.29			0.65			0.55	
Clearance Time (s)	6.0	6.0		6.0	6.0			5.5			5.5	
Lane Grp Cap (vph)	116	405		73	412			1166			959	
v/s Ratio Prot		c0.31			0.25			c0.08				
v/s Ratio Perm	0.18			0.29				0.67			c0.92	
v/c Ratio	0.65	1.08		1.00	0.87			1.15			1.65	
Uniform Delay, d1	37.4	42.8		42.8	40.6			21.0			26.8	
Progression Factor	1.06	1.06		1.00	1.00			0.95			1.00	
Incremental Delay, d2	18.5	60.4		105.3	21.6			78.1			298.9	
Delay (s)	58.0	105.5		148.1	62.2			98.0			325.6	
Level of Service	E	F		F	E			F			F	
Approach Delay (s)		98.6			76.7			98.0			325.6	
Approach LOS		F			E			F			F	

Intersection Summary			
HCM 2000 Control Delay	188.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.44		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	129.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	22	11	36	10	10	11	934	18	11	632	10
Future Volume (Veh/h)	0	22	11	36	10	10	11	934	18	11	632	10
Sign Control		Stop			Stop			Free			Free	
Grade		-4%			6%			-2%			2%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	23	12	38	11	11	12	994	19	12	672	11
Pedestrians		24			26			1			6	
Lane Width (ft)		10.0			10.0			10.0			10.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		2			2			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								726			393	
pX, platoon unblocked	0.56	0.56	0.85	0.56	0.56	0.49	0.85			0.49		
vC, conflicting volume	1776	1788	702	1780	1784	1036	707			1039		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1402	1425	565	1409	1418	553	570			560		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	68	97	14	85	96	99			97		
cM capacity (veh/h)	52	71	440	44	71	255	828			480		

Direction, Lane #	EB 1	WB 1	NE 1	SW 1
Volume Total	35	60	1025	695
Volume Left	0	38	12	12
Volume Right	12	11	19	11
cSH	100	57	828	480
Volume to Capacity	0.35	1.06	0.01	0.03
Queue Length 95th (ft)	35	124	1	2
Control Delay (s)	59.3	255.0	0.4	0.7
Lane LOS	F	F	A	A
Approach Delay (s)	59.3	255.0	0.4	0.7
Approach LOS	F	F		

Intersection Summary			
Average Delay	10.1		
Intersection Capacity Utilization	79.9%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	880	3	18	660	7	94
Future Volume (Veh/h)	880	3	18	660	7	94
Sign Control	Free			Free	Yield	
Grade	-1%			2%	2%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	1035	4	21	776	8	111
Pedestrians					15	
Lane Width (ft)					10.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	554			565		
pX, platoon unblocked			0.47		0.49	0.47
vC, conflicting volume			1054		1482	1052
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			544		1033	539
tC, single (s)			4.2		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			95		92	51
cM capacity (veh/h)			462		107	224

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	1039	280	517	119
Volume Left	0	21	0	8
Volume Right	4	0	0	111
cSH	1700	462	1700	209
Volume to Capacity	0.61	0.05	0.30	0.57
Queue Length 95th (ft)	0	4	0	78
Control Delay (s)	0.0	1.6	0.0	42.8
Lane LOS		A		E
Approach Delay (s)	0.0	0.6		42.8
Approach LOS				E

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	65.2%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	NBT	SBT	NET
Lane Group Flow (vph)	1594	1355	1316
v/c Ratio	1.21	0.61	1.25
Control Delay	129.4	8.6	149.0
Queue Delay	0.4	0.8	1.0
Total Delay	129.8	9.4	150.0
Queue Length 50th (ft)	~786	87	~669
Queue Length 95th (ft)	#928	m97	#802
Internal Link Dist (ft)	297	110	29
Turn Bay Length (ft)			
Base Capacity (vph)	1320	2232	1055
Starvation Cap Reductn	0	518	192
Spillback Cap Reductn	134	0	23
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.34	0.79	1.52

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	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	1175	339	0	1287	0	335	864	51	0	0	0
Future Volume (vph)	0	1175	339	0	1287	0	335	864	51	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	12	12	12
Grade (%)		1%			-1%			-3%			1%	
Total Lost time (s)		2.0			2.0			7.0				
Lane Util. Factor		0.95			0.91			0.95				
Frpb, ped/bikes		0.99			1.00			1.00				
Flpb, ped/bikes		1.00			1.00			1.00				
Frt		0.97			1.00			0.99				
Flt Protected		1.00			1.00			0.99				
Satd. Flow (prot)		2599			4059			3164				
Flt Permitted		1.00			1.00			0.99				
Satd. Flow (perm)		2599			4059			3164				
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1237	357	0	1355	0	353	909	54	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1594	0	0	1355	0	0	1316	0	0	0	0
Confl. Peds. (#/hr)	63		80	80		63	6		10	10		6
Confl. Bikes (#/hr)			4			4			2			
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	20	0	0	0	0	0	0	0
Parking (#/hr)		0	0									
Turn Type		NA			NA		Perm	NA				
Protected Phases		15 6 1			15 6 1 2			3 4				
Permitted Phases							3 4					
Actuated Green, G (s)		56.0			64.0			48.0				
Effective Green, g (s)		54.0			57.0			50.0				
Actuated g/C Ratio		0.45			0.48			0.42				
Clearance Time (s)												
Lane Grp Cap (vph)		1169			1928			1318				
v/s Ratio Prot		c0.61			c0.33							
v/s Ratio Perm								0.42				
v/c Ratio		1.36			0.70			1.00				
Uniform Delay, d1		33.0			24.8			35.0				
Progression Factor		1.00			0.42			0.79				
Incremental Delay, d2		169.0			1.4			24.2				
Delay (s)		202.1			11.9			51.7				
Level of Service		F			B			D				
Approach Delay (s)		202.1			11.9			51.7			0.0	
Approach LOS		F			B			D			A	

Intersection Summary			
HCM 2000 Control Delay	95.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.33		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	158.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	SBL	SBR	NEL	NER
Lane Configurations						
Traffic Volume (veh/h)	0	148	0	0	1173	35
Future Volume (Veh/h)	0	148	0	0	1173	35
Sign Control	Yield		Free		Free	
Grade	-4%		0%		1%	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81
Hourly flow rate (vph)	0	183	0	0	1448	43
Pedestrians	12					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	1					
Right turn flare (veh)						
Median type			None		None	
Median storage veh)						
Upstream signal (ft)			187		111	
pX, platoon unblocked	0.61	0.61	0.61			
vC, conflicting volume	1482	758	1503			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	495	0	530			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	72	100			
cM capacity (veh/h)	303	651	620			

Direction, Lane #	WB 1	NE 1	NE 2
Volume Total	183	965	526
Volume Left	0	0	0
Volume Right	183	0	43
cSH	651	1700	1700
Volume to Capacity	0.28	0.57	0.31
Queue Length 95th (ft)	29	0	0
Control Delay (s)	12.7	0.0	0.0
Lane LOS	B		
Approach Delay (s)	12.7	0.0	
Approach LOS	B		

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	41.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	NBT	SBT	SWT
Lane Group Flow (vph)	1588	1432	906
v/c Ratio	0.72	0.71	0.90
Control Delay	8.3	25.1	29.1
Queue Delay	48.6	0.2	7.9
Total Delay	56.9	25.4	36.9
Queue Length 50th (ft)	112	301	321
Queue Length 95th (ft)	m88	359	#468
Internal Link Dist (ft)	110	479	17
Turn Bay Length (ft)			
Base Capacity (vph)	2199	2021	1007
Starvation Cap Reductn	924	0	83
Spillback Cap Reductn	0	133	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.25	0.76	0.98

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	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	1509	0	0	1016	345	0	0	0	272	560	29
Future Volume (vph)	0	1509	0	0	1016	345	0	0	0	272	560	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	11	11	11
Grade (%)		2%			-2%			0%			-1%	
Total Lost time (s)		2.0			2.0						7.0	
Lane Util. Factor		0.91			0.91						0.95	
Frpb, ped/bikes		1.00			0.99						1.00	
Flpb, ped/bikes		1.00			1.00						1.00	
Frt		1.00			0.96						0.99	
Flt Protected		1.00			1.00						0.98	
Satd. Flow (prot)		3999			3977						3023	
Flt Permitted		1.00			1.00						0.98	
Satd. Flow (perm)		3999			3977						3023	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1588	0	0	1069	363	0	0	0	286	589	31
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1588	0	0	1432	0	0	0	0	0	906	0
Confl. Peds. (#/hr)	61		79	79		61	20		7	7		20
Confl. Bikes (#/hr)			3			3						
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	20	0	0	0	0	0	0	0	0	0	0
Turn Type		NA			NA					Perm	NA	
Protected Phases		15 6 1 2			15 6 1						3 4	
Permitted Phases										3 4		
Actuated Green, G (s)		64.0			56.0						48.0	
Effective Green, g (s)		57.0			54.0						50.0	
Actuated g/C Ratio		0.48			0.45						0.42	
Clearance Time (s)												
Lane Grp Cap (vph)		1899			1789						1259	
v/s Ratio Prot		c0.40			0.36							
v/s Ratio Perm											0.30	
v/c Ratio		0.84			0.80						0.72	
Uniform Delay, d1		27.4			28.4						29.2	
Progression Factor		0.40			1.00						0.45	
Incremental Delay, d2		0.4			3.9						3.1	
Delay (s)		11.3			32.2						16.1	
Level of Service		B			C						B	
Approach Delay (s)		11.3			32.2			0.0			16.1	
Approach LOS		B			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	20.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	158.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Traffic Volume (veh/h)	0	196	0	0	828	77
Future Volume (Veh/h)	0	196	0	0	828	77
Sign Control	Stop		Free		Free	
Grade	-4%		0%		0%	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Hourly flow rate (vph)	0	280	0	0	1183	110
Pedestrians	49					
Lane Width (ft)	10.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	3					
Right turn flare (veh)						
Median type			None		None	
Median storage veh)						
Upstream signal (ft)			218		110	
pX, platoon unblocked						
vC, conflicting volume	1287	696	1342			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1287	696	1342			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	25	100			
cM capacity (veh/h)	151	372	492			

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	280	789	504
Volume Left	0	0	0
Volume Right	280	0	110
cSH	372	1700	1700
Volume to Capacity	0.75	0.46	0.30
Queue Length 95th (ft)	150	0	0
Control Delay (s)	39.0	0.0	0.0
Lane LOS	E		
Approach Delay (s)	39.0	0.0	
Approach LOS	E		

Intersection Summary			
Average Delay	6.9		
Intersection Capacity Utilization	32.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	NBT	NBR	SBR	SWT
Lane Group Flow (vph)	151	1690	187	820
v/c Ratio	0.20	1.46	0.17	0.68
Control Delay	18.4	230.4	0.4	32.1
Queue Delay	0.0	0.0	0.1	1.4
Total Delay	18.4	230.4	0.4	33.4
Queue Length 50th (ft)	85	~1813	0	267
Queue Length 95th (ft)	m77	#961	0	207
Internal Link Dist (ft)	1			419
Turn Bay Length (ft)				
Base Capacity (vph)	749	1156	1073	1204
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	246	199
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.20	1.46	0.23	0.82

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	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	95	1065	0	0	118	0	0	0	0	515	2
Future Volume (vph)	0	95	1065	0	0	118	0	0	0	0	515	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			0%			1%	
Total Lost time (s)		2.0	7.0			2.0					2.0	
Lane Util. Factor		0.95	0.95			1.00					0.95	
Frpb, ped/bikes		1.00	1.00			1.00					1.00	
Flpb, ped/bikes		1.00	1.00			1.00					1.00	
Frt		1.00	0.85			0.86					1.00	
Flt Protected		1.00	1.00			1.00					1.00	
Satd. Flow (prot)		1363	1187			1073					2892	
Flt Permitted		1.00	1.00			1.00					1.00	
Satd. Flow (perm)		1363	1187			1073					2892	
Peak-hour factor, PHF	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63
Adj. Flow (vph)	0	151	1690	0	0	187	0	0	0	0	817	3
RTOR Reduction (vph)	0	0	209	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	151	1481	0	0	187	0	0	0	0	820	0
Confl. Peds. (#/hr)				18			7		7			18
Heavy Vehicles (%)	8%	8%	8%	24%	24%	24%	0%	0%	0%	3%	3%	3%
Bus Blockages (#/hr)	0	6	0	0	0	9	0	0	0	0	6	6
Turn Type		NA	custom			Free					NA	
Protected Phases		4 15 6 1	11 4 15								2 3	
Permitted Phases						Free						
Actuated Green, G (s)		61.0	97.0			120.0					43.0	
Effective Green, g (s)		59.0	97.0			120.0					45.0	
Actuated g/C Ratio		0.49	0.81			1.00					0.38	
Clearance Time (s)												
Lane Grp Cap (vph)		670	959			1073					1084	
v/s Ratio Prot		c0.11	c1.25								0.28	
v/s Ratio Perm						0.17						
v/c Ratio		0.23	1.54			0.17					0.76	
Uniform Delay, d1		17.4	11.5			0.0					32.7	
Progression Factor		1.29	16.29			1.00					1.00	
Incremental Delay, d2		0.5	248.1			0.4					4.9	
Delay (s)		23.0	435.4			0.4					37.7	
Level of Service		C	F			A					D	
Approach Delay (s)		401.6			0.4			0.0			37.7	
Approach LOS		F			A			A			D	

Intersection Summary			
HCM 2000 Control Delay	270.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.63		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	54.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	NBT	SBT	SET	NWT
Lane Group Flow (vph)	231	210	157	375
v/c Ratio	0.73	0.60	0.22	0.40
Control Delay	47.7	39.4	9.7	11.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	47.7	39.4	9.7	11.6
Queue Length 50th (ft)	133	116	42	113
Queue Length 95th (ft)	201	175	67	155
Internal Link Dist (ft)	689	132	177	285
Turn Bay Length (ft)				
Base Capacity (vph)	317	352	722	943
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.73	0.60	0.22	0.40

Intersection Summary

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	75	116	1	13	158	3	8	63	59	33	253	25
Future Volume (vph)	75	116	1	13	158	3	8	63	59	33	253	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-4%			5%			7%			-7%	
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		1.00			1.00			0.99			1.00	
Flpb, ped/bikes		0.97			1.00			1.00			1.00	
Frt		1.00			1.00			0.94			0.99	
Flt Protected		0.98			1.00			1.00			0.99	
Satd. Flow (prot)		1549			1297			1210			1607	
Flt Permitted		0.72			0.97			0.97			0.96	
Satd. Flow (perm)		1136			1260			1183			1547	
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	90	140	1	16	190	4	10	76	71	40	305	30
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	231	0	0	210	0	0	157	0	0	375	0
Confl. Peds. (#/hr)	58		42	42		58	20		8	8		20
Heavy Vehicles (%)	0%	0%	0%	9%	0%	0%	0%	0%	0%	0%	1%	0%
Parking (#/hr)				10	10	10	10	10	10			
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		26.0			26.0			59.0			59.0	
Effective Green, g (s)		28.0			28.0			61.0			61.0	
Actuated g/C Ratio		0.28			0.28			0.61			0.61	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Lane Grp Cap (vph)		318			352			721			943	
v/s Ratio Prot												
v/s Ratio Perm		c0.20			0.17			0.13			c0.24	
v/c Ratio		0.73			0.60			0.22			0.40	
Uniform Delay, d1		32.5			31.1			8.8			10.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		13.5			7.3			0.7			1.3	
Delay (s)		46.1			38.4			9.5			11.3	
Level of Service		D			D			A			B	
Approach Delay (s)		46.1			38.4			9.5			11.3	
Approach LOS		D			D			A			B	

Intersection Summary			
HCM 2000 Control Delay	25.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	185	206	129	182
v/c Ratio	0.44	0.49	0.23	0.39
Control Delay	19.2	20.1	12.7	15.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	19.2	20.1	12.7	15.4
Queue Length 50th (ft)	50	57	29	44
Queue Length 95th (ft)	101	113	61	90
Internal Link Dist (ft)	418	274	520	689
Turn Bay Length (ft)				
Base Capacity (vph)	418	424	562	465
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.44	0.49	0.23	0.39

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	90	14	22	118	50	4	111	4	29	94	44
Future Volume (vph)	66	90	14	22	118	50	4	111	4	29	94	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		9%			-8%			-4%			0%	
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		0.99			0.95			0.99			0.95	
Flpb, ped/bikes		0.96			0.99			1.00			0.96	
Frt		0.99			0.96			1.00			0.96	
Flt Protected		0.98			0.99			1.00			0.99	
Satd. Flow (prot)		1404			1264			1359			1177	
Flt Permitted		0.84			0.95			0.99			0.94	
Satd. Flow (perm)		1197			1213			1350			1117	
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)	72	98	15	24	128	54	4	121	4	32	102	48
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	185	0	0	206	0	0	129	0	0	182	0
Confl. Peds. (#/hr)	83		47	47		83	93		128	128		93
Heavy Vehicles (%)	0%	0%	0%	0%	1%	2%	0%	0%	0%	0%	0%	2%
Parking (#/hr)				10	10	10	10	10	10	10	10	10
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		19.0			19.0			23.0			23.0	
Effective Green, g (s)		21.0			21.0			25.0			25.0	
Actuated g/C Ratio		0.35			0.35			0.42			0.42	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Lane Grp Cap (vph)		418			424			562			465	
v/s Ratio Prot												
v/s Ratio Perm		0.15			c0.17			0.10			c0.16	
v/c Ratio		0.44			0.49			0.23			0.39	
Uniform Delay, d1		15.0			15.3			11.3			12.2	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		3.4			3.9			1.0			2.5	
Delay (s)		18.4			19.2			12.2			14.7	
Level of Service		B			B			B			B	
Approach Delay (s)		18.4			19.2			12.2			14.7	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	50.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	8.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	61	3	24	99	38	10	118	36	21	98	10
Future Vol, veh/h	10	61	3	24	99	38	10	118	36	21	98	10
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	0	0
Mvmt Flow	11	68	3	27	110	42	11	131	40	23	109	11
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.6	9.1	9	8.9
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	6%	14%	15%	16%
Vol Thru, %	72%	82%	61%	76%
Vol Right, %	22%	4%	24%	8%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	164	74	161	129
LT Vol	10	10	24	21
Through Vol	118	61	99	98
RT Vol	36	3	38	10
Lane Flow Rate	182	82	179	143
Geometry Grp	1	1	1	1
Degree of Util (X)	0.232	0.112	0.231	0.188
Departure Headway (Hd)	4.577	4.886	4.652	4.724
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	782	730	769	757
Service Time	2.623	2.94	2.699	2.774
HCM Lane V/C Ratio	0.233	0.112	0.233	0.189
HCM Control Delay	9	8.6	9.1	8.9
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.9	0.4	0.9	0.7

Intersection	
Intersection Delay, s/veh	3.5
Intersection LOS	A

Approach	NB	SB	NE
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	158	132	14
Demand Flow Rate, veh/h	160	132	14
Vehicles Circulating, veh/h	14	3	109
Vehicles Exiting, veh/h	109	171	26
Ped Vol Crossing Leg, #/h	0	7	0
Ped Cap Adj	1.000	0.999	1.000
Approach Delay, s/veh	3.6	3.4	3.0
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	LT	TR	LR
Assumed Moves	LT	TR	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	160	132	14
Cap Entry Lane, veh/h	1360	1376	1235
Entry HV Adj Factor	0.990	1.000	1.000
Flow Entry, veh/h	158	132	14
Cap Entry, veh/h	1347	1374	1235
V/C Ratio	0.118	0.096	0.011
Control Delay, s/veh	3.6	3.4	3.0
LOS	A	A	A
95th %tile Queue, veh	0	0	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	22	30	111	0	4	98
Future Volume (Veh/h)	22	30	111	0	4	98
Sign Control	Stop		Free			Free
Grade	-4%		1%			1%
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	23	31	116	0	4	102
Pedestrians	5		5			5
Lane Width (ft)	10.0		10.0			10.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	0		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	236	126			121	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	236	126			121	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	97			100	
cM capacity (veh/h)	750	923			1474	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	54	116	106
Volume Left	23	0	4
Volume Right	31	0	0
cSH	841	1700	1474
Volume to Capacity	0.06	0.07	0.00
Queue Length 95th (ft)	5	0	0
Control Delay (s)	9.6	0.0	0.3
Lane LOS	A		A
Approach Delay (s)	9.6	0.0	0.3
Approach LOS	A		

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	21.2%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	3.3
Intersection LOS	A

Approach	NB	SB	SE
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	131	113	23
Demand Flow Rate, veh/h	131	113	23
Vehicles Circulating, veh/h	1	18	106
Vehicles Exiting, veh/h	128	114	25
Ped Vol Crossing Leg, #/h	9	2	0
Ped Cap Adj	0.999	1.000	1.000
Approach Delay, s/veh	3.4	3.3	3.1
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	LT	TR	LR
Assumed Moves	LT	TR	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	131	113	23
Cap Entry Lane, veh/h	1378	1355	1238
Entry HV Adj Factor	1.000	1.000	1.000
Flow Entry, veh/h	131	113	23
Cap Entry, veh/h	1377	1354	1238
V/C Ratio	0.095	0.083	0.019
Control Delay, s/veh	3.4	3.3	3.1
LOS	A	A	A
95th %tile Queue, veh	0	0	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	98	15	27	264	81	7	101	1	34	162	0
Future Volume (Veh/h)	5	98	15	27	264	81	7	101	1	34	162	0
Sign Control		Free			Free			Stop			Stop	
Grade		6%			-2%			-1%			-2%	
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)	5	102	16	28	275	84	7	105	1	35	169	0
Pedestrians		6			3			3			9	
Lane Width (ft)		10.0			10.0			10.0			10.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					176							
pX, platoon unblocked	0.92						0.92	0.92		0.92	0.92	0.92
vC, conflicting volume	368			121			586	547	116	558	513	332
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	265			121			504	460	116	473	423	226
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			98	76	100	90	64	100
cM capacity (veh/h)	1194			1476			309	443	938	366	467	743

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	123	387	113	204
Volume Left	5	28	7	35
Volume Right	16	84	1	0
cSH	1194	1476	434	446
Volume to Capacity	0.00	0.02	0.26	0.46
Queue Length 95th (ft)	0	1	26	59
Control Delay (s)	0.4	0.7	16.2	19.7
Lane LOS	A	A	C	C
Approach Delay (s)	0.4	0.7	16.2	19.7
Approach LOS			C	C

Intersection Summary			
Average Delay	7.5		
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	107	891	860	0	2	192
Future Volume (Veh/h)	107	891	860	0	2	192
Sign Control		Free	Free		Stop	
Grade		0%	0%		1%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	114	948	915	0	2	204
Pedestrians					28	
Lane Width (ft)					10.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					2	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			310			
pX, platoon unblocked						
vC, conflicting volume	943				1645	486
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	943				1645	486
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	84				97	61
cM capacity (veh/h)	715				76	520

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	430	632	610	305	206
Volume Left	114	0	0	0	2
Volume Right	0	0	0	0	204
cSH	715	1700	1700	1700	492
Volume to Capacity	0.16	0.37	0.36	0.18	0.42
Queue Length 95th (ft)	14	0	0	0	51
Control Delay (s)	4.5	0.0	0.0	0.0	17.5
Lane LOS	A				C
Approach Delay (s)	1.8		0.0		17.5
Approach LOS					C

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	80.6%	ICU Level of Service	D
Analysis Period (min)	15		

Lane Group	EBT	WBL	WBT	NET	SWT
Lane Group Flow (vph)	141	246	196	951	652
v/c Ratio	0.26	0.76	0.36	0.67	0.80
Control Delay	29.0	46.5	25.6	18.8	14.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	29.0	46.5	25.6	18.8	14.0
Queue Length 50th (ft)	76	187	132	240	209
Queue Length 95th (ft)	129	m#289	m196	314	292
Internal Link Dist (ft)	96		233	230	474
Turn Bay Length (ft)		85			
Base Capacity (vph)	550	322	539	1418	818
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	0.26	0.76	0.36	0.67	0.80

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	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	21	105	7	231	179	6	52	724	118	4	583	26
Future Volume (vph)	21	105	7	231	179	6	52	724	118	4	583	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	10	10	10	10	10	10	10	10	10
Grade (%)		2%			4%			0%			1%	
Total Lost time (s)		3.5		3.5	3.5			3.0			3.0	
Lane Util. Factor		1.00		1.00	1.00			0.95			1.00	
Frpb, ped/bikes		1.00		1.00	1.00			0.98			0.99	
Flpb, ped/bikes		1.00		0.96	1.00			1.00			1.00	
Frt		0.99		1.00	1.00			0.98			0.99	
Flt Protected		0.99		0.95	1.00			1.00			1.00	
Satd. Flow (prot)		1658		1417	1540			2700			1378	
Flt Permitted		0.94		0.62	1.00			0.87			1.00	
Satd. Flow (perm)		1571		922	1540			2365			1372	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	22	112	7	246	190	6	55	770	126	4	620	28
RTOR Reduction (vph)	0	1	0	0	1	0	0	10	0	0	1	0
Lane Group Flow (vph)	0	140	0	246	195	0	0	941	0	0	651	0
Confl. Peds. (#/hr)	11		23	23		11	26		25	25		26
Confl. Bikes (#/hr)			3			2						
Heavy Vehicles (%)	0%	0%	0%	1%	1%	0%	0%	4%	2%	0%	5%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	20	0	0	20	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		40.0		40.0	40.0			69.5			69.5	
Effective Green, g (s)		42.0		42.0	42.0			71.5			71.5	
Actuated g/C Ratio		0.35		0.35	0.35			0.60			0.60	
Clearance Time (s)		5.5		5.5	5.5			5.0			5.0	
Lane Grp Cap (vph)		549		322	539			1409			817	
v/s Ratio Prot					0.13							
v/s Ratio Perm		0.09		c0.27				0.40			c0.47	
v/c Ratio		0.25		0.76	0.36			0.67			0.80	
Uniform Delay, d1		27.8		34.6	29.0			16.3			18.7	
Progression Factor		1.00		0.87	0.81			1.00			0.32	
Incremental Delay, d2		1.1		14.7	1.7			2.5			7.5	
Delay (s)		28.9		45.0	25.3			18.8			13.5	
Level of Service		C		D	C			B			B	
Approach Delay (s)		28.9			36.2			18.8			13.5	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	21.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.5
Intersection Capacity Utilization	96.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	363	16	14	458	39	33	15	13	11	1	9
Future Volume (Veh/h)	11	363	16	14	458	39	33	15	13	11	1	9
Sign Control		Free			Free			Stop			Stop	
Grade		5%			4%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	12	382	17	15	482	41	35	16	14	12	1	9
Pedestrians								23			11	
Lane Width (ft)								10.0			10.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								2			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		313			929							
pX, platoon unblocked	0.90			0.98			0.91	0.91	0.98	0.91	0.91	0.90
vC, conflicting volume	534			422			980	1002	414	980	990	514
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	430			396			874	898	388	875	885	408
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			85	93	98	95	100	98
cM capacity (veh/h)	1012			1117			230	243	635	219	247	577

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	411	538	65	22
Volume Left	12	15	35	12
Volume Right	17	41	14	9
cSH	1012	1117	271	296
Volume to Capacity	0.01	0.01	0.24	0.07
Queue Length 95th (ft)	1	1	23	6
Control Delay (s)	0.4	0.4	22.5	18.1
Lane LOS	A	A	C	C
Approach Delay (s)	0.4	0.4	22.5	18.1
Approach LOS			C	C

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	47.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	SET	NWT
Lane Group Flow (vph)	54	291	44	324	1033	1226
v/c Ratio	0.39	0.69	0.28	0.74	0.61	0.60
Control Delay	46.7	49.8	39.2	50.6	7.9	19.5
Queue Delay	0.0	0.0	0.0	0.0	0.4	0.0
Total Delay	46.7	49.8	39.2	50.6	8.3	19.5
Queue Length 50th (ft)	37	214	26	228	93	222
Queue Length 95th (ft)	m75	315	63	#340	110	269
Internal Link Dist (ft)		849		339	239	287
Turn Bay Length (ft)	70		110			
Base Capacity (vph)	137	422	156	436	1686	2034
Starvation Cap Reductn	0	0	0	0	217	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.69	0.28	0.74	0.70	0.60

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	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	51	216	61	42	265	43	6	922	53	7	1138	20
Future Volume (vph)	51	216	61	42	265	43	6	922	53	7	1138	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		5%			3%			1%			-1%	
Total Lost time (s)	4.0	4.0		4.0	4.0			3.5			3.5	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.95			0.91	
Frpb, ped/bikes	1.00	0.98		1.00	0.99			0.98			0.99	
Flpb, ped/bikes	0.97	1.00		0.95	1.00			1.00			1.00	
Frt	1.00	0.97		1.00	0.98			0.99			1.00	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1409	1470		1398	1518			2718			3936	
Flt Permitted	0.32	1.00		0.37	1.00			0.95			0.93	
Satd. Flow (perm)	479	1470		546	1518			2581			3675	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	54	227	64	44	279	45	6	971	56	7	1198	21
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	54	291	0	44	324	0	0	1033	0	0	1226	0
Confl. Peds. (#/hr)	39		56	56		39	69		76	76		69
Confl. Bikes (#/hr)						2			5			5
Heavy Vehicles (%)	2%	0%	0%	2%	0%	2%	83%	3%	2%	0%	3%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	20	20	0	0	0
Parking (#/hr)											20	20
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		8			4		1	6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	32.5	32.5		32.5	32.5			76.0			64.5	
Effective Green, g (s)	34.5	34.5		34.5	34.5			78.0			66.5	
Actuated g/C Ratio	0.29	0.29		0.29	0.29			0.65			0.55	
Clearance Time (s)	6.0	6.0		6.0	6.0			5.5			5.5	
Lane Grp Cap (vph)	137	422		156	436			1686			2036	
v/s Ratio Prot		0.20			c0.21			c0.04				
v/s Ratio Perm	0.11			0.08				c0.36			0.33	
v/c Ratio	0.39	0.69		0.28	0.74			0.61			0.60	
Uniform Delay, d1	34.4	38.0		33.1	38.7			12.2			17.9	
Progression Factor	1.06	1.05		1.00	1.00			0.52			1.00	
Incremental Delay, d2	8.1	8.7		4.5	10.9			1.5			1.3	
Delay (s)	44.4	48.8		37.6	49.6			7.9			19.2	
Level of Service	D	D		D	D			A			B	
Approach Delay (s)		48.1			48.2			7.9			19.2	
Approach LOS		D			D			A			B	

Intersection Summary			
HCM 2000 Control Delay	22.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	69.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	1	3	18	7	10	18	786	23	29	649	27
Future Volume (Veh/h)	0	1	3	18	7	10	18	786	23	29	649	27
Sign Control		Stop			Stop			Free			Free	
Grade		-4%			6%			-2%			2%	
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	1	4	21	8	12	21	925	27	34	764	32
Pedestrians		61			11			2			10	
Lane Width (ft)		10.0			10.0			10.0			10.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		4			1			0			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								726			393	
pX, platoon unblocked	0.90	0.90	0.83	0.90	0.90	0.87	0.83			0.87		
vC, conflicting volume	1440	1914	843	1846	1916	497	857			963		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	903	1431	713	1356	1434	133	730			667		
tC, single (s)	7.5	6.5	6.9	7.6	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.2			2.2		
p0 queue free %	100	99	99	75	93	98	97			96		
cM capacity (veh/h)	171	108	303	82	107	772	706			808		

Direction, Lane #	EB 1	WB 1	NE 1	NE 2	SW 1
Volume Total	5	41	484	490	830
Volume Left	0	21	21	0	34
Volume Right	4	12	0	27	32
cSH	222	119	706	1700	808
Volume to Capacity	0.02	0.35	0.03	0.29	0.04
Queue Length 95th (ft)	2	35	2	0	3
Control Delay (s)	21.6	50.6	0.8	0.0	1.1
Lane LOS	C	F	A		A
Approach Delay (s)	21.6	50.6	0.4		1.1
Approach LOS	C	F			

Intersection Summary				
Average Delay	1.9			
Intersection Capacity Utilization	83.2%	ICU Level of Service	E	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	803	1	14	743	4	61
Future Volume (Veh/h)	803	1	14	743	4	61
Sign Control	Free			Free	Yield	
Grade	-1%			2%	2%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	892	1	16	826	4	68
Pedestrians					25	
Lane Width (ft)					10.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					2	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	554			565		
pX, platoon unblocked			0.85		0.91	0.85
vC, conflicting volume			918		1776	472
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			559		1195	35
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		97	92
cM capacity (veh/h)			845		156	863

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	595	298	842	72
Volume Left	0	0	16	4
Volume Right	0	1	0	68
cSH	1700	1700	845	690
Volume to Capacity	0.35	0.18	0.02	0.10
Queue Length 95th (ft)	0	0	1	9
Control Delay (s)	0.0	0.0	0.5	10.8
Lane LOS			A	B
Approach Delay (s)	0.0		0.5	10.8
Approach LOS				B

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	67.0%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	NBT	SBT	NET
Lane Group Flow (vph)	1262	1106	1004
v/c Ratio	0.65	0.49	0.97
Control Delay	21.9	9.1	49.0
Queue Delay	0.6	0.3	41.1
Total Delay	22.6	9.3	90.1
Queue Length 50th (ft)	171	79	371
Queue Length 95th (ft)	257	m90	#533
Internal Link Dist (ft)	297	110	29
Turn Bay Length (ft)			
Base Capacity (vph)	1937	2275	1033
Starvation Cap Reductn	316	490	180
Spillback Cap Reductn	35	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.78	0.62	1.18

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	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	903	271	0	1029	0	206	666	61	0	0	0
Future Volume (vph)	0	903	271	0	1029	0	206	666	61	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	12	12	12
Grade (%)		1%			-1%			-3%			1%	
Total Lost time (s)		2.0			2.0			7.0				
Lane Util. Factor		0.91			0.91			0.95				
Frpb, ped/bikes		0.98			1.00			1.00				
Flpb, ped/bikes		1.00			1.00			1.00				
Frt		0.97			1.00			0.99				
Flt Protected		1.00			1.00			0.99				
Satd. Flow (prot)		3812			4138			3101				
Flt Permitted		1.00			1.00			0.99				
Satd. Flow (perm)		3812			4138			3101				
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	971	291	0	1106	0	222	716	66	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1262	0	0	1106	0	0	1004	0	0	0	0
Confl. Peds. (#/hr)	80		117	117		80	16		58	58		16
Confl. Bikes (#/hr)			4			4			2			
Heavy Vehicles (%)	0%	3%	7%	0%	3%	0%	3%	4%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	20	0	0	0	0	0	0	0
Parking (#/hr)		0	0									
Turn Type		NA			NA		Perm	NA				
Protected Phases		15 6 1			15 6 1 2			3 4				
Permitted Phases							3 4					
Actuated Green, G (s)		56.0			64.0			48.0				
Effective Green, g (s)		54.0			57.0			50.0				
Actuated g/C Ratio		0.45			0.48			0.42				
Clearance Time (s)												
Lane Grp Cap (vph)		1715			1965			1292				
v/s Ratio Prot		c0.33			c0.27							
v/s Ratio Perm								0.32				
v/c Ratio		0.74			0.56			0.78				
Uniform Delay, d1		27.1			22.6			30.2				
Progression Factor		0.92			0.51			0.68				
Incremental Delay, d2		2.7			0.9			4.3				
Delay (s)		27.8			12.3			24.9				
Level of Service		C			B			C				
Approach Delay (s)		27.8			12.3			24.9			0.0	
Approach LOS		C			B			C			A	

Intersection Summary			
HCM 2000 Control Delay	21.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	66.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	SBL	SBR	NEL	NER
Lane Configurations						
Traffic Volume (veh/h)	0	102	0	0	839	134
Future Volume (Veh/h)	0	102	0	0	839	134
Sign Control	Yield		Free		Free	
Grade	-4%		0%		1%	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81
Hourly flow rate (vph)	0	126	0	0	1036	165
Pedestrians	11					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	1					
Right turn flare (veh)						
Median type			None		None	
Median storage veh)						
Upstream signal (ft)			187		111	
pX, platoon unblocked	0.74	0.74	0.74			
vC, conflicting volume	1130	612	1212			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	476	0	587			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	84	100			
cM capacity (veh/h)	381	796	722			

Direction, Lane #	WB 1	NE 1	NE 2
Volume Total	126	691	510
Volume Left	0	0	0
Volume Right	126	0	165
cSH	796	1700	1700
Volume to Capacity	0.16	0.41	0.30
Queue Length 95th (ft)	14	0	0
Control Delay (s)	10.4	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.4	0.0	
Approach LOS	B		

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	34.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	NBT	SBT	SWT
Lane Group Flow (vph)	1180	1096	881
v/c Ratio	0.53	0.53	0.89
Control Delay	6.8	21.1	28.9
Queue Delay	0.5	0.1	27.3
Total Delay	7.3	21.1	56.2
Queue Length 50th (ft)	67	202	246
Queue Length 95th (ft)	m74	245	#442
Internal Link Dist (ft)	110	479	17
Turn Bay Length (ft)			
Base Capacity (vph)	2241	2062	985
Starvation Cap Reductn	557	0	145
Spillback Cap Reductn	0	100	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.70	0.56	1.05

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	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	1109	0	0	789	242	0	0	0	240	555	34
Future Volume (vph)	0	1109	0	0	789	242	0	0	0	240	555	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	11	11	11
Grade (%)		2%			-2%			0%			-1%	
Total Lost time (s)		2.0			2.0						7.0	
Lane Util. Factor		0.91			0.91						0.95	
Frpb, ped/bikes		1.00			0.98						1.00	
Flpb, ped/bikes		1.00			1.00						1.00	
Frt		1.00			0.96						0.99	
Flt Protected		1.00			1.00						0.99	
Satd. Flow (prot)		4076			4057						2956	
Flt Permitted		1.00			1.00						0.99	
Satd. Flow (perm)		4076			4057						2956	
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)	0	1180	0	0	839	257	0	0	0	255	590	36
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1180	0	0	1096	0	0	0	0	0	881	0
Confl. Peds. (#/hr)	98		145	145		98	77		4	4		77
Confl. Bikes (#/hr)			3			3						
Heavy Vehicles (%)	0%	3%	0%	0%	3%	2%	0%	0%	0%	5%	4%	3%
Bus Blockages (#/hr)	0	20	0	0	0	0	0	0	0	0	0	0
Turn Type		NA			NA					Perm	NA	
Protected Phases		15 6 1 2			15 6 1						3 4	
Permitted Phases										3 4		
Actuated Green, G (s)		64.0			56.0						48.0	
Effective Green, g (s)		57.0			54.0						50.0	
Actuated g/C Ratio		0.48			0.45						0.42	
Clearance Time (s)												
Lane Grp Cap (vph)		1936			1825						1231	
v/s Ratio Prot		c0.29			0.27							
v/s Ratio Perm											0.30	
v/c Ratio		0.61			0.60						0.72	
Uniform Delay, d1		23.3			24.9						29.1	
Progression Factor		0.36			1.00						0.45	
Incremental Delay, d2		1.0			1.5						3.1	
Delay (s)		9.3			26.3						16.2	
Level of Service		A			C						B	
Approach Delay (s)		9.3			26.3			0.0			16.2	
Approach LOS		A			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	17.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	66.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Traffic Volume (veh/h)	0	103	0	0	656	182
Future Volume (Veh/h)	0	103	0	0	656	182
Sign Control	Stop		Free		Free	
Grade	-4%		0%		0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	110	0	0	698	194
Pedestrians	267					
Lane Width (ft)	10.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	19					
Right turn flare (veh)						
Median type			None		None	
Median storage veh)						
Upstream signal (ft)			218		110	
pX, platoon unblocked						
vC, conflicting volume	1062	713	1159			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1062	713	1159			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	64	100			
cM capacity (veh/h)	181	309	497			

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	110	465	427
Volume Left	0	0	0
Volume Right	110	0	194
cSH	309	1700	1700
Volume to Capacity	0.36	0.27	0.25
Queue Length 95th (ft)	39	0	0
Control Delay (s)	23.0	0.0	0.0
Lane LOS	C		
Approach Delay (s)	23.0	0.0	
Approach LOS	C		

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	32.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	NBT	NBR	SBR	SWT
Lane Group Flow (vph)	186	1111	165	889
v/c Ratio	0.23	0.92	0.13	0.73
Control Delay	18.4	22.9	0.2	33.7
Queue Delay	0.0	0.0	0.1	2.5
Total Delay	18.4	22.9	0.3	36.2
Queue Length 50th (ft)	102	462	0	298
Queue Length 95th (ft)	m106	129	0	227
Internal Link Dist (ft)	1			419
Turn Bay Length (ft)				
Base Capacity (vph)	794	1204	1305	1216
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	335	206
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.23	0.92	0.17	0.88

Intersection Summary

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

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	117	700	0	0	104	0	0	0	0	555	5
Future Volume (vph)	0	117	700	0	0	104	0	0	0	0	555	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			0%			1%	
Total Lost time (s)		2.0	7.0			2.0					2.0	
Lane Util. Factor		0.95	0.95			1.00					0.95	
Frpb, ped/bikes		1.00	1.00			1.00					1.00	
Flpb, ped/bikes		1.00	1.00			1.00					1.00	
Frt		1.00	0.85			0.86					1.00	
Flt Protected		1.00	1.00			1.00					1.00	
Satd. Flow (prot)		1444	1257			1305					2918	
Flt Permitted		1.00	1.00			1.00					1.00	
Satd. Flow (perm)		1444	1257			1305					2918	
Peak-hour factor, PHF	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63
Adj. Flow (vph)	0	186	1111	0	0	165	0	0	0	0	881	8
RTOR Reduction (vph)	0	0	209	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	186	902	0	0	165	0	0	0	0	888	0
Confl. Peds. (#/hr)			7	7			7					7
Bus Blockages (#/hr)	0	6	0	0	0	9	0	0	0	0	6	6
Turn Type		NA	custom			Free					NA	
Protected Phases		4 15 6 1	11 4 15								2 3	
Permitted Phases						Free						
Actuated Green, G (s)		61.0	97.0			120.0					43.0	
Effective Green, g (s)		59.0	97.0			120.0					45.0	
Actuated g/C Ratio		0.49	0.81			1.00					0.38	
Clearance Time (s)												
Lane Grp Cap (vph)		709	1016			1305					1094	
v/s Ratio Prot		c0.13	c0.72								0.30	
v/s Ratio Perm						0.13						
v/c Ratio		0.26	0.89			0.13					0.81	
Uniform Delay, d1		17.8	7.8			0.0					33.7	
Progression Factor		1.25	14.97			1.00					1.00	
Incremental Delay, d2		0.8	10.2			0.2					6.6	
Delay (s)		23.1	127.0			0.2					40.3	
Level of Service		C	F			A					D	
Approach Delay (s)		112.1			0.2			0.0			40.3	
Approach LOS		F			A			A			D	

Intersection Summary			
HCM 2000 Control Delay	77.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

APPENDIX F
BACKGROUND LEVELS OF SERVICE AND QUEUE REPORTS

Lane Group	NBT	SBT	SET	NWT
Lane Group Flow (vph)	206	218	402	254
v/c Ratio	0.68	0.68	0.50	0.27
Control Delay	46.6	46.2	12.2	8.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	46.6	46.2	12.2	8.8
Queue Length 50th (ft)	119	126	123	64
Queue Length 95th (ft)	#215	#224	197	103
Internal Link Dist (ft)	689	132	177	285
Turn Bay Length (ft)				
Base Capacity (vph)	304	320	807	933
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.68	0.68	0.50	0.27

Intersection Summary

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

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	57	135	1	9	193	3	3	310	65	25	183	30
Future Volume (vph)	57	135	1	9	193	3	3	310	65	25	183	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-4%			5%			7%			-7%	
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		1.00			1.00			1.00			1.00	
Flpb, ped/bikes		0.98			1.00			1.00			1.00	
Frt		1.00			1.00			0.98			0.98	
Flt Protected		0.99			1.00			1.00			0.99	
Satd. Flow (prot)		1559			1299			1262			1544	
Flt Permitted		0.77			0.98			1.00			0.94	
Satd. Flow (perm)		1218			1280			1260			1458	
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)	61	144	1	10	205	3	3	330	69	27	195	32
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	206	0	0	218	0	0	402	0	0	254	0
Confl. Peds. (#/hr)	58		42	42		58	20		8	8		20
Heavy Vehicles (%)	2%	0%	0%	0%	1%	0%	0%	0%	5%	0%	5%	2%
Parking (#/hr)				10	10	10	10	10	10			
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		23.0			23.0			62.0			62.0	
Effective Green, g (s)		25.0			25.0			64.0			64.0	
Actuated g/C Ratio		0.25			0.25			0.64			0.64	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Lane Grp Cap (vph)		304			320			806			933	
v/s Ratio Prot												
v/s Ratio Perm		0.17			c0.17			c0.32			0.17	
v/c Ratio		0.68			0.68			0.50			0.27	
Uniform Delay, d1		33.9			33.9			9.5			7.8	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		11.5			11.2			2.2			0.7	
Delay (s)		45.4			45.1			11.7			8.6	
Level of Service		D			D			B			A	
Approach Delay (s)		45.4			45.1			11.7			8.6	
Approach LOS		D			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	24.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	74.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	303	203	295	234
v/c Ratio	0.63	0.40	0.70	0.59
Control Delay	20.5	14.6	29.0	24.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	20.5	14.6	29.0	24.0
Queue Length 50th (ft)	81	48	91	69
Queue Length 95th (ft)	140	85	#157	120
Internal Link Dist (ft)	418	274	520	689
Turn Bay Length (ft)				
Base Capacity (vph)	481	513	419	395
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.63	0.40	0.70	0.59

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)	104	129	19	29	123	17	13	215	17	0	154	40
Future Volume (vph)	104	129	19	29	123	17	13	215	17	0	154	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		9%			-8%			-4%			0%	
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		0.98			0.97			0.96			0.92	
Flpb, ped/bikes		0.93			0.98			0.99			1.00	
Frt		0.99			0.99			0.99			0.97	
Flt Protected		0.98			0.99			1.00			1.00	
Satd. Flow (prot)		1345			1285			1284			1188	
Flt Permitted		0.81			0.91			0.98			1.00	
Satd. Flow (perm)		1110			1184			1258			1188	
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	125	155	23	35	148	20	16	259	20	0	186	48
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	303	0	0	203	0	0	295	0	0	234	0
Confl. Peds. (#/hr)	129		118	118		129	159		273	273		159
Heavy Vehicles (%)	0%	0%	0%	0%	3%	0%	0%	1%	6%	0%	2%	4%
Parking (#/hr)				10	10	10	10	10	10	10	10	10
Turn Type	Perm	NA		Perm	NA		Perm	NA			NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		24.0			24.0			18.0			18.0	
Effective Green, g (s)		26.0			26.0			20.0			20.0	
Actuated g/C Ratio		0.43			0.43			0.33			0.33	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Lane Grp Cap (vph)		481			513			419			396	
v/s Ratio Prot											0.20	
v/s Ratio Perm		c0.27			0.17			c0.23				
v/c Ratio		0.63			0.40			0.70			0.59	
Uniform Delay, d1		13.3			11.6			17.4			16.6	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		6.1			2.3			9.5			6.3	
Delay (s)		19.4			13.9			27.0			23.0	
Level of Service		B			B			C			C	
Approach Delay (s)		19.4			13.9			27.0			23.0	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	21.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	64.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	10.6
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	119	10	29	90	17	12	133	42	45	119	23
Future Vol, veh/h	40	119	10	29	90	17	12	133	42	45	119	23
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	0	2	0	4	1	0	0	3	0	0	0	0
Mvmt Flow	48	142	12	35	107	20	14	158	50	54	142	27
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	10.7	10.3	10.5	10.7
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	6%	24%	21%	24%
Vol Thru, %	71%	70%	66%	64%
Vol Right, %	22%	6%	12%	12%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	187	169	136	187
LT Vol	12	40	29	45
Through Vol	133	119	90	119
RT Vol	42	10	17	23
Lane Flow Rate	223	201	162	223
Geometry Grp	1	1	1	1
Degree of Util (X)	0.317	0.299	0.245	0.323
Departure Headway (Hd)	5.129	5.358	5.447	5.219
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	701	670	659	688
Service Time	3.16	3.392	3.482	3.251
HCM Lane V/C Ratio	0.318	0.3	0.246	0.324
HCM Control Delay	10.5	10.7	10.3	10.7
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	1.4	1.3	1	1.4

Intersection	
Intersection Delay, s/veh	4.1
Intersection LOS	A

Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	53	240	231
Demand Flow Rate, veh/h	53	240	231
Vehicles Circulating, veh/h	205	46	2
Vehicles Exiting, veh/h	28	212	284
Ped Vol Crossing Leg, #/h	3	0	3
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	3.6	4.3	4.0
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	LR	LT	TR
Assumed Moves	LR	LT	TR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	53	240	231
Cap Entry Lane, veh/h	1120	1317	1377
Entry HV Adj Factor	1.000	1.000	1.000
Flow Entry, veh/h	53	240	231
Cap Entry, veh/h	1119	1317	1376
V/C Ratio	0.047	0.182	0.168
Control Delay, s/veh	3.6	4.3	4.0
LOS	A	A	A
95th %tile Queue, veh	0	1	1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	14	20	139	30	30	86
Future Volume (Veh/h)	14	20	139	30	30	86
Sign Control	Stop		Free			Free
Grade	-4%		1%			1%
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	16	22	156	34	34	97
Pedestrians	5		5			5
Lane Width (ft)	10.0		10.0			10.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	0		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	348	183			195	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	348	183			195	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	97			98	
cM capacity (veh/h)	633	859			1385	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	38	190	131
Volume Left	16	0	34
Volume Right	22	34	0
cSH	747	1700	1385
Volume to Capacity	0.05	0.11	0.02
Queue Length 95th (ft)	4	0	2
Control Delay (s)	10.1	0.0	2.1
Lane LOS	B		A
Approach Delay (s)	10.1	0.0	2.1
Approach LOS	B		

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	32.5%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	3.5
Intersection LOS	A

Approach	NB	SB	SE
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	156	109	85
Demand Flow Rate, veh/h	159	109	85
Vehicles Circulating, veh/h	39	11	107
Vehicles Exiting, veh/h	153	187	13
Ped Vol Crossing Leg, #/h	6	0	0
Ped Cap Adj	0.999	1.000	1.000
Approach Delay, s/veh	3.7	3.3	3.5
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	LT	TR	LR
Assumed Moves	LT	TR	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	159	109	85
Cap Entry Lane, veh/h	1326	1364	1237
Entry HV Adj Factor	0.982	1.000	1.000
Flow Entry, veh/h	156	109	85
Cap Entry, veh/h	1301	1364	1237
V/C Ratio	0.120	0.080	0.069
Control Delay, s/veh	3.7	3.3	3.5
LOS	A	A	A
95th %tile Queue, veh	0	0	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	292	40	33	166	117	7	66	2	27	105	0
Future Volume (Veh/h)	11	292	40	33	166	117	7	66	2	27	105	0
Sign Control		Free			Free			Stop			Stop	
Grade		6%			-2%			-1%			-2%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	12	314	43	35	178	126	8	71	2	29	113	0
Pedestrians		6			1			3			9	
Lane Width (ft)		10.0			10.0			10.0			10.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					176							
pX, platoon unblocked	0.92						0.92	0.92		0.92	0.92	0.92
vC, conflicting volume	313			360			736	746	340	718	704	256
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	204			360			666	676	340	646	631	142
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			97	78	100	90	68	100
cM capacity (veh/h)	1256			1207			247	330	706	283	348	826

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	369	339	81	142
Volume Left	12	35	8	29
Volume Right	43	126	2	0
cSH	1256	1207	324	332
Volume to Capacity	0.01	0.03	0.25	0.43
Queue Length 95th (ft)	1	2	24	51
Control Delay (s)	0.3	1.1	19.8	23.7
Lane LOS	A	A	C	C
Approach Delay (s)	0.3	1.1	19.8	23.7
Approach LOS			C	C

Intersection Summary			
Average Delay	5.9		
Intersection Capacity Utilization	55.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	95	919	956	0	0	219
Future Volume (Veh/h)	95	919	956	0	0	219
Sign Control		Free	Free		Stop	
Grade		0%	0%		1%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	103	999	1039	0	0	238
Pedestrians					20	
Lane Width (ft)					10.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			310			
pX, platoon unblocked	0.86				0.86	0.86
vC, conflicting volume	1059				2264	540
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	746				2145	142
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	86				100	68
cM capacity (veh/h)	729				31	747

Direction, Lane #	EB 1	WB 1	WB 2	SB 1
Volume Total	1102	693	346	238
Volume Left	103	0	0	0
Volume Right	0	0	0	238
cSH	729	1700	1700	747
Volume to Capacity	0.14	0.41	0.20	0.32
Queue Length 95th (ft)	12	0	0	34
Control Delay (s)	4.3	0.0	0.0	12.1
Lane LOS	A			B
Approach Delay (s)	4.3	0.0		12.1
Approach LOS				B

Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	114.0%	ICU Level of Service	H
Analysis Period (min)	15		

Lane Group	EBT	WBL	WBT	NET	SWT
Lane Group Flow (vph)	294	157	189	977	809
v/c Ratio	0.56	0.77	0.38	1.65	0.50
Control Delay	38.8	49.7	23.9	322.3	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	38.8	49.7	23.9	322.3	9.9
Queue Length 50th (ft)	188	122	135	~1098	115
Queue Length 95th (ft)	281	m#173	m187	#1354	138
Internal Link Dist (ft)	96		233	230	474
Turn Bay Length (ft)		85			
Base Capacity (vph)	523	203	495	592	1617
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	0.77	0.38	1.65	0.50

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	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	24	256	0	149	176	4	88	580	259	4	737	28
Future Volume (vph)	24	256	0	149	176	4	88	580	259	4	737	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	10	10	10	10	10	10	10	10	10
Grade (%)		2%			4%			0%			1%	
Total Lost time (s)		3.0		3.0	3.0			3.5			3.5	
Lane Util. Factor		1.00		1.00	1.00			1.00			0.95	
Frpb, ped/bikes		1.00		1.00	1.00			0.97			1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00			1.00	
Frt		1.00		1.00	1.00			0.96			0.99	
Flt Protected		1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)		1683		1457	1542			1111			2715	
Flt Permitted		0.97		0.41	1.00			0.83			0.95	
Satd. Flow (perm)		1631		633	1542			929			2584	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	25	269	0	157	185	4	93	611	273	4	776	29
RTOR Reduction (vph)	0	0	0	0	1	0	0	12	0	0	2	0
Lane Group Flow (vph)	0	294	0	157	188	0	0	965	0	0	807	0
Confl. Peds. (#/hr)	8		10	10		8	15		16	16		15
Confl. Bikes (#/hr)			3			2						
Heavy Vehicles (%)	0%	0%	0%	2%	1%	0%	0%	7%	1%	0%	6%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	20	0	0	20	0
Parking (#/hr)							10	10	10			
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		36.5		36.5	36.5			73.0			73.0	
Effective Green, g (s)		38.5		38.5	38.5			75.0			75.0	
Actuated g/C Ratio		0.32		0.32	0.32			0.62			0.62	
Clearance Time (s)		5.0		5.0	5.0			5.5			5.5	
Lane Grp Cap (vph)		523		203	494			580			1615	
v/s Ratio Prot					0.12							
v/s Ratio Perm		0.18		c0.25				c1.04			0.31	
v/c Ratio		0.56		0.77	0.38			1.66			0.50	
Uniform Delay, d1		33.8		36.8	31.5			22.5			12.3	
Progression Factor		1.00		0.77	0.70			1.00			0.72	
Incremental Delay, d2		4.3		19.0	1.7			306.6			1.0	
Delay (s)		38.1		47.4	23.6			329.1			9.9	
Level of Service		D		D	C			F			A	
Approach Delay (s)		38.1			34.4			329.1			9.9	
Approach LOS		D			C			F			A	

Intersection Summary			
HCM 2000 Control Delay	145.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.36		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.5
Intersection Capacity Utilization	122.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	502	3	4	306	21	26	24	11	6	0	21
Future Volume (Veh/h)	14	502	3	4	306	21	26	24	11	6	0	21
Sign Control		Free			Free			Stop			Stop	
Grade		5%			4%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	15	540	3	4	329	23	28	26	12	6	0	23
Pedestrians								10			8	
Lane Width (ft)								10.0			10.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		313			929							
pX, platoon unblocked	0.91			0.87			0.92	0.92	0.87	0.92	0.92	0.91
vC, conflicting volume	360			553			953	950	552	953	940	348
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	249			413			684	681	411	684	670	236
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			91	92	98	98	100	97
cM capacity (veh/h)	1193			991			312	332	554	297	336	727

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	558	356	66	29
Volume Left	15	4	28	6
Volume Right	3	23	12	23
cSH	1193	991	348	560
Volume to Capacity	0.01	0.00	0.19	0.05
Queue Length 95th (ft)	1	0	17	4
Control Delay (s)	0.4	0.1	17.8	11.8
Lane LOS	A	A	C	B
Approach Delay (s)	0.4	0.1	17.8	11.8
Approach LOS			C	B

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	52.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	SET	NWT
Lane Group Flow (vph)	67	368	63	322	1865	1221
v/c Ratio	0.54	0.92	0.65	0.79	0.75	0.89
Control Delay	37.5	44.1	71.1	56.0	4.1	32.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.5	44.1	71.1	56.0	4.2	32.2
Queue Length 50th (ft)	50	293	43	232	52	412
Queue Length 95th (ft)	m64	m288	#118	#375	60	#548
Internal Link Dist (ft)		849		339	239	287
Turn Bay Length (ft)	70		110			
Base Capacity (vph)	124	401	97	407	2503	1373
Starvation Cap Reductn	0	0	0	0	21	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.92	0.65	0.79	0.75	0.89

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	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	61	268	66	57	246	47	2	1625	70	3	1054	55
Future Volume (vph)	61	268	66	57	246	47	2	1625	70	3	1054	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		5%			3%			1%			-1%	
Total Lost time (s)	4.0	4.0		4.0	4.0			3.5			3.5	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.91			0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.99			0.98			0.99	
Flpb, ped/bikes	0.97	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.97		1.00	0.98			0.99			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1439	1482		1459	1502			3968			2531	
Flt Permitted	0.30	1.00		0.23	1.00			0.94			0.95	
Satd. Flow (perm)	460	1482		359	1502			3728			2404	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	67	295	73	63	270	52	2	1786	77	3	1158	60
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	67	368	0	63	322	0	0	1865	0	0	1221	0
Confl. Peds. (#/hr)	38		6	6		38	36		76	76		36
Confl. Bikes (#/hr)						2			5			5
Heavy Vehicles (%)	0%	1%	3%	2%	1%	0%	50%	4%	2%	0%	7%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	20	20	0	0	0
Parking (#/hr)											20	20
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		8			4		1	6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	30.5	30.5		30.5	30.5			78.0			66.5	
Effective Green, g (s)	32.5	32.5		32.5	32.5			80.0			68.5	
Actuated g/C Ratio	0.27	0.27		0.27	0.27			0.67			0.57	
Clearance Time (s)	6.0	6.0		6.0	6.0			5.5			5.5	
Lane Grp Cap (vph)	124	401		97	406			2501			1372	
v/s Ratio Prot		c0.25			0.21			c0.05				
v/s Ratio Perm	0.15			0.18				0.45			c0.51	
v/c Ratio	0.54	0.92		0.65	0.79			0.75			0.89	
Uniform Delay, d1	37.4	42.5		38.7	40.6			13.3			22.5	
Progression Factor	0.90	0.92		1.00	1.00			0.17			1.00	
Incremental Delay, d2	1.5	4.1		29.0	14.7			1.9			9.0	
Delay (s)	35.2	43.0		67.7	55.3			4.1			31.4	
Level of Service	D	D		E	E			A			C	
Approach Delay (s)		41.8			57.3			4.1			31.4	
Approach LOS		D			E			A			C	

Intersection Summary			
HCM 2000 Control Delay	22.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	74.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	14	17	5	3	34	11	15	677	14	18	767	8
Future Volume (Veh/h)	14	17	5	3	34	11	15	677	14	18	767	8
Sign Control		Stop			Stop			Free			Free	
Grade		-4%			6%			-2%			2%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	15	18	5	3	36	12	16	720	15	19	816	9
Pedestrians		19			17			3			2	
Lane Width (ft)		10.0			10.0			10.0			10.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			1			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								726			393	
pX, platoon unblocked	0.91	0.91	0.91	0.91	0.91		0.91					
vC, conflicting volume	1302	1662	434	1240	1658	386	844			752		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1127	1524	172	1059	1521	386	623			752		
tC, single (s)	7.5	6.5	6.9	7.7	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.3			2.2		
p0 queue free %	85	82	99	98	64	98	98			98		
cM capacity (veh/h)	98	101	758	124	101	609	824			857		

Direction, Lane #	EB 1	WB 1	NE 1	NE 2	SW 1	SW 2
Volume Total	38	51	376	375	427	417
Volume Left	15	3	16	0	19	0
Volume Right	5	12	0	15	0	9
cSH	113	127	824	1700	857	1700
Volume to Capacity	0.34	0.40	0.02	0.22	0.02	0.25
Queue Length 95th (ft)	33	42	1	0	2	0
Control Delay (s)	52.4	51.0	0.6	0.0	0.7	0.0
Lane LOS	F	F	A		A	
Approach Delay (s)	52.4	51.0	0.3		0.3	
Approach LOS	F	F				

Intersection Summary			
Average Delay	3.0		
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	704	3	24	751	7	54
Future Volume (Veh/h)	704	3	24	751	7	54
Sign Control	Free			Free	Yield	
Grade	-1%			2%	2%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	741	3	25	791	7	57
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	554			565		
pX, platoon unblocked					0.92	
vC, conflicting volume			744		1188	742
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			744		1029	742
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		97	84
cM capacity (veh/h)			859		205	358

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	744	289	527	64
Volume Left	0	25	0	7
Volume Right	3	0	0	57
cSH	1700	859	1700	331
Volume to Capacity	0.44	0.03	0.31	0.19
Queue Length 95th (ft)	0	2	0	18
Control Delay (s)	0.0	1.1	0.0	18.5
Lane LOS		A		C
Approach Delay (s)	0.0	0.4		18.5
Approach LOS				C

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	53.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	NBT	SBT	NET
Lane Group Flow (vph)	1213	1919	911
v/c Ratio	0.85	0.80	1.00
Control Delay	36.5	6.6	49.7
Queue Delay	0.6	2.3	35.5
Total Delay	37.0	8.9	85.2
Queue Length 50th (ft)	482	87	206
Queue Length 95th (ft)	556	m91	#502
Internal Link Dist (ft)	297	110	29
Turn Bay Length (ft)			
Base Capacity (vph)	1427	2390	911
Starvation Cap Reductn	43	329	153
Spillback Cap Reductn	36	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.88	0.93	1.20

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	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	988	140	0	1785	0	242	533	73	0	0	0
Future Volume (vph)	0	988	140	0	1785	0	242	533	73	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	12	12	12
Grade (%)		1%			-1%			-3%			1%	
Total Lost time (s)		2.0			2.0			7.0				
Lane Util. Factor		0.95			0.91			0.95				
Frpb, ped/bikes		0.99			1.00			1.00				
Flpb, ped/bikes		1.00			1.00			1.00				
Frt		0.98			1.00			0.99				
Flt Protected		1.00			1.00			0.99				
Satd. Flow (prot)		2636			4098			3038				
Flt Permitted		1.00			1.00			0.99				
Satd. Flow (perm)		2636			4098			3038				
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	1062	151	0	1919	0	260	573	78	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1213	0	0	1919	0	0	911	0	0	0	0
Confl. Peds. (#/hr)	61		68	68		61	5		23	23		5
Confl. Bikes (#/hr)			4			4			2			
Heavy Vehicles (%)	0%	5%	13%	0%	4%	0%	4%	6%	4%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	20	0	0	0	0	0	0	0
Parking (#/hr)		0	0									
Turn Type		NA			NA		Perm	NA				
Protected Phases		15 6 1			15 6 1 2			3 4				
Permitted Phases							3 4					
Actuated Green, G (s)		60.0			68.0			44.0				
Effective Green, g (s)		58.0			61.0			46.0				
Actuated g/C Ratio		0.48			0.51			0.38				
Clearance Time (s)												
Lane Grp Cap (vph)		1274			2083			1164				
v/s Ratio Prot		c0.46			c0.47							
v/s Ratio Perm								0.30				
v/c Ratio		0.95			0.92			0.78				
Uniform Delay, d1		29.7			27.3			32.6				
Progression Factor		1.26			0.27			0.47				
Incremental Delay, d2		15.4			3.7			4.5				
Delay (s)		52.9			11.0			20.0				
Level of Service		D			B			C				
Approach Delay (s)		52.9			11.0			20.0			0.0	
Approach LOS		D			B			C			A	

Intersection Summary			
HCM 2000 Control Delay	25.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	82.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	SBL	SBR	NEL	NER
Lane Configurations						
Traffic Volume (veh/h)	0	105	0	0	623	95
Future Volume (Veh/h)	0	105	0	0	623	95
Sign Control	Yield		Free		Free	
Grade	-4%		0%		1%	
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	0	135	0	0	799	122
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage veh)						
Upstream signal (ft)			187		111	
pX, platoon unblocked						
vC, conflicting volume	860	460	921			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	860	460	921			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	75	100			
cM capacity (veh/h)	296	548	737			

Direction, Lane #	WB 1	NE 1	NE 2
Volume Total	135	533	388
Volume Left	0	0	0
Volume Right	135	0	122
cSH	548	1700	1700
Volume to Capacity	0.25	0.31	0.23
Queue Length 95th (ft)	24	0	0
Control Delay (s)	13.7	0.0	0.0
Lane LOS	B		
Approach Delay (s)	13.7	0.0	
Approach LOS	B		

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	26.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	NBT	SBT	SWT
Lane Group Flow (vph)	1287	1927	1103
v/c Ratio	0.55	0.87	1.25
Control Delay	6.6	29.1	143.4
Queue Delay	2.5	1.5	0.0
Total Delay	9.1	30.6	143.4
Queue Length 50th (ft)	77	452	~564
Queue Length 95th (ft)	m84	532	#678
Internal Link Dist (ft)	110	479	17
Turn Bay Length (ft)			
Base Capacity (vph)	2332	2223	883
Starvation Cap Reductn	879	0	0
Spillback Cap Reductn	0	144	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.89	0.93	1.25

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	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	1223	0	0	1534	296	0	0	0	258	758	31
Future Volume (vph)	0	1223	0	0	1534	296	0	0	0	258	758	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	11	11	11
Grade (%)		2%			-2%			0%			-1%	
Total Lost time (s)		2.0			2.0						7.0	
Lane Util. Factor		0.91			0.91						0.95	
Frpb, ped/bikes		1.00			0.99						1.00	
Flpb, ped/bikes		1.00			1.00						1.00	
Frt		1.00			0.98						1.00	
Flt Protected		1.00			1.00						0.99	
Satd. Flow (prot)		3999			4103						2944	
Flt Permitted		1.00			1.00						0.99	
Satd. Flow (perm)		3999			4103						2944	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1287	0	0	1615	312	0	0	0	272	798	33
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1287	0	0	1927	0	0	0	0	0	1103	0
Confl. Peds. (#/hr)	57		103	103		57	46		4	4		46
Confl. Bikes (#/hr)			3			3						
Heavy Vehicles (%)	0%	5%	0%	0%	4%	3%	0%	0%	0%	6%	5%	3%
Bus Blockages (#/hr)	0	20	0	0	0	0	0	0	0	0	0	0
Turn Type		NA			NA					Perm	NA	
Protected Phases		15 6 1 2			15 6 1						3 4	
Permitted Phases										3 4		
Actuated Green, G (s)		68.0			60.0						44.0	
Effective Green, g (s)		61.0			58.0						46.0	
Actuated g/C Ratio		0.51			0.48						0.38	
Clearance Time (s)												
Lane Grp Cap (vph)		2032			1983						1128	
v/s Ratio Prot		c0.32			c0.47							
v/s Ratio Perm											0.37	
v/c Ratio		0.63			0.97						0.98	
Uniform Delay, d1		21.4			30.2						36.5	
Progression Factor		0.40			1.00						0.50	
Incremental Delay, d2		0.7			14.6						20.1	
Delay (s)		9.2			44.8						38.3	
Level of Service		A			D						D	
Approach Delay (s)		9.2			44.8			0.0			38.3	
Approach LOS		A			D			A			D	

Intersection Summary			
HCM 2000 Control Delay	32.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	82.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Traffic Volume (veh/h)	0	144	0	0	899	163
Future Volume (Veh/h)	0	144	0	0	899	163
Sign Control	Stop		Free		Free	
Grade	-4%		0%		0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	0	150	0	0	936	170
Pedestrians	104					
Lane Width (ft)	10.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	7					
Right turn flare (veh)						
Median type			None		None	
Median storage veh)						
Upstream signal (ft)			218		110	
pX, platoon unblocked	0.66	0.66	0.66			
vC, conflicting volume	1125	657	1210			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	141	0	271			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	77	100			
cM capacity (veh/h)	513	664	794			

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	150	624	482
Volume Left	0	0	0
Volume Right	150	0	170
cSH	664	1700	1700
Volume to Capacity	0.23	0.37	0.28
Queue Length 95th (ft)	22	0	0
Control Delay (s)	12.0	0.0	0.0
Lane LOS	B		
Approach Delay (s)	12.0	0.0	
Approach LOS	B		

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	38.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	NBT	NBR	SBR	SWT
Lane Group Flow (vph)	114	556	244	811
v/c Ratio	0.14	0.54	0.19	0.73
Control Delay	16.9	3.1	0.3	36.2
Queue Delay	0.0	0.0	0.3	3.1
Total Delay	16.9	3.1	0.6	39.3
Queue Length 50th (ft)	67	5	0	278
Queue Length 95th (ft)	m86	m27	0	356
Internal Link Dist (ft)	1			419
Turn Bay Length (ft)				
Base Capacity (vph)	842	1035	1305	1118
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	599	206
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.14	0.54	0.35	0.89

Intersection Summary

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

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	103	500	0	0	220	0	0	0	0	727	3
Future Volume (vph)	0	103	500	0	0	220	0	0	0	0	727	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			0%			1%	
Total Lost time (s)		2.0	7.0			2.0					2.0	
Lane Util. Factor		0.95	0.95			1.00					0.95	
Frpb, ped/bikes		1.00	1.00			1.00					1.00	
Flpb, ped/bikes		1.00	1.00			1.00					1.00	
Frt		1.00	0.85			0.86					1.00	
Flt Protected		1.00	1.00			1.00					1.00	
Satd. Flow (prot)		1444	1257			1305					2921	
Flt Permitted		1.00	1.00			1.00					1.00	
Satd. Flow (perm)		1444	1257			1305					2921	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	114	556	0	0	244	0	0	0	0	808	3
RTOR Reduction (vph)	0	0	107	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	114	449	0	0	244	0	0	0	0	811	0
Confl. Peds. (#/hr)			7	7			7					7
Bus Blockages (#/hr)	0	6	0	0	0	9	0	0	0	0	6	6
Turn Type		NA	custom			Free					NA	
Protected Phases		4 15 6 1	11 4 15								2 3	
Permitted Phases						Free						
Actuated Green, G (s)		65.0	97.0			120.0					39.0	
Effective Green, g (s)		63.0	97.0			120.0					41.0	
Actuated g/C Ratio		0.52	0.81			1.00					0.34	
Clearance Time (s)												
Lane Grp Cap (vph)		758	1016			1305					998	
v/s Ratio Prot		0.08	c0.36								c0.28	
v/s Ratio Perm						c0.19						
v/c Ratio		0.15	0.44			0.19					0.81	
Uniform Delay, d1		14.7	3.4			0.0					36.0	
Progression Factor		1.45	4.51			1.00					1.00	
Incremental Delay, d2		0.3	1.1			0.3					7.2	
Delay (s)		21.6	16.5			0.3					43.2	
Level of Service		C	B			A					D	
Approach Delay (s)		17.4			0.3			0.0			43.2	
Approach LOS		B			A			A			D	

Intersection Summary			
HCM 2000 Control Delay	27.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	46.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	NBT	SBT	SET	NWT
Lane Group Flow (vph)	219	138	402	571
v/c Ratio	0.71	0.42	0.56	0.65
Control Delay	46.9	34.0	15.2	17.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	46.9	34.0	15.2	17.1
Queue Length 50th (ft)	125	72	139	218
Queue Length 95th (ft)	#233	130	227	338
Internal Link Dist (ft)	689	132	177	285
Turn Bay Length (ft)				
Base Capacity (vph)	308	331	723	873
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.71	0.42	0.56	0.65

Intersection Summary

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

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	112	46	50	20	94	17	10	298	73	57	447	38
Future Volume (vph)	112	46	50	20	94	17	10	298	73	57	447	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-4%			5%			7%			-7%	
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		0.99			1.00			0.99			1.00	
Flpb, ped/bikes		0.99			1.00			1.00			1.00	
Frt		0.97			0.98			0.97			0.99	
Flt Protected		0.97			0.99			1.00			0.99	
Satd. Flow (prot)		1483			1257			1204			1546	
Flt Permitted		0.72			0.94			0.98			0.92	
Satd. Flow (perm)		1102			1186			1186			1431	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	118	48	53	21	99	18	11	314	77	60	471	40
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	219	0	0	138	0	0	402	0	0	571	0
Confl. Peds. (#/hr)	8		4	4		8	6		25	25		6
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	5%	5%	5%	5%	5%
Parking (#/hr)				10	10	10	10	10	10			
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		26.0			26.0			59.0			59.0	
Effective Green, g (s)		28.0			28.0			61.0			61.0	
Actuated g/C Ratio		0.28			0.28			0.61			0.61	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Lane Grp Cap (vph)		308			332			723			872	
v/s Ratio Prot												
v/s Ratio Perm		c0.20			0.12			0.34			c0.40	
v/c Ratio		0.71			0.42			0.56			0.65	
Uniform Delay, d1		32.4			29.3			11.5			12.7	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		13.1			3.8			3.1			3.8	
Delay (s)		45.4			33.1			14.6			16.5	
Level of Service		D			C			B			B	
Approach Delay (s)		45.4			33.1			14.6			16.5	
Approach LOS		D			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	22.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	85.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	454	547	180	260
v/c Ratio	0.95	1.42	0.34	0.55
Control Delay	52.6	225.1	14.2	18.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	52.6	225.1	14.2	18.5
Queue Length 50th (ft)	156	~276	42	68
Queue Length 95th (ft)	#321	#442	85	133
Internal Link Dist (ft)	418	274	520	689
Turn Bay Length (ft)				
Base Capacity (vph)	480	386	533	477
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.95	1.42	0.34	0.55

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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	388	30	72	346	124	15	139	25	69	163	25
Future Volume (vph)	32	388	30	72	346	124	15	139	25	69	163	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		9%			-8%			-4%			0%	
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		0.99			0.98			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.99			0.97			0.98			0.99	
Flt Protected		1.00			0.99			1.00			0.99	
Satd. Flow (prot)		1465			1296			1320			1289	
Flt Permitted		0.93			0.85			0.97			0.88	
Satd. Flow (perm)		1373			1104			1282			1147	
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)	32	392	30	73	349	125	15	140	25	70	165	25
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	454	0	0	547	0	0	180	0	0	260	0
Confl. Peds. (#/hr)	38		28	28		38	9		3	3		9
Parking (#/hr)				10	10	10	10	10	10	10	10	10
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		19.0			19.0			23.0			23.0	
Effective Green, g (s)		21.0			21.0			25.0			25.0	
Actuated g/C Ratio		0.35			0.35			0.42			0.42	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Lane Grp Cap (vph)		480			386			534			477	
v/s Ratio Prot												
v/s Ratio Perm		0.33			c0.50			0.14			c0.23	
v/c Ratio		0.95			1.42			0.34			0.55	
Uniform Delay, d1		18.9			19.5			11.9			13.2	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		29.6			202.4			1.7			4.4	
Delay (s)		48.5			221.9			13.6			17.6	
Level of Service		D			F			B			B	
Approach Delay (s)		48.5			221.9			13.6			17.6	
Approach LOS		D			F			B			B	

Intersection Summary			
HCM 2000 Control Delay	104.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	91.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	10.9
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	32	89	25	42	152	21	4	164	15	21	177	22
Future Vol, veh/h	32	89	25	42	152	21	4	164	15	21	177	22
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	35	97	27	46	165	23	4	178	16	23	192	24
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	10.2	11.3	10.7	11.2
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	2%	22%	20%	10%
Vol Thru, %	90%	61%	71%	80%
Vol Right, %	8%	17%	10%	10%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	183	146	215	220
LT Vol	4	32	42	21
Through Vol	164	89	152	177
RT Vol	15	25	21	22
Lane Flow Rate	199	159	234	239
Geometry Grp	1	1	1	1
Degree of Util (X)	0.296	0.241	0.348	0.352
Departure Headway (Hd)	5.358	5.456	5.368	5.298
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	670	657	668	679
Service Time	3.397	3.496	3.406	3.336
HCM Lane V/C Ratio	0.297	0.242	0.35	0.352
HCM Control Delay	10.7	10.2	11.3	11.2
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	1.2	0.9	1.6	1.6

Intersection	
Intersection Delay, s/veh	4.1
Intersection LOS	A

Approach	NB	SB	NE
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	195	214	107
Demand Flow Rate, veh/h	199	219	109
Vehicles Circulating, veh/h	96	19	187
Vehicles Exiting, veh/h	200	276	51
Ped Vol Crossing Leg, #/h	1	4	2
Ped Cap Adj	1.000	0.999	1.000
Approach Delay, s/veh	4.3	4.1	4.0
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	LT	TR	LR
Assumed Moves	LT	TR	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	199	219	109
Cap Entry Lane, veh/h	1251	1353	1140
Entry HV Adj Factor	0.982	0.979	0.982
Flow Entry, veh/h	195	214	107
Cap Entry, veh/h	1229	1324	1119
V/C Ratio	0.159	0.162	0.096
Control Delay, s/veh	4.3	4.1	4.0
LOS	A	A	A
95th %tile Queue, veh	1	1	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	3	35	215	17	10	206
Future Volume (Veh/h)	3	35	215	17	10	206
Sign Control	Stop		Free			Free
Grade	-4%		1%			1%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	38	234	18	11	224
Pedestrians	25		1			
Lane Width (ft)	10.0		10.0			
Walking Speed (ft/s)	4.0		4.0			
Percent Blockage	2		0			
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	515	268			277	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	515	268			277	
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	95			99	
cM capacity (veh/h)	507	758			1264	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	41	252	235
Volume Left	3	0	11
Volume Right	38	18	0
cSH	731	1700	1264
Volume to Capacity	0.06	0.15	0.01
Queue Length 95th (ft)	4	0	1
Control Delay (s)	10.2	0.0	0.4
Lane LOS	B		A
Approach Delay (s)	10.2	0.0	0.4
Approach LOS	B		

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	31.1%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	4.9
Intersection LOS	A

Approach	NB	SB	SE
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	207	225	300
Demand Flow Rate, veh/h	211	229	306
Vehicles Circulating, veh/h	42	16	226
Vehicles Exiting, veh/h	490	237	19
Ped Vol Crossing Leg, #/h	6	0	3
Ped Cap Adj	0.999	1.000	1.000
Approach Delay, s/veh	4.1	4.1	6.0
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	LT	TR	LR
Assumed Moves	LT	TR	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	211	229	306
Cap Entry Lane, veh/h	1322	1358	1096
Entry HV Adj Factor	0.982	0.981	0.980
Flow Entry, veh/h	207	225	300
Cap Entry, veh/h	1297	1331	1074
V/C Ratio	0.160	0.169	0.279
Control Delay, s/veh	4.1	4.1	6.0
LOS	A	A	A
95th %tile Queue, veh	1	1	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	183	23	15	270	46	13	98	7	40	124	10
Future Volume (Veh/h)	34	183	23	15	270	46	13	98	7	40	124	10
Sign Control		Free			Free			Stop			Stop	
Grade		6%			-2%			-1%			-2%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	41	220	28	18	325	55	16	118	8	48	149	12
Pedestrians		8			1			4			4	
Lane Width (ft)		10.0			10.0			10.0			10.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					176							
pX, platoon unblocked	0.87						0.87	0.87		0.87	0.87	0.87
vC, conflicting volume	384			252			803	740	239	776	726	364
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	222			252			702	630	239	672	614	200
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			99			92	64	99	78	56	98
cM capacity (veh/h)	1173			1310			189	330	797	221	337	729

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	289	398	142	209
Volume Left	41	18	16	48
Volume Right	28	55	8	12
cSH	1173	1310	314	309
Volume to Capacity	0.03	0.01	0.45	0.68
Queue Length 95th (ft)	3	1	56	115
Control Delay (s)	1.4	0.5	25.6	37.9
Lane LOS	A	A	D	E
Approach Delay (s)	1.4	0.5	25.6	37.9
Approach LOS			D	E

Intersection Summary			
Average Delay	11.7		
Intersection Capacity Utilization	50.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	161	1088	914	1	2	267
Future Volume (Veh/h)	161	1088	914	1	2	267
Sign Control		Free	Free		Stop	
Grade		0%	0%		1%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	177	1196	1004	1	2	293
Pedestrians			4		14	
Lane Width (ft)			10.0		10.0	
Walking Speed (ft/s)			4.0		4.0	
Percent Blockage			0		1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			310			
pX, platoon unblocked						
vC, conflicting volume	1019				2572	516
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1019				2572	516
tC, single (s)	4.2				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	73				87	41
cM capacity (veh/h)	652				15	499

Direction, Lane #	EB 1	WB 1	WB 2	SB 1
Volume Total	1373	669	336	295
Volume Left	177	0	0	2
Volume Right	0	0	1	293
cSH	652	1700	1700	410
Volume to Capacity	0.27	0.39	0.20	0.72
Queue Length 95th (ft)	27	0	0	139
Control Delay (s)	11.6	0.0	0.0	33.3
Lane LOS	B			D
Approach Delay (s)	11.6	0.0		33.3
Approach LOS				D

Intersection Summary			
Average Delay	9.6		
Intersection Capacity Utilization	130.1%	ICU Level of Service	H
Analysis Period (min)	15		

Lane Group	EBT	WBL	WBT	NET	SWT
Lane Group Flow (vph)	252	310	267	1322	756
v/c Ratio	0.48	1.22	0.50	1.98	0.94
Control Delay	34.0	157.1	32.0	465.6	32.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	34.0	157.1	32.0	465.6	32.3
Queue Length 50th (ft)	151	~298	179	~1603	323
Queue Length 95th (ft)	232	m#351	m204	#1870	#802
Internal Link Dist (ft)	96		233	230	474
Turn Bay Length (ft)		85			
Base Capacity (vph)	529	254	534	669	800
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	0.48	1.22	0.50	1.98	0.94

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	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	35	192	5	285	238	7	21	946	249	7	636	52
Future Volume (vph)	35	192	5	285	238	7	21	946	249	7	636	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	10	10	10	10	10	10	10	10	10
Grade (%)		2%			4%			0%			1%	
Total Lost time (s)		3.5		3.5	3.5			3.0			3.0	
Lane Util. Factor		1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes		1.00		1.00	1.00			0.98			0.99	
Flpb, ped/bikes		1.00		0.96	1.00			1.00			1.00	
Frt		1.00		1.00	1.00			0.97			0.99	
Flt Protected		0.99		0.95	1.00			1.00			1.00	
Satd. Flow (prot)		1634		1396	1523			1131			1359	
Flt Permitted		0.92		0.50	1.00			0.98			0.98	
Satd. Flow (perm)		1514		728	1523			1110			1339	
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)	38	209	5	310	259	8	23	1028	271	8	691	57
RTOR Reduction (vph)	0	1	0	0	1	0	0	8	0	0	2	0
Lane Group Flow (vph)	0	251	0	310	266	0	0	1314	0	0	754	0
Confl. Peds. (#/hr)	11		41	41		11	32		18	18		32
Confl. Bikes (#/hr)			3			2						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	20	0	0	20	0
Parking (#/hr)							10	10	10			
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		40.0		40.0	40.0			69.5			69.5	
Effective Green, g (s)		42.0		42.0	42.0			71.5			71.5	
Actuated g/C Ratio		0.35		0.35	0.35			0.60			0.60	
Clearance Time (s)		5.5		5.5	5.5			5.0			5.0	
Lane Grp Cap (vph)		529		254	533			661			797	
v/s Ratio Prot					0.17							
v/s Ratio Perm		0.17		c0.43				c1.18			0.56	
v/c Ratio		0.48		1.22	0.50			1.99			0.95	
Uniform Delay, d1		30.4		39.0	30.7			24.2			22.4	
Progression Factor		1.00		0.97	0.94			1.00			0.44	
Incremental Delay, d2		3.0		122.6	2.5			450.2			20.3	
Delay (s)		33.4		160.4	31.5			474.4			30.3	
Level of Service		C		F	C			F			C	
Approach Delay (s)		33.4			100.7			474.4			30.3	
Approach LOS		C			F			F			C	

Intersection Summary			
HCM 2000 Control Delay	246.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.70		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.5
Intersection Capacity Utilization	128.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	594	4	5	600	35	26	24	11	4	0	15
Future Volume (Veh/h)	21	594	4	5	600	35	26	24	11	4	0	15
Sign Control		Free			Free			Stop			Stop	
Grade		5%			4%			0%			0%	
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Hourly flow rate (vph)	29	814	5	7	822	48	36	33	15	5	0	21
Pedestrians								20			8	
Lane Width (ft)								10.0			10.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		313			929							
pX, platoon unblocked				0.91			0.91	0.91	0.91	0.91	0.91	
vC, conflicting volume	878			839			1776	1786	836	1774	1765	854
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	878			774			1803	1815	771	1801	1791	854
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			99			27	50	96	84	100	94
cM capacity (veh/h)	765			756			49	67	359	31	69	356

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	848	877	84	26
Volume Left	29	7	36	5
Volume Right	5	48	15	21
cSH	765	756	66	119
Volume to Capacity	0.04	0.01	1.27	0.22
Queue Length 95th (ft)	3	1	171	20
Control Delay (s)	1.0	0.3	304.7	43.7
Lane LOS	A	A	F	E
Approach Delay (s)	1.0	0.3	304.7	43.7
Approach LOS			F	E

Intersection Summary			
Average Delay	15.2		
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	SET	NWT
Lane Group Flow (vph)	98	477	86	390	1674	1807
v/c Ratio	1.00	1.18	1.69	0.94	1.55	2.16
Control Delay	119.9	136.7	409.4	74.4	275.6	547.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	119.9	136.7	409.4	74.4	275.6	547.3
Queue Length 50th (ft)	~79	~448	~97	295	~973	~1177
Queue Length 95th (ft)	m#131	m#476	#205	#490	#1091	#1317
Internal Link Dist (ft)		849		339	239	287
Turn Bay Length (ft)	70		110			
Base Capacity (vph)	98	404	51	414	1080	836
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.00	1.18	1.69	0.94	1.55	2.16

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	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	91	271	173	80	257	106	59	1410	88	95	1557	29
Future Volume (vph)	91	271	173	80	257	106	59	1410	88	95	1557	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		5%			3%			1%			-1%	
Total Lost time (s)	4.0	4.0		4.0	4.0			3.5			3.5	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.95			0.95	
Frpb, ped/bikes	1.00	0.98		1.00	0.98			0.97			0.99	
Flpb, ped/bikes	0.98	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.94		1.00	0.96			0.99			1.00	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1421	1405		1464	1441			2661			2580	
Flt Permitted	0.23	1.00		0.12	1.00			0.58			0.58	
Satd. Flow (perm)	342	1405		179	1441			1549			1511	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	98	291	186	86	276	114	63	1516	95	102	1674	31
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	98	477	0	86	390	0	0	1674	0	0	1807	0
Confl. Peds. (#/hr)	37		26	26		37	93		87	87		93
Confl. Bikes (#/hr)						2			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	20	20	0	0	0
Parking (#/hr)											20	20
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		8			4		1	6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	32.5	32.5		32.5	32.5			76.0			64.5	
Effective Green, g (s)	34.5	34.5		34.5	34.5			78.0			66.5	
Actuated g/C Ratio	0.29	0.29		0.29	0.29			0.65			0.55	
Clearance Time (s)	6.0	6.0		6.0	6.0			5.5			5.5	
Lane Grp Cap (vph)	98	403		51	414			1080			837	
v/s Ratio Prot		0.34			0.27			c0.10				
v/s Ratio Perm	0.29			c0.48				0.90			c1.20	
v/c Ratio	1.00	1.18		1.69	0.94			1.55			2.16	
Uniform Delay, d1	42.8	42.8		42.8	41.8			21.0			26.8	
Progression Factor	1.02	1.02		1.00	1.00			1.30			1.00	
Incremental Delay, d2	74.1	98.7		379.4	31.8			251.7			525.5	
Delay (s)	117.9	142.4		422.2	73.6			279.1			552.2	
Level of Service	F	F		F	E			F			F	
Approach Delay (s)		138.2			136.6			279.1			552.2	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	355.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.97		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	148.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	37	12	38	14	11	11	962	19	11	651	10
Future Volume (Veh/h)	0	37	12	38	14	11	11	962	19	11	651	10
Sign Control		Stop			Stop			Free			Free	
Grade		-4%			6%			-2%			2%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	39	13	40	15	12	12	1023	20	12	693	11
Pedestrians		24			26			1			6	
Lane Width (ft)		10.0			10.0			10.0			10.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		2			2			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								726			393	
pX, platoon unblocked	0.57	0.57	0.85	0.57	0.57	0.49	0.85			0.49		
vC, conflicting volume	1829	1840	724	1839	1835	1065	728			1069		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1484	1503	586	1502	1495	617	592			625		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	39	97	0	77	95	99			97		
cM capacity (veh/h)	42	64	426	26	64	236	810			456		

Direction, Lane #	EB 1	WB 1	NE 1	SW 1
Volume Total	52	67	1055	716
Volume Left	0	40	12	12
Volume Right	13	12	20	11
cSH	81	37	810	456
Volume to Capacity	0.64	1.80	0.01	0.03
Queue Length 95th (ft)	74	180	1	2
Control Delay (s)	107.0	616.9	0.5	0.8
Lane LOS	F	F	A	A
Approach Delay (s)	107.0	616.9	0.5	0.8
Approach LOS	F	F		

Intersection Summary			
Average Delay	25.4		
Intersection Capacity Utilization	82.0%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	907	3	19	680	7	100
Future Volume (Veh/h)	907	3	19	680	7	100
Sign Control	Free			Free	Yield	
Grade	-1%			2%	2%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	1067	4	22	800	8	118
Pedestrians					15	
Lane Width (ft)					10.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	554			565		
pX, platoon unblocked			0.47		0.50	0.47
vC, conflicting volume			1086		1528	1084
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			615		1072	611
tC, single (s)			4.2		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			95		92	42
cM capacity (veh/h)			435		101	202

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	1071	289	533	126
Volume Left	0	22	0	8
Volume Right	4	0	0	118
cSH	1700	435	1700	190
Volume to Capacity	0.63	0.05	0.31	0.66
Queue Length 95th (ft)	0	4	0	99
Control Delay (s)	0.0	1.8	0.0	54.8
Lane LOS		A		F
Approach Delay (s)	0.0	0.6		54.8
Approach LOS				F

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	67.2%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	NBT	SBT	NET
Lane Group Flow (vph)	1823	1678	1401
v/c Ratio	1.37	0.75	1.33
Control Delay	200.0	7.9	183.2
Queue Delay	0.4	3.2	0.8
Total Delay	200.5	11.1	184.1
Queue Length 50th (ft)	~981	92	~742
Queue Length 95th (ft)	#1122	m100	#875
Internal Link Dist (ft)	297	110	29
Turn Bay Length (ft)			
Base Capacity (vph)	1328	2232	1055
Starvation Cap Reductn	0	441	165
Spillback Cap Reductn	141	0	41
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.54	0.94	1.57

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	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	1383	349	0	1594	0	356	921	54	0	0	0
Future Volume (vph)	0	1383	349	0	1594	0	356	921	54	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	12	12	12
Grade (%)		1%			-1%			-3%			1%	
Total Lost time (s)		2.0			2.0			7.0				
Lane Util. Factor		0.95			0.91			0.95				
Frpb, ped/bikes		0.99			1.00			1.00				
Flpb, ped/bikes		1.00			1.00			1.00				
Frt		0.97			1.00			0.99				
Flt Protected		1.00			1.00			0.99				
Satd. Flow (prot)		2612			4059			3165				
Flt Permitted		1.00			1.00			0.99				
Satd. Flow (perm)		2612			4059			3165				
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1456	367	0	1678	0	375	969	57	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1823	0	0	1678	0	0	1401	0	0	0	0
Confl. Peds. (#/hr)	63		80	80		63	6		10	10		6
Confl. Bikes (#/hr)			4			4			2			
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	20	0	0	0	0	0	0	0
Parking (#/hr)		0	0									
Turn Type		NA			NA		Perm	NA				
Protected Phases		15 6 1			15 6 1 2			3 4				
Permitted Phases							3 4					
Actuated Green, G (s)		56.0			64.0			48.0				
Effective Green, g (s)		54.0			57.0			50.0				
Actuated g/C Ratio		0.45			0.48			0.42				
Clearance Time (s)												
Lane Grp Cap (vph)		1175			1928			1318				
v/s Ratio Prot		c0.70			c0.41							
v/s Ratio Perm								0.44				
v/c Ratio		1.55			0.87			1.06				
Uniform Delay, d1		33.0			28.2			35.0				
Progression Factor		1.00			0.33			0.79				
Incremental Delay, d2		252.3			2.7			43.2				
Delay (s)		285.4			11.9			71.0				
Level of Service		F			B			E				
Approach Delay (s)		285.4			11.9			71.0			0.0	
Approach LOS		F			B			E			A	

Intersection Summary			
HCM 2000 Control Delay	130.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.47		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	175.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	SBL	SBR	NEL	NER
Lane Configurations						
Traffic Volume (veh/h)	0	161	0	0	1245	41
Future Volume (Veh/h)	0	161	0	0	1245	41
Sign Control	Yield		Free		Free	
Grade	-4%		0%		1%	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81
Hourly flow rate (vph)	0	199	0	0	1537	51
Pedestrians	12					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	1					
Right turn flare (veh)						
Median type			None		None	
Median storage veh)						
Upstream signal (ft)			187		111	
pX, platoon unblocked	0.60	0.60	0.60			
vC, conflicting volume	1574	806	1600			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	622	0	665			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	69	100			
cM capacity (veh/h)	249	644	546			

Direction, Lane #	WB 1	NE 1	NE 2
Volume Total	199	1025	563
Volume Left	0	0	0
Volume Right	199	0	51
cSH	644	1700	1700
Volume to Capacity	0.31	0.60	0.33
Queue Length 95th (ft)	33	0	0
Control Delay (s)	13.1	0.0	0.0
Lane LOS	B		
Approach Delay (s)	13.1	0.0	
Approach LOS	B		

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	44.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	NBT	SBT	SWT
Lane Group Flow (vph)	1819	1758	966
v/c Ratio	0.83	0.86	0.96
Control Delay	8.6	31.4	37.3
Queue Delay	48.0	2.1	13.2
Total Delay	56.6	33.5	50.5
Queue Length 50th (ft)	136	422	383
Queue Length 95th (ft)	m83	497	#511
Internal Link Dist (ft)	110	479	17
Turn Bay Length (ft)			
Base Capacity (vph)	2199	2038	1008
Starvation Cap Reductn	898	0	62
Spillback Cap Reductn	0	159	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.40	0.94	1.02

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	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	1728	0	0	1315	355	0	0	0	289	598	31
Future Volume (vph)	0	1728	0	0	1315	355	0	0	0	289	598	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	11	11	11
Grade (%)		2%			-2%			0%			-1%	
Total Lost time (s)		2.0			2.0						7.0	
Lane Util. Factor		0.91			0.91						0.95	
Frpb, ped/bikes		1.00			0.99						1.00	
Flpb, ped/bikes		1.00			1.00						1.00	
Frt		1.00			0.97						0.99	
Flt Protected		1.00			1.00						0.98	
Satd. Flow (prot)		3999			4011						3023	
Flt Permitted		1.00			1.00						0.98	
Satd. Flow (perm)		3999			4011						3023	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1819	0	0	1384	374	0	0	0	304	629	33
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1819	0	0	1758	0	0	0	0	0	966	0
Confl. Peds. (#/hr)	61		79	79		61	20		7	7		20
Confl. Bikes (#/hr)			3			3						
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	20	0	0	0	0	0	0	0	0	0	0
Turn Type		NA			NA					Perm	NA	
Protected Phases		15 6 1 2			15 6 1						3 4	
Permitted Phases										3 4		
Actuated Green, G (s)		64.0			56.0						48.0	
Effective Green, g (s)		57.0			54.0						50.0	
Actuated g/C Ratio		0.48			0.45						0.42	
Clearance Time (s)												
Lane Grp Cap (vph)		1899			1804						1259	
v/s Ratio Prot		c0.45			c0.44							
v/s Ratio Perm											0.32	
v/c Ratio		0.96			0.97						0.77	
Uniform Delay, d1		30.3			32.3						30.0	
Progression Factor		0.36			1.00						0.45	
Incremental Delay, d2		1.8			16.0						3.9	
Delay (s)		12.8			48.3						17.5	
Level of Service		B			D						B	
Approach Delay (s)		12.8			48.3			0.0			17.5	
Approach LOS		B			D			A			B	

Intersection Summary			
HCM 2000 Control Delay	27.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	175.7%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Traffic Volume (veh/h)	0	212	0	0	879	85
Future Volume (Veh/h)	0	212	0	0	879	85
Sign Control	Stop		Free		Free	
Grade	-4%		0%		0%	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Hourly flow rate (vph)	0	303	0	0	1256	121
Pedestrians	49					
Lane Width (ft)	10.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	3					
Right turn flare (veh)						
Median type			None		None	
Median storage veh)						
Upstream signal (ft)			218		110	
pX, platoon unblocked						
vC, conflicting volume	1366	738	1426			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1366	738	1426			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	13	100			
cM capacity (veh/h)	134	349	457			

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	303	837	540
Volume Left	0	0	0
Volume Right	303	0	121
cSH	349	1700	1700
Volume to Capacity	0.87	0.49	0.32
Queue Length 95th (ft)	205	0	0
Control Delay (s)	55.9	0.0	0.0
Lane LOS	F		
Approach Delay (s)	55.9	0.0	
Approach LOS	F		

Intersection Summary			
Average Delay	10.1		
Intersection Capacity Utilization	34.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	NBT	NBR	SBR	SWT
Lane Group Flow (vph)	160	1795	198	846
v/c Ratio	0.21	1.55	0.18	0.70
Control Delay	18.6	270.7	0.4	32.8
Queue Delay	0.0	0.0	0.1	1.7
Total Delay	18.6	270.7	0.5	34.5
Queue Length 50th (ft)	91	~1992	0	279
Queue Length 95th (ft)	m78	m#1236	0	215
Internal Link Dist (ft)	1			419
Turn Bay Length (ft)				
Base Capacity (vph)	749	1156	1073	1204
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	304	199
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.21	1.55	0.26	0.84

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	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	101	1131	0	0	125	0	0	0	0	531	2
Future Volume (vph)	0	101	1131	0	0	125	0	0	0	0	531	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			0%			1%	
Total Lost time (s)		2.0	7.0			2.0					2.0	
Lane Util. Factor		0.95	0.95			1.00					0.95	
Frpb, ped/bikes		1.00	1.00			1.00					1.00	
Flpb, ped/bikes		1.00	1.00			1.00					1.00	
Frt		1.00	0.85			0.86					1.00	
Flt Protected		1.00	1.00			1.00					1.00	
Satd. Flow (prot)		1363	1187			1073					2892	
Flt Permitted		1.00	1.00			1.00					1.00	
Satd. Flow (perm)		1363	1187			1073					2892	
Peak-hour factor, PHF	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63
Adj. Flow (vph)	0	160	1795	0	0	198	0	0	0	0	843	3
RTOR Reduction (vph)	0	0	209	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	160	1586	0	0	198	0	0	0	0	846	0
Confl. Peds. (#/hr)				18			7		7			18
Heavy Vehicles (%)	8%	8%	8%	24%	24%	24%	0%	0%	0%	3%	3%	3%
Bus Blockages (#/hr)	0	6	0	0	0	9	0	0	0	0	6	6
Turn Type		NA	custom			Free					NA	
Protected Phases		4 15 6 1	11 4 15								2 3	
Permitted Phases						Free						
Actuated Green, G (s)		61.0	97.0			120.0					43.0	
Effective Green, g (s)		59.0	97.0			120.0					45.0	
Actuated g/C Ratio		0.49	0.81			1.00					0.38	
Clearance Time (s)												
Lane Grp Cap (vph)		670	959			1073					1084	
v/s Ratio Prot		c0.12	c1.34								0.29	
v/s Ratio Perm						0.18						
v/c Ratio		0.24	1.65			0.18					0.78	
Uniform Delay, d1		17.6	11.5			0.0					33.1	
Progression Factor		1.30	16.43			1.00					1.00	
Incremental Delay, d2		0.4	296.6			0.4					5.6	
Delay (s)		23.2	485.6			0.4					38.7	
Level of Service		C	F			A					D	
Approach Delay (s)		447.7			0.4			0.0			38.7	
Approach LOS		F			A			A			D	

Intersection Summary			
HCM 2000 Control Delay	302.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.74		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	NBT	SBT	SET	NWT
Lane Group Flow (vph)	232	204	160	390
v/c Ratio	0.75	0.57	0.22	0.41
Control Delay	49.6	38.4	9.8	11.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	49.6	38.4	9.8	11.8
Queue Length 50th (ft)	134	111	43	120
Queue Length 95th (ft)	#210	169	68	163
Internal Link Dist (ft)	689	132	177	285
Turn Bay Length (ft)				
Base Capacity (vph)	310	356	721	941
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.75	0.57	0.22	0.41

Intersection Summary

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

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	80	112	1	10	156	3	8	64	61	34	260	30
Future Volume (vph)	80	112	1	10	156	3	8	64	61	34	260	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-4%			5%			7%			-7%	
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		1.00			1.00			0.99			1.00	
Flpb, ped/bikes		0.97			1.00			1.00			1.00	
Frt		1.00			1.00			0.94			0.99	
Flt Protected		0.98			1.00			1.00			0.99	
Satd. Flow (prot)		1543			1301			1209			1604	
Flt Permitted		0.70			0.98			0.97			0.96	
Satd. Flow (perm)		1108			1275			1182			1543	
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	96	135	1	12	188	4	10	77	73	41	313	36
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	232	0	0	204	0	0	160	0	0	390	0
Confl. Peds. (#/hr)	58		42	42		58	20		8	8		20
Heavy Vehicles (%)	0%	0%	0%	9%	0%	0%	0%	0%	0%	0%	1%	0%
Parking (#/hr)				10	10	10	10	10	10			
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		26.0			26.0			59.0			59.0	
Effective Green, g (s)		28.0			28.0			61.0			61.0	
Actuated g/C Ratio		0.28			0.28			0.61			0.61	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Lane Grp Cap (vph)		310			357			721			941	
v/s Ratio Prot												
v/s Ratio Perm		c0.21			0.16			0.14			c0.25	
v/c Ratio		0.75			0.57			0.22			0.41	
Uniform Delay, d1		32.8			30.9			8.8			10.2	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		15.2			6.5			0.7			1.3	
Delay (s)		48.0			37.4			9.5			11.5	
Level of Service		D			D			A			B	
Approach Delay (s)		48.0			37.4			9.5			11.5	
Approach LOS		D			D			A			B	

Intersection Summary			
HCM 2000 Control Delay	25.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	77.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	205	218	137	182
v/c Ratio	0.48	0.51	0.24	0.37
Control Delay	20.0	20.4	12.8	15.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	20.0	20.4	12.8	15.0
Queue Length 50th (ft)	57	61	31	43
Queue Length 95th (ft)	112	119	64	89
Internal Link Dist (ft)	418	274	520	689
Turn Bay Length (ft)				
Base Capacity (vph)	423	431	563	486
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.48	0.51	0.24	0.37

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	69	105	15	23	135	42	4	119	4	20	108	40
Future Volume (vph)	69	105	15	23	135	42	4	119	4	20	108	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		9%			-8%			-4%			0%	
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		0.99			0.96			0.99			0.95	
Flpb, ped/bikes		0.96			0.99			1.00			0.98	
Frt		0.99			0.97			1.00			0.97	
Flt Protected		0.98			0.99			1.00			0.99	
Satd. Flow (prot)		1412			1287			1360			1207	
Flt Permitted		0.84			0.95			0.99			0.96	
Satd. Flow (perm)		1210			1232			1352			1167	
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)	75	114	16	25	147	46	4	129	4	22	117	43
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	205	0	0	218	0	0	137	0	0	182	0
Confl. Peds. (#/hr)	83		47	47		83	93		128	128		93
Heavy Vehicles (%)	0%	0%	0%	0%	1%	2%	0%	0%	0%	0%	0%	2%
Parking (#/hr)				10	10	10	10	10	10	10	10	10
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		19.0			19.0			23.0			23.0	
Effective Green, g (s)		21.0			21.0			25.0			25.0	
Actuated g/C Ratio		0.35			0.35			0.42			0.42	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Lane Grp Cap (vph)		423			431			563			486	
v/s Ratio Prot												
v/s Ratio Perm		0.17			c0.18			0.10			c0.16	
v/c Ratio		0.48			0.51			0.24			0.37	
Uniform Delay, d1		15.3			15.4			11.4			12.1	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		3.9			4.2			1.0			2.2	
Delay (s)		19.2			19.6			12.4			14.3	
Level of Service		B			B			B			B	
Approach Delay (s)		19.2			19.6			12.4			14.3	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	9.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	72	3	25	111	40	11	126	38	22	112	16
Future Vol, veh/h	16	72	3	25	111	40	11	126	38	22	112	16
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	0	0
Mvmt Flow	18	80	3	28	123	44	12	140	42	24	124	18
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.9	9.5	9.4	9.3
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	6%	18%	14%	15%
Vol Thru, %	72%	79%	63%	75%
Vol Right, %	22%	3%	23%	11%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	175	91	176	150
LT Vol	11	16	25	22
Through Vol	126	72	111	112
RT Vol	38	3	40	16
Lane Flow Rate	194	101	196	167
Geometry Grp	1	1	1	1
Degree of Util (X)	0.255	0.141	0.26	0.223
Departure Headway (Hd)	4.712	5.024	4.779	4.825
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	756	708	747	738
Service Time	2.774	3.098	2.843	2.892
HCM Lane V/C Ratio	0.257	0.143	0.262	0.226
HCM Control Delay	9.4	8.9	9.5	9.3
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	1	0.5	1	0.9

Intersection	
Intersection Delay, s/veh	3.6
Intersection LOS	A

Approach	NB	SB	NE
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	175	158	21
Demand Flow Rate, veh/h	177	158	21
Vehicles Circulating, veh/h	21	9	123
Vehicles Exiting, veh/h	123	189	44
Ped Vol Crossing Leg, #/h	0	7	0
Ped Cap Adj	1.000	0.999	1.000
Approach Delay, s/veh	3.8	3.6	3.1
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	LT	TR	LR
Assumed Moves	LT	TR	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	177	158	21
Cap Entry Lane, veh/h	1351	1367	1217
Entry HV Adj Factor	0.991	1.000	1.000
Flow Entry, veh/h	175	158	21
Cap Entry, veh/h	1338	1366	1217
V/C Ratio	0.131	0.116	0.017
Control Delay, s/veh	3.8	3.6	3.1
LOS	A	A	A
95th %tile Queue, veh	0	0	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	23	37	119	23	4	112
Future Volume (Veh/h)	23	37	119	23	4	112
Sign Control	Stop		Free			Free
Grade	-4%		1%			1%
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	24	39	124	24	4	117
Pedestrians	5		5			5
Lane Width (ft)	10.0		10.0			10.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	0		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	271	146			153	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	271	146			153	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	96			100	
cM capacity (veh/h)	716	900			1435	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	63	148	121
Volume Left	24	0	4
Volume Right	39	24	0
cSH	820	1700	1435
Volume to Capacity	0.08	0.09	0.00
Queue Length 95th (ft)	6	0	0
Control Delay (s)	9.8	0.0	0.3
Lane LOS	A		A
Approach Delay (s)	9.8	0.0	0.3
Approach LOS	A		

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	22.5%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	3.4
Intersection LOS	A

Approach	NB	SB	SE
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	141	131	49
Demand Flow Rate, veh/h	141	131	49
Vehicles Circulating, veh/h	26	19	121
Vehicles Exiting, veh/h	144	148	29
Ped Vol Crossing Leg, #/h	9	2	0
Ped Cap Adj	0.999	1.000	1.000
Approach Delay, s/veh	3.5	3.4	3.3
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	LT	TR	LR
Assumed Moves	LT	TR	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	141	131	49
Cap Entry Lane, veh/h	1344	1353	1220
Entry HV Adj Factor	1.000	1.000	1.000
Flow Entry, veh/h	141	131	49
Cap Entry, veh/h	1342	1353	1220
V/C Ratio	0.105	0.097	0.040
Control Delay, s/veh	3.5	3.4	3.3
LOS	A	A	A
95th %tile Queue, veh	0	0	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	174	15	28	326	83	7	107	1	36	180	0
Future Volume (Veh/h)	6	174	15	28	326	83	7	107	1	36	180	0
Sign Control		Free			Free			Stop			Stop	
Grade		6%			-2%			-1%			-2%	
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	181	16	29	340	86	7	111	1	38	188	0
Pedestrians		6			3			3			9	
Lane Width (ft)		10.0			10.0			10.0			10.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					176							
pX, platoon unblocked	0.88						0.88	0.88		0.88	0.88	0.88
vC, conflicting volume	435			200			745	697	195	710	662	398
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	289			200			641	587	195	602	547	247
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			97	69	100	86	51	100
cM capacity (veh/h)	1123			1381			203	360	848	268	380	694

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	203	455	119	226
Volume Left	6	29	7	38
Volume Right	16	86	1	0
cSH	1123	1381	346	355
Volume to Capacity	0.01	0.02	0.34	0.64
Queue Length 95th (ft)	0	2	37	104
Control Delay (s)	0.3	0.7	20.8	31.3
Lane LOS	A	A	C	D
Approach Delay (s)	0.3	0.7	20.8	31.3
Approach LOS			C	D

Intersection Summary			
Average Delay	9.9		
Intersection Capacity Utilization	65.0%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	110	962	925	0	2	212
Future Volume (Veh/h)	110	962	925	0	2	212
Sign Control		Free	Free		Stop	
Grade		0%	0%		1%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	117	1023	984	0	2	226
Pedestrians					28	
Lane Width (ft)					10.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					2	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			310			
pX, platoon unblocked						
vC, conflicting volume	1012				1758	520
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1012				1758	520
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	83				97	54
cM capacity (veh/h)	673				63	494

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	458	682	656	328	228
Volume Left	117	0	0	0	2
Volume Right	0	0	0	0	226
cSH	673	1700	1700	1700	466
Volume to Capacity	0.17	0.40	0.39	0.19	0.49
Queue Length 95th (ft)	16	0	0	0	66
Control Delay (s)	4.8	0.0	0.0	0.0	19.9
Lane LOS	A				C
Approach Delay (s)	1.9		0.0		19.9
Approach LOS					C

Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	86.2%	ICU Level of Service	E
Analysis Period (min)	15		

Lane Group	EBT	WBL	WBT	NET	SWT
Lane Group Flow (vph)	223	295	259	1028	672
v/c Ratio	0.40	1.08	0.48	0.73	0.82
Control Delay	32.0	109.2	28.5	20.6	15.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	32.0	109.2	28.5	20.6	15.6
Queue Length 50th (ft)	129	~259	181	274	209
Queue Length 95th (ft)	201	m#386	m238	361	297
Internal Link Dist (ft)	96		233	230	474
Turn Bay Length (ft)		85			
Base Capacity (vph)	560	273	540	1406	818
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	1.08	0.48	0.73	0.82

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	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	22	181	7	277	238	6	54	746	166	4	601	27
Future Volume (vph)	22	181	7	277	238	6	54	746	166	4	601	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	10	10	10	10	10	10	10	10	10
Grade (%)		2%			4%			0%			1%	
Total Lost time (s)		3.5		3.5	3.5			3.0			3.0	
Lane Util. Factor		1.00		1.00	1.00			0.95			1.00	
Frpb, ped/bikes		1.00		1.00	1.00			0.98			0.99	
Flpb, ped/bikes		1.00		0.97	1.00			1.00			1.00	
Frt		1.00		1.00	1.00			0.97			0.99	
Flt Protected		0.99		0.95	1.00			1.00			1.00	
Satd. Flow (prot)		1671		1432	1542			2672			1378	
Flt Permitted		0.95		0.52	1.00			0.87			1.00	
Satd. Flow (perm)		1599		781	1542			2336			1371	
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)	23	193	7	295	253	6	57	794	177	4	639	29
RTOR Reduction (vph)	0	1	0	0	1	0	0	15	0	0	1	0
Lane Group Flow (vph)	0	222	0	295	258	0	0	1013	0	0	671	0
Confl. Peds. (#/hr)	11		23	23		11	26		25	25		26
Confl. Bikes (#/hr)			3			2						
Heavy Vehicles (%)	0%	0%	0%	1%	1%	0%	0%	4%	2%	0%	5%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	20	0	0	20	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		40.0		40.0	40.0			69.5			69.5	
Effective Green, g (s)		42.0		42.0	42.0			71.5			71.5	
Actuated g/C Ratio		0.35		0.35	0.35			0.60			0.60	
Clearance Time (s)		5.5		5.5	5.5			5.0			5.0	
Lane Grp Cap (vph)		559		273	539			1391			816	
v/s Ratio Prot					0.17							
v/s Ratio Perm		0.14		c0.38				0.43			c0.49	
v/c Ratio		0.40		1.08	0.48			0.73			0.82	
Uniform Delay, d1		29.4		39.0	30.5			17.3			19.2	
Progression Factor		1.00		0.89	0.83			1.00			0.32	
Incremental Delay, d2		2.1		74.2	2.7			3.4			8.6	
Delay (s)		31.6		108.9	28.1			20.7			14.9	
Level of Service		C		F	C			C			B	
Approach Delay (s)		31.6			71.1			20.7			14.9	
Approach LOS		C			E			C			B	

Intersection Summary			
HCM 2000 Control Delay	31.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.5
Intersection Capacity Utilization	107.0%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	491	16	14	565	40	33	15	13	12	1	10
Future Volume (Veh/h)	11	491	16	14	565	40	33	15	13	12	1	10
Sign Control		Free			Free			Stop			Stop	
Grade		5%			4%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	12	517	17	15	595	42	35	16	14	13	1	11
Pedestrians								23			11	
Lane Width (ft)								10.0			10.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								2			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		313			929							
pX, platoon unblocked	0.86			0.92			0.90	0.90	0.92	0.90	0.90	0.86
vC, conflicting volume	648			557			1230	1250	548	1228	1238	627
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	508			478			1006	1028	469	1004	1014	484
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			81	92	97	92	100	98
cM capacity (veh/h)	901			984			182	199	540	173	203	497

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	546	652	65	25
Volume Left	12	15	35	13
Volume Right	17	42	14	11
cSH	901	984	218	244
Volume to Capacity	0.01	0.02	0.30	0.10
Queue Length 95th (ft)	1	1	30	8
Control Delay (s)	0.4	0.4	28.4	21.4
Lane LOS	A	A	D	C
Approach Delay (s)	0.4	0.4	28.4	21.4
Approach LOS			D	C

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	55.0%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	SET	NWT
Lane Group Flow (vph)	89	345	63	367	1435	1442
v/c Ratio	0.80	0.83	0.50	0.84	0.86	0.71
Control Delay	84.9	57.8	52.0	58.5	16.7	22.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	84.9	57.8	52.0	58.5	16.7	22.2
Queue Length 50th (ft)	68	265	41	267	125	287
Queue Length 95th (ft)	m#148	#412	94	#431	196	346
Internal Link Dist (ft)		849		339	239	287
Turn Bay Length (ft)	70		110			
Base Capacity (vph)	111	415	125	437	1677	2024
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.80	0.83	0.50	0.84	0.86	0.71

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	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	85	236	92	60	305	44	6	1264	93	7	1328	35
Future Volume (vph)	85	236	92	60	305	44	6	1264	93	7	1328	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		5%			3%			1%			-1%	
Total Lost time (s)	4.0	4.0		4.0	4.0			3.5			3.5	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.95			0.91	
Frpb, ped/bikes	1.00	0.97		1.00	0.99			0.97			0.99	
Flpb, ped/bikes	0.98	1.00		0.96	1.00			1.00			1.00	
Frt	1.00	0.96		1.00	0.98			0.99			1.00	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1416	1446		1411	1523			2701			3924	
Flt Permitted	0.26	1.00		0.29	1.00			0.95			0.93	
Satd. Flow (perm)	389	1446		434	1523			2565			3653	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	89	248	97	63	321	46	6	1331	98	7	1398	37
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	89	345	0	63	367	0	0	1435	0	0	1442	0
Confl. Peds. (#/hr)	39		56	56		39	69		76	76		69
Confl. Bikes (#/hr)						2			5			5
Heavy Vehicles (%)	2%	0%	0%	2%	0%	2%	83%	3%	2%	0%	3%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	20	20	0	0	0
Parking (#/hr)											20	20
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		8			4		1	6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	32.5	32.5		32.5	32.5			76.0			64.5	
Effective Green, g (s)	34.5	34.5		34.5	34.5			78.0			66.5	
Actuated g/C Ratio	0.29	0.29		0.29	0.29			0.65			0.55	
Clearance Time (s)	6.0	6.0		6.0	6.0			5.5			5.5	
Lane Grp Cap (vph)	111	415		124	437			1676			2024	
v/s Ratio Prot		0.24			c0.24			c0.06				
v/s Ratio Perm	0.23			0.15				c0.50			0.39	
v/c Ratio	0.80	0.83		0.51	0.84			0.86			0.71	
Uniform Delay, d1	39.6	40.0		35.7	40.2			16.6			19.7	
Progression Factor	1.01	1.00		1.00	1.00			0.65			1.00	
Incremental Delay, d2	42.3	16.7		14.1	17.4			5.4			2.2	
Delay (s)	82.1	56.8		49.8	57.6			16.3			21.9	
Level of Service	F	E		D	E			B			C	
Approach Delay (s)		62.0			56.4			16.3			21.9	
Approach LOS		E			E			B			C	

Intersection Summary			
HCM 2000 Control Delay	28.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	84.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	24	3	19	12	11	19	810	24	30	669	28
Future Volume (Veh/h)	0	24	3	19	12	11	19	810	24	30	669	28
Sign Control		Stop			Stop			Free			Free	
Grade		-4%			6%			-2%			2%	
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	28	4	22	14	13	22	953	28	35	787	33
Pedestrians		61			11			2			10	
Lane Width (ft)		10.0			10.0			10.0			10.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		4			1			0			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								726			393	
pX, platoon unblocked	0.89	0.89	0.83	0.89	0.89	0.89	0.83			0.89		
vC, conflicting volume	1485	1970	866	1916	1973	512	881			992		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1000	1546	738	1485	1549	190	755			732		
tC, single (s)	7.5	6.5	6.9	7.6	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.2			2.2		
p0 queue free %	100	69	99	56	84	98	97			95		
cM capacity (veh/h)	133	90	290	50	89	721	688			775		

Direction, Lane #	EB 1	WB 1	NE 1	NE 2	SW 1
Volume Total	32	49	498	504	855
Volume Left	0	22	22	0	35
Volume Right	4	13	0	28	33
cSH	99	80	688	1700	775
Volume to Capacity	0.32	0.62	0.03	0.30	0.05
Queue Length 95th (ft)	31	70	2	0	4
Control Delay (s)	57.9	105.3	0.9	0.0	1.2
Lane LOS	F	F	A		A
Approach Delay (s)	57.9	105.3	0.4		1.2
Approach LOS	F	F			

Intersection Summary			
Average Delay	4.4		
Intersection Capacity Utilization	85.7%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	827	1	14	766	4	65
Future Volume (Veh/h)	827	1	14	766	4	65
Sign Control	Free			Free	Yield	
Grade	-1%			2%	2%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	919	1	16	851	4	72
Pedestrians					25	
Lane Width (ft)					10.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					2	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	554			565		
pX, platoon unblocked			0.85		0.90	0.85
vC, conflicting volume			945		1828	485
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			595		1258	57
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		97	91
cM capacity (veh/h)			820		141	837

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	613	307	867	76
Volume Left	0	0	16	4
Volume Right	0	1	0	72
cSH	1700	1700	820	665
Volume to Capacity	0.36	0.18	0.02	0.11
Queue Length 95th (ft)	0	0	1	10
Control Delay (s)	0.0	0.0	0.5	11.1
Lane LOS			A	B
Approach Delay (s)	0.0		0.5	11.1
Approach LOS				B

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	68.6%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	NBT	SBT	NET
Lane Group Flow (vph)	1502	1519	1073
v/c Ratio	0.77	0.67	1.04
Control Delay	24.1	7.8	66.0
Queue Delay	1.6	0.6	24.4
Total Delay	25.6	8.4	90.4
Queue Length 50th (ft)	245	83	~464
Queue Length 95th (ft)	313	m92	#594
Internal Link Dist (ft)	297	110	29
Turn Bay Length (ft)			
Base Capacity (vph)	1955	2275	1033
Starvation Cap Reductn	267	363	155
Spillback Cap Reductn	56	0	77
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.89	0.79	1.22

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	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	1118	279	0	1413	0	219	714	65	0	0	0
Future Volume (vph)	0	1118	279	0	1413	0	219	714	65	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	12	12	12
Grade (%)		1%			-1%			-3%			1%	
Total Lost time (s)		2.0			2.0			7.0				
Lane Util. Factor		0.91			0.91			0.95				
Frpb, ped/bikes		0.98			1.00			1.00				
Flpb, ped/bikes		1.00			1.00			1.00				
Frt		0.97			1.00			0.99				
Flt Protected		1.00			1.00			0.99				
Satd. Flow (prot)		3846			4138			3101				
Flt Permitted		1.00			1.00			0.99				
Satd. Flow (perm)		3846			4138			3101				
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	1202	300	0	1519	0	235	768	70	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1502	0	0	1519	0	0	1073	0	0	0	0
Confl. Peds. (#/hr)	80		117	117		80	16		58	58		16
Confl. Bikes (#/hr)			4			4			2			
Heavy Vehicles (%)	0%	3%	7%	0%	3%	0%	3%	4%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	20	0	0	0	0	0	0	0
Parking (#/hr)		0	0									
Turn Type		NA			NA		Perm	NA				
Protected Phases		15 6 1			15 6 1 2			3 4				
Permitted Phases							3 4					
Actuated Green, G (s)		56.0			64.0			48.0				
Effective Green, g (s)		54.0			57.0			50.0				
Actuated g/C Ratio		0.45			0.48			0.42				
Clearance Time (s)												
Lane Grp Cap (vph)		1730			1965			1292				
v/s Ratio Prot		c0.39			c0.37							
v/s Ratio Perm								0.35				
v/c Ratio		0.87			0.77			0.83				
Uniform Delay, d1		29.8			26.1			31.2				
Progression Factor		0.88			0.35			0.69				
Incremental Delay, d2		6.0			1.9			5.9				
Delay (s)		32.1			11.0			27.2				
Level of Service		C			B			C				
Approach Delay (s)		32.1			11.0			27.2			0.0	
Approach LOS		C			B			C			A	

Intersection Summary			
HCM 2000 Control Delay	23.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	73.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	114	891	149	0	0
Future Volume (Veh/h)	0	114	891	149	0	0
Sign Control	Yield		Free			Free
Grade	-4%		1%			0%
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81
Hourly flow rate (vph)	0	141	1100	184	0	0
Pedestrians	11					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	1					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			111			187
pX, platoon unblocked	0.71	0.71			0.71	
vC, conflicting volume	1203	653			1295	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	474	0			603	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	82			100	
cM capacity (veh/h)	366	764			684	

Direction, Lane #	WB 1	NB 1	NB 2
Volume Total	141	733	551
Volume Left	0	0	0
Volume Right	141	0	184
cSH	764	1700	1700
Volume to Capacity	0.18	0.43	0.32
Queue Length 95th (ft)	17	0	0
Control Delay (s)	10.8	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.8	0.0	
Approach LOS	B		

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	47.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	NBT	SBT	SWT
Lane Group Flow (vph)	1415	1504	942
v/c Ratio	0.63	0.72	0.96
Control Delay	6.2	25.3	38.0
Queue Delay	0.9	0.2	39.2
Total Delay	7.1	25.6	77.2
Queue Length 50th (ft)	70	319	322
Queue Length 95th (ft)	m77	378	#496
Internal Link Dist (ft)	110	479	17
Turn Bay Length (ft)			
Base Capacity (vph)	2241	2090	985
Starvation Cap Reductn	497	0	122
Spillback Cap Reductn	0	126	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.81	0.77	1.09

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	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	1330	0	0	1165	249	0	0	0	255	595	36
Future Volume (vph)	0	1330	0	0	1165	249	0	0	0	255	595	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	11	11	11
Grade (%)		2%			-2%			0%			-1%	
Total Lost time (s)		2.0			2.0						7.0	
Lane Util. Factor		0.91			0.91						0.95	
Frpb, ped/bikes		1.00			0.99						1.00	
Flpb, ped/bikes		1.00			1.00						1.00	
Frt		1.00			0.97						0.99	
Flt Protected		1.00			1.00						0.99	
Satd. Flow (prot)		4076			4110						2956	
Flt Permitted		1.00			1.00						0.99	
Satd. Flow (perm)		4076			4110						2956	
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)	0	1415	0	0	1239	265	0	0	0	271	633	38
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1415	0	0	1504	0	0	0	0	0	942	0
Confl. Peds. (#/hr)	98		145	145		98	77		4	4		77
Confl. Bikes (#/hr)			3			3						
Heavy Vehicles (%)	0%	3%	0%	0%	3%	2%	0%	0%	0%	5%	4%	3%
Bus Blockages (#/hr)	0	20	0	0	0	0	0	0	0	0	0	0
Turn Type		NA			NA					Perm	NA	
Protected Phases		15 6 1 2			15 6 1						3 4	
Permitted Phases										3 4		
Actuated Green, G (s)		64.0			56.0						48.0	
Effective Green, g (s)		57.0			54.0						50.0	
Actuated g/C Ratio		0.48			0.45						0.42	
Clearance Time (s)												
Lane Grp Cap (vph)		1936			1849						1231	
v/s Ratio Prot		c0.35			c0.37							
v/s Ratio Perm											0.32	
v/c Ratio		0.73			0.81						0.77	
Uniform Delay, d1		25.3			28.6						30.0	
Progression Factor		0.29			1.00						0.47	
Incremental Delay, d2		1.4			4.0						3.9	
Delay (s)		8.7			32.7						18.1	
Level of Service		A			C						B	
Approach Delay (s)		8.7			32.7			0.0			18.1	
Approach LOS		A			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	20.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	73.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	116	0	0	696	199
Future Volume (Veh/h)	0	116	0	0	696	199
Sign Control	Stop			Free	Free	
Grade	-4%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	123	0	0	740	212
Pedestrians	267					
Lane Width (ft)	10.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	19					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				218	110	
pX, platoon unblocked						
vC, conflicting volume	1113	743	1219			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1113	743	1219			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	58	100			
cM capacity (veh/h)	168	295	472			

Direction, Lane #	EB 1	SB 1	SB 2
Volume Total	123	493	459
Volume Left	0	0	0
Volume Right	123	0	212
cSH	295	1700	1700
Volume to Capacity	0.42	0.29	0.27
Queue Length 95th (ft)	49	0	0
Control Delay (s)	25.6	0.0	0.0
Lane LOS	D		
Approach Delay (s)	25.6	0.0	
Approach LOS	D		

Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	45.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	NBT	NBR	SBR	SWT
Lane Group Flow (vph)	197	1179	175	914
v/c Ratio	0.25	0.98	0.13	0.75
Control Delay	18.6	32.6	0.2	34.5
Queue Delay	2.7	23.4	0.1	3.3
Total Delay	21.3	56.1	0.3	37.7
Queue Length 50th (ft)	108	597	0	311
Queue Length 95th (ft)	m109	165	0	234
Internal Link Dist (ft)	1			419
Turn Bay Length (ft)				
Base Capacity (vph)	794	1204	1305	1216
Starvation Cap Reductn	483	91	0	0
Spillback Cap Reductn	0	0	431	206
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.63	1.06	0.20	0.90

Intersection Summary

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

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	124	743	0	0	110	0	0	0	0	571	5
Future Volume (vph)	0	124	743	0	0	110	0	0	0	0	571	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			0%			1%	
Total Lost time (s)		2.0	7.0			2.0					2.0	
Lane Util. Factor		0.95	0.95			1.00					0.95	
Frpb, ped/bikes		1.00	1.00			1.00					1.00	
Flpb, ped/bikes		1.00	1.00			1.00					1.00	
Frt		1.00	0.85			0.86					1.00	
Flt Protected		1.00	1.00			1.00					1.00	
Satd. Flow (prot)		1444	1257			1305					2918	
Flt Permitted		1.00	1.00			1.00					1.00	
Satd. Flow (perm)		1444	1257			1305					2918	
Peak-hour factor, PHF	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63
Adj. Flow (vph)	0	197	1179	0	0	175	0	0	0	0	906	8
RTOR Reduction (vph)	0	0	209	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	197	970	0	0	175	0	0	0	0	913	0
Confl. Peds. (#/hr)			7	7			7					7
Bus Blockages (#/hr)	0	6	0	0	0	9	0	0	0	0	6	6
Turn Type		NA	custom			Free					NA	
Protected Phases		4 15 6 1	11 4 15								2 3	
Permitted Phases						Free						
Actuated Green, G (s)		61.0	97.0			120.0					43.0	
Effective Green, g (s)		59.0	97.0			120.0					45.0	
Actuated g/C Ratio		0.49	0.81			1.00					0.38	
Clearance Time (s)												
Lane Grp Cap (vph)		709	1016			1305					1094	
v/s Ratio Prot		c0.14	c0.77								0.31	
v/s Ratio Perm						0.13						
v/c Ratio		0.28	0.95			0.13					0.83	
Uniform Delay, d1		18.0	9.7			0.0					34.1	
Progression Factor		1.25	14.17			1.00					1.00	
Incremental Delay, d2		0.8	17.1			0.2					7.6	
Delay (s)		23.3	153.9			0.2					41.7	
Level of Service		C	F			A					D	
Approach Delay (s)		135.2			0.2			0.0			41.7	
Approach LOS		F			A			A			D	

Intersection Summary			
HCM 2000 Control Delay	90.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	49.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

APPENDIX G
ON-SITE QUEUE ANALYSIS

M/M/1 Queuing Model

- Markovian Arrivals and Departures
  - Arrivals follow a Poisson process or exponential inter-arrival times
  - The Poisson distribution estimates the probability of cars arriving following an exponential distribution
  - The Poisson process assumes a "memoryless" time between arrivals
    - e.g. the time between the arrivals of Vehicle 2 and Vehicle 3 is independent of the time between the arrivals of Vehicle 1 and 2
- Single Server Queue
  - First-In/First-Out service
  - Does <u>not</u> mean that only one car is loaded or unloaded at a time

M/M/1 Queuing Model

λ = arrival rate

μ = service rate

ρ = utilization = λ / μ

$Q_{99} = [\ln(1-0.99)/\ln(\rho)] - 1$

Existing vs. Proposed Traffic Data

	Existing	Proposed
AM Peak Hour Vehicles	88	112
PM Peak Hour Vehicles	95	74

M/M/1 Queuing Model

Existing Model Calibration – AM Peak

λ = 88 vph

λ_{adj} = 135 vph (accounts for uneven distribution of traffic over peak hour)

μ = 240 vph (assumes 4 vehs unload at once; 60 sec unloading time)

ρ = 0.564

Q_{99} = 8 vehs

Q_{obs} = 9 vehs

Existing Model Calibration – PM Peak

λ = 95 vph

λ_{adj} = 158 vph (accounts for uneven distribution of traffic over peak hour)

μ = 179 vph (assumes 6 vehs load at once; 121 sec loading time)

ρ = 0.887

Q_{99} = 38 vehs

Q_{obs} = 38 vehs

M/M/1 Queuing Model

Projected Queues – AM Peak

λ = 108 vph

λ_{adj} = 166 vph (accounts for uneven distribution of traffic over peak hour)

μ = 240 vph (assumes 4 vehs unload at once; 60 sec unloading time)

ρ = 0.692

Q_{99} = 12 vehs

Projected Queues – PM Peak

λ = 74 vph

λ_{adj} = 123 vph (accounts for uneven distribution of traffic over peak hour)

μ = 179 vph (assumes 6 vehs load at once; 121 sec loading time)

ρ = 0.691

Q_{99} = 17 vehs

Wells + Associates, Inc

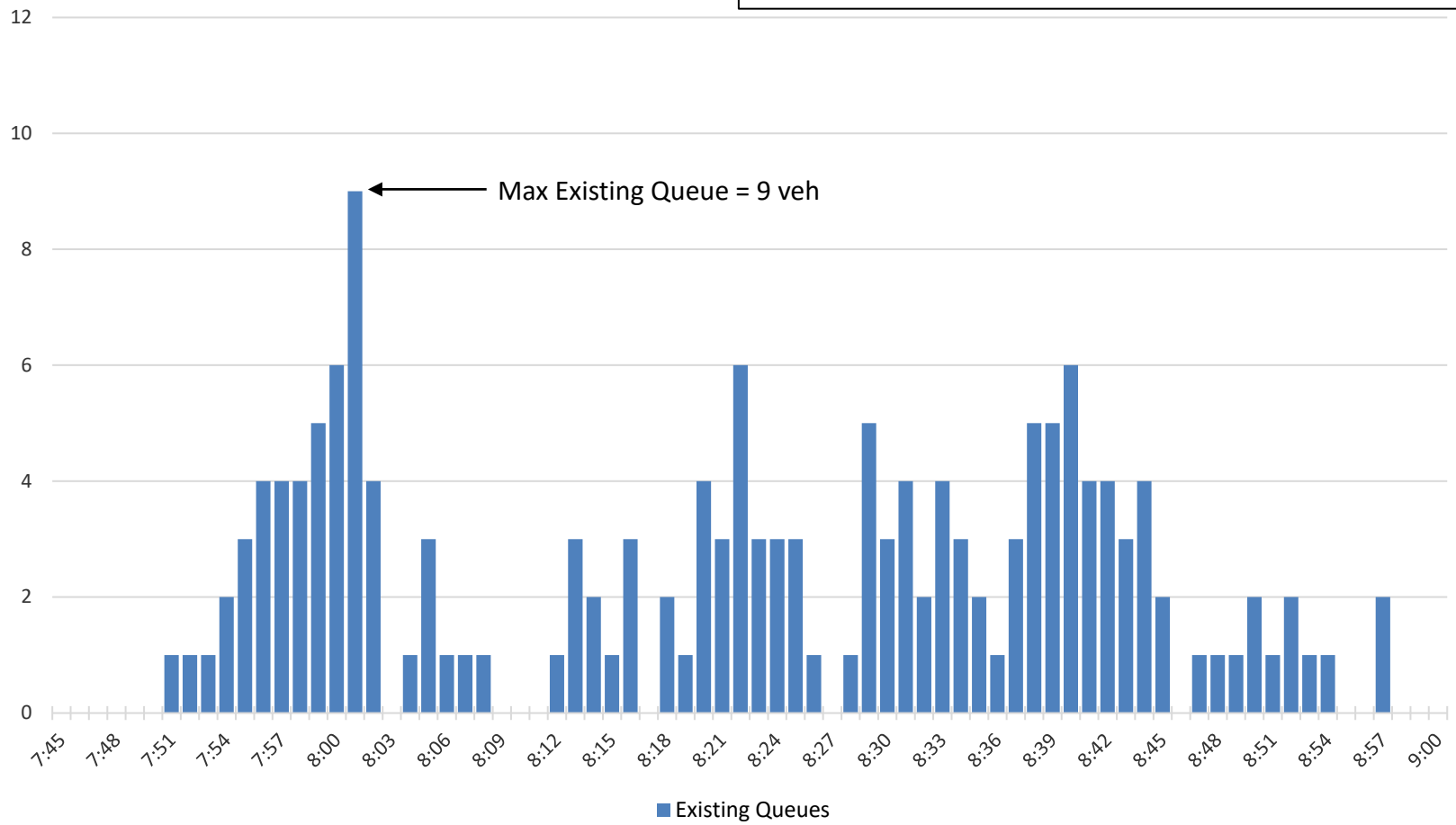
INTERSECTION:	The River School - Front Drop Off and Pick Up	Existing AM Volume	88		
PROJECT:	#8182 - The River School	Existing PM Volume	95		
APPROACH:	Eastbound	Projected AM Volume	112	Percent Change	27.3%
LANE(S):	One	Projected PM Volume	74	Percent Change	-22.1%
DIRECTION:	Thru				
TIME:	7:45-9:00 AM; 2:30-3:30 PM				
WEATHER:	Clear				
COUNTER(S):	Agan & Majda				
DATE:	3/14/2021				

Existing Queues				Projected Queues				PM Queue Adjusted for Staggard Dismissals		
AM Queue		PM Queue		AM Queue		PM Queue		PM Queue		
Time	Max Observed	Time	Max Observed	Time	Projected Max	Time	Projected Max	÷ 2 (Roundup)	Shift Second Half	Re-combine
7:45 AM	0	2:30 PM	7	7:45 AM	0	2:30 PM	5	3	0	3
7:46 AM	0	2:31 PM	8	7:46 AM	0	2:31 PM	6	4	0	4
7:47 AM	0	2:32 PM	9	7:47 AM	0	2:32 PM	7	4	0	4
7:48 AM	0	2:33 PM	14	7:48 AM	0	2:33 PM	11	6	0	6
7:49 AM	0	2:34 PM	16	7:49 AM	0	2:34 PM	12	7	0	7
7:50 AM	0	2:35 PM	16	7:50 AM	0	2:35 PM	12	7	0	7
7:51 AM	1	2:36 PM	16	7:51 AM	1	2:36 PM	12	7	0	7
7:52 AM	1	2:37 PM	18	7:52 AM	1	2:37 PM	14	8	0	8
7:53 AM	1	2:38 PM	19	7:53 AM	1	2:38 PM	15	8	0	8
7:54 AM	2	2:39 PM	19	7:54 AM	3	2:39 PM	15	8	0	8
7:55 AM	3	2:40 PM	21	7:55 AM	4	2:40 PM	16	9	0	9
7:56 AM	4	2:41 PM	23	7:56 AM	5	2:41 PM	18	9	0	9
7:57 AM	4	2:42 PM	25	7:57 AM	5	2:42 PM	19	10	0	10
7:58 AM	4	2:43 PM	28	7:58 AM	5	2:43 PM	22	11	0	11
7:59 AM	5	2:44 PM	28	7:59 AM	6	2:44 PM	22	11	0	11
8:00 AM	6	2:45 PM	32	8:00 AM	8	2:45 PM	25	13	0	13
8:01 AM	9	2:46 PM	37	8:01 AM	11	2:46 PM	29	15	0	15
8:02 AM	4	2:47 PM	37	8:02 AM	5	2:47 PM	29	15	0	15
8:03 AM	0	2:48 PM	38	8:03 AM	0	2:48 PM	30	15	0	15
8:04 AM	1	2:49 PM	37	8:04 AM	1	2:49 PM	29	15	0	15
8:05 AM	3	2:50 PM	35	8:05 AM	4	2:50 PM	27	14	0	14
8:06 AM	1	2:51 PM	31	8:06 AM	1	2:51 PM	24	13	0	13
8:07 AM	1	2:52 PM	27	8:07 AM	1	2:52 PM	21	11	0	11
8:08 AM	1	2:53 PM	29	8:08 AM	1	2:53 PM	23	12	0	12
8:09 AM	0	2:54 PM	29	8:09 AM	0	2:54 PM	23	12	0	12
8:10 AM	0	2:55 PM	27	8:10 AM	0	2:55 PM	21	11	3	14
8:11 AM	0	2:56 PM	28	8:11 AM	0	2:56 PM	22	11	4	15
8:12 AM	1	2:57 PM	23	8:12 AM	1	2:57 PM	18	9	4	13
8:13 AM	3	2:58 PM	24	8:13 AM	4	2:58 PM	19	10	6	16
8:14 AM	2	2:59 PM	25	8:14 AM	3	2:59 PM	19	10	7	17
8:15 AM	1	3:00 PM	22	8:15 AM	1	3:00 PM	17	9	7	16
8:16 AM	3	3:01 PM	21	8:16 AM	4	3:01 PM	16	9	7	16
8:17 AM	0	3:02 PM	19	8:17 AM	0	3:02 PM	15	8	8	16
8:18 AM	2	3:03 PM	17	8:18 AM	3	3:03 PM	13	7	8	15

Existing Queues				Projected Queues				PM Queue Adjusted for Staggard Dismissals		
AM Queue		PM Queue		AM Queue		PM Queue		PM Queue		
Time	Max Observed	Time	Max Observed	Time	Projected Max	Time	Projected Max	÷ 2 (Roundup)	Shift Second Half	Re-combine
8:19 AM	1	3:04 PM	17	8:19 AM	1	3:04 PM	13	7	8	15
8:20 AM	4	3:05 PM	15	8:20 AM	5	3:05 PM	12	6	9	15
8:21 AM	3	3:06 PM	11	8:21 AM	4	3:06 PM	9	5	9	14
8:22 AM	6	3:07 PM	10	8:22 AM	8	3:07 PM	8	4	10	14
8:23 AM	3	3:08 PM	10	8:23 AM	4	3:08 PM	8	4	11	15
8:24 AM	3	3:09 PM	7	8:24 AM	4	3:09 PM	5	3	11	14
8:25 AM	3	3:10 PM	7	8:25 AM	4	3:10 PM	5	3	13	16
8:26 AM	1	3:11 PM	2	8:26 AM	1	3:11 PM	2	1	15	16
8:27 AM	0	3:12 PM	5	8:27 AM	0	3:12 PM	4	2	15	17
8:28 AM	1	3:13 PM	4	8:28 AM	1	3:13 PM	3	2	15	17
8:29 AM	5	3:14 PM	1	8:29 AM	6	3:14 PM	1	1	15	16
8:30 AM	3	3:15 PM	1	8:30 AM	4	3:15 PM	1	1	14	15
8:31 AM	4	3:16 PM	0	8:31 AM	5	3:16 PM	0	0	13	13
8:32 AM	2	3:17 PM	0	8:32 AM	3	3:17 PM	0	0	11	11
8:33 AM	4	3:18 PM	0	8:33 AM	5	3:18 PM	0	0	12	12
8:34 AM	3	3:19 PM	0	8:34 AM	4	3:19 PM	0	0	12	12
8:35 AM	2	3:20 PM	1	8:35 AM	3	3:20 PM	1	1	11	12
8:36 AM	1	3:21 PM	0	8:36 AM	1	3:21 PM	0	0	11	11
8:37 AM	3	3:22 PM	0	8:37 AM	4	3:22 PM	0	0	9	9
8:38 AM	5	3:23 PM	1	8:38 AM	6	3:23 PM	1	1	10	11
8:39 AM	5	3:24 PM	0	8:39 AM	6	3:24 PM	0	0	10	10
8:40 AM	6	3:25 PM	0	8:40 AM	8	3:25 PM	0	0	9	9
8:41 AM	4	3:26 PM	0	8:41 AM	5	3:26 PM	0	0	9	9
8:42 AM	4	3:27 PM	0	8:42 AM	5	3:27 PM	0	0	8	8
8:43 AM	3	3:28 PM	1	8:43 AM	4	3:28 PM	1	1	7	8
8:44 AM	4	3:29 PM	0	8:44 AM	5	3:29 PM	0	0	7	7
8:45 AM	2	3:30 PM	0	8:45 AM	3	3:30 PM	0	0	6	6
8:46 AM	0			8:46 AM	0	12:00 AM	0	0	5	5
8:47 AM	1			8:47 AM	1	12:00 AM	0	0	4	4
8:48 AM	1			8:48 AM	1	12:00 AM	0	0	4	4
8:49 AM	1			8:49 AM	1	12:00 AM	0	0	3	3
8:50 AM	2			8:50 AM	3	12:00 AM	0	0	3	3
8:51 AM	1			8:51 AM	1	12:00 AM	0	0	1	1
8:52 AM	2			8:52 AM	3	12:00 AM	0	0	2	2
8:53 AM	1			8:53 AM	1	12:00 AM	0	0	2	2
8:54 AM	1			8:54 AM	1	12:00 AM	0	0	1	1
8:55 AM	0			8:55 AM	0	12:00 AM	0	0	1	1
8:56 AM	0			8:56 AM	0	12:00 AM	0	0	0	0
8:57 AM	2			8:57 AM	3	12:00 AM	0	0	0	0
8:58 AM	0			8:58 AM	0	12:00 AM	0	0	0	0
8:59 AM	0			8:59 AM	0	12:00 AM	0	0	0	0
9:00 AM	0			9:00 AM	0	12:00 AM	0	0	1	1
Max Q	9	**Max Q**	38	**Max Q**	12	**Max Q**	30	15	15	17

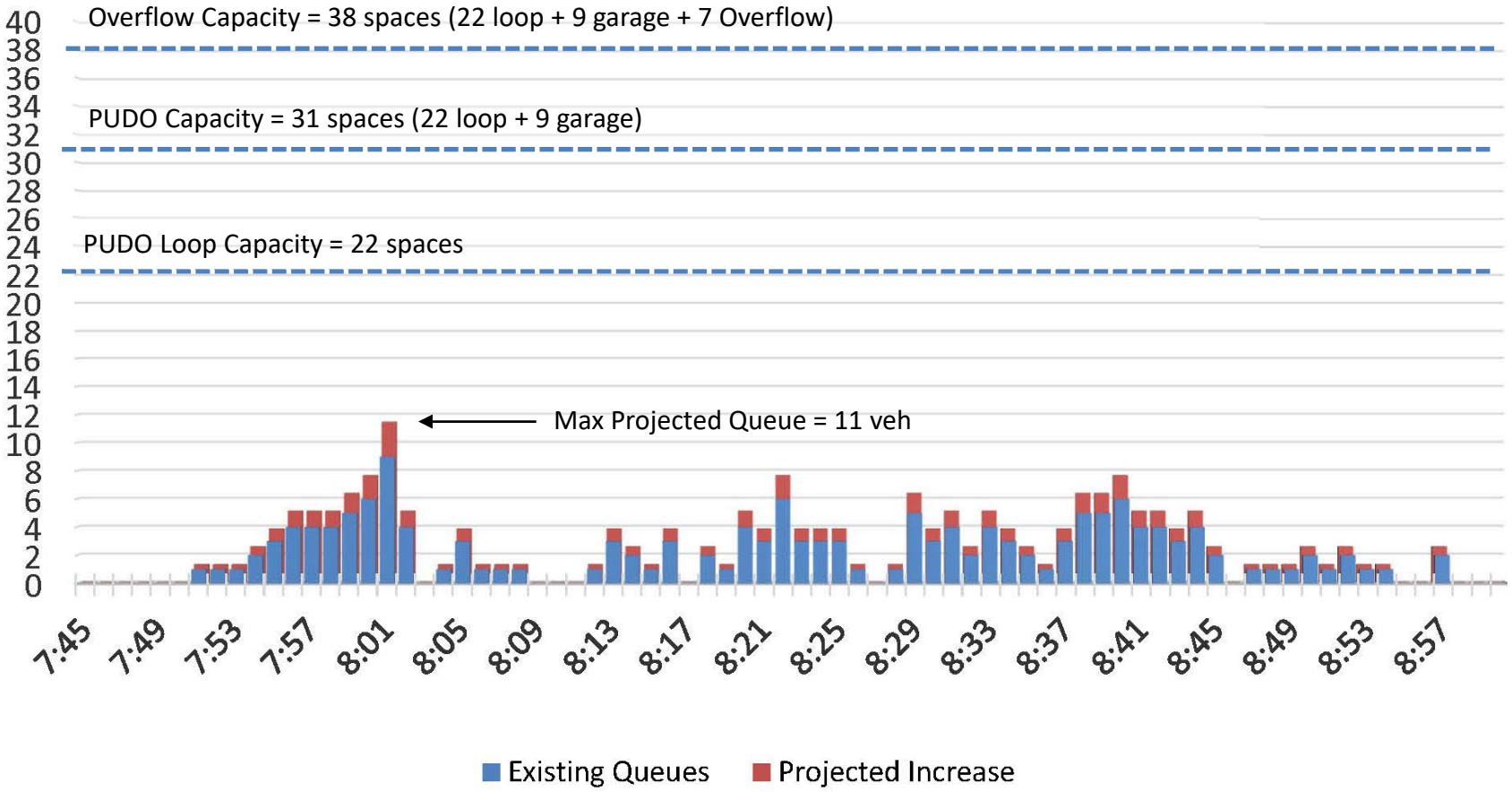
Existing AM Peak Hour

Total number of vehicles dropping off = 88



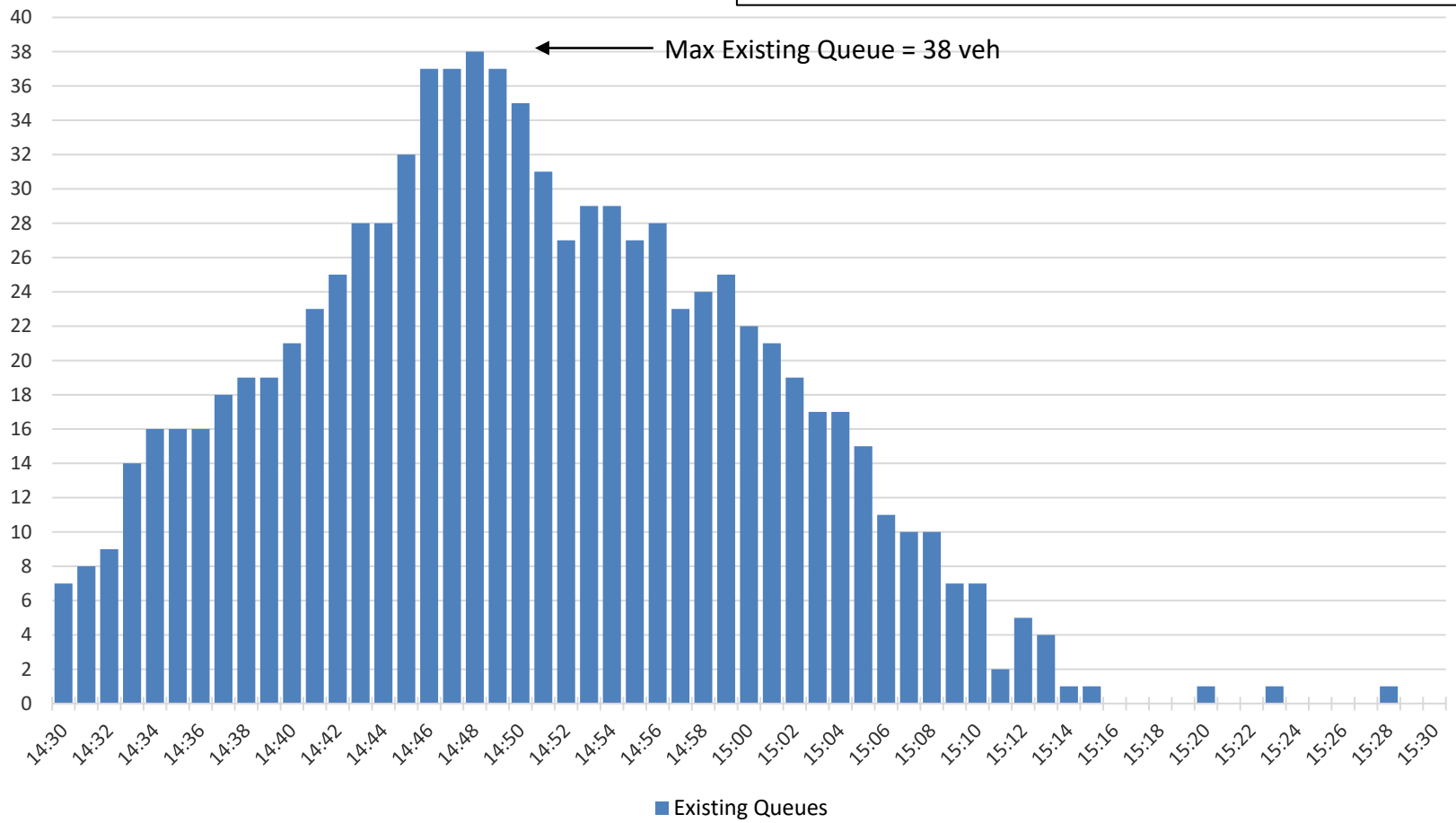
Projected AM Peak Hour

Total number of vehicles dropping off = 112



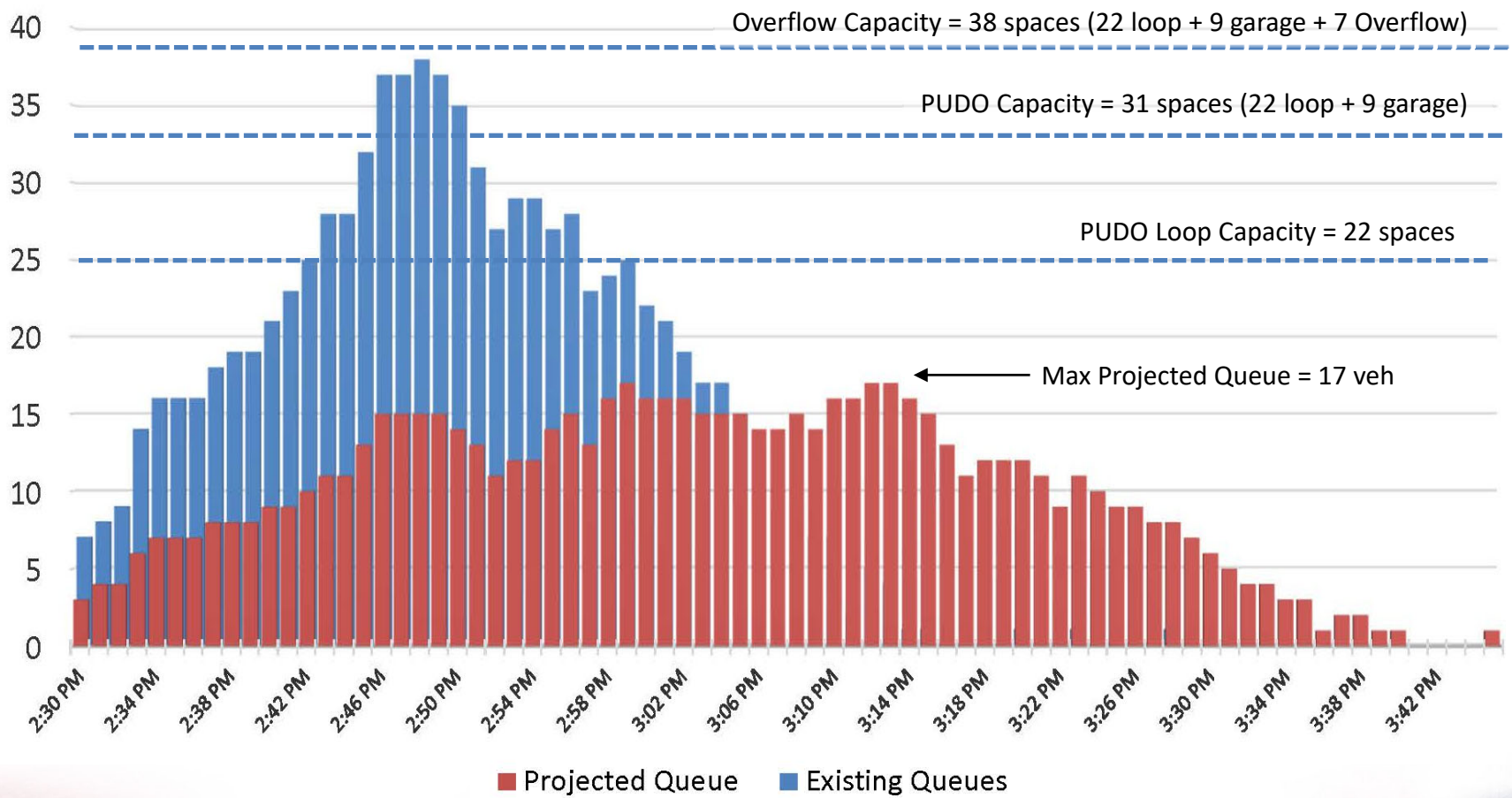
Existing PM Peak Hour

Total number of vehicles picking up = 95



Projected PM Peak Hour

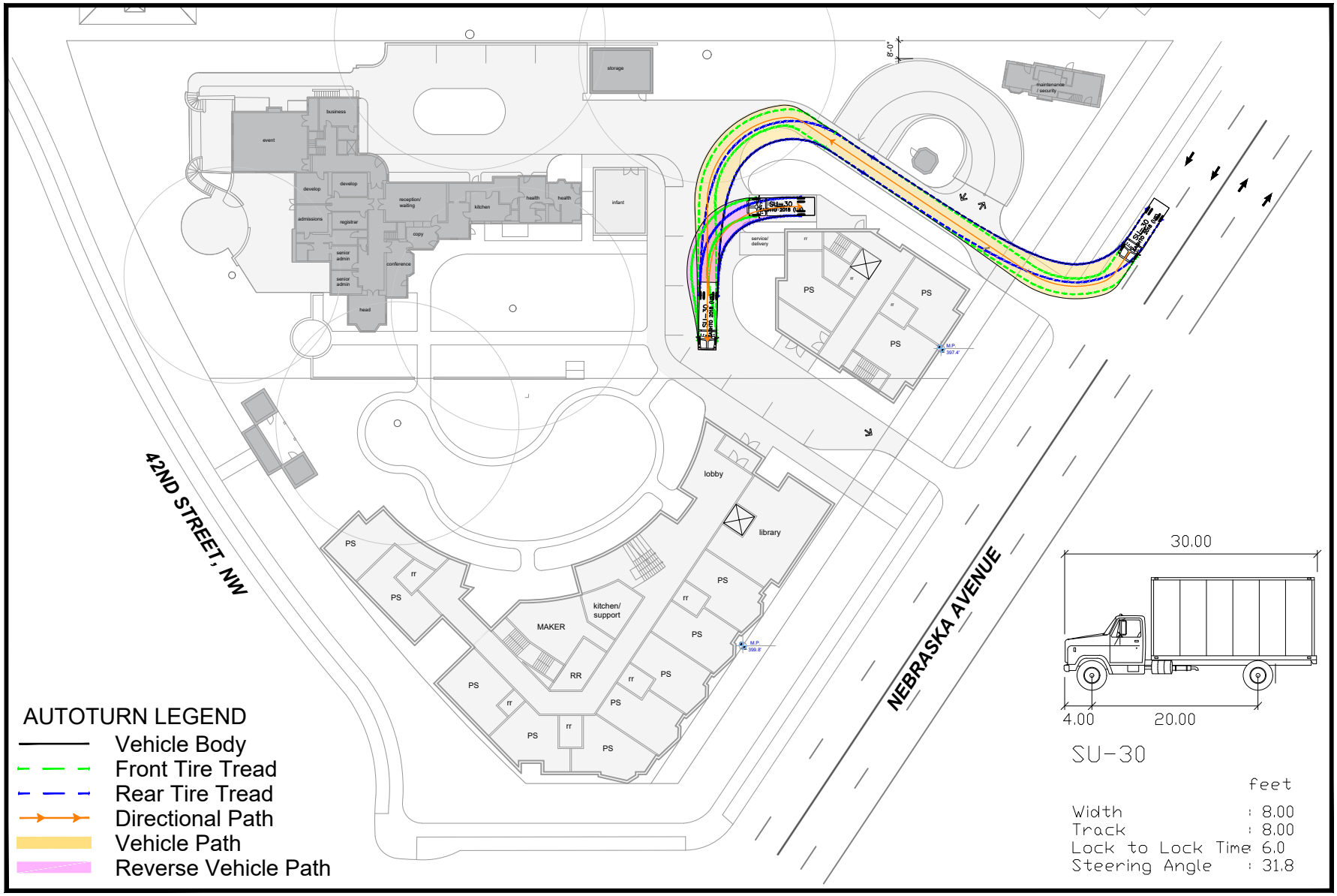
Total number of vehicles picking up = 74



MEETING THE NEEDS OF A MOBILE SOCIETY

APPENDIX H
SWEPT AREA DIAGRAMS

O:\PROJECTS\8001-8500\8182 THE RIVER SCHOOL\AUTOTURN\21.0909 - RIVER SCHOOL PUDO LOOP AND HERITAGE TREE AUTOTURN.DWG



SCALE: 1/64" = 1'-0"

Figure H-1A

Vehicle: SU-30

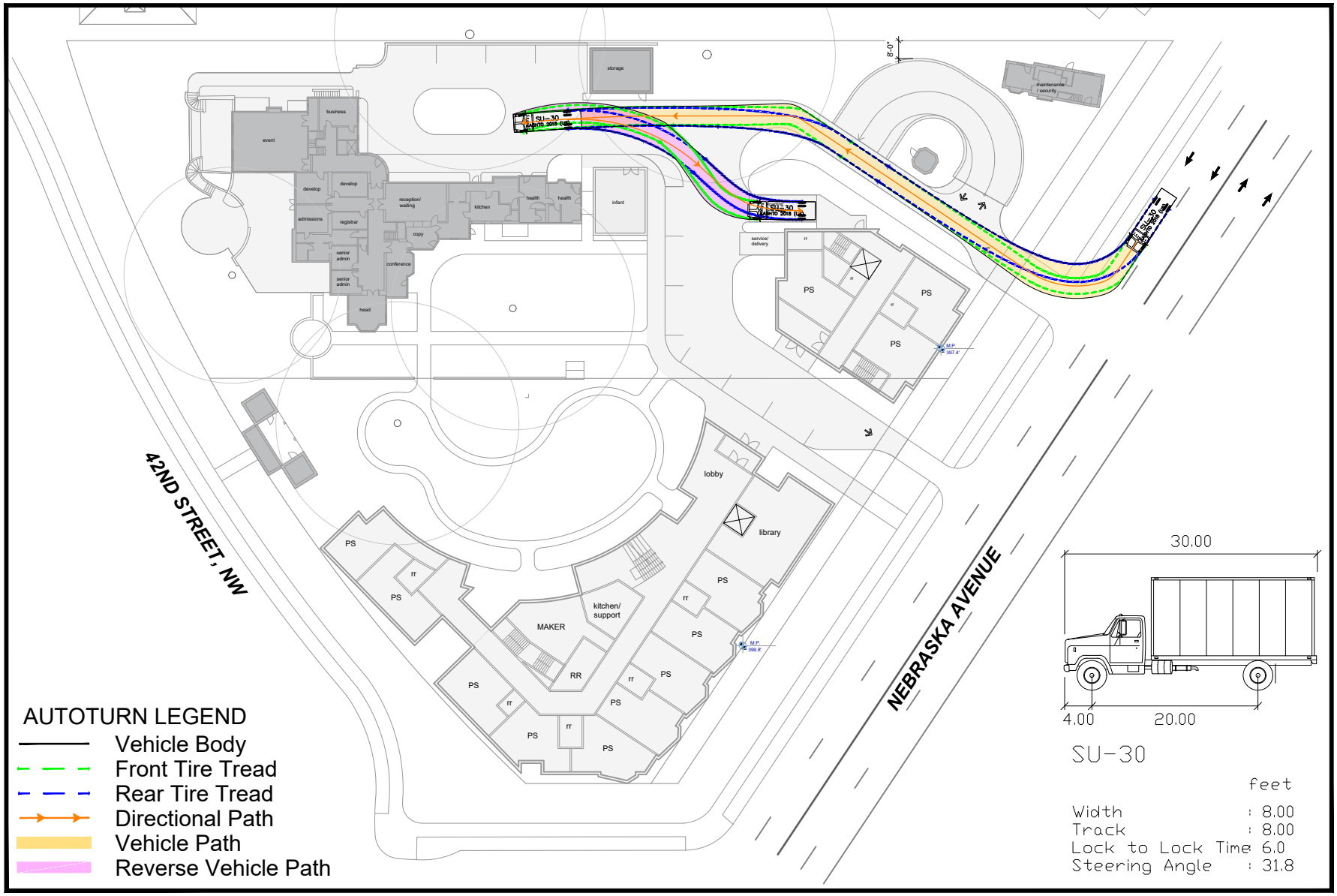
Inbound Path - Option 1

NORTH

The River School

Washington, DC

O:\PROJECTS\8001-8500\8182 THE RIVER SCHOOL\AUTOTURN\21.0909 - RIVER SCHOOL PUDO LOOP AND HERITAGE TREE AUTOTURN.DWG



SCALE: 1/64" = 1'-0"

Figure H-1B

Vehicle: SU-30

Inbound Path - Option 2

NORTH

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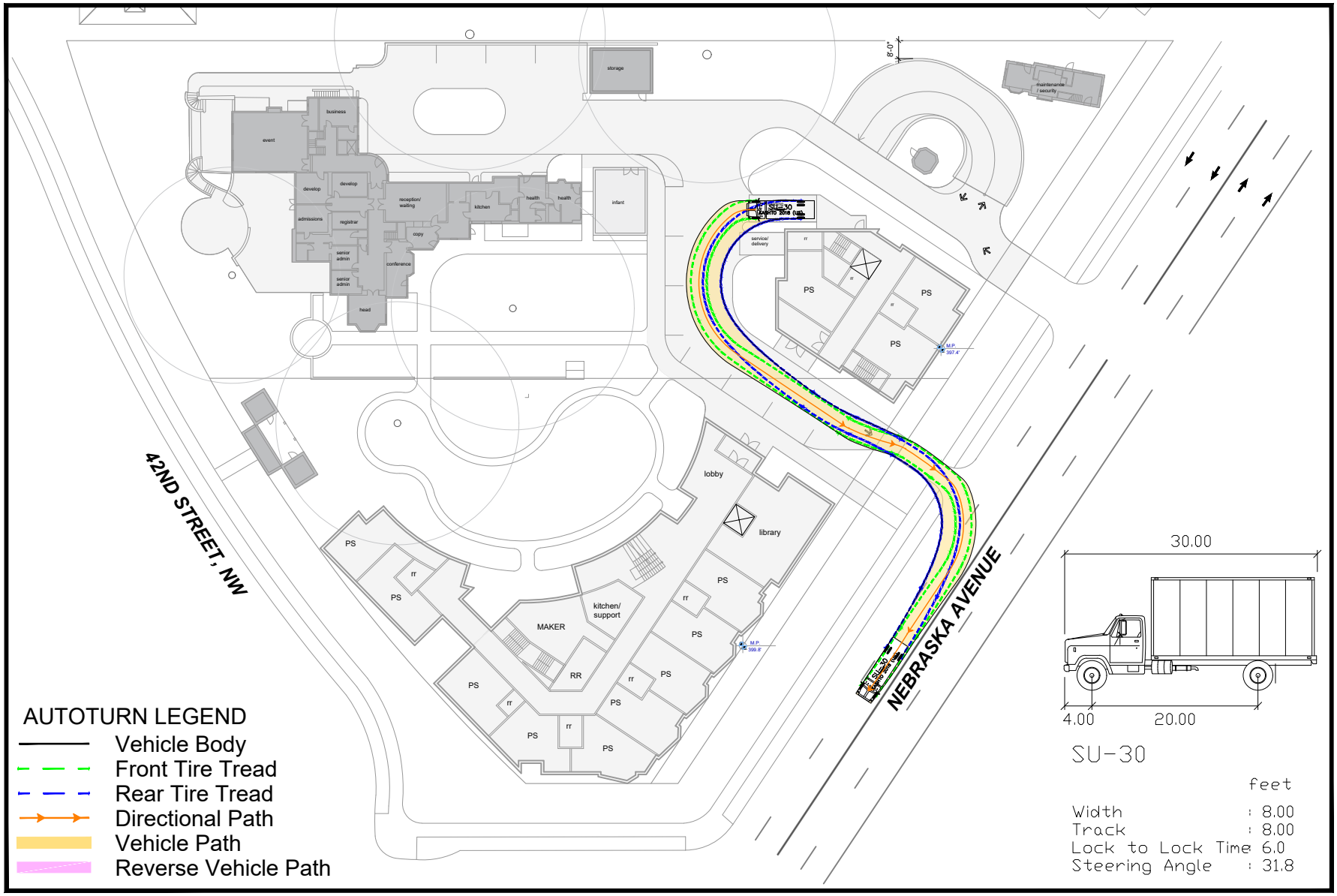


SCALE: 1/64" = 1'-0"

Figure H-1C
Vehicle: SU-30
Outbound Path

NORTH

The River School
Washington, DC

APPENDIX I
TOTAL FUTURE LEVELS OF SERVICE AND QUEUE REPORTS

Lane Group	NBT	SBT	SET	NWT
Lane Group Flow (vph)	217	218	421	254
v/c Ratio	0.76	0.68	0.53	0.27
Control Delay	53.6	46.2	12.7	8.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	53.6	46.2	12.7	8.8
Queue Length 50th (ft)	128	126	132	64
Queue Length 95th (ft)	#244	#224	213	103
Internal Link Dist (ft)	689	132	177	285
Turn Bay Length (ft)				
Base Capacity (vph)	285	320	801	931
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.76	0.68	0.53	0.27

Intersection Summary

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

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	68	135	1	9	193	3	3	313	80	25	183	30
Future Volume (vph)	68	135	1	9	193	3	3	313	80	25	183	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-4%			5%			7%			-7%	
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		1.00			1.00			0.99			1.00	
Flpb, ped/bikes		0.98			1.00			1.00			1.00	
Frt		1.00			1.00			0.97			0.98	
Flt Protected		0.98			1.00			1.00			0.99	
Satd. Flow (prot)		1551			1299			1254			1544	
Flt Permitted		0.72			0.98			1.00			0.94	
Satd. Flow (perm)		1143			1280			1252			1455	
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)	72	144	1	10	205	3	3	333	85	27	195	32
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	217	0	0	218	0	0	421	0	0	254	0
Confl. Peds. (#/hr)	58		42	42		58	20		8	8		20
Heavy Vehicles (%)	2%	0%	0%	0%	1%	0%	0%	0%	5%	0%	5%	2%
Parking (#/hr)				10	10	10	10	10	10			
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		23.0			23.0			62.0			62.0	
Effective Green, g (s)		25.0			25.0			64.0			64.0	
Actuated g/C Ratio		0.25			0.25			0.64			0.64	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Lane Grp Cap (vph)		285			320			801			931	
v/s Ratio Prot												
v/s Ratio Perm		c0.19			0.17			c0.34			0.17	
v/c Ratio		0.76			0.68			0.53			0.27	
Uniform Delay, d1		34.7			33.9			9.8			7.9	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		17.4			11.2			2.5			0.7	
Delay (s)		52.1			45.1			12.2			8.6	
Level of Service		D			D			B			A	
Approach Delay (s)		52.1			45.1			12.2			8.6	
Approach LOS		D			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	25.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	80.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	311	203	308	252
v/c Ratio	0.64	0.40	0.73	0.63
Control Delay	20.9	14.6	30.7	25.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	20.9	14.6	30.7	25.6
Queue Length 50th (ft)	84	48	96	75
Queue Length 95th (ft)	144	86	#180	130
Internal Link Dist (ft)	418	274	520	689
Turn Bay Length (ft)				
Base Capacity (vph)	484	512	420	399
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.64	0.40	0.73	0.63

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)	104	135	19	29	123	17	13	226	17	0	169	40
Future Volume (vph)	104	135	19	29	123	17	13	226	17	0	169	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		9%			-8%			-4%			0%	
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		0.98			0.97			0.97			0.93	
Flpb, ped/bikes		0.93			0.98			0.99			1.00	
Frt		0.99			0.99			0.99			0.97	
Flt Protected		0.98			0.99			1.00			1.00	
Satd. Flow (prot)		1349			1286			1288			1198	
Flt Permitted		0.81			0.91			0.98			1.00	
Satd. Flow (perm)		1119			1183			1262			1198	
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	125	163	23	35	148	20	16	272	20	0	204	48
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	311	0	0	203	0	0	308	0	0	252	0
Confl. Peds. (#/hr)	129		118	118		129	159		273	273		159
Heavy Vehicles (%)	0%	0%	0%	0%	3%	0%	0%	1%	6%	0%	2%	4%
Parking (#/hr)				10	10	10	10	10	10	10	10	10
Turn Type	Perm	NA		Perm	NA		Perm	NA			NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		24.0			24.0			18.0			18.0	
Effective Green, g (s)		26.0			26.0			20.0			20.0	
Actuated g/C Ratio		0.43			0.43			0.33			0.33	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Lane Grp Cap (vph)		484			512			420			399	
v/s Ratio Prot											0.21	
v/s Ratio Perm		c0.28			0.17			c0.24				
v/c Ratio		0.64			0.40			0.73			0.63	
Uniform Delay, d1		13.4			11.6			17.6			16.9	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		6.4			2.3			10.8			7.4	
Delay (s)		19.8			13.9			28.5			24.3	
Level of Service		B			B			C			C	
Approach Delay (s)		19.8			13.9			28.5			24.3	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	22.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	11.2
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	141	10	29	90	17	12	143	42	52	127	23
Future Vol, veh/h	40	141	10	29	90	17	12	143	42	52	127	23
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	0	2	0	4	1	0	0	3	0	0	0	0
Mvmt Flow	48	168	12	35	107	20	14	170	50	62	151	27
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	11.4	10.6	11.1	11.4
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	6%	21%	21%	26%
Vol Thru, %	73%	74%	66%	63%
Vol Right, %	21%	5%	12%	11%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	197	191	136	202
LT Vol	12	40	29	52
Through Vol	143	141	90	127
RT Vol	42	10	17	23
Lane Flow Rate	235	227	162	240
Geometry Grp	1	1	1	1
Degree of Util (X)	0.343	0.346	0.252	0.358
Departure Headway (Hd)	5.27	5.471	5.61	5.354
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	680	657	638	671
Service Time	3.316	3.516	3.66	3.399
HCM Lane V/C Ratio	0.346	0.346	0.254	0.358
HCM Control Delay	11.1	11.4	10.6	11.4
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	1.5	1.5	1	1.6

Intersection	
Intersection Delay, s/veh	3.8
Intersection LOS	A

Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	63	198	193
Demand Flow Rate, veh/h	63	198	193
Vehicles Circulating, veh/h	138	56	2
Vehicles Exiting, veh/h	57	145	252
Ped Vol Crossing Leg, #/h	3	0	3
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	3.4	4.0	3.7
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	LR	LT	TR
Assumed Moves	LR	LT	TR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	63	198	193
Cap Entry Lane, veh/h	1199	1303	1377
Entry HV Adj Factor	1.000	1.000	1.000
Flow Entry, veh/h	63	198	193
Cap Entry, veh/h	1198	1303	1376
V/C Ratio	0.053	0.152	0.140
Control Delay, s/veh	3.4	4.0	3.7
LOS	A	A	A
95th %tile Queue, veh	0	1	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	14	20	149	55	38	86
Future Volume (Veh/h)	14	20	149	55	38	86
Sign Control	Stop		Free			Free
Grade	-4%		1%			1%
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	16	22	167	62	43	97
Pedestrians	5		5			5
Lane Width (ft)	10.0		10.0			10.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	0		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	391	208			234	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	391	208			234	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	97			97	
cM capacity (veh/h)	594	832			1341	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	38	229	140
Volume Left	16	0	43
Volume Right	22	62	0
cSH	712	1700	1341
Volume to Capacity	0.05	0.13	0.03
Queue Length 95th (ft)	4	0	2
Control Delay (s)	10.3	0.0	2.6
Lane LOS	B		A
Approach Delay (s)	10.3	0.0	2.6
Approach LOS	B		

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	34.9%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	3.7
Intersection LOS	A

Approach	NB	SB	SE
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	187	109	92
Demand Flow Rate, veh/h	191	109	92
Vehicles Circulating, veh/h	46	11	107
Vehicles Exiting, veh/h	153	226	13
Ped Vol Crossing Leg, #/h	6	0	0
Ped Cap Adj	0.999	1.000	1.000
Approach Delay, s/veh	4.0	3.3	3.5
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	LT	TR	LR
Assumed Moves	LT	TR	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	191	109	92
Cap Entry Lane, veh/h	1317	1364	1237
Entry HV Adj Factor	0.982	1.000	1.000
Flow Entry, veh/h	187	109	92
Cap Entry, veh/h	1291	1364	1237
V/C Ratio	0.145	0.080	0.074
Control Delay, s/veh	4.0	3.3	3.5
LOS	A	A	A
95th %tile Queue, veh	1	0	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	292	40	33	194	147	7	66	2	27	105	0
Future Volume (Veh/h)	11	292	40	33	194	147	7	66	2	27	105	0
Sign Control		Free			Free			Stop			Stop	
Grade		6%			-2%			-1%			-2%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	12	314	43	35	209	158	8	71	2	29	113	0
Pedestrians		6			1			3			9	
Lane Width (ft)		10.0			10.0			10.0			10.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					176							
pX, platoon unblocked	0.92						0.92	0.92		0.92	0.92	0.92
vC, conflicting volume	376			360			783	808	340	765	751	303
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	273			360			717	745	340	698	682	193
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			96	76	100	89	65	100
cM capacity (veh/h)	1185			1207			223	301	706	257	325	774

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	369	402	81	142
Volume Left	12	35	8	29
Volume Right	43	158	2	0
cSH	1185	1207	295	308
Volume to Capacity	0.01	0.03	0.27	0.46
Queue Length 95th (ft)	1	2	27	58
Control Delay (s)	0.4	1.0	21.8	26.3
Lane LOS	A	A	C	D
Approach Delay (s)	0.4	1.0	21.8	26.3
Approach LOS			C	D

Intersection Summary			
Average Delay	6.1		
Intersection Capacity Utilization	59.4%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	95	941	995	0	0	219
Future Volume (Veh/h)	95	941	995	0	0	219
Sign Control		Free	Free		Stop	
Grade		0%	0%		1%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	103	1023	1082	0	0	238
Pedestrians					20	
Lane Width (ft)					10.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			310			
pX, platoon unblocked	0.83				0.83	0.83
vC, conflicting volume	1102				2331	561
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	722				2197	73
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	86				100	70
cM capacity (veh/h)	720				28	801

Direction, Lane #	EB 1	WB 1	WB 2	SB 1
Volume Total	1126	721	361	238
Volume Left	103	0	0	0
Volume Right	0	0	0	238
cSH	720	1700	1700	801
Volume to Capacity	0.14	0.42	0.21	0.30
Queue Length 95th (ft)	12	0	0	31
Control Delay (s)	4.5	0.0	0.0	11.4
Lane LOS	A			B
Approach Delay (s)	4.5	0.0		11.4
Approach LOS				B

Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	116.5%	ICU Level of Service	H
Analysis Period (min)	15		

Lane Group	EBT	WBL	WBT	NET	SWT
Lane Group Flow (vph)	294	157	189	1000	927
v/c Ratio	0.56	0.77	0.38	1.94	0.63
Control Delay	38.8	49.2	23.7	449.8	14.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	38.8	49.2	23.7	449.8	14.0
Queue Length 50th (ft)	188	122	135	~800	158
Queue Length 95th (ft)	281	m#167	m182	#1057	246
Internal Link Dist (ft)	96		233	230	156
Turn Bay Length (ft)		85			
Base Capacity (vph)	523	203	495	516	1466
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	0.77	0.38	1.94	0.63

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	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	24	256	0	149	176	4	107	583	259	38	777	66
Future Volume (vph)	24	256	0	149	176	4	107	583	259	38	777	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	10	10	10	10	10	10	10	10	10
Grade (%)		2%			4%			0%			1%	
Total Lost time (s)		3.0		3.0	3.0			3.5			3.5	
Lane Util. Factor		1.00		1.00	1.00			1.00			0.95	
Frpb, ped/bikes		1.00		1.00	1.00			0.97			0.99	
Flpb, ped/bikes		1.00		1.00	1.00			1.00			1.00	
Frt		1.00		1.00	1.00			0.96			0.99	
Flt Protected		1.00		0.95	1.00			0.99			1.00	
Satd. Flow (prot)		1683		1457	1542			1114			2697	
Flt Permitted		0.97		0.41	1.00			0.72			0.87	
Satd. Flow (perm)		1631		633	1542			809			2338	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	25	269	0	157	185	4	113	614	273	40	818	69
RTOR Reduction (vph)	0	0	0	0	1	0	0	11	0	0	5	0
Lane Group Flow (vph)	0	294	0	157	188	0	0	989	0	0	922	0
Confl. Peds. (#/hr)	8		10	10		8	15		16	16		15
Confl. Bikes (#/hr)			3			2						
Heavy Vehicles (%)	0%	0%	0%	2%	1%	0%	0%	7%	1%	0%	6%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	20	0	0	20	0
Parking (#/hr)							10	10	10			
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		36.5		36.5	36.5			73.0			73.0	
Effective Green, g (s)		38.5		38.5	38.5			75.0			75.0	
Actuated g/C Ratio		0.32		0.32	0.32			0.62			0.62	
Clearance Time (s)		5.0		5.0	5.0			5.5			5.5	
Lane Grp Cap (vph)		523		203	494			505			1461	
v/s Ratio Prot					0.12							
v/s Ratio Perm		0.18		c0.25				c1.22			0.39	
v/c Ratio		0.56		0.77	0.38			1.96			0.63	
Uniform Delay, d1		33.8		36.8	31.5			22.5			13.9	
Progression Factor		1.00		0.77	0.69			1.00			0.85	
Incremental Delay, d2		4.3		18.7	1.6			438.2			2.0	
Delay (s)		38.1		46.9	23.4			460.7			13.9	
Level of Service		D		D	C			F			B	
Approach Delay (s)		38.1			34.1			460.7			13.9	
Approach LOS		D			C			F			B	

Intersection Summary			
HCM 2000 Control Delay	193.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.55		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.5
Intersection Capacity Utilization	127.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	527	3	4	306	21	26	24	11	6	0	21
Future Volume (Veh/h)	23	527	3	4	306	21	26	24	11	6	0	21
Sign Control		Free			Free			Stop			Stop	
Grade		5%			4%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	25	567	3	4	329	23	28	26	12	6	0	23
Pedestrians								10			8	
Lane Width (ft)								10.0			10.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		313			929							
pX, platoon unblocked	0.92			0.87			0.91	0.91	0.87	0.91	0.91	0.92
vC, conflicting volume	360			580			1000	996	578	1000	986	348
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	254			444			744	740	442	744	729	242
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			100			90	91	98	98	100	97
cM capacity (veh/h)	1193			966			282	303	532	267	308	725

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	595	356	66	29
Volume Left	25	4	28	6
Volume Right	3	23	12	23
cSH	1193	966	318	535
Volume to Capacity	0.02	0.00	0.21	0.05
Queue Length 95th (ft)	2	0	19	4
Control Delay (s)	0.6	0.1	19.2	12.1
Lane LOS	A	A	C	B
Approach Delay (s)	0.6	0.1	19.2	12.1
Approach LOS			C	B

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	SET	NWT
Lane Group Flow (vph)	70	392	63	329	1865	1247
v/c Ratio	0.58	0.98	0.77	0.81	0.75	0.91
Control Delay	40.7	52.6	93.4	58.0	4.1	34.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.7	52.6	93.4	58.0	4.2	34.1
Queue Length 50th (ft)	53	313	45	239	52	431
Queue Length 95th (ft)	m65	m299	#130	#388	61	#612
Internal Link Dist (ft)		849		339	239	287
Turn Bay Length (ft)	70		110			
Base Capacity (vph)	120	399	82	405	2503	1373
Starvation Cap Reductn	0	0	0	0	21	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.98	0.77	0.81	0.75	0.91

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	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	64	279	77	57	246	54	2	1625	70	3	1077	55
Future Volume (vph)	64	279	77	57	246	54	2	1625	70	3	1077	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		5%			3%			1%			-1%	
Total Lost time (s)	4.0	4.0		4.0	4.0			3.5			3.5	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.91			0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.99			0.98			0.99	
Flpb, ped/bikes	0.97	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.97		1.00	0.97			0.99			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1440	1477		1460	1496			3968			2532	
Flt Permitted	0.29	1.00		0.20	1.00			0.94			0.95	
Satd. Flow (perm)	444	1477		304	1496			3728			2405	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	70	307	85	63	270	59	2	1786	77	3	1184	60
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	70	392	0	63	329	0	0	1865	0	0	1247	0
Confl. Peds. (#/hr)	38		6	6		38	36		76	76		36
Confl. Bikes (#/hr)						2			5			5
Heavy Vehicles (%)	0%	1%	3%	2%	1%	0%	50%	4%	2%	0%	7%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	20	20	0	0	0
Parking (#/hr)											20	20
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		8			4		1	6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	30.5	30.5		30.5	30.5			78.0			66.5	
Effective Green, g (s)	32.5	32.5		32.5	32.5			80.0			68.5	
Actuated g/C Ratio	0.27	0.27		0.27	0.27			0.67			0.57	
Clearance Time (s)	6.0	6.0		6.0	6.0			5.5			5.5	
Lane Grp Cap (vph)	120	400		82	405			2501			1372	
v/s Ratio Prot		c0.27			0.22			c0.05				
v/s Ratio Perm	0.16			0.21				0.45			c0.52	
v/c Ratio	0.58	0.98		0.77	0.81			0.75			0.91	
Uniform Delay, d1	37.9	43.4		40.3	40.9			13.3			23.0	
Progression Factor	0.95	0.96		1.00	1.00			0.17			1.00	
Incremental Delay, d2	1.9	9.6		49.4	16.2			1.9			10.4	
Delay (s)	37.9	51.3		89.7	57.1			4.1			33.4	
Level of Service	D	D		F	E			A			C	
Approach Delay (s)		49.3			62.3			4.1			33.4	
Approach LOS		D			E			A			C	

Intersection Summary			
HCM 2000 Control Delay	24.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	14	17	38	11	34	11	15	689	14	18	838	8
Future Volume (Veh/h)	14	17	38	11	34	11	15	689	14	18	838	8
Sign Control		Stop			Stop			Free			Free	
Grade		-4%			6%			-2%			2%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	15	18	40	12	36	12	16	733	15	19	891	9
Pedestrians		19			17			3			2	
Lane Width (ft)		10.0			10.0			10.0			10.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			1			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								726			393	
pX, platoon unblocked	0.91	0.91	0.91	0.91	0.91		0.91					
vC, conflicting volume	1383	1750	472	1325	1746	393	919			765		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1216	1620	211	1152	1617	393	704			765		
tC, single (s)	7.5	6.5	6.9	7.7	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.3			2.2		
p0 queue free %	81	80	94	88	59	98	98			98		
cM capacity (veh/h)	79	88	715	98	88	603	767			847		

Direction, Lane #	EB 1	WB 1	NE 1	NE 2	SW 1	SW 2
Volume Total	73	60	382	382	464	454
Volume Left	15	12	16	0	19	0
Volume Right	40	12	0	15	0	9
cSH	163	109	767	1700	847	1700
Volume to Capacity	0.45	0.55	0.02	0.22	0.02	0.27
Queue Length 95th (ft)	52	65	2	0	2	0
Control Delay (s)	44.0	72.7	0.7	0.0	0.7	0.0
Lane LOS	E	F	A		A	
Approach Delay (s)	44.0	72.7	0.3		0.3	
Approach LOS	E	F				

Intersection Summary			
Average Delay	4.5		
Intersection Capacity Utilization	53.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	704	3	24	863	7	63
Future Volume (Veh/h)	704	3	24	863	7	63
Sign Control	Free			Free	Yield	
Grade	-1%			2%	2%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	741	3	25	908	7	66
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	554			565		
pX, platoon unblocked					0.92	
vC, conflicting volume			744		1246	742
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			744		1090	742
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		96	82
cM capacity (veh/h)			859		187	358

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	744	328	605	73
Volume Left	0	25	0	7
Volume Right	3	0	0	66
cSH	1700	859	1700	329
Volume to Capacity	0.44	0.03	0.36	0.22
Queue Length 95th (ft)	0	2	0	21
Control Delay (s)	0.0	1.0	0.0	19.0
Lane LOS		A		C
Approach Delay (s)	0.0	0.4		19.0
Approach LOS				C

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	57.1%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Volume (veh/h)	0	112	0	611	769	112
Future Volume (Veh/h)	0	112	0	611	769	112
Sign Control	Stop			Free	Free	
Grade	0%			-1%	1%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	0	149	0	815	1025	149
Pedestrians	25					
Lane Width (ft)	10.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	2					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				236	883	
pX, platoon unblocked	0.94	0.94	0.94			
vC, conflicting volume	1940	612	1199			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1874	465	1088			
tC, single (s)	6.8	6.9	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	70	100			
cM capacity (veh/h)	59	504	574			

Direction, Lane #	SE 1	NE 1	SW 1	SW 2
Volume Total	149	815	683	491
Volume Left	0	0	0	0
Volume Right	149	0	0	149
cSH	504	1700	1700	1700
Volume to Capacity	0.30	0.48	0.40	0.29
Queue Length 95th (ft)	31	0	0	0
Control Delay (s)	15.1	0.0	0.0	0.0
Lane LOS	C			
Approach Delay (s)	15.1	0.0	0.0	
Approach LOS	C			

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	38.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	NBT	SBT	NET
Lane Group Flow (vph)	1239	1919	924
v/c Ratio	0.87	0.80	1.01
Control Delay	37.5	6.5	53.9
Queue Delay	0.6	2.5	31.8
Total Delay	38.1	9.0	85.7
Queue Length 50th (ft)	493	87	~257
Queue Length 95th (ft)	567	m90	#514
Internal Link Dist (ft)	297	110	29
Turn Bay Length (ft)			
Base Capacity (vph)	1421	2390	911
Starvation Cap Reductn	31	338	149
Spillback Cap Reductn	35	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.89	0.94	1.21

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	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	991	161	0	1785	0	242	545	73	0	0	0
Future Volume (vph)	0	991	161	0	1785	0	242	545	73	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	12	12	12
Grade (%)		1%			-1%			-3%			1%	
Total Lost time (s)		2.0			2.0			7.0				
Lane Util. Factor		0.95			0.91			0.95				
Frpb, ped/bikes		0.99			1.00			1.00				
Flpb, ped/bikes		1.00			1.00			1.00				
Frt		0.98			1.00			0.99				
Flt Protected		1.00			1.00			0.99				
Satd. Flow (prot)		2624			4098			3039				
Flt Permitted		1.00			1.00			0.99				
Satd. Flow (perm)		2624			4098			3039				
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	1066	173	0	1919	0	260	586	78	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1239	0	0	1919	0	0	924	0	0	0	0
Confl. Peds. (#/hr)	61		68	68		61	5		23	23		5
Confl. Bikes (#/hr)			4			4			2			
Heavy Vehicles (%)	0%	5%	13%	0%	4%	0%	4%	6%	4%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	20	0	0	0	0	0	0	0
Parking (#/hr)		0	0									
Turn Type		NA			NA		Perm	NA				
Protected Phases		15 6 1			15 6 1 2			3 4				
Permitted Phases							3 4					
Actuated Green, G (s)		60.0			68.0			44.0				
Effective Green, g (s)		58.0			61.0			46.0				
Actuated g/C Ratio		0.48			0.51			0.38				
Clearance Time (s)												
Lane Grp Cap (vph)		1268			2083			1164				
v/s Ratio Prot		c0.47			c0.47							
v/s Ratio Perm								0.30				
v/c Ratio		0.98			0.92			0.79				
Uniform Delay, d1		30.4			27.3			32.8				
Progression Factor		1.24			0.27			0.49				
Incremental Delay, d2		19.7			3.5			4.9				
Delay (s)		57.2			10.8			20.9				
Level of Service		E			B			C				
Approach Delay (s)		57.2			10.8			20.9			0.0	
Approach LOS		E			B			C			A	

Intersection Summary			
HCM 2000 Control Delay	27.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	84.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	SBL	SBR	NEL	NER
Lane Configurations						
Traffic Volume (veh/h)	0	105	0	0	656	95
Future Volume (Veh/h)	0	105	0	0	656	95
Sign Control	Yield		Free		Free	
Grade	-4%		0%		1%	
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	0	135	0	0	841	122
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage veh)						
Upstream signal (ft)			187		111	
pX, platoon unblocked						
vC, conflicting volume	902	482	963			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	902	482	963			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	75	100			
cM capacity (veh/h)	278	531	711			

Direction, Lane #	WB 1	NE 1	NE 2
Volume Total	135	561	402
Volume Left	0	0	0
Volume Right	135	0	122
cSH	531	1700	1700
Volume to Capacity	0.25	0.33	0.24
Queue Length 95th (ft)	25	0	0
Control Delay (s)	14.1	0.0	0.0
Lane LOS	B		
Approach Delay (s)	14.1	0.0	
Approach LOS	B		

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	27.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	NBT	SBT	SWT
Lane Group Flow (vph)	1291	1936	1138
v/c Ratio	0.55	0.87	1.29
Control Delay	6.6	29.4	160.0
Queue Delay	3.0	1.6	0.0
Total Delay	9.5	31.0	160.0
Queue Length 50th (ft)	77	457	~594
Queue Length 95th (ft)	m84	536	#709
Internal Link Dist (ft)	110	479	17
Turn Bay Length (ft)			
Base Capacity (vph)	2332	2220	884
Starvation Cap Reductn	902	0	0
Spillback Cap Reductn	0	140	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.90	0.93	1.29

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	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	1226	0	0	1535	304	0	0	0	258	791	31
Future Volume (vph)	0	1226	0	0	1535	304	0	0	0	258	791	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	11	11	11
Grade (%)		2%			-2%			0%			-1%	
Total Lost time (s)		2.0			2.0						7.0	
Lane Util. Factor		0.91			0.91						0.95	
Frpb, ped/bikes		1.00			0.99						1.00	
Flpb, ped/bikes		1.00			1.00						1.00	
Frt		1.00			0.98						1.00	
Flt Protected		1.00			1.00						0.99	
Satd. Flow (prot)		3999			4100						2946	
Flt Permitted		1.00			1.00						0.99	
Satd. Flow (perm)		3999			4100						2946	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1291	0	0	1616	320	0	0	0	272	833	33
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1291	0	0	1936	0	0	0	0	0	1138	0
Confl. Peds. (#/hr)	57		103	103		57	46		4	4		46
Confl. Bikes (#/hr)			3			3						
Heavy Vehicles (%)	0%	5%	0%	0%	4%	3%	0%	0%	0%	6%	5%	3%
Bus Blockages (#/hr)	0	20	0	0	0	0	0	0	0	0	0	0
Turn Type		NA			NA					Perm	NA	
Protected Phases		15 6 1 2			15 6 1						3 4	
Permitted Phases										3 4		
Actuated Green, G (s)		68.0			60.0						44.0	
Effective Green, g (s)		61.0			58.0						46.0	
Actuated g/C Ratio		0.51			0.48						0.38	
Clearance Time (s)												
Lane Grp Cap (vph)		2032			1981						1129	
v/s Ratio Prot		c0.32			c0.47							
v/s Ratio Perm											0.39	
v/c Ratio		0.64			0.98						1.01	
Uniform Delay, d1		21.4			30.4						37.0	
Progression Factor		0.40			1.00						0.51	
Incremental Delay, d2		0.6			15.5						26.8	
Delay (s)		9.1			45.9						45.7	
Level of Service		A			D						D	
Approach Delay (s)		9.1			45.9			0.0			45.7	
Approach LOS		A			D			A			D	

Intersection Summary			
HCM 2000 Control Delay	35.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	84.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Traffic Volume (veh/h)	0	175	0	0	941	163
Future Volume (Veh/h)	0	175	0	0	941	163
Sign Control	Stop		Free		Free	
Grade	-4%		0%		0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	0	182	0	0	980	170
Pedestrians	104					
Lane Width (ft)	10.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	7					
Right turn flare (veh)						
Median type			None		None	
Median storage veh)						
Upstream signal (ft)			218		110	
pX, platoon unblocked	0.64	0.64	0.64			
vC, conflicting volume	1169	679	1254			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	134	0	267			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	72	100			
cM capacity (veh/h)	505	647	776			

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	182	653	497
Volume Left	0	0	0
Volume Right	182	0	170
cSH	647	1700	1700
Volume to Capacity	0.28	0.38	0.29
Queue Length 95th (ft)	29	0	0
Control Delay (s)	12.7	0.0	0.0
Lane LOS	B		
Approach Delay (s)	12.7	0.0	
Approach LOS	B		

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	39.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	NBT	NBR	SBR	SWT
Lane Group Flow (vph)	114	566	244	821
v/c Ratio	0.14	0.55	0.19	0.73
Control Delay	16.6	3.1	0.3	36.5
Queue Delay	0.0	0.0	0.4	3.5
Total Delay	16.6	3.1	0.7	40.0
Queue Length 50th (ft)	67	5	0	284
Queue Length 95th (ft)	m83	m20	0	361
Internal Link Dist (ft)	1			419
Turn Bay Length (ft)				
Base Capacity (vph)	842	1038	1305	1118
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	635	206
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.14	0.55	0.36	0.90

Intersection Summary

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

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	103	509	0	0	220	0	0	0	0	736	3
Future Volume (vph)	0	103	509	0	0	220	0	0	0	0	736	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			0%			1%	
Total Lost time (s)		2.0	7.0			2.0					2.0	
Lane Util. Factor		0.95	0.95			1.00					0.95	
Frpb, ped/bikes		1.00	1.00			1.00					1.00	
Flpb, ped/bikes		1.00	1.00			1.00					1.00	
Frt		1.00	0.85			0.86					1.00	
Flt Protected		1.00	1.00			1.00					1.00	
Satd. Flow (prot)		1444	1257			1305					2921	
Flt Permitted		1.00	1.00			1.00					1.00	
Satd. Flow (perm)		1444	1257			1305					2921	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	114	566	0	0	244	0	0	0	0	818	3
RTOR Reduction (vph)	0	0	108	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	114	458	0	0	244	0	0	0	0	821	0
Confl. Peds. (#/hr)			7	7			7					7
Bus Blockages (#/hr)	0	6	0	0	0	9	0	0	0	0	6	6
Turn Type		NA	custom			Free					NA	
Protected Phases		4 15 6 1	11 4 15								2 3	
Permitted Phases						Free						
Actuated Green, G (s)		65.0	97.0			120.0					39.0	
Effective Green, g (s)		63.0	97.0			120.0					41.0	
Actuated g/C Ratio		0.52	0.81			1.00					0.34	
Clearance Time (s)												
Lane Grp Cap (vph)		758	1016			1305					998	
v/s Ratio Prot		0.08	c0.36								c0.28	
v/s Ratio Perm						c0.19						
v/c Ratio		0.15	0.45			0.19					0.82	
Uniform Delay, d1		14.7	3.5			0.0					36.2	
Progression Factor		1.42	4.46			1.00					1.00	
Incremental Delay, d2		0.3	1.1			0.3					7.6	
Delay (s)		21.2	16.5			0.3					43.8	
Level of Service		C	B			A					D	
Approach Delay (s)		17.3			0.3			0.0			43.8	
Approach LOS		B			A			A			D	

Intersection Summary			
HCM 2000 Control Delay	27.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	47.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	NBT	SBT	SET	NWT
Lane Group Flow (vph)	232	138	414	571
v/c Ratio	0.77	0.42	0.57	0.65
Control Delay	51.6	34.0	15.7	17.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	51.6	34.0	15.7	17.2
Queue Length 50th (ft)	135	72	146	218
Queue Length 95th (ft)	#257	130	240	338
Internal Link Dist (ft)	689	132	177	285
Turn Bay Length (ft)				
Base Capacity (vph)	302	332	720	872
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.77	0.42	0.57	0.65

Intersection Summary

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

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	124	46	50	20	94	17	10	298	85	57	447	38
Future Volume (vph)	124	46	50	20	94	17	10	298	85	57	447	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-4%			5%			7%			-7%	
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		0.99			1.00			0.99			1.00	
Flpb, ped/bikes		0.99			1.00			1.00			1.00	
Frt		0.97			0.98			0.97			0.99	
Flt Protected		0.97			0.99			1.00			0.99	
Satd. Flow (prot)		1484			1257			1199			1546	
Flt Permitted		0.71			0.94			0.98			0.92	
Satd. Flow (perm)		1080			1187			1181			1429	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	131	48	53	21	99	18	11	314	89	60	471	40
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	232	0	0	138	0	0	414	0	0	571	0
Confl. Peds. (#/hr)	8		4	4		8	6		25	25		6
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	5%	5%	5%	5%	5%
Parking (#/hr)				10	10	10	10	10	10			
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		26.0			26.0			59.0			59.0	
Effective Green, g (s)		28.0			28.0			61.0			61.0	
Actuated g/C Ratio		0.28			0.28			0.61			0.61	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Lane Grp Cap (vph)		302			332			720			871	
v/s Ratio Prot												
v/s Ratio Perm		c0.21			0.12			0.35			c0.40	
v/c Ratio		0.77			0.42			0.57			0.66	
Uniform Delay, d1		33.0			29.3			11.7			12.7	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		17.0			3.8			3.3			3.8	
Delay (s)		50.0			33.1			15.0			16.5	
Level of Service		D			C			B			B	
Approach Delay (s)		50.0			33.1			15.0			16.5	
Approach LOS		D			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	23.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	87.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	457	547	193	272
v/c Ratio	0.95	1.42	0.36	0.57
Control Delay	53.8	226.7	14.5	19.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	53.8	226.7	14.5	19.1
Queue Length 50th (ft)	157	~276	46	72
Queue Length 95th (ft)	#324	#442	91	141
Internal Link Dist (ft)	418	274	520	689
Turn Bay Length (ft)				
Base Capacity (vph)	480	385	536	479
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.95	1.42	0.36	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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	391	30	72	346	124	15	151	25	69	175	25
Future Volume (vph)	32	391	30	72	346	124	15	151	25	69	175	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		9%			-8%			-4%			0%	
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		0.99			0.98			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.99			0.97			0.98			0.99	
Flt Protected		1.00			0.99			1.00			0.99	
Satd. Flow (prot)		1466			1296			1322			1291	
Flt Permitted		0.93			0.84			0.97			0.88	
Satd. Flow (perm)		1374			1102			1286			1150	
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)	32	395	30	73	349	125	15	153	25	70	177	25
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	457	0	0	547	0	0	193	0	0	272	0
Confl. Peds. (#/hr)	38		28	28		38	9		3	3		9
Parking (#/hr)				10	10	10	10	10	10	10	10	10
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		19.0			19.0			23.0			23.0	
Effective Green, g (s)		21.0			21.0			25.0			25.0	
Actuated g/C Ratio		0.35			0.35			0.42			0.42	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Lane Grp Cap (vph)		480			385			535			479	
v/s Ratio Prot												
v/s Ratio Perm		0.33			c0.50			0.15			c0.24	
v/c Ratio		0.95			1.42			0.36			0.57	
Uniform Delay, d1		19.0			19.5			12.0			13.4	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		30.7			204.0			1.9			4.8	
Delay (s)		49.7			223.5			13.9			18.2	
Level of Service		D			F			B			B	
Approach Delay (s)		49.7			223.5			13.9			18.2	
Approach LOS		D			F			B			B	

Intersection Summary			
HCM 2000 Control Delay	103.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	92.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	11.3
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	32	104	25	42	152	21	4	176	15	27	183	22
Future Vol, veh/h	32	104	25	42	152	21	4	176	15	27	183	22
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	35	113	27	46	165	23	4	191	16	29	199	24
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	10.7	11.6	11.1	11.7
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	2%	20%	20%	12%
Vol Thru, %	90%	65%	71%	79%
Vol Right, %	8%	16%	10%	9%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	195	161	215	232
LT Vol	4	32	42	27
Through Vol	176	104	152	183
RT Vol	15	25	21	22
Lane Flow Rate	212	175	234	252
Geometry Grp	1	1	1	1
Degree of Util (X)	0.322	0.27	0.357	0.378
Departure Headway (Hd)	5.461	5.564	5.494	5.403
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	657	644	654	663
Service Time	3.507	3.616	3.541	3.449
HCM Lane V/C Ratio	0.323	0.272	0.358	0.38
HCM Control Delay	11.1	10.7	11.6	11.7
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	1.4	1.1	1.6	1.8

Intersection	
Intersection Delay, s/veh	4.2
Intersection LOS	A

Approach	NB	SB	NE
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	207	219	107
Demand Flow Rate, veh/h	211	224	109
Vehicles Circulating, veh/h	96	19	192
Vehicles Exiting, veh/h	205	288	51
Ped Vol Crossing Leg, #/h	1	4	2
Ped Cap Adj	1.000	0.999	1.000
Approach Delay, s/veh	4.4	4.1	4.1
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	LT	TR	LR
Assumed Moves	LT	TR	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	211	224	109
Cap Entry Lane, veh/h	1251	1353	1134
Entry HV Adj Factor	0.982	0.979	0.982
Flow Entry, veh/h	207	219	107
Cap Entry, veh/h	1229	1324	1113
V/C Ratio	0.169	0.166	0.096
Control Delay, s/veh	4.4	4.1	4.1
LOS	A	A	A
95th %tile Queue, veh	1	1	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	3	35	227	36	15	206
Future Volume (Veh/h)	3	35	227	36	15	206
Sign Control	Stop		Free			Free
Grade	-4%		1%			1%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	38	247	39	16	224
Pedestrians	25		1			
Lane Width (ft)	10.0		10.0			
Walking Speed (ft/s)	4.0		4.0			
Percent Blockage	2		0			
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	548	292			311	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	548	292			311	
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	95			99	
cM capacity (veh/h)	482	735			1228	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	41	286	240
Volume Left	3	0	16
Volume Right	38	39	0
cSH	708	1700	1228
Volume to Capacity	0.06	0.17	0.01
Queue Length 95th (ft)	5	0	1
Control Delay (s)	10.4	0.0	0.6
Lane LOS	B		A
Approach Delay (s)	10.4	0.0	0.6
Approach LOS	B		

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	35.8%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	5.0
Intersection LOS	A

Approach	NB	SB	SE
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	241	225	305
Demand Flow Rate, veh/h	246	229	311
Vehicles Circulating, veh/h	47	16	226
Vehicles Exiting, veh/h	490	276	19
Ped Vol Crossing Leg, #/h	6	0	3
Ped Cap Adj	0.999	1.000	1.000
Approach Delay, s/veh	4.4	4.1	6.1
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	LT	TR	LR
Assumed Moves	LT	TR	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	246	229	311
Cap Entry Lane, veh/h	1315	1358	1096
Entry HV Adj Factor	0.982	0.981	0.981
Flow Entry, veh/h	241	225	305
Cap Entry, veh/h	1290	1331	1074
V/C Ratio	0.187	0.169	0.284
Control Delay, s/veh	4.4	4.1	6.1
LOS	A	A	A
95th %tile Queue, veh	1	1	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	183	23	15	285	66	13	105	7	40	124	10
Future Volume (Veh/h)	34	183	23	15	285	66	13	105	7	40	124	10
Sign Control		Free			Free			Stop			Stop	
Grade		6%			-2%			-1%			-2%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	41	220	28	18	343	80	16	127	8	48	149	12
Pedestrians		8			1			4			4	
Lane Width (ft)		10.0			10.0			10.0			10.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					176							
pX, platoon unblocked	0.87						0.87	0.87		0.87	0.87	0.87
vC, conflicting volume	427			252			834	783	239	812	757	395
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	271			252			737	679	239	712	649	235
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			99			91	59	99	75	54	98
cM capacity (veh/h)	1125			1310			174	308	797	196	321	697

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	289	441	151	209
Volume Left	41	18	16	48
Volume Right	28	80	8	12
cSH	1125	1310	294	288
Volume to Capacity	0.04	0.01	0.51	0.73
Queue Length 95th (ft)	3	1	69	130
Control Delay (s)	1.5	0.5	29.5	44.8
Lane LOS	A	A	D	E
Approach Delay (s)	1.5	0.5	29.5	44.8
Approach LOS			D	E

Intersection Summary			
Average Delay	13.3		
Intersection Capacity Utilization	51.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	168	1095	951	1	2	267
Future Volume (Veh/h)	168	1095	951	1	2	267
Sign Control		Free	Free		Stop	
Grade		0%	0%		1%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	185	1203	1045	1	2	293
Pedestrians			4		14	
Lane Width (ft)			10.0		10.0	
Walking Speed (ft/s)			4.0		4.0	
Percent Blockage			0		1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			310			
pX, platoon unblocked						
vC, conflicting volume	1060				2636	537
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1060				2636	537
tC, single (s)	4.2				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	71				85	39
cM capacity (veh/h)	629				13	483

Direction, Lane #	EB 1	WB 1	WB 2	SB 1
Volume Total	1388	697	349	295
Volume Left	185	0	0	2
Volume Right	0	0	1	293
cSH	629	1700	1700	390
Volume to Capacity	0.29	0.41	0.21	0.76
Queue Length 95th (ft)	31	0	0	154
Control Delay (s)	13.1	0.0	0.0	37.9
Lane LOS	B			E
Approach Delay (s)	13.1	0.0		37.9
Approach LOS				E

Intersection Summary			
Average Delay	10.8		
Intersection Capacity Utilization	132.1%	ICU Level of Service	H
Analysis Period (min)	15		

Lane Group	EBT	WBL	WBT	NET	SWT
Lane Group Flow (vph)	252	310	267	1329	837
v/c Ratio	0.48	1.22	0.50	2.01	1.09
Control Delay	34.0	161.0	38.5	480.9	95.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	34.0	161.0	38.5	480.9	95.4
Queue Length 50th (ft)	151	~298	173	~1621	~744
Queue Length 95th (ft)	232	m#347	m196	#1886	#995
Internal Link Dist (ft)	96		233	230	156
Turn Bay Length (ft)		85			
Base Capacity (vph)	529	254	534	661	768
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	0.48	1.22	0.50	2.01	1.09

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	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	35	192	5	285	238	7	28	946	249	18	673	78
Future Volume (vph)	35	192	5	285	238	7	28	946	249	18	673	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	10	10	10	10	10	10	10	10	10
Grade (%)		2%			4%			0%			1%	
Total Lost time (s)		3.5		3.5	3.5			3.0			3.0	
Lane Util. Factor		1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes		1.00		1.00	1.00			0.98			0.98	
Flpb, ped/bikes		1.00		0.96	1.00			1.00			1.00	
Frt		1.00		1.00	1.00			0.97			0.99	
Flt Protected		0.99		0.95	1.00			1.00			1.00	
Satd. Flow (prot)		1634		1396	1523			1131			1348	
Flt Permitted		0.92		0.50	1.00			0.97			0.95	
Satd. Flow (perm)		1514		728	1523			1098			1284	
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)	38	209	5	310	259	8	30	1028	271	20	732	85
RTOR Reduction (vph)	0	1	0	0	1	0	0	8	0	0	3	0
Lane Group Flow (vph)	0	251	0	310	266	0	0	1321	0	0	834	0
Confl. Peds. (#/hr)	11		41	41		11	32		18	18		32
Confl. Bikes (#/hr)			3			2						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	20	0	0	20	0
Parking (#/hr)							10	10	10			
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		40.0		40.0	40.0			69.5			69.5	
Effective Green, g (s)		42.0		42.0	42.0			71.5			71.5	
Actuated g/C Ratio		0.35		0.35	0.35			0.60			0.60	
Clearance Time (s)		5.5		5.5	5.5			5.0			5.0	
Lane Grp Cap (vph)		529		254	533			654			765	
v/s Ratio Prot					0.17							
v/s Ratio Perm		0.17		c0.43				c1.20			0.65	
v/c Ratio		0.48		1.22	0.50			2.02			1.09	
Uniform Delay, d1		30.4		39.0	30.7			24.2			24.2	
Progression Factor		1.00		1.14	1.15			1.00			1.59	
Incremental Delay, d2		3.0		122.4	2.4			464.6			59.4	
Delay (s)		33.4		166.8	37.9			488.8			98.0	
Level of Service		C		F	D			F			F	
Approach Delay (s)		33.4			107.2			488.8			98.0	
Approach LOS		C			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	267.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.72		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.5
Intersection Capacity Utilization	129.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	598	4	5	600	35	26	24	11	4	0	15
Future Volume (Veh/h)	27	598	4	5	600	35	26	24	11	4	0	15
Sign Control		Free			Free			Stop			Stop	
Grade		5%			4%			0%			0%	
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Hourly flow rate (vph)	37	819	5	7	822	48	36	33	15	5	0	21
Pedestrians								20			8	
Lane Width (ft)								10.0			10.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		313			929							
pX, platoon unblocked				0.91			0.91	0.91	0.91	0.91	0.91	
vC, conflicting volume	878			844			1796	1808	842	1795	1786	854
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	878			780			1826	1838	777	1824	1814	854
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			99			24	48	96	83	100	94
cM capacity (veh/h)	765			752			47	64	356	29	66	356

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	861	877	84	26
Volume Left	37	7	36	5
Volume Right	5	48	15	21
cSH	765	752	64	112
Volume to Capacity	0.05	0.01	1.32	0.23
Queue Length 95th (ft)	4	1	176	21
Control Delay (s)	1.3	0.3	331.7	46.5
Lane LOS	A	A	F	E
Approach Delay (s)	1.3	0.3	331.7	46.5
Approach LOS			F	E

Intersection Summary			
Average Delay	16.5		
Intersection Capacity Utilization	68.9%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	SET	NWT
Lane Group Flow (vph)	98	482	86	395	1674	1823
v/c Ratio	1.03	1.19	1.69	0.96	1.56	2.18
Control Delay	124.9	138.1	409.4	77.3	280.0	553.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	124.9	138.1	409.4	77.3	280.0	553.4
Queue Length 50th (ft)	~73	~442	~97	301	~975	~1191
Queue Length 95th (ft)	m#131	m#467	#205	#500	#1094	#1330
Internal Link Dist (ft)		849		339	239	287
Turn Bay Length (ft)	70		110			
Base Capacity (vph)	95	404	51	413	1073	838
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.03	1.19	1.69	0.96	1.56	2.18

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	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	91	275	173	80	257	111	59	1410	88	95	1572	29
Future Volume (vph)	91	275	173	80	257	111	59	1410	88	95	1572	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		5%			3%			1%			-1%	
Total Lost time (s)	4.0	4.0		4.0	4.0			3.5			3.5	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.95			0.95	
Frpb, ped/bikes	1.00	0.98		1.00	0.98			0.97			0.99	
Flpb, ped/bikes	0.98	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.94		1.00	0.95			0.99			1.00	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1422	1406		1464	1438			2661			2580	
Flt Permitted	0.22	1.00		0.12	1.00			0.58			0.58	
Satd. Flow (perm)	332	1406		179	1438			1539			1513	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	98	296	186	86	276	119	63	1516	95	102	1690	31
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	98	482	0	86	395	0	0	1674	0	0	1823	0
Confl. Peds. (#/hr)	37		26	26		37	93		87	87		93
Confl. Bikes (#/hr)						2			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	20	20	0	0	0
Parking (#/hr)											20	20
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		8			4		1	6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	32.5	32.5		32.5	32.5			76.0			64.5	
Effective Green, g (s)	34.5	34.5		34.5	34.5			78.0			66.5	
Actuated g/C Ratio	0.29	0.29		0.29	0.29			0.65			0.55	
Clearance Time (s)	6.0	6.0		6.0	6.0			5.5			5.5	
Lane Grp Cap (vph)	95	404		51	413			1075			838	
v/s Ratio Prot		0.34			0.27			c0.10				
v/s Ratio Perm	0.30			c0.48				0.91			c1.21	
v/c Ratio	1.03	1.19		1.69	0.96			1.56			2.18	
Uniform Delay, d1	42.8	42.8		42.8	42.0			21.0			26.8	
Progression Factor	0.96	0.93		1.00	1.00			1.31			1.00	
Incremental Delay, d2	82.2	101.8		379.4	34.6			255.0			532.9	
Delay (s)	123.4	141.6		422.2	76.6			282.4			559.6	
Level of Service	F	F		F	E			F			F	
Approach Delay (s)		138.5			138.4			282.4			559.6	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	359.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.98		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	149.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	37	36	43	14	11	11	968	19	11	696	10
Future Volume (Veh/h)	0	37	36	43	14	11	11	968	19	11	696	10
Sign Control		Stop			Stop			Free			Free	
Grade		-4%			6%			-2%			2%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	39	38	46	15	12	12	1030	20	12	740	11
Pedestrians		24			26			1			6	
Lane Width (ft)		10.0			10.0			10.0			10.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		2			2			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								726			393	
pX, platoon unblocked	0.57	0.57	0.84	0.57	0.57	0.49	0.84			0.49		
vC, conflicting volume	1883	1894	770	1918	1889	1072	775			1076		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1551	1569	634	1612	1561	631	640			639		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	34	90	0	75	95	98			97		
cM capacity (veh/h)	37	59	397	19	59	231	771			450		

Direction, Lane #	EB 1	WB 1	NE 1	SW 1
Volume Total	77	73	1062	763
Volume Left	0	46	12	12
Volume Right	38	12	20	11
cSH	101	26	771	450
Volume to Capacity	0.76	2.76	0.02	0.03
Queue Length 95th (ft)	102	222	1	2
Control Delay (s)	109.2	1110.3	0.5	0.8
Lane LOS	F	F	A	A
Approach Delay (s)	109.2	1110.3	0.5	0.8
Approach LOS	F	F		

Intersection Summary			
Average Delay	45.9		
Intersection Capacity Utilization	82.7%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	907	3	19	754	7	106
Future Volume (Veh/h)	907	3	19	754	7	106
Sign Control	Free			Free	Yield	
Grade	-1%			2%	2%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	1067	4	22	887	8	125
Pedestrians					15	
Lane Width (ft)					10.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	554			565		
pX, platoon unblocked			0.47		0.51	0.47
vC, conflicting volume			1086		1572	1084
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			615		1066	611
tC, single (s)			4.2		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			95		92	38
cM capacity (veh/h)			435		103	202

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	1071	318	591	133
Volume Left	0	22	0	8
Volume Right	4	0	0	125
cSH	1700	435	1700	191
Volume to Capacity	0.63	0.05	0.35	0.70
Queue Length 95th (ft)	0	4	0	108
Control Delay (s)	0.0	1.7	0.0	58.2
Lane LOS		A		F
Approach Delay (s)	0.0	0.6		58.2
Approach LOS				F

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	67.6%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Volume (veh/h)	0	74	0	988	694	74
Future Volume (Veh/h)	0	74	0	988	694	74
Sign Control	Stop			Free	Free	
Grade	0%			-1%	1%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	0	99	0	1317	925	99
Pedestrians	25					
Lane Width (ft)	10.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	2					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				236	883	
pX, platoon unblocked	0.53	0.82	0.82			
vC, conflicting volume	2316	1000	1049			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2289	891	951			
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	64	100			
cM capacity (veh/h)	22	276	574			

Direction, Lane #	SE 1	NE 1	SW 1
Volume Total	99	1317	1024
Volume Left	0	0	0
Volume Right	99	0	99
cSH	276	1700	1700
Volume to Capacity	0.36	0.77	0.60
Queue Length 95th (ft)	39	0	0
Control Delay (s)	25.2	0.0	0.0
Lane LOS	D		
Approach Delay (s)	25.2	0.0	0.0
Approach LOS	D		

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	55.3%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	NBT	SBT	NET
Lane Group Flow (vph)	1838	1678	1408
v/c Ratio	1.39	0.75	1.33
Control Delay	205.8	7.9	184.7
Queue Delay	0.4	3.3	0.8
Total Delay	206.3	11.2	185.5
Queue Length 50th (ft)	~995	92	~756
Queue Length 95th (ft)	#1136	m100	#881
Internal Link Dist (ft)	297	110	29
Turn Bay Length (ft)			
Base Capacity (vph)	1326	2232	1055
Starvation Cap Reductn	0	444	163
Spillback Cap Reductn	141	0	41
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.55	0.94	1.58

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	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	1383	363	0	1594	0	356	927	54	0	0	0
Future Volume (vph)	0	1383	363	0	1594	0	356	927	54	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	12	12	12
Grade (%)		1%			-1%			-3%			1%	
Total Lost time (s)		2.0			2.0			7.0				
Lane Util. Factor		0.95			0.91			0.95				
Frpb, ped/bikes		0.99			1.00			1.00				
Flpb, ped/bikes		1.00			1.00			1.00				
Frt		0.97			1.00			0.99				
Flt Protected		1.00			1.00			0.99				
Satd. Flow (prot)		2608			4059			3165				
Flt Permitted		1.00			1.00			0.99				
Satd. Flow (perm)		2608			4059			3165				
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1456	382	0	1678	0	375	976	57	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1838	0	0	1678	0	0	1408	0	0	0	0
Confl. Peds. (#/hr)	63		80	80		63	6		10	10		6
Confl. Bikes (#/hr)			4			4			2			
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	20	0	0	0	0	0	0	0
Parking (#/hr)		0	0									
Turn Type		NA			NA		Perm	NA				
Protected Phases		15 6 1			15 6 1 2			3 4				
Permitted Phases							3 4					
Actuated Green, G (s)		56.0			64.0			48.0				
Effective Green, g (s)		54.0			57.0			50.0				
Actuated g/C Ratio		0.45			0.48			0.42				
Clearance Time (s)												
Lane Grp Cap (vph)		1173			1928			1318				
v/s Ratio Prot		c0.70			c0.41							
v/s Ratio Perm								0.44				
v/c Ratio		1.57			0.87			1.07				
Uniform Delay, d1		33.0			28.2			35.0				
Progression Factor		1.00			0.32			0.73				
Incremental Delay, d2		259.2			2.6			45.0				
Delay (s)		292.3			11.8			70.7				
Level of Service		F			B			E				
Approach Delay (s)		292.3			11.8			70.7			0.0	
Approach LOS		F			B			E			A	

Intersection Summary			
HCM 2000 Control Delay	133.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.49		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	177.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	SBL	SBR	NEL	NER
Lane Configurations						
Traffic Volume (veh/h)	0	161	0	0	1265	41
Future Volume (Veh/h)	0	161	0	0	1265	41
Sign Control	Yield		Free		Free	
Grade	-4%		0%		1%	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81
Hourly flow rate (vph)	0	199	0	0	1562	51
Pedestrians	12					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	1					
Right turn flare (veh)						
Median type			None		None	
Median storage veh)						
Upstream signal (ft)			187		111	
pX, platoon unblocked	0.60	0.60	0.60			
vC, conflicting volume	1600	818	1625			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	662	0	705			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	69	100			
cM capacity (veh/h)	234	643	527			

Direction, Lane #	WB 1	NE 1	NE 2
Volume Total	199	1041	572
Volume Left	0	0	0
Volume Right	199	0	51
cSH	643	1700	1700
Volume to Capacity	0.31	0.61	0.34
Queue Length 95th (ft)	33	0	0
Control Delay (s)	13.1	0.0	0.0
Lane LOS	B		
Approach Delay (s)	13.1	0.0	
Approach LOS	B		

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	44.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	NBT	SBT	SWT
Lane Group Flow (vph)	1819	1762	988
v/c Ratio	0.83	0.86	0.98
Control Delay	8.6	31.5	42.1
Queue Delay	48.0	2.2	16.5
Total Delay	56.7	33.7	58.6
Queue Length 50th (ft)	137	424	397
Queue Length 95th (ft)	m82	500	#529
Internal Link Dist (ft)	110	479	17
Turn Bay Length (ft)			
Base Capacity (vph)	2199	2038	1008
Starvation Cap Reductn	907	0	59
Spillback Cap Reductn	0	159	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.41	0.94	1.04

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	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	1728	0	0	1315	359	0	0	0	289	618	31
Future Volume (vph)	0	1728	0	0	1315	359	0	0	0	289	618	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	11	11	11
Grade (%)		2%			-2%			0%			-1%	
Total Lost time (s)		2.0			2.0						7.0	
Lane Util. Factor		0.91			0.91						0.95	
Frpb, ped/bikes		1.00			0.99						1.00	
Flpb, ped/bikes		1.00			1.00						1.00	
Frt		1.00			0.97						0.99	
Flt Protected		1.00			1.00						0.98	
Satd. Flow (prot)		3999			4010						3025	
Flt Permitted		1.00			1.00						0.98	
Satd. Flow (perm)		3999			4010						3025	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1819	0	0	1384	378	0	0	0	304	651	33
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1819	0	0	1762	0	0	0	0	0	988	0
Confl. Peds. (#/hr)	61		79	79		61	20		7	7		20
Confl. Bikes (#/hr)			3			3						
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	20	0	0	0	0	0	0	0	0	0	0
Turn Type		NA			NA					Perm	NA	
Protected Phases		15 6 1 2			15 6 1						3 4	
Permitted Phases										3 4		
Actuated Green, G (s)		64.0			56.0						48.0	
Effective Green, g (s)		57.0			54.0						50.0	
Actuated g/C Ratio		0.48			0.45						0.42	
Clearance Time (s)												
Lane Grp Cap (vph)		1899			1804						1260	
v/s Ratio Prot		c0.45			c0.44							
v/s Ratio Perm											0.33	
v/c Ratio		0.96			0.98						0.78	
Uniform Delay, d1		30.3			32.4						30.3	
Progression Factor		0.36			1.00						0.46	
Incremental Delay, d2		1.8			16.3						4.2	
Delay (s)		12.8			48.7						18.3	
Level of Service		B			D						B	
Approach Delay (s)		12.8			48.7			0.0			18.3	
Approach LOS		B			D			A			B	

Intersection Summary			
HCM 2000 Control Delay	27.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	177.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Traffic Volume (veh/h)	0	233	0	0	903	85
Future Volume (Veh/h)	0	233	0	0	903	85
Sign Control	Stop		Free		Free	
Grade	-4%		0%		0%	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Hourly flow rate (vph)	0	333	0	0	1290	121
Pedestrians	49					
Lane Width (ft)	10.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	3					
Right turn flare (veh)						
Median type			None		None	
Median storage veh)						
Upstream signal (ft)			218		110	
pX, platoon unblocked						
vC, conflicting volume	1400	754	1460			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1400	754	1460			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	2	100			
cM capacity (veh/h)	127	340	443			

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	333	860	551
Volume Left	0	0	0
Volume Right	333	0	121
cSH	340	1700	1700
Volume to Capacity	0.98	0.51	0.32
Queue Length 95th (ft)	269	0	0
Control Delay (s)	79.6	0.0	0.0
Lane LOS	F		
Approach Delay (s)	79.6	0.0	
Approach LOS	F		

Intersection Summary			
Average Delay	15.2		
Intersection Capacity Utilization	35.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	NBT	NBR	SBR	SWT
Lane Group Flow (vph)	160	1803	198	855
v/c Ratio	0.21	1.56	0.18	0.71
Control Delay	18.5	273.6	0.4	33.0
Queue Delay	0.0	0.0	0.2	1.8
Total Delay	18.5	273.6	0.5	34.9
Queue Length 50th (ft)	90	~2006	0	283
Queue Length 95th (ft)	m77	m#1235	0	217
Internal Link Dist (ft)	1			419
Turn Bay Length (ft)				
Base Capacity (vph)	749	1156	1073	1204
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	335	199
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.21	1.56	0.27	0.85

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	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	101	1136	0	0	125	0	0	0	0	537	2
Future Volume (vph)	0	101	1136	0	0	125	0	0	0	0	537	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			0%			1%	
Total Lost time (s)		2.0	7.0			2.0					2.0	
Lane Util. Factor		0.95	0.95			1.00					0.95	
Frpb, ped/bikes		1.00	1.00			1.00					1.00	
Flpb, ped/bikes		1.00	1.00			1.00					1.00	
Frt		1.00	0.85			0.86					1.00	
Flt Protected		1.00	1.00			1.00					1.00	
Satd. Flow (prot)		1363	1187			1073					2892	
Flt Permitted		1.00	1.00			1.00					1.00	
Satd. Flow (perm)		1363	1187			1073					2892	
Peak-hour factor, PHF	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63
Adj. Flow (vph)	0	160	1803	0	0	198	0	0	0	0	852	3
RTOR Reduction (vph)	0	0	209	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	160	1594	0	0	198	0	0	0	0	855	0
Confl. Peds. (#/hr)				18			7		7			18
Heavy Vehicles (%)	8%	8%	8%	24%	24%	24%	0%	0%	0%	3%	3%	3%
Bus Blockages (#/hr)	0	6	0	0	0	9	0	0	0	0	6	6
Turn Type		NA	custom			Free					NA	
Protected Phases		4 15 6 1	11 4 15								2 3	
Permitted Phases						Free						
Actuated Green, G (s)		61.0	97.0			120.0					43.0	
Effective Green, g (s)		59.0	97.0			120.0					45.0	
Actuated g/C Ratio		0.49	0.81			1.00					0.38	
Clearance Time (s)												
Lane Grp Cap (vph)		670	959			1073					1084	
v/s Ratio Prot		c0.12	c1.34								0.30	
v/s Ratio Perm						0.18						
v/c Ratio		0.24	1.66			0.18					0.79	
Uniform Delay, d1		17.6	11.5			0.0					33.3	
Progression Factor		1.29	16.17			1.00					1.00	
Incremental Delay, d2		0.4	300.3			0.4					5.8	
Delay (s)		23.1	486.3			0.4					39.1	
Level of Service		C	F			A					D	
Approach Delay (s)		448.5			0.4			0.0			39.1	
Approach LOS		F			A			A			D	

Intersection Summary			
HCM 2000 Control Delay	303.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.75		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	NBT	SBT	SET	NWT
Lane Group Flow (vph)	243	204	164	390
v/c Ratio	0.82	0.57	0.23	0.41
Control Delay	57.3	38.4	9.8	11.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	57.3	38.4	9.8	11.8
Queue Length 50th (ft)	145	111	44	120
Queue Length 95th (ft)	#242	169	70	163
Internal Link Dist (ft)	689	132	177	285
Turn Bay Length (ft)				
Base Capacity (vph)	296	356	719	941
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.82	0.57	0.23	0.41

Intersection Summary

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

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	89	112	1	10	156	3	8	64	64	34	260	30
Future Volume (vph)	89	112	1	10	156	3	8	64	64	34	260	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-4%			5%			7%			-7%	
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		1.00			1.00			0.99			1.00	
Flpb, ped/bikes		0.97			1.00			1.00			1.00	
Frt		1.00			1.00			0.94			0.99	
Flt Protected		0.98			1.00			1.00			0.99	
Satd. Flow (prot)		1538			1301			1207			1604	
Flt Permitted		0.67			0.98			0.98			0.96	
Satd. Flow (perm)		1061			1274			1180			1543	
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	107	135	1	12	188	4	10	77	77	41	313	36
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	243	0	0	204	0	0	164	0	0	390	0
Confl. Peds. (#/hr)	58		42	42		58	20		8	8		20
Heavy Vehicles (%)	0%	0%	0%	9%	0%	0%	0%	0%	0%	0%	1%	0%
Parking (#/hr)				10	10	10	10	10	10			
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		26.0			26.0			59.0			59.0	
Effective Green, g (s)		28.0			28.0			61.0			61.0	
Actuated g/C Ratio		0.28			0.28			0.61			0.61	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Lane Grp Cap (vph)		297			356			719			941	
v/s Ratio Prot												
v/s Ratio Perm		c0.23			0.16			0.14			c0.25	
v/c Ratio		0.82			0.57			0.23			0.41	
Uniform Delay, d1		33.6			30.9			8.8			10.2	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		21.6			6.6			0.7			1.3	
Delay (s)		55.2			37.4			9.6			11.5	
Level of Service		E			D			A			B	
Approach Delay (s)		55.2			37.4			9.6			11.5	
Approach LOS		E			D			A			B	

Intersection Summary			
HCM 2000 Control Delay	27.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	78.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	205	218	148	186
v/c Ratio	0.48	0.51	0.26	0.38
Control Delay	20.0	20.4	13.1	15.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	20.0	20.4	13.1	15.1
Queue Length 50th (ft)	57	61	33	45
Queue Length 95th (ft)	112	119	69	90
Internal Link Dist (ft)	418	274	520	689
Turn Bay Length (ft)				
Base Capacity (vph)	423	431	564	487
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.48	0.51	0.26	0.38

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	69	105	15	23	135	42	4	129	4	20	111	40
Future Volume (vph)	69	105	15	23	135	42	4	129	4	20	111	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		9%			-8%			-4%			0%	
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		0.99			0.96			0.99			0.95	
Flpb, ped/bikes		0.96			0.99			1.00			0.98	
Frt		0.99			0.97			1.00			0.97	
Flt Protected		0.98			0.99			1.00			0.99	
Satd. Flow (prot)		1412			1287			1362			1211	
Flt Permitted		0.84			0.95			0.99			0.96	
Satd. Flow (perm)		1210			1232			1355			1171	
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)	75	114	16	25	147	46	4	140	4	22	121	43
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	205	0	0	218	0	0	148	0	0	186	0
Confl. Peds. (#/hr)	83		47	47		83	93		128	128		93
Heavy Vehicles (%)	0%	0%	0%	0%	1%	2%	0%	0%	0%	0%	0%	2%
Parking (#/hr)				10	10	10	10	10	10	10	10	10
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		19.0			19.0			23.0			23.0	
Effective Green, g (s)		21.0			21.0			25.0			25.0	
Actuated g/C Ratio		0.35			0.35			0.42			0.42	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Lane Grp Cap (vph)		423			431			564			487	
v/s Ratio Prot												
v/s Ratio Perm		0.17			c0.18			0.11			c0.16	
v/c Ratio		0.48			0.51			0.26			0.38	
Uniform Delay, d1		15.3			15.4			11.5			12.1	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		3.9			4.2			1.1			2.3	
Delay (s)		19.2			19.6			12.6			14.4	
Level of Service		B			B			B			B	
Approach Delay (s)		19.2			19.6			12.6			14.4	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	9.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	76	3	25	111	40	11	136	38	24	114	16
Future Vol, veh/h	16	76	3	25	111	40	11	136	38	24	114	16
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	0	0
Mvmt Flow	18	84	3	28	123	44	12	151	42	27	127	18
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9	9.6	9.6	9.4
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	6%	17%	14%	16%
Vol Thru, %	74%	80%	63%	74%
Vol Right, %	21%	3%	23%	10%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	185	95	176	154
LT Vol	11	16	25	24
Through Vol	136	76	111	114
RT Vol	38	3	40	16
Lane Flow Rate	206	106	196	171
Geometry Grp	1	1	1	1
Degree of Util (X)	0.271	0.149	0.262	0.231
Departure Headway (Hd)	4.743	5.068	4.828	4.862
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	752	701	737	732
Service Time	2.809	3.147	2.897	2.932
HCM Lane V/C Ratio	0.274	0.151	0.266	0.234
HCM Control Delay	9.6	9	9.6	9.4
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	1.1	0.5	1	0.9

Intersection	
Intersection Delay, s/veh	3.7
Intersection LOS	A

Approach	NB	SB	NE
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	186	161	21
Demand Flow Rate, veh/h	188	161	21
Vehicles Circulating, veh/h	21	9	126
Vehicles Exiting, veh/h	126	200	44
Ped Vol Crossing Leg, #/h	0	7	0
Ped Cap Adj	1.000	0.999	1.000
Approach Delay, s/veh	3.8	3.6	3.1
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	LT	TR	LR
Assumed Moves	LT	TR	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	188	161	21
Cap Entry Lane, veh/h	1351	1367	1213
Entry HV Adj Factor	0.991	1.000	1.000
Flow Entry, veh/h	186	161	21
Cap Entry, veh/h	1338	1366	1213
V/C Ratio	0.139	0.118	0.017
Control Delay, s/veh	3.8	3.6	3.1
LOS	A	A	A
95th %tile Queue, veh	0	0	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	23	37	129	36	6	112
Future Volume (Veh/h)	23	37	129	36	6	112
Sign Control	Stop		Free			Free
Grade	-4%		1%			1%
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	24	39	134	38	6	117
Pedestrians	5		5			5
Lane Width (ft)	10.0		10.0			10.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	0		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	292	163			177	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	292	163			177	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	96			100	
cM capacity (veh/h)	696	881			1406	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	63	172	123
Volume Left	24	0	6
Volume Right	39	38	0
cSH	800	1700	1406
Volume to Capacity	0.08	0.10	0.00
Queue Length 95th (ft)	6	0	0
Control Delay (s)	9.9	0.0	0.4
Lane LOS	A		A
Approach Delay (s)	9.9	0.0	0.4
Approach LOS	A		

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	24.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	3.5
Intersection LOS	A

Approach	NB	SB	SE
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	161	131	52
Demand Flow Rate, veh/h	161	131	52
Vehicles Circulating, veh/h	29	19	121
Vehicles Exiting, veh/h	144	171	29
Ped Vol Crossing Leg, #/h	9	2	0
Ped Cap Adj	0.999	1.000	1.000
Approach Delay, s/veh	3.7	3.4	3.3
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	LT	TR	LR
Assumed Moves	LT	TR	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	161	131	52
Cap Entry Lane, veh/h	1340	1353	1220
Entry HV Adj Factor	1.000	1.000	1.000
Flow Entry, veh/h	161	131	52
Cap Entry, veh/h	1338	1353	1220
V/C Ratio	0.120	0.097	0.043
Control Delay, s/veh	3.7	3.4	3.3
LOS	A	A	A
95th %tile Queue, veh	0	0	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	174	15	28	338	102	7	107	1	36	180	0
Future Volume (Veh/h)	8	174	15	28	338	102	7	107	1	36	180	0
Sign Control		Free			Free			Stop			Stop	
Grade		6%			-2%			-1%			-2%	
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)	8	181	16	29	352	106	7	111	1	38	188	0
Pedestrians		6			3			3			9	
Lane Width (ft)		10.0			10.0			10.0			10.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					176							
pX, platoon unblocked	0.88						0.88	0.88		0.88	0.88	0.88
vC, conflicting volume	467			200			771	733	195	736	688	420
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	325			200			671	628	195	632	576	272
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			96	67	100	85	48	100
cM capacity (veh/h)	1089			1381			189	340	848	251	365	672

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	205	487	119	226
Volume Left	8	29	7	38
Volume Right	16	106	1	0
cSH	1089	1381	326	339
Volume to Capacity	0.01	0.02	0.36	0.67
Queue Length 95th (ft)	1	2	41	113
Control Delay (s)	0.4	0.7	22.2	34.5
Lane LOS	A	A	C	D
Approach Delay (s)	0.4	0.7	22.2	34.5
Approach LOS			C	D

Intersection Summary			
Average Delay	10.5		
Intersection Capacity Utilization	65.2%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	110	971	956	0	2	212
Future Volume (Veh/h)	110	971	956	0	2	212
Sign Control		Free	Free		Stop	
Grade		0%	0%		1%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	117	1033	1017	0	2	226
Pedestrians					28	
Lane Width (ft)					10.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					2	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			310			
pX, platoon unblocked						
vC, conflicting volume	1045				1796	536
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1045				1796	536
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	82				97	53
cM capacity (veh/h)	654				59	482

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	461	689	678	339	228
Volume Left	117	0	0	0	2
Volume Right	0	0	0	0	226
cSH	654	1700	1700	1700	453
Volume to Capacity	0.18	0.41	0.40	0.20	0.50
Queue Length 95th (ft)	16	0	0	0	69
Control Delay (s)	4.9	0.0	0.0	0.0	20.7
Lane LOS	A				C
Approach Delay (s)	2.0		0.0		20.7
Approach LOS					C

Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	87.4%	ICU Level of Service	E
Analysis Period (min)	15		

Lane Group	EBT	WBL	WBT	NET	SWT
Lane Group Flow (vph)	223	295	259	1038	738
v/c Ratio	0.40	1.08	0.48	0.77	0.93
Control Delay	32.0	109.1	28.4	22.3	27.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	32.0	109.1	28.4	22.3	27.8
Queue Length 50th (ft)	129	~259	181	288	257
Queue Length 95th (ft)	201	m#382	m237	384	#769
Internal Link Dist (ft)	96		233	230	156
Turn Bay Length (ft)		85			
Base Capacity (vph)	560	273	540	1349	797
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	1.08	0.48	0.77	0.93

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	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	22	181	7	277	238	6	63	746	166	13	632	49
Future Volume (vph)	22	181	7	277	238	6	63	746	166	13	632	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	10	10	10	10	10	10	10	10	10
Grade (%)		2%			4%			0%			1%	
Total Lost time (s)		3.5		3.5	3.5			3.0			3.0	
Lane Util. Factor		1.00		1.00	1.00			0.95			1.00	
Frpb, ped/bikes		1.00		1.00	1.00			0.98			0.99	
Flpb, ped/bikes		1.00		0.97	1.00			1.00			1.00	
Frt		1.00		1.00	1.00			0.97			0.99	
Flt Protected		0.99		0.95	1.00			1.00			1.00	
Satd. Flow (prot)		1671		1432	1542			2672			1369	
Flt Permitted		0.95		0.52	1.00			0.84			0.97	
Satd. Flow (perm)		1599		781	1542			2241			1335	
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)	23	193	7	295	253	6	67	794	177	14	672	52
RTOR Reduction (vph)	0	1	0	0	1	0	0	15	0	0	2	0
Lane Group Flow (vph)	0	222	0	295	258	0	0	1023	0	0	736	0
Confl. Peds. (#/hr)	11		23	23		11	26		25	25		26
Confl. Bikes (#/hr)			3			2						
Heavy Vehicles (%)	0%	0%	0%	1%	1%	0%	0%	4%	2%	0%	5%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	20	0	0	20	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		40.0		40.0	40.0			69.5			69.5	
Effective Green, g (s)		42.0		42.0	42.0			71.5			71.5	
Actuated g/C Ratio		0.35		0.35	0.35			0.60			0.60	
Clearance Time (s)		5.5		5.5	5.5			5.0			5.0	
Lane Grp Cap (vph)		559		273	539			1335			795	
v/s Ratio Prot					0.17							
v/s Ratio Perm		0.14		c0.38				0.46			c0.55	
v/c Ratio		0.40		1.08	0.48			0.77			0.93	
Uniform Delay, d1		29.4		39.0	30.5			18.0			21.8	
Progression Factor		1.00		0.89	0.83			1.00			0.38	
Incremental Delay, d2		2.1		74.1	2.7			4.3			17.6	
Delay (s)		31.6		108.8	28.0			22.3			25.8	
Level of Service		C		F	C			C			C	
Approach Delay (s)		31.6			71.0			22.3			25.8	
Approach LOS		C			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	34.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.5
Intersection Capacity Utilization	102.2%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	495	16	14	565	40	33	15	13	12	1	10
Future Volume (Veh/h)	16	495	16	14	565	40	33	15	13	12	1	10
Sign Control		Free			Free			Stop			Stop	
Grade		5%			4%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	17	521	17	15	595	42	35	16	14	13	1	11
Pedestrians								23			11	
Lane Width (ft)								10.0			10.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								2			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		313			929							
pX, platoon unblocked	0.86			0.92			0.90	0.90	0.92	0.90	0.90	0.86
vC, conflicting volume	648			561			1244	1264	552	1242	1252	627
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	508			482			1021	1044	473	1020	1030	484
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			98			80	92	97	92	99	98
cM capacity (veh/h)	901			981			177	194	537	167	198	497

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	555	652	65	25
Volume Left	17	15	35	13
Volume Right	17	42	14	11
cSH	901	981	212	239
Volume to Capacity	0.02	0.02	0.31	0.10
Queue Length 95th (ft)	1	1	31	9
Control Delay (s)	0.5	0.4	29.3	21.9
Lane LOS	A	A	D	C
Approach Delay (s)	0.5	0.4	29.3	21.9
Approach LOS			D	C

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	53.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	SET	NWT
Lane Group Flow (vph)	89	349	63	370	1435	1445
v/c Ratio	0.81	0.84	0.52	0.85	0.86	0.71
Control Delay	86.4	58.7	53.2	59.2	16.7	22.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	86.4	58.7	53.2	59.2	16.7	22.2
Queue Length 50th (ft)	68	269	41	270	125	289
Queue Length 95th (ft)	m#144	m#410	94	#436	196	347
Internal Link Dist (ft)		849		339	239	287
Turn Bay Length (ft)	70		110			
Base Capacity (vph)	110	416	122	437	1677	2024
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.84	0.52	0.85	0.86	0.71

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	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	85	239	92	60	305	47	6	1264	93	7	1331	35
Future Volume (vph)	85	239	92	60	305	47	6	1264	93	7	1331	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		5%			3%			1%			-1%	
Total Lost time (s)	4.0	4.0		4.0	4.0			3.5			3.5	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.95			0.91	
Frpb, ped/bikes	1.00	0.97		1.00	0.99			0.97			0.99	
Flpb, ped/bikes	0.98	1.00		0.96	1.00			1.00			1.00	
Frt	1.00	0.96		1.00	0.98			0.99			1.00	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1416	1447		1412	1521			2701			3924	
Flt Permitted	0.26	1.00		0.29	1.00			0.95			0.93	
Satd. Flow (perm)	383	1447		426	1521			2565			3653	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	89	252	97	63	321	49	6	1331	98	7	1401	37
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	89	349	0	63	370	0	0	1435	0	0	1445	0
Confl. Peds. (#/hr)	39		56	56		39	69		76	76		69
Confl. Bikes (#/hr)						2			5			5
Heavy Vehicles (%)	2%	0%	0%	2%	0%	2%	83%	3%	2%	0%	3%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	20	20	0	0	0
Parking (#/hr)											20	20
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		8			4		1	6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	32.5	32.5		32.5	32.5			76.0			64.5	
Effective Green, g (s)	34.5	34.5		34.5	34.5			78.0			66.5	
Actuated g/C Ratio	0.29	0.29		0.29	0.29			0.65			0.55	
Clearance Time (s)	6.0	6.0		6.0	6.0			5.5			5.5	
Lane Grp Cap (vph)	110	416		122	437			1676			2024	
v/s Ratio Prot		0.24			c0.24			c0.06				
v/s Ratio Perm	0.23			0.15				c0.50			0.40	
v/c Ratio	0.81	0.84		0.52	0.85			0.86			0.71	
Uniform Delay, d1	39.7	40.1		35.8	40.3			16.6			19.7	
Progression Factor	1.01	1.01		1.00	1.00			0.65			1.00	
Incremental Delay, d2	43.3	17.1		14.8	18.0			5.4			2.2	
Delay (s)	83.5	57.8		50.5	58.3			16.3			21.9	
Level of Service	F	E		D	E			B			C	
Approach Delay (s)		63.0			57.2			16.3			21.9	
Approach LOS		E			E			B			C	

Intersection Summary			
HCM 2000 Control Delay	28.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	84.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	24	18	22	12	11	19	815	24	30	680	28
Future Volume (Veh/h)	0	24	18	22	12	11	19	815	24	30	680	28
Sign Control		Stop			Stop			Free			Free	
Grade		-4%			6%			-2%			2%	
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	28	21	26	14	13	22	959	28	35	800	33
Pedestrians		61			11			2			10	
Lane Width (ft)		10.0			10.0			10.0			10.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		4			1			0			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								726			393	
pX, platoon unblocked	0.83	0.83	0.83	0.83	0.83		0.83					
vC, conflicting volume	1501	1990	880	1952	1992	514	894			998		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1501	2089	753	2043	2092	514	771			998		
tC, single (s)	7.5	6.5	6.9	7.6	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.2			2.2		
p0 queue free %	100	28	93	0	63	97	97			95		
cM capacity (veh/h)	43	39	284	9	38	503	679			696		

Direction, Lane #	EB 1	WB 1	NE 1	NE 2	SW 1
Volume Total	49	53	502	508	868
Volume Left	0	26	22	0	35
Volume Right	21	13	0	28	33
cSH	62	16	679	1700	696
Volume to Capacity	0.79	3.29	0.03	0.30	0.05
Queue Length 95th (ft)	89	Err	3	0	4
Control Delay (s)	169.0	Err	0.9	0.0	1.4
Lane LOS	F	F	A		A
Approach Delay (s)	169.0	Err	0.5		1.4
Approach LOS	F	F			

Intersection Summary			
Average Delay	272.8		
Intersection Capacity Utilization	86.4%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	827	1	14	796	4	70
Future Volume (Veh/h)	827	1	14	796	4	70
Sign Control	Free			Free	Yield	
Grade	-1%			2%	2%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	919	1	16	884	4	78
Pedestrians					25	
Lane Width (ft)					10.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					2	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	554			565		
pX, platoon unblocked					0.83	
vC, conflicting volume			945		1860	485
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			945		1935	485
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		91	85
cM capacity (veh/h)			709		46	519

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	613	307	900	82
Volume Left	0	0	16	4
Volume Right	0	1	0	78
cSH	1700	1700	709	345
Volume to Capacity	0.36	0.18	0.02	0.24
Queue Length 95th (ft)	0	0	2	23
Control Delay (s)	0.0	0.0	0.7	18.7
Lane LOS			A	C
Approach Delay (s)	0.0		0.7	18.7
Approach LOS				C

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	70.7%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Volume (veh/h)	0	62	0	774	632	30
Future Volume (Veh/h)	0	62	0	774	632	30
Sign Control	Stop			Free	Free	
Grade	0%			-1%	1%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	0	83	0	1032	843	40
Pedestrians	25					
Lane Width (ft)	10.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	2					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				236	883	
pX, platoon unblocked	0.90	0.81	0.81			
vC, conflicting volume	1404	888	908			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	591	747	772			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	71	100			
cM capacity (veh/h)	385	284	670			

Direction, Lane #	SE 1	NE 1	NE 2	SW 1
Volume Total	83	516	516	883
Volume Left	0	0	0	0
Volume Right	83	0	0	40
cSH	284	1700	1700	1700
Volume to Capacity	0.29	0.30	0.30	0.52
Queue Length 95th (ft)	30	0	0	0
Control Delay (s)	22.8	0.0	0.0	0.0
Lane LOS	C			
Approach Delay (s)	22.8	0.0		0.0
Approach LOS	C			

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	NBT	SBT	NET
Lane Group Flow (vph)	1505	1519	1078
v/c Ratio	0.77	0.67	1.04
Control Delay	24.1	7.7	66.9
Queue Delay	1.6	0.6	22.7
Total Delay	25.7	8.4	89.6
Queue Length 50th (ft)	246	83	~470
Queue Length 95th (ft)	314	m92	#598
Internal Link Dist (ft)	297	110	29
Turn Bay Length (ft)			
Base Capacity (vph)	1954	2275	1033
Starvation Cap Reductn	267	363	154
Spillback Cap Reductn	56	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.89	0.79	1.23

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	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	1118	282	0	1413	0	219	719	65	0	0	0
Future Volume (vph)	0	1118	282	0	1413	0	219	719	65	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	12	12	12
Grade (%)		1%			-1%			-3%			1%	
Total Lost time (s)		2.0			2.0			7.0				
Lane Util. Factor		0.91			0.91			0.95				
Frpb, ped/bikes		0.98			1.00			1.00				
Flpb, ped/bikes		1.00			1.00			1.00				
Frt		0.97			1.00			0.99				
Flt Protected		1.00			1.00			0.99				
Satd. Flow (prot)		3844			4138			3102				
Flt Permitted		1.00			1.00			0.99				
Satd. Flow (perm)		3844			4138			3102				
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	1202	303	0	1519	0	235	773	70	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1505	0	0	1519	0	0	1078	0	0	0	0
Confl. Peds. (#/hr)	80		117	117		80	16		58	58		16
Confl. Bikes (#/hr)			4			4			2			
Heavy Vehicles (%)	0%	3%	7%	0%	3%	0%	3%	4%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	20	0	0	0	0	0	0	0
Parking (#/hr)		0	0									
Turn Type		NA			NA		Perm	NA				
Protected Phases		15 6 1			15 6 1 2			3 4				
Permitted Phases							3 4					
Actuated Green, G (s)		56.0			64.0			48.0				
Effective Green, g (s)		54.0			57.0			50.0				
Actuated g/C Ratio		0.45			0.48			0.42				
Clearance Time (s)												
Lane Grp Cap (vph)		1729			1965			1292				
v/s Ratio Prot		c0.39			c0.37							
v/s Ratio Perm								0.35				
v/c Ratio		0.87			0.77			0.83				
Uniform Delay, d1		29.8			26.1			31.3				
Progression Factor		0.88			0.35			0.67				
Incremental Delay, d2		6.1			1.9			6.0				
Delay (s)		32.2			11.0			27.0				
Level of Service		C			B			C				
Approach Delay (s)		32.2			11.0			27.0			0.0	
Approach LOS		C			B			C			A	

Intersection Summary			
HCM 2000 Control Delay	23.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	73.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	SBL	SBR	NEL	NER
Lane Configurations						
Traffic Volume (veh/h)	0	114	0	0	899	149
Future Volume (Veh/h)	0	114	0	0	899	149
Sign Control	Yield		Free		Free	
Grade	-4%		0%		1%	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81
Hourly flow rate (vph)	0	141	0	0	1110	184
Pedestrians	11					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	1					
Right turn flare (veh)						
Median type			None		None	
Median storage veh)						
Upstream signal (ft)			187		111	
pX, platoon unblocked	0.71	0.71	0.71			
vC, conflicting volume	1213	658	1305			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	480	0	609			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	81	100			
cM capacity (veh/h)	362	762	678			

Direction, Lane #	WB 1	NE 1	NE 2
Volume Total	141	740	554
Volume Left	0	0	0
Volume Right	141	0	184
cSH	762	1700	1700
Volume to Capacity	0.19	0.44	0.33
Queue Length 95th (ft)	17	0	0
Control Delay (s)	10.8	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.8	0.0	
Approach LOS	B		

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	37.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	NBT	SBT	SWT
Lane Group Flow (vph)	1415	1504	948
v/c Ratio	0.63	0.72	0.96
Control Delay	6.2	25.3	39.2
Queue Delay	0.9	0.2	40.8
Total Delay	7.1	25.6	80.0
Queue Length 50th (ft)	70	319	327
Queue Length 95th (ft)	m76	378	#501
Internal Link Dist (ft)	110	479	17
Turn Bay Length (ft)			
Base Capacity (vph)	2241	2090	985
Starvation Cap Reductn	500	0	121
Spillback Cap Reductn	0	126	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.81	0.77	1.10

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	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	1330	0	0	1165	249	0	0	0	255	601	36
Future Volume (vph)	0	1330	0	0	1165	249	0	0	0	255	601	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	11	11	11
Grade (%)		2%			-2%			0%			-1%	
Total Lost time (s)		2.0			2.0						7.0	
Lane Util. Factor		0.91			0.91						0.95	
Frpb, ped/bikes		1.00			0.99						1.00	
Flpb, ped/bikes		1.00			1.00						1.00	
Frt		1.00			0.97						0.99	
Flt Protected		1.00			1.00						0.99	
Satd. Flow (prot)		4076			4110						2957	
Flt Permitted		1.00			1.00						0.99	
Satd. Flow (perm)		4076			4110						2957	
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)	0	1415	0	0	1239	265	0	0	0	271	639	38
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1415	0	0	1504	0	0	0	0	0	948	0
Confl. Peds. (#/hr)	98		145	145		98	77		4	4		77
Confl. Bikes (#/hr)			3			3						
Heavy Vehicles (%)	0%	3%	0%	0%	3%	2%	0%	0%	0%	5%	4%	3%
Bus Blockages (#/hr)	0	20	0	0	0	0	0	0	0	0	0	0
Turn Type		NA			NA					Perm	NA	
Protected Phases		15 6 1 2			15 6 1						3 4	
Permitted Phases										3 4		
Actuated Green, G (s)		64.0			56.0						48.0	
Effective Green, g (s)		57.0			54.0						50.0	
Actuated g/C Ratio		0.48			0.45						0.42	
Clearance Time (s)												
Lane Grp Cap (vph)		1936			1849						1232	
v/s Ratio Prot		c0.35			c0.37							
v/s Ratio Perm											0.32	
v/c Ratio		0.73			0.81						0.77	
Uniform Delay, d1		25.3			28.6						30.1	
Progression Factor		0.29			1.00						0.48	
Incremental Delay, d2		1.4			4.0						4.0	
Delay (s)		8.7			32.7						18.3	
Level of Service		A			C						B	
Approach Delay (s)		8.7			32.7			0.0			18.3	
Approach LOS		A			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	20.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	73.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	123	0	0	702	199
Future Volume (Veh/h)	0	123	0	0	702	199
Sign Control	Stop			Free	Free	
Grade	-4%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	131	0	0	747	212
Pedestrians	267					
Lane Width (ft)	10.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	19					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				218	110	
pX, platoon unblocked						
vC, conflicting volume	1120	746	1226			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1120	746	1226			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	55	100			
cM capacity (veh/h)	166	294	469			

Direction, Lane #	EB 1	SB 1	SB 2
Volume Total	131	498	461
Volume Left	0	0	0
Volume Right	131	0	212
cSH	294	1700	1700
Volume to Capacity	0.45	0.29	0.27
Queue Length 95th (ft)	55	0	0
Control Delay (s)	26.8	0.0	0.0
Lane LOS	D		
Approach Delay (s)	26.8	0.0	
Approach LOS	D		

Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	45.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	NBT	NBR	SBR	SWT
Lane Group Flow (vph)	197	1187	175	918
v/c Ratio	0.25	0.99	0.13	0.75
Control Delay	18.6	34.2	0.2	34.6
Queue Delay	0.0	0.0	0.1	3.4
Total Delay	18.6	34.2	0.3	38.0
Queue Length 50th (ft)	108	612	0	313
Queue Length 95th (ft)	m108	169	0	235
Internal Link Dist (ft)	1			419
Turn Bay Length (ft)				
Base Capacity (vph)	794	1204	1305	1216
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	441	206
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.25	0.99	0.20	0.91

Intersection Summary

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

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	124	748	0	0	110	0	0	0	0	573	5
Future Volume (vph)	0	124	748	0	0	110	0	0	0	0	573	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			0%			1%	
Total Lost time (s)		2.0	7.0			2.0					2.0	
Lane Util. Factor		0.95	0.95			1.00					0.95	
Frpb, ped/bikes		1.00	1.00			1.00					1.00	
Flpb, ped/bikes		1.00	1.00			1.00					1.00	
Frt		1.00	0.85			0.86					1.00	
Flt Protected		1.00	1.00			1.00					1.00	
Satd. Flow (prot)		1444	1257			1305					2918	
Flt Permitted		1.00	1.00			1.00					1.00	
Satd. Flow (perm)		1444	1257			1305					2918	
Peak-hour factor, PHF	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63
Adj. Flow (vph)	0	197	1187	0	0	175	0	0	0	0	910	8
RTOR Reduction (vph)	0	0	209	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	197	978	0	0	175	0	0	0	0	917	0
Confl. Peds. (#/hr)			7	7			7					7
Bus Blockages (#/hr)	0	6	0	0	0	9	0	0	0	0	6	6
Turn Type		NA	custom			Free					NA	
Protected Phases		4 15 6 1	11 4 15								2 3	
Permitted Phases						Free						
Actuated Green, G (s)		61.0	97.0			120.0					43.0	
Effective Green, g (s)		59.0	97.0			120.0					45.0	
Actuated g/C Ratio		0.49	0.81			1.00					0.38	
Clearance Time (s)												
Lane Grp Cap (vph)		709	1016			1305					1094	
v/s Ratio Prot		c0.14	c0.78								0.31	
v/s Ratio Perm						0.13						
v/c Ratio		0.28	0.96			0.13					0.84	
Uniform Delay, d1		18.0	9.9			0.0					34.2	
Progression Factor		1.25	13.66			1.00					1.00	
Incremental Delay, d2		0.8	18.3			0.2					7.7	
Delay (s)		23.2	153.9			0.2					41.9	
Level of Service		C	F			A					D	
Approach Delay (s)		135.3			0.2			0.0			41.9	
Approach LOS		F			A			A			D	

Intersection Summary			
HCM 2000 Control Delay	91.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

APPENDIX J
IMPROVEMENT ANALYSES

Lane Group	NBT	SBT	SET	NWT
Lane Group Flow (vph)	217	218	421	254
v/c Ratio	0.63	0.60	0.55	0.29
Control Delay	40.5	38.9	15.1	10.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	40.5	38.9	15.1	10.4
Queue Length 50th (ft)	119	119	146	71
Queue Length 95th (ft)	202	199	234	114
Internal Link Dist (ft)	689	132	177	285
Turn Bay Length (ft)				
Base Capacity (vph)	344	362	759	881
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.63	0.60	0.55	0.29

Intersection Summary

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	68	135	1	9	193	3	3	313	80	25	183	30
Future Volume (vph)	68	135	1	9	193	3	3	313	80	25	183	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-4%			5%			7%			-7%	
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		1.00			1.00			0.99			1.00	
Flpb, ped/bikes		0.98			1.00			1.00			1.00	
Frt		1.00			1.00			0.97			0.98	
Flt Protected		0.98			1.00			1.00			0.99	
Satd. Flow (prot)		1551			1299			1253			1544	
Flt Permitted		0.77			0.98			1.00			0.94	
Satd. Flow (perm)		1218			1281			1252			1454	
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)	72	144	1	10	205	3	3	333	85	27	195	32
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	217	0	0	218	0	0	421	0	0	254	0
Confl. Peds. (#/hr)	58		42	42		58	20		8	8		20
Heavy Vehicles (%)	2%	0%	0%	0%	1%	0%	0%	0%	5%	0%	5%	2%
Parking (#/hr)				10	10	10	10	10	10			
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		26.0			26.0			58.0			58.0	
Effective Green, g (s)		28.0			28.0			60.0			60.0	
Actuated g/C Ratio		0.28			0.28			0.61			0.61	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Lane Grp Cap (vph)		344			362			758			881	
v/s Ratio Prot												
v/s Ratio Perm		c0.18			0.17			c0.34			0.17	
v/c Ratio		0.63			0.60			0.56			0.29	
Uniform Delay, d1		31.0			30.7			11.6			9.3	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		8.5			7.2			2.9			0.8	
Delay (s)		39.5			37.9			14.5			10.1	
Level of Service		D			D			B			B	
Approach Delay (s)		39.5			37.9			14.5			10.1	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	23.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	99.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	80.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	311	203	317	252
v/c Ratio	0.64	0.40	0.77	0.63
Control Delay	20.9	14.6	33.3	25.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	20.9	14.6	33.3	25.6
Queue Length 50th (ft)	84	48	100	75
Queue Length 95th (ft)	144	86	#191	130
Internal Link Dist (ft)	418	274	520	689
Turn Bay Length (ft)				
Base Capacity (vph)	484	512	413	399
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.64	0.40	0.77	0.63

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)	104	135	19	29	123	17	13	226	24	0	169	40
Future Volume (vph)	104	135	19	29	123	17	13	226	24	0	169	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		9%			-8%			-4%			0%	
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		0.98			0.97			0.95			0.93	
Flpb, ped/bikes		0.93			0.98			0.99			1.00	
Frt		0.99			0.99			0.99			0.97	
Flt Protected		0.98			0.99			1.00			1.00	
Satd. Flow (prot)		1349			1286			1263			1198	
Flt Permitted		0.81			0.91			0.98			1.00	
Satd. Flow (perm)		1119			1183			1238			1198	
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	125	163	23	35	148	20	16	272	29	0	204	48
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	311	0	0	203	0	0	317	0	0	252	0
Confl. Peds. (#/hr)	129		118	118		129	159		273	273		159
Heavy Vehicles (%)	0%	0%	0%	0%	3%	0%	0%	1%	6%	0%	2%	4%
Parking (#/hr)				10	10	10	10	10	10	10	10	10
Turn Type	Perm	NA		Perm	NA		Perm	NA			NA	
Protected Phases		2			2			4			4	
Permitted Phases	2			2			4			4		
Actuated Green, G (s)		24.0			24.0			18.0			18.0	
Effective Green, g (s)		26.0			26.0			20.0			20.0	
Actuated g/C Ratio		0.43			0.43			0.33			0.33	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Lane Grp Cap (vph)		484			512			412			399	
v/s Ratio Prot											0.21	
v/s Ratio Perm		c0.28			0.17			c0.26				
v/c Ratio		0.64			0.40			0.77			0.63	
Uniform Delay, d1		13.4			11.6			17.9			16.9	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		6.4			2.3			13.0			7.4	
Delay (s)		19.8			13.9			30.9			24.3	
Level of Service		B			B			C			C	
Approach Delay (s)		19.8			13.9			30.9			24.3	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	23.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	11.3
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	141	10	29	90	17	12	150	42	53	127	23
Future Vol, veh/h	40	141	10	29	90	17	12	150	42	53	127	23
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	0	2	0	4	1	0	0	3	0	0	0	0
Mvmt Flow	48	168	12	35	107	20	14	179	50	63	151	27
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	11.5	10.6	11.3	11.5
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	6%	21%	21%	26%
Vol Thru, %	74%	74%	66%	63%
Vol Right, %	21%	5%	12%	11%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	204	191	136	203
LT Vol	12	40	29	53
Through Vol	150	141	90	127
RT Vol	42	10	17	23
Lane Flow Rate	243	227	162	242
Geometry Grp	1	1	1	1
Degree of Util (X)	0.357	0.348	0.254	0.361
Departure Headway (Hd)	5.286	5.504	5.644	5.378
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	680	653	635	667
Service Time	3.332	3.551	3.696	3.424
HCM Lane V/C Ratio	0.357	0.348	0.255	0.363
HCM Control Delay	11.3	11.5	10.6	11.5
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	1.6	1.6	1	1.6

Intersection	
Intersection Delay, s/veh	3.8
Intersection LOS	A

Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	64	204	193
Demand Flow Rate, veh/h	64	204	193
Vehicles Circulating, veh/h	138	59	2
Vehicles Exiting, veh/h	57	143	261
Ped Vol Crossing Leg, #/h	3	0	3
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	3.4	4.1	3.7
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	LR	LT	TR
Assumed Moves	LR	LT	TR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	64	204	193
Cap Entry Lane, veh/h	1199	1299	1377
Entry HV Adj Factor	1.000	1.000	1.000
Flow Entry, veh/h	64	204	193
Cap Entry, veh/h	1198	1299	1376
V/C Ratio	0.053	0.157	0.140
Control Delay, s/veh	3.4	4.1	3.7
LOS	A	A	A
95th %tile Queue, veh	0	1	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	14	20	154	43	36	86
Future Volume (Veh/h)	14	20	154	43	36	86
Sign Control	Stop		Free			Free
Grade	-4%		1%			1%
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	16	22	173	48	40	97
Pedestrians	5		5			5
Lane Width (ft)	10.0		10.0			10.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	0		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	384	207			226	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	384	207			226	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	97			97	
cM capacity (veh/h)	601	833			1350	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	38	221	137
Volume Left	16	0	40
Volume Right	22	48	0
cSH	716	1700	1350
Volume to Capacity	0.05	0.13	0.03
Queue Length 95th (ft)	4	0	2
Control Delay (s)	10.3	0.0	2.4
Lane LOS	B		A
Approach Delay (s)	10.3	0.0	2.4
Approach LOS	B		

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	34.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	3.6
Intersection LOS	A

Approach	NB	SB	SE
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	179	109	86
Demand Flow Rate, veh/h	182	109	86
Vehicles Circulating, veh/h	40	11	107
Vehicles Exiting, veh/h	153	211	13
Ped Vol Crossing Leg, #/h	6	0	0
Ped Cap Adj	0.999	1.000	1.000
Approach Delay, s/veh	3.9	3.3	3.5
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	LT	TR	LR
Assumed Moves	LT	TR	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	182	109	86
Cap Entry Lane, veh/h	1325	1364	1237
Entry HV Adj Factor	0.982	1.000	1.000
Flow Entry, veh/h	179	109	86
Cap Entry, veh/h	1299	1364	1237
V/C Ratio	0.138	0.080	0.070
Control Delay, s/veh	3.9	3.3	3.5
LOS	A	A	A
95th %tile Queue, veh	0	0	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	299	40	33	194	147	7	66	2	27	105	0
Future Volume (Veh/h)	4	299	40	33	194	147	7	66	2	27	105	0
Sign Control		Free			Free			Stop			Stop	
Grade		6%			-2%			-1%			-2%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	4	322	43	35	209	158	8	71	2	29	113	0
Pedestrians		6			1			3			9	
Lane Width (ft)		10.0			10.0			10.0			10.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					176							
pX, platoon unblocked	0.92						0.92	0.92		0.92	0.92	0.92
vC, conflicting volume	376			368			775	800	348	757	743	303
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	277			368			711	739	348	692	676	198
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			96	77	100	89	66	100
cM capacity (veh/h)	1185			1199			229	307	698	262	331	772

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	369	402	81	142
Volume Left	4	35	8	29
Volume Right	43	158	2	0
cSH	1185	1199	301	314
Volume to Capacity	0.00	0.03	0.27	0.45
Queue Length 95th (ft)	0	2	27	56
Control Delay (s)	0.1	1.0	21.3	25.6
Lane LOS	A	A	C	D
Approach Delay (s)	0.1	1.0	21.3	25.6
Approach LOS			C	D

Intersection Summary			
Average Delay	5.8		
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	95	941	995	0	0	219
Future Volume (Veh/h)	95	941	995	0	0	219
Sign Control		Free	Free		Stop	
Grade		0%	0%		1%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	103	1023	1082	0	0	238
Pedestrians					20	
Lane Width (ft)					10.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			310			
pX, platoon unblocked	0.83				0.83	0.83
vC, conflicting volume	1102				1820	561
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	702				1571	47
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	86				100	71
cM capacity (veh/h)	726				72	825

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	444	682	721	361	238
Volume Left	103	0	0	0	0
Volume Right	0	0	0	0	238
cSH	726	1700	1700	1700	825
Volume to Capacity	0.14	0.40	0.42	0.21	0.29
Queue Length 95th (ft)	12	0	0	0	30
Control Delay (s)	4.0	0.0	0.0	0.0	11.1
Lane LOS	A				B
Approach Delay (s)	1.6		0.0		11.1
Approach LOS					B

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	87.6%	ICU Level of Service	E
Analysis Period (min)	15		

Lane Group	EBT	WBL	WBT	NET	SWT
Lane Group Flow (vph)	302	166	189	1001	917
v/c Ratio	0.75	0.73	0.36	1.00	0.65
Control Delay	54.8	39.6	23.0	51.9	16.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	54.8	39.6	23.0	51.9	16.1
Queue Length 50th (ft)	217	116	132	~372	182
Queue Length 95th (ft)	#343	m153	m180	#546	330
Internal Link Dist (ft)	96		233	230	156
Turn Bay Length (ft)		85			
Base Capacity (vph)	401	226	527	998	1404
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	0.75	0.73	0.36	1.00	0.65

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	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	31	256	0	158	176	4	108	583	259	38	768	66
Future Volume (vph)	31	256	0	158	176	4	108	583	259	38	768	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	10	10	10	10	10	10	10	10	10
Grade (%)		2%			4%			0%			1%	
Total Lost time (s)		3.0		3.0	3.0			3.5			3.5	
Lane Util. Factor		1.00		1.00	1.00			0.95			0.95	
Frpb, ped/bikes		1.00		1.00	1.00			0.97			0.99	
Flpb, ped/bikes		1.00		1.00	1.00			1.00			1.00	
Frt		1.00		1.00	1.00			0.96			0.99	
Flt Protected		0.99		0.95	1.00			0.99			1.00	
Satd. Flow (prot)		1679		1457	1542			2394			2696	
Flt Permitted		0.95		0.31	1.00			0.66			0.86	
Satd. Flow (perm)		1603		469	1542			1599			2317	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	33	269	0	166	185	4	114	614	273	40	808	69
RTOR Reduction (vph)	0	0	0	0	1	0	0	32	0	0	5	0
Lane Group Flow (vph)	0	302	0	166	188	0	0	969	0	0	912	0
Confl. Peds. (#/hr)	8		10	10		8	15		16	16		15
Confl. Bikes (#/hr)			3			2						
Heavy Vehicles (%)	0%	0%	0%	2%	1%	0%	0%	7%	1%	0%	6%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	20	0	0	20	0
Parking (#/hr)							10	10	10			
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		8		7	4			2			2	
Permitted Phases	8			4			2			2		
Actuated Green, G (s)		28.0		39.0	39.0			70.5			70.5	
Effective Green, g (s)		30.0		41.0	41.0			72.5			72.5	
Actuated g/C Ratio		0.25		0.34	0.34			0.60			0.60	
Clearance Time (s)		5.0		5.0	5.0			5.5			5.5	
Lane Grp Cap (vph)		400		226	526			966			1399	
v/s Ratio Prot				c0.05	0.12							
v/s Ratio Perm		0.19		c0.20				c0.61			0.39	
v/c Ratio		0.76		0.73	0.36			1.00			0.65	
Uniform Delay, d1		41.6		34.9	29.6			23.8			15.5	
Progression Factor		1.00		0.75	0.72			1.00			0.88	
Incremental Delay, d2		12.5		14.6	1.4			29.7			2.3	
Delay (s)		54.1		40.9	22.7			53.4			16.0	
Level of Service		D		D	C			D			B	
Approach Delay (s)		54.1			31.2			53.4			16.0	
Approach LOS		D			C			D			B	

Intersection Summary			
HCM 2000 Control Delay	37.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	100.2%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	527	3	4	308	21	26	24	11	6	0	28
Future Volume (Veh/h)	23	527	3	4	308	21	26	24	11	6	0	28
Sign Control		Free			Free			Stop			Stop	
Grade		5%			4%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	25	567	3	4	331	23	28	26	12	6	0	30
Pedestrians								10			8	
Lane Width (ft)								10.0			10.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		313			929							
pX, platoon unblocked	0.91			0.85			0.90	0.90	0.85	0.90	0.90	0.91
vC, conflicting volume	362			580			1009	998	578	1002	988	350
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	256			422			738	727	420	730	715	244
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			100			90	91	98	98	100	96
cM capacity (veh/h)	1191			964			276	303	537	267	307	723

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	595	358	66	36
Volume Left	25	4	28	6
Volume Right	3	23	12	30
cSH	1191	964	315	563
Volume to Capacity	0.02	0.00	0.21	0.06
Queue Length 95th (ft)	2	0	19	5
Control Delay (s)	0.6	0.1	19.4	11.8
Lane LOS	A	A	C	B
Approach Delay (s)	0.6	0.1	19.4	11.8
Approach LOS			C	B

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	60.9%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	SET	NWT
Lane Group Flow (vph)	70	392	63	329	1867	1247
v/c Ratio	0.58	0.98	0.77	0.81	0.75	0.91
Control Delay	46.3	69.2	93.4	58.0	4.2	34.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.3	69.2	93.4	58.0	4.2	34.1
Queue Length 50th (ft)	44	317	45	239	52	431
Queue Length 95th (ft)	m51	m#425	#130	#388	61	#612
Internal Link Dist (ft)		849		339	239	287
Turn Bay Length (ft)	70		110			
Base Capacity (vph)	120	399	82	405	2501	1373
Starvation Cap Reductn	0	0	0	0	20	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.98	0.77	0.81	0.75	0.91

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	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	64	279	77	57	246	54	2	1625	72	3	1077	55
Future Volume (vph)	64	279	77	57	246	54	2	1625	72	3	1077	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		5%			3%			1%			-1%	
Total Lost time (s)	4.0	4.0		4.0	4.0			3.5			3.5	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.91			0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.99			0.98			0.99	
Flpb, ped/bikes	0.97	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.97		1.00	0.97			0.99			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1440	1477		1460	1496			3966			2532	
Flt Permitted	0.29	1.00		0.20	1.00			0.94			0.95	
Satd. Flow (perm)	444	1477		304	1496			3726			2405	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	70	307	85	63	270	59	2	1786	79	3	1184	60
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	70	392	0	63	329	0	0	1867	0	0	1247	0
Confl. Peds. (#/hr)	38		6	6		38	36		76	76		36
Confl. Bikes (#/hr)						2			5			5
Heavy Vehicles (%)	0%	1%	3%	2%	1%	0%	50%	4%	2%	0%	7%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	20	20	0	0	0
Parking (#/hr)											20	20
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		8			4		1	6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	30.5	30.5		30.5	30.5			78.0			66.5	
Effective Green, g (s)	32.5	32.5		32.5	32.5			80.0			68.5	
Actuated g/C Ratio	0.27	0.27		0.27	0.27			0.67			0.57	
Clearance Time (s)	6.0	6.0		6.0	6.0			5.5			5.5	
Lane Grp Cap (vph)	120	400		82	405			2500			1372	
v/s Ratio Prot		c0.27			0.22			c0.05				
v/s Ratio Perm	0.16			0.21				0.45			c0.52	
v/c Ratio	0.58	0.98		0.77	0.81			0.75			0.91	
Uniform Delay, d1	37.9	43.4		40.3	40.9			13.3			23.0	
Progression Factor	0.87	0.89		1.00	1.00			0.17			1.00	
Incremental Delay, d2	10.8	28.7		49.4	16.2			1.9			10.4	
Delay (s)	43.7	67.5		89.7	57.1			4.2			33.4	
Level of Service	D	E		F	E			A			C	
Approach Delay (s)		63.9			62.3			4.2			33.4	
Approach LOS		E			E			A			C	

Intersection Summary			
HCM 2000 Control Delay	26.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	75.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	17	38	0	34	11	15	696	14	18	847	8
Future Volume (Veh/h)	0	17	38	0	34	11	15	696	14	18	847	8
Sign Control		Stop			Stop			Free			Free	
Grade		-4%			6%			-2%			2%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	18	40	0	36	12	16	740	15	19	901	9
Pedestrians		19			17			3			2	
Lane Width (ft)		10.0			10.0			10.0			10.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			1			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								726			393	
pX, platoon unblocked	0.91	0.91	0.91	0.91	0.91		0.91					
vC, conflicting volume	1396	1766	477	1337	1764	396	929			772		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1231	1639	216	1165	1636	396	715			772		
tC, single (s)	7.5	6.5	6.9	7.7	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.3			2.2		
p0 queue free %	100	79	94	100	58	98	98			98		
cM capacity (veh/h)	76	86	709	95	86	600	759			842		

Direction, Lane #	EB 1	WB 1	NE 1	NE 2	SW 1	SW 2
Volume Total	58	48	386	385	470	460
Volume Left	0	0	16	0	19	0
Volume Right	40	12	0	15	0	9
cSH	218	109	759	1700	842	1700
Volume to Capacity	0.27	0.44	0.02	0.23	0.02	0.27
Queue Length 95th (ft)	26	47	2	0	2	0
Control Delay (s)	27.3	61.7	0.7	0.0	0.7	0.0
Lane LOS	D	F	A		A	
Approach Delay (s)	27.3	61.7	0.3		0.3	
Approach LOS	D	F				

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	711	3	24	861	0	63
Future Volume (Veh/h)	711	3	24	861	0	63
Sign Control	Free			Free	Yield	
Grade	-1%			2%	2%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	748	3	25	906	0	66
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	554			565		
pX, platoon unblocked			0.74		0.78	0.74
vC, conflicting volume			751		1252	750
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			489		790	487
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		100	83
cM capacity (veh/h)			793		247	390

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	751	327	604	66
Volume Left	0	25	0	0
Volume Right	3	0	0	66
cSH	1700	793	1700	390
Volume to Capacity	0.44	0.03	0.36	0.17
Queue Length 95th (ft)	0	2	0	15
Control Delay (s)	0.0	1.1	0.0	16.1
Lane LOS		A		C
Approach Delay (s)	0.0	0.4		16.1
Approach LOS				C

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Volume (veh/h)	0	112	0	618	760	112
Future Volume (Veh/h)	0	112	0	618	760	112
Sign Control	Stop			Free	Free	
Grade	0%			-1%	1%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	0	149	0	824	1013	149
Pedestrians	25					
Lane Width (ft)	10.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	2					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				236	883	
pX, platoon unblocked	0.75	0.94	0.94			
vC, conflicting volume	1936	606	1187			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1792	458	1075			
tC, single (s)	6.8	6.9	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	71	100			
cM capacity (veh/h)	53	509	580			

Direction, Lane #	SE 1	NE 1	SW 1	SW 2
Volume Total	149	824	675	487
Volume Left	0	0	0	0
Volume Right	149	0	0	149
cSH	509	1700	1700	1700
Volume to Capacity	0.29	0.48	0.40	0.29
Queue Length 95th (ft)	30	0	0	0
Control Delay (s)	15.0	0.0	0.0	0.0
Lane LOS	B			
Approach Delay (s)	15.0	0.0	0.0	
Approach LOS	B			

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	NBT	NBR	SBT	NET
Lane Group Flow (vph)	1066	182	1919	924
v/c Ratio	0.72	0.33	0.80	1.01
Control Delay	29.0	20.7	6.5	54.0
Queue Delay	0.8	0.0	2.5	31.8
Total Delay	29.8	20.7	8.9	85.8
Queue Length 50th (ft)	415	69	87	~262
Queue Length 95th (ft)	385	98	m90	#514
Internal Link Dist (ft)	297		110	29
Turn Bay Length (ft)				
Base Capacity (vph)	1478	550	2390	911
Starvation Cap Reductn	170	0	337	149
Spillback Cap Reductn	54	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.81	0.33	0.93	1.21

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	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	991	169	0	1785	0	242	545	73	0	0	0
Future Volume (vph)	0	991	169	0	1785	0	242	545	73	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	12	12	12
Grade (%)		1%			-1%			-3%			1%	
Total Lost time (s)		2.0	2.0		2.0			7.0				
Lane Util. Factor		0.95	1.00		0.91			0.95				
Frpb, ped/bikes		1.00	0.94		1.00			1.00				
Flpb, ped/bikes		1.00	1.00		1.00			1.00				
Frt		1.00	0.85		1.00			0.99				
Flt Protected		1.00	1.00		1.00			0.99				
Satd. Flow (prot)		2730	1016		4098			3039				
Flt Permitted		1.00	1.00		1.00			0.99				
Satd. Flow (perm)		2730	1016		4098			3039				
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	1066	182	0	1919	0	260	586	78	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1066	182	0	1919	0	0	924	0	0	0	0
Confl. Peds. (#/hr)	61		68	68		61	5		23	23		5
Confl. Bikes (#/hr)			4			4			2			
Heavy Vehicles (%)	0%	5%	13%	0%	4%	0%	4%	6%	4%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	20	0	0	0	0	0	0	0
Parking (#/hr)		0	0									
Turn Type		NA	Perm		NA		Perm	NA				
Protected Phases		15 6 1			15 6 1 2			3 4				
Permitted Phases			15 6 1				3 4					
Actuated Green, G (s)		60.0	60.0		68.0			44.0				
Effective Green, g (s)		58.0	58.0		61.0			46.0				
Actuated g/C Ratio		0.48	0.48		0.51			0.38				
Clearance Time (s)												
Lane Grp Cap (vph)		1319	491		2083			1164				
v/s Ratio Prot		0.39			c0.47							
v/s Ratio Perm			0.18					0.30				
v/c Ratio		0.81	0.37		0.92			0.79				
Uniform Delay, d1		26.3	19.5		27.3			32.8				
Progression Factor		1.23	1.21		0.27			0.49				
Incremental Delay, d2		5.1	2.0		3.5			4.9				
Delay (s)		37.6	25.6		10.8			20.9				
Level of Service		D	C		B			C				
Approach Delay (s)		35.8			10.8			20.9			0.0	
Approach LOS		D			B			C			A	

Intersection Summary			
HCM 2000 Control Delay	20.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	84.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	SBL	SBR	NEL	NER
Lane Configurations						
Traffic Volume (veh/h)	0	106	0	0	664	95
Future Volume (Veh/h)	0	106	0	0	664	95
Sign Control	Yield		Free		Free	
Grade	-4%		0%		1%	
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	0	136	0	0	851	122
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage veh)						
Upstream signal (ft)			187		111	
pX, platoon unblocked						
vC, conflicting volume	912	486	973			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	912	486	973			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	74	100			
cM capacity (veh/h)	274	527	704			

Direction, Lane #	WB 1	NE 1	NE 2
Volume Total	136	567	406
Volume Left	0	0	0
Volume Right	136	0	122
cSH	527	1700	1700
Volume to Capacity	0.26	0.33	0.24
Queue Length 95th (ft)	26	0	0
Control Delay (s)	14.2	0.0	0.0
Lane LOS	B		
Approach Delay (s)	14.2	0.0	
Approach LOS	B		

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	27.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	NBT	SBT	SWT
Lane Group Flow (vph)	1291	1935	1147
v/c Ratio	0.55	0.87	1.30
Control Delay	6.8	29.4	164.6
Queue Delay	0.9	1.5	0.0
Total Delay	7.7	31.0	164.6
Queue Length 50th (ft)	77	457	~602
Queue Length 95th (ft)	m84	536	#717
Internal Link Dist (ft)	110	479	17
Turn Bay Length (ft)			
Base Capacity (vph)	2332	2220	884
Starvation Cap Reductn	684	0	0
Spillback Cap Reductn	0	140	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.78	0.93	1.30

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	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	1226	0	0	1535	303	0	0	0	258	800	31
Future Volume (vph)	0	1226	0	0	1535	303	0	0	0	258	800	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	11	11	11
Grade (%)		2%			-2%			0%			-1%	
Total Lost time (s)		2.0			2.0						7.0	
Lane Util. Factor		0.91			0.91						0.95	
Frpb, ped/bikes		1.00			0.99						1.00	
Flpb, ped/bikes		1.00			1.00						1.00	
Frt		1.00			0.98						1.00	
Flt Protected		1.00			1.00						0.99	
Satd. Flow (prot)		3999			4101						2947	
Flt Permitted		1.00			1.00						0.99	
Satd. Flow (perm)		3999			4101						2947	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1291	0	0	1616	319	0	0	0	272	842	33
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1291	0	0	1935	0	0	0	0	0	1147	0
Confl. Peds. (#/hr)	57		103	103		57	46		4	4		46
Confl. Bikes (#/hr)			3			3						
Heavy Vehicles (%)	0%	5%	0%	0%	4%	3%	0%	0%	0%	6%	5%	3%
Bus Blockages (#/hr)	0	20	0	0	0	0	0	0	0	0	0	0
Turn Type		NA			NA					Perm	NA	
Protected Phases		15 6 1 2			15 6 1						3 4	
Permitted Phases										3 4		
Actuated Green, G (s)		68.0			60.0						44.0	
Effective Green, g (s)		61.0			58.0						46.0	
Actuated g/C Ratio		0.51			0.48						0.38	
Clearance Time (s)												
Lane Grp Cap (vph)		2032			1982						1129	
v/s Ratio Prot		c0.32			c0.47							
v/s Ratio Perm											0.39	
v/c Ratio		0.64			0.98						1.02	
Uniform Delay, d1		21.4			30.3						37.0	
Progression Factor		0.40			1.00						0.51	
Incremental Delay, d2		0.9			15.3						28.9	
Delay (s)		9.6			45.7						48.0	
Level of Service		A			D						D	
Approach Delay (s)		9.6			45.7			0.0			48.0	
Approach LOS		A			D			A			D	

Intersection Summary			
HCM 2000 Control Delay	35.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	84.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Traffic Volume (veh/h)	0	175	0	0	950	163
Future Volume (Veh/h)	0	175	0	0	950	163
Sign Control	Stop		Free		Free	
Grade	-4%		0%		0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	0	182	0	0	990	170
Pedestrians	104					
Lane Width (ft)	10.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	7					
Right turn flare (veh)						
Median type			None		None	
Median storage veh)						
Upstream signal (ft)			218		110	
pX, platoon unblocked	0.64	0.64	0.64			
vC, conflicting volume	1179	684	1264			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	143	0	277			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	72	100			
cM capacity (veh/h)	497	645	768			

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	182	660	500
Volume Left	0	0	0
Volume Right	182	0	170
cSH	645	1700	1700
Volume to Capacity	0.28	0.39	0.29
Queue Length 95th (ft)	29	0	0
Control Delay (s)	12.8	0.0	0.0
Lane LOS	B		
Approach Delay (s)	12.8	0.0	
Approach LOS	B		

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	NBT	NBR	SBR	SWT
Lane Group Flow (vph)	114	566	244	821
v/c Ratio	0.14	0.55	0.19	0.73
Control Delay	16.4	3.3	0.3	36.5
Queue Delay	0.0	0.0	0.4	3.5
Total Delay	16.4	3.3	0.7	40.0
Queue Length 50th (ft)	66	5	0	284
Queue Length 95th (ft)	m86	m24	0	361
Internal Link Dist (ft)	1			419
Turn Bay Length (ft)				
Base Capacity (vph)	842	1038	1305	1118
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	643	206
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.14	0.55	0.37	0.90

Intersection Summary

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

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	103	509	0	0	220	0	0	0	0	736	3
Future Volume (vph)	0	103	509	0	0	220	0	0	0	0	736	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			0%			1%	
Total Lost time (s)		2.0	7.0			2.0					2.0	
Lane Util. Factor		0.95	0.95			1.00					0.95	
Frpb, ped/bikes		1.00	1.00			1.00					1.00	
Flpb, ped/bikes		1.00	1.00			1.00					1.00	
Frt		1.00	0.85			0.86					1.00	
Flt Protected		1.00	1.00			1.00					1.00	
Satd. Flow (prot)		1444	1257			1305					2921	
Flt Permitted		1.00	1.00			1.00					1.00	
Satd. Flow (perm)		1444	1257			1305					2921	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	114	566	0	0	244	0	0	0	0	818	3
RTOR Reduction (vph)	0	0	108	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	114	458	0	0	244	0	0	0	0	821	0
Confl. Peds. (#/hr)			7	7			7					7
Bus Blockages (#/hr)	0	6	0	0	0	9	0	0	0	0	6	6
Turn Type		NA	custom			Free					NA	
Protected Phases		4 15 6 1	11 4 15								2 3	
Permitted Phases						Free						
Actuated Green, G (s)		65.0	97.0			120.0					39.0	
Effective Green, g (s)		63.0	97.0			120.0					41.0	
Actuated g/C Ratio		0.52	0.81			1.00					0.34	
Clearance Time (s)												
Lane Grp Cap (vph)		758	1016			1305					998	
v/s Ratio Prot		0.08	c0.36								c0.28	
v/s Ratio Perm						c0.19						
v/c Ratio		0.15	0.45			0.19					0.82	
Uniform Delay, d1		14.7	3.5			0.0					36.2	
Progression Factor		1.40	4.55			1.00					1.00	
Incremental Delay, d2		0.3	1.2			0.3					7.6	
Delay (s)		21.0	16.9			0.3					43.8	
Level of Service		C	B			A					D	
Approach Delay (s)		17.6			0.3			0.0			43.8	
Approach LOS		B			A			A			D	

Intersection Summary			
HCM 2000 Control Delay	27.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	47.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	NBT	SBT	SET	SER	NWT
Lane Group Flow (vph)	232	138	325	89	571
v/c Ratio	0.77	0.42	0.44	0.14	0.65
Control Delay	51.6	34.0	12.7	9.1	16.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	51.6	34.0	12.7	9.1	16.9
Queue Length 50th (ft)	135	72	102	22	216
Queue Length 95th (ft)	#257	130	165	45	334
Internal Link Dist (ft)	689	132	177		285
Turn Bay Length (ft)				50	
Base Capacity (vph)	302	332	745	620	882
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	0.77	0.42	0.44	0.14	0.65

Intersection Summary

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

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	124	46	50	20	94	17	10	298	85	57	447	38
Future Volume (vph)	124	46	50	20	94	17	10	298	85	57	447	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-4%			5%			7%			-7%	
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	
Frpb, ped/bikes		0.99			1.00			1.00	0.96		1.00	
Flpb, ped/bikes		0.99			1.00			1.00	1.00		1.00	
Frt		0.97			0.98			1.00	0.85		0.99	
Flt Protected		0.97			0.99			1.00	1.00		0.99	
Satd. Flow (prot)		1484			1257			1245	1017		1545	
Flt Permitted		0.71			0.94			0.98	1.00		0.93	
Satd. Flow (perm)		1080			1187			1222	1017		1447	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	131	48	53	21	99	18	11	314	89	60	471	40
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	232	0	0	138	0	0	325	89	0	571	0
Confl. Peds. (#/hr)	8		4	4		8	6		25	25		6
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	5%	5%	5%	5%	5%
Parking (#/hr)				10	10	10	10	10	10			
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2		2	2		
Actuated Green, G (s)		26.0			26.0			59.0	59.0		59.0	
Effective Green, g (s)		28.0			28.0			61.0	61.0		61.0	
Actuated g/C Ratio		0.28			0.28			0.61	0.61		0.61	
Clearance Time (s)		6.0			6.0			6.0	6.0		6.0	
Lane Grp Cap (vph)		302			332			745	620		882	
v/s Ratio Prot												
v/s Ratio Perm		c0.21			0.12			0.27	0.09		c0.39	
v/c Ratio		0.77			0.42			0.44	0.14		0.65	
Uniform Delay, d1		33.0			29.3			10.4	8.3		12.6	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		17.0			3.8			1.9	0.5		3.7	
Delay (s)		50.0			33.1			12.2	8.8		16.2	
Level of Service		D			C			B	A		B	
Approach Delay (s)		50.0			33.1			11.5			16.2	
Approach LOS		D			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	22.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	457	547	193	272
v/c Ratio	0.95	1.42	0.36	0.57
Control Delay	53.8	226.7	14.5	19.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	53.8	226.7	14.5	19.1
Queue Length 50th (ft)	157	~276	46	72
Queue Length 95th (ft)	#324	#442	91	141
Internal Link Dist (ft)	418	274	520	689
Turn Bay Length (ft)				
Base Capacity (vph)	480	385	536	479
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.95	1.42	0.36	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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	391	30	72	346	124	15	151	25	69	175	25
Future Volume (vph)	32	391	30	72	346	124	15	151	25	69	175	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		9%			-8%			-4%			0%	
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		0.99			0.98			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.99			0.97			0.98			0.99	
Flt Protected		1.00			0.99			1.00			0.99	
Satd. Flow (prot)		1466			1296			1322			1291	
Flt Permitted		0.93			0.84			0.97			0.88	
Satd. Flow (perm)		1374			1102			1286			1150	
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)	32	395	30	73	349	125	15	153	25	70	177	25
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	457	0	0	547	0	0	193	0	0	272	0
Confl. Peds. (#/hr)	38		28	28		38	9		3	3		9
Parking (#/hr)				10	10	10	10	10	10	10	10	10
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		19.0			19.0			23.0			23.0	
Effective Green, g (s)		21.0			21.0			25.0			25.0	
Actuated g/C Ratio		0.35			0.35			0.42			0.42	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Lane Grp Cap (vph)		480			385			535			479	
v/s Ratio Prot												
v/s Ratio Perm		0.33			c0.50			0.15			c0.24	
v/c Ratio		0.95			1.42			0.36			0.57	
Uniform Delay, d1		19.0			19.5			12.0			13.4	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		30.7			204.0			1.9			4.8	
Delay (s)		49.7			223.5			13.9			18.2	
Level of Service		D			F			B			B	
Approach Delay (s)		49.7			223.5			13.9			18.2	
Approach LOS		D			F			B			B	

Intersection Summary			
HCM 2000 Control Delay	103.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	92.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	11.3
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	32	104	25	42	152	21	4	176	15	27	183	22
Future Vol, veh/h	32	104	25	42	152	21	4	176	15	27	183	22
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	35	113	27	46	165	23	4	191	16	29	199	24
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	10.7	11.6	11.1	11.7
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	2%	20%	20%	12%
Vol Thru, %	90%	65%	71%	79%
Vol Right, %	8%	16%	10%	9%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	195	161	215	232
LT Vol	4	32	42	27
Through Vol	176	104	152	183
RT Vol	15	25	21	22
Lane Flow Rate	212	175	234	252
Geometry Grp	1	1	1	1
Degree of Util (X)	0.322	0.27	0.357	0.378
Departure Headway (Hd)	5.461	5.564	5.494	5.403
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	657	644	654	663
Service Time	3.507	3.616	3.541	3.449
HCM Lane V/C Ratio	0.323	0.272	0.358	0.38
HCM Control Delay	11.1	10.7	11.6	11.7
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	1.4	1.1	1.6	1.8

Intersection	
Intersection Delay, s/veh	4.2
Intersection LOS	A

Approach	NB	SB	NE
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	207	219	107
Demand Flow Rate, veh/h	211	224	109
Vehicles Circulating, veh/h	96	19	192
Vehicles Exiting, veh/h	205	288	51
Ped Vol Crossing Leg, #/h	1	4	2
Ped Cap Adj	1.000	0.999	1.000
Approach Delay, s/veh	4.4	4.1	4.1
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	LT	TR	LR
Assumed Moves	LT	TR	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	211	224	109
Cap Entry Lane, veh/h	1251	1353	1134
Entry HV Adj Factor	0.982	0.979	0.982
Flow Entry, veh/h	207	219	107
Cap Entry, veh/h	1229	1324	1113
V/C Ratio	0.169	0.166	0.096
Control Delay, s/veh	4.4	4.1	4.1
LOS	A	A	A
95th %tile Queue, veh	1	1	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	3	35	227	36	15	206
Future Volume (Veh/h)	3	35	227	36	15	206
Sign Control	Stop		Free			Free
Grade	-4%		1%			1%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	38	247	39	16	224
Pedestrians	25		1			
Lane Width (ft)	10.0		10.0			
Walking Speed (ft/s)	4.0		4.0			
Percent Blockage	2		0			
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	548	292			311	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	548	292			311	
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	95			99	
cM capacity (veh/h)	482	735			1228	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	41	286	240
Volume Left	3	0	16
Volume Right	38	39	0
cSH	708	1700	1228
Volume to Capacity	0.06	0.17	0.01
Queue Length 95th (ft)	5	0	1
Control Delay (s)	10.4	0.0	0.6
Lane LOS	B		A
Approach Delay (s)	10.4	0.0	0.6
Approach LOS	B		

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	35.8%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	5.0
Intersection LOS	A

Approach	NB	SB	SE
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	241	225	305
Demand Flow Rate, veh/h	246	229	311
Vehicles Circulating, veh/h	47	16	226
Vehicles Exiting, veh/h	490	276	19
Ped Vol Crossing Leg, #/h	6	0	3
Ped Cap Adj	0.999	1.000	1.000
Approach Delay, s/veh	4.4	4.1	6.1
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	LT	TR	LR
Assumed Moves	LT	TR	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	246	229	311
Cap Entry Lane, veh/h	1315	1358	1096
Entry HV Adj Factor	0.982	0.981	0.981
Flow Entry, veh/h	241	225	305
Cap Entry, veh/h	1290	1331	1074
V/C Ratio	0.187	0.169	0.284
Control Delay, s/veh	4.4	4.1	6.1
LOS	A	A	A
95th %tile Queue, veh	1	1	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	183	23	15	285	66	13	105	7	40	124	4
Future Volume (Veh/h)	34	183	23	15	285	66	13	105	7	40	124	4
Sign Control		Free			Free			Stop			Stop	
Grade		6%			-2%			-1%			-2%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	41	220	28	18	343	80	16	127	8	48	149	5
Pedestrians		8			1			4			4	
Lane Width (ft)		10.0			10.0			10.0			10.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					176							
pX, platoon unblocked	0.88						0.88	0.88		0.88	0.88	0.88
vC, conflicting volume	427			252			826	783	239	812	757	395
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	283			252			736	686	239	719	657	246
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			99			91	59	99	75	54	99
cM capacity (veh/h)	1125			1310			178	308	797	195	321	693

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	289	441	151	202
Volume Left	41	18	16	48
Volume Right	28	80	8	5
cSH	1125	1310	295	281
Volume to Capacity	0.04	0.01	0.51	0.72
Queue Length 95th (ft)	3	1	68	126
Control Delay (s)	1.5	0.5	29.4	44.7
Lane LOS	A	A	D	E
Approach Delay (s)	1.5	0.5	29.4	44.7
Approach LOS			D	E

Intersection Summary			
Average Delay	13.0		
Intersection Capacity Utilization	51.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	168	1095	951	1	2	267
Future Volume (Veh/h)	168	1095	951	1	2	267
Sign Control		Free	Free		Stop	
Grade		0%	0%		1%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	185	1203	1045	1	2	293
Pedestrians			4		14	
Lane Width (ft)			10.0		10.0	
Walking Speed (ft/s)			4.0		4.0	
Percent Blockage			0		1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			310			
pX, platoon unblocked	0.84				0.84	0.84
vC, conflicting volume	1060				2035	537
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	694				1853	72
tC, single (s)	4.2				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	75				95	64
cM capacity (veh/h)	731				41	812

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	586	802	697	349	295
Volume Left	185	0	0	0	2
Volume Right	0	0	0	1	293
cSH	731	1700	1700	1700	719
Volume to Capacity	0.25	0.47	0.41	0.21	0.41
Queue Length 95th (ft)	25	0	0	0	50
Control Delay (s)	6.3	0.0	0.0	0.0	13.4
Lane LOS	A				B
Approach Delay (s)	2.7		0.0		13.4
Approach LOS					B

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	96.8%	ICU Level of Service	F
Analysis Period (min)	15		

Lane Group	EBT	WBL	WBT	NET	SWT
Lane Group Flow (vph)	252	338	267	1329	808
v/c Ratio	0.71	1.02	0.45	1.05	0.60
Control Delay	53.8	84.6	34.3	65.6	30.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	53.8	84.6	34.3	65.6	30.7
Queue Length 50th (ft)	179	~226	163	~583	315
Queue Length 95th (ft)	276	m#277	m184	#722	384
Internal Link Dist (ft)	96		233	230	156
Turn Bay Length (ft)					
Base Capacity (vph)	357	331	591	1266	1339
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.71	1.02	0.45	1.05	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	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	35	192	5	311	238	7	28	946	249	18	647	78
Future Volume (vph)	35	192	5	311	238	7	28	946	249	18	647	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	10	10	10	10	10	10	10	10	10
Grade (%)		2%			4%			0%			1%	
Total Lost time (s)		3.5		3.0	3.5			3.0			3.0	
Lane Util. Factor		1.00		1.00	1.00			0.95			0.95	
Frpb, ped/bikes		1.00		1.00	1.00			0.98			0.98	
Flpb, ped/bikes		1.00		1.00	1.00			1.00			1.00	
Frt		1.00		1.00	1.00			0.97			0.98	
Flt Protected		0.99		0.95	1.00			1.00			1.00	
Satd. Flow (prot)		1631		1457	1523			2432			2665	
Flt Permitted		0.91		0.37	1.00			0.92			0.89	
Satd. Flow (perm)		1502		561	1523			2234			2385	
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)	38	209	5	338	259	8	30	1028	271	20	703	85
RTOR Reduction (vph)	0	1	0	0	1	0	0	19	0	0	8	0
Lane Group Flow (vph)	0	251	0	338	266	0	0	1310	0	0	800	0
Confl. Peds. (#/hr)	11		41	41		11	32		18	18		32
Confl. Bikes (#/hr)			3			2						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	20	0	0	20	0
Parking (#/hr)							10	10	10			
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		8		7	4			2			2	
Permitted Phases	8			4			2			2		
Actuated Green, G (s)		26.5		44.5	44.5			65.0			65.0	
Effective Green, g (s)		28.5		46.5	46.5			67.0			67.0	
Actuated g/C Ratio		0.24		0.39	0.39			0.56			0.56	
Clearance Time (s)		5.5		5.0	5.5			5.0			5.0	
Lane Grp Cap (vph)		356		329	590			1247			1331	
v/s Ratio Prot				c0.13	0.17							
v/s Ratio Perm		0.17		c0.27				c0.59			0.34	
v/c Ratio		0.71		1.03	0.45			1.05			0.60	
Uniform Delay, d1		41.9		35.5	27.3			26.5			17.6	
Progression Factor		1.00		1.18	1.18			1.00			1.63	
Incremental Delay, d2		11.2		49.1	1.8			39.9			2.0	
Delay (s)		53.1		91.0	33.9			66.4			30.7	
Level of Service		D		F	C			E			C	
Approach Delay (s)		53.1			65.8			66.4			30.7	
Approach LOS		D			E			E			C	

Intersection Summary			
HCM 2000 Control Delay	55.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	104.1%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	598	4	5	619	35	26	24	11	4	0	22
Future Volume (Veh/h)	27	598	4	5	619	35	26	24	11	4	0	22
Sign Control		Free			Free			Stop			Stop	
Grade		5%			4%			0%			0%	
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Hourly flow rate (vph)	37	819	5	7	848	48	36	33	15	5	0	30
Pedestrians								20			8	
Lane Width (ft)								10.0			10.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		313			929							
pX, platoon unblocked				0.89			0.89	0.89	0.89	0.89	0.89	
vC, conflicting volume	904			844			1832	1834	842	1821	1812	880
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	904			763			1872	1875	760	1861	1851	880
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			99			13	44	96	80	100	91
cM capacity (veh/h)	748			746			41	59	356	25	61	344

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	861	903	84	35
Volume Left	37	7	36	5
Volume Right	5	48	15	30
cSH	748	746	57	122
Volume to Capacity	0.05	0.01	1.47	0.29
Queue Length 95th (ft)	4	1	188	27
Control Delay (s)	1.4	0.3	404.0	46.0
Lane LOS	A	A	F	E
Approach Delay (s)	1.4	0.3	404.0	46.0
Approach LOS			F	E

Intersection Summary			
Average Delay	19.6		
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	SET	NWT
Lane Group Flow (vph)	98	482	86	395	1694	1823
v/c Ratio	1.03	1.19	1.69	0.96	1.58	2.19
Control Delay	142.6	148.0	409.4	77.3	290.8	561.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	142.6	148.0	409.4	77.3	290.8	561.6
Queue Length 50th (ft)	~82	~461	~97	301	~994	~1193
Queue Length 95th (ft)	m#149	m#598	#205	#500	#1113	#1333
Internal Link Dist (ft)		849		339	239	287
Turn Bay Length (ft)	70		110			
Base Capacity (vph)	95	404	51	413	1069	831
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.03	1.19	1.69	0.96	1.58	2.19

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	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	91	275	173	80	257	111	59	1410	107	95	1572	29
Future Volume (vph)	91	275	173	80	257	111	59	1410	107	95	1572	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		5%			3%			1%			-1%	
Total Lost time (s)	4.0	4.0		4.0	4.0			3.5			3.5	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.95			0.95	
Frpb, ped/bikes	1.00	0.98		1.00	0.98			0.97			0.99	
Flpb, ped/bikes	0.98	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.94		1.00	0.95			0.99			1.00	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1422	1406		1464	1438			2643			2580	
Flt Permitted	0.22	1.00		0.12	1.00			0.58			0.58	
Satd. Flow (perm)	332	1406		179	1438			1529			1501	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	98	296	186	86	276	119	63	1516	115	102	1690	31
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	98	482	0	86	395	0	0	1694	0	0	1823	0
Confl. Peds. (#/hr)	37		26	26		37	93		87	87		93
Confl. Bikes (#/hr)						2			5			5
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	20	20	0	0	0
Parking (#/hr)											20	20
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		8			4		1	6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	32.5	32.5		32.5	32.5			76.0			64.5	
Effective Green, g (s)	34.5	34.5		34.5	34.5			78.0			66.5	
Actuated g/C Ratio	0.29	0.29		0.29	0.29			0.65			0.55	
Clearance Time (s)	6.0	6.0		6.0	6.0			5.5			5.5	
Lane Grp Cap (vph)	95	404		51	413			1068			831	
v/s Ratio Prot		0.34			0.27			c0.11				
v/s Ratio Perm	0.30			c0.48				0.93			c1.21	
v/c Ratio	1.03	1.19		1.69	0.96			1.59			2.19	
Uniform Delay, d1	42.8	42.8		42.8	42.0			21.0			26.8	
Progression Factor	1.11	1.11		1.00	1.00			1.29			1.00	
Incremental Delay, d2	95.2	106.6		379.4	34.6			267.9			541.1	
Delay (s)	142.7	154.1		422.2	76.6			295.1			567.9	
Level of Service	F	F		F	E			F			F	
Approach Delay (s)		152.2			138.4			295.1			567.9	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	369.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.99		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	149.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	37	36	0	14	11	11	968	19	11	720	10
Future Volume (Veh/h)	0	37	36	0	14	11	11	968	19	11	720	10
Sign Control		Stop			Stop			Free			Free	
Grade		-4%			6%			-2%			2%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	39	38	0	15	12	12	1030	20	12	766	11
Pedestrians		24			26			1			6	
Lane Width (ft)		10.0			10.0			10.0			10.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		2			2			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								726			393	
pX, platoon unblocked	0.58	0.58	0.84	0.58	0.58	0.50	0.84			0.50		
vC, conflicting volume	1909	1920	796	1944	1915	1072	801			1076		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1578	1597	661	1639	1589	637	666			645		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	32	90	100	74	95	98			97		
cM capacity (veh/h)	36	57	381	17	57	231	749			451		

Direction, Lane #	EB 1	WB 1	NE 1	SW 1
Volume Total	77	27	1062	789
Volume Left	0	0	12	12
Volume Right	38	12	20	11
cSH	98	86	749	451
Volume to Capacity	0.78	0.31	0.02	0.03
Queue Length 95th (ft)	105	30	1	2
Control Delay (s)	116.6	65.1	0.5	0.8
Lane LOS	F	F	A	A
Approach Delay (s)	116.6	65.1	0.5	0.8
Approach LOS	F	F		

Intersection Summary			
Average Delay	6.1		
Intersection Capacity Utilization	76.5%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	907	3	19	735	0	106
Future Volume (Veh/h)	907	3	19	735	0	106
Sign Control	Free			Free	Stop	
Grade	-1%			2%	2%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	1067	4	22	865	0	125
Pedestrians					15	
Lane Width (ft)					10.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	554			565		
pX, platoon unblocked			0.47		0.51	0.47
vC, conflicting volume			1086		1560	1084
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			620		1007	616
tC, single (s)			4.2		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			95		100	38
cM capacity (veh/h)			436		114	202

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	1071	310	577	125
Volume Left	0	22	0	0
Volume Right	4	0	0	125
cSH	1700	436	1700	202
Volume to Capacity	0.63	0.05	0.34	0.62
Queue Length 95th (ft)	0	4	0	89
Control Delay (s)	0.0	1.7	0.0	48.1
Lane LOS		A		E
Approach Delay (s)	0.0	0.6		48.1
Approach LOS				E

Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	67.2%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Volume (veh/h)	0	74	0	988	668	74
Future Volume (Veh/h)	0	74	0	988	668	74
Sign Control	Stop			Free	Free	
Grade	0%			-1%	1%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	0	99	0	1317	891	99
Pedestrians	25					
Lane Width (ft)	10.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	2					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				236	883	
pX, platoon unblocked	0.54	0.81	0.81			
vC, conflicting volume	2282	966	1015			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2170	844	904			
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	66	100			
cM capacity (veh/h)	27	291	592			

Direction, Lane #	SE 1	NE 1	SW 1
Volume Total	99	1317	990
Volume Left	0	0	0
Volume Right	99	0	99
cSH	291	1700	1700
Volume to Capacity	0.34	0.77	0.58
Queue Length 95th (ft)	36	0	0
Control Delay (s)	23.6	0.0	0.0
Lane LOS	C		
Approach Delay (s)	23.6	0.0	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	55.3%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	NBT	NBR	SBT	NET
Lane Group Flow (vph)	1456	388	1678	1408
v/c Ratio	1.05	0.71	0.75	1.33
Control Delay	68.0	32.2	7.8	184.8
Queue Delay	20.6	2.7	3.3	0.8
Total Delay	88.5	34.9	11.1	185.6
Queue Length 50th (ft)	~640	211	92	~757
Queue Length 95th (ft)	#781	293	m99	#881
Internal Link Dist (ft)	297		110	29
Turn Bay Length (ft)				
Base Capacity (vph)	1387	549	2232	1055
Starvation Cap Reductn	66	78	444	163
Spillback Cap Reductn	147	0	0	41
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.17	0.82	0.94	1.58

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	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	1383	369	0	1594	0	356	927	54	0	0	0
Future Volume (vph)	0	1383	369	0	1594	0	356	927	54	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	12	12	12
Grade (%)		1%			-1%			-3%			1%	
Total Lost time (s)		2.0	2.0		2.0			7.0				
Lane Util. Factor		0.95	1.00		0.91			0.95				
Frpb, ped/bikes		1.00	0.93		1.00			1.00				
Flpb, ped/bikes		1.00	1.00		1.00			1.00				
Frt		1.00	0.85		1.00			0.99				
Flt Protected		1.00	1.00		1.00			0.99				
Satd. Flow (prot)		2730	1081		4059			3165				
Flt Permitted		1.00	1.00		1.00			0.99				
Satd. Flow (perm)		2730	1081		4059			3165				
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1456	388	0	1678	0	375	976	57	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1456	388	0	1678	0	0	1408	0	0	0	0
Confl. Peds. (#/hr)	63		80	80		63	6		10	10		6
Confl. Bikes (#/hr)			4			4			2			
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	20	0	0	0	0	0	0	0
Parking (#/hr)		0	0									
Turn Type		NA	Perm		NA		Perm	NA				
Protected Phases		15 6 1			15 6 1 2			3 4				
Permitted Phases			15 6 1				3 4					
Actuated Green, G (s)		56.0	56.0		64.0			48.0				
Effective Green, g (s)		54.0	54.0		57.0			50.0				
Actuated g/C Ratio		0.45	0.45		0.48			0.42				
Clearance Time (s)												
Lane Grp Cap (vph)		1228	486		1928			1318				
v/s Ratio Prot		c0.53			c0.41							
v/s Ratio Perm			0.36					0.44				
v/c Ratio		1.19	0.80		0.87			1.07				
Uniform Delay, d1		33.0	28.3		28.2			35.0				
Progression Factor		1.01	1.04		0.32			0.74				
Incremental Delay, d2		91.9	12.6		2.6			45.0				
Delay (s)		125.1	42.1		11.7			70.9				
Level of Service		F	D		B			E				
Approach Delay (s)		107.6			11.7			70.9			0.0	
Approach LOS		F			B			E			A	

Intersection Summary			
HCM 2000 Control Delay	64.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.27		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	163.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	SBL	SBR	NEL	NER
Lane Configurations						
Traffic Volume (veh/h)	0	180	0	0	1270	41
Future Volume (Veh/h)	0	180	0	0	1270	41
Sign Control	Yield		Free		Free	
Grade	-4%		0%		1%	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81
Hourly flow rate (vph)	0	222	0	0	1568	51
Pedestrians	12					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	1					
Right turn flare (veh)						
Median type			None		None	
Median storage veh)						
Upstream signal (ft)			187		111	
pX, platoon unblocked	0.60	0.60	0.60			
vC, conflicting volume	1606	822	1631			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	672	0	715			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	65	100			
cM capacity (veh/h)	231	643	523			

Direction, Lane #	WB 1	NE 1	NE 2
Volume Total	222	1045	574
Volume Left	0	0	0
Volume Right	222	0	51
cSH	643	1700	1700
Volume to Capacity	0.35	0.61	0.34
Queue Length 95th (ft)	38	0	0
Control Delay (s)	13.5	0.0	0.0
Lane LOS	B		
Approach Delay (s)	13.5	0.0	
Approach LOS	B		

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	45.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	NBT	SBT	SWT
Lane Group Flow (vph)	1819	1762	1013
v/c Ratio	0.83	0.86	1.00
Control Delay	8.7	31.5	49.0
Queue Delay	47.3	2.2	19.6
Total Delay	56.0	33.7	68.6
Queue Length 50th (ft)	138	424	~414
Queue Length 95th (ft)	m103	500	#552
Internal Link Dist (ft)	110	479	17
Turn Bay Length (ft)			
Base Capacity (vph)	2199	2038	1008
Starvation Cap Reductn	614	0	56
Spillback Cap Reductn	0	159	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.15	0.94	1.06

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	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	1728	0	0	1315	359	0	0	0	289	642	31
Future Volume (vph)	0	1728	0	0	1315	359	0	0	0	289	642	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	11	11	11
Grade (%)		2%			-2%			0%			-1%	
Total Lost time (s)		2.0			2.0						7.0	
Lane Util. Factor		0.91			0.91						0.95	
Frpb, ped/bikes		1.00			0.99						1.00	
Flpb, ped/bikes		1.00			1.00						1.00	
Frt		1.00			0.97						1.00	
Flt Protected		1.00			1.00						0.99	
Satd. Flow (prot)		3999			4010						3027	
Flt Permitted		1.00			1.00						0.99	
Satd. Flow (perm)		3999			4010						3027	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1819	0	0	1384	378	0	0	0	304	676	33
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1819	0	0	1762	0	0	0	0	0	1013	0
Confl. Peds. (#/hr)	61		79	79		61	20		7	7		20
Confl. Bikes (#/hr)			3			3						
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	20	0	0	0	0	0	0	0	0	0	0
Turn Type		NA			NA					Perm	NA	
Protected Phases		15 6 1 2			15 6 1						3 4	
Permitted Phases										3 4		
Actuated Green, G (s)		64.0			56.0						48.0	
Effective Green, g (s)		57.0			54.0						50.0	
Actuated g/C Ratio		0.48			0.45						0.42	
Clearance Time (s)												
Lane Grp Cap (vph)		1899			1804						1261	
v/s Ratio Prot		c0.45			c0.44							
v/s Ratio Perm											0.33	
v/c Ratio		0.96			0.98						0.80	
Uniform Delay, d1		30.3			32.4						30.7	
Progression Factor		0.37			1.00						0.48	
Incremental Delay, d2		1.8			16.3						4.8	
Delay (s)		12.9			48.7						19.6	
Level of Service		B			D						B	
Approach Delay (s)		12.9			48.7			0.0			19.6	
Approach LOS		B			D			A			B	

Intersection Summary			
HCM 2000 Control Delay	28.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	163.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBR	SWL	SWR
Lane Configurations						
Traffic Volume (veh/h)	0	233	0	0	927	85
Future Volume (Veh/h)	0	233	0	0	927	85
Sign Control	Stop		Free		Free	
Grade	-4%		0%		0%	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70
Hourly flow rate (vph)	0	333	0	0	1324	121
Pedestrians	49					
Lane Width (ft)	10.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	3					
Right turn flare (veh)						
Median type			None		None	
Median storage veh)						
Upstream signal (ft)			218		110	
pX, platoon unblocked	0.75	0.75	0.75			
vC, conflicting volume	1434	772	1494			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	904	18	985			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	56	100			
cM capacity (veh/h)	200	762	503			

Direction, Lane #	EB 1	SW 1	SW 2
Volume Total	333	883	562
Volume Left	0	0	0
Volume Right	333	0	121
cSH	762	1700	1700
Volume to Capacity	0.44	0.52	0.33
Queue Length 95th (ft)	56	0	0
Control Delay (s)	13.3	0.0	0.0
Lane LOS	B		
Approach Delay (s)	13.3	0.0	
Approach LOS	B		

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	36.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	NBT	NBR	SBR	SWT
Lane Group Flow (vph)	160	1803	198	855
v/c Ratio	0.21	1.56	0.18	0.71
Control Delay	18.0	274.7	0.4	33.0
Queue Delay	0.0	0.0	0.2	1.8
Total Delay	18.0	274.7	0.6	34.9
Queue Length 50th (ft)	89	~2007	0	283
Queue Length 95th (ft)	m83	m#1261	0	217
Internal Link Dist (ft)	1			419
Turn Bay Length (ft)				
Base Capacity (vph)	749	1156	1073	1204
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	374	199
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.21	1.56	0.28	0.85

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	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	101	1136	0	0	125	0	0	0	0	537	2
Future Volume (vph)	0	101	1136	0	0	125	0	0	0	0	537	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			0%			1%	
Total Lost time (s)		2.0	7.0			2.0					2.0	
Lane Util. Factor		0.95	0.95			1.00					0.95	
Frpb, ped/bikes		1.00	1.00			1.00					1.00	
Flpb, ped/bikes		1.00	1.00			1.00					1.00	
Frt		1.00	0.85			0.86					1.00	
Flt Protected		1.00	1.00			1.00					1.00	
Satd. Flow (prot)		1363	1187			1073					2892	
Flt Permitted		1.00	1.00			1.00					1.00	
Satd. Flow (perm)		1363	1187			1073					2892	
Peak-hour factor, PHF	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63
Adj. Flow (vph)	0	160	1803	0	0	198	0	0	0	0	852	3
RTOR Reduction (vph)	0	0	209	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	160	1594	0	0	198	0	0	0	0	855	0
Confl. Peds. (#/hr)				18			7		7			18
Heavy Vehicles (%)	8%	8%	8%	24%	24%	24%	0%	0%	0%	3%	3%	3%
Bus Blockages (#/hr)	0	6	0	0	0	9	0	0	0	0	6	6
Turn Type		NA	custom			Free					NA	
Protected Phases		4 15 6 1	11 4 15								2 3	
Permitted Phases						Free						
Actuated Green, G (s)		61.0	97.0			120.0					43.0	
Effective Green, g (s)		59.0	97.0			120.0					45.0	
Actuated g/C Ratio		0.49	0.81			1.00					0.38	
Clearance Time (s)												
Lane Grp Cap (vph)		670	959			1073					1084	
v/s Ratio Prot		c0.12	c1.34								0.30	
v/s Ratio Perm						0.18						
v/c Ratio		0.24	1.66			0.18					0.79	
Uniform Delay, d1		17.6	11.5			0.0					33.3	
Progression Factor		1.25	17.08			1.00					1.00	
Incremental Delay, d2		0.6	301.1			0.4					5.8	
Delay (s)		22.5	497.5			0.4					39.1	
Level of Service		C	F			A					D	
Approach Delay (s)		458.8			0.4			0.0			39.1	
Approach LOS		F			A			A			D	

Intersection Summary			
HCM 2000 Control Delay	309.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.75		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	NBT	SBT	SET	SER	NWT
Lane Group Flow (vph)	243	204	87	77	390
v/c Ratio	0.75	0.54	0.12	0.12	0.42
Control Delay	47.6	35.3	9.3	9.4	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	47.6	35.3	9.3	9.4	12.7
Queue Length 50th (ft)	137	106	22	20	123
Queue Length 95th (ft)	#212	162	40	37	168
Internal Link Dist (ft)	689	132	177		285
Turn Bay Length (ft)				50	
Base Capacity (vph)	324	377	739	640	920
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	0.75	0.54	0.12	0.12	0.42

Intersection Summary

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

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	89	112	1	10	156	3	8	64	64	34	260	30
Future Volume (vph)	89	112	1	10	156	3	8	64	64	34	260	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-4%			5%			7%			-7%	
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor		1.00			1.00			1.00	1.00		1.00	
Frpb, ped/bikes		1.00			1.00			1.00	0.97		1.00	
Flpb, ped/bikes		0.97			1.00			1.00	1.00		1.00	
Frt		1.00			1.00			1.00	0.85		0.99	
Flt Protected		0.98			1.00			0.99	1.00		0.99	
Satd. Flow (prot)		1538			1301			1300	1083		1603	
Flt Permitted		0.70			0.98			0.96	1.00		0.97	
Satd. Flow (perm)		1095			1275			1250	1083		1556	
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	107	135	1	12	188	4	10	77	77	41	313	36
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	243	0	0	204	0	0	87	77	0	390	0
Confl. Peds. (#/hr)	58		42	42		58	20		8	8		20
Heavy Vehicles (%)	0%	0%	0%	9%	0%	0%	0%	0%	0%	0%	1%	0%
Parking (#/hr)				10	10	10	10	10	10			
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2		2	2		
Actuated Green, G (s)		27.0			27.0			56.0	56.0		56.0	
Effective Green, g (s)		29.0			29.0			58.0	58.0		58.0	
Actuated g/C Ratio		0.30			0.30			0.59	0.59		0.59	
Clearance Time (s)		6.0			6.0			6.0	6.0		6.0	
Lane Grp Cap (vph)		324			377			739	640		920	
v/s Ratio Prot												
v/s Ratio Perm		c0.22			0.16			0.07	0.07		c0.25	
v/c Ratio		0.75			0.54			0.12	0.12		0.42	
Uniform Delay, d1		31.2			28.9			8.8	8.8		10.9	
Progression Factor		1.00			1.00			1.00	1.00		1.00	
Incremental Delay, d2		14.7			5.5			0.3	0.4		1.4	
Delay (s)		46.0			34.4			9.1	9.2		12.3	
Level of Service		D			C			A	A		B	
Approach Delay (s)		46.0			34.4			9.1			12.3	
Approach LOS		D			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	24.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	98.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	205	218	148	186
v/c Ratio	0.48	0.51	0.26	0.38
Control Delay	20.0	20.4	13.1	15.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	20.0	20.4	13.1	15.1
Queue Length 50th (ft)	57	61	33	45
Queue Length 95th (ft)	112	119	69	90
Internal Link Dist (ft)	418	274	520	689
Turn Bay Length (ft)				
Base Capacity (vph)	423	431	564	487
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.48	0.51	0.26	0.38

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	69	105	15	23	135	42	4	129	4	20	111	40
Future Volume (vph)	69	105	15	23	135	42	4	129	4	20	111	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		9%			-8%			-4%			0%	
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		0.99			0.96			0.99			0.95	
Flpb, ped/bikes		0.96			0.99			1.00			0.98	
Frt		0.99			0.97			1.00			0.97	
Flt Protected		0.98			0.99			1.00			0.99	
Satd. Flow (prot)		1412			1287			1362			1211	
Flt Permitted		0.84			0.95			0.99			0.96	
Satd. Flow (perm)		1210			1232			1355			1171	
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)	75	114	16	25	147	46	4	140	4	22	121	43
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	205	0	0	218	0	0	148	0	0	186	0
Confl. Peds. (#/hr)	83		47	47		83	93		128	128		93
Heavy Vehicles (%)	0%	0%	0%	0%	1%	2%	0%	0%	0%	0%	0%	2%
Parking (#/hr)				10	10	10	10	10	10	10	10	10
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		19.0			19.0			23.0			23.0	
Effective Green, g (s)		21.0			21.0			25.0			25.0	
Actuated g/C Ratio		0.35			0.35			0.42			0.42	
Clearance Time (s)		6.0			6.0			6.0			6.0	
Lane Grp Cap (vph)		423			431			564			487	
v/s Ratio Prot												
v/s Ratio Perm		0.17			c0.18			0.11			c0.16	
v/c Ratio		0.48			0.51			0.26			0.38	
Uniform Delay, d1		15.3			15.4			11.5			12.1	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		3.9			4.2			1.1			2.3	
Delay (s)		19.2			19.6			12.6			14.4	
Level of Service		B			B			B			B	
Approach Delay (s)		19.2			19.6			12.6			14.4	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	9.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	76	3	25	111	40	11	136	38	24	114	16
Future Vol, veh/h	16	76	3	25	111	40	11	136	38	24	114	16
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	0	0
Mvmt Flow	18	84	3	28	123	44	12	151	42	27	127	18
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9	9.6	9.6	9.4
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	6%	17%	14%	16%
Vol Thru, %	74%	80%	63%	74%
Vol Right, %	21%	3%	23%	10%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	185	95	176	154
LT Vol	11	16	25	24
Through Vol	136	76	111	114
RT Vol	38	3	40	16
Lane Flow Rate	206	106	196	171
Geometry Grp	1	1	1	1
Degree of Util (X)	0.271	0.149	0.262	0.231
Departure Headway (Hd)	4.743	5.068	4.828	4.862
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	752	701	737	732
Service Time	2.809	3.147	2.897	2.932
HCM Lane V/C Ratio	0.274	0.151	0.266	0.234
HCM Control Delay	9.6	9	9.6	9.4
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	1.1	0.5	1	0.9

Intersection	
Intersection Delay, s/veh	3.6
Intersection LOS	A

Approach	NB	SB	NE
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	186	150	21
Demand Flow Rate, veh/h	188	150	21
Vehicles Circulating, veh/h	21	9	126
Vehicles Exiting, veh/h	126	200	33
Ped Vol Crossing Leg, #/h	0	7	0
Ped Cap Adj	1.000	0.999	1.000
Approach Delay, s/veh	3.8	3.5	3.1
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	LT	TR	LR
Assumed Moves	LT	TR	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	188	150	21
Cap Entry Lane, veh/h	1351	1367	1213
Entry HV Adj Factor	0.991	1.000	1.000
Flow Entry, veh/h	186	150	21
Cap Entry, veh/h	1338	1366	1213
V/C Ratio	0.139	0.110	0.017
Control Delay, s/veh	3.8	3.5	3.1
LOS	A	A	A
95th %tile Queue, veh	0	0	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	23	37	129	36	6	112
Future Volume (Veh/h)	23	37	129	36	6	112
Sign Control	Stop		Free			Free
Grade	-4%		1%			1%
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	24	39	134	38	6	117
Pedestrians	5		5			5
Lane Width (ft)	10.0		10.0			10.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	0		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	292	163			177	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	292	163			177	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	96			100	
cM capacity (veh/h)	696	881			1406	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	63	172	123
Volume Left	24	0	6
Volume Right	39	38	0
cSH	800	1700	1406
Volume to Capacity	0.08	0.10	0.00
Queue Length 95th (ft)	6	0	0
Control Delay (s)	9.9	0.0	0.4
Lane LOS	A		A
Approach Delay (s)	9.9	0.0	0.4
Approach LOS	A		

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	24.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	3.5
Intersection LOS	A

Approach	NB	SB	SE
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	161	131	52
Demand Flow Rate, veh/h	161	131	52
Vehicles Circulating, veh/h	29	19	121
Vehicles Exiting, veh/h	144	171	29
Ped Vol Crossing Leg, #/h	9	2	0
Ped Cap Adj	0.999	1.000	1.000
Approach Delay, s/veh	3.7	3.4	3.3
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	LT	TR	LR
Assumed Moves	LT	TR	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	161	131	52
Cap Entry Lane, veh/h	1340	1353	1220
Entry HV Adj Factor	1.000	1.000	1.000
Flow Entry, veh/h	161	131	52
Cap Entry, veh/h	1338	1353	1220
V/C Ratio	0.120	0.097	0.043
Control Delay, s/veh	3.7	3.4	3.3
LOS	A	A	A
95th %tile Queue, veh	0	0	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	174	15	28	338	102	7	107	1	36	180	0
Future Volume (Veh/h)	8	174	15	28	338	102	7	107	1	36	180	0
Sign Control		Free			Free			Stop			Stop	
Grade		6%			-2%			-1%			-2%	
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)	8	181	16	29	352	106	7	111	1	38	188	0
Pedestrians		6			3			3			9	
Lane Width (ft)		10.0			10.0			10.0			10.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					176							
pX, platoon unblocked	0.89						0.89	0.89		0.89	0.89	0.89
vC, conflicting volume	467			200			771	733	195	736	688	420
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	342			200			683	640	195	644	590	289
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			96	67	100	85	48	100
cM capacity (veh/h)	1089			1381			188	339	848	250	364	666

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	205	487	119	226
Volume Left	8	29	7	38
Volume Right	16	106	1	0
cSH	1089	1381	326	338
Volume to Capacity	0.01	0.02	0.37	0.67
Queue Length 95th (ft)	1	2	41	114
Control Delay (s)	0.4	0.7	22.3	34.7
Lane LOS	A	A	C	D
Approach Delay (s)	0.4	0.7	22.3	34.7
Approach LOS			C	D

Intersection Summary			
Average Delay	10.5		
Intersection Capacity Utilization	65.2%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	110	971	956	0	2	212
Future Volume (Veh/h)	110	971	956	0	2	212
Sign Control		Free	Free		Stop	
Grade		0%	0%		1%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	117	1033	1017	0	2	226
Pedestrians					28	
Lane Width (ft)					10.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					2	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			310			
pX, platoon unblocked	0.86				0.86	0.86
vC, conflicting volume	1045				1796	536
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	717				1593	123
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	84				97	70
cM capacity (veh/h)	744				71	762

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	461	689	678	339	228
Volume Left	117	0	0	0	2
Volume Right	0	0	0	0	226
cSH	744	1700	1700	1700	702
Volume to Capacity	0.16	0.41	0.40	0.20	0.32
Queue Length 95th (ft)	14	0	0	0	35
Control Delay (s)	4.3	0.0	0.0	0.0	12.6
Lane LOS	A				B
Approach Delay (s)	1.7		0.0		12.6
Approach LOS					B

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	87.4%	ICU Level of Service	E
Analysis Period (min)	15		

Lane Group	EBT	WBL	WBT	NET	SWT
Lane Group Flow (vph)	223	310	259	1038	723
v/c Ratio	0.66	0.78	0.41	0.87	0.54
Control Delay	53.6	52.3	38.7	33.2	29.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	53.6	52.3	38.7	33.2	29.8
Queue Length 50th (ft)	159	211	172	346	294
Queue Length 95th (ft)	247	m271	m223	#464	360
Internal Link Dist (ft)	96		233	230	156
Turn Bay Length (ft)		85			
Base Capacity (vph)	338	395	637	1193	1344
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	0.66	0.78	0.41	0.87	0.54

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	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	22	181	7	291	238	6	63	746	166	13	618	49
Future Volume (vph)	22	181	7	291	238	6	63	746	166	13	618	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	10	10	10	10	10	10	10	10	10
Grade (%)		2%			4%			0%			1%	
Total Lost time (s)		3.5		2.5	3.5			3.0			3.0	
Lane Util. Factor		1.00		1.00	1.00			0.95			0.95	
Frpb, ped/bikes		1.00		1.00	1.00			0.98			0.99	
Flpb, ped/bikes		1.00		1.00	1.00			1.00			1.00	
Frt		1.00		1.00	1.00			0.97			0.99	
Flt Protected		0.99		0.95	1.00			1.00			1.00	
Satd. Flow (prot)		1670		1471	1542			2668			2711	
Flt Permitted		0.95		0.35	1.00			0.83			0.93	
Satd. Flow (perm)		1589		547	1542			2211			2513	
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)	23	193	7	310	253	6	67	794	177	14	657	52
RTOR Reduction (vph)	0	1	0	0	1	0	0	14	0	0	5	0
Lane Group Flow (vph)	0	222	0	310	258	0	0	1024	0	0	718	0
Confl. Peds. (#/hr)	11		23	23		11	26		25	25		26
Confl. Bikes (#/hr)			3			2						
Heavy Vehicles (%)	0%	0%	0%	1%	1%	0%	0%	4%	2%	0%	5%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	20	0	0	20	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		8		7	4			2			2	
Permitted Phases	8			4			2			2		
Actuated Green, G (s)		23.5		47.5	47.5			62.0			62.0	
Effective Green, g (s)		25.5		49.5	49.5			64.0			64.0	
Actuated g/C Ratio		0.21		0.41	0.41			0.53			0.53	
Clearance Time (s)		5.5		4.5	5.5			5.0			5.0	
Lane Grp Cap (vph)		337		391	636			1179			1340	
v/s Ratio Prot				c0.14	0.17							
v/s Ratio Perm		0.14		c0.18				c0.46			0.29	
v/c Ratio		0.66		0.79	0.41			0.87			0.54	
Uniform Delay, d1		43.3		27.7	24.9			24.3			18.3	
Progression Factor		1.00		1.49	1.47			1.00			1.54	
Incremental Delay, d2		9.7		13.4	1.7			8.8			1.5	
Delay (s)		53.0		54.9	38.1			33.1			29.7	
Level of Service		D		D	D			C			C	
Approach Delay (s)		53.0			47.3			33.1			29.7	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	37.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	96.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	495	16	14	575	40	33	15	13	12	1	14
Future Volume (Veh/h)	16	495	16	14	575	40	33	15	13	12	1	14
Sign Control		Free			Free			Stop			Stop	
Grade		5%			4%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	17	521	17	15	605	42	35	16	14	13	1	15
Pedestrians								23			11	
Lane Width (ft)								10.0			10.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								2			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		313			929							
pX, platoon unblocked	0.86			0.90			0.91	0.91	0.90	0.91	0.91	0.86
vC, conflicting volume	658			561			1258	1274	552	1252	1262	637
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	520			458			989	1007	448	983	993	496
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			98			81	92	97	93	100	97
cM capacity (veh/h)	892			978			187	206	541	180	210	489

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	555	662	65	29
Volume Left	17	15	35	13
Volume Right	17	42	14	15
cSH	892	978	223	270
Volume to Capacity	0.02	0.02	0.29	0.11
Queue Length 95th (ft)	1	1	29	9
Control Delay (s)	0.5	0.4	27.6	19.9
Lane LOS	A	A	D	C
Approach Delay (s)	0.5	0.4	27.6	19.9
Approach LOS			D	C

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	55.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	SET	NWT
Lane Group Flow (vph)	89	349	63	370	1445	1445
v/c Ratio	0.81	0.84	0.52	0.85	0.86	0.71
Control Delay	90.3	64.3	53.2	59.2	17.5	22.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	90.3	64.3	53.2	59.2	17.5	22.2
Queue Length 50th (ft)	70	279	41	270	131	289
Queue Length 95th (ft)	m#130	m#393	94	#436	202	347
Internal Link Dist (ft)		849		339	239	287
Turn Bay Length (ft)	70		110			
Base Capacity (vph)	110	416	122	437	1671	2024
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.84	0.52	0.85	0.86	0.71

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	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	85	239	92	60	305	47	6	1264	103	7	1331	35
Future Volume (vph)	85	239	92	60	305	47	6	1264	103	7	1331	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		5%			3%			1%			-1%	
Total Lost time (s)	4.0	4.0		4.0	4.0			3.5			3.5	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.95			0.91	
Frpb, ped/bikes	1.00	0.97		1.00	0.99			0.97			0.99	
Flpb, ped/bikes	0.98	1.00		0.96	1.00			1.00			1.00	
Frt	1.00	0.96		1.00	0.98			0.99			1.00	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1416	1447		1412	1521			2691			3924	
Flt Permitted	0.26	1.00		0.29	1.00			0.95			0.93	
Satd. Flow (perm)	383	1447		426	1521			2556			3653	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	89	252	97	63	321	49	6	1331	108	7	1401	37
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	89	349	0	63	370	0	0	1445	0	0	1445	0
Confl. Peds. (#/hr)	39		56	56		39	69		76	76		69
Confl. Bikes (#/hr)						2			5			5
Heavy Vehicles (%)	2%	0%	0%	2%	0%	2%	83%	3%	2%	0%	3%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	20	20	0	0	0
Parking (#/hr)											20	20
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		8			4		1	6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)	32.5	32.5		32.5	32.5			76.0			64.5	
Effective Green, g (s)	34.5	34.5		34.5	34.5			78.0			66.5	
Actuated g/C Ratio	0.29	0.29		0.29	0.29			0.65			0.55	
Clearance Time (s)	6.0	6.0		6.0	6.0			5.5			5.5	
Lane Grp Cap (vph)	110	416		122	437			1670			2024	
v/s Ratio Prot		0.24			c0.24			c0.06				
v/s Ratio Perm	0.23			0.15				c0.50			0.40	
v/c Ratio	0.81	0.84		0.52	0.85			0.87			0.71	
Uniform Delay, d1	39.7	40.1		35.8	40.3			16.8			19.7	
Progression Factor	1.18	1.18		1.00	1.00			0.67			1.00	
Incremental Delay, d2	41.3	16.2		14.8	18.0			5.8			2.2	
Delay (s)	88.0	63.6		50.5	58.3			17.0			21.9	
Level of Service	F	E		D	E			B			C	
Approach Delay (s)		68.6			57.2			17.0			21.9	
Approach LOS		E			E			B			C	

Intersection Summary			
HCM 2000 Control Delay	29.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	84.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	0	24	18	0	12	11	19	815	24	30	692	28
Future Volume (Veh/h)	0	24	18	0	12	11	19	815	24	30	692	28
Sign Control		Stop			Stop			Free			Free	
Grade		-4%			6%			-2%			2%	
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	28	21	0	14	13	22	959	28	35	814	33
Pedestrians		61			11			2			10	
Lane Width (ft)		10.0			10.0			10.0			10.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		4			1			0			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								726			393	
pX, platoon unblocked	0.83	0.83	0.83	0.83	0.83		0.83					
vC, conflicting volume	1515	2004	894	1966	2006	514	908			998		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1518	2106	770	2060	2109	514	787			998		
tC, single (s)	7.5	6.5	6.9	7.6	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.2			2.2		
p0 queue free %	100	26	92	100	62	97	97			95		
cM capacity (veh/h)	41	38	276	8	37	503	669			696		

Direction, Lane #	EB 1	WB 1	NE 1	NE 2	SW 1
Volume Total	49	27	502	508	882
Volume Left	0	0	22	0	35
Volume Right	21	13	0	28	33
cSH	60	67	669	1700	696
Volume to Capacity	0.81	0.40	0.03	0.30	0.05
Queue Length 95th (ft)	91	39	3	0	4
Control Delay (s)	177.2	90.6	0.9	0.0	1.4
Lane LOS	F	F	A		A
Approach Delay (s)	177.2	90.6	0.5		1.4
Approach LOS	F	F			

Intersection Summary			
Average Delay	6.5		
Intersection Capacity Utilization	82.5%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	827	1	14	786	0	70
Future Volume (Veh/h)	827	1	14	786	0	70
Sign Control	Free			Free	Stop	
Grade	-1%			2%	2%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	919	1	16	873	0	78
Pedestrians					25	
Lane Width (ft)					10.0	
Walking Speed (ft/s)					4.0	
Percent Blockage					2	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	554			565		
pX, platoon unblocked					0.83	
vC, conflicting volume			945		1850	485
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			945		1922	485
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		100	85
cM capacity (veh/h)			709		47	519

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	613	307	889	78
Volume Left	0	0	16	0
Volume Right	0	1	0	78
cSH	1700	1700	709	519
Volume to Capacity	0.36	0.18	0.02	0.15
Queue Length 95th (ft)	0	0	2	13
Control Delay (s)	0.0	0.0	0.6	13.2
Lane LOS			A	B
Approach Delay (s)	0.0		0.6	13.2
Approach LOS				B

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	61.8%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Volume (veh/h)	0	62	0	774	618	30
Future Volume (Veh/h)	0	62	0	774	618	30
Sign Control	Stop			Free	Free	
Grade	0%			-1%	1%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	0	83	0	1032	824	40
Pedestrians	25					
Lane Width (ft)	10.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	2					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				236	883	
pX, platoon unblocked	0.86	0.81	0.81			
vC, conflicting volume	1385	869	889			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	459	725	749			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	72	100			
cM capacity (veh/h)	446	294	684			

Direction, Lane #	SE 1	NE 1	NE 2	SW 1
Volume Total	83	516	516	864
Volume Left	0	0	0	0
Volume Right	83	0	0	40
cSH	294	1700	1700	1700
Volume to Capacity	0.28	0.30	0.30	0.51
Queue Length 95th (ft)	28	0	0	0
Control Delay (s)	22.0	0.0	0.0	0.0
Lane LOS	C			
Approach Delay (s)	22.0	0.0		0.0
Approach LOS	C			

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	45.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	NBT	SBT	NET
Lane Group Flow (vph)	1508	1519	1078
v/c Ratio	0.77	0.67	1.04
Control Delay	24.1	7.7	62.2
Queue Delay	1.6	0.6	22.7
Total Delay	25.8	8.3	84.9
Queue Length 50th (ft)	246	84	~483
Queue Length 95th (ft)	315	m91	#598
Internal Link Dist (ft)	297	110	29
Turn Bay Length (ft)			
Base Capacity (vph)	1954	2275	1033
Starvation Cap Reductn	266	363	154
Spillback Cap Reductn	56	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.89	0.79	1.23

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	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	1118	285	0	1413	0	219	719	65	0	0	0
Future Volume (vph)	0	1118	285	0	1413	0	219	719	65	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	12	12	12
Grade (%)		1%			-1%			-3%			1%	
Total Lost time (s)		2.0			2.0			7.0				
Lane Util. Factor		0.91			0.91			0.95				
Frpb, ped/bikes		0.98			1.00			1.00				
Flpb, ped/bikes		1.00			1.00			1.00				
Frt		0.97			1.00			0.99				
Flt Protected		1.00			1.00			0.99				
Satd. Flow (prot)		3842			4138			3102				
Flt Permitted		1.00			1.00			0.99				
Satd. Flow (perm)		3842			4138			3102				
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	1202	306	0	1519	0	235	773	70	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1508	0	0	1519	0	0	1078	0	0	0	0
Confl. Peds. (#/hr)	80		117	117		80	16		58	58		16
Confl. Bikes (#/hr)			4			4			2			
Heavy Vehicles (%)	0%	3%	7%	0%	3%	0%	3%	4%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	20	0	0	0	0	0	0	0
Parking (#/hr)		0	0									
Turn Type		NA			NA		Perm	NA				
Protected Phases		15 6 1			15 6 1 2			3 4				
Permitted Phases							3 4					
Actuated Green, G (s)		56.0			64.0			48.0				
Effective Green, g (s)		54.0			57.0			50.0				
Actuated g/C Ratio		0.45			0.48			0.42				
Clearance Time (s)												
Lane Grp Cap (vph)		1728			1965			1292				
v/s Ratio Prot		c0.39			c0.37							
v/s Ratio Perm								0.35				
v/c Ratio		0.87			0.77			0.83				
Uniform Delay, d1		29.9			26.1			31.3				
Progression Factor		0.88			0.35			0.53				
Incremental Delay, d2		6.2			1.9			6.0				
Delay (s)		32.4			11.0			22.7				
Level of Service		C			B			C				
Approach Delay (s)		32.4			11.0			22.7			0.0	
Approach LOS		C			B			C			A	

Intersection Summary			
HCM 2000 Control Delay	21.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	73.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	SBL	SBR	NEL	NER
Lane Configurations						
Traffic Volume (veh/h)	0	124	0	0	902	149
Future Volume (Veh/h)	0	124	0	0	902	149
Sign Control	Yield		Free		Free	
Grade	-4%		0%		1%	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81
Hourly flow rate (vph)	0	153	0	0	1114	184
Pedestrians	11					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	1					
Right turn flare (veh)						
Median type			None		None	
Median storage veh)						
Upstream signal (ft)			187		111	
pX, platoon unblocked	0.71	0.71	0.71			
vC, conflicting volume	1217	660	1309			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	485	0	615			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	80	100			
cM capacity (veh/h)	359	762	675			

Direction, Lane #	WB 1	NE 1	NE 2
Volume Total	153	743	555
Volume Left	0	0	0
Volume Right	153	0	184
cSH	762	1700	1700
Volume to Capacity	0.20	0.44	0.33
Queue Length 95th (ft)	19	0	0
Control Delay (s)	10.9	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.9	0.0	
Approach LOS	B		

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	37.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	NBT	SBT	SWT
Lane Group Flow (vph)	1415	1504	962
v/c Ratio	0.63	0.72	0.98
Control Delay	6.2	25.3	42.5
Queue Delay	0.9	0.2	39.9
Total Delay	7.1	25.6	82.4
Queue Length 50th (ft)	70	319	354
Queue Length 95th (ft)	m76	378	#514
Internal Link Dist (ft)	110	479	17
Turn Bay Length (ft)			
Base Capacity (vph)	2241	2090	985
Starvation Cap Reductn	504	0	118
Spillback Cap Reductn	0	126	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.81	0.77	1.11

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	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	1330	0	0	1165	249	0	0	0	255	614	36
Future Volume (vph)	0	1330	0	0	1165	249	0	0	0	255	614	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10	12	12	12	11	11	11
Grade (%)		2%			-2%			0%			-1%	
Total Lost time (s)		2.0			2.0						7.0	
Lane Util. Factor		0.91			0.91						0.95	
Frpb, ped/bikes		1.00			0.99						1.00	
Flpb, ped/bikes		1.00			1.00						1.00	
Frt		1.00			0.97						0.99	
Flt Protected		1.00			1.00						0.99	
Satd. Flow (prot)		4076			4110						2958	
Flt Permitted		1.00			1.00						0.99	
Satd. Flow (perm)		4076			4110						2958	
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)	0	1415	0	0	1239	265	0	0	0	271	653	38
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1415	0	0	1504	0	0	0	0	0	962	0
Confl. Peds. (#/hr)	98		145	145		98	77		4	4		77
Confl. Bikes (#/hr)			3			3						
Heavy Vehicles (%)	0%	3%	0%	0%	3%	2%	0%	0%	0%	5%	4%	3%
Bus Blockages (#/hr)	0	20	0	0	0	0	0	0	0	0	0	0
Turn Type		NA			NA					Perm	NA	
Protected Phases		15 6 1 2			15 6 1						3 4	
Permitted Phases										3 4		
Actuated Green, G (s)		64.0			56.0						48.0	
Effective Green, g (s)		57.0			54.0						50.0	
Actuated g/C Ratio		0.48			0.45						0.42	
Clearance Time (s)												
Lane Grp Cap (vph)		1936			1849						1232	
v/s Ratio Prot		c0.35			c0.37							
v/s Ratio Perm											0.33	
v/c Ratio		0.73			0.81						0.78	
Uniform Delay, d1		25.3			28.6						30.3	
Progression Factor		0.29			1.00						0.49	
Incremental Delay, d2		1.4			4.0						4.3	
Delay (s)		8.7			32.7						19.0	
Level of Service		A			C						B	
Approach Delay (s)		8.7			32.7			0.0			19.0	
Approach LOS		A			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	20.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	73.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	123	0	0	715	199
Future Volume (Veh/h)	0	123	0	0	715	199
Sign Control	Stop			Free	Free	
Grade	-4%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	131	0	0	761	212
Pedestrians	267					
Lane Width (ft)	10.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	19					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				218	110	
pX, platoon unblocked	0.77	0.77	0.77			
vC, conflicting volume	1134	754	1240			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	568	72	706			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	79	100			
cM capacity (veh/h)	287	614	563			

Direction, Lane #	EB 1	SB 1	SB 2
Volume Total	131	507	466
Volume Left	0	0	0
Volume Right	131	0	212
cSH	614	1700	1700
Volume to Capacity	0.21	0.30	0.27
Queue Length 95th (ft)	20	0	0
Control Delay (s)	12.4	0.0	0.0
Lane LOS	B		
Approach Delay (s)	12.4	0.0	
Approach LOS	B		

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	46.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	NBT	NBR	SBR	SWT
Lane Group Flow (vph)	197	1187	175	918
v/c Ratio	0.25	0.99	0.13	0.75
Control Delay	18.5	34.1	0.2	34.6
Queue Delay	0.0	0.0	0.1	3.4
Total Delay	18.5	34.1	0.3	38.0
Queue Length 50th (ft)	108	610	0	313
Queue Length 95th (ft)	m108	166	0	235
Internal Link Dist (ft)	1			419
Turn Bay Length (ft)				
Base Capacity (vph)	794	1204	1305	1216
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	466	206
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.25	0.99	0.21	0.91

Intersection Summary

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

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	124	748	0	0	110	0	0	0	0	573	5
Future Volume (vph)	0	124	748	0	0	110	0	0	0	0	573	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			0%			1%	
Total Lost time (s)		2.0	7.0			2.0					2.0	
Lane Util. Factor		0.95	0.95			1.00					0.95	
Frpb, ped/bikes		1.00	1.00			1.00					1.00	
Flpb, ped/bikes		1.00	1.00			1.00					1.00	
Frt		1.00	0.85			0.86					1.00	
Flt Protected		1.00	1.00			1.00					1.00	
Satd. Flow (prot)		1444	1257			1305					2918	
Flt Permitted		1.00	1.00			1.00					1.00	
Satd. Flow (perm)		1444	1257			1305					2918	
Peak-hour factor, PHF	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63
Adj. Flow (vph)	0	197	1187	0	0	175	0	0	0	0	910	8
RTOR Reduction (vph)	0	0	209	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	197	978	0	0	175	0	0	0	0	917	0
Confl. Peds. (#/hr)			7	7			7					7
Bus Blockages (#/hr)	0	6	0	0	0	9	0	0	0	0	6	6
Turn Type		NA	custom			Free					NA	
Protected Phases		4 15 6 1	11 4 15								2 3	
Permitted Phases						Free						
Actuated Green, G (s)		61.0	97.0			120.0					43.0	
Effective Green, g (s)		59.0	97.0			120.0					45.0	
Actuated g/C Ratio		0.49	0.81			1.00					0.38	
Clearance Time (s)												
Lane Grp Cap (vph)		709	1016			1305					1094	
v/s Ratio Prot		c0.14	c0.78								0.31	
v/s Ratio Perm						0.13						
v/c Ratio		0.28	0.96			0.13					0.84	
Uniform Delay, d1		18.0	9.9			0.0					34.2	
Progression Factor		1.25	13.48			1.00					1.00	
Incremental Delay, d2		0.8	18.4			0.2					7.7	
Delay (s)		23.2	152.3			0.2					41.9	
Level of Service		C	F			A					D	
Approach Delay (s)		133.9			0.2			0.0			41.9	
Approach LOS		F			A			A			D	

Intersection Summary			
HCM 2000 Control Delay	90.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Nebraska Avenue/Warren Street

Table 4C-1. Warrant 1, Eight-Hour Vehicular Volume

Condition A—Minimum Vehicular Volume

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100%[a]	80%[b]	70%[c]	56%[d]	100%[a]	80%[b]	70%[c]	56%[d]
1	1	500	400	350	280	150	120	105	84
2 or more	1	600	480	420	336	150	120	105	84
2 or more	2 or more	600	480	420	336	200	160	140	112
1	2 or more	500	400	350	280	200	160	140	112

Condition B—Interruption of Continuous Traffic

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100%[a]	80%[b]	70%[c]	56%[d]	100%[a]	80%[b]	70%[c]	56%[d]
1	1	750	600	525	420	75	60	53	42
2 or more	1	900	720	630	504	75	60	53	42
2 or more	2 or more	900	720	630	504	100	80	70	56
1	2 or more	750	600	525	420	100	80	70	56

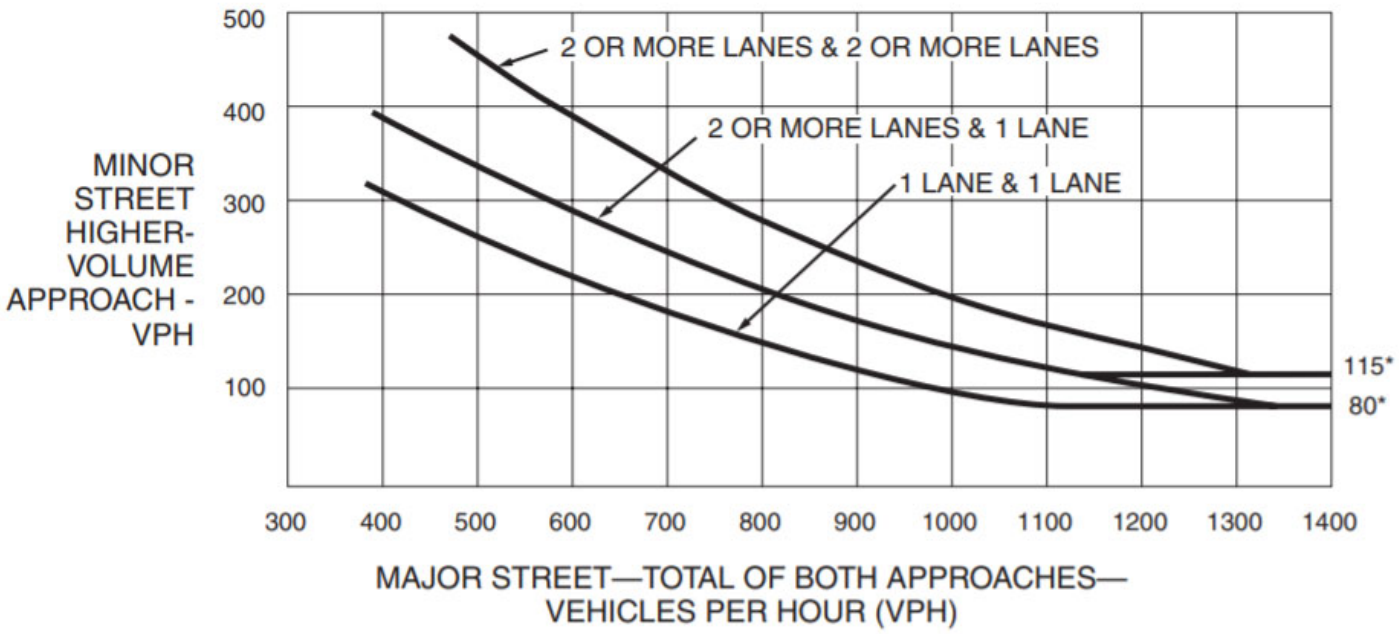
[a] Basic minimum hourly volume
[b] Used for combination of Conditions A and B after adequate trial of other remedial measures
[c] May be used when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000
[d] May be used for combination of Conditions A and B after adequate trial of other remedial measures when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000

Time Period	# of Lanes		Volumes	
	Side Street	Mainline	Side Street Highest Volume Approach	Mainline Total Both Approaches
AM Peak Hour	1	2	69	1582
PM School Peak Hour	1	1	73	1716
PM Commuter Peak Hour	1	1-2	45	1595

None of the peak hours meet the volume thresholds. Therefore, it is extremely unlikely that the volume thresholds would be met for the required 8 hours.

Nebraska Avenue/Warren Street

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume

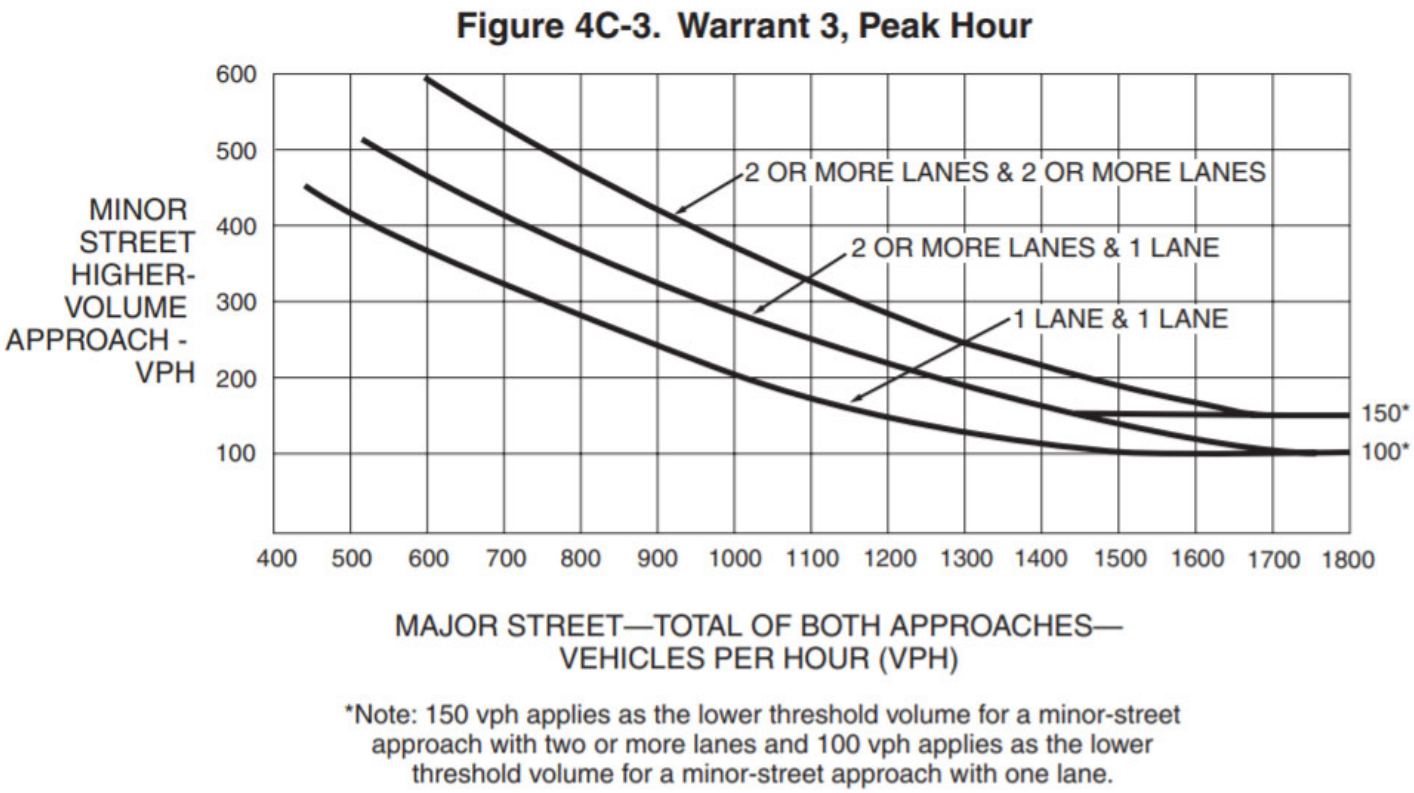


*Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

Time Period	# of Lanes		Volumes	
	Side Street	Mainline	Side Street Highest Volume Approach	Mainline Total Both Approaches
AM Peak Hour	1	2	69	1582
PM School Peak Hour	1	1	73	1716
PM Commuter Peak Hour	1	1-2	45	1595

None of the peak hours would meet the volume thresholds. Therefore, it is extremely unlikely that the volume thresholds would be met for the required 4 hours.

Nebraska Avenue/Warren Street

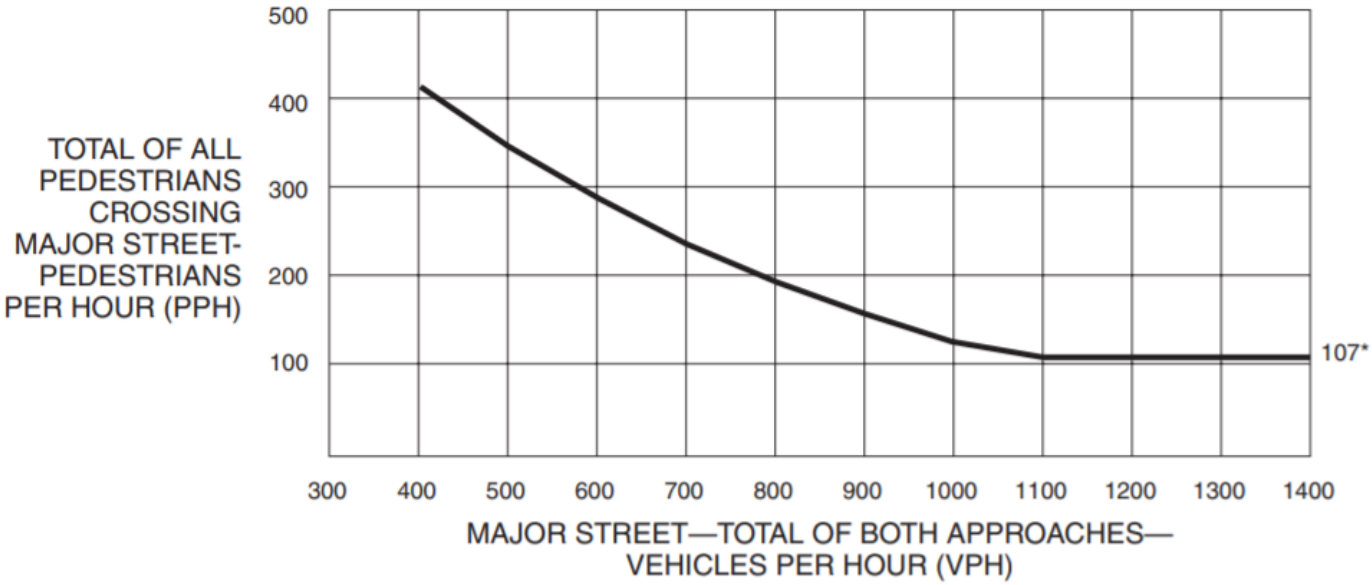


Time Period	# of Lanes		Volumes	
	Side Street	Mainline	Side Street Highest Volume Approach	Mainline Total Both Approaches
AM Peak Hour	1	2	69	1582
PM School Peak Hour	1	1	73	1716
PM Commuter Peak Hour	1	1-2	45	1595

None of the peak hours would meet the volume thresholds. Therefore, the Peak Hour Warrant would not be met.

Nebraska Avenue/Warren Street

Figure 4C-5. Warrant 4, Pedestrian Four-Hour Volume



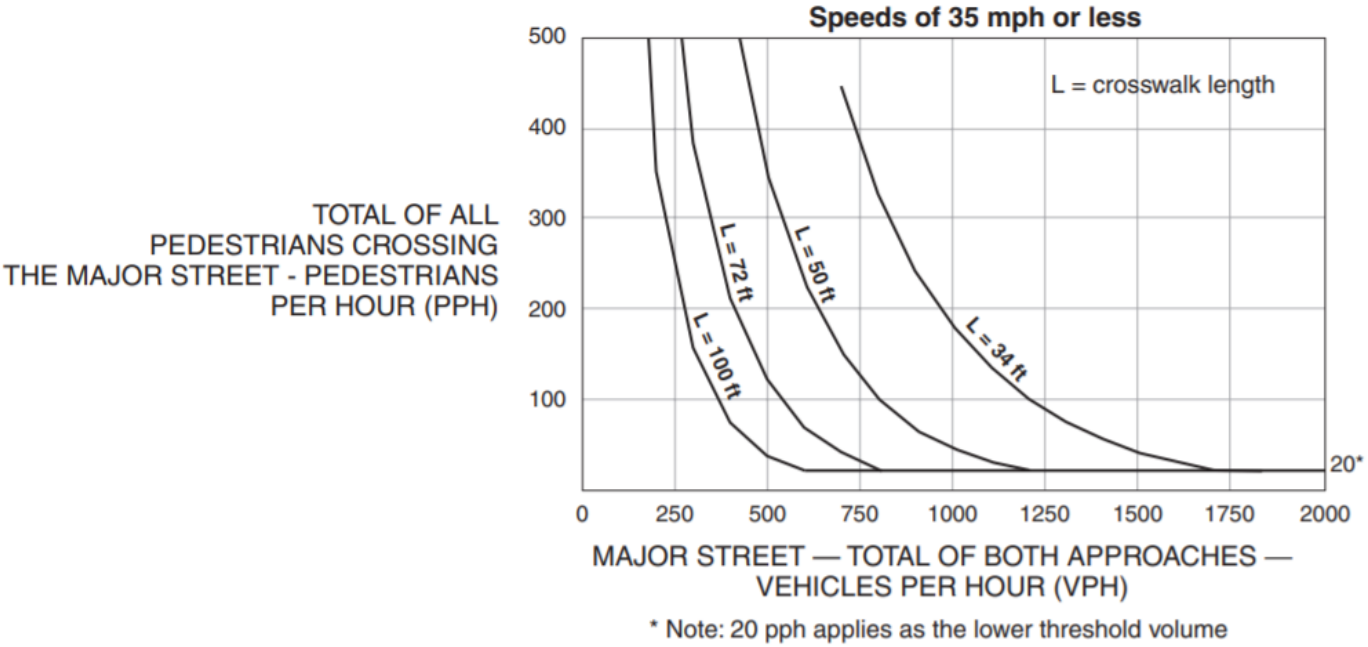
*Note: 107 pph applies as the lower threshold volume.

Time Period	Pedestrian Volume Crossing Mainline	Mainline Vehicle Volume Total Both Approaches
AM Peak Hour	36	1582
PM School Peak Hour	7	1716
PM Commuter Peak Hour	72	1595

None of the peak hours would meet the volume thresholds. Therefore, it is extremely unlikely that the volume thresholds would be met for the required 4 hours.

Nebraska Avenue @ Warren Street

Figure 4F-1. Guidelines for the Installation of Pedestrian Hybrid Beacons on Low-Speed Roadways



Time Period	Pedestrian Volume Crossing Mainline	Mainline Vehicle Volume Total Both Approaches
AM Peak Hour	36	1582
PM School Peak Hour	7	1716
PM Commuter Peak Hour	72	1595

The AM and PM Commuter peak hours meet are projected to meet the volume thresholds. Therefore, the warrant would be met.