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September 17, 2009

OF COUNSEL
HAROLD E. JORDAN

VIA E-MAIL TRANSMISSION

Marc D. Loud, Chairman
District of Columbia Board of Zoning
441 4th Street, N.W. - Room 210 South
Washington, D.C. 20001

Re: BZA Application No. 17964 - Application of Emory United Methodist Church

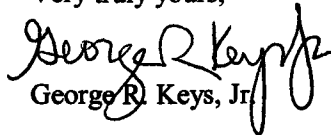
Dear Mr. Loud:

This firm represents Emory United Methodist Church (the "Applicant") in connection with its application for variance and special exception relief in order to construct a mixed use project at 6100-6120 Georgia Avenue, N.W. in the C-2-A Zone District. The application is scheduled for hearing on Tuesday, September 22, 2009.

Pursuant to §3110.2 of the Rules of Practice and Procedure before the Board of Zoning Adjustment, the Applicant respectfully requests that the Board waive its rules to permit the late filing of the supplemental information required by § 3113.8, which was due to be filed on or before September 8, 2009.

Counsel for the Applicant was unexpectedly hospitalized on the afternoon of September 2, 2009, shortly after participating in a conference call with the Office of Planning ("OP") at which time the participants discussed, *inter alia*, the type of information which OP believed should be included in the supplemental information to be filed by the Applicant. Counsel for the Applicant was not released from the hospital until the evening of September 9, 2009, and has only been able to resume a partial workload this week. Accordingly, counsel for the Applicant was unable to prepare and timely file the supplemental information. As the Office of Planning was aware of the supplemental filing (and even suggested some of the contents) and no one has filed seeking party status opposing the application, there is no prejudice in granting the request for late filing.

Very truly yours,


George R. Keys, Jr.

Enclosures

cc: Karen Thomas, Office of Planning
Advisory Neighborhood Commission 4A

BOARD OF ZONING ADJUSTMENT
District of Columbia

CASE NO. 17964
EXHIBIT NO. 25

Board of Zoning Adjustment
District of Columbia
CASE NO. 17964
EXHIBIT NO. 25

**BEFORE THE DISTRICT OF COLUMBIA
BOARD OF ZONING ADJUSTMENT**

SUPPLEMENTAL INFORMATION

In Re: Application of Emory United Methodist Church for variances from:
(i) the height requirements of Section 770.1, (ii) the Floor Area Ratio
requirements of Section 771.2, (iii) the lot occupancy requirements
of Section 772.1, (iv) the loading facility requirements of Section
2201.1 and a special exception for multiple roof structures and
required setbacks under Sections 770.6(a) and 411.11 in a C-2-A
Zoning District

Subject Property:

**Lots 801, 802, 808 and 813, Square 2940
6100-6120 Georgia Avenue, N.W..**

JORDAN & KEYS, PLLC
George R. Keys, Jr.
1400 16th Street, N.W., Suite 710
Washington, D.C. 20036

Date: September 16, 2009

BZA Application # 17964

Pursuant to § 3113.8 of the Board of Zoning Adjustment Supplemental Rules of Practice and Procedure, Emory United Methodist Church (the “Applicant”) herewith submits the enclosed information as a supplement to its application for variances and a special exception pursuant to §§ 770.1, 771.2, 772.1, 2201.1, 777.1, 411.1, 3104.1 and 3107.2 of the District of Columbia Zoning Regulations, 11 DCMR Zoning (February 2003), as amended (the “Zoning Regulations”), to permit the construction of a mixed use project in the C-2-A Zoning District (the “Beacon Center Project”).

A. Discussion with Office of Planning

In discussion with the Office of Planning on September 2, 2009, there were several issues related to project the which the Office of Planning suggested that the Applicant address with particularity for the edification of the Board prior to the public hearing. These issues are discussed in the numbered paragraphs below:

1. Determination of Measuring Point for Height

The Applicant met with Matthew LeGrant, the Zoning Administrator on November 10, 2008 to explore the options in developing the site, one of which was the point for measuring height of the building. While the fact that the subject property fronts on three streets — Georgia Avenue, NW, Quackenbos Street, NW and Old Piney Branch Road, NW — theoretically affords some latitude in selecting the “front” of the project and thus the measuring point for building height, the fact that the Applicant was retaining the existing church building meant that Georgia Avenue, NW was the “front” of the project. The base elevation at the middle of the front of the building was therefore 303.7 feet. If the Applicant had been able to demolish the existing church building, then Old Piney Branch Road, NW could have potentially been the “front” of the building and the base elevation at

that point is 315 feet. From this measuring point the building height is 50 feet, or within the matter-of-right development parameters for the C-2-A Zone District.

2. Retention of the Existing Church

The most significant decision for the Beacon Center Project was to retain the existing church building. The existing church building determined not only the “front” of the Beacon Center Project for the purposes of measuring building height, but it also established the floor levels of every other structure within the development and the level of the lower underground parking floor.

3. Collaboration with Historic Preservation Office.

Early in the development effort, the Applicant was made aware of the historical significance of the existing church building and was encouraged to collaborate with the Historic Preservation Office staff in finding a design solution that would maintain the Applicant’s program objectives while retaining and enhancing the elements of the existing church building deemed historic. The Applicant’s architect met several times with HPO staff and submitted a series of design alternatives for HPO consideration and comment. As result of this collaboration, The Applicant preserved views of the existing church building from both directions along Georgia Avenue, and adjusted the design and utilization of the berm along Georgia Avenue, NW to the church entrance.

4. PUD Parameters in the C-2-A Zone District

Under the PUD standards at §§ 2405.1 and 2405.2 of the Zoning Regulations, an approved project could achieve a maximum height of 65 feet and a maximum Floor Area Ratio of 3.0. The Zoning Commission could also under § 2405.4 approve a lot occupancy greater than allowed for in the Zone District. In fact, the Applicant is seeking a height variance to allow a 63.4 foot building and a variance in the Floor Area Ratio of 2.97, both less than the PUD standards. As previously

stated in the original application, the Applicant believes that it has proposed a building actually conforming to applicable C-2-A requirements, which is unfortunately situated atop a 14-foot berm and has the further burden of retaining an existing structure with important historic characteristics.

5. Loading Dock Considerations

The Applicant has requested a variance from the loading facilities requirements to eliminate the 55-foot loading berth and an additional loading platform. The rationale for the variance has several aspects. First, the mixed use nature of the Beacon Center Project drives the loading facilities requirements, but, in fact, the residential units in the project are atypical from the standard rental apartment building because the apartments are dedicated to either senior housing or transitional housing. In both instances the units are smaller than standard and unlikely to require the larger trucks. Similarly, the small retail component of the project can share the loading facilities with the residential units without conflict. Finally, the topography of the subject property determined the point of entry for trucks along Old Piney Branch Road, NW and there was some doubt that the narrow roadway would permit adequate maneuvering space for the larger trucks.

B. Witnesses for the Applicant

The Applicant intends to present its case through three witnesses: (1) Dr. Joseph W. Daniels, Jr., the Pastor of Emory United Methodist Church; (2) Sean M. Pichon, AIA NCARB, a principal with PGN Architects PLLC who designed the Beacon Center Project; and (3) Edward Y. Papazian, P.E. of Kimley-Horn and Associates, Inc., a traffic and transportation engineer who prepared the Traffic Impact Study, a copy of which is appended hereto. The Traffic Impact Study was delivered to the D.C. Department of Transportation on September 2, 2009.

The Applicant intends to offer Mr. Pichon and Mr. Papazian as expert witnesses in their

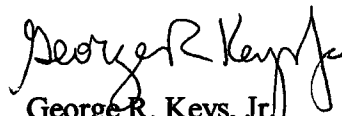
respective fields and submit herewith copies of their professional resumes for consideration by the Board. Both of them have testified as expert witnesses before the D.C. Board of Zoning Adjustment in other cases.

C. Community Contacts.

The Applicant and its architects appeared before Advisory Neighborhood Commission 4A at its regularly scheduled meeting on September 1, 2009, where its plans received the unanimous support of the Commission.

In addition, the Brightwood Community Association, Inc. has filed its letter of support, dated September 1, 2009, with the Board of Zoning Adjustment, a copy of which is appended hereto.

Respectfully submitted,


George R. Keys, Jr.
Counsel for the Applicant

■ **Partner**

Sean M. Pichon, AIA NCARB
Partner



Sean has over 14 years experience in the DC metro area. Before joining PGN, Sean worked with two of the DC's leading firms. Sean compliments PGN with a career crafted to refine his understanding of the architectural process. He was a vital team member on the award winning Pepco Headquarters Building in downtown DC and served as the on site architect for the United States Patent and Trademark Complex in Alexandria, Virginia. Sean has worked on many prominent projects in Washington. He is an exceptional designer who has substantial technical and construction experience.

In addition to the work Sean has performed in Washington DC, Sean has brought energy to the planning ideas of New Communities within the office of Economic Development in Washington DC. He has managed several large community efforts including the masterplan of Georgia Ave, NW. This included over 600 thousand square feet of development. He was instrumental in the community charette and collaborating with the DC agencies, developers and residents. His well thought out approach to projects ensures success at every phase of architecture.

Significant Project list:

Park Morton Master Plan, Washington, DC 600,000 square feet 477 unit planning project. Sean led a rewarding community design charrette and coordination with DC agencies.

Martin Luther King Latino Cooperative, Washington, DC: 40,000 square foot 74 unit Historic Renovation, Sean was the partner in charge and managed the project through design and construction.

Mathews Memorial, Washington DC 100,000 square feet PUD containing 99 unit residential with 3 story commercial building adjacent. Sean provided Quality Control for the project.

Pepco Headquarters, Washington, DC: 400,000 square feet Class A Office Building, Responsibilities included Design, Structural Coordination and Technical Documentation.

United States Patent and Trademark Office Complex, Alexandria, VA: 2.5 million square foot Government Office Building, Responsibilities included Technical Documentation, Civil, MEP and Structural Coordination, and Construction Administration

Washington Convention Center, Washington, DC: 2.3 million square foot Convention Center, Responsibilities included Design and Design Development for obtaining Design Board approval.

Bachelors of Architecture from Howard University School of Architecture in 1995



Kimley-Horn
and Associates, Inc.

RESUME

Edward Y. Papazian, P.E.
Kimley-Horn and Associates, Inc.
13221 Woodland Park Road
Suite 400
Herndon, VA 20171

7201 Wisconsin Avenue
Suite 500
Bethesda, MD 20814

Traffic and Transportation Engineer

Education: Bachelor of Science in Civil Engineering, Drexel University
Master of Science in Civil Engineering (Major in Traffic/
Transportation Engineering), Drexel University

Registration: Registered Professional Engineer in Pennsylvania, Virginia,
Maryland, the District of Columbia, and Florida

**Professional
Organizations:** American Society of Civil Engineers
Institute of Transportation Engineers
National Society of Professional Engineers

**Professional
Experience:** Transportation Engineer at Pennsylvania Department of
Transportation for 8 years
- Performed TOPICS studies, traffic access studies,
corridor and design location studies, air and noise
quality studies.
Adjunct Professor in the Department of Civil Engineering at
Drexel University for 5 years.
- Taught undergraduate courses in transportation
facilities design and transportation systems analysis.
Traffic and Transportation Engineer at Barton-Aschman
Associates and its parent company, Parsons Transportation
Group, from 1978 to 2000 and Senior Project Manager at
Kimley-Horn and Associates since April 2000.
- Performed development traffic analysis and access and
circulation studies, parking studies, urban traffic and
transportation studies, environmental impact analyses.

Expert Witness Experience:

Maryland: Testified at public hearings at Montgomery County Planning
Board, the Montgomery County Council, the Montgomery County Hearing
Examiner, the County Board of Appeals for Montgomery County, the Prince
George's County Zoning Hearing Examiner, City of Rockville Board of Appeals,
City of Rockville Planning Commission, the Rockville City Council, and the
Zoning Board of Howard County.



**Kimley-Horn
and Associates, Inc.**

Washington, D.C.: Testified before the D.C. Zoning Commission and the D.C. Board of Zoning Adjustment.

Virginia: Testified before the Arlington County board of Zoning Appeals, the Arlington County Board of Supervisors, the City of Alexandria Board of Zoning Appeals, the Henrico County Circuit Court, the Fauquier County Planning Commission, and the Fauquier County Board of Supervisors.

New Jersey: Testified at public hearings before the Mt. Laurel Township Planning Board, the Burlington County Land Development Review Committee, and Egg Harbor Township Planning Board.

Pennsylvania: Testified before the Upper Macungie Township Planning Commission and Board of Supervisors.



BRIGHTWOOD COMMUNITY ASSOCIATION, INC. Established 1958
P.O. Box 55104 • Brightwood Station • Washington, DC 20011
www.brightwooddc.com (Join our listserv at http://groups.yahoo.com/group/Brightwood_DC)

September 1, 2009

Mr. Nkosi Ayize, Executive Director
Emory Beacon of Light, Inc.
6120 Georgia Ave, NE
Washington DC 20011

Dear ^{Nkosi} Mr. Ayize:

In April of this year, in response to your project presentation, the Brightwood Community Association's Executive Board wrote a strong letter of support for your organization's proposed development in the Brightwood Georgia Avenue Great Streets commercial corridor. At that time and up to the present, the members and leaders of the BCA have been overwhelmingly favorable toward the EBOL's plans for conscientious mixed-use construction on the four lots on Square 2940 (6100, 6104, and 6120 Georgia Avenue).

Your April presentation to the BCA about this project generated significant excitement and support for the EBOL's plans to create affordable residential units for very low- to low-income households as well as commercial, retail, and recreation space, and, of course, to renovate and expand the historic Emory Church. We believe this bold, large-scale project will kick-start much-needed development along one of our major thoroughfares.

I personally, and our membership collectively, anxiously await seeing this proposal become a reality. Please know that the BCA is committed to assisting you in whatever way possible toward this, just as we've supported EBOL's ongoing and innovative community improvement efforts throughout the years.

If you need any further assistance or information, please do not hesitate to contact me at (202) 355-3695 or president@brightwooddc.com.

Sincerely,

D. Kamili Anderson
President

cc: The BCA Executive Board, c/o Ms. Karrie Braxton, Secretary

Traffic Impact Study

Emory Beacon of Light

A Mixed-Use Complex

Washington, D.C.

Prepared for:

Emory Beacon of Light, Inc.

August 2009

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INTRODUCTION

This report presents the results of a traffic impact study for the proposed Beacon Center mixed-use development in northwest Washington, D.C. The site is located along the west side of Georgia Avenue NW just north of Quackenbos Street NW. It is bordered by Rittenhouse Street NW to the north, Old Piney Branch Road to the west, Quackenbos Street NW to the south, and Georgia Avenue NW to the east. The property currently contains The Emory United Methodist Church. The site location is shown on Figure 1. The proposed development includes 91 senior and transitional residential units, 5,691 SF of retail, 7,416 square feet of community recreation center, 13,694 SF of church office space, and a 125 seat church expansion.

The following traffic study was prepared to satisfy the traffic requirements associated with the submittal to the Board of Zoning Adjustment for the Beacon Center and is in accordance with direction provided by the District of Columbia Department of Transportation (DDOT).

The following sections of this report describe the area transportation system, existing traffic volumes, the calculation of background traffic volumes including estimated traffic generated by approved and unbuilt developments, and the impact of the proposed development.

EXECUTIVE SUMMARY

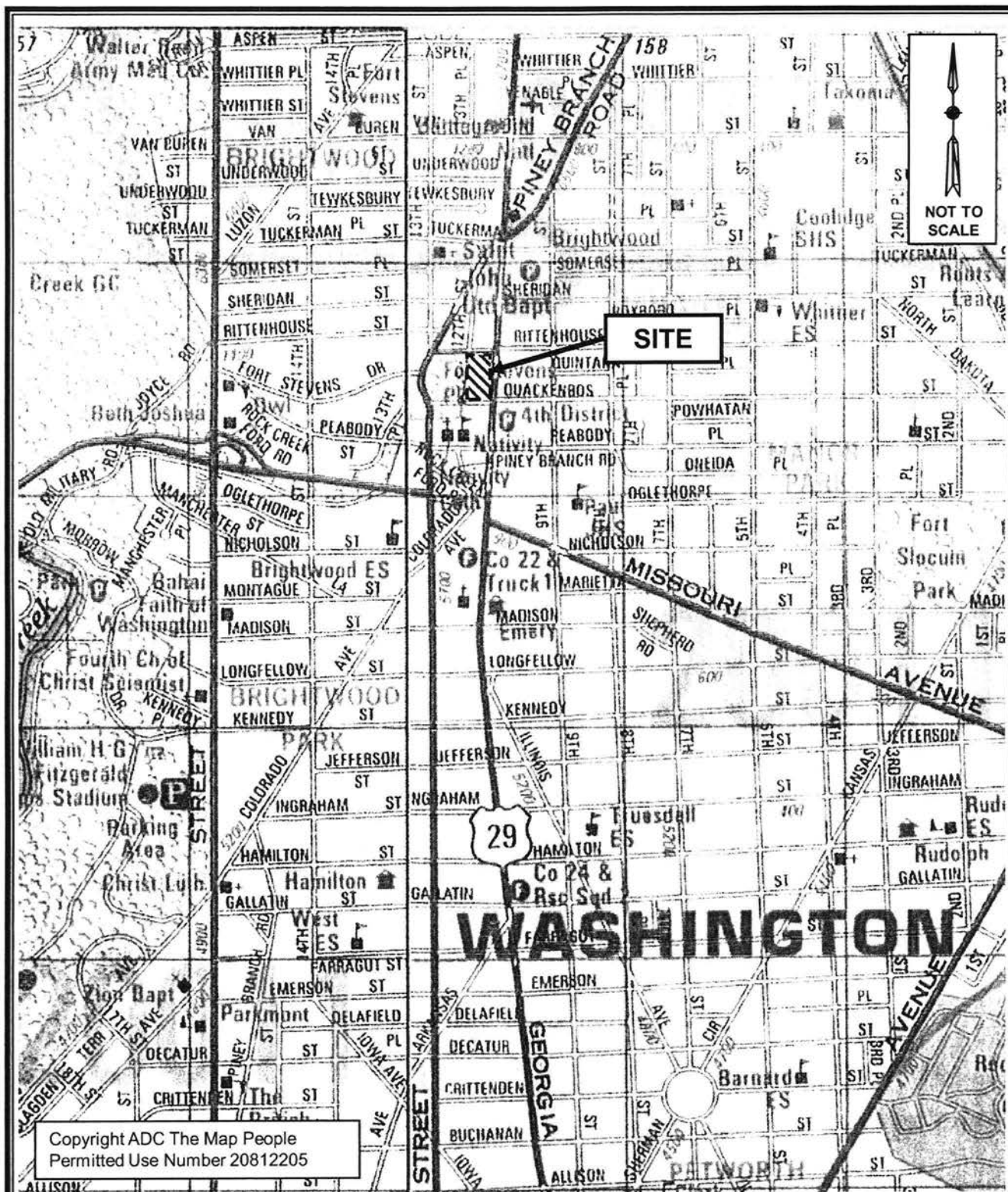
As a result of this study, it is concluded that the area intersections will all operate at satisfactory conditions with the Beacon Center development in place. The proposed development will have a negligible effect on the area intersections.

The site and the surrounding area are well served by transit via Metrobus. Pedestrian connections in the area are well established. As a result, there will be ample opportunities for travel by alternatives to the automobile.

The parking spaces provided onsite for the residential uses meet the requirements set forth in the Zoning Ordinance. The onsite parking meets the zoning and the practical requirements of the proposed development. The proposed residential units are a combination of senior and transitional units. These units will house individuals that are less likely to own a personal vehicle,

and therefore the site has a lower parking demand and a lower number of generated trips than what have been calculated using standard trip and parking rates contained in this study.

For those who travel to the site by way of a personal vehicle, sufficient parking will be provided to satisfy the demand for Beacon Center. As a result, there is expected to be no spillover of parking into the surrounding community.



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and Associates, Inc.

KHA Project # 110209000

Site Location Map

Emory Beacon of Light
Washington, DC

Figure

1

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AREA TRANSPORTATION SYSTEM

Existing Area Streets

Streets considered in this study include Georgia Avenue NW, Rittenhouse Street NW, Quackenbos Street NW, and 13th Street NW. A brief description of the area street system follows:

Georgia Avenue NW (US Route 29) – This north-south arterial serves as a commuter route for people commuting to the vicinity of Howard University and destinations to the south. It forms the east boundary of the Beacon Center. In the vicinity of the site, Georgia Avenue has a four-lane cross-section with on-street parking and sidewalks on both sides. The study intersection of Georgia Avenue and Rittenhouse Street is signalized. The study intersection of Georgia Avenue and Quackenbos Street is unsignalized, with the Quackenbos Street approaches being stop controlled.

Rittenhouse Street NW – This local east-west street, which forms the northern boundary of the site, has a two-lane cross section with on-street parking and sidewalks on both the north and south sides in the vicinity of the site. To the west of Piney Branch Road, Rittenhouse Street operates one-way westbound only and has a one-lane cross section. The study intersection of Rittenhouse Street and Georgia Avenue is signalized.

Quackenbos Street NW – This local east-west roadway begins at 13th Street and continues to the east to Blair Road and provides access to communities east of Georgia Avenue and north of Missouri Avenue. It has a two lane cross section in the vicinity of the site and has on-street parking and sidewalks on both the north and south sides. The study intersection of Quackenbos Street and Georgia Avenue is unsignalized, with the Quackenbos Street approaches being stop controlled.

13th Street NW – This arterial serves as a commuter route that provides north-south access within the study area. In the vicinity of the site, 13th Street has a two travel lanes in each direction, no parking, and sidewalks on both sides. The study intersection of 13th Street and Quackenbos Street is unsignalized, with the Quackenbos Street approach being stop controlled.

Existing Area Transit Service

Existing transit service in the study area includes Metrobus service. The nearest Metrorail station, the Takoma Station on the Red Line, is approximately 1.1 miles northeast of the site. The Georgia Ave – Pentworth Station on the Green/Yellow Line is approximately 2.0 miles south of the site.

Metrobus service in the study area is provided along Georgia Avenue by the Georgia Avenue - 7th Street Line. (Route 70 and 71). This line runs from the Silver Spring Metrorail Station to Fort McNair, and serves 6 other Metrorail Stations, Walter Reed Army Medical Center, and the area around Howard University. The buses on this line travel north and south along Georgia Avenue on weekdays, weekends, and holidays running 22 to 24 hours a day with headways of 15 minutes during commuter peak periods and 30 minutes during other times of day.

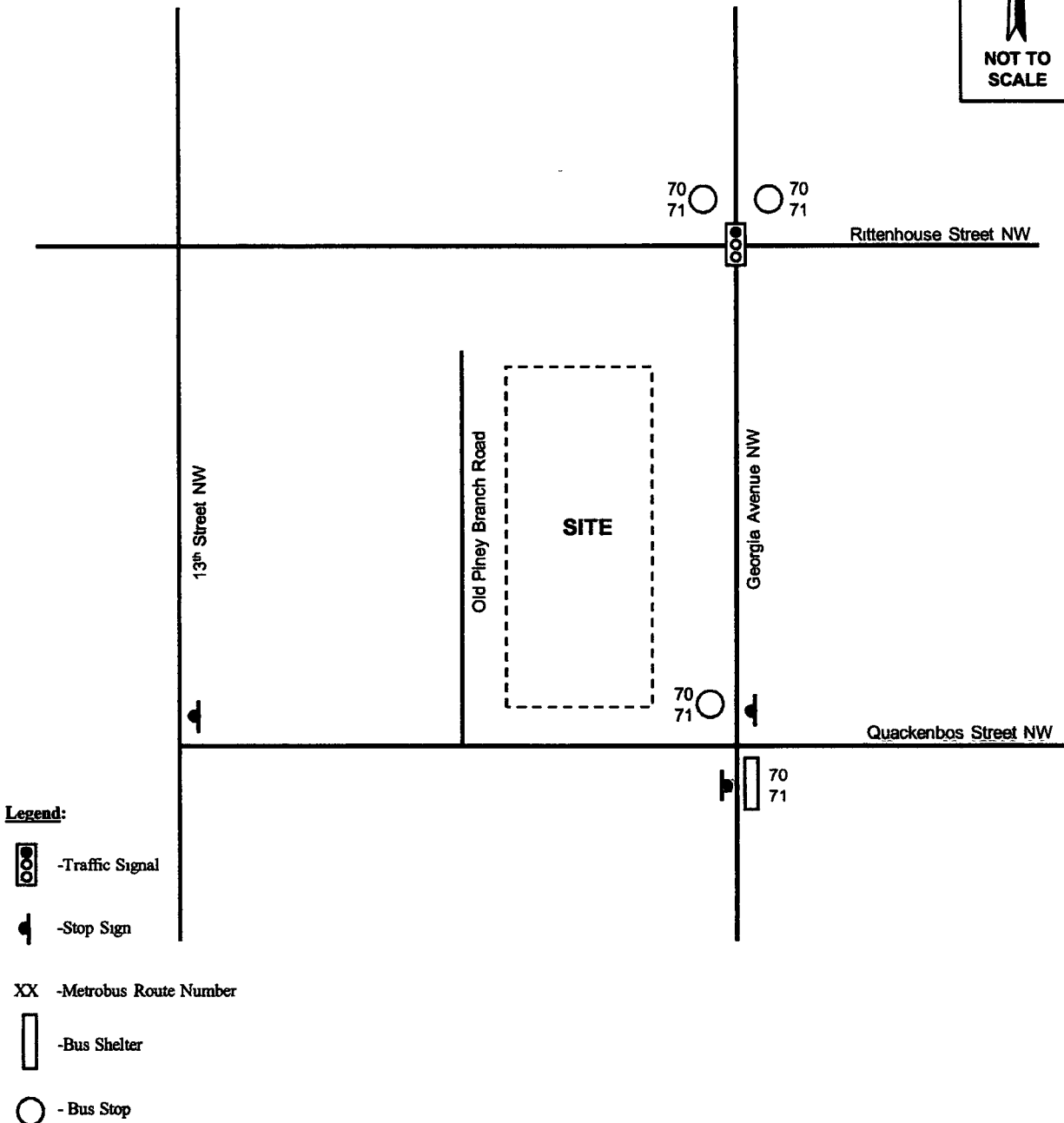
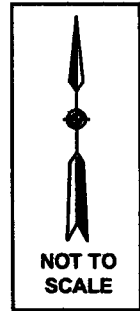
There are bus stops along Georgia Avenue in the study area at the following locations:

- Northwest corner of Georgia Avenue and Rittenhouse Street
- Northeast corner of Georgia Avenue and Rittenhouse Street
- Northwest corner of Georgia Avenue and Quackenbos Street
- Southeast corner of Georgia Avenue and Quackenbos Street (Bus shelter provided)

Figure 2 shows the existing bus stop locations at the study area intersections.

Future Transportation Improvements

There are no programmed transportation improvements that were considered for this study.



DESCRIPTION OF PROPOSED DEVELOPMENT

Location

The proposed Beacon Center development is located along the west side of Georgia Avenue NW just north of Quackenbos Street NW. It is bordered by Rittenhouse Street NW to the north, Old Piney Branch Road to the west, Quackenbos Street NW to the south, and Georgia Avenue NW to the east. The proposed development includes 91 senior and transitional residential units, 5,691 SF of retail, 7,416 square feet of community recreation center, 13,694 SF of church office space, and a 125 seat church expansion. The property currently contains an existing church.

Vehicle Access

Vehicle access will be provided along Old Piney Branch Road along the west side of the property and along Quackenbos Street.

Parking

The proposed development will contain a total of 97 parking spaces located in two levels of underground structured parking. This number of parking spaces will satisfy the zoning requirements and the practical requirements for this property.

Based on the amount of on-site parking being provided, there is expected to be no spillover of parking from this development into the surrounding community.

TRAFFIC VOLUMES

Traffic volumes used in this study include existing traffic volumes, the projection of traffic volumes to obtain background traffic volumes, estimated traffic generated by approved and unbuilt developments, and traffic generated by the proposed Beacon Center development to obtain total future traffic volumes. The horizon year for this study is 2011, which represents a year after the expected completion and occupancy of the Beacon Center. The District of Columbia transportation staff directed that the weekday AM and PM commuter peak hours, as well as Saturday and Sunday peak hours, be studied. Intersections identified for study by District of Columbia Department of Transportation staff are as follows:

- Georgia Avenue and Rittenhouse Street
- Georgia Avenue and Quackenbos Street
- Quackenbos Street and 13th Street

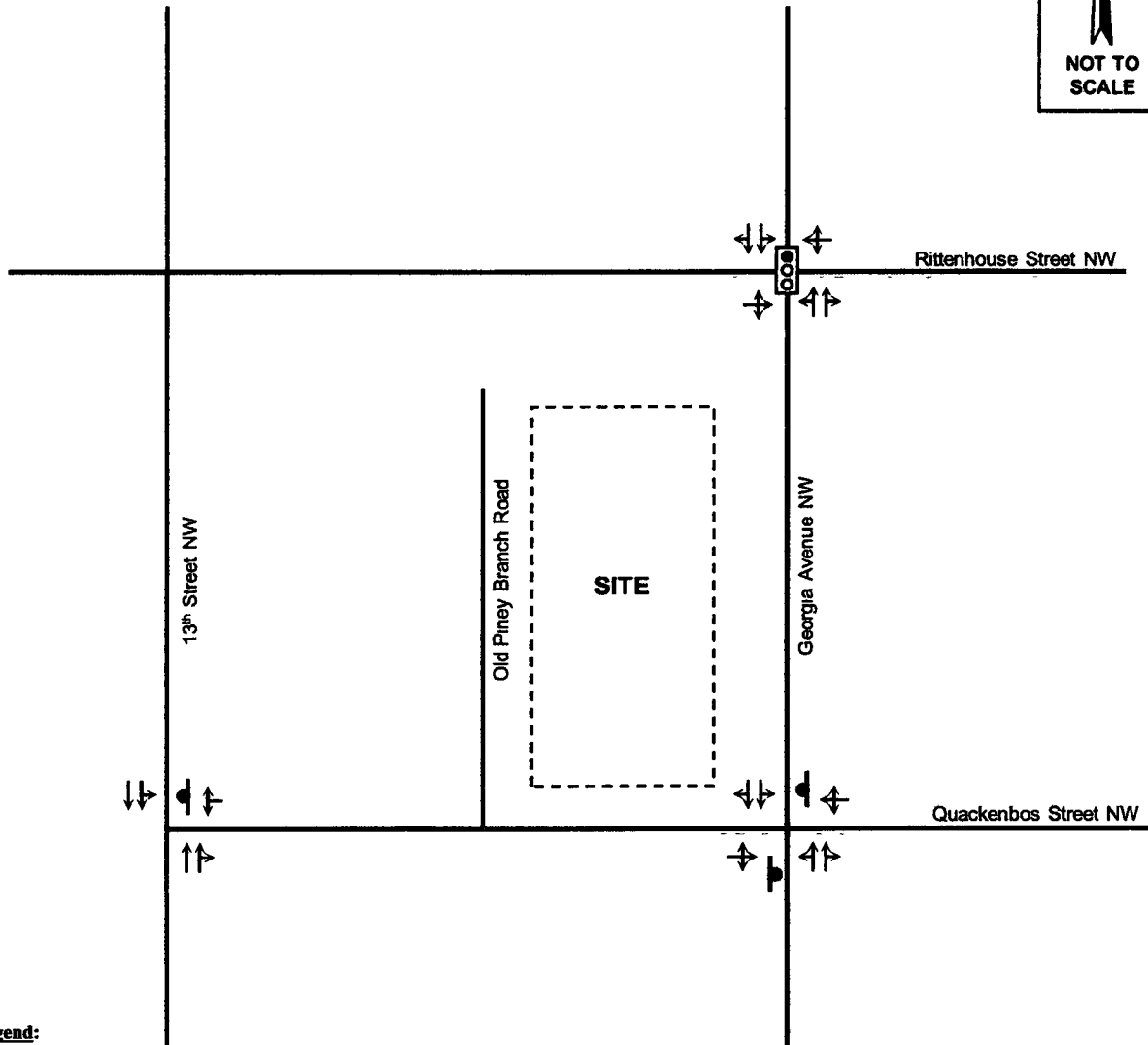
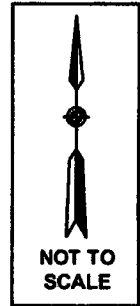
Figure 3 shows the lane designations at the study area intersections. The following sections describe the traffic volumes used in this study.

Existing Traffic Volumes

Traffic and pedestrian counts were conducted at the study area intersections in April 2009 from 7:00 AM to 9:00 AM and from 4:30 PM to 6:30 PM on a weekday, from noon to 2:00 PM on a Saturday, and from 7:00 AM to 1:00 PM on a Sunday. These counts were used to establish current peak hour traffic conditions. The peak hours at each intersection were established by identifying the peak 60 minutes of traffic during the peak periods. From these traffic counts, the peak study hours were identified for each intersection as follows:

- Georgia Avenue and Rittenhouse Street – 8:00 to 9:00 AM, 5:30 to 6:30 PM, 12:45 to 1:45 PM Saturday, and noon to 1:00 PM on Sunday
- Georgia Avenue and Quackenbos Street – 7:30 to 8:30 AM, 4:30 to 5:30 PM, 12:45 to 1:45 PM Saturday, and noon to 1:00 PM on Sunday
- Quackenbos Street and 13th Street – 8:00 to 9:00 AM, 5:30 to 6:30 PM, 1:00 to 2:00 PM Saturday, and noon to 1:00 PM on Sunday

The existing peak hour traffic volumes at the study intersections are shown on Figure 4. The appendix of this report contains the traffic count and pedestrian count summaries.



Legend:

- - Travel Lane
-  - Traffic Signal
-  - Stop Sign



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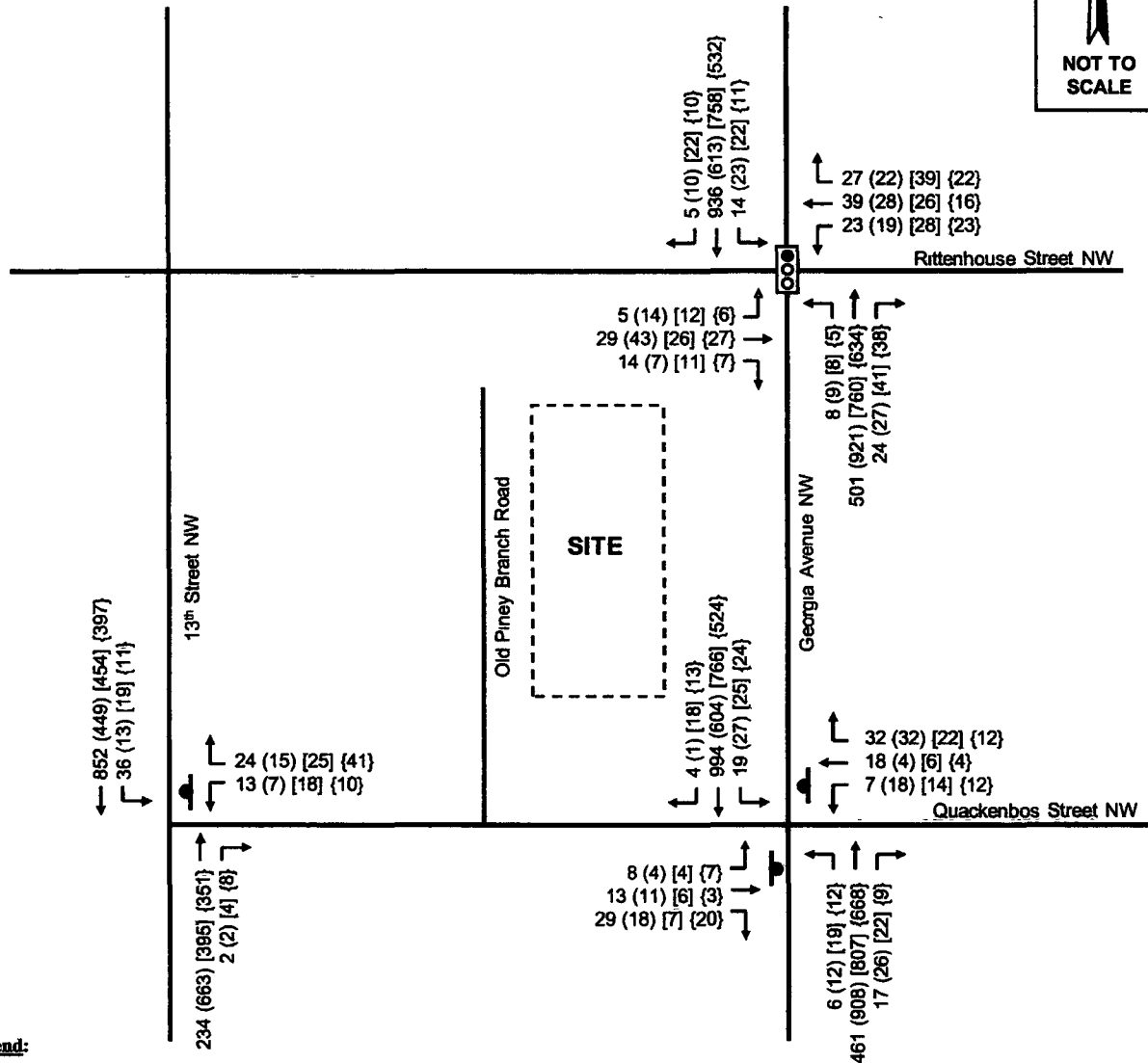
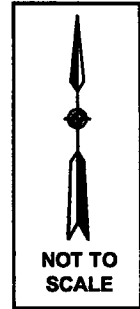
KHA Project # 110209000

Existing Lane Designations

**Emory Beacon of Light
Washington, DC**

**Figure
3**

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and Associates, Inc.

KHA Project # 110209000

Existing Peak Hour Traffic Volumes

Emory Beacon of Light
Washington, DC

Figure

4

Background Traffic Volumes

Background traffic volumes represent future traffic that would travel through the area intersections without the proposed Beacon Center development. Since the general area is undergoing redevelopment, growth in traffic to the projected horizon year of 2011 was estimated using a combination of yearly growth of through traffic and projected traffic from approved and unbuilt developments within the study area.

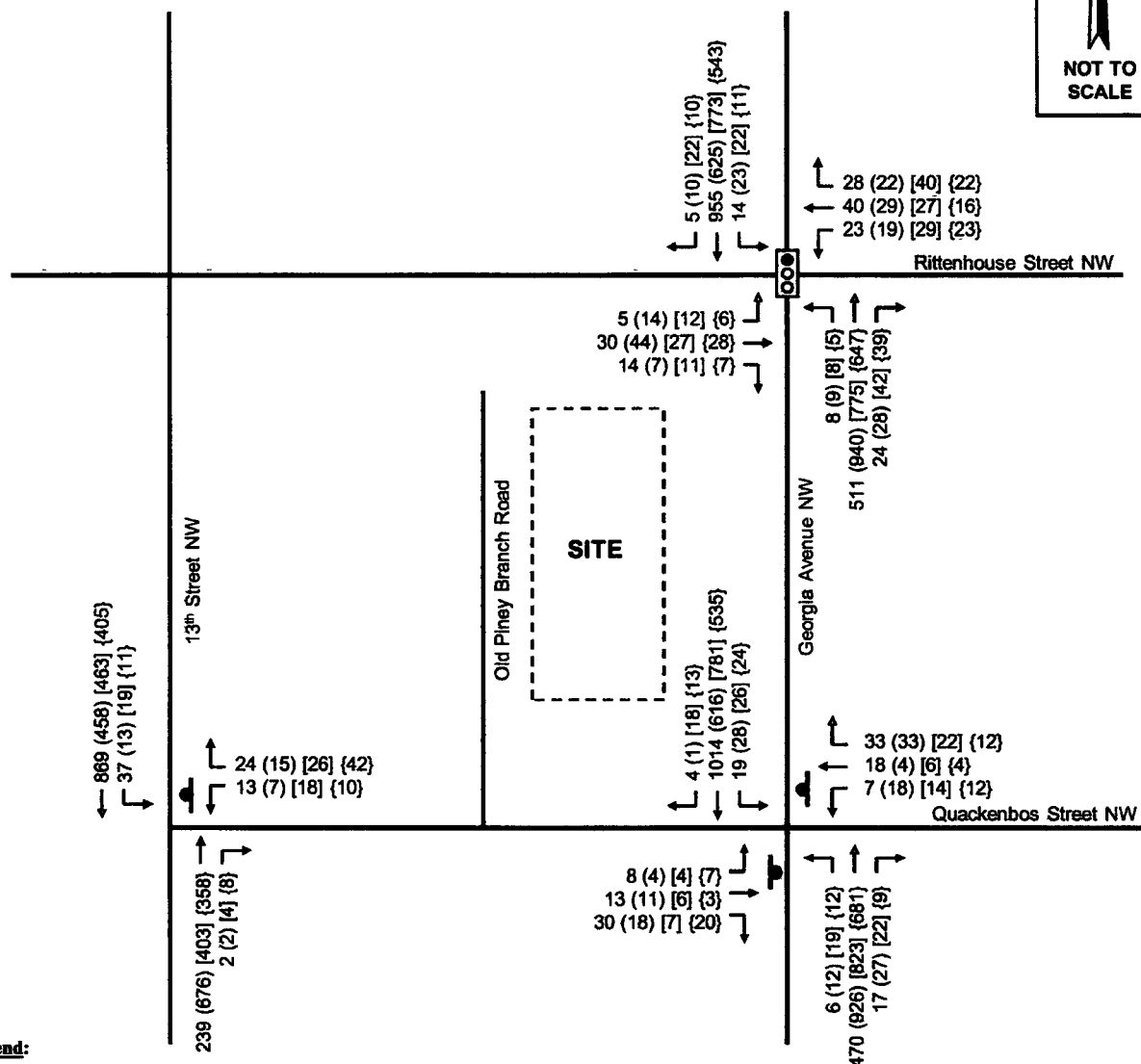
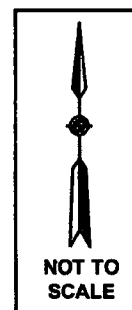
In order to represent the growth of through traffic resulting from development activity outside the study area, traffic volumes for each of the movements at the study intersections were increased by 1% per year to the horizon year of 2011, as directed by DDOT.

The existing traffic volumes adjusted to reflect the yearly growth of through traffic are shown on Figure 5.

One approved and unbuilt development, the Curtis Chevrolet development, was included in the study per direction from DDOT. This development was included due to its proximity to the proposed Beacon Center development and since it is imminent. The location of the development is depicted on Figure 6.

Where possible, information regarding the Curtis Chevrolet development was taken directly from the approved report by O.R. George & Associates, Inc. dated November 26, 2008. In this report, AM and PM peak hour site generated trips were calculated using the 2003 ITE Trip Generation Report. A 40 percent reduction in trip generation was taken to reflect the urban setting of the area, the proximity to transit, and the opportunity for non-vehicular travel. In this report, traffic generated by the Curtis Chevrolet development during Saturday and Sunday peak hours was estimated using rates found in the *ITE Trip Generation Report* (8th Edition). A 40 percent reduction in trip generation was taken to be consistent with the approved analysis. The resulting trip generation rates for the Curtis Chevrolet development are summarized in Table 1.

The estimated traffic generated by the Curtis Chevrolet development is summarized in Table 2.



Legend:

XX (XX) [XX] {XX} - AM (PM) [Sat] {Sun} Weekday Peak Hour Traffic Volumes



- Traffic Signal



- Stop Sign



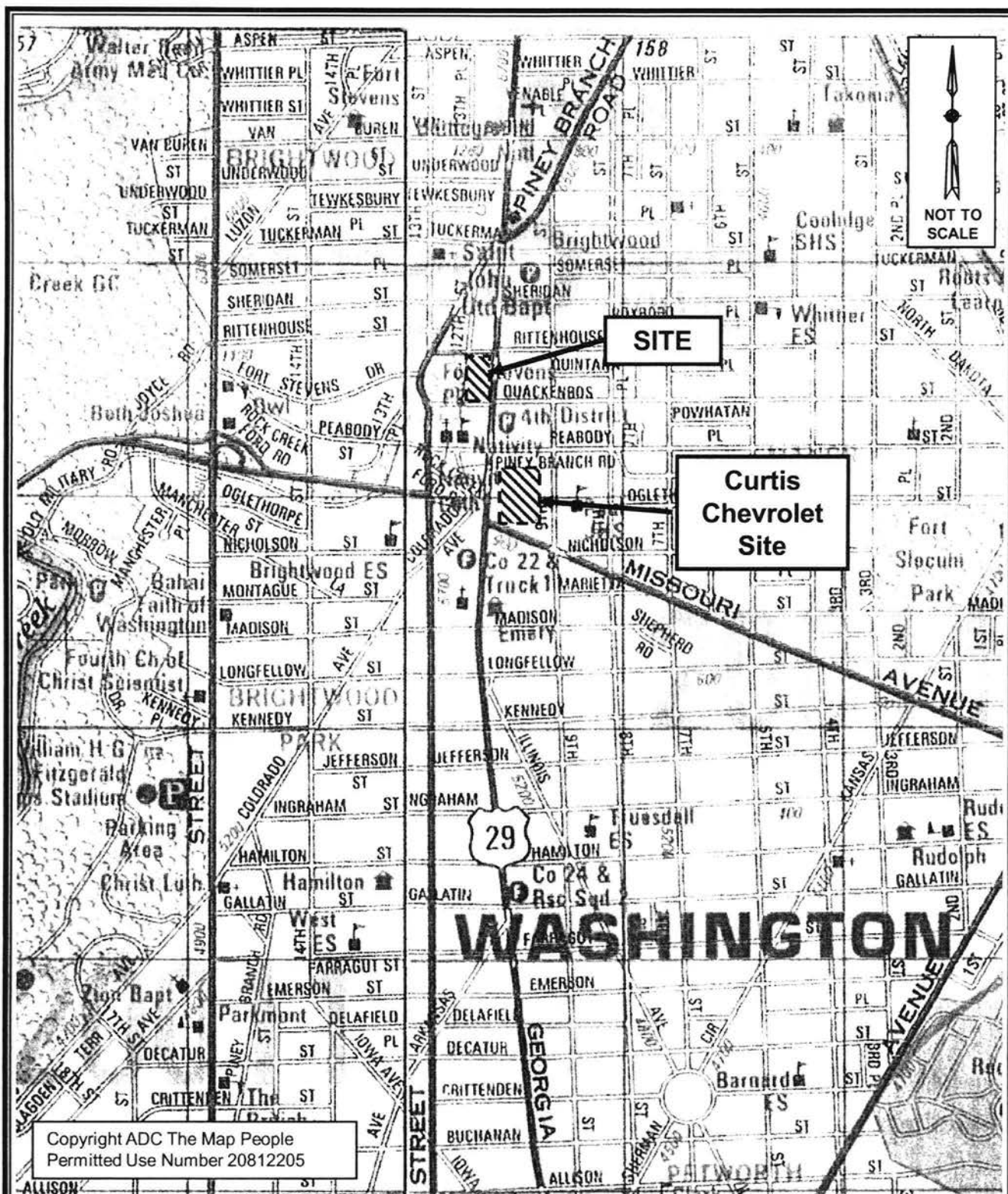
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**Adjusted Existing Traffic to
Year 2011**

**Emory Beacon of Light
Washington, DC**

**Figure
5**



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KHA Project # 110209000

**Approved and Unbuilt
Development Location Map**
Emory Beacon of Light
Washington, DC

**Figure
6**

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Table 1: Trip Generation Rates - Curtis Chevrolet Approved and Unbuilt Development

Land Use	AM Peak Hour			PM Peak Hour			Saturday Peak Hour			Sunday Peak Hour		
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
1. Res. Apartments – per dwelling unit (400 units)* (ITE LU Code 223) <i>With 40% Mode Split Reduction</i>	0.09 <i>0.05</i>	0.21 <i>0.13</i>	0.30 <i>0.18</i>	0.23 <i>0.14</i>	0.16 <i>0.09</i>	0.39 <i>0.23</i>	0.26 <i>0.16</i>	0.26 <i>0.15</i>	0.52 <i>0.31</i>	0.26 <i>0.16</i>	0.25 <i>0.15</i>	0.51 <i>0.31</i>
2. Specialty Retail – per 1,000 SF (20,900 SF)** (ITE LU Code 814) <i>With 40% Mode Split Reduction</i>	0.63 <i>0.38</i>	0.40 <i>0.24</i>	1.03 <i>0.62</i>	1.19 <i>0.72</i>	1.52 <i>0.91</i>	2.71 <i>1.63</i>	2.10 <i>1.26</i>	2.10 <i>1.26</i>	4.20 <i>2.52</i>	2.10 <i>1.26</i>	2.10 <i>1.26</i>	4.20 <i>2.52</i>

Note: AM and PM peak hour trip generation rates are from the November 26, 2008 Curtis Chevrolet Traffic Impact Analysis by O. R. George & Associates, Inc., while Saturday and Sunday peak hour rates were taken from the ITE Trip Generation Report (8th Edition).

*No LU Code 223 data was available for weekends, so LU Code 220 was used.

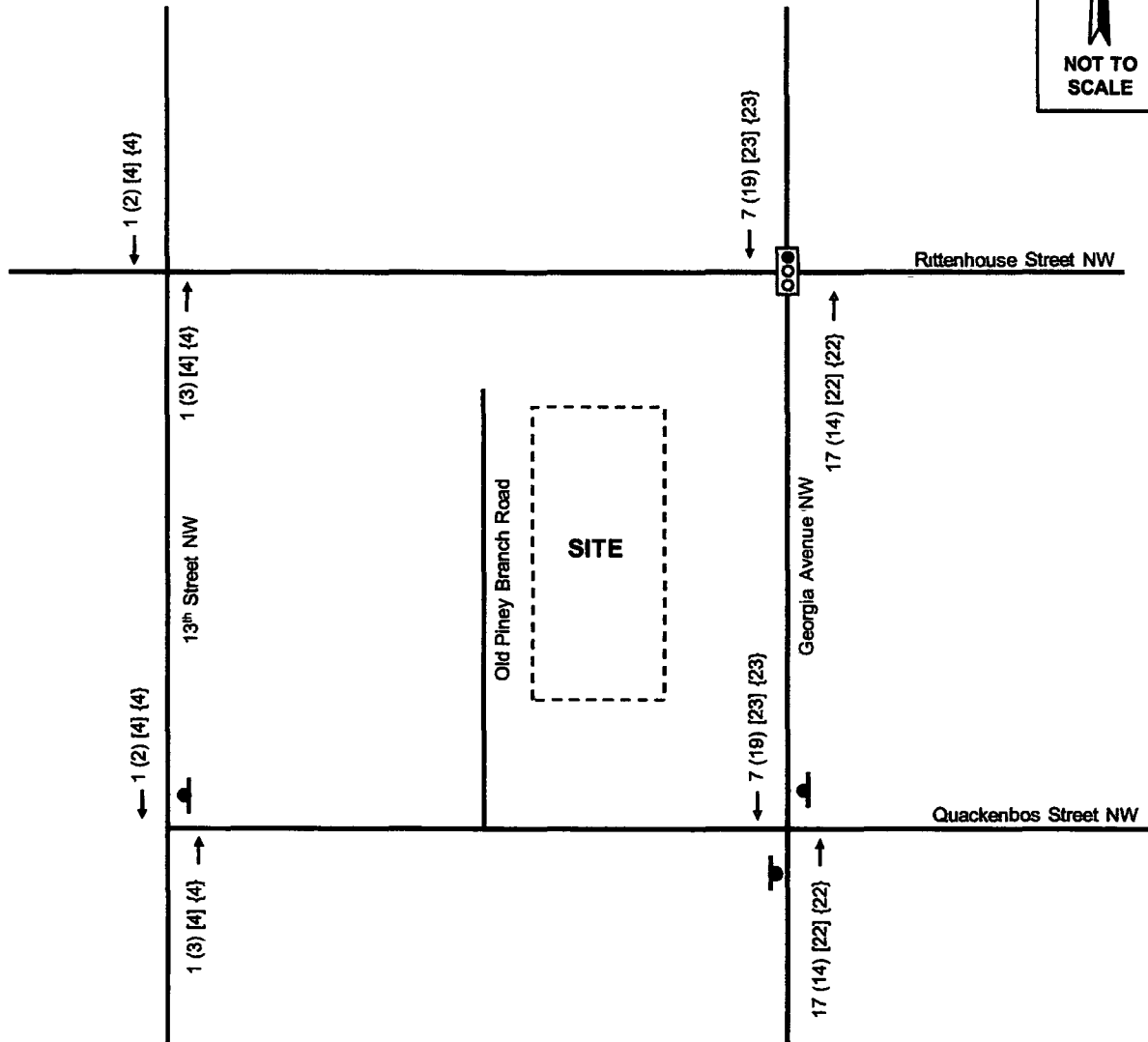
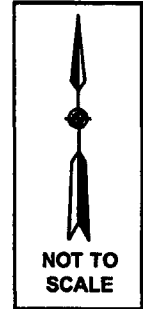
**No weekend peak hour data provided, 0.10 of Saturday daily trip generation rate was used along with an assumed 50/50 split. Sunday trips were estimated to be the same as Saturday trips.

Table 2: Peak Hour Trips - Curtis Chevrolet Approved and Unbuilt Development

Land Use	AM Peak Hour			PM Peak Hour			Saturday Peak Hour			Sunday Peak Hour		
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
1. Res. Apartments – 400 DU	20	52	72	56	36	92	64	60	124	64	60	124
2. Specialty Retail – 20,900 SF	8	5	13	15	19	34	26	26	52	26	26	52
Total	28	57	85	71	55	126	90	86	176	90	86	176

The AM, PM, Saturday, and Sunday peak hour trips generated by the Curtis development were assigned to the area streets according to the distribution assumed in the traffic report for the site. In this report, 30% of the trips generated by the residential component of the development travel to/from the north along Georgia Avenue. No site generated trips use 13th Street. For the retail component of the development 15% of the site generated trips travel to/from the north along Georgia Avenue, and 15% of the site generated trips travel to/from the north along 13th Street. All other site generated trips use streets that do not involve the study intersections in this report.

The trips generated by the Curtis Chevrolet Development are shown on Figure 7. The resulting total background peak hour traffic volumes at the study area intersections are shown on Figure 8.



Legend:

XX (XX) [XX] {XX} - AM (PM) [Sat] {Sun} Weekday Peak Hour Traffic Volumes



- Traffic Signal



- Stop Sign



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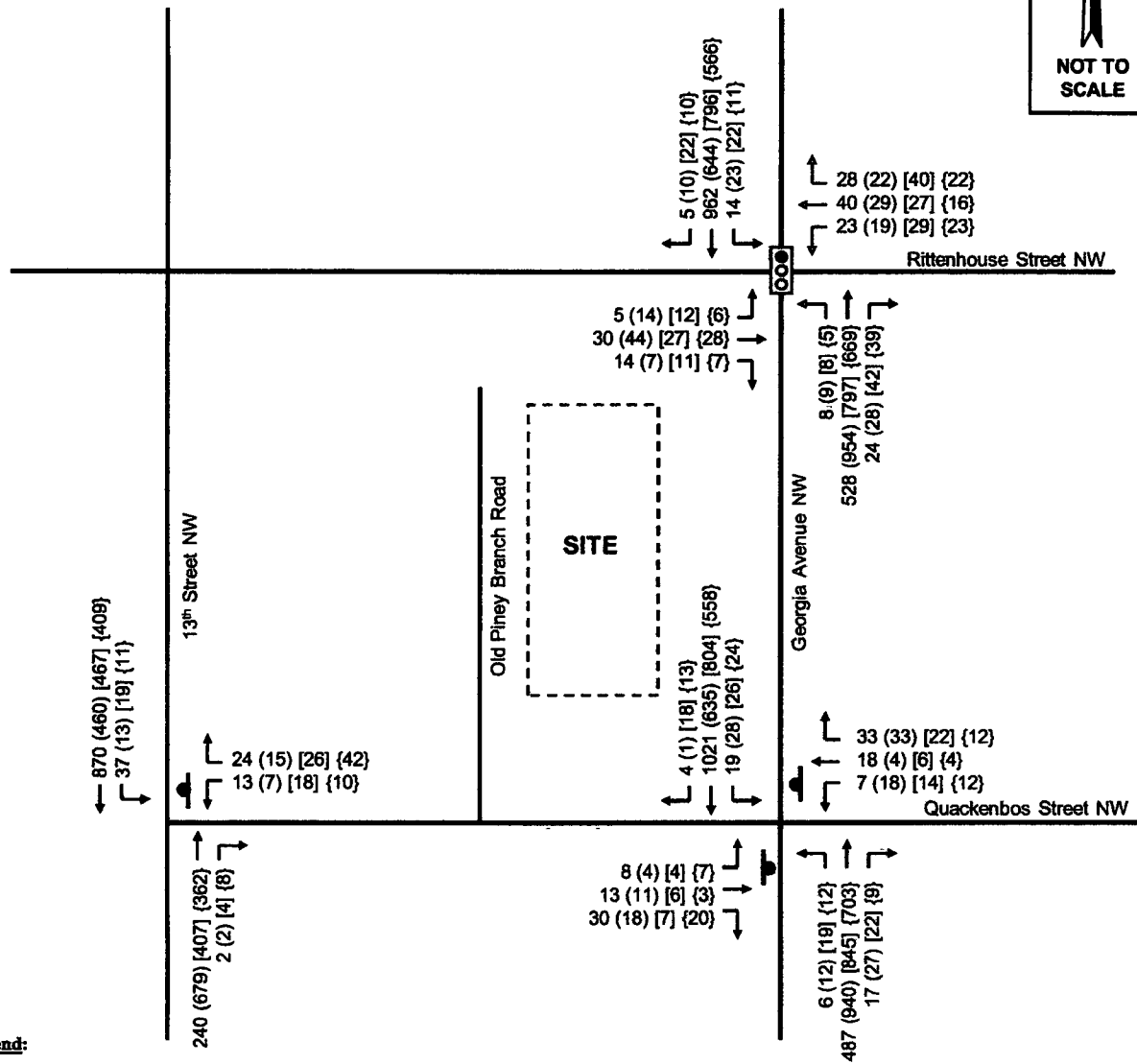
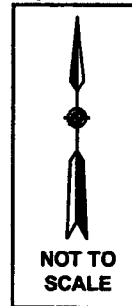
KHA Project # 110209000

**Traffic Generated by Approved
and Unbuilt Developments**

**Emory Beacon of Light
Washington, DC**

Figure

7



Legend:

XX (XX) [XX] {XX} - AM (PM) [Sat] {Sun} Weekday Peak Hour Traffic Volumes

-  - Traffic Signal
-  - Stop Sign



**Kimley-Horn
and Associates, Inc.**

KHA Project # 110209000

**Total Background Peak Hour
Traffic Volumes**
Emory Beacon of Light
Washington, DC

**Figure
8**

Site Generated Traffic Volumes

Peak hour traffic volumes generated by the proposed development were calculated using the trip generation rates and equations for contained in the ITE Trip Generation Report 8th Edition. The trip generation for the residential units assumed typical residential apartments. The proposed residential units consist of a combination of senior and transitional units. Residents of these types of units typically have lower auto ownership rates than typical residents of market rate units. The actual trip generation for the residential units will be lower than the ITE trip generation rates, but for this report a conservative analysis has been done to ensure that the proposed site will have minimal impacts on the area transportation network. The resulting trip generation rates for each land use are shown in Table 3. In order to perform a conservative analysis, trip reductions similar to those used in the Curtis Chevrolet development were not included in the trip generation calculations for the Beacon Center.

Table 3: Trip Generation Rates – The Beacon Center Development

Land Use	AM Peak Hour			PM Peak Hour			Saturday Peak Hour			Sunday Peak Hour		
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
1. Res. Apartments – 91 DU <i>ITE Land Use Code 220</i> <i>(Equations)</i>	0.11	0.42	0.53	0.49	0.26	0.75	0.32	0.31	0.63	0.26	0.25	0.51
2. Specialty Retail – 5,691 SF <i>ITE Land Use Code 814 (Rates)</i>	0.30	0.38	0.68	1.19	1.52	2.71	2.10	2.10	4.20	2.10	2.10	4.20
3. Recreational Community Center – 7,416 SF <i>ITE Land Use Code 495 (Rates)</i>	0.99	0.63	1.62	0.54	0.91	1.45	0.58	0.49	1.07	0.83	0.65	1.48
4. General Office – 13,694 SF <i>ITE Land Use Code 710 (Rates)</i>	1.36	0.19	1.55	0.25	1.24	1.49	0.22	0.19	0.41	0.08	0.06	0.14
5. Church – 125 Seats <i>ITE Land Use Code 560 (Rates)</i>	0.03	0.03	0.06	0.03	0.03	0.06	0.26	0.34	0.60	0.31	0.30	0.61

The estimated traffic generated by the Beacon Center is summarized in Table 4.

Table 4: Peak Hour Trips – The Beacon Center Development												
	AM Peak Hour			PM Peak Hour			Saturday Peak Hour			Sunday Peak Hour		
Land Use	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
1. Res. Apartments – 91 DU	10	38	48	44	24	68	29	28	57	23	23	46
2. Specialty Retail – 5,691 SF	2	2	4	7	8	15	12	12	24	12	12	24
3. Recreational Community Center – 7,416 SF	7	5	12	4	7	11	4	4	8	6	5	11
4. General Office – 13,694 SF	18	3	21	3	17	20	3	3	6	1	1	2
5. Church – 125 Seats	4	4	8	4	4	8	32	43	75	39	37	76
Total	41	52	93	62	60	122	80	90	170	81	78	159

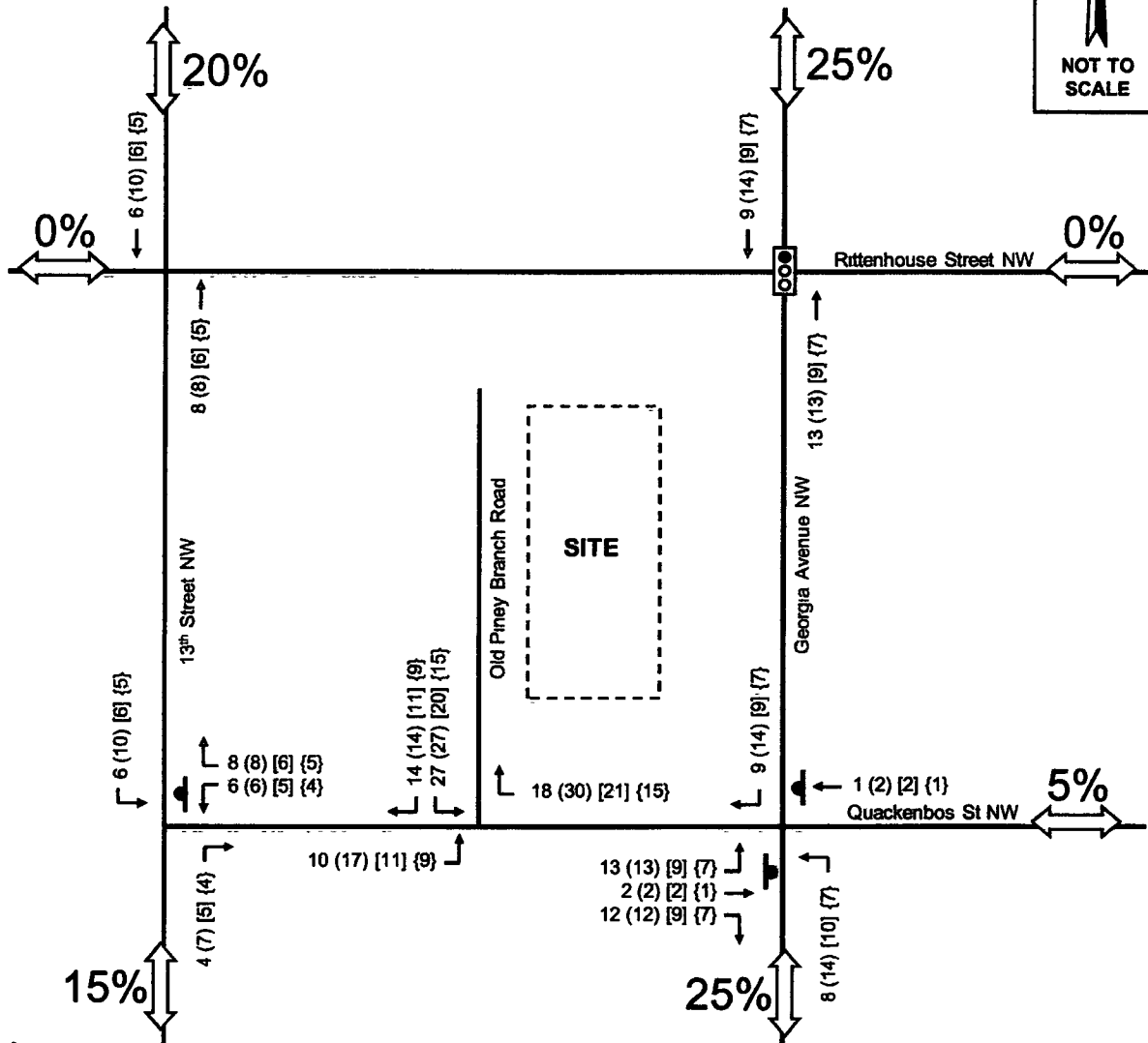
The AM, PM, Saturday, and Sunday peak hour trips generated by the Beacon Center were assigned to the area streets based upon existing traffic volume patterns in the study area and adjacent land use. The resulting percent distributions of generated trips are summarized in Table 5.

Table 5: Distribution of the Beacon Center Traffic		
Direction To/From	Residential/Office	Retail/Church/Rec. Center
To/From North on Georgia Avenue	30%	25%
To/From South on Georgia Avenue	30%	25%
To/From North on 13 th Street	20%	20%
To/From South on 13 th Street	15%	15%
To/From East on Quackenbos Street	5%	5%
To/From East on Rittenhouse Street	0%	5%
To/From West on Rittenhouse Street	0%	5%

The trip distributions and assignments of the trips generated by the residential and office uses at Beacon Center are shown on Figure 9. The trip distributions and assignments of the trips generated by the retail, church, and community recreation center uses at Beacon Center are shown on Figure 10. The resulting total site generated peak hour traffic volumes at the study area intersections are shown on Figure 11.

Total Future Traffic Volumes

Total future traffic volumes represent future traffic volumes with the proposed Beacon Center development in place. These volumes were calculated by adding the site generated trips (shown on Figure 11) to the background traffic volumes (shown on Figure 8). The resulting total future peak hour traffic volumes are shown on Figure 12.



Legend:

XX (XX) [XX] {XX} - AM (PM) [Sat] {Sun} Weekday Peak Hour Traffic Volumes



- Traffic Signal



- Stop Sign



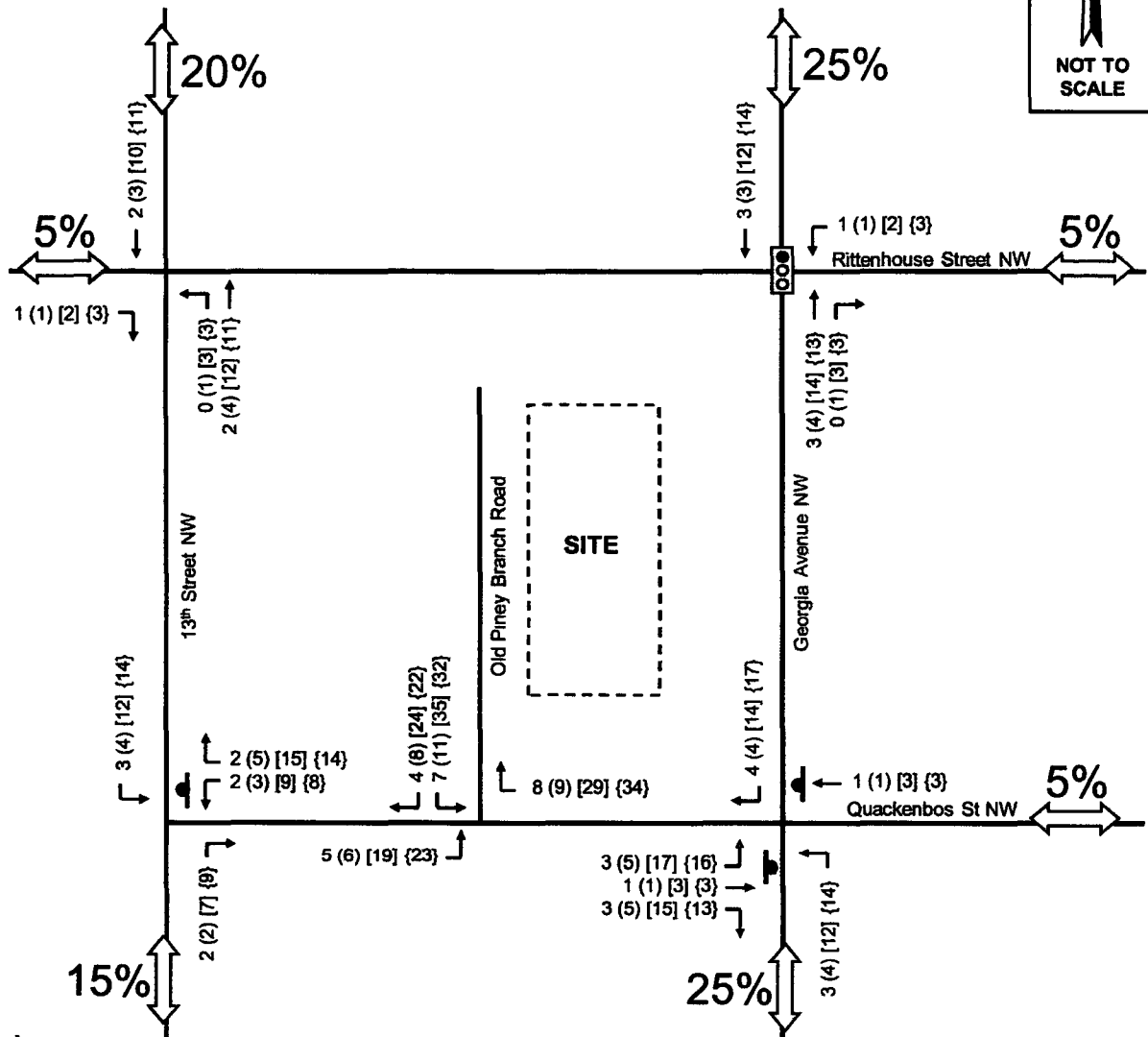
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KHA Project # 110209000

**Residential/Office Trip Distributions
and Site Generated Peak Hour Traffic
Volumes**
Emory Beacon of Light
Washington, DC

**Figure
9**

Page 21



Legend:

XX (XX) [XX] [XX] - AM (PM) [Sat] {Sun} Weekday Peak Hour Traffic Volumes



- Traffic Signal



- Stop Sign

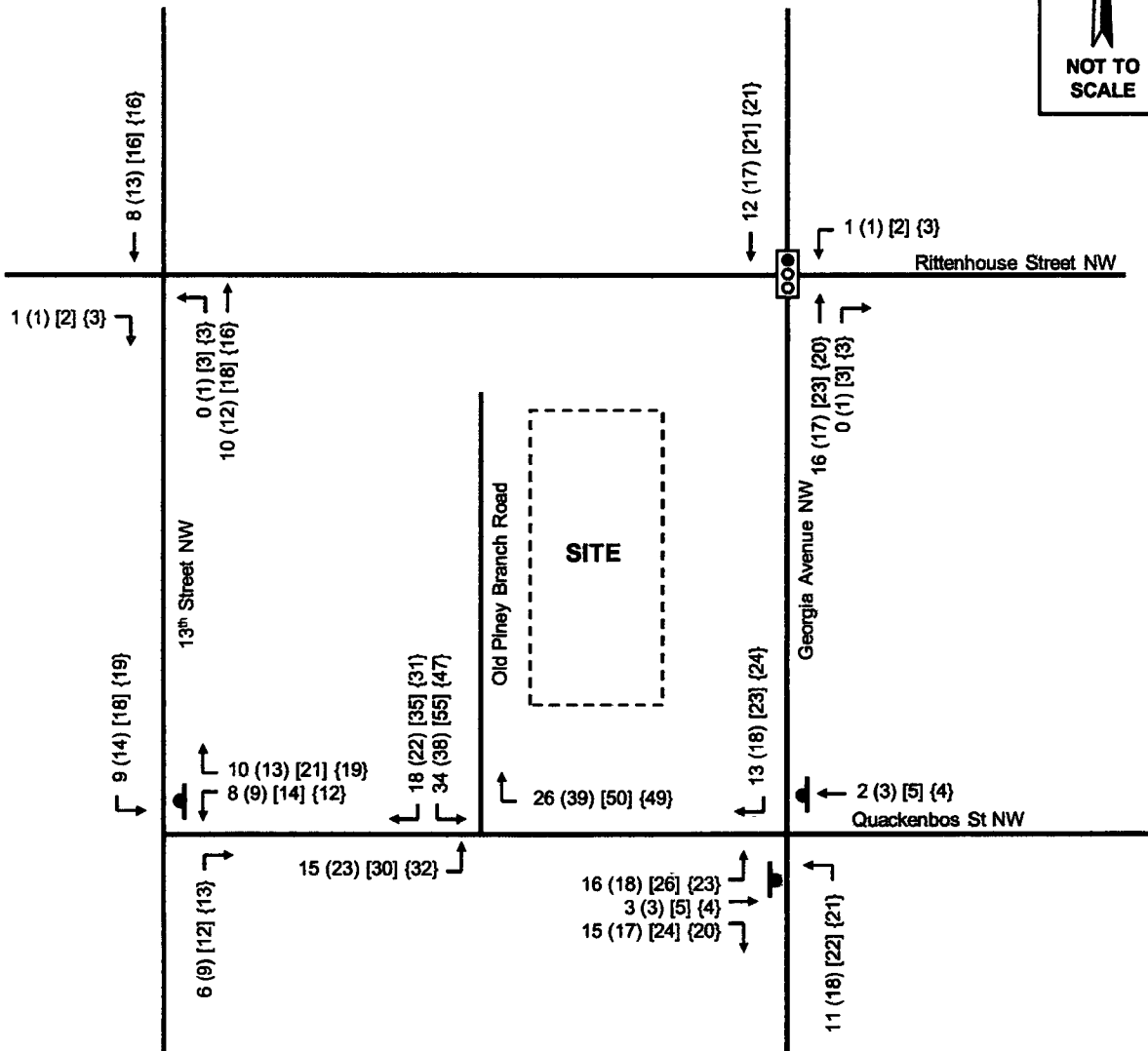
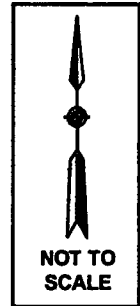


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**Retail/Church/Community Rec. Center
Trip Distributions and Site Generated
Peak Hour Traffic Volumes
Emory Beacon of Light
Washington, DC**

**Figure
10**



Legend:

XX (XX) [XX] {XX} - AM (PM) [Sat] {Sun} Weekday Peak Hour Traffic Volumes



- Traffic Signal



- Stop Sign



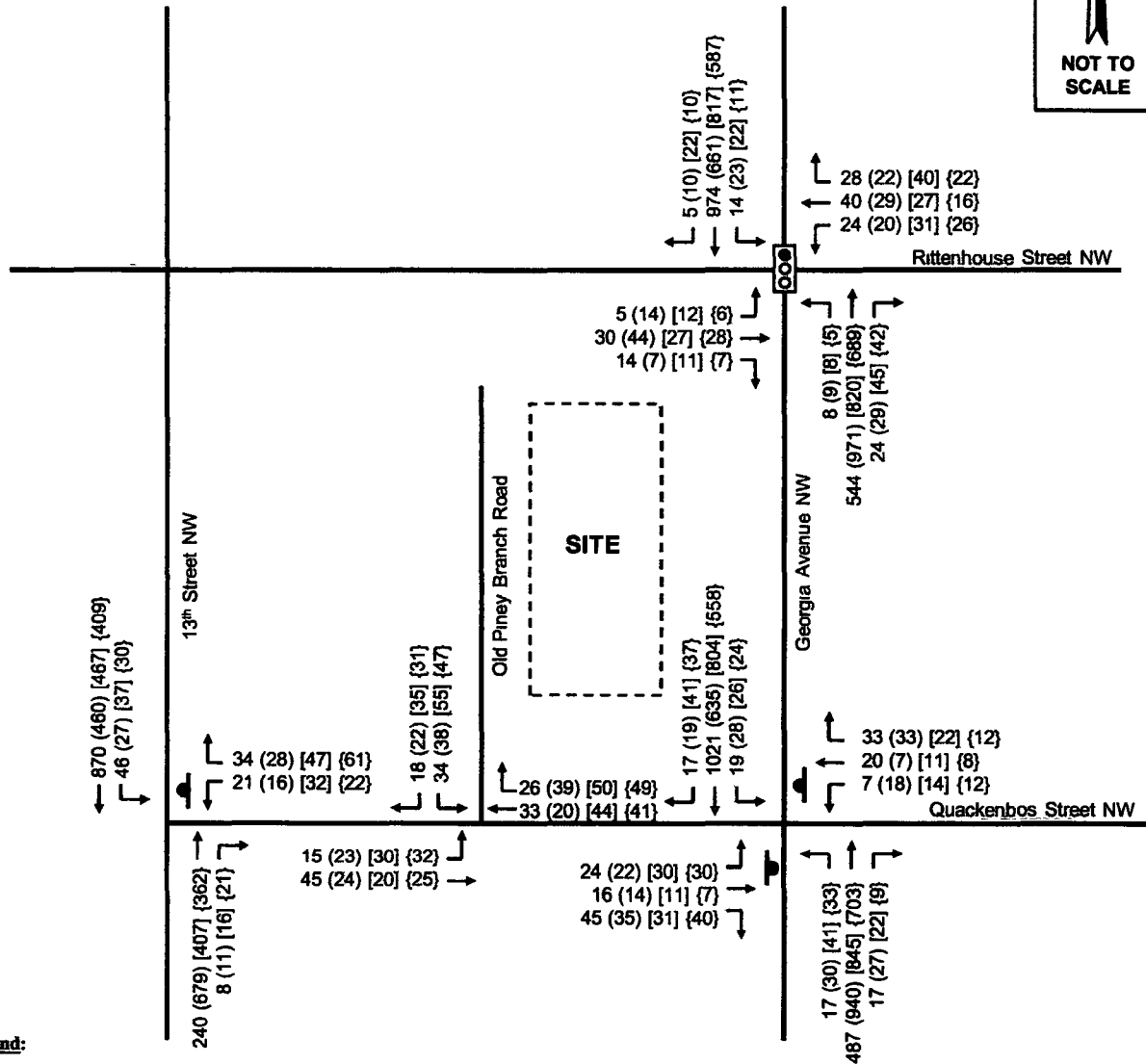
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**Total Site Generated Peak
Hour Traffic Volumes**

**Emory Beacon of Light
Washington, DC**

**Figure
11**



Legend:

XX (XX) [XX] {XX} - AM (PM) [Sat] {Sun} Weekday Peak Hour Traffic Volumes



- Traffic Signal



- Stop Sign



**Kimley-Horn
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KHA Project # 110209000

**Total Future Peak Hour
Traffic Volumes**

**Emory Beacon of Light
Washington, DC**

**Figure
12**

ASSESSMENT OF TRAFFIC CONDITIONS

The following is a discussion of the assessment of traffic conditions.

Intersection Capacity Analyses

Intersection capacity analyses were conducted for existing, background, and total future traffic volumes. The capacity analyses were conducted using Synchro Software Package, which utilizes methodologies in the *Highway Capacity Manual (2000 Edition)* (HCM) for signalized and unsignalized intersections. The analyses of existing, background, and total future traffic volumes were based on the existing lane uses and existing signal operations at the study area intersections.

According to the HCM, capacity is defined as the maximum number of vehicles that can pass over a particular road segment or through a particular intersection within a fixed time duration. The operating conditions are described by Level-of-Service (LOS), which is defined as a qualitative measure that describes operational conditions and motorist perceptions within a traffic stream. The *Highway Capacity Manual* defines six levels of service, LOS A through F, with A being the best and F the worst. The District attempts to maintain a level of service D and better during the peak traffic hours.

The results of the capacity analyses are summarized in Table 6 for the study area intersections. Analysis results show overall level of service and delay information for each intersection for the existing, background, and total future traffic volumes. The Synchro analysis worksheets are contained in the Appendix.

Table 6: Level of Service Summary at Study Intersections

Intersection	Existing 2009 Conditions				2011 Background Conditions				2011 Total Future Conditions			
	AM	PM	Sat	Sun	AM	PM	Sat	Sun	AM	PM	Sat	Sun
Georgia Avenue NW and Rittenhouse Street NW	B (15.2)	B (15.2)	B (15.4)	B (13.8)	B (15.4)	B (15.4)	B (15.7)	B (14.0)	B (15.4)	B (15.5)	B (15.9)	B (14.1)
Georgia Avenue NW and Quackenbos Street NW	A (1.9)	A (2.4)	A (2.0)	A (1.3)	A (2.0)	A (2.6)	A (2.2)	A (1.3)	A (3.6)	A (5.0)	A (7.6)	A (2.9)
13th Street NW and Quackenbos Street NW	A (0.7)	A (0.4)	A (0.8)	A (0.8)	A (0.7)	A (0.4)	A (0.8)	A (0.8)	A (1.0)	A (0.8)	A (1.5)	A (1.4)

B (15.2) – Level of Service (Seconds of Delay per Vehicle)

These results show that under existing and background conditions, the study area intersections operate at satisfactory levels of service. The capacity analyses of background traffic volumes result in levels of service ranging from A to B.

The addition of the traffic generated by the Beacon Center development will result in only a slight change in the operation of the area intersections. The proposed development will result in marginal increases in vehicle delay. There will be no change in the levels of service. The area intersections will continue to operate at levels of service that range from A to B during the AM, PM, Saturday, and Sunday peak hours, well above the satisfactory level of service D condition.

Pedestrian Impact

There are existing sidewalks along all of the adjacent streets. The proposed Beacon Center development will enhance the sidewalk connections to these adjacent streets.

CONCLUSIONS

As a result of this study, it is concluded that the area intersections will all operate at satisfactory conditions with the Beacon Center development in place. The proposed development will result in no change in the intersection levels of service. The intersections will continue to operate at better than level of service D. The increases in vehicle delay will be marginal. The proposed development will have a negligible effect on the area intersections.

The site and the surrounding area are well served by transit via Metrobus. Pedestrian connections in the area are well established. As a result, there will be ample opportunities for travel by alternatives to the automobile.

The parking spaces provided onsite for the residential uses meet the zoning and practical requirements set forth in the Zoning Ordinance. The residential units are a combination of senior and transitional units. These units will house individuals that are less likely to own a personal vehicle, and therefore the site has a lower parking demand and a lower number of generated trips than what have been calculated using standard trip and parking rates.

For those who travel to the site by way of a personal vehicle, sufficient parking will be provided to satisfy the demand for Beacon Center. As a result, there is expected to be no spillover of parking into the surrounding community.

APPENDIX

Peggy Malone & Associates, Inc.

(888) 247-8602

File Name : Georgia Ave. and Rittenhouse St. AM

Site Code : 00003371

Start Date : 4/15/2009

Page No : 1

Groups Printed- Vehicles - Trucks

Georgia Ave. Southbound						Rittenhouse St Westbound					Georgia Ave Northbound					Rittenhouse St Eastbound					Int Total
Start Time	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
07:00 AM	0	184	1	2	187	4	10	2	4	20	0	96	1	0	97	1	2	1	4	8	312
07:15 AM	1	236	3	6	246	6	6	5	12	29	7	109	0	3	119	2	8	3	8	21	415
07:30 AM	0	258	0	9	267	3	8	7	9	27	7	107	2	6	122	1	7	2	3	13	429
07:45 AM	0	235	1	6	242	4	7	7	11	29	12	94	1	2	109	0	4	0	4	8	388
Total	1	913	5	23	942	17	31	21	36	105	26	406	4	11	447	4	21	6	19	50	1544
08:00 AM	3	253	3	10	269	9	10	8	14	41	7	114	2	0	123	3	11	0	2	16	449
08:15 AM	0	239	3	9	251	8	9	9	7	33	3	139	2	2	146	4	4	2	3	13	443
08:30 AM	1	222	7	4	234	4	12	4	6	26	7	128	3	2	140	4	5	1	5	15	415
08:45 AM	1	222	1	6	230	6	8	2	8	24	7	120	1	1	129	3	9	2	3	17	400
Total	5	936	14	29	984	27	39	23	35	124	24	501	8	5	538	14	29	5	13	61	1707
Grand Total	6	1849	19	52	1926	44	70	44	71	229	50	907	12	16	985	18	50	11	32	111	3251
Approch %	0.3	96.0	1.0	2.7		19.2	30.6	19.2	31.0		5.1	92.1	1.2	1.6		16.2	45.0	9.9	28.8		
Total %	0.2	56.9	0.6	1.6	59.2	1.4	2.2	1.4	2.2	7.0	1.5	27.9	0.4	0.5	30.3	0.6	1.5	0.3	1.0	3.4	

Georgia Ave Southbound						Rittenhouse St Westbound					Georgia Ave Northbound					Rittenhouse St Eastbound					Int Total
Start Time	Right	Thru	Left	App Total		Right	Thru	Left	App Total		Right	Thru	Left	App Total		Right	Thru	Left	App Total		
Peak Hour From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Intersection 08:00 AM																					
Volume	5	936	14	955		27	39	23	89		24	501	8	533		14	29	5	48		1625
Percent	0.5	98.0	1.5			30.3	43.8	25.8			4.5	94.0	1.5			29.2	60.4	10.4			
08:00 Volume	3	253	3	259		9	10	8	27		7	114	2	123		3	11	0	14		423
Peak Factor																					0.960
High Int 08:00 AM						08:00 AM					08:15 AM					08:00 AM					
Volume	3	253	3	259		9	10	8	27		3	139	2	144		3	11	0	14		
Peak Factor				0.922					0.824					0.925					0.857		

Peggy Malone & Associates, Inc.

(888) 247-8602

File Name : Georgia Ave. and Rittenhouse St. PM

Site Code : 00003371

Start Date : 4/15/2009

Page No : 1

Groups Printed- Vehicles - Trucks

	Georgia Ave. Southbound					Rittenhouse St Westbound					Georgia Ave Northbound					Rittenhouse St Eastbound					
Start Time	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	Int Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
04 30 PM	2	163	4	3	172	6	11	6	14	37	10	228	3	1	242	2	8	1	0	11	462
04 45 PM	2	155	6	11	174	8	10	6	10	34	5	204	1	1	211	3	7	3	4	17	436
Total	4	318	10	14	346	14	21	12	24	71	15	432	4	2	453	5	15	4	4	28	898
05 00 PM	2	141	6	7	156	5	6	6	9	26	12	226	2	6	246	1	8	6	1	16	444
05 15 PM	6	146	4	8	164	10	6	2	10	28	9	227	0	4	240	4	9	1	6	20	452
05 30 PM	3	154	4	6	167	7	9	2	15	33	7	222	1	3	233	2	8	2	6	18	451
05 45 PM	4	139	7	10	160	8	6	7	12	33	9	241	3	1	254	4	15	1	8	28	475
Total	15	580	21	31	647	30	27	17	46	120	37	916	6	14	973	11	40	10	21	82	1822
06 00 PM	2	162	4	6	174	2	8	4	3	17	6	231	2	3	242	1	5	7	2	15	448
06 15 PM	1	158	8	2	169	5	5	6	6	22	5	227	3	0	235	0	15	4	5	24	450
Grand Total	22	1218	43	53	1336	51	61	39	79	230	63	1806	15	19	1903	17	75	25	32	149	3618
Approch %	1.6	91.2	3.2	4.0		22.2	26.5	17.0	34.3		3.3	94.9	0.8	1.0		11.4	50.3	16.8	21.5		
Total %	0.6	33.7	1.2	1.5	36.9	1.4	1.7	1.1	2.2	6.4	1.7	49.9	0.4	0.5	52.6	0.5	2.1	0.7	0.9	4.1	

	Georgia Ave Southbound				Rittenhouse St Westbound				Georgia Ave Northbound				Rittenhouse St Eastbound				
Start Time	Right	Thru	Left	App Total	Right	Thru	Left	App Total	Right	Thru	Left	App Total	Right	Thru	Left	App Total	Int Total
Peak Hour From 04 30 PM to 06 15 PM - Peak 1 of 1																	
Intersection	05 30 PM																
Volume	10	613	23	646	22	28	19	69	27	921	9	957	7	43	14	64	1736
Percent	1.5	94.9	3.6		31.9	40.6	27.5		2.8	96.2	0.9		10.9	67.2	21.9		
05 45 Volume	4	139	7	150	8	6	7	21	9	241	3	253	4	15	1	20	444
Peak Factor																	0.977
High Int	06 00 PM				05 45 PM				05 45 PM				05 45 PM				
Volume	2	162	4	168	8	6	7	21	9	241	3	253	4	15	1	20	
Peak Factor				0.961				0.821				0.946				0.800	

Peggy Malone & Associates, Inc

(888) 247-8602

File Name . Georgia Ave and Rittenhouse St Saturday

Site Code 00003371

Start Date . 4/18/2009

Page No 1

Groups Printed- Vehicles - Trucks

	Georgia Ave Southbound					Rittenhouse St Westbound					Georgia Ave Northbound					Rittenhouse St Eastbound					
Start Time	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	Int Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
12 00 PM	1	167	6	13	187	10	3	4	6	23	9	158	2	2	171	4	7	1	6	18	399
12 15 PM	2	162	9	16	189	8	10	4	5	27	10	169	4	3	186	2	5	3	6	16	418
12 30 PM	4	188	6	18	216	4	4	6	12	26	9	171	4	5	189	3	10	1	8	22	453
12 45 PM	7	192	9	13	221	9	5	8	19	41	12	198	2	1	213	2	7	2	11	22	497
Total	14	709	30	60	813	31	22	22	42	117	40	696	12	11	759	11	29	7	31	78	1767
01 00 PM	3	175	4	23	205	14	8	3	10	35	9	174	2	9	194	2	4	1	15	22	456
01 15 PM	8	201	6	14	229	10	4	11	13	38	8	209	2	5	224	2	5	5	10	22	513
01 30 PM	4	190	3	11	208	6	9	6	10	31	12	179	2	1	194	5	10	4	6	25	458
01 45 PM	19	165	3	13	200	6	7	4	18	35	7	191	1	5	204	6	5	3	6	20	459
Total	34	731	16	61	842	36	28	24	51	139	36	753	7	20	816	15	24	13	37	89	1886
Grand Total	48	1440	46	121	1655	67	50	46	93	256	76	1449	19	31	1575	26	53	20	68	167	3653
Apprch %	2.9	87.0	2.8	7.3		26.2	19.5	18.0	36.3		4.8	92.0	1.2	2.0		15.6	31.7	12.0	40.7		
Total %	1.3	39.4	1.3	3.3	45.3	1.8	1.4	1.3	2.5	7.0	2.1	39.7	0.5	0.8	43.1	0.7	1.5	0.5	1.9	4.6	

	Georgia Ave Southbound				Rittenhouse St Westbound				Georgia Ave Northbound				Rittenhouse St Eastbound				
Start Time	Right	Thru	Left	App Total	Right	Thru	Left	App Total	Right	Thru	Left	App Total	Right	Thru	Left	App Total	Int Total
Peak Hour From 12 00 PM to 01 45 PM Peak 1 of 1																	
Intersection 12 45 PM																	
Volume	22	758	22	802	39	26	28	93	41	760	8	809	11	26	12	49	1753
Percent	2.7	94.5	2.7		41.9	28.0	30.1		5.1	93.9	1.0		22.4	53.1	24.5		
01 15 Volume	8	201	6	215	10	4	11	25	8	209	2	219	2	5	5	12	471
Peak Factor																	0.930
High Int	01 15 PM				01 00 PM				01 15 PM				01 30 PM				
Volume	8	201	6	215	14	8	3	25	8	209	2	219	5	10	4	19	
Peak Factor				0.933				0.930				0.924				0.645	

Peggy Malone & Associates, Inc

(888) 247-8602

File Name Georgia Ave and Rittenhouse St Sunday

Site Code .00003371

Start Date 4/19/2009

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Groups Printed- Vehicles - Trucks

Start Time	Georgia Ave Southbound					Rittenhouse St Westbound					Georgia Ave Northbound					Rittenhouse St Eastbound					Int Total
	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
07:00 AM	0	52	0	1	53	3	0	2	1	6	2	44	0	0	46	2	1	0	5	8	113
07:15 AM	0	67	0	1	68	2	2	3	1	8	5	37	0	1	43	1	0	0	5	6	125
07:30 AM	0	69	0	3	72	1	0	3	2	6	1	48	0	0	49	0	1	1	0	2	129
07:45 AM	0	73	1	2	76	0	2	5	3	10	3	49	0	0	52	3	2	0	1	6	144
Total	0	261	1	7	269	6	4	13	7	30	11	178	0	1	190	6	4	1	11	22	511
08:00 AM	2	84	1	8	95	1	1	5	3	10	3	47	0	0	50	0	2	2	1	5	160
08:15 AM	2	69	0	3	74	6	5	3	4	18	4	71	0	0	75	0	1	0	1	2	169
08:30 AM	3	64	3	10	80	2	2	0	5	9	5	74	2	5	86	4	4	1	7	16	191
08:45 AM	0	98	1	4	103	2	2	1	7	12	5	57	0	1	63	1	0	0	3	4	182
Total	7	315	5	25	352	11	10	9	19	49	17	249	2	6	274	5	7	3	12	27	702
09:00 AM	0	101	4	6	111	2	0	5	6	13	0	61	0	2	63	1	2	1	9	13	200
09:15 AM	0	104	0	5	109	4	1	9	6	20	9	80	0	0	89	3	1	1	2	7	225
09:30 AM	2	101	2	3	108	2	0	3	11	16	4	110	1	2	117	0	4	0	7	11	252
09:45 AM	2	122	4	2	130	0	3	4	6	13	5	100	0	0	105	3	2	1	5	11	259
Total	4	428	10	16	458	8	4	21	29	62	18	351	1	4	374	7	9	3	23	42	936
10:00 AM	1	112	1	3	117	1	1	3	2	7	2	106	4	6	118	3	1	0	12	16	258
10:15 AM	3	120	6	1	130	3	0	5	5	13	1	87	2	0	90	2	4	2	3	11	244
10:30 AM	0	157	0	2	159	6	8	5	3	22	3	124	0	2	129	2	4	2	5	13	323
10:45 AM	1	150	3	4	158	5	4	3	9	21	2	124	1	0	127	3	6	1	6	16	322
Total	5	539	10	10	564	15	13	16	19	63	8	441	7	8	464	10	15	5	26	56	1147
11:00 AM	2	126	0	8	136	3	9	6	10	28	4	112	0	1	117	1	4	1	7	13	294
11:15 AM	3	109	3	9	124	6	1	4	11	22	6	134	1	6	147	1	8	2	12	23	316
11:30 AM	4	116	4	7	131	5	4	2	4	15	3	133	2	4	142	2	4	1	13	20	308
11:45 AM	0	143	0	11	154	2	2	5	8	17	5	120	0	5	130	1	3	2	5	11	312
Total	9	494	7	35	545	16	16	17	33	82	18	499	3	16	536	5	19	6	37	67	1230
12:00 PM	1	123	3	14	141	6	6	10	6	28	11	177	2	3	193	1	7	1	14	23	385
12:15 PM	3	140	0	16	159	7	2	2	8	19	10	150	1	5	166	3	4	1	10	18	362
12:30 PM	5	123	6	10	144	6	2	5	8	21	11	150	1	1	163	0	9	4	5	18	346
12:45 PM	1	146	2	9	158	3	6	6	8	23	6	157	1	2	166	3	7	0	2	12	359
Total	10	532	11	49	602	22	16	23	30	91	38	634	5	11	688	7	27	6	31	71	1452
Grand Total	35	2569	44	142	2790	78	63	99	137	377	110	2352	18	46	2526	40	81	24	140	285	5978
Apprch %	1.3	92.1	1.6	5.1		20.7	16.7	26.3	36.3		4.4	93.1	0.7	1.8		14.0	28.4	8.4	49.1		
Total %	0.6	43.0	0.7	2.4	46.7	1.3	1.1	1.7	2.3	6.3	1.8	39.3	0.3	0.8	42.3	0.7	1.4	0.4	2.3	4.8	

Start Time	Georgia Ave Southbound				Rittenhouse St Westbound				Georgia Ave Northbound				Rittenhouse St Eastbound				Int. Total
	Right	Thru	Left	App Total	Right	Thru	Left	App Total	Right	Thru	Left	App Total	Right	Thru	Left	App Total	
Peak Hour From 07:00 AM to 12:45 PM - Peak 1 of 1																	
Intersection 12:00 PM																	
Volume	10	532	11	553	22	16	23	61	38	634	5	677	7	27	6	40	1331
Percent	1.8	96.2	2.0		36.1	26.2	37.7		5.6	93.6	0.7		17.5	67.5	15.0		
12:00 Volume	1	123	3	127	6	6	10	22	11	177	2	190	1	7	1	9	348
Peak Factor																	0.956
High Int 12:45 PM					12:00 PM				12:00 PM				12:30 PM				
Volume	1	146	2	149	6	6	10	22	11	177	2	190	0	9	4	13	
Peak Factor				0.928				0.693				0.891				0.769	

Peggy Malone & Associates, Inc
(888) 247-8602

File Name . Georgia Ave and Quackenbos St AM

Site Code 00003004

Start Date . 4/15/2009

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Groups Printed- Vehicles - Trucks

Start Time	Georgia Ave Southbound					Quackenbos St Westbound					Georgia Ave Northbound					Quackenbos St Eastbound					Int Total
	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
07:00 AM	0	189	1	0	190	3	4	0	5	12	9	99	0	1	109	3	0	2	7	12	323
07:15 AM	1	239	6	0	246	6	8	2	3	19	3	115	0	0	118	4	1	0	7	12	395
07:30 AM	1	267	3	2	273	8	3	1	2	14	6	116	1	0	123	6	1	0	4	11	421
07:45 AM	1	239	3	1	244	12	7	2	21	42	2	94	1	1	98	7	3	2	9	21	405
Total	3	934	13	3	953	29	22	5	31	87	20	424	2	2	448	20	5	4	27	56	1544
08:00 AM	1	240	8	1	250	6	3	2	3	14	4	110	2	0	116	12	6	4	4	26	406
08:15 AM	1	248	5	1	255	6	5	2	4	17	5	141	2	1	149	4	3	2	4	13	434
08:30 AM	1	223	7	0	231	2	2	0	5	9	1	132	1	0	134	11	3	0	0	14	388
08:45 AM	4	228	8	3	243	8	2	2	2	14	3	123	1	2	129	3	4	0	5	12	398
Total	7	939	28	5	979	22	12	6	14	54	13	506	6	3	528	30	16	6	13	65	1626
Grand Total	10	1873	41	8	1932	51	34	11	45	141	33	930	8	5	976	50	21	10	40	121	3170
Apprch %	0.5	96.9	2.1	0.4		36.2	24.1	7.8	31.9		3.4	95.3	0.8	0.5		41.3	17.4	8.3	33.1		
Total %	0.3	59.1	1.3	0.3	60.9	1.6	1.1	0.3	1.4	4.4	1.0	29.3	0.3	0.2	30.8	1.6	0.7	0.3	1.3	3.8	

Start Time	Georgia Ave Southbound					Quackenbos St Westbound					Georgia Ave Northbound					Quackenbos St Eastbound					Int. Total
	Right	Thru	Left	App Total		Right	Thru	Left	App Total		Right	Thru	Left	App Total		Right	Thru	Left	App Total		
Peak Hour From 07:00 AM to 08:45 AM Peak 1 of 1																					
Intersection 07:30 AM																					
Volume	4	994	19	1017		32	18	7	57		17	461	6	484		29	13	8	50		1608
Percent	0.4	97.7	1.9			56.1	31.6	12.3			3.5	95.2	1.2			58.0	26.0	16.0			
08:15 Volume	1	248	5	254		6	5	2	13		5	141	2	148		4	3	2	9		424
Peak Factor																					0.948
High Int 07:30 AM						07:45 AM					08:15 AM					08:00 AM					
Volume	1	267	3	271		12	7	2	21		5	141	2	148		12	6	4	22		
Peak Factor				0.938					0.679					0.818					0.568		

Peggy Malone & Associates, Inc.

(888) 247-8602

File Name Georgia Ave and Quackenbos St PM

Site Code 00003004

Start Date 4/15/2009

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Groups Printed- Vehicles - Trucks

Start Time	Georgia Ave Southbound					Quackenbos St Westbound					Georgia Ave Northbound					Quackenbos St Eastbound					Int Total
	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
04 30 PM	0	161	8	3	172	8	1	4	15	28	6	240	5	1	252	4	4	0	8	16	468
04 45 PM	0	155	5	3	163	3	1	7	12	23	7	200	3	5	215	3	1	2	7	13	414
Total	0	316	13	6	335	11	2	11	27	51	13	440	8	6	467	7	5	2	15	29	882
05 00 PM	1	137	6	4	148	11	2	3	10	26	9	238	2	3	252	6	5	1	5	17	443
05 15 PM	0	151	8	3	162	10	0	4	11	25	4	230	2	3	239	5	1	1	12	19	445
05 30 PM	0	148	8	1	157	4	0	1	17	22	4	227	3	2	236	1	4	2	5	12	427
05 45 PM	1	143	5	3	152	2	1	1	16	20	0	242	3	2	247	3	5	0	7	15	434
Total	2	579	27	11	619	27	3	9	54	93	17	937	10	10	974	15	15	4	29	63	1749
06 00 PM	1	160	6	2	169	8	2	0	10	20	3	227	2	2	234	4	0	1	11	16	439
06 15 PM	1	161	5	1	168	1	1	2	6	10	4	247	0	2	253	2	3	1	5	11	442
Grand Total	4	1216	51	20	1291	47	8	22	97	174	37	1851	20	20	1928	28	23	8	60	119	3512
Approch %	0.3	94.2	4.0	1.5		27.0	4.6	12.6	55.7		1.9	96.0	1.0	1.0		23.5	19.3	6.7	50.4		
Total %	0.1	34.6	1.5	0.6	36.8	1.3	0.2	0.6	2.8	5.0	1.1	52.7	0.6	0.6	54.9	0.8	0.7	0.2	1.7	3.4	

	Georgia Ave Southbound				Quackenbos St Westbound				Georgia Ave Northbound				Quackenbos St Eastbound				
Start Time	Right	Thru	Left	App Total	Right	Thru	Left	App Total	Right	Thru	Left	App Total	Right	Thru	Left	App Total	Int Total
Peak Hour From 04 30 PM to 06 15 PM - Peak 1 of 1																	
Intersection	04 30 PM																
Volume	1	604	27	632	32	4	18	54	26	908	12	946	18	11	4	33	1665
Percent	0.2	95.6	4.3		59.3	7.4	33.3		2.7	96.0	1.3		54.5	33.3	12.1		
04 30 Volume	0	161	8	169	8	1	4	13	6	240	5	251	4	4	0	8	441
Peak Factor																	0.944
High Int	04 30 PM				05 00 PM				04 30 PM				05 00 PM				
Volume	0	161	8	169	11	2	3	16	6	240	5	251	6	5	1	12	
Peak Factor	0.935				0.844				0.942				0.688				

Peggy Malone & Associates, Inc

(888) 247-8602

File Name . Georgia Ave. and Quackenbos St. Saturday

Site Code 00003010

Start Date 4/18/2009

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Groups Printed- Vehicles - Trucks

	Georgia Ave Southbound					Quackenbos St Westbound					Georgia Ave Northbound					Quackenbos St Eastbound					
Start Time	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	Int Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
12:00 PM	2	171	2	2	177	2	1	2	10	15	3	168	1	1	173	0	1	1	0	2	367
12:15 PM	1	164	2	3	170	5	3	3	13	24	4	173	3	1	181	1	1	2	1	5	380
12:30 PM	3	179	7	4	193	1	0	3	14	18	7	173	3	2	185	0	0	2	2	4	400
12:45 PM	2	195	5	4	206	3	2	4	22	31	8	203	6	1	218	0	1	0	9	10	465
Total	8	709	16	13	746	11	6	12	59	88	22	717	13	5	757	1	3	5	12	21	1612
01:00 PM	3	169	3	7	182	6	1	4	24	35	9	188	4	6	207	2	3	1	11	17	441
01:15 PM	4	216	4	5	229	9	2	3	17	31	1	214	4	2	221	4	1	2	4	11	492
01:30 PM	9	186	13	4	212	4	1	3	20	28	4	202	5	0	211	1	1	1	7	10	461
01:45 PM	3	183	3	2	191	5	4	2	22	33	4	200	6	0	210	0	3	0	6	9	443
Total	19	754	23	18	814	24	8	12	83	127	18	804	19	8	849	7	8	4	28	47	1837
Grand Total	27	1463	39	31	1560	35	14	24	142	215	40	1521	32	13	1606	8	11	9	40	68	3449
Apprch %	17	93.8	2.5	2.0		16.3	6.5	11.2	66.0		2.5	94.7	2.0	0.8		11.8	16.2	13.2	58.8		
Total %	0.8	42.4	1.1	0.9	45.2	1.0	0.4	0.7	4.1	6.2	1.2	44.1	0.9	0.4	46.6	0.2	0.3	0.3	1.2	2.0	

	Georgia Ave Southbound					Quackenbos St Westbound					Georgia Ave Northbound					Quackenbos St Eastbound					
Start Time	Right	Thru	Left	App Total		Right	Thru	Left	App Total		Right	Thru	Left	App Total		Right	Thru	Left	App Total		Int Total
Peak Hour From 12:00 PM to 01:45 PM - Peak 1 of 1																					
Intersection 12:45 PM																					
Volume	18	766	25	809		22	6	14	42		22	807	19	848		7	6	4	17		1716
Percent	2.2	94.7	3.1			52.4	14.3	33.3			2.6	95.2	2.2			41.2	35.3	23.5			
01:15 Volume	4	216	4	224		9	2	3	14		1	214	4	219		4	1	2	7		464
Peak Factor																					0.925
High Int 01:15 PM						01:15 PM					01:15 PM					01:15 PM					
Volume	4	216	4	224		9	2	3	14		1	214	4	219		4	1	2	7		
Peak Factor				0.903					0.750					0.968					0.607		

Peggy Malone & Associates, Inc

(888) 247-8602

File Name Georgia Ave and Quackenbos St Sunday

Site Code 00003010

Start Date 4/19/2009

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Groups Printed- Vehicles - Trucks

Start Time	Georgia Ave Southbound					Quackenbos St Westbound					Georgia Ave Northbound					Quackenbos St Eastbound					Int. Total
	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
07:00 AM	0	54	0	1	55	1	2	1	3	7	3	44	1	2	50	2	0	0	1	3	115
07:15 AM	0	71	1	3	75	0	1	1	2	4	4	42	3	0	49	0	1	0	4	5	133
07:30 AM	1	66	1	2	70	0	2	0	3	5	1	50	3	1	55	0	1	0	3	4	134
07:45 AM	0	81	3	2	86	1	1	3	0	5	3	50	7	6	66	0	0	1	1	2	159
Total	1	272	5	8	286	2	6	5	8	21	11	186	14	9	220	2	2	1	9	14	541
08:00 AM	1	84	1	2	88	0	2	0	0	2	1	53	3	2	59	1	1	0	4	6	155
08:15 AM	2	69	1	2	74	0	0	1	6	7	1	72	0	0	73	0	0	0	2	2	156
08:30 AM	1	64	4	4	73	1	0	0	6	7	1	79	3	0	83	1	0	0	7	8	171
08:45 AM	0	101	1	0	102	0	1	0	10	11	0	62	0	0	62	1	0	0	5	6	181
Total	4	318	7	8	337	1	3	1	22	27	3	266	6	2	277	3	1	0	18	22	663
09:00 AM	0	100	5	1	106	1	0	2	5	8	1	59	1	2	63	6	3	2	9	20	197
09:15 AM	0	120	2	1	123	0	1	1	8	10	1	90	1	0	92	11	1	0	10	22	247
09:30 AM	5	104	2	1	112	1	1	1	7	10	1	113	4	1	119	6	2	1	13	22	263
09:45 AM	3	119	4	5	131	0	0	1	6	7	6	106	2	4	118	5	0	1	11	17	273
Total	8	443	13	8	472	2	2	5	26	35	9	368	8	7	392	28	6	4	43	81	980
10:00 AM	3	106	6	2	117	2	2	1	8	13	2	105	2	0	109	8	1	3	17	29	268
10:15 AM	5	124	1	7	137	3	1	1	4	9	1	92	8	2	103	5	4	0	12	21	270
10:30 AM	5	152	3	8	168	4	2	1	16	23	3	122	5	3	133	2	0	2	5	9	333
10:45 AM	3	144	3	1	151	7	1	1	12	21	1	122	6	2	131	3	0	1	9	13	316
Total	16	526	13	18	573	16	6	4	40	66	7	441	21	7	476	18	5	6	43	72	1187
11:00 AM	2	135	4	6	147	4	1	0	14	19	1	114	1	1	117	4	1	0	8	13	296
11:15 AM	0	121	2	3	126	4	1	1	19	25	8	135	0	8	151	6	1	4	20	31	333
11:30 AM	0	117	4	3	124	4	2	0	9	15	3	142	2	3	150	4	2	1	7	14	303
11:45 AM	2	153	1	3	159	5	1	5	15	26	3	125	1	2	131	6	0	0	15	21	337
Total	4	526	11	15	556	17	5	6	57	85	15	516	4	14	549	20	4	5	50	79	1269
12:00 PM	8	122	7	9	146	2	1	4	26	33	4	177	3	6	190	8	1	5	22	36	405
12:15 PM	2	140	5	6	153	3	0	5	11	19	3	153	6	1	163	5	1	0	17	23	358
12:30 PM	2	120	5	4	131	4	1	1	15	21	1	172	3	1	177	5	1	2	18	26	355
12:45 PM	1	142	7	5	155	3	2	2	8	15	1	166	0	0	167	2	0	0	6	8	345
Total	13	524	24	24	585	12	4	12	60	88	9	668	12	8	697	20	3	7	63	93	1463
Grand Total	46	2609	73	81	2809	50	26	33	213	322	54	2445	65	47	2611	91	21	23	226	361	6103
Approach %	1.6	92.9	2.6	2.9		15.5	8.1	10.2	66.1		2.1	93.6	2.5	1.8		25.2	5.8	6.4	62.6		
Total %	0.8	42.7	1.2	1.3	46.0	0.8	0.4	0.5	3.5	5.3	0.9	40.1	1.1	0.8	42.8	1.5	0.3	0.4	3.7	5.9	

Start Time	Georgia Ave Southbound					Quackenbos St Westbound					Georgia Ave Northbound					Quackenbos St Eastbound					Int. Total
	Right	Thru	Left	App Total		Right	Thru	Left	App Total		Right	Thru	Left	App Total		Right	Thru	Left	App Total		
Peak Hour From 07:00 AM to 12:45 PM Peak 1 of 1																					
Intersection 12:00 PM																					
Volume	13	524	24	561		12	4	12	28		9	668	12	689		20	3	7	30		1308
Percent	2.3	93.4	4.3			42.9	14.3	42.9			1.3	97.0	1.7			66.7	10.0	23.3			
12:00 Volume	8	122	7	137		2	1	4	7		4	177	3	184		8	1	5	14		342
Peak Factor																					0.956
High Int 12:45 PM						12:15 PM					12:00 PM					12:00 PM					
Volume	1	142	7	150		3	0	5	8		4	177	3	184		8	1	5	14		
Peak Factor				0.935					0.875					0.936					0.536		

Peggy Malone & Associates, Inc.

(888) 247-8602

File Name : 13th St. and Quackenbos St. AM

Site Code 00003398

Start Date 4/15/2009

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Groups Printed- Vehicles - Trucks

Start Time	13th St Southbound					Quackenbos St Westbound					13th St Northbound					Eastbound					Int Total
	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
07:00 AM	0	153	3	0	156	6	0	1	1	8	0	27	0	3	30	0	0	0	0	0	194
07:15 AM	0	173	3	0	176	0	0	7	1	8	0	45	0	2	47	0	0	0	0	0	231
07:30 AM	0	212	5	0	217	6	0	2	1	9	1	42	0	3	46	0	0	0	0	0	272
07:45 AM	0	202	7	0	209	16	0	4	2	22	1	52	0	4	57	0	0	0	0	0	288
Total	0	740	18	0	758	28	0	14	5	47	2	166	0	12	180	0	0	0	0	0	985
08:00 AM	0	210	10	0	220	14	0	4	0	18	1	57	0	4	62	0	0	0	0	0	300
08:15 AM	0	228	6	0	234	3	0	3	3	9	1	59	0	0	60	0	0	0	0	0	303
08:30 AM	0	206	12	0	218	3	0	4	0	7	0	55	0	2	57	0	0	0	0	0	282
08:45 AM	0	208	8	0	216	4	0	2	0	6	0	63	0	1	64	0	0	0	0	0	286
Total	0	852	36	0	888	24	0	13	3	40	2	234	0	7	243	0	0	0	0	0	1171
Grand Total	0	1592	54	0	1646	52	0	27	8	87	4	400	0	19	423	0	0	0	0	0	2156
Apprch %	0.0	96.7	3.3	0.0		59.8	0.0	31.0	9.2		0.9	94.6	0.0	4.5		0.0	0.0	0.0	0.0		
Total %	0.0	73.8	2.5	0.0	76.3	2.4	0.0	1.3	0.4	4.0	0.2	18.6	0.0	0.9	19.6	0.0	0.0	0.0	0.0	0.0	

Start Time	13th St Southbound					Quackenbos St Westbound					13th St Northbound					Eastbound					Int Total
	Right	Thru	Left	App Total		Right	Thru	Left	App Total		Right	Thru	Left	App Total		Right	Thru	Left	App Total		
Peak Hour From 07:00 AM to 08:45 AM Peak 1 of 1																					
Intersection 08:00 AM																					
Volume	0	852	36	888		24	0	13	37		2	234	0	236		0	0	0	0		1161
Percent	0.0	95.9	4.1			64.9	0.0	35.1			0.8	99.2	0.0			0.0	0.0	0.0			
08:15 Volume	0	228	6	234		3	0	3	6		1	59	0	60		0	0	0	0		300
Peak Factor																					0.968
High Int 08:15 AM						08:00 AM					08:45 AM					6:45:00 AM					
Volume	0	228	6	234		14	0	4	18		0	63	0	63							
Peak Factor				0.949					0.514					0.937							

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File Name 13th St and Quackenbos St. PM
Site Code 00003398
Start Date 4/15/2009
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Groups Printed- Vehicles - Trucks

	13th St Southbound					Quackenbos St Westbound					13th St Northbound					Eastbound					Int Total
Start Time	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	Int Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
04 30 PM	0	76	6	0	82	4	0	4	0	8	2	127	0	4	133	0	0	0	0	0	223
04 45 PM	0	105	5	0	110	4	0	3	0	7	1	149	0	1	151	0	0	0	0	0	268
Total	0	181	11	0	192	8	0	7	0	15	3	276	0	5	284	0	0	0	0	0	491
05 00 PM	0	113	6	0	119	2	0	2	0	4	3	116	0	1	120	0	0	0	0	0	243
05 15 PM	0	99	4	0	103	4	0	3	0	7	0	136	0	0	136	0	0	0	0	0	246
05 30 PM	0	122	4	0	126	3	0	2	2	7	0	156	0	1	157	0	0	0	0	0	290
05 45 PM	0	115	2	0	117	5	0	3	0	8	1	166	0	1	168	0	0	0	0	0	293
Total	0	449	16	0	465	14	0	10	2	26	4	574	0	3	581	0	0	0	0	0	1072
06 00 PM	0	115	3	0	118	5	0	1	3	9	0	177	0	3	180	0	0	0	0	0	307
06 15 PM	0	97	4	0	101	2	0	1	1	4	1	164	0	5	170	0	0	0	0	0	275
Grand Total	0	842	34	0	876	29	0	19	6	54	8	1191	0	16	1215	0	0	0	0	0	2145
Apprch %	0.0	96.1	3.9	0.0		53.7	0.0	35.2	11.1		0.7	98.0	0.0	1.3		0.0	0.0	0.0	0.0		
Total %	0.0	39.3	1.6	0.0	40.8	1.4	0.0	0.9	0.3	2.5	0.4	55.5	0.0	0.7	56.6	0.0	0.0	0.0	0.0	0.0	

	13th St Southbound					Quackenbos St Westbound					13th St Northbound					Eastbound					Int Total
Start Time	Right	Thru	Left	App Total		Right	Thru	Left	App Total		Right	Thru	Left	App Total		Right	Thru	Left	App Total		Int Total
Peak Hour From 04 30 PM to 06 15 PM Peak 1 of 1																					
Intersection 05 30 PM																					
Volume	0	449	13	462		15	0	7	22		2	663	0	665		0	0	0	0	0	1149
Percent	0.0	97.2	2.8			68.2	0.0	31.8			0.3	99.7	0.0			0.0	0.0	0.0			
06 00 Volume	0	115	3	118		5	0	1	6		0	177	0	177		0	0	0	0	0	301
Peak Factor																					0.954
High Int 05 30 PM						05 45 PM					06 00 PM					4 15 00 PM					
Volume	0	122	4	126		5	0	3	8		0	177	0	177							
Peak Factor				0.917					0.688					0.939							

Peggy Malone & Associates, Inc

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File Name . 13th St and Quackenbos St Saturday

Site Code 00003398

Start Date 4/18/2009

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Groups Printed- Vehicles - Trucks

Start Time	13th St Southbound					Quackenbos St Westbound					13th St Northbound					Eastbound					Int Total
	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
12:00 PM	0	120	2	0	122	3	0	1	1	5	1	89	0	2	92	0	0	0	0	0	219
12:15 PM	0	119	4	0	123	4	0	4	3	11	1	85	0	1	87	0	0	0	0	0	221
12:30 PM	0	98	1	0	99	4	0	2	0	6	2	83	0	1	86	0	0	0	0	0	191
12:45 PM	0	114	1	0	115	4	0	1	0	5	0	97	0	1	98	0	0	0	0	0	218
Total	0	451	8	0	459	15	0	8	4	27	4	354	0	5	363	0	0	0	0	0	849
01:00 PM	0	97	3	0	100	3	0	3	1	7	3	108	0	1	112	0	0	0	0	0	219
01:15 PM	0	125	9	0	134	6	0	4	0	10	0	101	0	4	105	0	0	0	0	0	249
01:30 PM	0	113	3	0	116	8	0	9	0	17	1	90	0	2	93	0	0	0	0	0	226
01:45 PM	0	119	4	0	123	8	0	2	0	10	0	96	0	0	96	0	0	0	0	0	229
Total	0	454	19	0	473	25	0	18	1	44	4	395	0	7	406	0	0	0	0	0	923
Grand Total	0	905	27	0	932	40	0	26	5	71	8	749	0	12	769	0	0	0	0	0	1772
Apprch %	0.0	97.1	2.9	0.0		56.3	0.0	36.6	7.0		1.0	97.4	0.0	1.6		0.0	0.0	0.0	0.0		
Total %	0.0	51.1	1.5	0.0	52.6	2.3	0.0	1.5	0.3	4.0	0.5	42.3	0.0	0.7	43.4	0.0	0.0	0.0	0.0	0.0	

Start Time	13th St Southbound					Quackenbos St Westbound					13th St Northbound					Eastbound					Int. Total
	Right	Thru	Left	App Total		Right	Thru	Left	App Total		Right	Thru	Left	App Total		Right	Thru	Left	App Total		
Peak Hour From 12:00 PM to 01:45 PM Peak 1 of 1																					
Intersection 01:00 PM																					
Volume	0	454	19	473		25	0	18	43		4	395	0	399		0	0	0	0		915
Percent	0.0	96.0	4.0			58.1	0.0	41.9			1.0	99.0	0.0			0.0	0.0	0.0			
01:15 Volume	0	125	9	134		6	0	4	10		0	101	0	101		0	0	0	0		245
Peak Factor																					0.934
High Int 01:15 PM						01:30 PM					01:00 PM					11:45:00 AM					
Volume	0	125	9	134		8	0	9	17		3	108	0	111							
Peak Factor				0.882					0.632					0.899							

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File Name 13th St and Quackenbos St. Sunday
Site Code 00003398
Start Date 4/19/2009
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Groups Printed- Vehicles - Trucks

	13th St Southbound					Quackenbos St Westbound					13th St Northbound					Eastbound					
Start Time	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	Right	Thru	Left	Peds	App Total	Int Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
07 00 AM	0	35	1	0	36	4	0	0	0	4	1	23	0	1	25	0	0	0	0	0	65
07 15 AM	0	45	4	0	49	0	0	3	1	4	1	18	0	0	19	0	0	0	0	0	72
07 30 AM	0	52	2	0	54	1	0	2	2	5	2	28	0	0	30	0	0	0	0	0	89
07 45 AM	0	51	10	0	61	0	0	0	0	0	4	23	0	0	27	0	0	0	0	0	88
Total	0	183	17	0	200	5	0	5	3	13	8	92	0	1	101	0	0	0	0	0	314
08 00 AM	0	55	5	0	60	3	0	2	0	5	0	35	0	0	35	0	0	0	0	0	100
08 15 AM	0	60	3	0	63	0	0	1	0	1	0	24	0	0	24	0	0	0	0	0	88
08 30 AM	0	52	1	0	53	2	0	1	4	7	1	27	0	0	28	0	0	0	0	0	88
08 45 AM	0	58	2	0	60	0	0	1	0	1	0	40	0	0	40	0	0	0	0	0	101
Total	0	225	11	0	236	5	0	5	4	14	1	126	0	0	127	0	0	0	0	0	377
09 00 AM	0	74	5	0	79	1	0	0	0	1	1	39	0	1	41	0	0	0	0	0	121
09 15 AM	0	71	1	0	72	4	0	0	3	7	3	37	0	2	42	0	0	0	0	0	121
09 30 AM	0	84	4	0	88	7	0	6	0	13	4	46	0	2	52	0	0	0	0	0	153
09 45 AM	0	105	4	0	109	5	0	0	4	9	6	71	0	10	87	0	0	0	0	0	205
Total	0	334	14	0	348	17	0	6	7	30	14	193	0	15	222	0	0	0	0	0	600
10 00 AM	0	91	15	0	106	5	0	2	0	7	5	58	0	1	64	0	0	0	0	0	177
10 15 AM	0	84	6	0	90	5	0	0	3	8	6	55	0	1	62	0	0	0	0	0	160
10 30 AM	0	141	2	0	143	3	0	2	1	6	1	59	0	1	61	0	0	0	0	0	210
10 45 AM	0	109	2	0	111	5	0	2	2	9	1	55	0	2	58	0	0	0	0	0	178
Total	0	425	25	0	450	18	0	6	6	30	13	227	0	5	245	0	0	0	0	0	725
11 00 AM	0	100	5	0	105	2	0	2	0	4	1	70	0	0	71	0	0	0	0	0	180
11 15 AM	0	99	2	0	101	6	0	3	7	16	5	75	0	1	81	0	0	0	0	0	198
11 30 AM	0	82	3	0	85	12	0	2	5	19	4	62	0	3	69	0	0	0	0	0	173
11 45 AM	0	99	5	0	104	6	0	2	0	8	2	68	0	0	70	0	0	0	0	0	182
Total	0	380	15	0	395	26	0	9	12	47	12	275	0	4	291	0	0	0	0	0	733
12 00 PM	0	102	4	0	106	18	0	5	4	27	2	83	0	2	87	0	0	0	0	0	220
12 15 PM	0	98	4	0	102	11	0	2	1	14	1	74	0	6	81	0	0	0	0	0	197
12 30 PM	0	98	2	0	100	8	0	2	0	10	4	106	0	1	111	0	0	0	0	0	221
12 45 PM	0	99	1	0	100	4	0	1	4	9	1	88	0	0	89	0	0	0	0	0	198
Total	0	397	11	0	408	41	0	10	9	60	8	351	0	9	368	0	0	0	0	0	836
Grand Total	0	1944	93	0	2037	112	0	41	41	194	56	1264	0	34	1354	0	0	0	0	0	3585
Approch %	0.0	95.4	4.6	0.0		57.7	0.0	21.1	21.1		4.1	93.4	0.0	2.5		0.0	0.0	0.0	0.0		
Total %	0.0	54.2	2.6	0.0	56.8	3.1	0.0	1.1	1.1	5.4	1.6	35.3	0.0	0.9	37.8	0.0	0.0	0.0	0.0	0.0	

	13th St Southbound					Quackenbos St Westbound					13th St Northbound					Eastbound					
Start Time	Right	Thru	Left	App Total		Right	Thru	Left	App Total		Right	Thru	Left	App Total		Right	Thru	Left	App Total		Int Total
Peak Hour From 07 00 AM to 12 45 PM Peak 1 of 1																					
Intersection 12:00 PM																					
Volume	0	397	11	408		41	0	10	51		8	351	0	359		0	0	0	0	0	818
Percent	0.0	97.3	2.7			80.4	0.0	19.6			2.2	97.8	0.0			0.0	0.0	0.0			
12 30 Volume	0	98	2	100		8	0	2	10		4	106	0	110		0	0	0	0	0	220
Peak Factor																					0.930
High Int 12:00 PM						12:00 PM					12 30 PM					6 45 00 AM					
Volume	0	102	4	106		18	0	5	23		4	106	0	110							
Peak Factor				0.962					0.554					0.816							

HCM Signalized Intersection Capacity Analysis

1: Rittenhouse St. & Georgia Ave.

Existing
Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	29	14	23	39	27	8	501	24	14	936	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		0.99			0.98			0.99			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.96			0.96			0.99			1.00	
Flt Protected		1.00			0.99			1.00			1.00	
Satd. Flow (prot)		1759			1726			3492			3530	
Flt Permitted		0.98			0.93			0.94			0.94	
Satd. Flow (perm)		1736			1633			3285			3334	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	5	30	15	24	41	28	8	522	25	15	975	5
RTOR Reduction (vph)	0	10	0	0	16	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	40	0	0	77	0	0	552	0	0	995	0
Confl. Peds. (#/hr)	29		5	5		29	13		35	35		13
Parking (#/hr)			0			0			0			0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		35.0			35.0			55.0			55.0	
Effective Green, g (s)		35.0			35.0			55.0			55.0	
Actuated g/C Ratio		0.35			0.35			0.55			0.55	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Lane Grp Cap (vph)		608			572			1807			1834	
v/s Ratio Prot												
v/s Ratio Perm		0.02			0.05			0.17			0.30	
v/c Ratio		0.07			0.14			0.31			0.54	
Uniform Delay, d1		21.6			22.2			12.2			14.4	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.2			0.5			0.4			1.2	
Delay (s)		21.8			22.7			12.6			15.6	
Level of Service		C			C			B			B	
Approach Delay (s)		21.8			22.7			12.6			15.6	
Approach LOS		C			C			B			B	

Intersection Summary

HCM Average Control Delay	15.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	57.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

1: Rittenhouse St. & Georgia Ave.

Existing
Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	43	7	19	28	22	9	921	27	23	613	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		1.00			0.98			1.00			1.00	
Flpb, ped/bikes		0.99			1.00			1.00			1.00	
Frt		0.99			0.96			1.00			1.00	
Flt Protected		0.99			0.99			1.00			1.00	
Satd. Flow (prot)		1795			1723			3509			3518	
Flt Permitted		0.95			0.93			0.95			0.90	
Satd. Flow (perm)		1726			1631			3330			3168	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	14	44	7	19	29	22	9	940	28	23	626	10
RTOR Reduction (vph)	0	5	0	0	14	0	0	2	0	0	1	0
Lane Group Flow (vph)	0	60	0	0	56	0	0	975	0	0	658	0
Confl. Peds. (#/hr)	24		7	7		24	21		36	36		21
Parking (#/hr)			0			0			0			0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		35.0			35.0			55.0			55.0	
Effective Green, g (s)		35.0			35.0			55.0			55.0	
Actuated g/C Ratio		0.35			0.35			0.55			0.55	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Lane Grp Cap (vph)		604			571			1832			1742	
v/s Ratio Prot												
v/s Ratio Perm		0.04			0.03			0.29			0.21	
v/c Ratio		0.10			0.10			0.53			0.38	
Uniform Delay, d1		21.9			21.9			14.3			12.8	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.3			0.3			1.1			0.6	
Delay (s)		22.2			22.2			15.4			13.4	
Level of Service		C			C			B			B	
Approach Delay (s)		22.2			22.2			15.4			13.4	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM Average Control Delay		15.2					HCM Level of Service		B			
HCM Volume to Capacity ratio		0.36										
Actuated Cycle Length (s)		100.0					Sum of lost time (s)		10.0			
Intersection Capacity Utilization		55.8%					ICU Level of Service		B			
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

1: Rittenhouse St. & Georgia Ave.

Existing
Timing Plan: Saturday Peak Ho

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	26	11	28	26	39	8	760	41	22	758	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		0.99			0.95			0.99			1.00	
Flpb, ped/bikes		0.98			0.99			1.00			1.00	
Frt		0.97			0.94			0.99			1.00	
Flt Protected		0.99			0.99			1.00			1.00	
Satd. Flow (prot)		1727			1627			3478			3502	
Flt Permitted		0.94			0.92			0.95			0.91	
Satd. Flow (perm)		1646			1517			3289			3203	
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)	13	28	12	30	28	42	9	817	44	24	815	24
RTOR Reduction (vph)	0	8	0	0	26	0	0	4	0	0	2	0
Lane Group Flow (vph)	0	45	0	0	74	0	0	866	0	0	861	0
Confl. Peds. (#/hr)	61		16	16		61	42		52	52		42
Parking (#/hr)			0			0			0			0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		35.0			35.0			55.0			55.0	
Effective Green, g (s)		35.0			35.0			55.0			55.0	
Actuated g/C Ratio		0.35			0.35			0.55			0.55	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Lane Grp Cap (vph)		576			531			1809			1762	
v/s Ratio Prot												
v/s Ratio Perm		0.03			0.05			0.26			0.27	
v/c Ratio		0.08			0.14			0.48			0.49	
Uniform Delay, d1		21.7			22.2			13.7			13.8	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.3			0.5			0.9			1.0	
Delay (s)		22.0			22.8			14.7			14.8	
Level of Service		C			C			B			B	
Approach Delay (s)		22.0			22.8			14.7			14.8	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	15.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	59.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

1: Rittenhouse St. & Georgia Ave.

Existing
Timing Plan: Sunday Peak Ho

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	27	7	23	16	22	5	634	38	11	532	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		0.99			0.96			0.99			1.00	
Flpb, ped/bikes		0.99			0.99			1.00			1.00	
Frt		0.98			0.95			0.99			1.00	
Flt Protected		0.99			0.98			1.00			1.00	
Satd. Flow (prot)		1775			1664			3485			3518	
Flt Permitted		0.98			0.91			0.95			0.94	
Satd. Flow (perm)		1743			1545			3318			3309	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	6	28	7	24	17	23	5	660	40	11	554	10
RTOR Reduction (vph)	0	5	0	0	15	0	0	5	0	0	1	0
Lane Group Flow (vph)	0	36	0	0	49	0	0	701	0	0	574	0
Confl. Peds. (#/hr)	49		11	11		49	31		30	30		31
Parking (#/hr)			0			0			0			0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		35.0			35.0			55.0			55.0	
Effective Green, g (s)		35.0			35.0			55.0			55.0	
Actuated g/C Ratio		0.35			0.35			0.55			0.55	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Lane Grp Cap (vph)		610			541			1825			1820	
v/s Ratio Prot												
v/s Ratio Perm		0.02			0.03			0.21			0.17	
v/c Ratio		0.06			0.09			0.38			0.32	
Uniform Delay, d1		21.6			21.8			12.8			12.2	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.2			0.3			0.6			0.5	
Delay (s)		21.8			22.1			13.4			12.7	
Level of Service		C			C			B			B	
Approach Delay (s)		21.8			22.1			13.4			12.7	
Approach LOS		C			C			B			B	

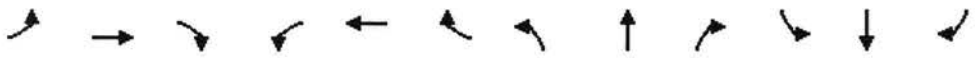
Intersection Summary

HCM Average Control Delay	13.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	44.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

1: Rittenhouse St. & Georgia Ave.

Background
Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇄			⇄			⇄			⇄	
Volume (vph)	5	30	14	23	40	28	8	528	24	14	962	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		0.99			0.98			0.99			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.96			0.96			0.99			1.00	
Flt Protected		1.00			0.99			1.00			1.00	
Satd. Flow (prot)		1761			1725			3495			3531	
Flt Permitted		0.98			0.94			0.94			0.94	
Satd. Flow (perm)		1738			1634			3288			3334	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	5	31	15	24	42	29	8	550	25	15	1002	5
RTOR Reduction (vph)	0	10	0	0	16	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	41	0	0	79	0	0	580	0	0	1022	0
Confl. Peds. (#/hr)	29		5	5		29	13		35	35		13
Parking (#/hr)			0			0			0			0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		35.0			35.0			55.0			55.0	
Effective Green, g (s)		35.0			35.0			55.0			55.0	
Actuated g/C Ratio		0.35			0.35			0.55			0.55	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Lane Grp Cap (vph)		608			572			1808			1834	
v/s Ratio Prot												
v/s Ratio Perm		0.02			0.05			0.18			0.31	
v/c Ratio		0.07			0.14			0.32			0.56	
Uniform Delay, d1		21.6			22.2			12.3			14.6	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.2			0.5			0.5			1.2	
Delay (s)		21.9			22.7			12.8			15.8	
Level of Service		C			C			B			B	
Approach Delay (s)		21.9			22.7			12.8			15.8	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM Average Control Delay		15.4				HCM Level of Service		B				
HCM Volume to Capacity ratio		0.39										
Actuated Cycle Length (s)		100.0				Sum of lost time (s)		10.0				
Intersection Capacity Utilization		58.3%				ICU Level of Service		B				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

1: Rittenhouse St. & Georgia Ave.

Background
Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Volume (vph)	14	44	7	19	29	22	9	954	28	23	644	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		1.00			0.98			1.00			1.00	
Flpb, ped/bikes		0.99			1.00			1.00			1.00	
Frt		0.99			0.96			1.00			1.00	
Flt Protected		0.99			0.99			1.00			1.00	
Satd. Flow (prot)		1796			1725			3509			3520	
Flt Permitted		0.95			0.93			0.95			0.90	
Satd. Flow (perm)		1728			1634			3329			3168	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	14	45	7	19	30	22	9	973	29	23	657	10
RTOR Reduction (vph)	0	5	0	0	14	0	0	2	0	0	1	0
Lane Group Flow (vph)	0	61	0	0	57	0	0	1009	0	0	689	0
Confl. Peds. (#/hr)	24		7	7		24	21		36	36		21
Parking (#/hr)			0			0			0			0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		35.0			35.0			55.0			55.0	
Effective Green, g (s)		35.0			35.0			55.0			55.0	
Actuated g/C Ratio		0.35			0.35			0.55			0.55	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Lane Grp Cap (vph)		605			572			1831			1742	
v/s Ratio Prot												
v/s Ratio Perm		0.04			0.03			0.30			0.22	
v/c Ratio		0.10			0.10			0.55			0.40	
Uniform Delay, d1		21.9			21.9			14.5			12.9	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.3			0.3			1.2			0.7	
Delay (s)		22.2			22.2			15.7			13.6	
Level of Service		C			C			B			B	
Approach Delay (s)		22.2			22.2			15.7			13.6	
Approach LOS		C			C			B			B	

Intersection Summary												
HCM Average Control Delay		15.4		HCM Level of Service				B				
HCM Volume to Capacity ratio		0.38										
Actuated Cycle Length (s)		100.0		Sum of lost time (s)				10.0				
Intersection Capacity Utilization		56.6%		ICU Level of Service				B				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

1: Rittenhouse St. & Georgia Ave.

Background

Timing Plan: Saturday Peak Ho

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	27	11	29	27	40	8	797	42	22	796	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		0.99			0.95			0.99			1.00	
Flpb, ped/bikes		0.98			0.99			1.00			1.00	
Frt		0.97			0.94			0.99			1.00	
Flt Protected		0.99			0.99			1.00			1.00	
Satd. Flow (prot)		1729			1628			3479			3504	
Flt Permitted		0.94			0.92			0.95			0.91	
Satd. Flow (perm)		1649			1516			3290			3203	
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)	13	29	12	31	29	43	9	857	45	24	856	24
RTOR Reduction (vph)	0	8	0	0	26	0	0	4	0	0	2	0
Lane Group Flow (vph)	0	46	0	0	77	0	0	907	0	0	902	0
Confl. Peds. (#/hr)	61		16	16		61	42		52	52		42
Parking (#/hr)			0			0			0			0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		35.0			35.0			55.0			55.0	
Effective Green, g (s)		35.0			35.0			55.0			55.0	
Actuated g/C Ratio		0.35			0.35			0.55			0.55	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Lane Grp Cap (vph)		577			531			1810			1762	
v/s Ratio Prot												
v/s Ratio Perm		0.03			0.05			0.28			0.28	
v/c Ratio		0.08			0.15			0.50			0.51	
Uniform Delay, d1		21.7			22.3			14.0			14.1	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.3			0.6			1.0			1.1	
Delay (s)		22.0			22.8			15.0			15.2	
Level of Service		C			C			B			B	
Approach Delay (s)		22.0			22.8			15.0			15.2	
Approach LOS		C			C			B			B	

Intersection Summary

HCM Average Control Delay	15.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	60.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

1: Rittenhouse St. & Georgia Ave.

Background

Timing Plan: Sunday Peak Ho

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	28	7	23	16	22	5	669	39	11	566	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		0.99			0.96			0.99			1.00	
Flpb, ped/bikes		0.99			0.99			1.00			1.00	
Frt		0.98			0.95			0.99			1.00	
Flt Protected		0.99			0.98			1.00			1.00	
Satd. Flow (prot)		1777			1664			3486			3519	
Flt Permitted		0.98			0.91			0.95			0.94	
Satd. Flow (perm)		1746			1544			3319			3310	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	6	29	7	24	17	23	5	697	41	11	590	10
RTOR Reduction (vph)	0	5	0	0	15	0	0	4	0	0	1	0
Lane Group Flow (vph)	0	37	0	0	49	0	0	739	0	0	610	0
Confl. Peds. (#/hr)	49		11	11		49	31		30	30		31
Parking (#/hr)			0			0			0			0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		35.0			35.0			55.0			55.0	
Effective Green, g (s)		35.0			35.0			55.0			55.0	
Actuated g/C Ratio		0.35			0.35			0.55			0.55	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Lane Grp Cap (vph)		611			540			1825			1821	
v/s Ratio Prot												
v/s Ratio Perm		0.02			0.03			0.22			0.18	
v/c Ratio		0.06			0.09			0.40			0.33	
Uniform Delay, d1		21.6			21.8			13.0			12.4	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.2			0.3			0.7			0.5	
Delay (s)		21.8			22.2			13.7			12.9	
Level of Service		C			C			B			B	
Approach Delay (s)		21.8			22.2			13.7			12.9	
Approach LOS		C			C			B			B	

Intersection Summary

HCM Average Control Delay	14.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	45.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

1: Rittenhouse St. & Georgia Ave.

Total Future
Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	30	14	24	40	28	8	544	24	14	974	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		0.99			0.98			0.99			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.96			0.96			0.99			1.00	
Flt Protected		1.00			0.99			1.00			1.00	
Satd. Flow (prot)		1761			1725			3496			3531	
Flt Permitted		0.98			0.93			0.94			0.94	
Satd. Flow (perm)		1738			1630			3290			3333	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	5	31	15	25	42	29	8	567	25	15	1015	5
RTOR Reduction (vph)	0	10	0	0	16	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	41	0	0	80	0	0	597	0	0	1035	0
Confl. Peds. (#/hr)	29		5	5		29	13		35	35		13
Parking (#/hr)			0			0			0			0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		35.0			35.0			55.0			55.0	
Effective Green, g (s)		35.0			35.0			55.0			55.0	
Actuated g/C Ratio		0.35			0.35			0.55			0.55	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Lane Grp Cap (vph)		608			571			1810			1833	
v/s Ratio Prot												
v/s Ratio Perm		0.02			0.05			0.18			0.31	
v/c Ratio		0.07			0.14			0.33			0.56	
Uniform Delay, d1		21.6			22.2			12.4			14.7	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.2			0.5			0.5			1.3	
Delay (s)		21.9			22.7			12.9			15.9	
Level of Service		C			C			B			B	
Approach Delay (s)		21.9			22.7			12.9			15.9	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM Average Control Delay		15.4										
HCM Volume to Capacity ratio		0.40										
Actuated Cycle Length (s)		100.0										
Intersection Capacity Utilization		58.7%										
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

1: Rittenhouse St. & Georgia Ave.

Total Future
Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	44	7	20	29	22	9	971	29	23	661	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		1.00			0.98			1.00			1.00	
Flpb, ped/bikes		0.99			1.00			1.00			1.00	
Frt		0.99			0.96			1.00			1.00	
Flt Protected		0.99			0.99			1.00			1.00	
Satd. Flow (prot)		1797			1725			3508			3520	
Flt Permitted		0.95			0.93			0.95			0.90	
Satd. Flow (perm)		1727			1629			3329			3168	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	14	45	7	20	30	22	9	991	30	23	674	10
RTOR Reduction (vph)	0	5	0	0	14	0	0	2	0	0	1	0
Lane Group Flow (vph)	0	61	0	0	58	0	0	1028	0	0	706	0
Confl. Peds. (#/hr)	24		7	7		24	21		36	36		21
Parking (#/hr)			0			0			0			0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		35.0			35.0			55.0			55.0	
Effective Green, g (s)		35.0			35.0			55.0			55.0	
Actuated g/C Ratio		0.35			0.35			0.55			0.55	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Lane Grp Cap (vph)		604			570			1831			1742	
v/s Ratio Prot												
v/s Ratio Perm		0.04			0.04			0.31			0.22	
v/c Ratio		0.10			0.10			0.56			0.41	
Uniform Delay, d1		21.9			21.9			14.6			13.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.3			0.4			1.2			0.7	
Delay (s)		22.2			22.3			15.9			13.7	
Level of Service		C			C			B			B	
Approach Delay (s)		22.2			22.3			15.9			13.7	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	15.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	57.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

1: Rittenhouse St. & Georgia Ave.

Total Future
Timing Plan: Saturday Peak Ho

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	27	11	31	27	40	8	820	45	22	817	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		0.99			0.95			0.99			1.00	
Flpb, ped/bikes		0.98			0.99			1.00			1.00	
Frt		0.97			0.94			0.99			1.00	
Flt Protected		0.99			0.98			1.00			1.00	
Satd. Flow (prot)		1730			1630			3477			3505	
Flt Permitted		0.94			0.91			0.95			0.91	
Satd. Flow (perm)		1649			1510			3288			3201	
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)	13	29	12	33	29	43	9	882	48	24	878	24
RTOR Reduction (vph)	0	8	0	0	25	0	0	4	0	0	2	0
Lane Group Flow (vph)	0	46	0	0	80	0	0	935	0	0	924	0
Confl. Peds. (#/hr)	61		16	16		61	42		52	52		42
Parking (#/hr)			0			0			0			0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		35.0			35.0			55.0			55.0	
Effective Green, g (s)		35.0			35.0			55.0			55.0	
Actuated g/C Ratio		0.35			0.35			0.55			0.55	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Lane Grp Cap (vph)		577			529			1808			1761	
v/s Ratio Prot												
v/s Ratio Perm		0.03			0.05			0.28			0.29	
v/c Ratio		0.08			0.15			0.52			0.52	
Uniform Delay, d1		21.7			22.3			14.1			14.2	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.3			0.6			1.1			1.1	
Delay (s)		22.0			22.9			15.2			15.4	
Level of Service		C			C			B			B	
Approach Delay (s)		22.0			22.9			15.2			15.4	
Approach LOS		C			C			B			B	

Intersection Summary

HCM Average Control Delay	15.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	60.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

1: Rittenhouse St. & Georgia Ave.

Total Future
Timing Plan: Sunday Peak Ho

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	28	7	26	16	22	5	689	42	11	587	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frpb, ped/bikes		0.99			0.96			0.99			1.00	
Flpb, ped/bikes		0.99			0.99			1.00			1.00	
Frt		0.98			0.95			0.99			1.00	
Flt Protected		0.99			0.98			1.00			1.00	
Satd. Flow (prot)		1777			1667			3484			3520	
Flt Permitted		0.98			0.90			0.95			0.94	
Satd. Flow (perm)		1745			1533			3317			3310	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	6	29	7	27	17	23	5	718	44	11	611	10
RTOR Reduction (vph)	0	5	0	0	15	0	0	5	0	0	1	0
Lane Group Flow (vph)	0	37	0	0	52	0	0	763	0	0	631	0
Confl. Peds. (#/hr)	49		11	11		49	31		30	30		31
Parking (#/hr)			0			0			0			0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		35.0			35.0			55.0			55.0	
Effective Green, g (s)		35.0			35.0			55.0			55.0	
Actuated g/C Ratio		0.35			0.35			0.55			0.55	
Clearance Time (s)		5.0			5.0			5.0			5.0	
Lane Grp Cap (vph)		611			537			1824			1821	
v/s Ratio Prot												
v/s Ratio Perm		0.02			0.03			0.23			0.19	
v/c Ratio		0.06			0.10			0.42			0.35	
Uniform Delay, d1		21.6			21.9			13.1			12.5	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.2			0.4			0.7			0.5	
Delay (s)		21.8			22.2			13.9			13.0	
Level of Service		C			C			B			B	
Approach Delay (s)		21.8			22.2			13.9			13.0	
Approach LOS		C			C			B			B	

Intersection Summary

HCM Average Control Delay	14.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	46.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis 2: Quackenbos St. & Georgia Ave.

Existing
Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	13	29	7	18	32	6	461	17	19	994	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			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)	8	14	31	7	19	34	6	485	18	20	1046	4
Pedestrians		21			30			2			5	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		2			3			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)											425	
pX, platoon unblocked	0.82	0.82	0.82	0.82	0.82		0.82					
vC, conflicting volume	1413	1655	548	1139	1648	287	1072			533		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1072	1366	21	739	1358	287	657			533		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	92	88	96	96	83	95	99			98		
cM capacity (veh/h)	111	112	849	203	113	690	749			1005		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	53	60	249	261	543	527						
Volume Left	8	7	6	0	20	0						
Volume Right	31	34	0	18	0	4						
cSH	225	237	749	1700	1005	1700						
Volume to Capacity	0.23	0.25	0.01	0.15	0.02	0.31						
Queue Length 95th (ft)	22	24	1	0	2	0						
Control Delay (s)	25.9	25.2	0.3	0.0	0.6	0.0						
Lane LOS	D	D	A		A							
Approach Delay (s)	25.9	25.2	0.2		0.3							
Approach LOS	D	D										
Intersection Summary												
Average Delay			1.9									
Intersection Capacity Utilization			53.6%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis 2: Quackenbos St. & Georgia Ave.

Existing
Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	11	18	18	4	32	12	908	26	27	604	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
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)	4	12	19	19	4	34	13	966	28	29	643	1
Pedestrians		32			48			12			13	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		3			4			1			1	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)											425	
pX, platoon unblocked	0.91	0.91	0.91	0.91	0.91		0.91					
vC, conflicting volume	1290	1800	366	1469	1786	558	676			1042		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1117	1678	98	1314	1663	558	439			1042		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	84	98	76	94	92	99			95		
cM capacity (veh/h)	114	75	821	78	77	449	987			637		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	35	57	496	511	350	322
Volume Left	4	19	13	0	29	0
Volume Right	19	34	0	28	0	1
cSH	162	153	987	1700	637	1700
Volume to Capacity	0.22	0.38	0.01	0.30	0.05	0.19
Queue Length 95th (ft)	20	40	1	0	4	0
Control Delay (s)	33.2	42.0	0.4	0.0	1.5	0.0
Lane LOS	D	E	A		A	
Approach Delay (s)	33.2	42.0	0.2		0.8	
Approach LOS	D	E				

Intersection Summary

Average Delay	2.4		
Intersection Capacity Utilization	52.9%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis 2: Quackenbos St. & Georgia Ave.

Existing
Timing Plan: Saturday Peak Ho

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	6	7	14	6	22	19	807	22	25	766	18
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			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)	4	6	8	15	6	24	20	868	24	27	824	19
Pedestrians		31			83			9			20	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		3			7			1			2	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)											425	
pX, platoon unblocked	0.86	0.86	0.86	0.86	0.86		0.86					
vC, conflicting volume	1440	1933	462	1489	1931	549	874			974		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1187	1761	51	1244	1758	549	530			974		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	95	89	99	82	89	95	98			96		
cM capacity (veh/h)	91	61	837	84	61	439	866			655		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	18	45	454	458	439	431						
Volume Left	4	15	20	0	27	0						
Volume Right	8	24	0	24	0	19						
cSH	113	133	866	1700	655	1700						
Volume to Capacity	0.16	0.34	0.02	0.27	0.04	0.25						
Queue Length 95th (ft)	14	34	2	0	3	0						
Control Delay (s)	42.9	45.3	0.7	0.0	1.2	0.0						
Lane LOS	E	E	A		A							
Approach Delay (s)	42.9	45.3	0.3		0.6							
Approach LOS	E	E										

Intersection Summary

Average Delay	2.0					
Intersection Capacity Utilization	55.6%	ICU Level of Service	B			
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis 2: Quackenbos St. & Georgia Ave.

Existing
Timing Plan: Sunday Peak Ho

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	7	3	20	12	4	12	12	668	9	24	524	13
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
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)	7	3	21	12	4	12	12	696	9	25	546	14
Pedestrians		63			60			8			24	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		5			5			1			2	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)											425	
pX, platoon unblocked	0.92	0.92	0.92	0.92	0.92		0.92					
vC, conflicting volume	1077	1456	351	1139	1458	437	622			765		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	920	1330	135	987	1332	437	428			765		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	97	97	92	97	98	99			97		
cM capacity (veh/h)	165	122	774	150	122	529	988			802		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	31	29	360	357	298	286
Volume Left	7	12	12	0	25	0
Volume Right	21	12	0	9	0	14
cSH	323	207	988	1700	802	1700
Volume to Capacity	0.10	0.14	0.01	0.21	0.03	0.17
Queue Length 95th (ft)	8	12	1	0	2	0
Control Delay (s)	17.3	25.3	0.4	0.0	1.1	0.0
Lane LOS	C	D	A		A	
Approach Delay (s)	17.3	25.3	0.2		0.6	
Approach LOS	C	D				

Intersection Summary						
Average Delay		1.3				
Intersection Capacity Utilization		48.4%	ICU Level of Service		A	
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis 2: Quackenbos St. & Georgia Ave.

Background
Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	13	30	7	18	33	6	487	17	19	1021	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			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)	8	14	32	7	19	35	6	513	18	20	1075	4
Pedestrians		21			30			2			5	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		2			3			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)											425	
pX, platoon unblocked	0.82	0.82	0.82	0.82	0.82		0.82					
vC, conflicting volume	1456	1711	562	1182	1704	300	1100			561		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1107	1420	11	771	1411	300	670			561		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	92	87	96	96	82	95	99			98		
cM capacity (veh/h)	102	103	853	189	104	676	734			982		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	54	61	263	274	557	542						
Volume Left	8	7	6	0	20	0						
Volume Right	32	35	0	18	0	4						
cSH	212	224	734	1700	982	1700						
Volume to Capacity	0.25	0.27	0.01	0.16	0.02	0.32						
Queue Length 95th (ft)	24	27	1	0	2	0						
Control Delay (s)	27.6	27.0	0.3	0.0	0.6	0.0						
Lane LOS	D	D	A		A							
Approach Delay (s)	27.6	27.0	0.2		0.3							
Approach LOS	D	D										

Intersection Summary

Average Delay	2.0					
Intersection Capacity Utilization	54.4%		ICU Level of Service	A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis 2: Quackenbos St. & Georgia Ave.

Background
Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	11	18	18	4	33	12	940	27	28	635	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
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)	4	12	19	19	4	35	13	1000	29	30	676	1
Pedestrians		32			48			12			13	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		3			4			1			1	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)											425	
pX, platoon unblocked	0.90	0.90	0.90	0.90	0.90		0.90					
vC, conflicting volume	1343	1870	382	1522	1856	575	709			1077		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1161	1745	93	1359	1730	575	456			1077		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	83	98	73	94	92	99			95		
cM capacity (veh/h)	104	68	820	71	69	438	965			618		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	35	59	513	529	368	339						
Volume Left	4	19	13	0	30	0						
Volume Right	19	35	0	29	0	1						
cSH	148	142	965	1700	618	1700						
Volume to Capacity	0.24	0.41	0.01	0.31	0.05	0.20						
Queue Length 95th (ft)	22	45	1	0	4	0						
Control Delay (s)	36.8	47.2	0.4	0.0	1.5	0.0						
Lane LOS	E	E	A		A							
Approach Delay (s)	36.8	47.2	0.2		0.8							
Approach LOS	E	E										
Intersection Summary												
Average Delay			2.6									
Intersection Capacity Utilization			54.5%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis 2: Quackenbos St. & Georgia Ave.

Background
Timing Plan: Saturday Peak Ho

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	6	7	14	6	22	19	845	22	26	804	18
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			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)	4	6	8	15	6	24	20	909	24	28	865	19
Pedestrians		31			83			9			20	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		3			7			1			2	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)											425	
pX, platoon unblocked	0.85	0.85	0.85	0.85	0.85		0.85					
vC, conflicting volume	1503	2017	482	1552	2015	569	915			1015		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1239	1844	38	1297	1842	569	548			1015		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	95	88	99	80	88	94	98			96		
cM capacity (veh/h)	81	53	843	74	54	426	843			632		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	18	45	475	478	460	452						
Volume Left	4	15	20	0	28	0						
Volume Right	8	24	0	24	0	19						
cSH	100	119	843	1700	632	1700						
Volume to Capacity	0.18	0.38	0.02	0.28	0.04	0.27						
Queue Length 95th (ft)	16	39	2	0	3	0						
Control Delay (s)	48.9	52.4	0.7	0.0	1.3	0.0						
Lane LOS	E	F	A		A							
Approach Delay (s)	48.9	52.4	0.3		0.6							
Approach LOS	E	F										

Intersection Summary

Average Delay	2.2					
Intersection Capacity Utilization	57.3%		ICU Level of Service		B	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis 2: Quackenbos St. & Georgia Ave.

Background
Timing Plan: Sunday Peak Ho

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	7	3	20	12	4	12	12	703	9	24	558	13
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
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)	7	3	21	12	4	12	12	732	9	25	581	14
Pedestrians		63			60			8			24	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		5			5			1			2	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)											425	
pX, platoon unblocked	0.92	0.92	0.92	0.92	0.92		0.92					
vC, conflicting volume	1131	1528	368	1193	1530	455	658			802		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	961	1394	129	1029	1396	455	445			802		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	95	97	97	91	96	98	99			97		
cM capacity (veh/h)	152	111	773	138	110	514	965			777		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	31	29	379	376	316	304						
Volume Left	7	12	12	0	25	0						
Volume Right	21	12	0	9	0	14						
cSH	303	191	965	1700	777	1700						
Volume to Capacity	0.10	0.15	0.01	0.22	0.03	0.18						
Queue Length 95th (ft)	9	13	1	0	2	0						
Control Delay (s)	18.3	27.2	0.4	0.0	1.1	0.0						
Lane LOS	C	D	A		A							
Approach Delay (s)	18.3	27.2	0.2		0.6							
Approach LOS	C	D										
Intersection Summary												
Average Delay			1.3									
Intersection Capacity Utilization			49.3%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis 2: Quackenbos St. & Georgia Ave.

Total Future
Timing Plan: AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	24	16	45	7	20	33	17	487	17	19	1021	17
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			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)	25	17	47	7	21	35	18	513	18	20	1075	18
Pedestrians		21			30			2			5	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		2			3			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)											425	
pX, platoon unblocked	0.81	0.81	0.81	0.81	0.81		0.81					
vC, conflicting volume	1487	1741	569	1223	1741	300	1114			561		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1137	1449	6	811	1449	300	677			561		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	73	83	94	96	78	95	98			98		
cM capacity (veh/h)	92	97	856	164	97	676	727			982		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	89	63	274	274	557	555						
Volume Left	25	7	18	0	20	0						
Volume Right	47	35	0	18	0	18						
cSH	178	201	727	1700	982	1700						
Volume to Capacity	0.50	0.31	0.02	0.16	0.02	0.33						
Queue Length 95th (ft)	62	32	2	0	2	0						
Control Delay (s)	44.3	30.9	0.9	0.0	0.6	0.0						
Lane LOS	E	D	A		A							
Approach Delay (s)	44.3	30.9	0.5		0.3							
Approach LOS	E	D										
Intersection Summary												
Average Delay			3.6									
Intersection Capacity Utilization			59.0%		ICU Level of Service				B			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis 2: Quackenbos St. & Georgia Ave.

Total Future
Timing Plan: PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	22	14	35	18	7	33	30	940	27	28	635	19
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
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)	23	15	37	19	7	35	32	1000	29	30	676	20
Pedestrians		32			48			12			13	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		3			4			1			1	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)											425	
pX, platoon unblocked	0.90	0.90	0.90	0.90	0.90		0.90					
vC, conflicting volume	1393	1918	392	1580	1914	575	728			1077		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1208	1793	91	1417	1788	575	466			1077		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	74	76	95	67	88	92	97			95		
cM capacity (veh/h)	90	61	819	58	62	438	953			618		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	76	62	532	529	368	358						
Volume Left	23	19	32	0	30	0						
Volume Right	37	35	0	29	0	20						
cSH	138	116	953	1700	618	1700						
Volume to Capacity	0.55	0.53	0.03	0.31	0.05	0.21						
Queue Length 95th (ft)	68	62	3	0	4	0						
Control Delay (s)	59.2	66.9	0.9	0.0	1.5	0.0						
Lane LOS	F	F	A		A							
Approach Delay (s)	59.2	66.9	0.5		0.8							
Approach LOS	F	F										
Intersection Summary												
Average Delay			5.0									
Intersection Capacity Utilization			63.8%		ICU Level of Service				B			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis 2: Quackenbos St. & Georgia Ave.

Total Future
Timing Plan: Saturday Peak Ho

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	11	31	14	11	22	41	845	22	26	804	41
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			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)	32	12	33	15	12	24	44	909	24	28	865	44
Pedestrians		31			83			9			20	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		3			7			1			2	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)											425	
pX, platoon unblocked	0.84	0.84	0.84	0.84	0.84		0.84					
vC, conflicting volume	1566	2077	494	1628	2087	569	940			1015		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1301	1907	33	1375	1919	569	560			1015		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	49	75	96	72	74	94	95			96		
cM capacity (veh/h)	63	47	844	55	46	426	828			632		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	77	51	498	478	460	476						
Volume Left	32	15	44	0	28	0						
Volume Right	33	24	0	24	0	44						
cSH	96	86	828	1700	632	1700						
Volume to Capacity	0.80	0.59	0.05	0.28	0.04	0.28						
Queue Length 95th (ft)	108	67	4	0	3	0						
Control Delay (s)	122.5	94.3	1.5	0.0	1.3	0.0						
Lane LOS	F	F	A		A							
Approach Delay (s)	122.5	94.3	0.8		0.6							
Approach LOS	F	F										
Intersection Summary												
Average Delay			7.6									
Intersection Capacity Utilization			68.4%		ICU Level of Service				C			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis 2: Quackenbos St. & Georgia Ave.

Total Future
Timing Plan: Sunday Peak Ho

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	7	40	12	8	12	33	703	9	24	558	37
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
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)	31	7	42	12	8	12	34	732	9	25	581	39
Pedestrians		63			60			8			24	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		5			5			1			2	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)											425	
pX, platoon unblocked	0.91	0.91	0.91	0.91	0.91		0.91					
vC, conflicting volume	1189	1584	381	1260	1599	455	683			802		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1014	1447	128	1091	1463	455	459			802		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	76	93	95	89	91	98	96			97		
cM capacity (veh/h)	131	100	771	114	98	514	949			777		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	80	33	401	376	316	329						
Volume Left	31	12	34	0	25	0						
Volume Right	42	12	0	9	0	39						
cSH	219	152	949	1700	777	1700						
Volume to Capacity	0.37	0.22	0.04	0.22	0.03	0.19						
Queue Length 95th (ft)	40	20	3	0	2	0						
Control Delay (s)	30.6	35.2	1.1	0.0	1.1	0.0						
Lane LOS	D	E	A		A							
Approach Delay (s)	30.6	35.2	0.6		0.6							
Approach LOS	D	E										
Intersection Summary												
Average Delay			2.9									
Intersection Capacity Utilization			57.1%		ICU Level of Service				B			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis 3: Quackenbos St. & 13th St.

Existing
Timing Plan: AM Peak Hour

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	LT	RT	TH	TH	LT	TH
Volume (veh/h)	13	24	234	2	36	852
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	13	25	241	2	37	878
Pedestrians	3		7			
Lane Width (ft)	12.0		12.0			
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)						
pX, platoon unblocked						
vC, conflicting volume	766	125			246	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	766	125			246	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	97			97	
cM capacity (veh/h)	327	900			1313	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	38	161	82	330	586	
Volume Left	13	0	0	37	0	
Volume Right	25	0	2	0	0	
cSH	557	1700	1700	1313	1700	
Volume to Capacity	0.07	0.09	0.05	0.03	0.34	
Queue Length 95th (ft)	5	0	0	2	0	
Control Delay (s)	11.9	0.0	0.0	1.1	0.0	
Lane LOS	B			A		
Approach Delay (s)	11.9	0.0		0.4		
Approach LOS	B					
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			45.1%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 3: Quackenbos St. & 13th St.

Existing
Timing Plan: PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	7	15	663	2	13	449
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	7	16	698	2	14	473
Pedestrians	6		10			
Lane Width (ft)	12.0		12.0			
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)						
pX, platoon unblocked						
vC, conflicting volume	979	356			706	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	979	356			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 %	97	98			98	
cM capacity (veh/h)	240	637			884	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	23	465	235	171	315	
Volume Left	7	0	0	14	0	
Volume Right	16	0	2	0	0	
cSH	418	1700	1700	884	1700	
Volume to Capacity	0.06	0.27	0.14	0.02	0.19	
Queue Length 95th (ft)	4	0	0	1	0	
Control Delay (s)	14.1	0.0	0.0	0.9	0.0	
Lane LOS	B			A		
Approach Delay (s)	14.1	0.0		0.3		
Approach LOS	B					
Intersection Summary						
Average Delay		0.4				
Intersection Capacity Utilization		31.8%		ICU Level of Service	A	
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis 3: Quackenbos St. & 13th St.

Existing
Timing Plan: Saturday Peak Ho

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	18	25	395	4	19	454
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	19	27	425	4	20	488
Pedestrians	1		7			
Lane Width (ft)	12.0		12.0			
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)						
pX, platoon unblocked						
vC, conflicting volume	720	216			430	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	720	216			430	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	97			98	
cM capacity (veh/h)	354	789			1125	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	46	283	146	183	325	
Volume Left	19	0	0	20	0	
Volume Right	27	0	4	0	0	
cSH	521	1700	1700	1125	1700	
Volume to Capacity	0.09	0.17	0.09	0.02	0.19	
Queue Length 95th (ft)	7	0	0	1	0	
Control Delay (s)	12.6	0.0	0.0	1.1	0.0	
Lane LOS	B			A		
Approach Delay (s)	12.6	0.0		0.4		
Approach LOS	B					
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			36.5%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 3: Quackenbos St. & 13th St.

Existing
Timing Plan: Sunday Peak Ho

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	10	41	351	8	11	397
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	11	44	377	9	12	427
Pedestrians	9		9			
Lane Width (ft)	12.0		12.0			
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)						
pX, platoon unblocked						
vC, conflicting volume	637	202			395	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	637	202			395	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	94			99	
cM capacity (veh/h)	399	799			1151	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	55	252	134	154	285	
Volume Left	11	0	0	12	0	
Volume Right	44	0	9	0	0	
cSH	668	1700	1700	1151	1700	
Volume to Capacity	0.08	0.15	0.08	0.01	0.17	
Queue Length 95th (ft)	7	0	0	1	0	
Control Delay (s)	10.9	0.0	0.0	0.7	0.0	
Lane LOS	B			A		
Approach Delay (s)	10.9	0.0		0.2		
Approach LOS	B					
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			28.9%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 3: Quackenbos St. & 13th St.

Background
Timing Plan: AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	13	24	240	2	37	870
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	13	25	247	2	38	897
Pedestrians	3		7			
Lane Width (ft)	12.0		12.0			
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)						
pX, platoon unblocked						
vC, conflicting volume	783	128			252	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	783	128			252	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	97			97	
cM capacity (veh/h)	318	896			1307	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	38	165	85	337	598	
Volume Left	13	0	0	38	0	
Volume Right	25	0	2	0	0	
cSH	547	1700	1700	1307	1700	
Volume to Capacity	0.07	0.10	0.05	0.03	0.35	
Queue Length 95th (ft)	6	0	0	2	0	
Control Delay (s)	12.1	0.0	0.0	1.1	0.0	
Lane LOS	B			A		
Approach Delay (s)	12.1	0.0		0.4		
Approach LOS	B					
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			45.8%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 3: Quackenbos St. & 13th St.

Background
Timing Plan: PM Peak Hour

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y ^{LT}		T TH		T TH	
Volume (veh/h)	7	15	679	2	13	460
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	7	16	715	2	14	484
Pedestrians	6		10			
Lane Width (ft)	12.0		12.0			
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)						
pX, platoon unblocked						
vC, conflicting volume	1001	364			723	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1001	364			723	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	97			98	
cM capacity (veh/h)	232	629			871	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	23	476	240	175	323	
Volume Left	7	0	0	14	0	
Volume Right	16	0	2	0	0	
cSH	408	1700	1700	871	1700	
Volume to Capacity	0.06	0.28	0.14	0.02	0.19	
Queue Length 95th (ft)	4	0	0	1	0	
Control Delay (s)	14.4	0.0	0.0	0.9	0.0	
Lane LOS	B			A		
Approach Delay (s)	14.4	0.0		0.3		
Approach LOS	B					
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			32.1%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 3: Quackenbos St. & 13th St.

Background
Timing Plan: Saturday Peak Ho

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	←	→	↑	→	←	→
Volume (veh/h)	18	26	407	4	19	467
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	19	28	438	4	20	502
Pedestrians	1		7			
Lane Width (ft)	12.0		12.0			
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)						
pX, platoon unblocked						
vC, conflicting volume	740	222			443	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	740	222			443	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	94	96			98	
cM capacity (veh/h)	344	781			1113	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	47	292	150	188	335	
Volume Left	19	0	0	20	0	
Volume Right	28	0	4	0	0	
cSH	514	1700	1700	1113	1700	
Volume to Capacity	0.09	0.17	0.09	0.02	0.20	
Queue Length 95th (ft)	8	0	0	1	0	
Control Delay (s)	12.7	0.0	0.0	1.1	0.0	
Lane LOS	B			A		
Approach Delay (s)	12.7	0.0		0.4		
Approach LOS	B					
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			36.8%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 3: Quackenbos St. & 13th St.

Background
Timing Plan: Sunday Peak Ho

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	10	42	362	8	11	409
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	11	45	389	9	12	440
Pedestrians	9		9			
Lane Width (ft)	12.0		12.0			
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)						
pX, platoon unblocked						
vC, conflicting volume	655	208			407	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	655	208			407	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	94			99	
cM capacity (veh/h)	389	792			1140	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	56	259	138	158	293	
Volume Left	11	0	0	12	0	
Volume Right	45	0	9	0	0	
cSH	660	1700	1700	1140	1700	
Volume to Capacity	0.08	0.15	0.08	0.01	0.17	
Queue Length 95th (ft)	7	0	0	1	0	
Control Delay (s)	11.0	0.0	0.0	0.7	0.0	
Lane LOS	B			A		
Approach Delay (s)	11.0	0.0		0.2		
Approach LOS	B					
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			29.2%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 3: Quackenbos St. & 13th St.

Total Future
Timing Plan: AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	21	34	240	8	46	870
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	22	35	247	8	47	897
Pedestrians	3		7			
Lane Width (ft)	12.0		12.0			
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)						
pX, platoon unblocked						
vC, conflicting volume	805	131			259	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	805	131			259	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	93	96			96	
cM capacity (veh/h)	306	892			1300	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	57	165	91	346	598	
Volume Left	22	0	0	47	0	
Volume Right	35	0	8	0	0	
cSH	515	1700	1700	1300	1700	
Volume to Capacity	0.11	0.10	0.05	0.04	0.35	
Queue Length 95th (ft)	9	0	0	3	0	
Control Delay (s)	12.8	0.0	0.0	1.4	0.0	
Lane LOS	B			A		
Approach Delay (s)	12.8	0.0		0.5		
Approach LOS	B					
Intersection Summary						
Average Delay			1.0			
Intersection Capacity Utilization		46.2%		ICU Level of Service	A	
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis 3: Quackenbos St. & 13th St.

Total Future
Timing Plan: PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	16	28	679	11	27	460
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	17	29	715	12	28	484
Pedestrians	6		10			
Lane Width (ft)	12.0		12.0			
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)						
pX, platoon unblocked						
vC, conflicting volume	1035	369			732	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1035	369			732	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	92	95			97	
cM capacity (veh/h)	217	625			864	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	46	476	250	190	323	
Volume Left	17	0	0	28	0	
Volume Right	29	0	12	0	0	
cSH	371	1700	1700	864	1700	
Volume to Capacity	0.12	0.28	0.15	0.03	0.19	
Queue Length 95th (ft)	11	0	0	3	0	
Control Delay (s)	16.1	0.0	0.0	1.7	0.0	
Lane LOS	C			A		
Approach Delay (s)	16.1	0.0		0.6		
Approach LOS	C					
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			42.9%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 3: Quackenbos St. & 13th St.

Total Future
Timing Plan: Saturday Peak Ho

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	32	47	407	16	37	467
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	34	51	438	17	40	502
Pedestrians	1		7			
Lane Width (ft)	12.0		12.0			
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)						
pX, platoon unblocked						
vC, conflicting volume	785	228			456	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	785	228			456	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	89	93			96	
cM capacity (veh/h)	316	774			1100	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	85	292	163	207	335	
Volume Left	34	0	0	40	0	
Volume Right	51	0	17	0	0	
cSH	487	1700	1700	1100	1700	
Volume to Capacity	0.17	0.17	0.10	0.04	0.20	
Queue Length 95th (ft)	16	0	0	3	0	
Control Delay (s)	13.9	0.0	0.0	1.9	0.0	
Lane LOS	B			A		
Approach Delay (s)	13.9	0.0		0.7		
Approach LOS	B					
Intersection Summary						
Average Delay			1.5			
Intersection Capacity Utilization			40.5%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 3: Quackenbos St. & 13th St.

Total Future
Timing Plan: Sunday Peak Ho

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	22	61	362	21	30	409
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	24	66	389	23	32	440
Pedestrians	9		9			
Lane Width (ft)	12.0		12.0			
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)						
pX, platoon unblocked						
vC, conflicting volume	703	215			421	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	703	215			421	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	93	92			97	
cM capacity (veh/h)	356	784			1126	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	89	259	152	179	293	
Volume Left	24	0	0	32	0	
Volume Right	66	0	23	0	0	
cSH	594	1700	1700	1126	1700	
Volume to Capacity	0.15	0.15	0.09	0.03	0.17	
Queue Length 95th (ft)	13	0	0	2	0	
Control Delay (s)	12.1	0.0	0.0	1.7	0.0	
Lane LOS	B			A		
Approach Delay (s)	12.1	0.0		0.6		
Approach LOS	B					
Intersection Summary						
Average Delay			1.4			
Intersection Capacity Utilization			38.6%	ICU Level of Service		A
Analysis Period (min)			15			