

**MOUNTAIN BROOK CITY COUNCIL
SPECIAL MEETING AGENDA**

**CITY HALL COUNCIL CHAMBER
56 CHURCH STREET
MOUNTAIN BROOK, AL 35213**

TUESDAY, DECEMBER 16, 2014, 5:30 P.M.

1. Public hearing: Consideration of an ordinance rezoning certain parcels on Vine Street from Professional and Residence D Districts to Local Business District with respect to the proposed Piggly Wiggly development.
2. Public hearing: Consideration of a resolution authorizing the execution and delivery of a development agreement pursuant to Amendment No. 772 to the Constitution of the State of Alabama (1901) (Section 94.01(a)(3) of the Recompiled Constitution of Alabama) with respect to the proposed Piggly Wiggly development on Church Street.
3. Announcement: The next meeting of the City Council is January 12, 2015, at 7:00 p.m. in the Council Chamber of City Hall located at 56 Church Street, Mountain Brook, AL 35213.
4. Comments from residents.
5. Adjourn.

ORDINANCE NO. 1925

AN ORDINANCE TO REZONE CERTAIN PARCELS OF LAND IN THE CITY OF MOUNTAIN BROOK, ALABAMA FROM PROFESSIONAL DISTRICT AND RESIDENCE D DISTRICT TO LOCAL BUSINESS DISTRICT

WHEREAS, certain real property located at 48 Vine Street, more particularly described as Lot 28A, according to a resurvey of Lots 28 and 29, Block 25, Crestline Heights, as recorded in Map Book 174, Page 38 in the Office of the Judge of Probate of Jefferson County, Alabama is presently zoned Professional District under the Zoning Ordinance of the City of Mountain Brook; and

WHEREAS, certain other real property located at 50 Vine Street and 52 Vine Street¹, more particularly described as Lots 27 and 26, Block 25, according to the Survey of Crestline Heights, as recorded in Map Book 7, Page 16 in the Office of the Judge of Probate of Jefferson County, Alabama is presently zoned Residence D District under the Zoning Ordinance of the City of Mountain Brook; and

WHEREAS, the real property described above is comprised of three contiguous parcels (collectively the “property”); and

WHEREAS, the owners of said property have requested that it be rezoned to Local Business District for the location and construction of a neighborhood grocery store to primarily serve the local community; and

WHEREAS, the property is located within the established boundaries of Crestline Village in the City of Mountain Brook and is therefore within one of the business districts of the City; and

WHEREAS, the property at 48 and 50 Vine Street is currently used for purposes appropriate under the Local Business District (day care and retail) and the property located at 52 Vine Street is currently used for civic club purposes; and

WHEREAS, properties to the south and west of the property are zoned Local Business District and the request is found to be consistent with the zoning for those properties and uses thereupon; and

WHEREAS, the specific request is to rezone said property for location of a community grocery store thereupon (the “project”) to support and serve the community and, in particular, those who live in and around Crestline Village; and

WHEREAS, the proposal has generated significant public discussion and debate that has resulted in modifications to the original plan for development of the property, as well as the inclusion of certain conditions to ensure that the public health, safety, and welfare are promoted and that the residential and community-related uses in the vicinity of the property are protected and enhanced; and

WHEREAS, the Council finds and determines that (1) rezoning the subject property to Local Business District is in the best interest of the City and serves legitimate public purposes; (2) the property is appropriate for community grocery store use; (3) the project is designed so as to provide an effective transition to residential and community related uses; (4) the project is consistent with the City’s Village Master Plan by providing a public parking solution for and safe pedestrian connections within Crestline

¹ 52 Vine Street is the address of record for Lot 26 according to the City of Mountain Brook Zoning map. County tax records show the address for Lot 26 as 42 Vine Street. For purposes of the present Ordinance, Lot 26 is referred to as 52 Vine Street.

Village; (5) the project will enhance property values and the quality of life for residents in the Crestline Village area; (6) the rezoning is consistent with the City's Comprehensive Plan; and (7) rezoning the property serves the public health, safety, and welfare of the residents of the City of Mountain Brook; and

WHEREAS, after multiple hearings, consideration of public comments, review of relevant materials and diligent study, the City Council has determined that the zoning classification of the property should be changed to Local Business District under the Zoning Ordinance of the City of Mountain Brook.

NOW, THEREFORE, BE IT ORDAINED by the City Council of the City of Mountain Brook as follows:

Section 1. Amendment of Zoning Map. The zoning map of the City of Mountain Brook, established under authority of Section 129-17, as amended from time to time, is hereby further amended by zoning to Local Business District the following described real property:

LOT 28A, ACCORDING TO A RESURVEY OF LOTS 28 AND 29, BLOCK 25, CRESTLINE HEIGHTS, AS RECORDED IN MAP BOOK 174, PAGE 38 IN THE OFFICE OF THE JUDGE OF PROBATE OF JEFFERSON COUNTY – FROM PROFESSIONAL DISTRICT TO LOCAL BUSINESS DISTRICT

AND

LOTS 27 & 26, BLOCK 25, ACCORDING TO THE SURVEY OF CRESTLINE HEIGHTS, AS RECORDED IN MAP BOOK 7, PAGE 16 IN THE OFFICE OF THE JUDGE OF PROBATE OF JEFFERSON COUNTY, ALABAMA - FROM RESIDENCE-D DISTRICT TO LOCAL BUSINESS DISTRICT.

Section 2. Conditions. In addition to the regulations and requirements of the City of Mountain Brook Municipal Code, the following conditions shall apply to the property described above and to the rezoning thereof:

- a. No more than one building, which building shall not exceed 28,250 square feet in size, may be constructed on the property; the ground level floor area (the "footprint") of such building shall not exceed 23,250 square feet.
- b. Service and loading areas for the building to be constructed on the property will be located along the alley to the west of the property and will not be located on Vine Street.
- c. The developer or owner(s) of the property shall be responsible for construction of all improvements on-site, as well as the installation of public improvements, whether on or off-site, needed as a result of such construction.
- d. The primary means of vehicular ingress and egress to any building constructed on the property shall be from Church Street and the building will have a Church Street address.
- e. Access to Vine Street from parking areas serving the property may be limited or eliminated entirely by the City, in its sole discretion.

Section 3. Repealer. All ordinances or parts of ordinances heretofore adopted by the City Council of the City of Mountain Brook, Alabama that are inconsistent with the provisions of this ordinance are hereby expressly repealed.

Section 4. Severability. The provisions of this ordinance are severable. If any provision of this

ordinance is held by a court of competent jurisdiction to be invalid, such invalidity shall in no way affect the remaining provisions of this ordinance.

Section 5. Effective Date. This ordinance shall become effective immediately upon adoption and publication as provided by law.

ADOPTED: This 16th day of December, 2014.

Council President

APPROVED: This 16th day of December, 2014.

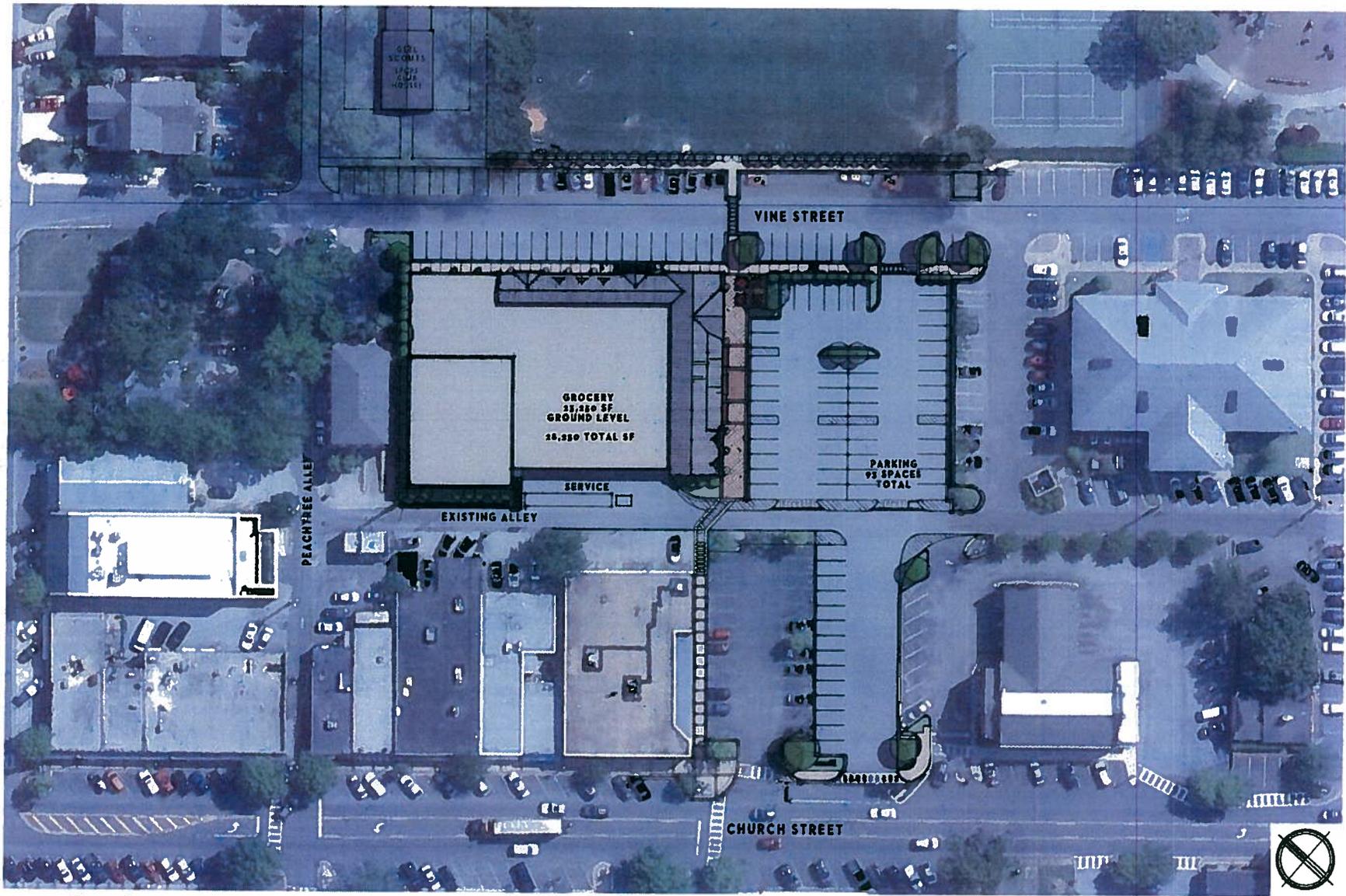
Mayor

CERTIFICATION

I, Steven Boone, City Clerk of the City of Mountain Brook, Alabama, hereby certify the above to be a true and correct copy of an ordinance adopted by the City Council of the City of Mountain Brook, Alabama, as its meeting held on December 16, 2014, as same appears in the minutes of record of said meeting, and published by posting copies thereof on December 17, 2014, at the following public places, which copies remained posted for five (5) days as required by law.

City Hall, 56 Church Street
Gilchrist Pharmacy, 2850 Cahaba Road
Overton Park, 3020 Overton Road
The Invitation Place, 3150 Overton Road

City Clerk



SCALE: 1" = 20'

PIGGLY WIGGLY CRESTLINE VILLAGE MOUNTAIN BROOK, AL

GODDWIN HILLS CAWOOD

PRELIMINARY SITE PLAN

DEXTER AVENUE

LOT 7A
55 VINE ST.

VINE STREET

BOARD
OF EDUCATION

PEACHTREE ALLEY

LOT 28A
48 VINE ST.

LOT 27
50 VINE ST.

LOT 26
52 VINE ST.

LOT 25 & 24
32 VINE ST.

LOT 23A
22 VINE ST.

CITY OF
MOUNTAIN
BROOK
OWNED
LOT

LOT 13
39 CHURCH
STREET

REGIONS
BANK

CHURCH STREET





MEMORANDUM

TO: Mountain Brook City Council

FROM: Becky White

DATE: December 11, 2014

SUBJECT: Parking and Trip Generation for Proposed Crestline Piggly Wiggly

Since traffic and parking generation at the proposed Crestline Piggly Wiggly continue to be points of discussion and concern, Mr. Whit Colvin and I agreed that some data collection at a Birmingham area Piggly Wiggly would be helpful to contextualize the trip estimates that were developed from national data in the Traffic Impact Study prepared by Skipper Consulting. In response, I conducted traffic and parking counts at the Piggly Wiggly store in Bluff Park during typical weekday morning and afternoon peak hours. Following is a summary of the data that was collected at the Bluff Park store and my estimation of parking and trip generation at the Crestline store using the Bluff Park rates.

Parking and Traffic Counts at Bluff Park Piggly Wiggly

On Tuesday, December 9, 2014, I conducted traffic counts at the Bluff Park grocery from 7:30-8:30 a.m. and from 5:00-6:00 p.m. Attachment A summarizes my counts of the number of cars parked at several intervals and the number of vehicles that entered and exited the grocery parking area during the surveyed hours. The Bluff Park store is located within a larger shopping center, but through observation I was able to tell what cars were associated with the grocery and those were the only ones I counted in order to simulate a free-standing store.

In Attachment A you will see the actual number of vehicles counted as well as parking and trip rates per 1,000 square feet of grocery space. According to the store owner, the Bluff Park Piggly Wiggly contains 20,757 gross square feet of space, so the vehicle counts were divided by 20.757 to determine trip and parking rates. At the Bluff Park store, the highest number of parking spaces filled in the morning peak hour was 14, and there were 47 during the afternoon peak. Total trips in and out of the store in the morning peak were 30 and 32, respectively. In the afternoon the numbers were 116 in and 116 out.

Parking and Trip Estimates for Crestline Village Piggly Wiggly

Attachment B presents an estimate of traffic generation at the Crestline store using its proposed 28,250 gross square feet and the trip and parking rates that were developed from Bluff Park. At the bottom of the page is a comparison of my trip estimates with those from the Skipper Consulting report. For Crestline, I anticipate parking in the morning peak hour will be at most about 19 occupied spaces with about 64 occupied spaces in the afternoon peak. Those numbers tell me that the 99 parking spaces planned are quite sufficient as I would have anticipated. As far as traffic generation is concerned, the trip estimates based on national data in the Skipper report over estimate inbound trips in the morning peak hour, but morning exits and afternoon peak hour entry and exit trips are comparable to what I estimated using Bluff Park trip rates. It is important to note that my analysis only deals with total trips and does not estimate the division between intercept and new trips as is done in the Skipper report.

"2013 Birmingham Business Alliance Small Business of the Year"

Two Perimeter Park South, Suite 500 East - Birmingham, Alabama 35243
p (205) 940-6420 - f (205) 940-6433
www.sain.com

Observations

While conducting the traffic counts in Bluff Park, it was very apparent to me that a large majority of the store's patrons during the morning and afternoon commuter peak hours were stopping by the store on the way to or from work. These patrons made quick shopping trips, often lasting less than 15 minutes. These observations lead me to believe that the intercept trip rate of 36% used in the Skipper report is low and could actually be as high as 60% during peak hours. If the intercept rate is higher than 36%, the number of additional new trips to be added to the Mountain Brook street network and adjacent intersections by the new Piggly Wiggly store will be less than estimated in the Skipper report.

As I stated in my comments to the Mountain Brook Planning Commission, I believe the Skipper report presents a conservatively high estimate of traffic impacts. The additional observations I conducted in Bluff Park confirm that statement.

I hope you will find this additional information helpful as you continue to deliberate the Crestline Piggly Wiggly proposal.

ⁱ The Skipper report utilized the gross square footage in its Traffic Report, as is appropriate for calculating trips using the ITE Trip Generation equations. The ITE rates do not disclose how much of the gross square footage is devoted to sales floor area and how much is backroom storage. The ratio of backroom storage to sales floor in the proposed Crestline store is high compared to what appears to me to be minimal backroom storage in the Bluff Park store. The high backroom to sales floor ratio for Crestline may further support a conclusion that the trip generation estimates in the Skipper report are high.

Attachment A

Piggly Wiggly Traffic Counts

conducted on Tuesday, December 9, 2014

at Bluff Park Piggly Wiggly

20,757 gross square feet

Parking Occupancy Counts

	Parked Cars	Parked Cars per 1000 Sq. Ft.		Parked Cars	Parked Cars per 1000 Sq. Ft.
7:30 AM	14	0.67	5:00 PM	40	1.93
7:45 AM	11	0.53	5:30 PM	47	2.26
8:00 AM	10	0.48	5:45 PM	43	2.07
8:15 AM	8	0.39	6:00 PM	43	2.07
8:30 AM	11	0.53	Average	43.3	2.08
Average	10.8	0.52			

Traffic Generation Counts

	Trips per 1000 Sq. Ft.		Trips per 1000 Sq. Ft.			Trips per 1000 Sq. Ft.		Trips per 1000 Sq. Ft.	
	In	Out	In	Out		In	Out	In	Out
7:30-7:45 AM	8	11	0.39	0.53	5:00-5:15 PM	34	27	1.64	1.30
7:45-8:00 AM	8	7	0.39	0.34	5:15-5:30 PM	27	30	1.30	1.45
8:00-8:15 AM	7	10	0.34	0.48	5:30-5:45 PM	27	33	1.30	1.59
8:15-8:30 AM	7	4	0.34	0.19	5:45-6:00 PM	28	26	1.35	1.25
Total	30	32	1.45	1.54	Total	116	116	5.59	5.59

Notes:

1 pedestrian entered and exited in the 7:30-7:45 interval. Not reflected in the vehicle counts above.

1 WB50 truck is included in the entry count for 7:45-8:00 am

1 SU truck is included in the exit count for 8:00-8:15 am

No trucks were observed entering or exiting during the afternoon count.

Attachment B

Crestline Piggly Wiggly Parking and Trip Generation

using rates compiled from counts conducted on Tuesday, December 9, 2014 at Bluff Park Piggly Wiggly

28,250 gross square feet is planned

Parking Generation for Proposed Store

	Parking Rate per 1000 Sq. Ft.	Est. Occupied Parking		Parking Rate per 1000 Sq.	Est. Occupied Parking
7:30 AM	0.67	19	5:00 PM	1.93	55
7:45 AM	0.53	15	5:30 PM	2.26	64
8:00 AM	0.48	14	5:45 PM	2.08	59
8:15 AM	0.39	11	6:00 PM	2.07	58
8:30 AM	0.53	15	Average	2.08	59
Average	0.52	15			

Traffic Generation for Proposed Store

	Trip Rate per 1000 Sq. Ft.		Estimated Trips			Trip Rate per 1000 Sq. Ft.		Estimated Trips	
	In	Out	In	Out		In	Out	In	Out
7:30-8:30 AM	1.45	1.54	41	44	5:00-6:00 PM	5.59	5.59	158	158

Trip Estimate from Skipper Consulting TIA

	Trip Rate per 1000 Sq. Ft.		Estimated Trips			Trip Rate per 1000 Sq. Ft.		Estimated Trips	
	In	Out	In	Out		In	Out	In	Out
AM Peak Hour	2.12	1.27	60	36	PM Peak Hour	5.52	5.31	156	150

Traffic Impact Study

Crestline Piggly Wiggly Mountain Brook, Alabama

Prepared for:

Goodwyn, Mills and Cawood, Inc.
Birmingham, Alabama



September 2014

Revision 2 November 2014

Traffic Impact Study

Crestline Piggly Wiggly

Mountain Brook, Alabama

Prepared for:

Goodwyn, Mills, and Cawood, Inc.

2701 First Avenue South, Suite 100

Birmingham, Alabama 35223

Phone (205)879-4462

Fax (205) 879-4493

Prepared by:

Skipper Consulting, Inc.

3644 Vann Road, Suite 100

Birmingham, Alabama 35235

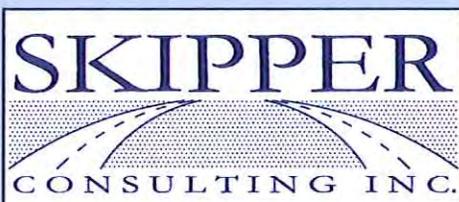
Phone (205) 655-8855

Fax (205) 655-8825



SIGNED: 

DATE: 11/26/14



September 2014

Revision 2 November 2014

TABLE OF CONTENTS

	Page
Introduction	1
Background Information	4
Study Area and Intersections.....	4
Study Area Roadways	4
Existing Intersection Turning Movement Traffic Counts	6
Historical Traffic Growth	6
Analysis	13
Existing Intersection Capacity Analysis	13
Background 2019 Intersection Capacity Analysis	13
Trip Generation.....	16
Directional Distribution.....	17
Traffic Assignment	17
Future 2019 Intersection Capacity Analysis.....	17
Future 2019 Turn Lane Warrant Analysis	23
Future 2019 Queue Analysis	23
Traffic Impacts of the Proposed Development.....	24
Delivery Truck Routing Analysis.....	29
Pedestrian Access and Circulation Analysis	32
Site Circulation Issues	35

APPENDICES

Appendix A	Site Plan
Appendix B	Existing Intersection Turning Movement Traffic Counts
Appendix C	Existing Intersection Capacity Analysis Worksheets
Appendix D	Background 2019 Intersection Capacity Analysis Worksheets
Appendix E	Future 2019 Intersection Capacity Analysis Worksheets
Appendix F	Future 2019 Right Turn Lane Warrant Analysis Worksheets
Appendix G	Future 2019 Intersection Capacity Analysis Worksheets – Church Street at Dexter Avenue (Signalized)

LIST OF ILLUSTRATIONS

Figure		Page
1	Site Location Map.....	2
2	Existing Turning Movement Traffic Volumes A.M. Peak Hour	7
3	Existing Turning Movement Traffic Volumes Afternoon School Peak Hour	8
4	Existing Turning Movement Traffic Volumes P.M. Peak Hour	9
5	Background 2019 Turning Movement Traffic Volumes A.M. Peak Hour	10
6	Background 2019 Turning Movement Traffic Volumes Afternoon School Peak Hour	11
7	Background 2019 Turning Movement Traffic Volumes P.M. Peak Hour	12
8	Directional Distribution	18
9	Future 2019 Turning Movement Traffic Volumes A.M. Peak Hour.....	19
10	Future 2019 Turning Movement Traffic Volumes Afternoon School Peak Hour	20
11	Future 2019 Turning Movement Traffic Volumes P.M. Peak Hour	21
12	Truck Turning Templates – Inbound	30
13	Truck Turning Templates – Outbound	31
14	Pedestrian System Improvements	33
15	Pedestrian Crosswalk – Church Street at Dexter Avenue	34
Table		
1	Historical Traffic Growth	6
2	Existing Intersection Capacity Analysis	14
3	Background 2019 Intersection Capacity Analysis.....	15
4	Trip Generation	16
5	Future 2019 Intersection Capacity Analysis	22
6	Future 2019 Right Turn Lane Warrant Analysis	23
7	Future 2019 Queue Analysis	24
8	Future 2019 Intersection Capacity Analysis with Improvements	26
9	Future 2019 Microsimulation Model Comparison	28

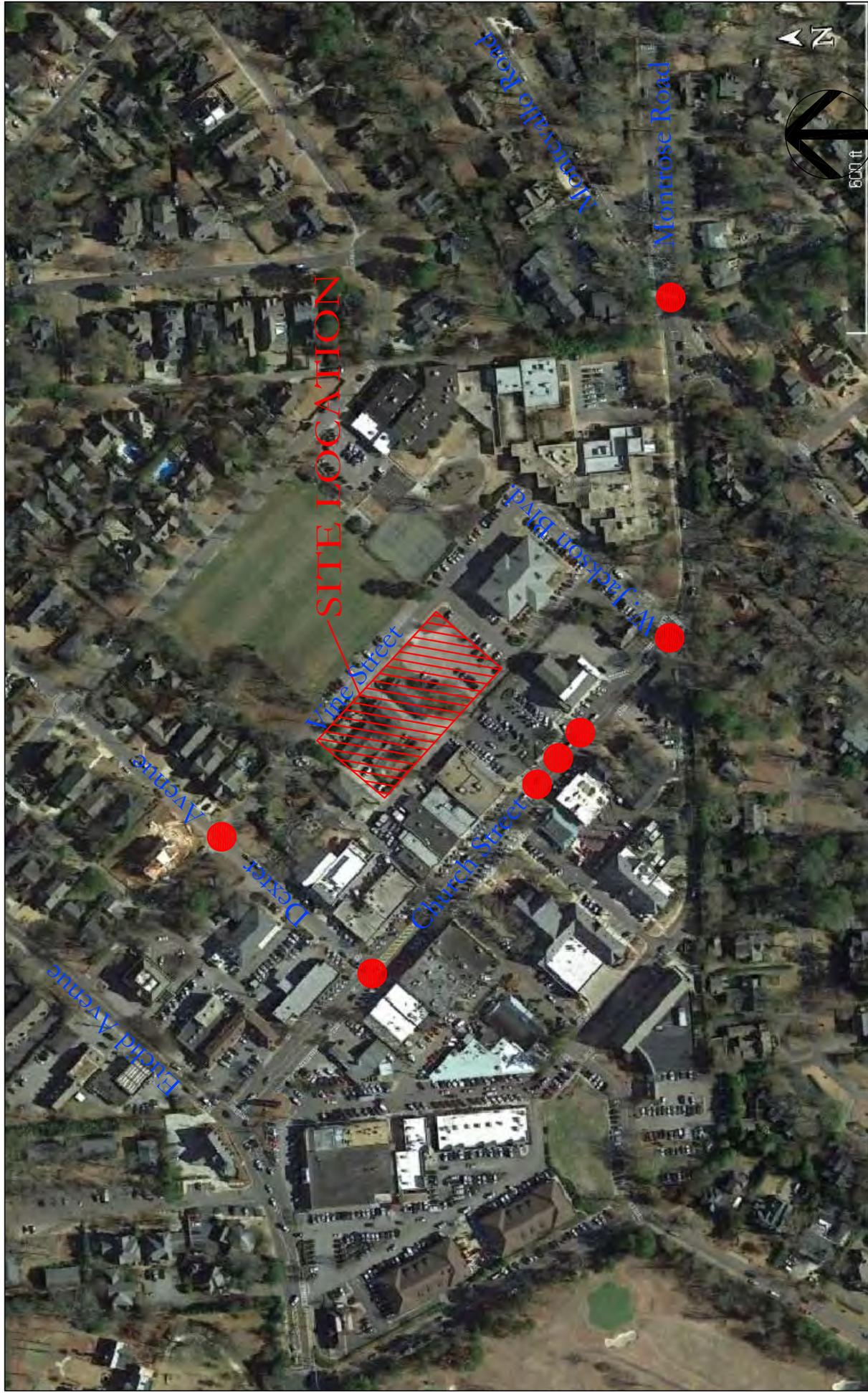
Introduction

This report documents a traffic impact study performed for a proposed grocery store to be located on Vine Street between Dexter Avenue and West Jackson Boulevard in Mountain Brook, Alabama. The location of the site with respect to the area roadway network is shown in Figure 1.

The proposed development will be constructed in a single phase. The buildout of the site will include a grocery store of approximately 28,250 gross square feet of space. The proposed development will occupy land which currently contains a daycare facility, an invitation printing business, a Girl Scout meeting facility, and a vacant lot. For the purposes of this study, an analysis year of 2019 was selected. The proposed development is to be accessed by driveways on Vine Street, on the alley between Vine Street and Church Street, and an access to Church Street at the location of an existing access to Regions Bank. The proposed site plan is included in Appendix A.

The purposes of this study are to:

- Analyze the existing traffic conditions on the roadways in the vicinity of the proposed development;
- Determine the projected growth in traffic to the year 2019;
- Analyze background traffic conditions without the proposed development for 2019 conditions on the roadways in the vicinity of the proposed development;
- Estimate the trip generation of the proposed development;
- Estimate the directional distribution of traffic generated by the proposed development;
- Assign site-generated traffic to the area roadway network and analyze the resultant traffic operations;
- Determine whether a right turn lane will be warranted on Church Street at the site access point;
- Estimate the queue lengths of turning traffic at the intersection of Church Street at the site access with the proposed development in place;
- Develop recommendations for site access and roadway improvements required to support the proposed development for buildout traffic conditions;



● - Study Intersection



Figure 1 - Site Location Map

Crestline Piggly Wiggly - Mountain Brook, Alabama

North
Scale: n.t.s

September 2014

- Analyze truck routes for delivery to the proposed development;
- Analyze pedestrian routes for the proposed development; and
- Develop specific site traffic circulation recommendations related to the interrelationship between the proposed development and Crestline Elementary School.

Sources of information used in this report included Goodwyn, Mills, and Cawood, Inc., the City of Mountain Brook, Mountain Brook City Schools, the Regional Planning Commission of Greater Birmingham, the Institute of Transportation Engineers, the Transportation Research Board, the National Cooperative Highway Research Program, and office files and field reconnaissance efforts of Skipper Consulting, Inc.

Background Information

Study Area and Intersections

The study area determined for the preparation of the traffic impact study includes the following intersections:

- Montevallo Road at Church Street/Montrose Road
- Church Street at West Jackson Boulevard
- The three driveways on Church Street between Regions Bank and CVS
- Church Street at Dexter Avenue
- Dexter Avenue at Vine Street

The locations of the study intersections are depicted in Figure 1.

Study Area Roadways

Montevallo Road. In the vicinity of the site, Montevallo Road is a two lane classified minor arterial roadway with a posted speed limit of 30 miles per hour. The intersection of Montevallo Road at Church Street/Montrose Road is controlled by a traffic signal.



Church Street. In the vicinity of the site, Church Street is a three lane local roadway with a posted speed limit of 20 miles per hour.



Vine Street. In the vicinity of the site, Vine Street is a two lane local roadway with a posted speed limit of 20 miles per hour. Vine Street is one way westbound from West Jackson Boulevard to Dexter Avenue during the hours of 7:20 a.m. to 4:00 p.m. to account for traffic operations of Crestline Elementary School.



Dexter Avenue. In the vicinity of the site, Dexter Avenue is a two lane local roadway with a posted speed limit of 20 miles per hour.



West Jackson Boulevard. In the vicinity of the site, West Jackson Boulevard is a three lane local roadway with no posted speed limit. West Jackson Boulevard is one way northbound from Church Street to Vine Street during the hours of 7:20 a.m. to 4:00 p.m. to account for traffic operations of Crestline Elementary School. West Jackson Boulevard serves as a primary pick-up and drop-off area for Crestline Elementary School.



Existing Intersection Turning Movement Traffic Counts

Existing intersection turning movement traffic counts (including pedestrian counts) were performed at the study area intersections on typical weekdays between Wednesday, May 14, 2014 and Wednesday, May 21, 2014 from 7:00 to 9:00 a.m., 2:30 to 3:30 p.m., and 4:00 to 6:00 p.m. by Traffic Data, LLC, on behalf of Skipper Consulting, Inc. The existing traffic counts are included in Appendix B. Existing a.m., afternoon school, and p.m. peak hour traffic counts were calculated using the traffic count data included in Appendix B. The existing a.m., afternoon school, and p.m. peak hour traffic and pedestrian volumes are included in Figures 2, 3, and 4. The following are the time periods for the peak hours in this study:

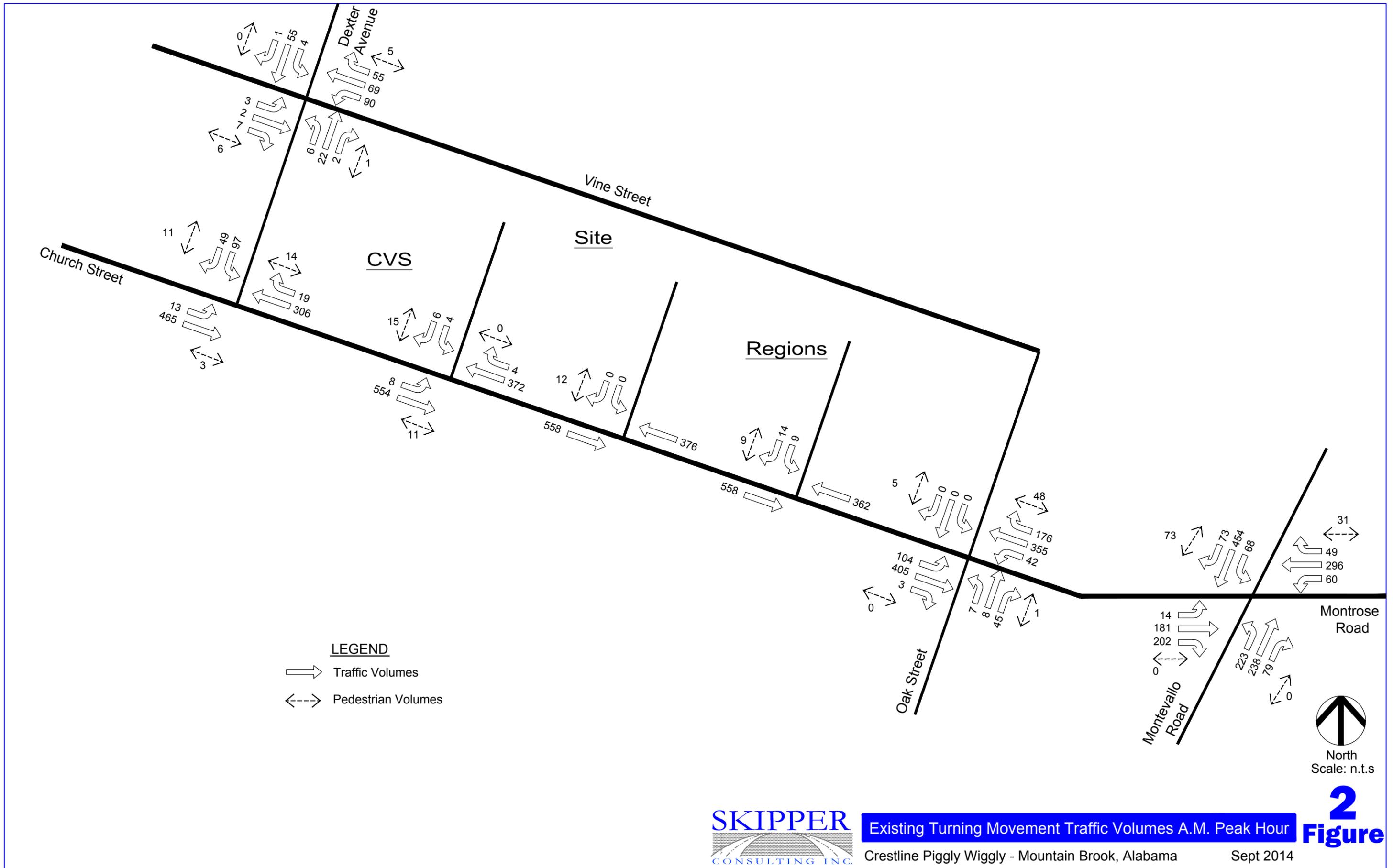
- AM Peak Hour – 7:15-8:15 a.m.
- Afternoon School Peak Hour – 2:30-3:30 p.m.
- PM Peak Hour – 5:00-6:00 p.m.

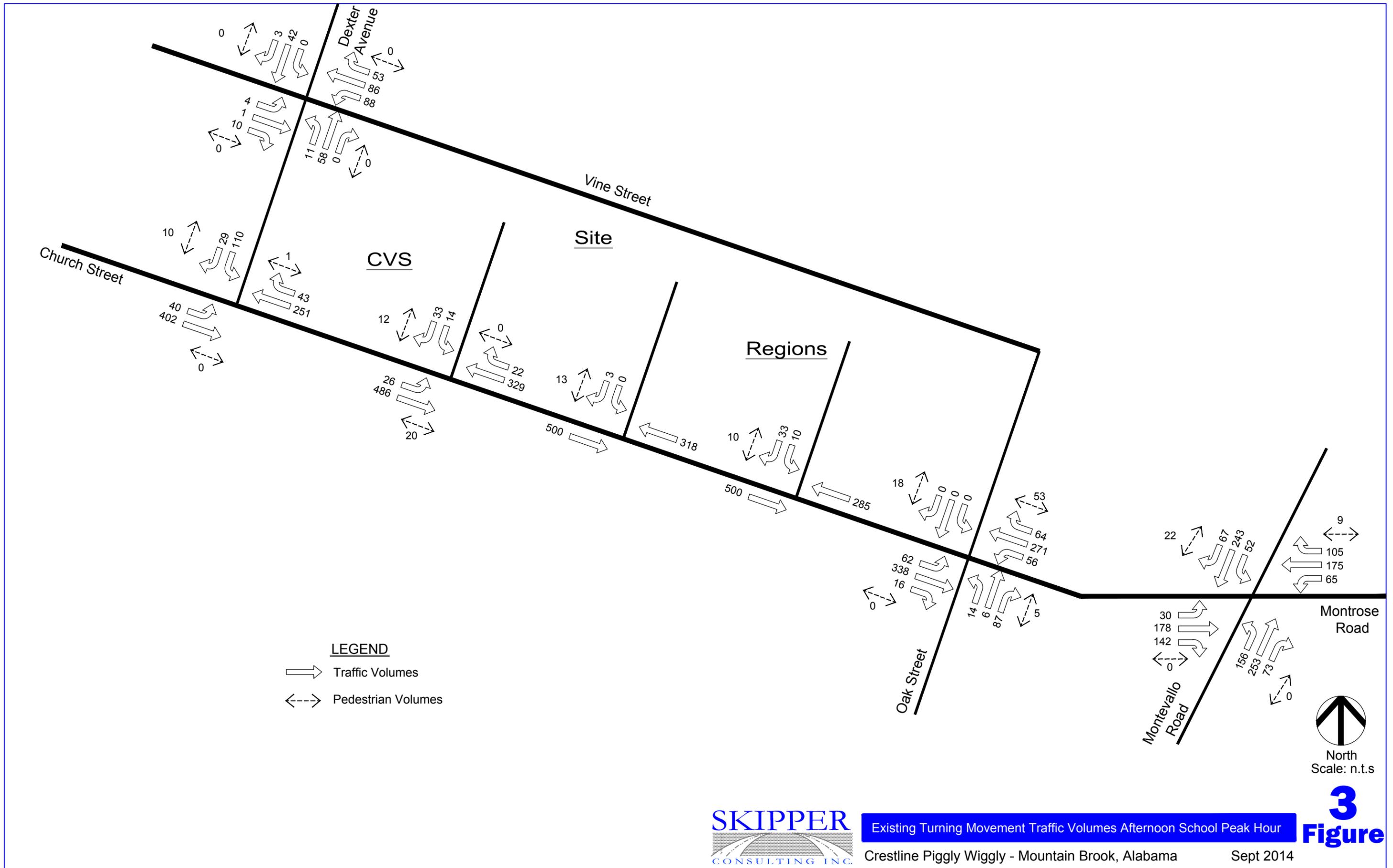
Historical Traffic Growth

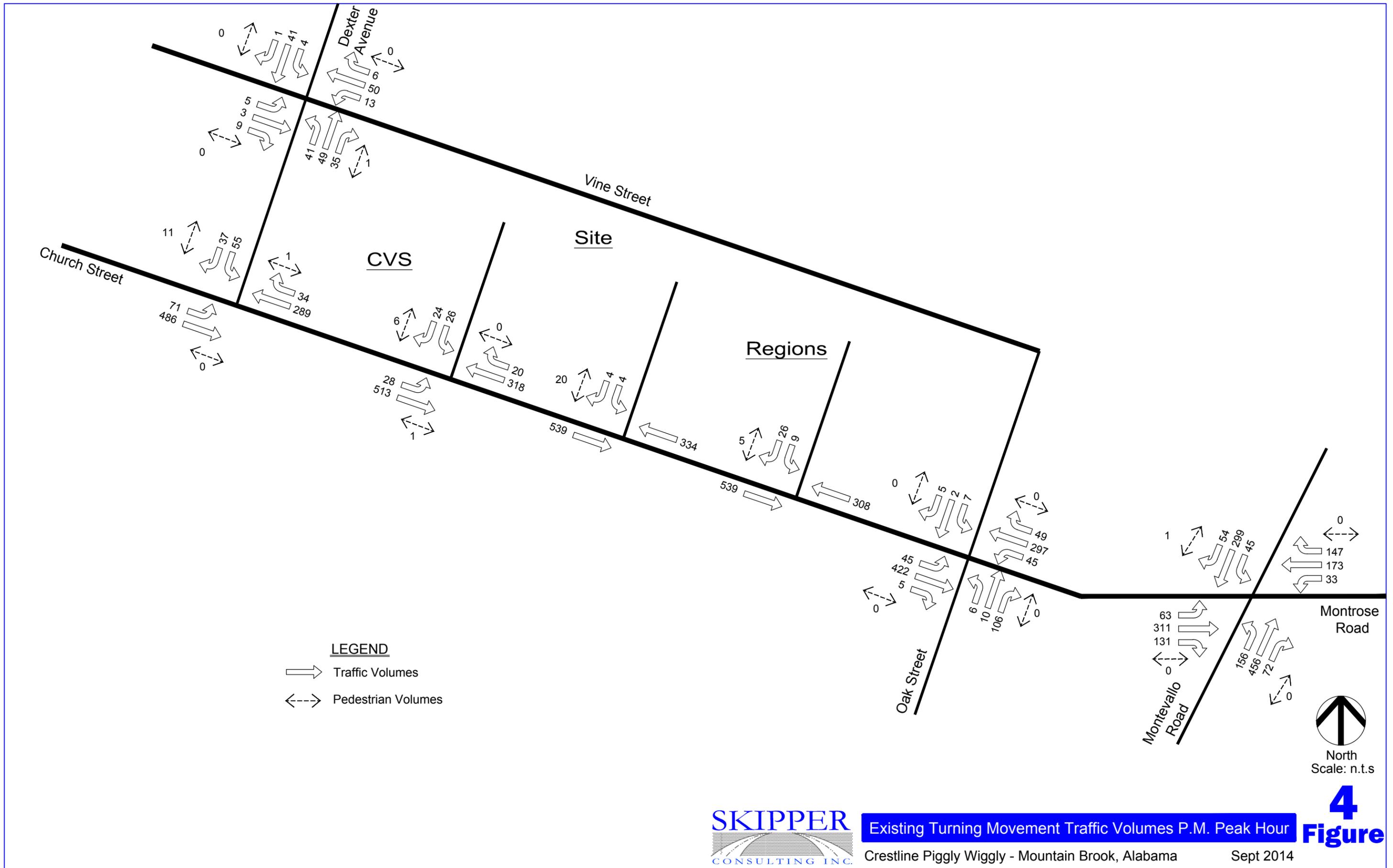
Existing average daily traffic counts were obtained from the Regional Planning Commission of Greater Birmingham for Montevallo Road in the vicinity of the site for various years between 1987 and 1999. An analysis was performed to determine the rate of historical traffic growth on Montevallo Road. The traffic counts and growth analysis are shown in Table 1. For the purposes of projecting background traffic volumes for the year 2019, a growth rate of +3.0% per year was applied to the existing traffic counts. The background 2019 a.m., afternoon school, and p.m. peak hour traffic volumes are included in Figures 5, 6, and 7.

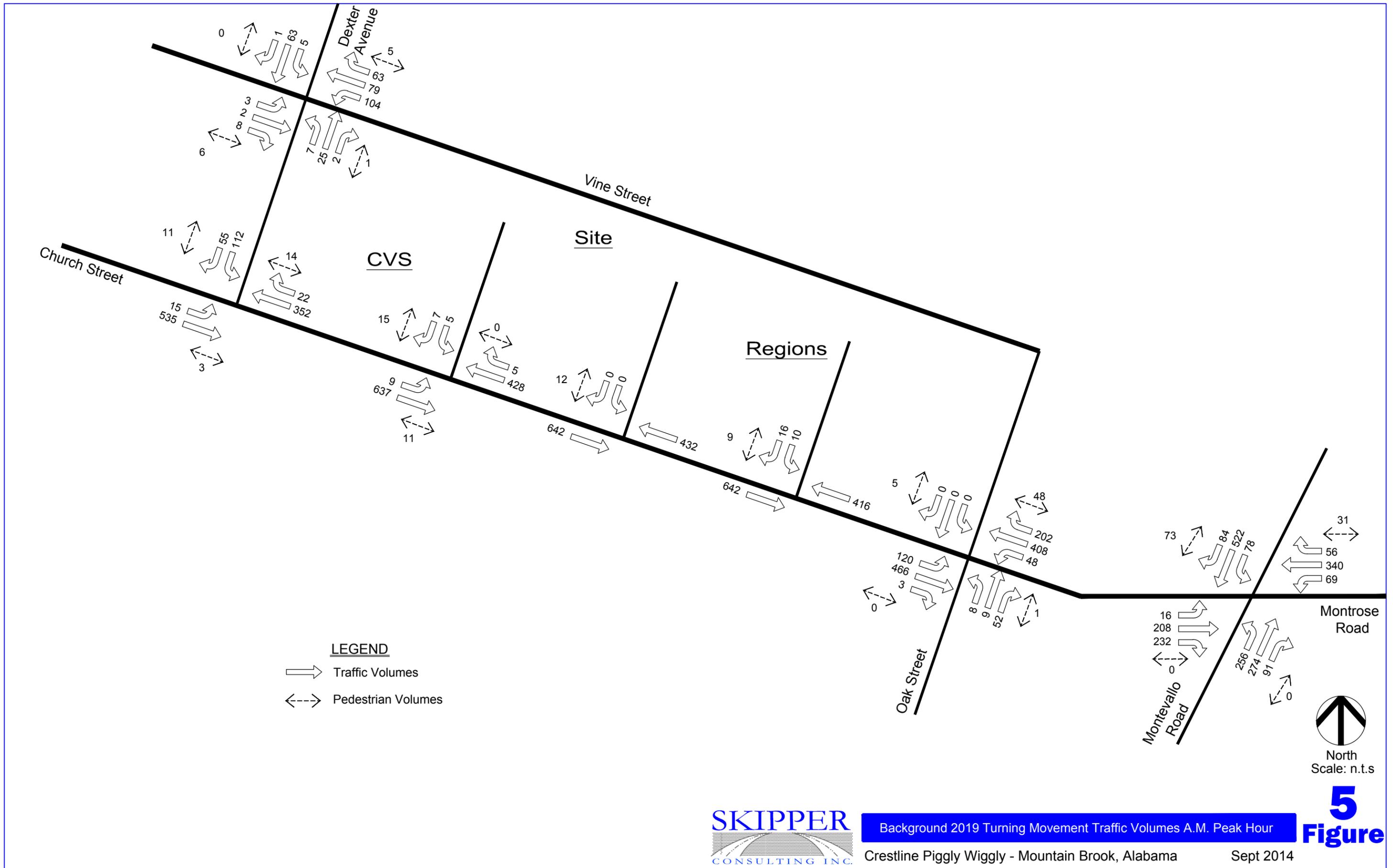
Table 1
Historical Traffic Growth

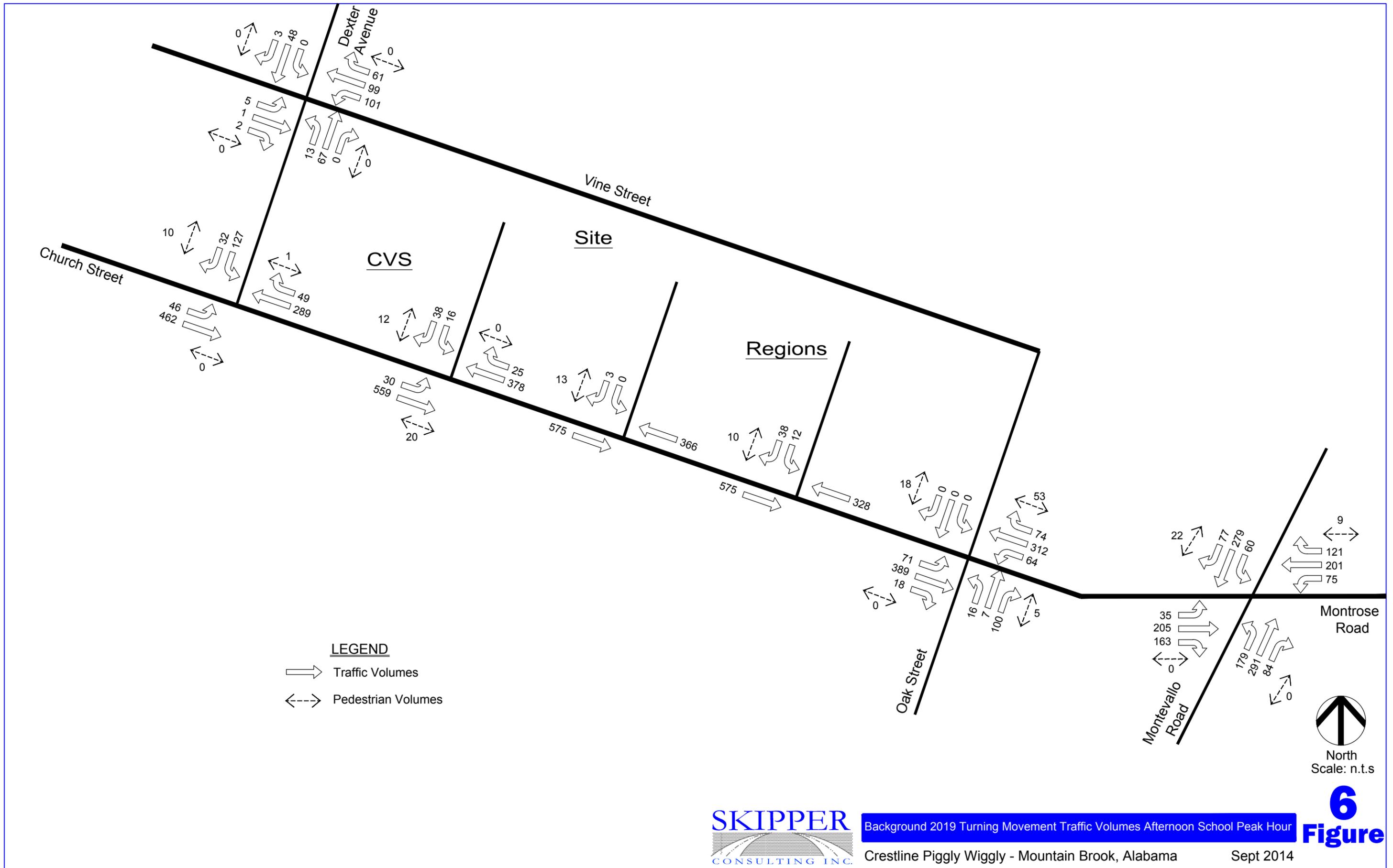
<i>Year</i>	<i>Daily Traffic Count</i>	<i>Per Year Growth</i>
1987	9,500	--
1988	12,100	+27.3%
1993	11,400	-5.8%
1994	12,440	+9.1%
1999	13,000	+0.9%
Overall Growth 1987-1999: +3.0% per year		

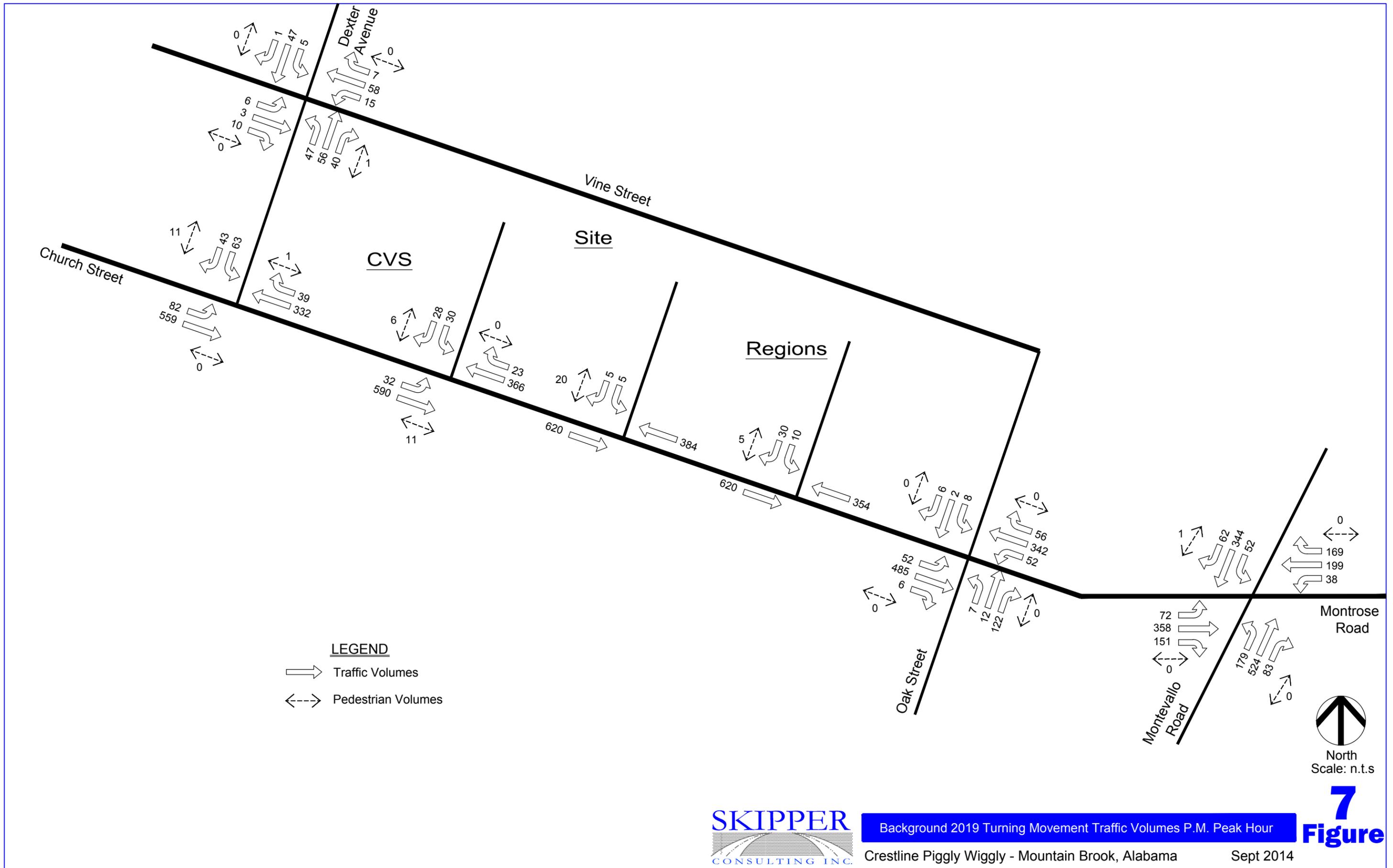












Analysis

Existing Intersection Capacity Analysis

Existing a.m., afternoon school, and p.m. peak hour intersection capacity analyses were performed for the study intersections using the method of analysis included in the 2010 *Highway Capacity Manual*, published by the Transportation Research Board. Capacities are expressed as levels of service, and range from a level of service “A” (highest quality of service) to a level of service “F” (jammed conditions). As a general rule, operation at a level of service “C” or better is desirable, with a level of service “D” considered acceptable during peak hours of traffic flow. The existing a.m., afternoon school, and p.m. peak hour intersection capacity analysis worksheets are included in Appendix C and are summarized in Table 2.

Background 2019 Intersection Capacity Analysis

Background 2019 (without the proposed development) a.m., afternoon school, and p.m. peak hour intersection capacity analyses were performed for the study intersections using the method of analysis included in the 2010 *Highway Capacity Manual*, published by the Transportation Research Board. Capacities are expressed as levels of service, and range from a level of service “A” (highest quality of service) to a level of service “F” (jammed conditions). As a general rule, operation at a level of service “C” or better is desirable, with a level of service “D” considered acceptable during peak hours of traffic flow. The background 2019 a.m., afternoon school, and p.m. peak hour intersection capacity analysis worksheets are included in Appendix D and are summarized in Table 3.

Table 2
Existing Intersection Capacity Analysis

Intersection	Approach	Movement	Level of Service		
			AM	Aft. School	PM
Montevallo Road at Church Street/ Montrose Road	Church Street Eastbound	Left	C	C	C
		Through-Right	F	D	F
		<i>Overall approach</i>	<i>F</i>	<i>D</i>	<i>F</i>
	Montrose Road Westbound	Left	C	C	C
		Through-Right	D	D	E
		<i>Overall approach</i>	<i>D</i>	<i>D</i>	<i>E</i>
	Montevallo Road Northbound	Left	F	D	D
		Through-Right	C	C	E
		<i>Overall approach</i>	<i>F</i>	<i>C</i>	<i>E</i>
	Montevallo Road Southbound	Left-Through-Right	F	D	F
Overall intersection			F	D	F
Church Street at West Jackson Boulevard	Church Street Eastbound	Left	B	A	A
	Church Street Westbound	Left	A	A	A
	West Jackson Boulevard Northbound	Left-Through-Right	E	C	C
	West Jackson Boulevard Southbound	Left-Through-Right	n/a	n/a	D
Church Street at Regions Bank	Regions Bank Driveway Southbound	Left	D	C	C
		Right	B	B	B
		<i>Overall approach</i>	<i>C</i>	<i>B</i>	<i>B</i>
Church Street at Site Access (Center Driveway)	Site Access Southbound	Left-Right	A	B	B
Church Street at CVS Driveway	Church Street Eastbound	Left	A	A	A
	CVS Driveway Southbound	Left-Right	C	C	C
Church Street at Dexter Avenue	Church Street Eastbound	Left	A	A	A
	Dexter Avenue Southbound	Left-Right	F	E	C
Dexter Avenue at Vine Street*	Vine Street Eastbound	Left-Through-Right	B	B	B
	Vine Street Westbound	Left-Through-Right	B	C	B
	Dexter Avenue Northbound	Left-Through-Right	A	A	A
	Dexter Avenue Southbound	Left-Through-Right	A	A	A

* See the detailed discussion concerning the capacity of intersection of Dexter Avenue at Vine Street beginning on page 26 of this report. The actual traffic conditions are not accurately reflected in the results of the capacity analysis.

Table 3
Background 2019 Intersection Capacity Analysis

<i>Intersection</i>	<i>Approach</i>	<i>Movement</i>	<i>Level of Service</i>		
			<i>AM</i>	<i>Aft. School</i>	<i>PM</i>
Montevallo Road at Church Street/ Montrose Road	Church Street Eastbound	Left	C	C	C
		Through-Right	F	E	F
		<i>Overall approach</i>	<i>F</i>	<i>D</i>	<i>F</i>
	Montrose Road Westbound	Left	C	C	C
		Through-Right	E	E	F
		<i>Overall approach</i>	<i>E</i>	<i>D</i>	<i>E</i>
	Montevallo Road Northbound	Left	F	F	F
		Through-Right	C	D	F
		<i>Overall approach</i>	<i>F</i>	<i>E</i>	<i>F</i>
	Montevallo Road Southbound	Left-Through-Right	F	F	F
<i>Overall intersection</i>			<i>F</i>	<i>F</i>	<i>F</i>
Church Street at West Jackson Boulevard	Church Street Eastbound	Left	B	A	A
	Church Street Westbound	Left	A	A	A
	West Jackson Boulevard Northbound	Left-Through-Right	F	D	C
	West Jackson Boulevard Southbound	Left-Through-Right	n/a	n/a	E
Church Street at Regions Bank	Regions Bank Driveway Southbound	Left	D	C	C
		Right	B	B	B
		<i>Overall approach</i>	<i>C</i>	<i>B</i>	<i>B</i>
Church Street at Site Access (Center Driveway)	Site Access Southbound	Left-Right	A	B	C
Church Street at CVS Driveway	Church Street Eastbound	Left	A	A	A
	CVS Driveway Southbound	Left-Right	C	C	C
Church Street at Dexter Avenue	Church Street Eastbound	Left	A	A	A
	Dexter Avenue Southbound	Left-Right	F	F	D
Dexter Avenue at Vine Street*	Vine Street Eastbound	Left-Through-Right	B	C	B
	Vine Street Westbound	Left-Through-Right	B	D	B
	Dexter Avenue Northbound	Left-Through-Right	A	A	A
	Dexter Avenue Southbound	Left-Through-Right	A	A	A

* See the detailed discussion concerning the capacity of intersection of Dexter Avenue at Vine Street beginning on page 26 of this report. The projected traffic conditions are not accurately reflected in the results of the capacity analysis.

Trip Generation

The trip generation of the proposed development for buildout traffic conditions was calculated based on information contained in the Institute of Transportation Engineers’ publication *Trip Generation, Ninth Edition*. Trip generation calculations were performed for an average weekday and for the a.m., afternoon school, and p.m. peak hours of traffic flow. ITE Land Use code 850, “Supermarket” was used for the trip generation analysis.

A portion of the trips generated by the proposed development will be intercepted trips. Intercepted trips are those trips which are made by vehicles already on the adjacent roadway for another purpose, but stop at the site while enroute to their final destination. The intercept rate for this development, calculated using an Institute of Transportation Engineers’ formula, is 36%.

It should be noted that the proposed land use displaces existing land uses. The Girl Scout building is being replaced in the proposed development. Traffic generated by the other two land uses being displaced (the invitation printing company and the daycare) are not subtracted from the trip generation of the proposed development.

The trip generation calculations for the proposed development are shown in Table 4.

**Table 4
Trip Generation**

Total Trips (Intercept Trips + New Trips)											
Daily			A.M. Peak Hour			Afternoon School Peak			P.M. Peak Hour		
In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
1,641	1,641	3,282	60	36	96	128	144	272	156	150	306
Intercept Trips											
Daily			A.M. Peak Hour			Afternoon School Peak			P.M. Peak Hour		
In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
591	591	1,162	21	13	44	46	52	98	56	54	110
New Trips											
Daily			A.M. Peak Hour			Afternoon School Peak			P.M. Peak Hour		
In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
1,050	1,050	2,100	39	23	62	82	92	174	100	96	196

Directional Distribution

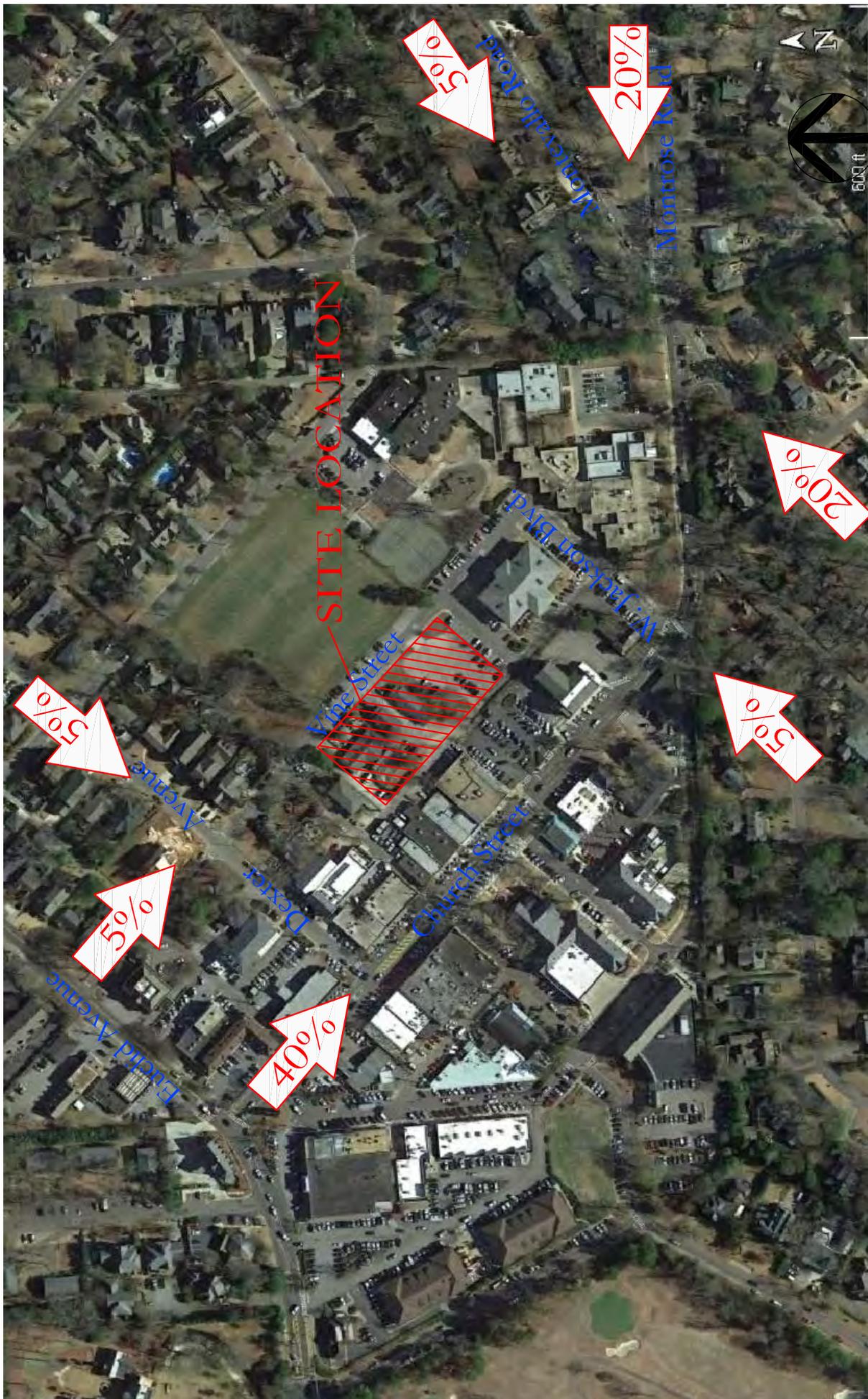
The directional distribution of traffic generated by the proposed development was estimated based on traffic flow patterns on roadways within the vicinity of the site. The directional distribution is shown in Figure 8.

Traffic Assignment

Traffic generated by the proposed development for buildout conditions for the a.m., afternoon school, and p.m. peak hours of traffic flow was assigned to the study intersections based on the directional distribution and access usage assumptions. The resultant future 2019 traffic volumes are shown in Figures 9, 10, and 11.

Future 2019 Intersection Capacity Analysis

Future 2019 (with the proposed development) a.m., afternoon school, and p.m. peak hour intersection capacity analyses were performed for the study intersections using the method of analysis included in the 2010 *Highway Capacity Manual*, published by the Transportation Research Board. Capacities are expressed as levels of service, and range from a level of service "A" (highest quality of service) to a level of service "F" (jammed conditions). As a general rule, operation at a level of service "C" or better is desirable, with a level of service "D" considered acceptable during peak hours of traffic flow. The future 2019 a.m., afternoon school, and p.m. peak hour intersection capacity analysis worksheets are included in Appendix E and are summarized in Table 5.



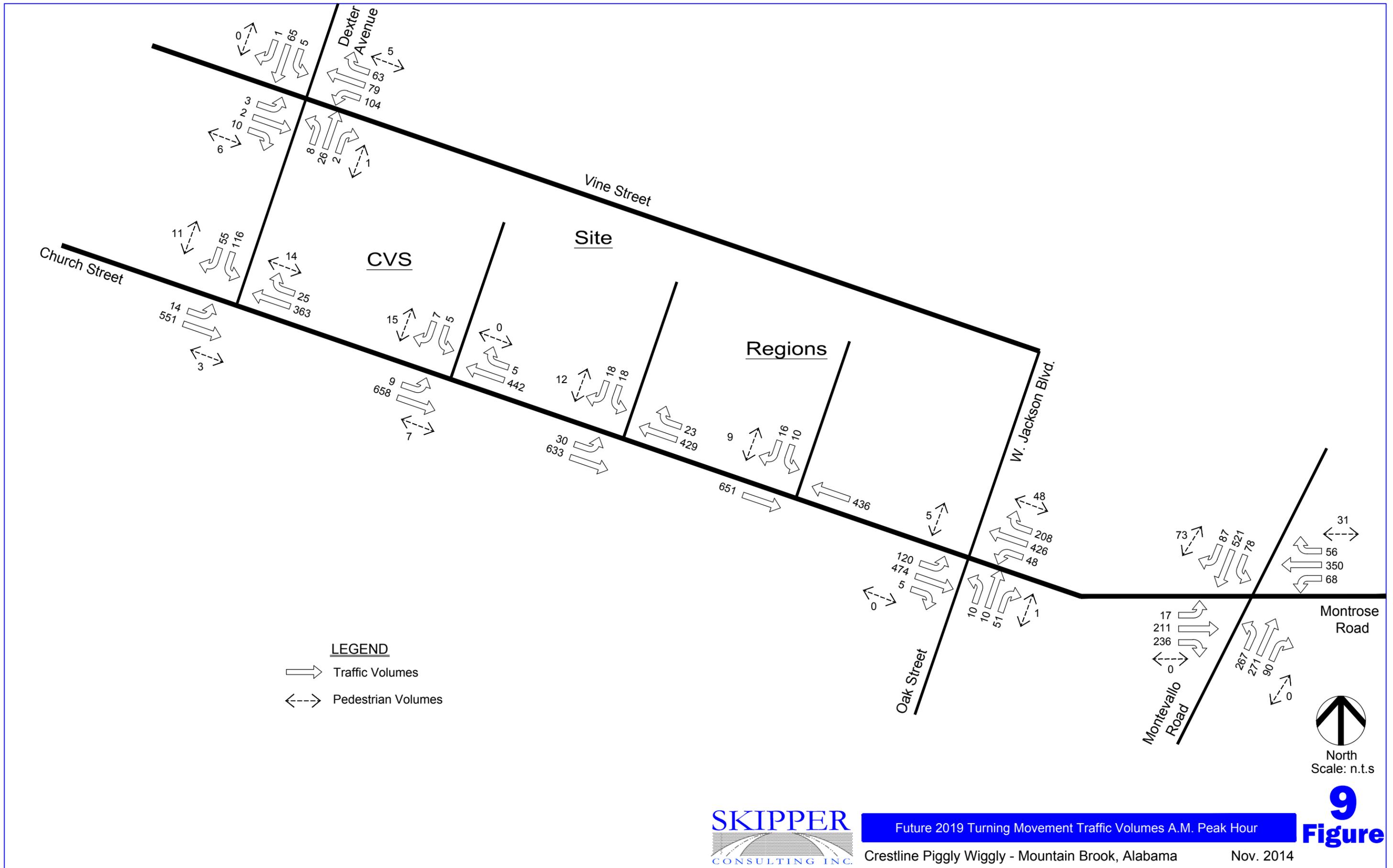
North
Scale: n.t.s

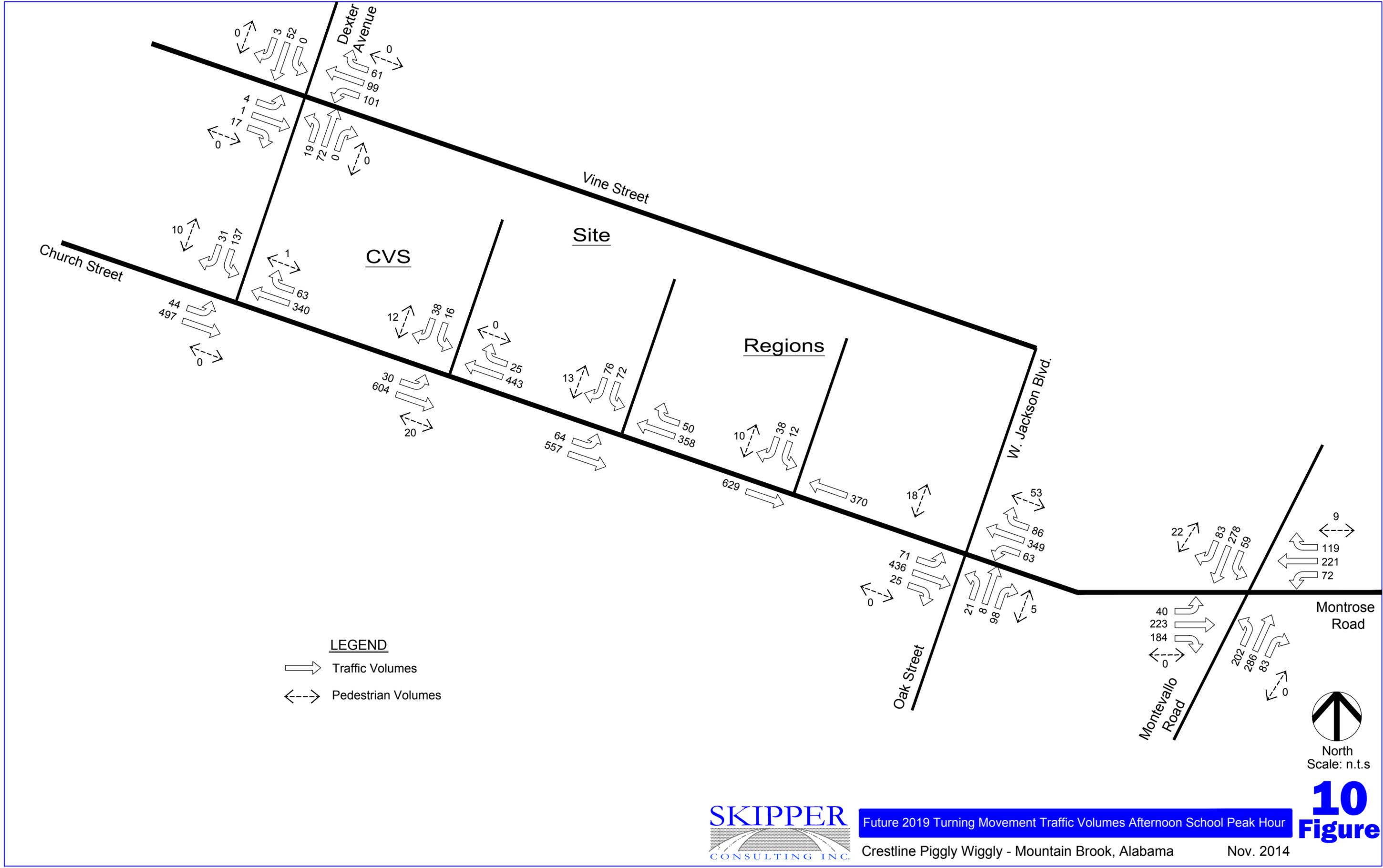
Figure 8 - Directional Distribution

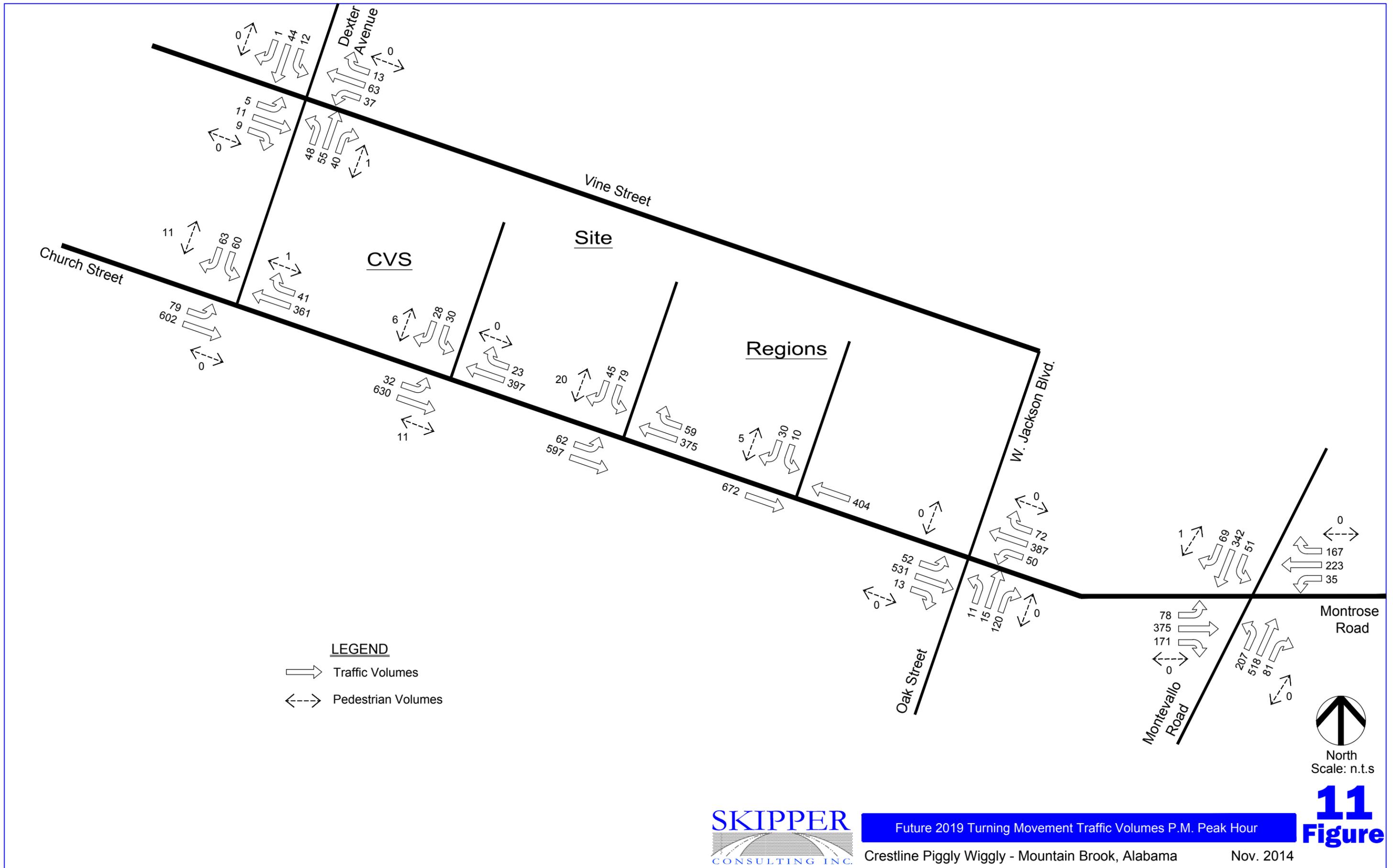
Crestline Piggly Wiggly - Mountain Brook, Alabama

September 2014









**Table 5
Future 2019 Intersection Capacity Analysis**

Intersection	Approach	Movement	Level of Service		
			AM	Aft. School	PM
Montevallo Road at Church Street/ Montrose Road	Church Street Eastbound	Left	C	C	C
		Through-Right	F	F	F
		<i>Overall approach</i>	<i>F</i>	<i>E</i>	<i>F</i>
	Montrose Road Westbound	Left	C	C	C
		Through-Right	F	E	F
		<i>Overall approach</i>	<i>E</i>	<i>E</i>	<i>F</i>
	Montevallo Road Northbound	Left	F	F	F
		Through-Right	C	D	F
		<i>Overall approach</i>	<i>F</i>	<i>F</i>	<i>F</i>
	Montevallo Road Southbound	Left-Through-Right	F	F	F
Overall intersection			F	F	F
Church Street at West Jackson Boulevard	Church Street Eastbound	Left	B	A	A
	Church Street Westbound	Left	A	A	A
	West Jackson Boulevard Northbound	Left-Through-Right	F	E	D
Church Street at Regions Bank	Regions Bank Driveway Southbound	Left	E	C	C
		Right	B	B	B
		<i>Overall approach</i>	<i>C</i>	<i>C</i>	<i>B</i>
Church Street at Site Access (Center Driveway)	Church Street Eastbound	Left	A	A	A
	Site Access Southbound	Left-Right	D	E	E
Church Street at CVS Driveway	Church Street Eastbound	Left	A	A	A
	CVS Driveway Southbound	Left-Right	C	C	C
Church Street at Dexter Avenue	Church Street Eastbound	Left	A	A	A
	Dexter Avenue Southbound	Left-Right	F	F	E
Dexter Avenue at Vine Street*	Vine Street Eastbound	Left-Through-Right	B	B	B
	Vine Street Westbound	Left-Through-Right	C	E	B
	Dexter Avenue Northbound	Left-Through-Right	A	A	A
	Dexter Avenue Southbound	Left-Through-Right	A	A	A

* See the detailed discussion concerning the capacity of intersection of Dexter Avenue at Vine Street beginning on page 26 of this report. The projected traffic conditions are not accurately reflected in the results of the capacity analysis.

Future 2019 Turn Lane Warrant Analysis

The warranting of a right turn lane on Church Street westbound at the site access point was performed using the methodology contained in the National Cooperative Highway Research Program Report 457 *Evaluating Intersection Improvements*. Turn lane warrants are based on future 2019 peak hour traffic volumes. The right turn warrant analysis worksheets are included in Appendix F and are summarized in Table 6.

Table 6
Future 2019 Right Turn Lane Warrant Analysis
Church Street Westbound at Site Access

<i>Peak Hour</i>	<i>Movement</i>	<i>Volume</i>
A.M. Peak Hour	Advancing Volume	452 vph
	Right Turning Volume	23 vph
	Right Turn Lane is Not Warranted	
Afternoon School Peak Hour	Advancing Volume	408 vph
	Right Turning Volume	50 vph
	Right Turn Lane is Not Warranted	
PM Peak Hour	Advancing Volume	434 vph
	Right Turning Volume	59 vph
	Right Turn Lane is Not Warranted	

Future 2019 Queue Analysis

95th percentile queue lengths at the intersection of Church Street at the site access were evaluated using Synchro software and are included in the capacity analysis worksheets in Appendix E. Future 2019 a.m., afternoon school, and p.m. peak hour 95th percentile queue lengths are summarized in Table 7. The results of the queue analysis show that the left turn from Church Street into the site access will be accommodated within the center left turn lane without interfering with left turns into the CVS driveway. Also, the queue exiting the site access driveway will not extend past the end of the parking bay into the alley.

**Table 7
Future 2019 Queue Analysis**

<i>Intersection</i>	<i>Approach</i>	<i>Movement</i>	<i>Queue Length</i>		
			<i>AM</i>	<i>Aft. School</i>	<i>PM</i>
Church Street at Site Access	Church Street Eastbound	Left	0'	25'	25'
	Site Access Southbound	Left-Right	25'	100'	80'

Traffic Impacts of the Proposed Development

Montevallo Road at Church Street/Montrose Road

The intersection of Montevallo Road at Church Street/Montrose Road currently experiences inadequate levels of service during the a.m. and p.m. peak hours of traffic flow. With growth through the year 2019, the inadequate levels of service continue to decline and the afternoon school peak hour also begins to experience inadequate levels of service. The analyses indicate that the additional traffic generated by the proposed development will increase the average delay experienced by each vehicle by 4 to 16 seconds, dependent upon the hour of the day.

Church Street at West Jackson Street

The proposed development has negative traffic impacts to the intersection of Church Street at West Jackson Boulevard. During the a.m. peak hour, the northbound movement on West Jackson Boulevard is projected to operate at a level of service "F" for background 2019 conditions. The addition of site-generated traffic will significantly increase the delay on this movement. During the afternoon school peak hour, the additional site-generated traffic is projected to cause the level of service on the West Jackson Boulevard northbound approach to decline from a level of service "D" to a level of service "E". There are no reasonable improvements to mitigate these traffic impacts.

Church Street at Regions Driveway

During the a.m. peak hour the additional site-generated traffic is projected to cause the level of service on the left turn movement from the Regions driveway to decline from a level of service “D” to a level of service “E”. There are no reasonable improvements to mitigate these traffic impacts.

Church Street at Site Access

During the afternoon school peak hour and p.m. peak hours, the site access driveway is projected to experience a level of service “E”. Altering the approach to have exclusive left and right turn lanes does not improve this deficiency. There are no reasonable improvements which would yield an acceptable level of service. Traffic signalization is not warranted for the intersection.

Church Street at CVS Access

All movements at the intersection of Church Street at the CVS access are projected to operate at acceptable levels of service for future 2019 traffic conditions.

Church Street at Dexter Avenue

The intersection of Church Street at Dexter Avenue currently operates with inadequate levels of service during the a.m. and afternoon school peak hours. Background traffic growth through the year 2019 increases the delay on Dexter Avenue, and the addition of site-generated traffic causes further increase in delay. The only reasonable measure to correct the existing deficiency would be the installation of a traffic signal. Based on the limited traffic counts conducted, it appears that a traffic signal would be warranted today. The future 2019 intersection capacity analysis for this intersection with traffic signalization is included in Appendix G and summarized in Table 8.

Table 8
Future 2019 Intersection Capacity Analysis with Improvements
Church Street at Dexter Avenue

<i>Approach</i>	<i>Movement</i>	<i>Level of Service</i>		
		<i>Signalized</i>		
		<i>AM Peak</i>	<i>Afternoon School</i>	<i>PM Peak</i>
Church Street Eastbound	Left	A	A	A
	Through	B	A	A
	<i>Overall approach</i>	<i>B</i>	<i>A</i>	<i>A</i>
Church Street Westbound	Through-Right	A	A	A
Dexter Avenue Southbound	Left-Right	C	C	B
<i>Overall intersection</i>		<i>B</i>	<i>A</i>	<i>A</i>

Although the capacity analyses indicate that installation of a traffic signal would alleviate existing and projected traffic congestion at the intersection of Church Street at Dexter Avenue, the characteristics of Church Street in the vicinity of Dexter Avenue are not currently conducive to installation of a traffic signal. The presence of on-street parking on Church Street within the limits of the intersection would pose traffic operational problems with signalized operations. Operational difficulties arise from two primary sources:

1. Vehicles which must back out into Church Street within the limits of the intersection would have limited or no visibility of the signal indications, and therefore would not be aware of which direction conflicting vehicles having the right-of-way might come from.
2. Vehicles queued at the stop line during the red signal indication would block the ability of drivers to back out of parking spaces near the intersection.

The operational difficulties posed by installation of a traffic signal could be alleviated by removal of on-street parking within the limits of the intersection. However, this may not be reasonable considering the high demand for parking within Crestline Village. It is therefore recommended that the City of Mountain Brook carefully weigh the benefits and detriments of installation of a traffic signal at the intersection of Church Street and Dexter Avenue.

Dexter Avenue at Vine Street

The traffic conditions at the intersection of Dexter Avenue at Vine Street are abnormally influenced by the traffic pattern of Crestline Elementary School. The results of the existing intersection capacity analyses for the a.m. and afternoon school peak periods do not appear to accurately reflect traffic conditions at the intersection. Observations of traffic during these two peak periods indicate queues and delays which are significantly in excess of what is predicted by the capacity analysis methodology. This is likely due to the high degree of traffic attempting to exit onto Dexter Avenue from Vine Street in a short amount of time. It is assumed that this same deficiency also predicts a better level of service for the Vine Street westbound movement for background 2019 and future 2019 conditions than will actually be present. Based on this, additional analyses were performed for future 2019 traffic conditions at the intersection of Dexter Street using a microsimulation model for the peak 15 minutes of traffic flow during the a.m. and afternoon school peak periods. The microsimulation model was calibrated to existing conditions based on observed queue lengths, and then projected forward to future 2019 conditions, including background traffic growth and traffic generated by the proposed development.

This microsimulation model was then used to determine the appropriate traffic control measure to apply at the intersection based on average queue lengths on each approach. Options which were evaluated included:

- Option 1 - The existing orientation of traffic control, which is stop signs on Vine Street and no stop signs on Dexter Avenue
- Option 2 - Reversing the position of the stops signs, such that Dexter Avenue has stop signs and Vine Street does not have stop signs
- Option 3 - Installing additional stop signs on Dexter Avenue to make the intersection a four-way stop
- Option 4 - Installing a traffic signal at the intersection

The results of these alternative analyses are documented in Table 9. As shown, the only viable options for appropriate traffic control which will minimize queues are Option 2 – Dexter Avenue Stop and Option 4 – Traffic Signal. Both the current configuration of the intersection (Option 1) and a four-way stop configuration (Option 3) yield extensive queues on Vine Street westbound. Based on the traffic flow

characteristics, it is recommended that the intersection initially be configured as Option 2 – Dexter Avenue Stop. In the future, the City may wish to consider installation of a traffic signal at the intersection based on actual traffic volumes and crash experience.

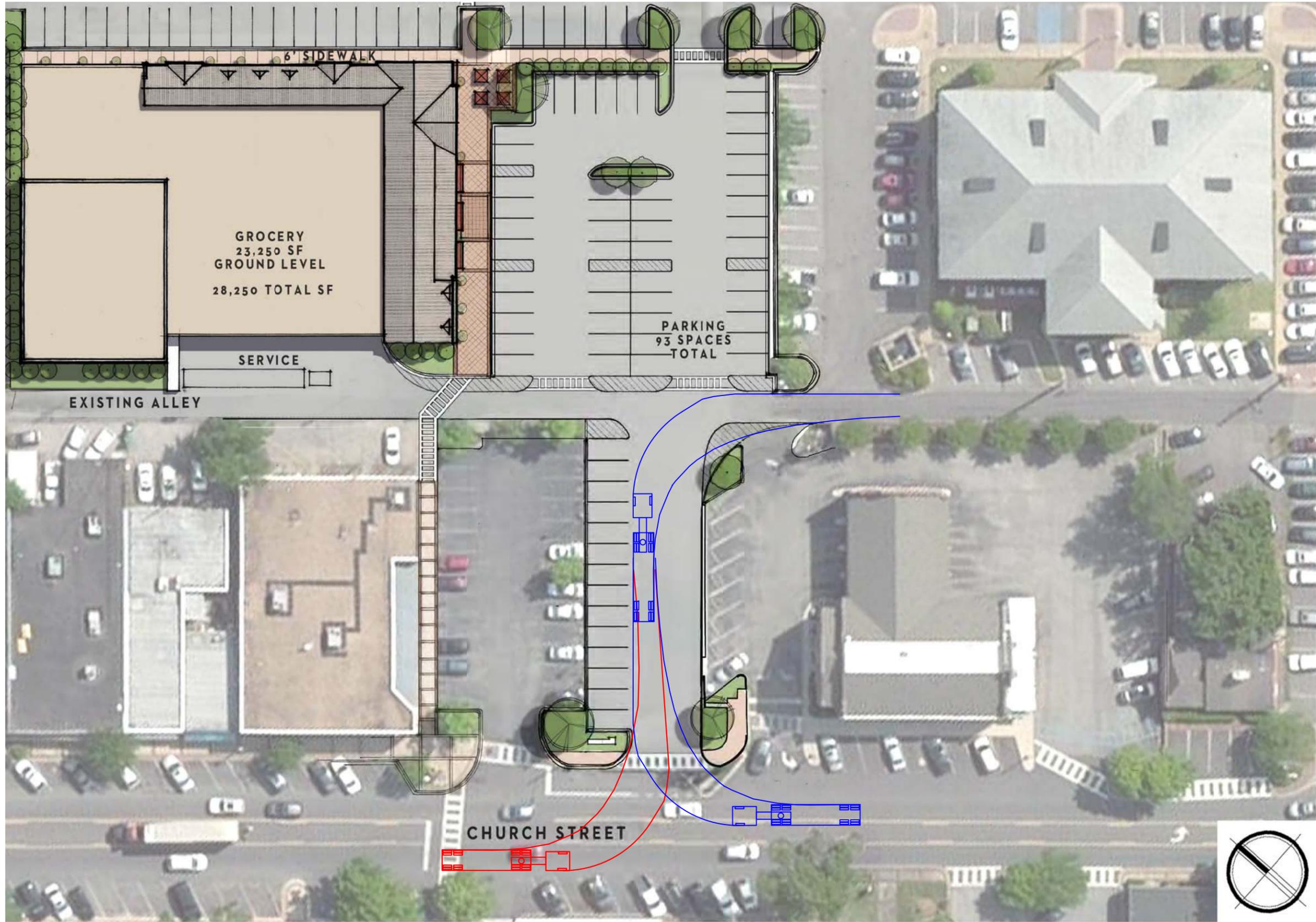
It should be noted that the results similar to either Option 2 or Option 4 could be achieved without any modification to the existing traffic control at the intersection by using a police officer to control the intersection during the two peak daily traffic times for Crestline Elementary School. The required manpower to implement this alternative is considerable and would need to be carefully evaluated by the City and/or School Board before implementation.

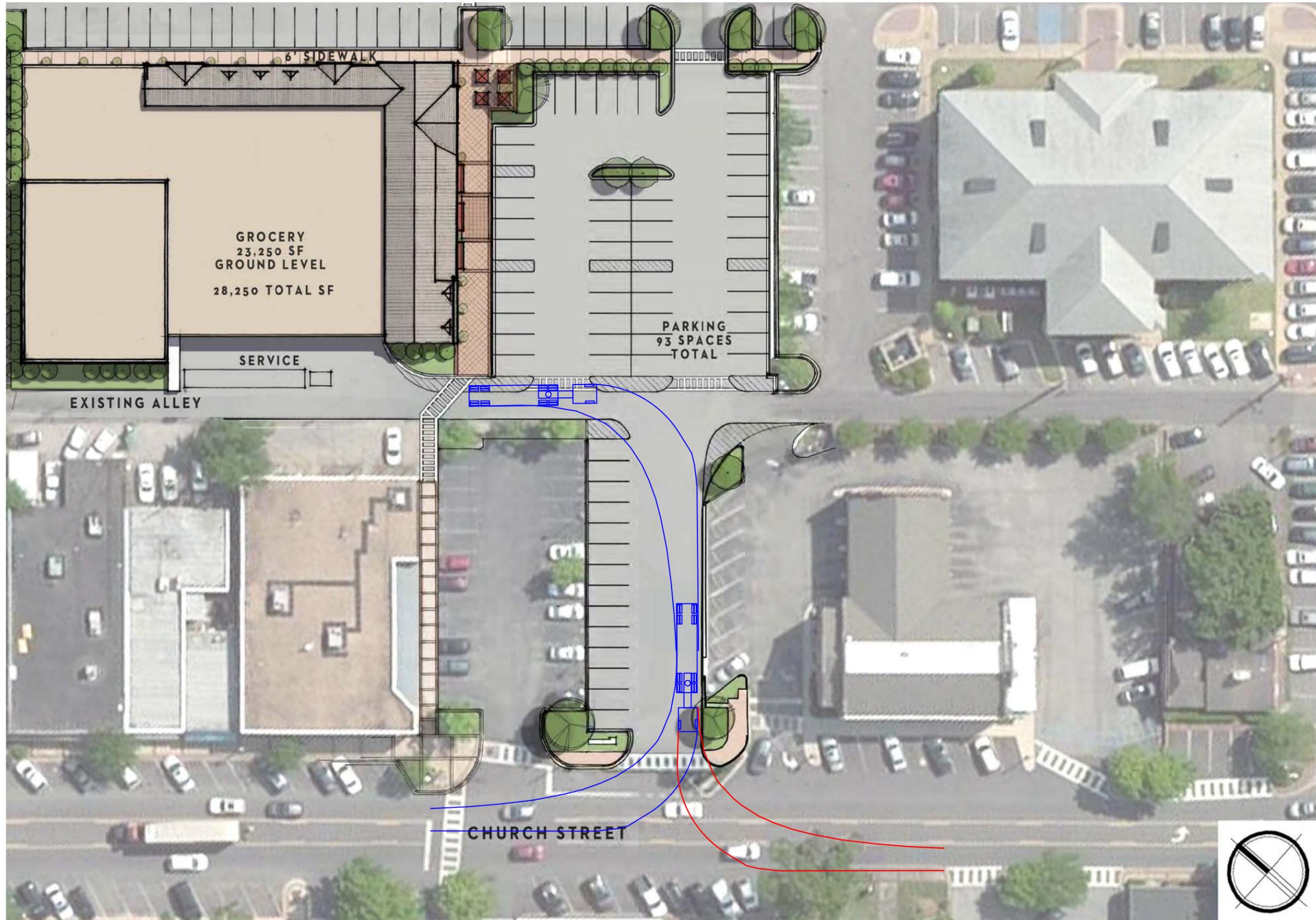
Table 9
Future 2019 Microsimulation Model Comparison
Dexter Avenue at Vine Street

<i>Peak Hour</i>	<i>Movement</i>	<i>Average Queue (number of vehicles)</i>			
		<i>Option 1 Vine Street Stop</i>	<i>Option 2 Dexter Avenue Stop</i>	<i>Option 3 Four Way Stop</i>	<i>Option 4 Traffic Signal</i>
AM	Vine Street Eastbound	1	1	1	1
	Vine Street Westbound	21	2	2	6
	Dexter Avenue Northbound	1	2	2	1
	Dexter Avenue Southbound	0	3	3	3
Afternoon School	Vine Street Eastbound	1	1	1	1
	Vine Street Westbound	40	2	39	9
	Dexter Avenue Northbound	1	5	2	3
	Dexter Avenue Southbound	0	3	1	2

Delivery Truck Routing Analysis

An analysis was performed to determine the potential impacts of truck routing for deliveries to the proposed development. Negative impacts could include: 1) encroachment of the truck into adjacent through lanes and 2) locations where parking will need to be prohibited. A WB-50 design vehicle was selected for the analysis. The analysis shows that a WB-50 design vehicle will be able to negotiate the required turns to access the loading dock without encroaching into oncoming lanes of traffic on Church Street. The maneuvering of trucks will require the full width of the drive aisle which serves as the primary access to the Piggly Wiggly, but will not require encroachment into any existing or proposed parking spaces. The site plan indicates areas which will not be able to have raised islands or curbs. These are shown as painted islands on the site plan. The truck turning template analysis is depicted in Figure 12 for the inbound traffic flow and Figure 13 for the outbound traffic flow.





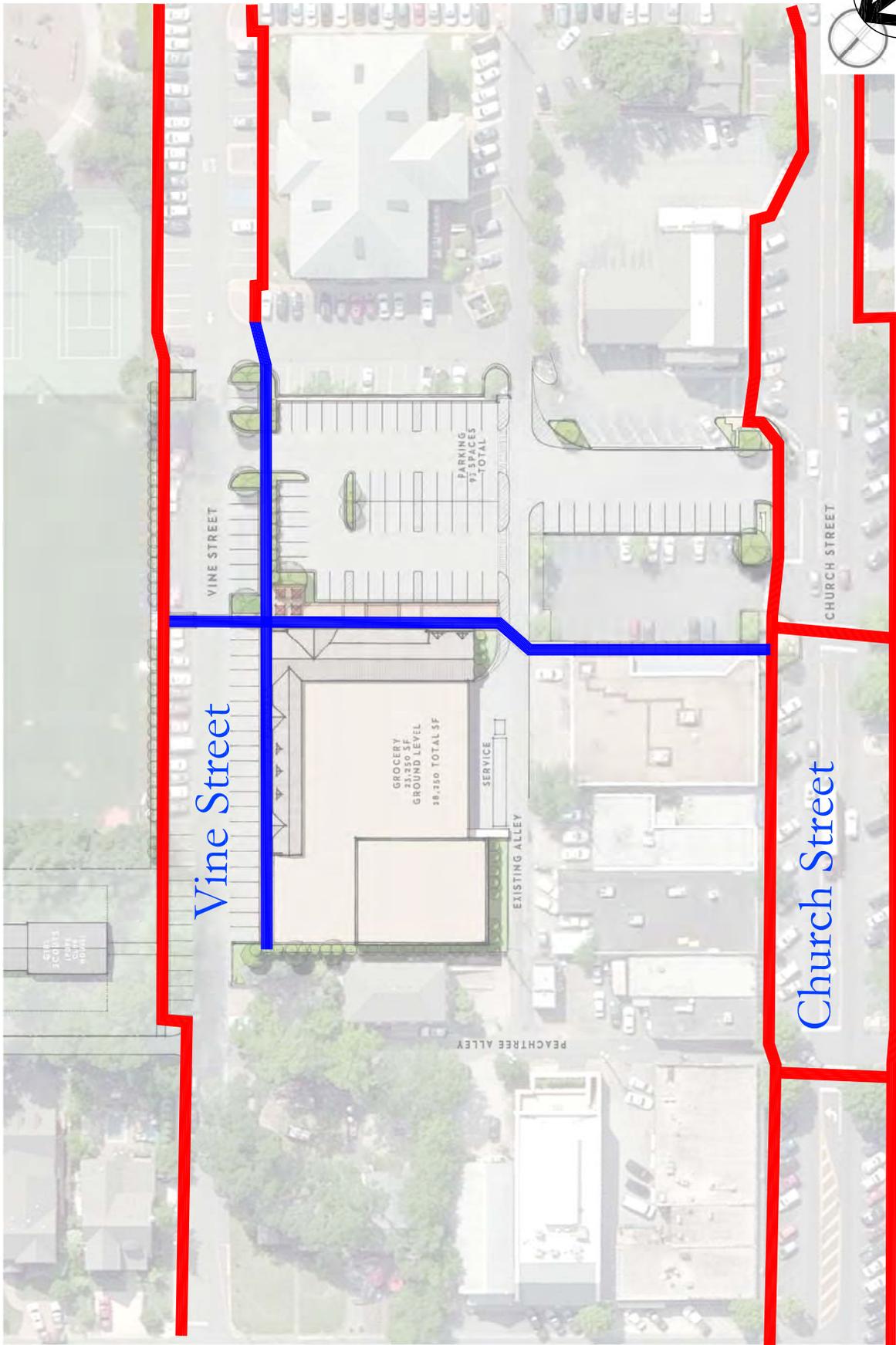
Pedestrian Access and Circulation Analysis

Pedestrian activity in the vicinity of the site is generated by two sources: 1) Crestline Elementary School and the athletic playing fields, and 2) commercial and institutional land uses within Crestline Village. For the second source (commercial and institutional land uses within Crestline Village), the pedestrian activity occurs mainly along Church Street from the intersection of Euclid Avenue to the intersection of West Jackson Boulevard. The location of the proposed development is isolated from this pedestrian corridor at the present time. The existing parking lots between the CVS and Regions Bank are configured to discourage pedestrian traffic beyond the alley which parallels Church Street and Vine Street. The proposed site plan recognizes the need for a pedestrian link between Church Street and the entrance to the Piggly Wiggly to serve pedestrians who are oriented to the Church Street corridor at the present time. The proposed pedestrian connection to meet this demand is a sidewalk and crosswalk system which begins at Church Street neat the CVS and proceeds along the front of the CVS, across the alley, and then along the front of the Piggly Wiggly to Vine Street.

Pedestrian activity along Vine Street is generated in large part by Crestline Elementary School and the athletic playing fields. The pedestrian demand for these facilities along Vine Street is currently being served by a sidewalk along the north side of Vine Street which was constructed as part of a Safe Routes to School (SRTS) grant. The site plan for the proposed Piggly Wiggly includes construction of a sidewalk along the south side of Vine Street along the frontage of the building and the parking. The site plan also shows a marked crosswalk to better organize and concentrate pedestrian crossings on Vine Street.

The linkage between the existing pedestrian system and the proposed development and its pedestrian system is illustrated in Figure 14.

The installation of a traffic signal at the intersection of Church Street at Dexter Avenue would present the opportunity to install a signalized crosswalk crossing Church Street. However, this would require removal of an existing parking space on the south side of Church Street. A concept for this crosswalk is illustrated in Figure 15.



- Existing Pedestrian System
- Proposed Pedestrian System



Figure 14 - Pedestrian System Improvements

Crestline Piggly Wiggly - Mountain Brook, Alabama

November 2014



Figure 15 - Pedestrian Crosswalk - Church Street at Dexter Avenue

Crestline Piggly Wiggly - Mountain Brook, Alabama

November 2014

Site Circulation Issues

The construction of the proposed development with the access system as shown in the latest site plan will result in certain traffic operational issues which should be addressed as part of the planning for the proposed development. These issues are addressed in the following paragraphs.

Crestline Elementary School

Crestline Elementary School relies heavily upon West Jackson Boulevard and Vine Street for vehicular drop off and pick up of students as well as paths for pedestrian flow. These vehicle and pedestrian activities are present throughout a typical weekday, and are heavy from 7:30 a.m. to 8:15 a.m. and from 2:30 p.m. to 3:15 p.m. Currently, the developments which access Vine Street are limited and generate a negligible amount of traffic during these time periods. The traffic which will be generated by the proposed development is greater in magnitude than the existing developments, particularly during the period of 2:30 p.m. to 3:15 p.m. In order to discourage use of West Jackson Boulevard and Vine Street by traffic generated by the proposed development, three measures are recommended:

- The City should erect a sign on West Jackson Boulevard at the intersection of Church Street with the message "SCHOOL TRAFFIC ONLY" and a placard with a time restriction from 7:20 a.m. to 4:00 p.m.
- The manager of the proposed grocery store should place a barricade (such as a sawhorse) with a sign which reads "NO EXIT" in the throat of the driveway entering Vine Street from 7:30 a.m. to 8:15 a.m. and from 2:30 p.m. to 3:15 p.m. on each day when school is in session. It is anticipated that after a period of time when the patrons of the proposed grocery store have learned traffic patterns these barricades will no longer be needed and their use should be reevaluated by the City, the School Board, and the owner.
- The City should consider posting a 15 mile per hour speed limit on West Jackson Boulevard.

West Jackson Boulevard/Vine Street One-Way

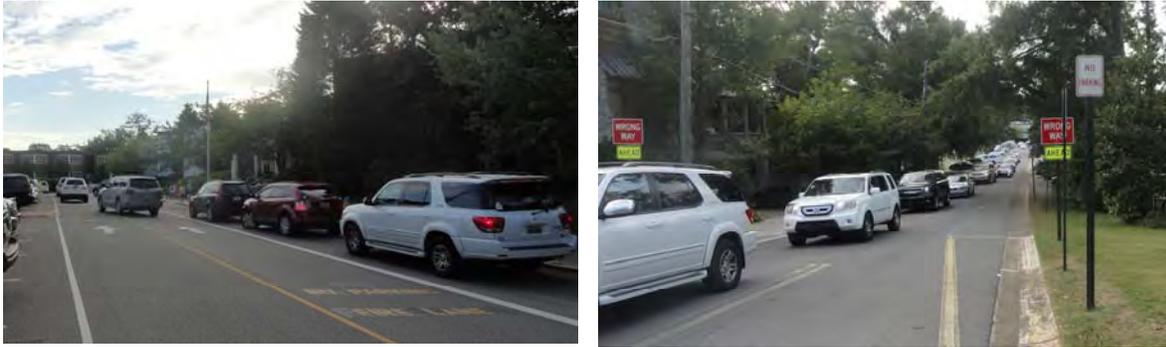
Currently, West Jackson Boulevard and Vine Street are one way only from 7:20 a.m. to 4:00 p.m. It has been suggested that perhaps this one way restriction should be extended to 24 hours a day, 7 days a week. An element of this discussion includes the limits of the section which should be one way, whether it should be the entire length of the roadway or just the section of West Jackson Boulevard and Vine Street in front of Crestline Elementary School. Existing traffic counts show the following traffic flows which could potentially be impacted by a 24/7 one-way restriction on West Jackson Boulevard and Vines Street:

	<u>Vehicles Exiting W. Jackson Blvd.</u>	<u>Vehicles Entering Vine St.</u>
7:00-9:00 AM	0	19
2:30-3:30 PM	2	1
4:00-6:00 PM	28	30

As shown, if West Jackson Boulevard were restricted to one-way operation 24/7, approximately 80 vehicles would be impacted over the five hours counted. Furthermore, there are businesses and other properties located on the western end of Vine Street which would have no effective inbound route that would not involve going in front of the school if Vine Street were one-way 24/7.

Two factors may influence the decision on whether to extend the one way restriction of West Jackson Boulevard and Vine Street:

- The section of Vine Street from Dexter Avenue to the Crestline Early Learning Center is narrow for two way operation, particularly when there are vehicles parked along the roadway; and
- The signing and striping on West Jackson Boulevard and Vine Street are not entirely appropriate and consistent for two way traffic operations, as shown in the following pictures:



Based on the traffic counts conducted, existing lane uses, striping and signing, a review of property access constraints and meetings with the City and Board of Education, this report recommends that the City consider the following restrictions to traffic on West Jackson Boulevard and Vine Street:

- West Jackson Boulevard should be considered for one way northbound operation 24 hours a day, 7 days a week along its entire length from Church Street to Vine Street.
- Vine Street should be considered for one way westbound operation 24 hours a day, 7 days a week from West Jackson Boulevard to the western edge of the Board of Education building property.
- Vine Street should be considered for one way westbound operation during the period of 7:20 a.m. to 4:00 p.m. along its entire length from West Jackson Boulevard to Dexter Avenue on school days (this is the current condition).
- Vine Street should be considered for two way operation at all other times from Dexter Avenue to the western edge of the Board of Education building property.

Appendix A

Site Plan



GIRL SCOUTS (POPS CLUB HOUSE)

VINE STREET

8' SIDEWALK

GROCERY
23,250 SF
GROUND LEVEL
28,250 TOTAL SF

PEACHTREE ALLEY

EXISTING ALLEY

PARKING
93 SPACES
TOTAL

SERVICE

CHURCH STREET



SCALE: 1" = 20'

PIGGLY WIGGLY

CRESTLINE VILLAGE - MOUNTAIN BROOK, AL

GOODWYN MILLS CAWOOD

PRELIMINARY SITE PLAN

Appendix B

Existing Intersection Turning Movement Traffic Counts

TRAFFIC DATA, LLC

1409 Turnham Lane
Birmingham, AL 35216
205-824-0125

Mountain Brook, AL

File Name : mtnbrook02
Site Code : 00000000
Start Date : 05/14/2014
Page No : 1

Groups Printed- Unshifted

Start Time	MONTEVALLO RD Southbound				MONTOSE RD Westbound				MONTEVALLO RD Northbound				CHURCH ST Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
02:30 PM	6	55	21	0	19	53	21	0	47	52	15	0	5	26	28	0	348
02:45 PM	11	44	16	14	12	38	35	7	42	69	5	0	4	35	22	0	354
Total	17	99	37	14	31	91	56	7	89	121	20	0	9	61	50	0	702
03:00 PM	17	91	20	8	19	41	16	2	14	48	10	0	10	65	54	0	415
03:15 PM	18	53	10	0	15	43	33	0	53	84	43	0	11	52	38	0	453
Total	35	144	30	8	34	84	49	2	67	132	53	0	21	117	92	0	868
04:00 PM	5	45	9	1	10	41	17	1	36	98	10	0	11	36	43	0	363
04:15 PM	6	62	10	0	8	39	30	0	33	112	9	0	11	47	46	0	413
04:30 PM	12	77	8	0	4	31	19	0	36	116	18	0	13	48	38	0	420
04:45 PM	14	50	14	1	14	43	23	0	34	101	14	0	11	70	30	0	419
Total	37	234	41	2	36	154	89	1	139	427	51	0	46	201	157	0	1615
05:00 PM	19	76	11	0	10	45	30	0	43	109	20	0	17	65	42	0	487
05:15 PM	4	74	11	0	11	39	46	0	28	99	26	0	14	82	43	0	477
05:30 PM	11	78	22	1	5	42	40	0	45	131	18	0	15	75	23	0	506
05:45 PM	11	71	10	0	7	47	31	0	40	117	8	0	17	89	23	0	471
Total	45	299	54	1	33	173	147	0	156	456	72	0	63	311	131	0	1941
07:00 AM	19	89	10	3	12	36	11	0	32	41	8	0	5	27	31	0	324
07:15 AM	17	124	22	2	8	63	12	1	53	49	18	0	5	41	37	0	452
07:30 AM	12	109	10	50	9	65	3	28	64	53	11	0	1	69	66	0	550
07:45 AM	22	102	20	14	25	82	19	2	69	86	27	0	2	42	67	0	579
Total	70	424	62	69	54	246	45	31	218	229	64	0	13	179	201	0	1905
08:00 AM	17	119	21	7	18	86	15	0	37	50	23	0	6	29	32	0	460
08:15 AM	17	110	9	4	18	50	17	0	40	33	10	0	5	37	22	0	372
08:30 AM	17	110	14	4	10	35	8	2	47	51	5	0	5	30	29	0	367
08:45 AM	14	114	15	2	14	44	16	5	61	60	16	0	8	24	33	0	426
Total	65	453	59	17	60	215	56	7	185	194	54	0	24	120	116	0	1625
Grand Total	269	1653	283	111	248	963	442	48	854	1559	314	0	176	989	747	0	8656
Apprch %	11.6	71.4	12.2	4.8	14.6	56.6	26.0	2.8	31.3	57.2	11.5	0.0	9.2	51.7	39.1	0.0	
Total %	3.1	19.1	3.3	1.3	2.9	11.1	5.1	0.6	9.9	18.0	3.6	0.0	2.0	11.4	8.6	0.0	

Start Time	MONTEVALLO RD Southbound					MONTOSE RD Westbound					MONTEVALLO RD Northbound					CHURCH ST Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Intersection	05:00 PM																				
Volume	45	299	54	1	399	33	173	147	0	353	156	456	72	0	684	63	311	131	0	505	1941
Percent	11.3	74.9	13.5	0.3		9.3	49.0	41.6	0.0		22.8	66.7	10.5	0.0		12.5	61.6	25.9	0.0		
05:30 Peak Factor	11	78	22	1	112	5	42	40	0	87	45	131	18	0	194	15	75	23	0	113	506
High Int. Volume	11	78	22	1	112	11	39	46	0	96	45	131	18	0	194	14	82	43	0	139	
Peak Factor	0.891					0.919					0.881					0.908					

TRAFFIC DATA, LLC

1409 Turnham Lane
Birmingham, AL 35216
205-824-0125

File Name : mtnbrook02
Site Code : 00000000
Start Date : 05/14/2014
Page No : 2

Start Time	MONTEVALLO RD Southbound					MONTOSE RD Westbound					MONTEVALLO RD Northbound					CHURCH ST Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1																					
By Approach	05:00 PM					05:00 PM					05:00 PM					05:00 PM					
Volume	45	299	54	1	399	33	173	147	0	353	156	456	72	0	684	63	311	131	0	505	
Percent	11.3	74.9	13.5	0.3		9.3	49.0	41.6	0.0		22.8	66.7	10.5	0.0		12.5	61.6	25.9	0.0		
High Int. Volume	05:30 PM					05:15 PM					05:30 PM					05:15 PM					
Peak Factor	11	78	22	1	112	11	39	46	0	96	45	131	18	0	194	14	82	43	0	139	
	0.891					0.919					0.881					0.908					
Peak Hour From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Intersection	07:15 AM					07:15 AM					07:15 AM					07:15 AM					
Volume	68	454	73	73	668	60	296	49	31	436	223	238	79	0	540	14	181	202	0	397	2041
Percent	10.2	68.0	10.9	10.9		13.8	67.9	11.2	7.1		41.3	44.1	14.6	0.0		3.5	45.6	50.9	0.0		
High Int. Volume	07:45 AM					07:45 AM					07:45 AM					07:30 AM					
Peak Factor	22	102	20	14	158	25	82	19	2	128	69	86	27	0	182	2	42	67	0	111	579
	0.923					0.852					0.742					0.730					0.881
Peak Hour From 07:00 AM to 08:45 AM - Peak 1 of 1																					
By Approach	07:15 AM					07:30 AM					07:15 AM					07:15 AM					
Volume	68	454	73	73	668	70	283	54	30	437	223	238	79	0	540	14	181	202	0	397	
Percent	10.2	68.0	10.9	10.9		16.0	64.8	12.4	6.9		41.3	44.1	14.6	0.0		3.5	45.6	50.9	0.0		
High Int. Volume	07:30 AM					07:45 AM					07:45 AM					07:30 AM					
Peak Factor	12	109	10	50	181	25	82	19	2	128	69	86	27	0	182	1	69	66	0	136	
	0.923					0.854					0.742					0.730					

TRAFFIC DATA, LLC

1409 Turnham Lane
Birmingham, AL 35216
205-824-0125

Mountain Brook, AL

File Name : mtnbrook01
Site Code : 00000000
Start Date : 05/14/2014
Page No : 1

Groups Printed- 1 - Unshifted

Start Time	CHURCH ST Southbound			DEXTER AVE Westbound			CHURCH ST Northbound			Int. Total
	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	
02:30 PM	12	88	0	17	7	4	54	20	1	203
02:45 PM	10	114	0	32	8	3	46	8	0	221
Total	22	202	0	49	15	7	100	28	1	424
03:00 PM	8	100	0	47	10	1	66	11	0	243
03:15 PM	10	100	0	14	4	2	85	4	0	219
Total	18	200	0	61	14	3	151	15	0	462
04:00 PM	5	87	0	8	6	1	64	1	0	172
04:15 PM	10	77	0	8	3	0	55	7	1	161
04:30 PM	9	97	1	8	5	1	55	5	3	184
04:45 PM	14	94	0	6	5	1	58	10	0	188
Total	38	355	1	30	19	3	232	23	4	705
05:00 PM	14	126	0	9	6	2	75	7	1	240
05:15 PM	15	119	0	12	8	0	70	6	0	230
05:30 PM	19	126	0	17	11	7	73	7	0	260
05:45 PM	23	115	0	17	12	2	71	14	0	254
Total	71	486	0	55	37	11	289	34	1	984
07:00 AM	3	71	0	5	2	1	42	2	0	126
07:15 AM	1	103	0	18	9	0	61	4	0	196
07:30 AM	2	165	0	25	14	5	62	5	8	286
07:45 AM	4	108	1	42	17	4	96	7	3	282
Total	10	447	1	90	42	10	261	18	11	890
08:00 AM	6	89	2	12	9	2	87	3	3	213
08:15 AM	2	64	0	8	4	8	64	3	1	154
08:30 AM	2	73	0	10	9	1	57	7	4	163
08:45 AM	3	82	1	14	8	7	89	5	10	219
Total	13	308	3	44	30	18	297	18	18	749
Grand Total	172	1998	5	329	157	52	1330	136	35	4214
Apprch %	7.9	91.9	0.2	61.2	29.2	9.7	88.6	9.1	2.3	
Total %	4.1	47.4	0.1	7.8	3.7	1.2	31.6	3.2	0.8	

Start Time	CHURCH ST Southbound				DEXTER AVE Westbound				CHURCH ST Northbound				Int. Total	
	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total		
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1														
Intersection	05:00 PM													
Volume	71	486	0	557	55	37	11	103	289	34	1	324	0	984
Percent	12.7	87.3	0.0		53.4	35.9	10.7		89.2	10.5	0.3			
05:30 Volume	19	126	0	145	17	11	7	35	73	7	0	80	0	260
Peak Factor														
High Int.	05:30 PM													
Volume	19	126	0	145	17	11	7	35	71	14	0	85		0.946
Peak Factor				0.960				0.736				0.953		

TRAFFIC DATA, LLC

1409 Turnham Lane
 Birmingham, AL 35216
 205-824-0125

File Name : mtnbrook01
 Site Code : 00000000
 Start Date : 05/14/2014
 Page No : 2

Start Time	CHURCH ST Southbound				DEXTER AVE Westbound				CHURCH ST Northbound				App. Total	App. Total	Int. Total
	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total			
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1															
By Approach	05:00 PM				05:00 PM				05:00 PM				04:00 PM		
Volume	71	486	0	557	55	37	11	103	289	34	1	324		0	
Percent	12.7	87.3	0.0		53.4	35.9	10.7		89.2	10.5	0.3				
High Int.	05:30 PM				05:30 PM				05:45 PM				-		
Volume	19	126	0	145	17	11	7	35	71	14	0	85		-	
Peak Factor	0.960				0.736				0.953				-		
Peak Hour From 07:00 AM to 08:45 AM - Peak 1 of 1															
Intersection	07:15 AM				07:15 AM				07:15 AM				07:00 AM		
Volume	13	465	3	481	97	49	11	157	306	19	14	339		0	977
Percent	2.7	96.7	0.6		61.8	31.2	7.0		90.3	5.6	4.1			0	286
07:30 Volume	2	165	0	167	25	14	5	44	62	5	8	75		0	0.854
Peak Factor	0.720				0.623				0.800				-		
High Int.	07:30 AM				07:45 AM				07:45 AM				-		
Volume	2	165	0	167	42	17	4	63	96	7	3	106		-	
Peak Factor	0.720				0.623				0.807				-		
Peak Hour From 07:00 AM to 08:45 AM - Peak 1 of 1															
By Approach	07:15 AM				07:15 AM				07:30 AM				07:00 AM		
Volume	13	465	3	481	97	49	11	157	309	18	15	342		0	
Percent	2.7	96.7	0.6		61.8	31.2	7.0		90.4	5.3	4.4				
High Int.	07:30 AM				07:45 AM				07:45 AM				-		
Volume	2	165	0	167	42	17	4	63	96	7	3	106		-	
Peak Factor	0.720				0.623				0.807				-		

TRAFFIC DATA, LLC

1409 Turnham Lane
Birmingham, AL 35216
205-824-0125

Mountain Brook, AL

File Name : mtnbrook03
Site Code : 00000000
Start Date : 05/14/2014
Page No : 1

Groups Printed- 1 - Unshifted

Start Time	CHURCH ST Southbound				JACKSON BLVD Westbound				CHURCH ST Northbound				OAK ST Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
02:30 PM	16	50	5	0	0	0	0	0	12	69	22	0	2	3	16	0	195
02:45 PM	19	83	3	0	0	0	0	16	12	46	24	47	1	3	23	4	281
Total	35	133	8	0	0	0	0	16	24	115	46	47	3	6	39	4	476
03:00 PM	23	120	1	0	0	0	0	2	15	68	13	5	2	0	25	0	274
03:15 PM	4	85	7	0	2	0	0	0	17	88	5	1	9	0	23	1	242
Total	27	205	8	0	2	0	0	2	32	156	18	6	11	0	48	1	516
04:00 PM	3	68	6	0	0	1	0	1	16	71	4	0	3	0	20	0	193
04:15 PM	3	84	3	0	5	1	0	0	19	60	10	0	2	3	18	0	208
04:30 PM	2	80	4	0	2	1	0	0	12	60	5	0	5	1	27	1	200
04:45 PM	3	90	2	0	4	0	0	0	15	73	13	0	2	1	21	0	224
Total	11	322	15	0	11	3	0	1	62	264	32	0	12	5	86	1	825
05:00 PM	6	105	0	0	0	1	0	0	13	75	8	0	1	1	31	0	241
05:15 PM	5	122	3	0	3	0	2	0	9	57	7	0	1	2	24	0	235
05:30 PM	18	95	1	0	1	1	2	0	10	83	18	0	1	4	23	0	257
05:45 PM	16	100	1	0	3	0	1	0	13	82	16	0	3	3	28	0	266
Total	45	422	5	0	7	2	5	0	45	297	49	0	6	10	106	0	999
07:00 AM	8	59	1	0	0	0	0	4	4	59	10	0	3	1	12	0	161
07:15 AM	20	88	2	0	0	0	0	0	6	78	44	0	1	0	9	0	248
07:30 AM	41	131	0	0	0	0	0	1	2	72	69	32	1	3	16	1	369
07:45 AM	32	112	1	0	0	0	0	1	11	105	40	11	3	2	11	0	329
Total	101	390	4	0	0	0	0	6	23	314	163	43	8	6	48	1	1107
08:00 AM	11	74	0	0	0	0	0	3	23	100	23	5	2	3	9	0	253
08:15 AM	8	54	1	1	0	0	0	2	11	71	15	1	3	3	9	1	180
08:30 AM	10	66	1	1	0	0	0	2	10	79	13	1	2	0	10	2	197
08:45 AM	12	67	3	1	0	0	0	2	15	100	7	2	1	1	6	1	218
Total	41	261	5	3	0	0	0	9	59	350	58	9	8	7	34	4	848
Grand Total	260	1733	45	3	20	5	5	34	245	1496	366	105	48	34	361	11	4771
Apprch %	12.7	84.9	2.2	0.1	31.3	7.8	7.8	53.1	11.1	67.6	16.5	4.7	10.6	7.5	79.5	2.4	
Total %	5.4	36.3	0.9	0.1	0.4	0.1	0.1	0.7	5.1	31.4	7.7	2.2	1.0	0.7	7.6	0.2	

Start Time	CHURCH ST Southbound					JACKSON BLVD Westbound					CHURCH ST Northbound					OAK ST Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Intersection	05:00 PM																				
Volume	45	422	5	0	472	7	2	5	0	14	45	297	49	0	391	6	10	106	0	122	999
Percent	9.5	89.4	1.1	0.0		50.0	14.3	35.7	0.0		11.5	76.0	12.5	0.0		4.9	8.2	86.9	0.0		
05:45 Peak Factor	16	100	1	0	117	3	0	1	0	4	13	82	16	0	111	3	3	28	0	34	0.939
High Int. Volume Peak Factor	05:15 PM					05:15 PM					05:30 PM					05:45 PM					
	5	122	3	0	130	3	0	2	0	5	10	83	18	0	111	3	3	28	0	34	
	0.908					0.700					0.881					0.897					

TRAFFIC DATA, LLC

1409 Turnham Lane
Birmingham, AL 35216
205-824-0125

File Name : mtnbrook03
Site Code : 00000000
Start Date : 05/14/2014
Page No : 2

Start Time	CHURCH ST Southbound					JACKSON BLVD Westbound					CHURCH ST Northbound					OAK ST Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	

Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1

By Approach	05:00 PM					04:00 PM					05:00 PM					05:00 PM					
Volume	45	422	5	0	472	11	3	0	1	15	45	297	49	0	391	6	10	106	0	122	
Percent	9.5	89.4	1.1	0.0		73.3	20.0	0.0	6.7		11.5	76.0	12.5	0.0		4.9	8.2	86.9	0.0		
High Int. Volume	05:15 PM					04:15 PM					05:30 PM					05:45 PM					
Peak Factor	0.908					0.625					0.881					0.897					

Peak Hour From 07:00 AM to 08:45 AM - Peak 1 of 1

Intersection	07:15 AM					08:00 AM					07:30 AM					07:30 AM					
Volume	104	405	3	0	512	0	0	0	5	5	42	355	176	48	621	7	8	45	1	61	1199
Percent	20.3	79.1	0.6	0.0		0.0	0.0	0.0	100.0		6.8	57.2	28.3	7.7		11.5	13.1	73.8	1.6		
High Int. Volume	07:30 AM					08:00 AM					07:30 AM					07:30 AM					
Peak Factor	0.744					0.417					0.887					0.726					0.812

Peak Hour From 07:00 AM to 08:45 AM - Peak 1 of 1

By Approach	07:15 AM					08:00 AM					07:15 AM					07:30 AM					
Volume	104	405	3	0	512	0	0	0	9	9	42	355	176	48	621	9	11	45	2	67	
Percent	20.3	79.1	0.6	0.0		0.0	0.0	0.0	100.0		6.8	57.2	28.3	7.7		13.4	16.4	67.2	3.0		
High Int. Volume	07:30 AM					08:00 AM					07:30 AM					07:30 AM					
Peak Factor	0.744					0.750					0.887					0.798					

TRAFFIC DATA, LLC

1409 Turnham Lane
Birmingham, AL 35216
205-824-0125

Mountain Brook, AL

File Name : mtnbrook04
Site Code : 00000000
Start Date : 05/14/2014
Page No : 1

Groups Printed- 1 - Unshifted

Start Time	VINE ST Southbound				DEXTER AVE Westbound				VINE ST Northbound				DEXTER AVE Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
02:30 PM	0	0	2	0	0	7	0	0	11	10	2	0	3	25	0	0	60
02:45 PM	0	0	1	0	0	10	0	0	30	22	12	0	1	18	0	0	94
Total	0	0	3	0	0	17	0	0	41	32	14	0	4	43	0	0	154
03:00 PM	2	0	4	0	0	18	2	0	38	44	35	0	6	7	0	0	156
03:15 PM	2	1	3	0	0	7	1	0	9	10	4	0	1	8	0	0	46
Total	4	1	7	0	0	25	3	0	47	54	39	0	7	15	0	0	202
04:00 PM	0	2	3	0	1	5	0	0	3	8	1	0	1	0	0	0	24
04:15 PM	2	4	3	0	2	9	1	0	4	8	2	0	2	10	0	0	47
04:30 PM	0	1	1	0	1	8	0	0	4	16	2	0	3	4	2	0	42
04:45 PM	5	0	4	0	1	4	0	0	6	4	3	1	3	10	1	0	42
Total	7	7	11	0	5	26	1	0	17	36	8	1	9	24	3	0	155
05:00 PM	1	2	2	0	1	6	0	0	6	18	7	1	6	10	0	0	60
05:15 PM	2	1	0	0	0	7	0	0	7	7	3	0	4	12	3	0	46
05:30 PM	1	0	3	0	2	13	0	0	16	17	9	0	1	12	2	0	76
05:45 PM	1	0	4	0	1	15	1	0	12	7	16	0	2	16	1	0	76
Total	5	3	9	0	4	41	1	0	41	49	35	1	13	50	6	0	258
07:00 AM	0	2	0	1	0	4	1	1	3	0	3	2	0	2	1	0	20
07:15 AM	1	1	0	1	0	5	0	0	21	16	5	1	2	9	0	0	62
07:30 AM	1	0	1	2	1	19	0	0	32	25	19	2	0	5	1	1	109
07:45 AM	1	0	2	0	2	27	1	0	27	21	25	0	3	7	0	0	116
Total	3	3	3	4	3	55	2	1	83	62	52	5	5	23	2	1	307
08:00 AM	0	1	4	3	1	4	0	0	10	7	6	2	1	1	1	0	41
08:15 AM	1	1	2	1	2	8	0	0	5	8	1	5	1	4	0	0	39
08:30 AM	0	0	3	0	0	6	0	0	8	1	2	1	3	5	0	0	29
08:45 AM	0	1	3	2	1	10	1	1	8	4	8	0	1	1	3	0	44
Total	1	3	12	6	4	28	1	1	31	20	17	8	6	11	4	0	153
Grand Total	20	17	45	10	16	192	8	2	260	253	165	15	44	166	15	1	1229
Approch %	21.7	18.5	48.9	10.9	7.3	88.1	3.7	0.9	37.5	36.5	23.8	2.2	19.5	73.5	6.6	0.4	
Total %	1.6	1.4	3.7	0.8	1.3	15.6	0.7	0.2	21.2	20.6	13.4	1.2	3.6	13.5	1.2	0.1	

Start Time	VINE ST Southbound					DEXTER AVE Westbound					VINE ST Northbound					DEXTER AVE Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Intersection	05:00 PM																				
Volume	5	3	9	0	17	4	41	1	0	46	41	49	35	1	126	13	50	6	0	69	258
Percent	29.4	17.6	52.9	0.0		8.7	89.1	2.2	0.0		32.5	38.9	27.8	0.8		18.8	72.5	8.7	0.0		
05:45 Peak Factor	1	0	4	0	5	1	15	1	0	17	12	7	16	0	35	2	16	1	0	19	76
High Int. Peak Factor	0.850					0.676					0.750					0.908					
Volume	05:00 PM					05:45 PM					05:30 PM					05:15 PM					
Peak Factor	1	2	2	0	5	1	15	1	0	17	16	17	9	0	42	4	12	3	0	19	

TRAFFIC DATA, LLC

1409 Turnham Lane
Birmingham, AL 35216
205-824-0125

File Name : mtnbrook04
Site Code : 00000000
Start Date : 05/14/2014
Page No : 2

Start Time	VINE ST Southbound					DEXTER AVE Westbound					VINE ST Northbound					DEXTER AVE Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1																					
By Approach	04:00 PM					05:00 PM					05:00 PM					05:00 PM					
Volume	7	7	11	0	25	4	41	1	0	46	41	49	35	1	126	13	50	6	0	69	
Percent	28.0	28.0	44.0	0.0		8.7	89.1	2.2	0.0		32.5	38.9	27.8	0.8		18.8	72.5	8.7	0.0		
High Int. Peak Factor	04:15 PM					05:45 PM					05:30 PM					05:15 PM					
Volume	2	4	3	0	9	1	15	1	0	17	16	17	9	0	42	4	12	3	0	19	
Peak Factor	0.694					0.676					0.750					0.908					
Peak Hour From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Intersection	07:15 AM																				
Volume	3	2	7	6	18	4	55	1	0	60	90	69	55	5	219	6	22	2	1	31	328
Percent	16.7	11.1	38.9	33.3		6.7	91.7	1.7	0.0		41.1	31.5	25.1	2.3		19.4	71.0	6.5	3.2		
High Int. Peak Factor	07:45 AM																				
Volume	1	0	2	0	3	2	27	1	0	30	27	21	25	0	73	3	7	0	0	10	116
Peak Factor	0.707																				
By Approach	08:00 AM					07:45 AM					07:30 AM					07:15 AM					
Volume	0	1	4	3	8	2	27	1	0	30	32	25	19	2	78	2	9	0	0	11	
Peak Factor	0.563					0.500					0.702					0.705					
Peak Hour From 07:00 AM to 08:45 AM - Peak 1 of 1																					
By Approach	08:00 AM					07:30 AM					07:15 AM					07:00 AM					
Volume	1	3	12	6	22	6	58	1	0	65	90	69	55	5	219	5	23	2	1	31	
Percent	4.5	13.6	54.5	27.3		9.2	89.2	1.5	0.0		41.1	31.5	25.1	2.3		16.1	74.2	6.5	3.2		
High Int. Peak Factor	08:00 AM					07:45 AM					07:30 AM					07:15 AM					
Volume	0	1	4	3	8	2	27	1	0	30	32	25	19	2	78	2	9	0	0	11	
Peak Factor	0.688					0.542					0.702					0.705					

TRAFFIC DATA, LLC

1409 Turnham Lane
Birmingham, AL 35216
205-824-0125

Mountain Brook, AL

File Name : mtnbrook06
Site Code : 00000000
Start Date : 05/21/2014
Page No : 1

Groups Printed- Unshifted

Start Time	CHURCH ST Southbound		REGIONS/CVS (S) ACCESS Westbound				Int. Total
	Left		Left	Right	Peds		
07:00 AM	0		0	1	4		5
07:15 AM	1		0	1	1		3
07:30 AM	0		6	7	0		13
07:45 AM	0		2	5	3		10
Total	1		8	14	8		31
08:00 AM	0		1	0	3		4
08:15 AM	0		0	2	3		5
08:30 AM	0		1	2	5		8
08:45 AM	0		0	1	5		6
Total	0		2	5	16		23
02:30 PM	0		2	4	5		11
02:45 PM	0		2	15	1		18
Total	0		4	19	6		29
03:00 PM	0		2	10	2		14
03:15 PM	0		4	4	2		10
Total	0		6	14	4		24
04:00 PM	0		3	6	2		11
04:15 PM	0		1	4	1		6
04:30 PM	0		1	6	2		9
04:45 PM	0		4	10	0		14
Total	0		9	26	5		40
05:00 PM	1		1	4	0		6
05:15 PM	0		4	1	2		7
05:30 PM	0		0	0	5		5
05:45 PM	1		0	0	12		13
Total	2		5	5	19		31
Grand Total	3		34	83	58		178
Apprch %	100.0		19.4	47.4	33.1		
Total %	1.7		19.1	46.6	32.6		

Start Time	CHURCH ST Southbound		REGIONS/CVS (S) ACCESS Westbound				App. Total	App. Total	App. Total	Int. Total
	Left	App. Total	Left	Right	Peds	App. Total				
Peak Hour From 07:00 AM to 08:45 AM - Peak 1 of 1										
Intersection	07:30 AM									
Volume	0	0	9	14	9	32	0	0		32
Percent	0.0		28.1	43.8	28.1					
07:30 Volume	0	0	6	7	0	13	0	0		13
Peak Factor									0.615	
High Int.	6:45:00 AM		07:30 AM				6:45:00 AM	6:45:00 AM		
Volume	0	0	6	7	0	13				
Peak Factor						0.615				

TRAFFIC DATA, LLC

1409 Turnham Lane
 Birmingham, AL 35216
 205-824-0125

File Name : mtnbrook06
 Site Code : 00000000
 Start Date : 05/21/2014
 Page No : 2

Start Time	CHURCH ST Southbound		REGIONS/CVS (S) ACCESS Westbound				App. Total	App. Total	App. Total	Int. Total
	Left	App. Total	Left	Right	Peds	App. Total				
Peak Hour From 07:00 AM to 08:45 AM - Peak 1 of 1										
By Approach	07:00 AM		07:30 AM				07:00 AM	07:00 AM		
Volume	1	1	9	14	9	32	0	0		
Percent	100.0		28.1	43.8	28.1					
High Int.	07:15 AM		07:30 AM				-	-		
Volume	1	1	6	7	0	13	-	-		
Peak Factor		0.250				0.615	-	-		
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1										
Intersection	04:00 PM									
Volume	0	0	9	26	5	40	0	0		40
Percent	0.0		22.5	65.0	12.5					
04:45 Volume	0	0	4	10	0	14	0	0		14
Peak Factor										0.714
High Int.			04:45 PM							
Volume	0	0	4	10	0	14				
Peak Factor						0.714				
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1										
By Approach	05:00 PM		04:00 PM				04:00 PM	04:00 PM		
Volume	2	2	9	26	5	40	0	0		
Percent	100.0		22.5	65.0	12.5					
High Int.	05:00 PM		04:45 PM				-	-		
Volume	1	1	4	10	0	14	-	-		
Peak Factor		0.500				0.714	-	-		

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1409 Turnham Lane
Birmingham, AL 35216
205-824-0125

Mountain Brook, AL

File Name : mtnbrook07
Site Code : 00000000
Start Date : 05/21/2014
Page No : 1

Groups Printed- Unshifted

Start Time	CHURCH ST Southbound		REGIONS/CVS (M) ACCESS Westbound				Int. Total
	Left		Left	Right	Peds		
07:00 AM	0		0	0	4	4	
07:15 AM	0		0	0	1	1	
07:45 AM	0		0	0	3	3	
Total	0		0	0	8	8	
08:00 AM	0		0	0	1	1	
08:15 AM	0		0	0	3	3	
08:30 AM	0		0	0	5	5	
08:45 AM	0		0	0	2	2	
Total	0		0	0	11	11	
02:30 PM	0		0	1	5	6	
02:45 PM	0		0	0	4	4	
Total	0		0	1	9	10	
03:00 PM	0		0	2	2	4	
03:15 PM	0		0	0	2	2	
Total	0		0	2	4	6	
04:00 PM	0		1	0	2	3	
04:15 PM	0		3	0	1	4	
04:30 PM	0		1	0	2	3	
04:45 PM	0		0	2	0	2	
Total	0		5	2	5	12	
05:00 PM	0		1	0	0	1	
05:15 PM	1		3	1	2	7	
05:30 PM	0		0	0	5	5	
05:45 PM	2		0	3	13	18	
Total	3		4	4	20	31	
Grand Total	3		9	9	57	78	
Apprch %	100.0		12.0	12.0	76.0		
Total %	3.8		11.5	11.5	73.1		

Start Time	CHURCH ST Southbound		REGIONS/CVS (M) ACCESS Westbound				App. Total	App. Total	App. Total	Int. Total
	Left	App. Total	Left	Right	Peds					
Peak Hour From 07:00 AM to 08:45 AM - Peak 1 of 1										
Intersection	07:45 AM									
Volume	0	0	0	0	12	12	0	0	12	
Percent	0.0		0.0	0.0	100.0					
08:30 Volume	0	0	0	0	5	5	0	0	5	
Peak Factor										0.600
High Int.	6:45:00 AM		08:30 AM				6:45:00 AM	6:45:00 AM		
Volume	0	0	0	0	5	5				
Peak Factor						0.600				

TRAFFIC DATA, LLC

1409 Turnham Lane
Birmingham, AL 35216
205-824-0125

File Name : mtnbrook07
Site Code : 00000000
Start Date : 05/21/2014
Page No : 2

Start Time	CHURCH ST Southbound		REGIONS/CVS (M) ACCESS Westbound				App. Total	App. Total	App. Total	Int. Total
	Left	App. Total	Left	Right	Peds	App. Total				
Peak Hour From 07:00 AM to 08:45 AM - Peak 1 of 1										
By Approach	07:00 AM		07:45 AM				07:00 AM	07:00 AM		
Volume	0	0	0	0	12	12	0	0		
Percent	-		0.0	0.0	100.0					
High Int.	-		08:30 AM				-	-		
Volume	-	-	0	0	5	5	-	-		
Peak Factor						0.600				
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1										
Intersection	05:00 PM									
Volume	3	3	4	4	20	28	0	0		31
Percent	100.0		14.3	14.3	71.4					
05:45 Volume	2	2	0	3	13	16	0	0		18
Peak Factor									0.431	
High Int.	05:45 PM		05:45 PM							
Volume	2	2	0	3	13	16				
Peak Factor		0.375				0.438				
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1										
By Approach	05:00 PM		05:00 PM				04:00 PM	04:00 PM		
Volume	3	3	4	4	20	28	0	0		
Percent	100.0		14.3	14.3	71.4					
High Int.	05:45 PM		05:45 PM				-	-		
Volume	2	2	0	3	13	16	-	-		
Peak Factor		0.375				0.438				

TRAFFIC DATA, LLC

1409 Turnham Lane
Birmingham, AL 35216
205-824-0125

Mountain Brook, AL

File Name : mtnbrook05
Site Code : 00000000
Start Date : 05/21/2014
Page No : 1

Groups Printed- Unshifted

Start Time	CHURCH ST Southbound		CVS/REGIONS (N) ACCESS Westbound			CHURCH ST Northbound		Int. Total
	Left	Peds	Left	Right	Peds	Right	Peds	
07:00 AM	1	0	2	1	4	0	0	8
07:15 AM	0	0	0	0	1	1	0	2
07:30 AM	2	0	0	1	0	1	0	4
07:45 AM	2	0	1	2	3	0	0	8
Total	5	0	3	4	8	2	0	22
08:00 AM	1	1	0	1	2	0	0	5
08:15 AM	1	6	0	0	3	1	0	11
08:30 AM	2	2	2	1	5	0	0	12
08:45 AM	4	2	2	4	5	3	0	20
Total	8	11	4	6	15	4	0	48
02:30 PM	6	1	2	8	5	5	0	27
02:45 PM	8	3	5	9	2	6	0	33
Total	14	4	7	17	7	11	0	60
03:00 PM	4	7	6	6	3	7	0	33
03:15 PM	8	6	1	10	2	4	0	31
Total	12	13	7	16	5	11	0	64
04:00 PM	3	0	9	4	2	5	0	23
04:15 PM	7	1	5	5	1	8	0	27
04:30 PM	11	9	8	7	3	3	0	41
04:45 PM	7	1	4	8	0	4	0	24
Total	28	11	26	24	6	20	0	115
05:00 PM	4	2	3	7	0	4	0	20
05:15 PM	9	6	2	4	2	1	0	24
05:30 PM	6	6	0	6	5	4	0	27
05:45 PM	6	1	1	8	14	2	0	32
Total	25	15	6	25	21	11	0	103
Grand Total	92	54	53	92	62	59	0	412
Apprch %	63.0	37.0	25.6	44.4	30.0	100.0	0.0	
Total %	22.3	13.1	12.9	22.3	15.0	14.3	0.0	

Start Time	CHURCH ST Southbound			CVS/REGIONS (N) ACCESS Westbound				CHURCH ST Northbound			App. Total	Int. Total
	Left	Peds	App. Total	Left	Right	Peds	App. Total	Right	Peds	App. Total		
Peak Hour From 07:00 AM to 08:45 AM - Peak 1 of 1												
Intersection 08:00 AM												
Volume	8	11	19	4	6	15	25	4	0	4	0	48
Percent	42.1	57.9		16.0	24.0	60.0		100.0	0.0			
08:45 Volume	4	2	6	2	4	5	11	3	0	3	0	20
Peak Factor	0.600											
High Int. 08:15 AM												
Volume	1	6	7	2	4	5	11	3	0	3	6:45:00 AM	
Peak Factor	0.679			0.568				0.333				

TRAFFIC DATA, LLC

1409 Turnham Lane
Birmingham, AL 35216
205-824-0125

File Name : mtnbrook05
Site Code : 00000000
Start Date : 05/21/2014
Page No : 2

Start Time	CHURCH ST Southbound			CVS/REGIONS (N) ACCESS Westbound				CHURCH ST Northbound			App. Total	Int. Total
	Left	Peds	App. Total	Left	Right	Peds	App. Total	Right	Peds	App. Total		
Peak Hour From 07:00 AM to 08:45 AM - Peak 1 of 1												
By Approach	08:00 AM			08:00 AM				08:00 AM			07:00 AM	
Volume	8	11	19	4	6	15	25	4	0	4	0	
Percent	42.1	57.9		16.0	24.0	60.0		100.0	0.0			
High Int.	08:15 AM			08:45 AM				08:45 AM			-	
Volume	1	6	7	2	4	5	11	3	0	3	-	
Peak Factor			0.679				0.568			0.333	-	
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1												
Intersection	04:00 PM											
Volume	28	11	39	26	24	6	56	20	0	20	0	115
Percent	71.8	28.2		46.4	42.9	10.7		100.0	0.0			
04:30 Volume	11	9	20	8	7	3	18	3	0	3	0	41
Peak Factor												0.701
High Int.	04:30 PM			04:30 PM				04:15 PM				
Volume	11	9	20	8	7	3	18	8	0	8		
Peak Factor			0.488				0.778			0.625		
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1												
By Approach	04:30 PM			04:00 PM				04:00 PM			04:00 PM	
Volume	31	18	49	26	24	6	56	20	0	20	0	
Percent	63.3	36.7		46.4	42.9	10.7		100.0	0.0			
High Int.	04:30 PM			04:30 PM				04:15 PM			-	
Volume	11	9	20	8	7	3	18	8	0	8	-	
Peak Factor			0.613				0.778			0.625	-	

Appendix C

Existing Intersection Capacity Analysis Worksheets

HCM Signalized Intersection Capacity Analysis

1: Church Street & Montevallo Road

9/9/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frbp, ped/bikes	1.00	0.90		1.00	0.99		1.00	0.98			0.96	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	0.92		1.00	0.98		1.00	0.96			0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.99	
Satd. Flow (prot)	1770	1545		1770	1796		1770	1766			1749	
Flt Permitted	0.95	1.00		0.95	1.00		0.29	1.00			0.74	
Satd. Flow (perm)	1770	1545		1770	1796		532	1766			1298	
Volume (vph)	14	181	202	60	296	49	223	238	79	68	454	73
Peak-hour factor, PHF	0.73	0.73	0.73	0.85	0.85	0.85	0.74	0.74	0.74	0.92	0.92	0.92
Adj. Flow (vph)	19	248	277	71	348	58	301	322	107	74	493	79
RTOR Reduction (vph)	0	40	0	0	6	0	0	12	0	0	5	0
Lane Group Flow (vph)	19	485	0	71	400	0	301	417	0	0	641	0
Confl. Peds. (#/hr)	104		73			31	73		15	31		104
Turn Type	Split		Split		Perm				Perm			
Protected Phases	3	3		4	4			2				2
Permitted Phases							2	2				
Actuated Green, G (s)	20.0	20.0		23.8	23.8		40.0	40.0			40.0	
Effective Green, g (s)	21.0	21.0		24.8	24.8		41.0	41.0			41.0	
Actuated g/C Ratio	0.21	0.21		0.25	0.25		0.41	0.41			0.41	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	376	328		444	451		221	733			539	
v/s Ratio Prot	0.01	c0.31		0.04	c0.22			0.24				
v/s Ratio Perm							c0.57	0.49				
v/c Ratio	0.05	1.48		0.16	0.89		1.36	0.57			1.19	
Uniform Delay, d1	31.0	38.9		28.9	35.6		28.9	22.1			28.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.1	231.0		0.2	18.5		189.3	3.2			102.4	
Delay (s)	31.0	269.9		29.0	54.2		218.2	25.3			131.3	
Level of Service	C	F		C	D		F	C			F	
Approach Delay (s)		261.5			50.4			104.8			131.3	
Approach LOS		F			D			F			F	
Intersection Summary												
HCM Average Control Delay			136.7	HCM Level of Service				F				
HCM Volume to Capacity ratio			1.25									
Actuated Cycle Length (s)			98.8	Sum of lost time (s)				12.0				
Intersection Capacity Utilization			95.1%	ICU Level of Service				F				
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
2: Church Street & West Jackson Boulevard

9/9/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Free			Free				Stop			Stop	
Grade	0%			0%				0%			0%	
Volume (veh/h)	104	405	3	42	355	176	7	8	45	0	0	0
Peak Hour Factor	0.74	0.74	0.74	0.89	0.89	0.89	0.73	0.73	0.73	0.90	0.90	0.90
Hourly flow rate (vph)	141	547	4	47	399	198	10	11	62	0	0	0
Pedestrians		15			15			15			15	
Lane Width (ft)		12.0			12.0			12.0			0.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			1			1			0	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)					600							
pX, platoon unblocked	0.78						0.78	0.78		0.78	0.78	0.78
vC, conflicting volume	612			566			1354	1551	579	1518	1455	528
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	499			566			1456	1711	579	1668	1586	391
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	83			95			86	80	88	100	100	100
cM capacity (veh/h)	826			993			68	55	502	36	65	504
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1							
Volume Total	141	551	47	597	82							
Volume Left	141	0	47	0	10							
Volume Right	0	4	0	198	62							
cSH	826	1700	993	1700	177							
Volume to Capacity	0.17	0.32	0.05	0.35	0.46							
Queue Length 95th (ft)	15	0	4	0	55							
Control Delay (s)	10.3	0.0	8.8	0.0	41.9							
Lane LOS	B		A		E							
Approach Delay (s)	2.1		0.6		41.9							
Approach LOS					E							
Intersection Summary												
Average Delay			3.7									
Intersection Capacity Utilization		53.8%		ICU Level of Service	A							
Analysis Period (min)		15										

HCM Unsignalized Intersection Capacity Analysis
 3: Church Street & Regions

9/9/2014



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↘	↗
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	558	362	0	9	14
Peak Hour Factor	0.72	0.72	0.80	0.80	0.62	0.62
Hourly flow rate (vph)	0	775	452	0	15	23
Pedestrians		15	15		15	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		1	1		1	
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)			825			
pX, platoon unblocked						
vC, conflicting volume	468				1258	482
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	468				1258	482
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				92	96
cM capacity (veh/h)	1080				184	569
Direction, Lane #	EB 1	WB 1	SB 1	SB 2		
Volume Total	775	452	15	23		
Volume Left	0	0	15	0		
Volume Right	0	0	0	23		
cSH	1700	1700	184	569		
Volume to Capacity	0.46	0.27	0.08	0.04		
Queue Length 95th (ft)	0	0	6	3		
Control Delay (s)	0.0	0.0	26.2	11.6		
Lane LOS			D	B		
Approach Delay (s)	0.0	0.0	17.3			
Approach LOS			C			
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization		43.3%			ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

4: Church Street & Site Access

9/9/2014



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	558	376	0	0	0
Peak Hour Factor	0.72	0.72	0.80	0.80	0.90	0.90
Hourly flow rate (vph)	0	775	470	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
None						
Median storage (veh)						
Upstream signal (ft)						
925						
pX, platoon unblocked						
vC, conflicting volume	470				1245	470
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	470				1245	470
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1092				192	594
Direction, Lane #						
	EB 1	WB 1	SB 1			
Volume Total	775	470	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.46	0.28	0.00			
Queue Length 95th (ft)	0	0	0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS			A			
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization		32.7%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis
 5: Church Street & CVS

9/9/2014



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗	↘		↙	
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	8	554	372	4	4	6
Peak Hour Factor	0.72	0.72	0.80	0.80	0.57	0.57
Hourly flow rate (vph)	11	769	465	5	7	11
Pedestrians		15	15		15	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		1	1		1	
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)			1025			
pX, platoon unblocked						
vC, conflicting volume	485				1289	498
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	485				1289	498
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				96	98
cM capacity (veh/h)	1064				174	558
Direction, Lane #	EB 1	EB 2	WB 1	SB 1		
Volume Total	11	769	470	18		
Volume Left	11	0	0	7		
Volume Right	0	0	5	11		
cSH	1064	1700	1700	297		
Volume to Capacity	0.01	0.45	0.28	0.06		
Queue Length 95th (ft)	1	0	0	5		
Control Delay (s)	8.4	0.0	0.0	17.9		
Lane LOS	A			C		
Approach Delay (s)	0.1		0.0	17.9		
Approach LOS				C		
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			43.1%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
6: Church Street & Dexter Avenue

9/9/2014



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↶	↷	↷		↶	↶
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	14	465	306	19	97	49
Peak Hour Factor	0.72	0.72	0.80	0.80	0.62	0.62
Hourly flow rate (vph)	19	646	382	24	156	79
Pedestrians		15	15		15	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		1	1		1	
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	421				1109	424
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	421				1109	424
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				30	87
cM capacity (veh/h)	1124				222	614
Direction, Lane #	EB 1	EB 2	WB 1	SB 1		
Volume Total	19	646	406	235		
Volume Left	19	0	0	156		
Volume Right	0	0	24	79		
cSH	1124	1700	1700	283		
Volume to Capacity	0.02	0.38	0.24	0.83		
Queue Length 95th (ft)	1	0	0	172		
Control Delay (s)	8.3	0.0	0.0	58.7		
Lane LOS	A			F		
Approach Delay (s)	0.2		0.0	58.7		
Approach LOS				F		
Intersection Summary						
Average Delay			10.7			
Intersection Capacity Utilization			41.8%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
7: Vine Street & Dexter Avenue

9/9/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	3	2	7	90	69	55	6	22	2	4	55	1
Peak Hour Factor	0.56	0.56	0.56	0.70	0.70	0.70	0.71	0.71	0.71	0.50	0.50	0.50
Hourly flow rate (vph)	5	4	12	129	99	79	8	31	3	8	110	2
Pedestrians		15			15			15			15	
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		1			1			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	334	208	141	221	207	62	127			49		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	334	208	141	221	207	62	127			49		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	99	99	81	85	92	99			99		
cM capacity (veh/h)	479	665	884	685	665	977	1441			1539		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	21	306	42	120								
Volume Left	5	129	8	8								
Volume Right	12	79	3	2								
cSH	698	734	1441	1539								
Volume to Capacity	0.03	0.42	0.01	0.01								
Queue Length 95th (ft)	2	52	0	0								
Control Delay (s)	10.3	13.4	1.5	0.5								
Lane LOS	B	B	A	A								
Approach Delay (s)	10.3	13.4	1.5	0.5								
Approach LOS	B	B										
Intersection Summary												
Average Delay			9.1									
Intersection Capacity Utilization			33.0%		ICU Level of Service					A		
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis
1: Church Street & Montevallo Road

9/9/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frbp, ped/bikes	1.00	1.00		1.00	0.98		1.00	1.00			0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.98	1.00			1.00	
Frt	1.00	0.93		1.00	0.94		1.00	0.97			0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.99	
Satd. Flow (prot)	1770	1739		1770	1731		1735	1800			1771	
Flt Permitted	0.95	1.00		0.95	1.00		0.41	1.00			0.70	
Satd. Flow (perm)	1770	1739		1770	1731		746	1800			1253	
Volume (vph)	30	178	142	65	175	105	156	253	73	52	243	67
Peak-hour factor, PHF	0.73	0.73	0.73	0.85	0.85	0.85	0.74	0.74	0.74	0.92	0.92	0.92
Adj. Flow (vph)	41	244	195	76	206	124	211	342	99	57	264	73
RTOR Reduction (vph)	0	33	0	0	24	0	0	11	0	0	9	0
Lane Group Flow (vph)	41	406	0	76	306	0	211	430	0	0	385	0
Confl. Peds. (#/hr)	31					9	22			9		31
Turn Type	Split			Split			Perm			Perm		
Protected Phases	3	3		4	4			2				2
Permitted Phases							2			2		
Actuated Green, G (s)	22.1	22.1		17.6	17.6		30.2	30.2				30.2
Effective Green, g (s)	23.1	23.1		18.6	18.6		31.2	31.2				31.2
Actuated g/C Ratio	0.27	0.27		0.22	0.22		0.37	0.37				0.37
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0				5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0				3.0
Lane Grp Cap (vph)	482	473		388	379		274	661				460
v/s Ratio Prot	0.02	c0.23		0.04	c0.18			0.24				
v/s Ratio Perm							0.28					c0.31
v/c Ratio	0.09	0.86		0.20	0.81		0.77	0.65				0.84
Uniform Delay, d1	23.0	29.4		27.0	31.4		23.7	22.3				24.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00				1.00
Incremental Delay, d2	0.1	14.4		0.2	11.9		18.6	4.9				16.4
Delay (s)	23.1	43.7		27.3	43.3		42.3	27.2				41.0
Level of Service	C	D		C	D		D	C				D
Approach Delay (s)		41.9			40.3			32.1				41.0
Approach LOS		D			D			C				D
Intersection Summary												
HCM Average Control Delay			38.1			HCM Level of Service					D	
HCM Volume to Capacity ratio			0.84									
Actuated Cycle Length (s)			84.9			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			76.1%			ICU Level of Service					D	
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 2: Church Street & West Jackson Boulevard

9/9/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Free			Free				Stop		Stop		
Grade	0%			0%				0%		0%		
Volume (veh/h)	62	338	16	56	271	64	14	6	87	0	0	0
Peak Hour Factor	0.72	0.72	0.72	0.89	0.89	0.89	0.84	0.84	0.84	0.90	0.90	0.90
Hourly flow rate (vph)	86	469	22	63	304	72	17	7	104	0	0	0
Pedestrians		20			20			20			20	
Lane Width (ft)		12.0			12.0			12.0			0.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		2			2			2			0	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)					600							
pX, platoon unblocked	1.00						1.00	1.00		1.00	1.00	1.00
vC, conflicting volume	396			512			1123	1195	521	1255	1170	380
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	394			512			1124	1196	521	1256	1171	378
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	93			94			89	95	81	100	100	100
cM capacity (veh/h)	1160			1036			157	159	537	101	164	655
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1							
Volume Total	86	492	63	376	127							
Volume Left	86	0	63	0	17							
Volume Right	0	22	0	72	104							
cSH	1160	1700	1036	1700	370							
Volume to Capacity	0.07	0.29	0.06	0.22	0.34							
Queue Length 95th (ft)	6	0	5	0	38							
Control Delay (s)	8.4	0.0	8.7	0.0	19.8							
Lane LOS	A		A		C							
Approach Delay (s)	1.2		1.2		19.8							
Approach LOS					C							
Intersection Summary												
Average Delay			3.3									
Intersection Capacity Utilization		42.8%			ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 3: Church Street & Regions

9/9/2014



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	↓
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	500	285	0	10	33
Peak Hour Factor	0.89	0.89	0.83	0.83	0.77	0.77
Hourly flow rate (vph)	0	562	343	0	13	43
Pedestrians		20	20		20	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		2	2		2	
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)			825			
pX, platoon unblocked						
vC, conflicting volume	363				945	383
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	363				945	383
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				95	93
cM capacity (veh/h)	1175				281	642
Direction, Lane #	EB 1	WB 1	SB 1	SB 2		
Volume Total	562	343	13	43		
Volume Left	0	0	13	0		
Volume Right	0	0	0	43		
cSH	1700	1700	281	642		
Volume to Capacity	0.33	0.20	0.05	0.07		
Queue Length 95th (ft)	0	0	4	5		
Control Delay (s)	0.0	0.0	18.4	11.0		
Lane LOS			C	B		
Approach Delay (s)	0.0	0.0	12.7			
Approach LOS			B			
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			41.2%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 4: Church Street & Site Access

9/9/2014



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	500	318	0	0	3
Peak Hour Factor	0.89	0.89	0.83	0.83	0.90	0.90
Hourly flow rate (vph)	0	562	383	0	0	3
Pedestrians		20	20		20	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		2	2		2	
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)			925			
pX, platoon unblocked						
vC, conflicting volume	403				985	423
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	403				985	423
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	1136				266	610
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	562	383	3			
Volume Left	0	0	0			
Volume Right	0	0	3			
cSH	1700	1700	610			
Volume to Capacity	0.33	0.23	0.01			
Queue Length 95th (ft)	0	0	0			
Control Delay (s)	0.0	0.0	10.9			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	10.9			
Approach LOS			B			
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization		41.2%		ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
5: Church Street & CVS

9/9/2014



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↶	↷	↷		↶	↶
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	26	486	329	22	14	33
Peak Hour Factor	0.89	0.89	0.83	0.83	0.85	0.85
Hourly flow rate (vph)	29	546	396	27	16	39
Pedestrians		20	20		20	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		2	2		2	
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)			1025			
pX, platoon unblocked						
vC, conflicting volume	443				1054	450
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	443				1054	450
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				93	93
cM capacity (veh/h)	1099				235	589
Direction, Lane #	EB 1	EB 2	WB 1	SB 1		
Volume Total	29	546	423	55		
Volume Left	29	0	0	16		
Volume Right	0	0	27	39		
cSH	1099	1700	1700	407		
Volume to Capacity	0.03	0.32	0.25	0.14		
Queue Length 95th (ft)	2	0	0	12		
Control Delay (s)	8.4	0.0	0.0	15.2		
Lane LOS	A			C		
Approach Delay (s)	0.4		0.0	15.2		
Approach LOS				C		
Intersection Summary						
Average Delay			1.0			
Intersection Capacity Utilization			40.9%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
6: Church Street & Dexter Avenue

9/9/2014



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↶	↷	↷		↶	
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	40	402	251	43	110	29
Peak Hour Factor	0.89	0.89	0.83	0.83	0.61	0.61
Hourly flow rate (vph)	45	452	302	52	180	48
Pedestrians		20	20		20	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		2	2		2	
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	374				910	368
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	374				910	368
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				36	93
cM capacity (veh/h)	1165				283	655
Direction, Lane #	EB 1	EB 2	WB 1	SB 1		
Volume Total	45	452	354	228		
Volume Left	45	0	0	180		
Volume Right	0	0	52	48		
cSH	1165	1700	1700	321		
Volume to Capacity	0.04	0.27	0.21	0.71		
Queue Length 95th (ft)	3	0	0	127		
Control Delay (s)	8.2	0.0	0.0	39.4		
Lane LOS	A			E		
Approach Delay (s)	0.7		0.0	39.4		
Approach LOS				E		
Intersection Summary						
Average Delay			8.7			
Intersection Capacity Utilization			40.2%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

7: Vine Street & Dexter Avenue

9/9/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	4	1	10	88	86	53	11	58	0	0	42	3
Peak Hour Factor	0.63	0.63	0.63	0.49	0.49	0.49	0.61	0.61	0.61	0.56	0.56	0.56
Hourly flow rate (vph)	6	2	16	180	176	108	18	95	0	0	75	5
Pedestrians		20			20			20			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		2			2			2			2	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	445	249	118	265	252	135	100			115		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	445	249	118	265	252	135	100			115		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	98	71	72	88	99			100		
cM capacity (veh/h)	336	624	903	629	622	884	1467			1449		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	24	463	113	80								
Volume Left	6	180	18	0								
Volume Right	16	108	0	5								
cSH	610	672	1467	1449								
Volume to Capacity	0.04	0.69	0.01	0.00								
Queue Length 95th (ft)	3	138	1	0								
Control Delay (s)	11.1	21.4	1.3	0.0								
Lane LOS	B	C	A									
Approach Delay (s)	11.1	21.4	1.3	0.0								
Approach LOS	B	C										
Intersection Summary												
Average Delay			15.2									
Intersection Capacity Utilization		38.2%		ICU Level of Service		A						
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis
 1: Church Street & Montevallo Road

9/9/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	0.96		1.00	0.93		1.00	0.98			0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.99	
Satd. Flow (prot)	1770	1780		1770	1735		1770	1825			1818	
Flt Permitted	0.95	1.00		0.95	1.00		0.37	1.00			0.24	
Satd. Flow (perm)	1770	1780		1770	1735		689	1825			437	
Volume (vph)	63	311	131	33	173	147	156	456	72	45	299	54
Peak-hour factor, PHF	0.73	0.73	0.73	0.85	0.85	0.85	0.74	0.74	0.74	0.92	0.92	0.92
Adj. Flow (vph)	86	426	179	39	204	173	211	616	97	49	325	59
RTOR Reduction (vph)	0	14	0	0	28	0	0	5	0	0	5	0
Lane Group Flow (vph)	86	591	0	39	349	0	211	708	0	0	428	0
Turn Type	Split			Split			Perm			Perm		
Protected Phases	3	3		4	4			2			2	
Permitted Phases							2			2		
Actuated Green, G (s)	30.0	30.0		23.7	23.7		40.0	40.0			40.0	
Effective Green, g (s)	31.0	31.0		24.7	24.7		41.0	41.0			41.0	
Actuated g/C Ratio	0.29	0.29		0.23	0.23		0.38	0.38			0.38	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	505	508		402	394		260	688			165	
v/s Ratio Prot	0.05	c0.33		0.02	c0.20			0.39				
v/s Ratio Perm							0.31				c0.98	
v/c Ratio	0.17	1.16		0.10	0.89		0.81	1.03			2.59	
Uniform Delay, d1	29.2	38.9		33.2	40.6		30.4	33.9			33.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.2	93.7		0.1	20.5		23.4	42.0			734.7	
Delay (s)	29.3	132.6		33.3	61.2		53.8	75.8			768.5	
Level of Service	C	F		C	E		D	E			F	
Approach Delay (s)		119.7			58.6			70.8			768.5	
Approach LOS		F			E			E			F	
Intersection Summary												
HCM Average Control Delay			205.0			HCM Level of Service			F			
HCM Volume to Capacity ratio			1.70									
Actuated Cycle Length (s)			108.7			Sum of lost time (s)		12.0				
Intersection Capacity Utilization			94.2%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
 2: Church Street & West Jackson Boulevard

9/9/2014

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Sign Control	Free			Free				Stop			Stop		
Grade	0%			0%				0%			0%		
Volume (veh/h)	45	422	5	45	297	49	6	10	106	7	2	5	
Peak Hour Factor	0.91	0.91	0.91	0.88	0.88	0.88	0.90	0.90	0.90	0.70	0.70	0.70	
Hourly flow rate (vph)	49	464	5	51	338	56	7	11	118	10	3	7	
Pedestrians	20			20				20			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	2			2				2			2		
Right turn flare (veh)													
Median type							None			None			
Median storage (veh)													
Upstream signal (ft)	600												
pX, platoon unblocked	0.96						0.96	0.96		0.96	0.96	0.96	
vC, conflicting volume	413			489			1054	1101	506	1194	1076	405	
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	389			489			1056	1105	506	1202	1079	381	
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2	
tC, 2 stage (s)													
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3	
p0 queue free %	96			95			96	94	78	90	98	99	
cM capacity (veh/h)	1104			1056			167	178	547	102	184	619	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1							
Volume Total	49	469	51	393	136	20							
Volume Left	49	0	51	0	7	10							
Volume Right	0	5	0	56	118	7							
cSH	1104	1700	1056	1700	427	160							
Volume to Capacity	0.04	0.28	0.05	0.23	0.32	0.13							
Queue Length 95th (ft)	4	0	4	0	34	10							
Control Delay (s)	8.4	0.0	8.6	0.0	17.3	30.8							
Lane LOS	A		A		C	D							
Approach Delay (s)	0.8		1.0		17.3	30.8							
Approach LOS					C	D							
Intersection Summary													
Average Delay			3.4										
Intersection Capacity Utilization			47.0%		ICU Level of Service			A					
Analysis Period (min)			15										

HCM Unsignalized Intersection Capacity Analysis
 3: Church Street & Regions

9/9/2014



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↘	↗
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	539	308	0	9	26
Peak Hour Factor	0.96	0.96	0.95	0.95	0.71	0.71
Hourly flow rate (vph)	0	561	324	0	13	37
Pedestrians		20	20		20	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		2	2		2	
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)			825			
pX, platoon unblocked						
vC, conflicting volume	344				926	364
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	344				926	364
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				96	94
cM capacity (veh/h)	1195				289	658
Direction, Lane #	EB 1	WB 1	SB 1	SB 2		
Volume Total	561	324	13	37		
Volume Left	0	0	13	0		
Volume Right	0	0	0	37		
cSH	1700	1700	289	658		
Volume to Capacity	0.33	0.19	0.04	0.06		
Queue Length 95th (ft)	0	0	3	4		
Control Delay (s)	0.0	0.0	18.0	10.8		
Lane LOS			C	B		
Approach Delay (s)	0.0	0.0	12.7			
Approach LOS			B			
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization		43.2%			ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

4: Church Street & Site Access

9/9/2014



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↘	
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	539	334	0	4	4
Peak Hour Factor	0.96	0.96	0.95	0.95	0.90	0.90
Hourly flow rate (vph)	0	561	352	0	4	4
Pedestrians		20	20		20	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		2	2		2	
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)			925			
pX, platoon unblocked						
vC, conflicting volume	372				953	392
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	372				953	392
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				98	99
cM capacity (veh/h)	1167				278	635
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	561	352	9			
Volume Left	0	0	4			
Volume Right	0	0	4			
cSH	1700	1700	387			
Volume to Capacity	0.33	0.21	0.02			
Queue Length 95th (ft)	0	0	2			
Control Delay (s)	0.0	0.0	14.5			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	14.5			
Approach LOS			B			
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization		43.2%		ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
5: Church Street & CVS

9/9/2014



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↶	↷	↷		↶	↶
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	28	513	318	20	26	24
Peak Hour Factor	0.96	0.96	0.95	0.95	0.78	0.78
Hourly flow rate (vph)	29	534	335	21	33	31
Pedestrians		20	20		20	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		2	2		2	
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)			1025			
pX, platoon unblocked						
vC, conflicting volume	376				978	385
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	376				978	385
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				87	95
cM capacity (veh/h)	1163				262	641
Direction, Lane #	EB 1	EB 2	WB 1	SB 1		
Volume Total	29	534	356	64		
Volume Left	29	0	0	33		
Volume Right	0	0	21	31		
cSH	1163	1700	1700	366		
Volume to Capacity	0.03	0.31	0.21	0.18		
Queue Length 95th (ft)	2	0	0	16		
Control Delay (s)	8.2	0.0	0.0	16.9		
Lane LOS	A			C		
Approach Delay (s)	0.4		0.0	16.9		
Approach LOS				C		
Intersection Summary						
Average Delay			1.3			
Intersection Capacity Utilization			42.1%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
6: Church Street & Dexter Avenue

9/9/2014



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↶	↷	↷		↶	↶
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	71	486	289	34	55	37
Peak Hour Factor	0.96	0.96	0.95	0.95	0.74	0.74
Hourly flow rate (vph)	74	506	304	36	74	50
Pedestrians		20	20		20	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		2	2		2	
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	360				1016	362
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	360				1016	362
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	94				69	92
cM capacity (veh/h)	1179				239	660
Direction, Lane #	EB 1	EB 2	WB 1	SB 1		
Volume Total	74	506	340	124		
Volume Left	74	0	0	74		
Volume Right	0	0	36	50		
cSH	1179	1700	1700	321		
Volume to Capacity	0.06	0.30	0.20	0.39		
Queue Length 95th (ft)	5	0	0	44		
Control Delay (s)	8.3	0.0	0.0	23.1		
Lane LOS	A			C		
Approach Delay (s)	1.1		0.0	23.1		
Approach LOS				C		
Intersection Summary						
Average Delay			3.3			
Intersection Capacity Utilization			41.9%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

7: Vine Street & Dexter Avenue

9/9/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	3	9	13	50	6	41	49	35	4	41	1
Peak Hour Factor	0.85	0.85	0.85	0.91	0.91	0.91	0.75	0.75	0.75	0.68	0.68	0.68
Hourly flow rate (vph)	6	4	11	14	55	7	55	65	47	6	60	1
Pedestrians		20			20			20			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		2			2			2			2	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	345	334	101	323	312	129	82			132		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	345	334	101	323	312	129	82			132		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	99	99	97	90	99	96			100		
cM capacity (veh/h)	512	544	923	566	560	891	1490			1429		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	20	76	167	68								
Volume Left	6	14	55	6								
Volume Right	11	7	47	1								
cSH	679	580	1490	1429								
Volume to Capacity	0.03	0.13	0.04	0.00								
Queue Length 95th (ft)	2	11	3	0								
Control Delay (s)	10.5	12.1	2.7	0.7								
Lane LOS	B	B	A	A								
Approach Delay (s)	10.5	12.1	2.7	0.7								
Approach LOS	B	B										
Intersection Summary												
Average Delay			4.9									
Intersection Capacity Utilization		29.7%		ICU Level of Service		A						
Analysis Period (min)			15									

Appendix D

Background 2019 Intersection Capacity Analysis Worksheets

HCM Signalized Intersection Capacity Analysis

1: Church Street & Montevallo Road

9/9/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frbp, ped/bikes	1.00	0.90		1.00	0.99		1.00	0.98			0.96	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	0.92		1.00	0.98		1.00	0.96			0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.99	
Satd. Flow (prot)	1770	1543		1770	1796		1770	1766			1754	
Flt Permitted	0.95	1.00		0.95	1.00		0.24	1.00			0.61	
Satd. Flow (perm)	1770	1543		1770	1796		454	1766			1074	
Volume (vph)	16	208	232	69	340	56	256	274	91	78	522	84
Peak-hour factor, PHF	0.73	0.73	0.73	0.85	0.85	0.85	0.74	0.74	0.74	0.92	0.92	0.92
Adj. Flow (vph)	22	285	318	81	400	66	346	370	123	85	567	91
RTOR Reduction (vph)	0	40	0	0	6	0	0	12	0	0	5	0
Lane Group Flow (vph)	22	563	0	81	460	0	346	481	0	0	738	0
Confl. Peds. (#/hr)	104		73			31	73		15	31		104
Turn Type	Split		Split		Perm				Perm			
Protected Phases	3	3		4	4			2				2
Permitted Phases							2	2				
Actuated Green, G (s)	20.0	20.0		25.0	25.0		40.0	40.0				40.0
Effective Green, g (s)	21.0	21.0		26.0	26.0		41.0	41.0				41.0
Actuated g/C Ratio	0.21	0.21		0.26	0.26		0.41	0.41				0.41
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0				5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0				3.0
Lane Grp Cap (vph)	372	324		460	467		186	724				440
v/s Ratio Prot	0.01	c0.36		0.05	c0.26			0.27				
v/s Ratio Perm							c0.76	0.69				
v/c Ratio	0.06	1.74		0.18	0.99		1.86	0.66				1.68
Uniform Delay, d1	31.6	39.5		28.7	36.8		29.5	23.9				29.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00				1.00
Incremental Delay, d2	0.1	344.2		0.2	37.5		407.0	4.8				314.3
Delay (s)	31.7	383.7		28.9	74.3		436.5	28.7				343.8
Level of Service	C	F		C	E		F	C				F
Approach Delay (s)		371.3			67.6			196.9				343.8
Approach LOS		F			E			F				F
Intersection Summary												
HCM Average Control Delay			250.4	HCM Level of Service				F				
HCM Volume to Capacity ratio			1.57									
Actuated Cycle Length (s)			100.0	Sum of lost time (s)				12.0				
Intersection Capacity Utilization			105.8%	ICU Level of Service				G				
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 2: Church Street & West Jackson Boulevard

9/9/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Free			Free				Stop			Stop	
Grade	0%			0%				0%			0%	
Volume (veh/h)	120	466	3	48	408	202	8	9	52	0	0	0
Peak Hour Factor	0.74	0.74	0.74	0.89	0.89	0.89	0.73	0.73	0.73	0.90	0.90	0.90
Hourly flow rate (vph)	162	630	4	54	458	227	11	12	71	0	0	0
Pedestrians		15			15			15			15	
Lane Width (ft)		12.0			12.0			12.0			0.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			1			1			0	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)					600							
pX, platoon unblocked	0.71						0.71	0.71		0.71	0.71	0.71
vC, conflicting volume	700			649			1552	1779	662	1741	1668	602
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	578			649			1778	2098	662	2044	1941	439
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	77			94			68	53	84	100	100	100
cM capacity (veh/h)	707			925			35	26	450	12	33	433
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1							
Volume Total	162	634	54	685	95							
Volume Left	162	0	54	0	11							
Volume Right	0	4	0	227	71							
cSH	707	1700	925	1700	100							
Volume to Capacity	0.23	0.37	0.06	0.40	0.94							
Queue Length 95th (ft)	22	0	5	0	140							
Control Delay (s)	11.6	0.0	9.1	0.0	151.5							
Lane LOS	B		A		F							
Approach Delay (s)	2.4		0.7		151.5							
Approach LOS					F							
Intersection Summary												
Average Delay			10.2									
Intersection Capacity Utilization		59.4%			ICU Level of Service				B			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 3: Church Street & Regions

9/9/2014



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↘	↗
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	642	416	0	10	16
Peak Hour Factor	0.72	0.72	0.80	0.80	0.62	0.62
Hourly flow rate (vph)	0	892	520	0	16	26
Pedestrians		15	15		15	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		1	1		1	
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)			825			
pX, platoon unblocked						
vC, conflicting volume	535				1442	550
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	535				1442	550
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				89	95
cM capacity (veh/h)	1020				142	521
Direction, Lane #	EB 1	WB 1	SB 1	SB 2		
Volume Total	892	520	16	26		
Volume Left	0	0	16	0		
Volume Right	0	0	0	26		
cSH	1700	1700	142	521		
Volume to Capacity	0.52	0.31	0.11	0.05		
Queue Length 95th (ft)	0	0	9	4		
Control Delay (s)	0.0	0.0	33.5	12.3		
Lane LOS			D	B		
Approach Delay (s)	0.0	0.0	20.4			
Approach LOS			C			
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization		47.7%			ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 4: Church Street & Site Access

9/9/2014



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	642	432	0	0	0
Peak Hour Factor	0.72	0.72	0.80	0.80	0.90	0.90
Hourly flow rate (vph)	0	892	540	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	540				1432	540
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	540				1432	540
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1028				148	542
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	892	540	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.52	0.32	0.00			
Queue Length 95th (ft)	0	0	0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS			A			
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization		37.1%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis
5: Church Street & CVS

9/9/2014



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↶	↷	↷		↶	
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	9	637	428	5	5	7
Peak Hour Factor	0.72	0.72	0.80	0.80	0.57	0.57
Hourly flow rate (vph)	12	885	535	6	9	12
Pedestrians		15	15		15	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		1	1		1	
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)			1025			
pX, platoon unblocked						
vC, conflicting volume	556				1478	568
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	556				1478	568
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				93	98
cM capacity (veh/h)	1002				134	509
Direction, Lane #	EB 1	EB 2	WB 1	SB 1		
Volume Total	12	885	541	21		
Volume Left	12	0	0	9		
Volume Right	0	0	6	12		
cSH	1002	1700	1700	234		
Volume to Capacity	0.01	0.52	0.32	0.09		
Queue Length 95th (ft)	1	0	0	7		
Control Delay (s)	8.6	0.0	0.0	21.9		
Lane LOS	A			C		
Approach Delay (s)	0.1		0.0	21.9		
Approach LOS				C		
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			47.5%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
6: Church Street & Dexter Avenue

9/9/2014



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↶	↷	↷		↶	↶
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	15	535	352	22	112	55
Peak Hour Factor	0.72	0.72	0.80	0.80	0.62	0.62
Hourly flow rate (vph)	21	743	440	28	181	89
Pedestrians		15	15		15	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		1	1		1	
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	482				1268	484
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	482				1268	484
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				0	84
cM capacity (veh/h)	1067				178	569
Direction, Lane #	EB 1	EB 2	WB 1	SB 1		
Volume Total	21	743	468	269		
Volume Left	21	0	0	181		
Volume Right	0	0	28	89		
cSH	1067	1700	1700	230		
Volume to Capacity	0.02	0.44	0.28	1.17		
Queue Length 95th (ft)	1	0	0	321		
Control Delay (s)	8.4	0.0	0.0	158.3		
Lane LOS	A			F		
Approach Delay (s)	0.2		0.0	158.3		
Approach LOS				F		
Intersection Summary						
Average Delay			28.5			
Intersection Capacity Utilization			46.2%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

7: Vine Street & Dexter Avenue

9/9/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	3	2	8	104	79	63	7	25	2	5	63	1
Peak Hour Factor	0.56	0.56	0.56	0.70	0.70	0.70	0.71	0.71	0.71	0.50	0.50	0.50
Hourly flow rate (vph)	5	4	14	149	113	90	10	35	3	10	126	2
Pedestrians		15			15			15			15	
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		1			1			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	380	235	157	249	234	67	143			53		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	380	235	157	249	234	67	143			53		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	99	98	77	82	91	99			99		
cM capacity (veh/h)	430	640	866	653	641	972	1422			1533		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	23	351	48	138								
Volume Left	5	149	10	10								
Volume Right	14	90	3	2								
cSH	672	708	1422	1533								
Volume to Capacity	0.03	0.50	0.01	0.01								
Queue Length 95th (ft)	3	70	1	0								
Control Delay (s)	10.5	15.0	1.6	0.6								
Lane LOS	B	B	A	A								
Approach Delay (s)	10.5	15.0	1.6	0.6								
Approach LOS	B	B										
Intersection Summary												
Average Delay			10.1									
Intersection Capacity Utilization			35.2%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis
1: Church Street & Montevallo Road

9/9/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frbp, ped/bikes	1.00	1.00		1.00	0.98		1.00	1.00			0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.98	1.00			1.00	
Frt	1.00	0.93		1.00	0.94		1.00	0.97			0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.99	
Satd. Flow (prot)	1770	1739		1770	1730		1741	1800			1771	
Flt Permitted	0.95	1.00		0.95	1.00		0.35	1.00			0.51	
Satd. Flow (perm)	1770	1739		1770	1730		643	1800			907	
Volume (vph)	35	205	163	75	201	121	179	291	84	60	279	77
Peak-hour factor, PHF	0.73	0.73	0.73	0.85	0.85	0.85	0.74	0.74	0.74	0.92	0.92	0.92
Adj. Flow (vph)	48	281	223	88	236	142	242	393	114	65	303	84
RTOR Reduction (vph)	0	32	0	0	24	0	0	12	0	0	9	0
Lane Group Flow (vph)	48	472	0	88	354	0	242	495	0	0	443	0
Confl. Peds. (#/hr)	31					9	22			9		31
Turn Type	Split			Split			Perm			Perm		
Protected Phases	3	3		4	4			2				2
Permitted Phases							2			2		
Actuated Green, G (s)	24.6	24.6		19.3	19.3		30.0	30.0				30.0
Effective Green, g (s)	25.6	25.6		20.3	20.3		31.0	31.0				31.0
Actuated g/C Ratio	0.29	0.29		0.23	0.23		0.35	0.35				0.35
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0				5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0				3.0
Lane Grp Cap (vph)	510	501		404	395		224	628				316
v/s Ratio Prot	0.03	c0.27		0.05	c0.20			0.28				
v/s Ratio Perm							0.38					c0.49
v/c Ratio	0.09	0.94		0.22	0.90		1.08	0.79				1.40
Uniform Delay, d1	23.2	30.9		27.9	33.3		29.0	26.0				29.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00				1.00
Incremental Delay, d2	0.1	26.3		0.3	22.1		83.1	9.7				198.8
Delay (s)	23.2	57.2		28.1	55.3		112.1	35.7				227.7
Level of Service	C	E		C	E		F	D				F
Approach Delay (s)		54.3			50.2			60.4				227.7
Approach LOS		D			D			E				F
Intersection Summary												
HCM Average Control Delay			90.8			HCM Level of Service			F			
HCM Volume to Capacity ratio			1.11									
Actuated Cycle Length (s)			88.9			Sum of lost time (s)		12.0				
Intersection Capacity Utilization			84.4%			ICU Level of Service			E			
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 2: Church Street & West Jackson Boulevard

9/9/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Free			Free				Stop			Stop	
Grade	0%			0%				0%			0%	
Volume (veh/h)	71	389	18	64	312	74	16	7	100	0	0	0
Peak Hour Factor	0.72	0.72	0.72	0.89	0.89	0.89	0.84	0.84	0.84	0.90	0.90	0.90
Hourly flow rate (vph)	99	540	25	72	351	83	19	8	119	0	0	0
Pedestrians		20			20			20			20	
Lane Width (ft)		12.0			12.0			12.0			0.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		2			2			2			0	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)					600							
pX, platoon unblocked	0.97						0.97	0.97		0.97	0.97	0.97
vC, conflicting volume	454			585			1284	1368	593	1437	1338	432
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	435			585			1294	1380	593	1452	1350	413
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	91			93			83	93	76	100	100	100
cM capacity (veh/h)	1087			973			113	116	489	64	120	608
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1							
Volume Total	99	565	72	434	146							
Volume Left	99	0	72	0	19							
Volume Right	0	25	0	83	119							
cSH	1087	1700	973	1700	303							
Volume to Capacity	0.09	0.33	0.07	0.26	0.48							
Queue Length 95th (ft)	7	0	6	0	62							
Control Delay (s)	8.6	0.0	9.0	0.0	27.6							
Lane LOS	A		A		D							
Approach Delay (s)	1.3		1.3		27.6							
Approach LOS					D							
Intersection Summary												
Average Delay			4.2									
Intersection Capacity Utilization		46.3%		ICU Level of Service		A						
Analysis Period (min)		15										

HCM Unsignalized Intersection Capacity Analysis
 3: Church Street & Regions

9/9/2014



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↘	↗
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	575	328	0	12	38
Peak Hour Factor	0.89	0.89	0.83	0.83	0.77	0.77
Hourly flow rate (vph)	0	646	395	0	16	49
Pedestrians		20	20		20	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		2	2		2	
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)			825			
pX, platoon unblocked						
vC, conflicting volume	415				1081	435
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	415				1081	435
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				93	92
cM capacity (veh/h)	1125				233	600
Direction, Lane #	EB 1	WB 1	SB 1	SB 2		
Volume Total	646	395	16	49		
Volume Left	0	0	16	0		
Volume Right	0	0	0	49		
cSH	1700	1700	233	600		
Volume to Capacity	0.38	0.23	0.07	0.08		
Queue Length 95th (ft)	0	0	5	7		
Control Delay (s)	0.0	0.0	21.6	11.5		
Lane LOS			C	B		
Approach Delay (s)	0.0	0.0	13.9			
Approach LOS			B			
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization		45.1%			ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

4: Church Street & Site Access

9/9/2014



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	575	366	0	0	3
Peak Hour Factor	0.89	0.89	0.83	0.83	0.90	0.90
Hourly flow rate (vph)	0	646	441	0	0	3
Pedestrians		20	20		20	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		2	2		2	
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)			925			
pX, platoon unblocked						
vC, conflicting volume	461				1127	481
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	461				1127	481
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	1082				219	566
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	646	441	3			
Volume Left	0	0	0			
Volume Right	0	0	3			
cSH	1700	1700	566			
Volume to Capacity	0.38	0.26	0.01			
Queue Length 95th (ft)	0	0	0			
Control Delay (s)	0.0	0.0	11.4			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	11.4			
Approach LOS			B			
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization		45.1%		ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 5: Church Street & CVS

9/9/2014



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↶	↷	↷		↶	↶
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	30	559	378	25	16	38
Peak Hour Factor	0.89	0.89	0.83	0.83	0.85	0.85
Hourly flow rate (vph)	34	628	455	30	19	45
Pedestrians		20	20		20	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		2	2		2	
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)			1025			
pX, platoon unblocked						
vC, conflicting volume	506				1206	510
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	506				1206	510
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				90	92
cM capacity (veh/h)	1041				190	544
Direction, Lane #	EB 1	EB 2	WB 1	SB 1		
Volume Total	34	628	486	64		
Volume Left	34	0	0	19		
Volume Right	0	0	30	45		
cSH	1041	1700	1700	350		
Volume to Capacity	0.03	0.37	0.29	0.18		
Queue Length 95th (ft)	3	0	0	16		
Control Delay (s)	8.6	0.0	0.0	17.5		
Lane LOS	A			C		
Approach Delay (s)	0.4		0.0	17.5		
Approach LOS				C		
Intersection Summary						
Average Delay			1.2			
Intersection Capacity Utilization			44.9%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
6: Church Street & Dexter Avenue

9/9/2014



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↶	↷	↷		↶	↶
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	46	462	289	49	127	32
Peak Hour Factor	0.89	0.89	0.83	0.83	0.61	0.61
Hourly flow rate (vph)	52	519	348	59	208	52
Pedestrians		20	20		20	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		2	2		2	
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	427				1040	418
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	427				1040	418
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	95				11	91
cM capacity (veh/h)	1113				235	614
Direction, Lane #	EB 1	EB 2	WB 1	SB 1		
Volume Total	52	519	407	261		
Volume Left	52	0	0	208		
Volume Right	0	0	59	52		
cSH	1113	1700	1700	268		
Volume to Capacity	0.05	0.31	0.24	0.97		
Queue Length 95th (ft)	4	0	0	235		
Control Delay (s)	8.4	0.0	0.0	88.7		
Lane LOS	A			F		
Approach Delay (s)	0.8		0.0	88.7		
Approach LOS				F		
Intersection Summary						
Average Delay			19.0			
Intersection Capacity Utilization			43.1%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

7: Vine Street & Dexter Avenue

9/9/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	1	2	101	99	61	13	67	0	0	48	3
Peak Hour Factor	0.63	0.63	0.63	0.49	0.49	0.49	0.61	0.61	0.61	0.56	0.56	0.56
Hourly flow rate (vph)	8	2	3	206	202	124	21	110	0	0	86	5
Pedestrians		20			20			20			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		2			2			2			2	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	506	281	128	285	284	150	111			130		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	506	281	128	285	284	150	111			130		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	100	100	67	66	86	99			100		
cM capacity (veh/h)	281	598	891	619	596	867	1454			1431		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	13	533	131	91								
Volume Left	8	206	21	0								
Volume Right	3	124	0	5								
cSH	368	653	1454	1431								
Volume to Capacity	0.03	0.82	0.01	0.00								
Queue Length 95th (ft)	3	212	1	0								
Control Delay (s)	15.1	30.2	1.3	0.0								
Lane LOS	C	D	A									
Approach Delay (s)	15.1	30.2	1.3	0.0								
Approach LOS	C	D										
Intersection Summary												
Average Delay				21.5								
Intersection Capacity Utilization			34.5%		ICU Level of Service					A		
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

1: Church Street & Montevallo Road

9/10/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Fr _t	1.00	0.96		1.00	0.93		1.00	0.98			0.98	
Fl _t Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.99	
Satd. Flow (prot)	1770	1780		1770	1734		1770	1825			1819	
Fl _t Permitted	0.95	1.00		0.95	1.00		0.33	1.00			0.19	
Satd. Flow (perm)	1770	1780		1770	1734		607	1825			349	
Volume (vph)	72	358	151	38	199	169	179	524	83	52	344	62
Peak-hour factor, PHF	0.73	0.73	0.73	0.85	0.85	0.85	0.74	0.74	0.74	0.92	0.92	0.92
Adj. Flow (vph)	99	490	207	45	234	199	242	708	112	57	374	67
RTOR Reduction (vph)	0	14	0	0	27	0	0	5	0	0	5	0
Lane Group Flow (vph)	99	683	0	45	406	0	242	815	0	0	493	0
Turn Type	Split			Split			Perm			Perm		
Protected Phases	3	3		4	4			2				2
Permitted Phases							2			2		
Actuated Green, G (s)	30.0	30.0		25.0	25.0		40.0	40.0				40.0
Effective Green, g (s)	31.0	31.0		26.0	26.0		41.0	41.0				41.0
Actuated g/C Ratio	0.28	0.28		0.24	0.24		0.37	0.37				0.37
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0				5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0				3.0
Lane Grp Cap (vph)	499	502		418	410		226	680				130
v/s Ratio Prot	0.06	c0.38		0.03	c0.23			0.45				
v/s Ratio Perm							0.40					c1.41
v/c Ratio	0.20	1.36		0.11	0.99		1.07	1.20				3.79
Uniform Delay, d ₁	30.0	39.5		32.9	41.9		34.5	34.5				34.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00				1.00
Incremental Delay, d ₂	0.2	175.1		0.1	41.1		79.9	103.2				1275.0
Delay (s)	30.2	214.6		33.0	83.0		114.4	137.7				1309.5
Level of Service	C	F		C	F		F	F				F
Approach Delay (s)		191.7			78.3			132.4				1309.5
Approach LOS		F			E			F				F
Intersection Summary												
HCM Average Control Delay			346.7			HCM Level of Service				F		
HCM Volume to Capacity ratio			2.28									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			105.4%			ICU Level of Service				G		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
 2: Church Street & West Jackson Boulevard

9/10/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Free			Free				Stop			Stop	
Grade	0%			0%				0%			0%	
Volume (veh/h)	52	485	6	52	342	56	7	12	122	8	2	6
Peak Hour Factor	0.91	0.91	0.91	0.88	0.88	0.88	0.90	0.90	0.90	0.70	0.70	0.70
Hourly flow rate (vph)	57	533	7	59	389	64	8	13	136	11	3	9
Pedestrians	20			20				20			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	2			2				2			2	
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)												
Upstream signal (ft)	600											
pX, platoon unblocked	0.94						0.94	0.94		0.94	0.94	0.94
vC, conflicting volume	472			560			1207	1261	576	1368	1232	460
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	439			560			1221	1278	576	1391	1247	426
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	94			94			94	90	73	83	98	98
cM capacity (veh/h)	1037			995			123	134	500	65	140	571
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	57	540	59	452	157	23						
Volume Left	57	0	59	0	8	11						
Volume Right	0	7	0	64	136	9						
cSH	1037	1700	995	1700	361	109						
Volume to Capacity	0.06	0.32	0.06	0.27	0.43	0.21						
Queue Length 95th (ft)	4	0	5	0	53	19						
Control Delay (s)	8.7	0.0	8.8	0.0	22.4	46.7						
Lane LOS	A		A		C	E						
Approach Delay (s)	0.8		1.0		22.4	46.7						
Approach LOS					C	E						
Intersection Summary												
Average Delay			4.3									
Intersection Capacity Utilization			51.0%		ICU Level of Service			A				
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 3: Church Street & Regions

9/10/2014



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↘	↗
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	620	354	0	10	30
Peak Hour Factor	0.96	0.96	0.95	0.95	0.71	0.71
Hourly flow rate (vph)	0	646	373	0	14	42
Pedestrians		20	20		20	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		2	2		2	
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)			825			
pX, platoon unblocked						
vC, conflicting volume	393				1058	413
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	393				1058	413
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				94	93
cM capacity (veh/h)	1146				240	618
Direction, Lane #	EB 1	WB 1	SB 1	SB 2		
Volume Total	646	373	14	42		
Volume Left	0	0	14	0		
Volume Right	0	0	0	42		
cSH	1700	1700	240	618		
Volume to Capacity	0.38	0.22	0.06	0.07		
Queue Length 95th (ft)	0	0	5	5		
Control Delay (s)	0.0	0.0	20.9	11.2		
Lane LOS			C	B		
Approach Delay (s)	0.0	0.0	13.7			
Approach LOS			B			
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization		47.5%			ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 4: Church Street & Site Access

9/10/2014



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	↓
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	620	384	0	5	5
Peak Hour Factor	0.96	0.96	0.95	0.95	0.90	0.90
Hourly flow rate (vph)	0	646	404	0	6	6
Pedestrians		20	20		20	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		2	2		2	
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)			925			
pX, platoon unblocked						
vC, conflicting volume	424				1090	444
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	424				1090	444
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				98	99
cM capacity (veh/h)	1116				230	593
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	646	404	11			
Volume Left	0	0	6			
Volume Right	0	0	6			
cSH	1700	1700	332			
Volume to Capacity	0.38	0.24	0.03			
Queue Length 95th (ft)	0	0	3			
Control Delay (s)	0.0	0.0	16.2			
Lane LOS			C			
Approach Delay (s)	0.0	0.0	16.2			
Approach LOS			C			
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization		47.5%		ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
5: Church Street & CVS

9/10/2014



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↑	↗		↘	
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	32	590	366	23	30	28
Peak Hour Factor	0.96	0.96	0.95	0.95	0.78	0.78
Hourly flow rate (vph)	33	615	385	24	38	36
Pedestrians		20	20		20	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		2	2		2	
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)			1025			
pX, platoon unblocked						
vC, conflicting volume	429				1119	437
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	429				1119	437
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				82	94
cM capacity (veh/h)	1111				215	599

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	33	615	409	74
Volume Left	33	0	0	38
Volume Right	0	0	24	36
cSH	1111	1700	1700	311
Volume to Capacity	0.03	0.36	0.24	0.24
Queue Length 95th (ft)	2	0	0	23
Control Delay (s)	8.3	0.0	0.0	20.2
Lane LOS	A			C
Approach Delay (s)	0.4		0.0	20.2
Approach LOS				C

Intersection Summary			
Average Delay		1.6	
Intersection Capacity Utilization	46.4%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
6: Church Street & Dexter Avenue

9/10/2014



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↶	↷	↷		↶	↶
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	82	559	332	39	63	43
Peak Hour Factor	0.96	0.96	0.95	0.95	0.74	0.74
Hourly flow rate (vph)	85	582	349	41	85	58
Pedestrians		20	20		20	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		2	2		2	
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	411				1163	410
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	411				1163	410
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	92				56	91
cM capacity (veh/h)	1129				192	620

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	85	582	391	143
Volume Left	85	0	0	85
Volume Right	0	0	41	58
cSH	1129	1700	1700	267
Volume to Capacity	0.08	0.34	0.23	0.54
Queue Length 95th (ft)	6	0	0	73
Control Delay (s)	8.4	0.0	0.0	33.0
Lane LOS	A			D
Approach Delay (s)	1.1		0.0	33.0
Approach LOS				D

Intersection Summary			
Average Delay		4.5	
Intersection Capacity Utilization	46.1%		ICU Level of Service A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis

7: Vine Street & Dexter Avenue

9/10/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	6	3	10	15	58	7	47	56	40	5	47	1
Peak Hour Factor	0.85	0.85	0.85	0.91	0.91	0.91	0.75	0.75	0.75	0.68	0.68	0.68
Hourly flow rate (vph)	7	4	12	16	64	8	63	75	53	7	69	1
Pedestrians		20			20			20			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		2			2			2			2	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	391	378	110	365	352	141	91			148		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	391	378	110	365	352	141	91			148		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	99	99	97	88	99	96			99		
cM capacity (veh/h)	465	510	912	528	528	877	1479			1410		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	22	88	191	78								
Volume Left	7	16	63	7								
Volume Right	12	8	53	1								
cSH	639	547	1479	1410								
Volume to Capacity	0.03	0.16	0.04	0.01								
Queue Length 95th (ft)	3	14	3	0								
Control Delay (s)	10.8	12.8	2.7	0.8								
Lane LOS	B	B	A	A								
Approach Delay (s)	10.8	12.8	2.7	0.8								
Approach LOS	B	B										
Intersection Summary												
Average Delay			5.1									
Intersection Capacity Utilization		31.0%		ICU Level of Service		A						
Analysis Period (min)			15									

Appendix E

Future 2019 Intersection Capacity Analysis Worksheets

HCM Signalized Intersection Capacity Analysis
 1: Church Street & Montevallo Road

11/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frbp, ped/bikes	1.00	0.90		1.00	0.99		1.00	0.98			0.96	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	0.92		1.00	0.98		1.00	0.96			0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.99	
Satd. Flow (prot)	1770	1543		1770	1798		1770	1766			1746	
Flt Permitted	0.95	1.00		0.95	1.00		0.24	1.00			0.62	
Satd. Flow (perm)	1770	1543		1770	1798		451	1766			1082	
Volume (vph)	17	211	236	68	350	56	267	271	90	78	521	87
Peak-hour factor, PHF	0.73	0.73	0.73	0.85	0.85	0.85	0.74	0.74	0.74	0.92	0.92	0.92
Adj. Flow (vph)	23	289	323	80	412	66	361	366	122	85	566	95
RTOR Reduction (vph)	0	40	0	0	6	0	0	12	0	0	5	0
Lane Group Flow (vph)	23	572	0	80	472	0	361	476	0	0	741	0
Confl. Peds. (#/hr)	104		73			31	73		15	31		104
Turn Type	Split		Split		Perm		Perm					
Protected Phases	3	3		4	4			2				2
Permitted Phases							2				2	
Actuated Green, G (s)	20.0	20.0		25.0	25.0		40.0	40.0				40.0
Effective Green, g (s)	21.0	21.0		26.0	26.0		41.0	41.0				41.0
Actuated g/C Ratio	0.21	0.21		0.26	0.26		0.41	0.41				0.41
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0				5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0				3.0
Lane Grp Cap (vph)	372	324		460	467		185	724				444
v/s Ratio Prot	0.01	c0.37		0.05	c0.26			0.27				
v/s Ratio Perm							c0.80				0.68	
v/c Ratio	0.06	1.76		0.17	1.01		1.95	0.66				1.67
Uniform Delay, d1	31.6	39.5		28.7	37.0		29.5	23.8				29.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00				1.00
Incremental Delay, d2	0.1	356.4		0.2	44.4		447.2	4.6				310.5
Delay (s)	31.7	395.9		28.9	81.4		476.7	28.5				340.0
Level of Service	C	F		C	F		F	C				F
Approach Delay (s)		382.7			73.9			219.1				340.0
Approach LOS		F			E			F				F
Intersection Summary												
HCM Average Control Delay			259.6		HCM Level of Service						F	
HCM Volume to Capacity ratio			1.63									
Actuated Cycle Length (s)			100.0		Sum of lost time (s)						12.0	
Intersection Capacity Utilization			106.1%		ICU Level of Service						G	
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 2: Church Street & West Jackson Boulevard

11/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Free			Free				Stop		Stop		
Grade	0%			0%				0%		0%		
Volume (veh/h)	120	474	5	48	426	208	10	10	51	0	0	0
Peak Hour Factor	0.74	0.74	0.74	0.89	0.89	0.89	0.73	0.73	0.73	0.90	0.90	0.90
Hourly flow rate (vph)	162	641	7	54	479	234	14	14	70	0	0	0
Pedestrians		15			15			15			15	
Lane Width (ft)		12.0			12.0			12.0			0.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			1			1			0	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)					600							
pX, platoon unblocked	0.69						0.69	0.69		0.69	0.69	0.69
vC, conflicting volume	727			662			1585	1818	674	1775	1705	626
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	606			662			1845	2182	674	2119	2018	459
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	76			94			54	39	84	100	100	100
cM capacity (veh/h)	673			915			30	22	443	9	28	412
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1							
Volume Total	162	647	54	712	97							
Volume Left	162	0	54	0	14							
Volume Right	0	7	0	234	70							
cSH	673	1700	915	1700	79							
Volume to Capacity	0.24	0.38	0.06	0.42	1.23							
Queue Length 95th (ft)	23	0	5	0	182							
Control Delay (s)	12.0	0.0	9.2	0.0	267.2							
Lane LOS	B		A		F							
Approach Delay (s)	2.4		0.6		267.2							
Approach LOS					F							
Intersection Summary												
Average Delay			17.0									
Intersection Capacity Utilization		60.7%		ICU Level of Service		B						
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 3: Church Street & Regions

11/25/2014



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↘	↗
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	651	436	0	10	16
Peak Hour Factor	0.72	0.72	0.80	0.80	0.62	0.62
Hourly flow rate (vph)	0	904	545	0	16	26
Pedestrians		15	15		15	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		1	1		1	
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)			825			
pX, platoon unblocked						
vC, conflicting volume	560				1479	575
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	560				1479	575
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				88	95
cM capacity (veh/h)	998				135	505
Direction, Lane #	EB 1	WB 1	SB 1	SB 2		
Volume Total	904	545	16	26		
Volume Left	0	0	16	0		
Volume Right	0	0	0	26		
cSH	1700	1700	135	505		
Volume to Capacity	0.53	0.32	0.12	0.05		
Queue Length 95th (ft)	0	0	10	4		
Control Delay (s)	0.0	0.0	35.3	12.5		
Lane LOS			E	B		
Approach Delay (s)	0.0	0.0	21.3			
Approach LOS			C			
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization		48.2%			ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

4: Church Street & Site Access

11/25/2014



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↵	↑	↶		↷	
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	30	633	429	23	18	18
Peak Hour Factor	0.72	0.72	0.80	0.80	0.90	0.90
Hourly flow rate (vph)	42	879	536	29	20	20
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)			925			
pX, platoon unblocked						
vC, conflicting volume	565				1513	551
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	565				1513	551
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				84	96
cM capacity (veh/h)	1007				126	534

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	42	879	565	40
Volume Left	42	0	0	20
Volume Right	0	0	29	20
cSH	1007	1700	1700	205
Volume to Capacity	0.04	0.52	0.33	0.20
Queue Length 95th (ft)	3	0	0	18
Control Delay (s)	8.7	0.0	0.0	26.8
Lane LOS	A			D
Approach Delay (s)	0.4		0.0	26.8
Approach LOS				D

Intersection Summary			
Average Delay		0.9	
Intersection Capacity Utilization	43.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
 5: Church Street & CVS

11/25/2014



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↵	↑	↵		↵	
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	9	658	442	5	5	7
Peak Hour Factor	0.72	0.72	0.80	0.80	0.57	0.57
Hourly flow rate (vph)	12	914	552	6	9	12
Pedestrians		15	15		15	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		1	1		1	
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)			1025			
pX, platoon unblocked						
vC, conflicting volume	574				1525	586
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	574				1525	586
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				93	98
cM capacity (veh/h)	987				125	498
Direction, Lane #	EB 1	EB 2	WB 1	SB 1		
Volume Total	12	914	559	21		
Volume Left	12	0	0	9		
Volume Right	0	0	6	12		
cSH	987	1700	1700	222		
Volume to Capacity	0.01	0.54	0.33	0.09		
Queue Length 95th (ft)	1	0	0	8		
Control Delay (s)	8.7	0.0	0.0	22.9		
Lane LOS	A			C		
Approach Delay (s)	0.1		0.0	22.9		
Approach LOS				C		
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			48.6%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
6: Church Street & Dexter Avenue

11/25/2014



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↶	↷	↷		↶	↶
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	14	551	363	25	116	55
Peak Hour Factor	0.72	0.72	0.80	0.80	0.62	0.62
Hourly flow rate (vph)	19	765	454	31	187	89
Pedestrians		15	15		15	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		1	1		1	
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	500				1304	499
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	500				1304	499
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				0	84
cM capacity (veh/h)	1051				169	557

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	19	765	485	276
Volume Left	19	0	0	187
Volume Right	0	0	31	89
cSH	1051	1700	1700	218
Volume to Capacity	0.02	0.45	0.29	1.26
Queue Length 95th (ft)	1	0	0	360
Control Delay (s)	8.5	0.0	0.0	194.3
Lane LOS	A			F
Approach Delay (s)	0.2		0.0	194.3
Approach LOS				F

Intersection Summary			
Average Delay		34.8	
Intersection Capacity Utilization		47.1%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis

7: Vine Street & Dexter Avenue

11/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	3	2	10	104	79	63	8	26	2	5	65	1
Peak Hour Factor	0.56	0.56	0.56	0.70	0.70	0.70	0.71	0.71	0.71	0.50	0.50	0.50
Hourly flow rate (vph)	5	4	18	149	113	90	11	37	3	10	130	2
Pedestrians		15			15			15			15	
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		1			1			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	388	243	161	261	243	68	147			54		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	388	243	161	261	243	68	147			54		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	99	98	77	82	91	99			99		
cM capacity (veh/h)	423	633	862	638	633	971	1417			1531		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	27	351	51	142								
Volume Left	5	149	11	10								
Volume Right	18	90	3	2								
cSH	687	698	1417	1531								
Volume to Capacity	0.04	0.50	0.01	0.01								
Queue Length 95th (ft)	3	71	1	0								
Control Delay (s)	10.5	15.3	1.7	0.6								
Lane LOS	B	C	A	A								
Approach Delay (s)	10.5	15.3	1.7	0.6								
Approach LOS	B	C										
Intersection Summary												
Average Delay			10.2									
Intersection Capacity Utilization		35.2%		ICU Level of Service		A						
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis
1: Church Street & Montevallo Road

11/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frbp, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00			0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.98	1.00			1.00	
Frt	1.00	0.93		1.00	0.95		1.00	0.97			0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.99	
Satd. Flow (prot)	1770	1736		1770	1739		1741	1800			1767	
Flt Permitted	0.95	1.00		0.95	1.00		0.34	1.00			0.51	
Satd. Flow (perm)	1770	1736		1770	1739		630	1800			916	
Volume (vph)	40	223	184	72	221	119	202	286	83	59	278	82
Peak-hour factor, PHF	0.73	0.73	0.73	0.85	0.85	0.85	0.74	0.74	0.74	0.92	0.92	0.92
Adj. Flow (vph)	55	305	252	85	260	140	273	386	112	64	302	89
RTOR Reduction (vph)	0	33	0	0	21	0	0	12	0	0	10	0
Lane Group Flow (vph)	55	524	0	85	379	0	273	486	0	0	445	0
Confl. Peds. (#/hr)	31					9	22			9		31
Turn Type	Split		Split		Perm		Perm					
Protected Phases	3	3		4	4			2				2
Permitted Phases							2			2		
Actuated Green, G (s)	25.0	25.0		20.0	20.0		30.0	30.0				30.0
Effective Green, g (s)	26.0	26.0		21.0	21.0		31.0	31.0				31.0
Actuated g/C Ratio	0.29	0.29		0.23	0.23		0.34	0.34				0.34
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0				5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0				3.0
Lane Grp Cap (vph)	511	502		413	406		217	620				316
v/s Ratio Prot	0.03	c0.30		0.05	c0.22			0.27				
v/s Ratio Perm							0.43					c0.49
v/c Ratio	0.11	1.04		0.21	0.93		1.26	0.78				1.41
Uniform Delay, d1	23.5	32.0		27.8	33.8		29.5	26.5				29.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00				1.00
Incremental Delay, d2	0.1	52.2		0.2	28.2		147.9	9.6				201.8
Delay (s)	23.6	84.2		28.0	62.0		177.4	36.1				231.3
Level of Service	C	F		C	E		F	D				F
Approach Delay (s)		78.8			56.0			86.1				231.3
Approach LOS		E			E			F				F
Intersection Summary												
HCM Average Control Delay			106.3			HCM Level of Service					F	
HCM Volume to Capacity ratio			1.16									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			86.5%			ICU Level of Service			E			
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

2: Church Street & West Jackson Boulevard

11/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Free			Free				Stop		Stop		
Grade	0%			0%				0%		0%		
Volume (veh/h)	71	436	25	63	349	86	21	8	98	0	0	0
Peak Hour Factor	0.72	0.72	0.72	0.89	0.89	0.89	0.84	0.84	0.84	0.90	0.90	0.90
Hourly flow rate (vph)	99	606	35	71	392	97	25	10	117	0	0	0
Pedestrians		20			20			20			20	
Lane Width (ft)		12.0			12.0			12.0			0.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		2			2			2			0	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)					600							
pX, platoon unblocked	0.94						0.94	0.94		0.94	0.94	0.94
vC, conflicting volume	509			660			1394	1490	663	1546	1460	480
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	478			660			1418	1521	663	1580	1488	448
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	90			92			72	90	74	100	100	100
cM capacity (veh/h)	1021			912			90	91	446	48	96	565
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1							
Volume Total	99	640	71	489	151							
Volume Left	99	0	71	0	25							
Volume Right	0	35	0	97	117							
cSH	1021	1700	912	1700	235							
Volume to Capacity	0.10	0.38	0.08	0.29	0.64							
Queue Length 95th (ft)	8	0	6	0	99							
Control Delay (s)	8.9	0.0	9.3	0.0	44.5							
Lane LOS	A		A		E							
Approach Delay (s)	1.2		1.2		44.5							
Approach LOS					E							
Intersection Summary												
Average Delay			5.7									
Intersection Capacity Utilization			49.2%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 3: Church Street & Regions

11/25/2014



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↘	↗
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	629	370	0	12	38
Peak Hour Factor	0.89	0.89	0.83	0.83	0.77	0.77
Hourly flow rate (vph)	0	707	446	0	16	49
Pedestrians		20	20		20	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		2	2		2	
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)			825			
pX, platoon unblocked						
vC, conflicting volume	466				1193	486
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	466				1193	486
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				92	91
cM capacity (veh/h)	1077				200	562
Direction, Lane #	EB 1	WB 1	SB 1	SB 2		
Volume Total	707	446	16	49		
Volume Left	0	0	16	0		
Volume Right	0	0	0	49		
cSH	1700	1700	200	562		
Volume to Capacity	0.42	0.26	0.08	0.09		
Queue Length 95th (ft)	0	0	6	7		
Control Delay (s)	0.0	0.0	24.5	12.0		
Lane LOS			C	B		
Approach Delay (s)	0.0	0.0	15.0			
Approach LOS			C			
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization		48.0%			ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
4: Church Street & Site Access

11/25/2014



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↶	↷	↷		↶	
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	64	557	358	50	72	76
Peak Hour Factor	0.89	0.89	0.83	0.83	0.90	0.90
Hourly flow rate (vph)	72	626	431	60	80	84
Pedestrians		20	20		20	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		2	2		2	
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)			925			
pX, platoon unblocked						
vC, conflicting volume	512				1271	501
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	512				1271	501
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	93				52	85
cM capacity (veh/h)	1036				167	551
Direction, Lane #	EB 1	EB 2	WB 1	SB 1		
Volume Total	72	626	492	164		
Volume Left	72	0	0	80		
Volume Right	0	0	60	84		
cSH	1036	1700	1700	260		
Volume to Capacity	0.07	0.37	0.29	0.63		
Queue Length 95th (ft)	6	0	0	98		
Control Delay (s)	8.7	0.0	0.0	40.1		
Lane LOS	A			E		
Approach Delay (s)	0.9		0.0	40.1		
Approach LOS				E		
Intersection Summary						
Average Delay			5.3			
Intersection Capacity Utilization			47.4%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
5: Church Street & CVS

11/25/2014



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↶	↷	↷		↶	↶
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	30	604	443	25	16	38
Peak Hour Factor	0.89	0.89	0.83	0.83	0.85	0.85
Hourly flow rate (vph)	34	679	534	30	19	45
Pedestrians		20	20		20	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		2	2		2	
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)			1025			
pX, platoon unblocked						
vC, conflicting volume	584				1335	589
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	584				1335	589
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				88	91
cM capacity (veh/h)	974				158	492

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	34	679	564	64
Volume Left	34	0	0	19
Volume Right	0	0	30	45
cSH	974	1700	1700	303
Volume to Capacity	0.03	0.40	0.33	0.21
Queue Length 95th (ft)	3	0	0	19
Control Delay (s)	8.8	0.0	0.0	20.0
Lane LOS	A			C
Approach Delay (s)	0.4		0.0	20.0
Approach LOS				C

Intersection Summary			
Average Delay		1.2	
Intersection Capacity Utilization		47.3%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
6: Church Street & Dexter Avenue

11/25/2014



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑	↗		↘	↙
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	44	497	340	63	137	31
Peak Hour Factor	0.89	0.89	0.83	0.83	0.61	0.61
Hourly flow rate (vph)	49	558	410	76	225	51
Pedestrians		20	20		20	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		2	2		2	
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	506				1145	488
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	506				1145	488
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	95				0	91
cM capacity (veh/h)	1041				203	561

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	49	558	486	275
Volume Left	49	0	0	225
Volume Right	0	0	76	51
cSH	1041	1700	1700	230
Volume to Capacity	0.05	0.33	0.29	1.20
Queue Length 95th (ft)	4	0	0	334
Control Delay (s)	8.6	0.0	0.0	166.3
Lane LOS	A			F
Approach Delay (s)	0.7		0.0	166.3
Approach LOS				F

Intersection Summary			
Average Delay		33.8	
Intersection Capacity Utilization	46.9%		ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis

7: Vine Street & Dexter Avenue

11/25/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	4	1	17	101	99	61	19	72	0	0	52	3
Peak Hour Factor	0.63	0.63	0.63	0.49	0.49	0.49	0.61	0.61	0.61	0.56	0.56	0.56
Hourly flow rate (vph)	6	2	27	206	202	124	31	118	0	0	93	5
Pedestrians		20			20			20			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		2			2			2			2	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	541	316	136	344	319	158	118			138		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	541	316	136	344	319	158	118			138		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	97	62	64	85	98			100		
cM capacity (veh/h)	259	568	883	548	566	858	1445			1422		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	35	533	149	98								
Volume Left	6	206	31	0								
Volume Right	27	124	0	5								
cSH	604	606	1445	1422								
Volume to Capacity	0.06	0.88	0.02	0.00								
Queue Length 95th (ft)	5	257	2	0								
Control Delay (s)	11.3	39.3	1.7	0.0								
Lane LOS	B	E	A									
Approach Delay (s)	11.3	39.3	1.7	0.0								
Approach LOS	B	E										
Intersection Summary												
Average Delay			26.5									
Intersection Capacity Utilization			40.7%		ICU Level of Service					A		
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

1: Church Street & Montevallo Road

11/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Fr _t	1.00	0.95		1.00	0.94		1.00	0.98			0.98	
Fl _t Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.99	
Satd. Flow (prot)	1770	1775		1770	1743		1770	1825			1815	
Fl _t Permitted	0.95	1.00		0.95	1.00		0.32	1.00			0.20	
Satd. Flow (perm)	1770	1775		1770	1743		600	1825			363	
Volume (vph)	78	375	171	35	223	167	207	518	81	51	342	69
Peak-hour factor, PHF	0.73	0.73	0.73	0.85	0.85	0.85	0.74	0.74	0.74	0.92	0.92	0.92
Adj. Flow (vph)	107	514	234	41	262	196	280	700	109	55	372	75
RTOR Reduction (vph)	0	15	0	0	24	0	0	5	0	0	6	0
Lane Group Flow (vph)	107	733	0	41	434	0	280	804	0	0	496	0
Turn Type	Split			Split			Perm			Perm		
Protected Phases	3	3		4	4			2				2
Permitted Phases							2			2		
Actuated Green, G (s)	30.0	30.0		25.0	25.0		40.0	40.0				40.0
Effective Green, g (s)	31.0	31.0		26.0	26.0		41.0	41.0				41.0
Actuated g/C Ratio	0.28	0.28		0.24	0.24		0.37	0.37				0.37
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0				5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0				3.0
Lane Grp Cap (vph)	499	500		418	412		224	680				135
v/s Ratio Prot	0.06	c0.41		0.02	c0.25			0.44				
v/s Ratio Perm							0.47					c1.37
v/c Ratio	0.21	1.47		0.10	1.05		1.25	1.18				3.68
Uniform Delay, d ₁	30.2	39.5		32.8	42.0		34.5	34.5				34.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00				1.00
Incremental Delay, d ₂	0.2	220.4		0.1	58.8		143.9	96.6				1222.6
Delay (s)	30.4	259.9		32.9	100.8		178.4	131.1				1257.1
Level of Service	C	F		C	F		F	F				F
Approach Delay (s)		231.2			95.2			143.3				1257.1
Approach LOS		F			F			F				F
Intersection Summary												
HCM Average Control Delay			350.5			HCM Level of Service					F	
HCM Volume to Capacity ratio			2.28									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			107.3%			ICU Level of Service					G	
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
 2: Church Street & West Jackson Boulevard

11/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Free			Free				Stop		Stop		
Grade	0%			0%				0%		0%		
Volume (veh/h)	52	531	13	50	387	72	11	15	120	0	0	0
Peak Hour Factor	0.91	0.91	0.91	0.88	0.88	0.88	0.90	0.90	0.90	1.00	1.00	1.00
Hourly flow rate (vph)	57	584	14	57	440	82	12	17	133	0	0	0
Pedestrians	20			20				20		20		
Lane Width (ft)	12.0			12.0				12.0		0.0		
Walking Speed (ft/s)	4.0			4.0				4.0		4.0		
Percent Blockage	2			2				2		0		
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)												
Upstream signal (ft)	600											
pX, platoon unblocked	0.92						0.92	0.92		0.92	0.92	0.92
vC, conflicting volume	542			618			1298	1380	631	1474	1346	521
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	500			618			1326	1415	631	1517	1378	477
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	94			94			88	85	71	100	100	100
cM capacity (veh/h)	975			946			106	110	465	51	116	534
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1							
Volume Total	57	598	57	522	162							
Volume Left	57	0	57	0	12							
Volume Right	0	14	0	82	133							
cSH	975	1700	946	1700	293							
Volume to Capacity	0.06	0.35	0.06	0.31	0.55							
Queue Length 95th (ft)	5	0	5	0	78							
Control Delay (s)	8.9	0.0	9.0	0.0	31.6							
Lane LOS	A		A		D							
Approach Delay (s)	0.8		0.9		31.6							
Approach LOS					D							
Intersection Summary												
Average Delay			4.4									
Intersection Capacity Utilization			53.9%		ICU Level of Service			A				
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 3: Church Street & Regions

11/25/2014



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↘	↗
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	672	404	0	10	30
Peak Hour Factor	0.96	0.96	0.95	0.95	0.71	0.71
Hourly flow rate (vph)	0	700	425	0	14	42
Pedestrians		20	20		20	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		2	2		2	
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)			825			
pX, platoon unblocked						
vC, conflicting volume	445				1165	465
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	445				1165	465
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				93	93
cM capacity (veh/h)	1096				207	577
Direction, Lane #	EB 1	WB 1	SB 1	SB 2		
Volume Total	700	425	14	42		
Volume Left	0	0	14	0		
Volume Right	0	0	0	42		
cSH	1700	1700	207	577		
Volume to Capacity	0.41	0.25	0.07	0.07		
Queue Length 95th (ft)	0	0	5	6		
Control Delay (s)	0.0	0.0	23.6	11.7		
Lane LOS			C	B		
Approach Delay (s)	0.0	0.0	14.7			
Approach LOS			B			
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			50.2%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 4: Church Street & Site Access

11/25/2014



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↶	↷	↷		↶	
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	62	597	375	59	79	45
Peak Hour Factor	0.96	0.96	0.95	0.95	0.90	0.90
Hourly flow rate (vph)	65	622	395	62	88	50
Pedestrians		20	20		20	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		2	2		2	
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)			925			
pX, platoon unblocked						
vC, conflicting volume	477				1217	466
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	477				1217	466
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	94				52	91
cM capacity (veh/h)	1067				181	577

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	65	622	457	138
Volume Left	65	0	0	88
Volume Right	0	0	62	50
cSH	1067	1700	1700	242
Volume to Capacity	0.06	0.37	0.27	0.57
Queue Length 95th (ft)	5	0	0	80
Control Delay (s)	8.6	0.0	0.0	38.0
Lane LOS	A			E
Approach Delay (s)	0.8		0.0	38.0
Approach LOS				E

Intersection Summary			
Average Delay		4.5	
Intersection Capacity Utilization		48.6%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
5: Church Street & CVS

11/25/2014



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↑	↗		↘	
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	32	630	397	23	30	28
Peak Hour Factor	0.96	0.96	0.95	0.95	0.78	0.78
Hourly flow rate (vph)	33	656	418	24	38	36
Pedestrians		20	20		20	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		2	2		2	
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)			1025			
pX, platoon unblocked						
vC, conflicting volume	462				1193	470
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	462				1193	470
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				80	94
cM capacity (veh/h)	1081				194	574
Direction, Lane #	EB 1	EB 2	WB 1	SB 1		
Volume Total	33	656	442	74		
Volume Left	33	0	0	38		
Volume Right	0	0	24	36		
cSH	1081	1700	1700	285		
Volume to Capacity	0.03	0.39	0.26	0.26		
Queue Length 95th (ft)	2	0	0	26		
Control Delay (s)	8.4	0.0	0.0	22.1		
Lane LOS	A			C		
Approach Delay (s)	0.4		0.0	22.1		
Approach LOS				C		
Intersection Summary						
Average Delay			1.6			
Intersection Capacity Utilization			48.5%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
6: Church Street & Dexter Avenue

11/25/2014



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↵	↑	↶		↷	
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	79	602	361	41	60	63
Peak Hour Factor	0.96	0.96	0.95	0.95	0.74	0.74
Hourly flow rate (vph)	82	627	380	43	81	85
Pedestrians		20	20		20	
Lane Width (ft)		12.0	12.0		12.0	
Walking Speed (ft/s)		4.0	4.0		4.0	
Percent Blockage		2	2		2	
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	443				1233	442
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	443				1233	442
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	93				54	86
cM capacity (veh/h)	1098				175	595
Direction, Lane #	EB 1	EB 2	WB 1	SB 1		
Volume Total	82	627	423	166		
Volume Left	82	0	0	81		
Volume Right	0	0	43	85		
cSH	1098	1700	1700	274		
Volume to Capacity	0.07	0.37	0.25	0.61		
Queue Length 95th (ft)	6	0	0	91		
Control Delay (s)	8.5	0.0	0.0	36.6		
Lane LOS	A			E		
Approach Delay (s)	1.0		0.0	36.6		
Approach LOS				E		
Intersection Summary						
Average Delay			5.2			
Intersection Capacity Utilization			49.0%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

7: Vine Street & Dexter Avenue

11/25/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	11	9	37	63	13	48	55	40	12	44	1
Peak Hour Factor	0.85	0.85	0.85	0.91	0.91	0.91	0.75	0.75	0.75	0.68	0.68	0.68
Hourly flow rate (vph)	6	13	11	41	69	14	64	73	53	18	65	1
Pedestrians		20			20			20			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		2			2			2			2	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	418	395	105	386	369	140	86			147		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	418	395	105	386	369	140	86			147		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	97	99	92	86	98	96			99		
cM capacity (veh/h)	435	495	918	501	512	878	1485			1411		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	29	124	191	84								
Volume Left	6	41	64	18								
Volume Right	11	14	53	1								
cSH	574	534	1485	1411								
Volume to Capacity	0.05	0.23	0.04	0.01								
Queue Length 95th (ft)	4	22	3	1								
Control Delay (s)	11.6	13.8	2.8	1.7								
Lane LOS	B	B	A	A								
Approach Delay (s)	11.6	13.8	2.8	1.7								
Approach LOS	B	B										
Intersection Summary												
Average Delay			6.4									
Intersection Capacity Utilization		32.1%		ICU Level of Service		A						
Analysis Period (min)			15									

Appendix F

Future 2019 Right Turn Lane Warrant Analysis Worksheets

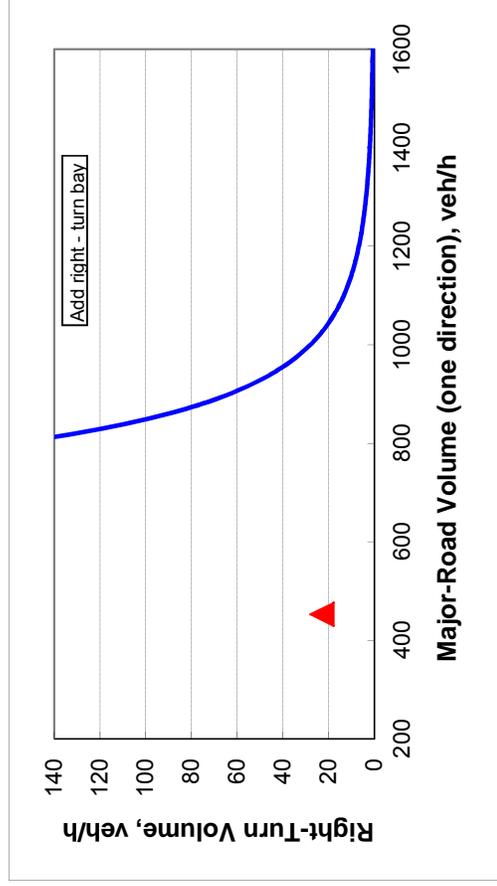
Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:	<input type="checkbox"/>	<input type="checkbox"/>	2-lane roadway
Variable	Value		
Major-road speed, mph:	20		
Major-road volume (one direction), veh/h:	452		
Right-turn volume, veh/h:	23		

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	13132
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



RIGHT TURN LANE WARRANT
 CHURCH STREET AT SITE ACCESS
 FUTURE A.M. PEAK HOUR

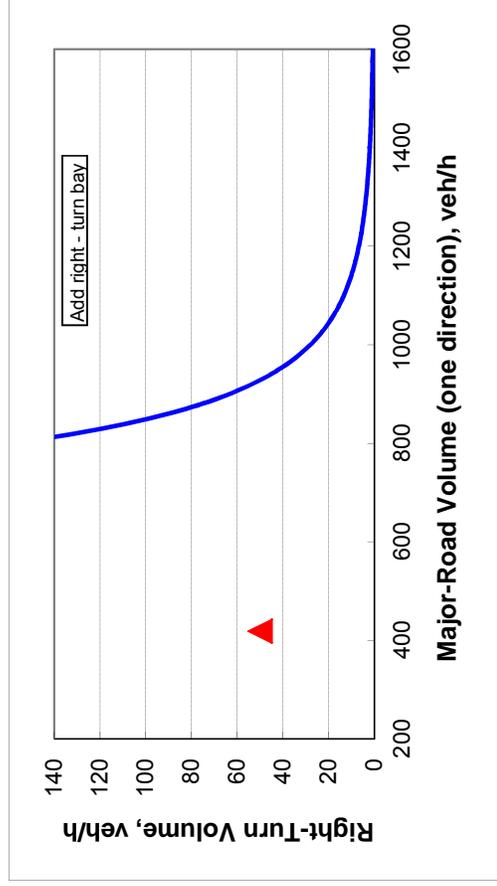
Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:		2-lane roadway
Variable	Value	
Major-road speed, mph:	20	
Major-road volume (one direction), veh/h:	418	
Right-turn volume, veh/h:	50	

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	24066
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



**RIGHT TURN LANE WARRANT
 CHURCH STREET AT SITE ACCESS
 FUTURE AFTERNOON SCHOOL
 PEAK HOUR**

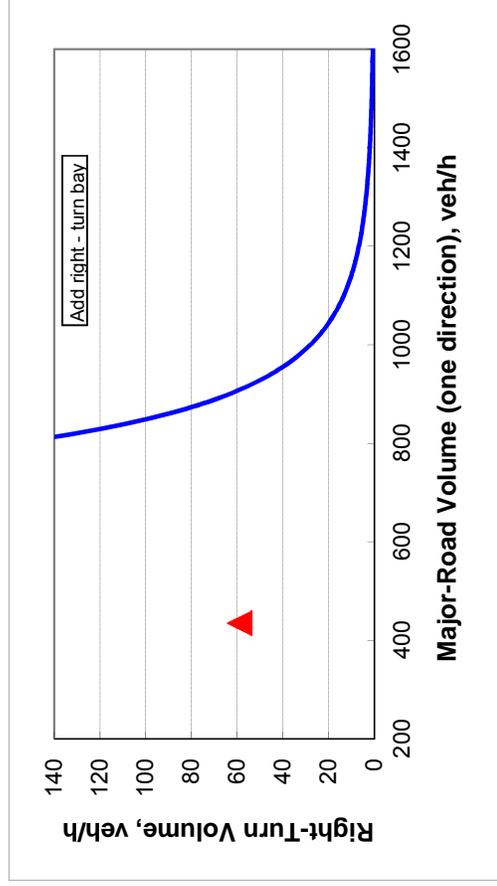
Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:		2-lane roadway
Variable	Value	
Major-road speed, mph:	20	
Major-road volume (one direction), veh/h:	434	
Right-turn volume, veh/h:	59	

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	17990
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



**RIGHT TURN LANE WARRANT
 CHURCH STREET AT SITE ACCESS
 FUTURE P.M. PEAK HOUR**

Appendix G

Future 2019 Intersection Capacity Analysis Worksheets – Church Street at Dexter Avenue (Signalized)

HCM Signalized Intersection Capacity Analysis
6: Church Street & Dexter Avenue

11/25/2014



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↶	↷	↷		↶	↶
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	1.00		0.99	
Flpb, ped/bikes	0.99	1.00	1.00		1.00	
Fr _t	1.00	1.00	0.99		0.96	
Fl _t Protected	0.95	1.00	1.00		0.97	
Satd. Flow (prot)	1753	1583	1566		1446	
Fl _t Permitted	0.44	1.00	1.00		0.97	
Satd. Flow (perm)	811	1583	1566		1446	
Volume (vph)	14	551	363	25	116	55
Peak-hour factor, PHF	0.72	0.72	0.80	0.80	0.62	0.62
Adj. Flow (vph)	19	765	454	31	187	89
RTOR Reduction (vph)	0	0	4	0	39	0
Lane Group Flow (vph)	19	765	481	0	237	0
Confl. Peds. (#/hr)	15			15	15	15
Parking (#/hr)		10	10	10	10	10
Turn Type	Perm					
Protected Phases		2	2		4	
Permitted Phases	2					
Actuated Green, G (s)	24.9	24.9	24.9		9.4	
Effective Green, g (s)	24.9	24.9	24.9		9.4	
Actuated g/C Ratio	0.59	0.59	0.59		0.22	
Clearance Time (s)	4.0	4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	477	932	922		321	
v/s Ratio Prot		c0.48	0.31		c0.16	
v/s Ratio Perm	0.02					
v/c Ratio	0.04	0.82	0.52		0.74	
Uniform Delay, d ₁	3.7	6.9	5.2		15.3	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d ₂	0.0	5.9	0.5		8.6	
Delay (s)	3.7	12.8	5.7		23.9	
Level of Service	A	B	A		C	
Approach Delay (s)		12.6	5.7		23.9	
Approach LOS		B	A		C	
Intersection Summary						
HCM Average Control Delay			12.4		HCM Level of Service	B
HCM Volume to Capacity ratio			0.80			
Actuated Cycle Length (s)			42.3		Sum of lost time (s)	8.0
Intersection Capacity Utilization			47.1%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis
6: Church Street & Dexter Avenue

11/25/2014



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	0.99		0.99	
Flpb, ped/bikes	0.99	1.00	1.00		1.00	
Frt	1.00	1.00	0.98		0.98	
Flt Protected	0.95	1.00	1.00		0.96	
Satd. Flow (prot)	1750	1583	1539		1472	
Flt Permitted	0.43	1.00	1.00		0.96	
Satd. Flow (perm)	798	1583	1539		1472	
Volume (vph)	44	497	340	63	137	31
Peak-hour factor, PHF	0.89	0.89	0.83	0.83	0.61	0.61
Adj. Flow (vph)	49	558	410	76	225	51
RTOR Reduction (vph)	0	0	13	0	15	0
Lane Group Flow (vph)	49	558	473	0	261	0
Confl. Peds. (#/hr)	20			20	20	20
Parking (#/hr)		10	10	10	10	10
Turn Type	Perm					
Protected Phases		2	2		4	
Permitted Phases	2					
Actuated Green, G (s)	21.0	21.0	21.0		9.0	
Effective Green, g (s)	21.0	21.0	21.0		9.0	
Actuated g/C Ratio	0.55	0.55	0.55		0.24	
Clearance Time (s)	4.0	4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	441	875	851		349	
v/s Ratio Prot		c0.35	0.31		c0.18	
v/s Ratio Perm	0.06					
v/c Ratio	0.11	0.64	0.56		0.75	
Uniform Delay, d1	4.1	5.9	5.5		13.4	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	0.1	1.5	0.8		8.5	
Delay (s)	4.2	7.4	6.3		21.9	
Level of Service	A	A	A		C	
Approach Delay (s)		7.1	6.3		21.9	
Approach LOS		A	A		C	
Intersection Summary						
HCM Average Control Delay			9.8		HCM Level of Service	A
HCM Volume to Capacity ratio			0.67			
Actuated Cycle Length (s)			38.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			46.9%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis

6: Church Street & Dexter Avenue

11/25/2014



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00	1.00		1.00	
Frpb, ped/bikes	1.00	1.00	1.00		0.98	
Flpb, ped/bikes	0.99	1.00	1.00		1.00	
Fr _t	1.00	1.00	0.99		0.93	
Fl _t Protected	0.95	1.00	1.00		0.98	
Satd. Flow (prot)	1749	1583	1555		1409	
Fl _t Permitted	0.51	1.00	1.00		0.98	
Satd. Flow (perm)	933	1583	1555		1409	
Volume (vph)	79	602	361	41	60	63
Peak-hour factor, PHF	0.96	0.96	0.95	0.95	0.74	0.74
Adj. Flow (vph)	82	627	380	43	81	85
RTOR Reduction (vph)	0	0	7	0	70	0
Lane Group Flow (vph)	82	627	416	0	96	0
Confl. Peds. (#/hr)	20			20	20	20
Parking (#/hr)		10	10	10	10	10
Turn Type	Perm					
Protected Phases		2	2		4	
Permitted Phases	2					
Actuated Green, G (s)	19.9	19.9	19.9		6.1	
Effective Green, g (s)	19.9	19.9	19.9		6.1	
Actuated g/C Ratio	0.59	0.59	0.59		0.18	
Clearance Time (s)	4.0	4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	546	927	910		253	
v/s Ratio Prot		c0.40	0.27		c0.07	
v/s Ratio Perm	0.09					
v/c Ratio	0.15	0.68	0.46		0.38	
Uniform Delay, d ₁	3.2	4.8	4.0		12.3	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d ₂	0.1	2.0	0.4		1.0	
Delay (s)	3.3	6.8	4.4		13.2	
Level of Service	A	A	A		B	
Approach Delay (s)		6.4	4.4		13.2	
Approach LOS		A	A		B	
Intersection Summary						
HCM Average Control Delay			6.6		HCM Level of Service	A
HCM Volume to Capacity ratio			0.61			
Actuated Cycle Length (s)			34.0		Sum of lost time (s)	8.0
Intersection Capacity Utilization			49.0%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

**CITY OF MOUNTAIN BROOK, ALABAMA
RESOLUTION NO. 2014-170**

WHEREAS, the City Council of the City of Mountain Brook, Alabama (“the City Council”), has been asked to consider and approve a development agreement (“Agreement”) with Ajlouny Investments, LLC, an Alabama limited liability company (hereinafter referred to as “Ajlouny”), which Agreement is attached hereto as Exhibit A, made a part hereof, and incorporated herein by reference; and

WHEREAS, the City Clerk has published; and

WHEREAS, Legal Notice of Action Proposed to be Taken by the City of Mountain Brook, Alabama with regard to a Development Agreement, pursuant to and in conformity with Amendment 772 to the Constitution of Alabama (1901) (Article 94.01 of the Recompiled Constitution of Alabama), attached hereto as Exhibit B, was published in the Birmingham News, the newspaper having the largest circulation in the City of Mountain Brook, on December 7, 2014, which publication was at least seven days prior to the date of the meeting at which this Resolution is being considered; and

WHEREAS, such Notice further invited members of the public to attend the meeting and submit comments regarding the actions the City Council is considering with respect to the transactions and agreements described in the Notice; and

WHEREAS, the City Council, at its meeting on the present date, offered members of the public the opportunity to comment on the matters set forth in the Notice and those comments have been considered by the City Council.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF MOUNTAIN BROOK, ALABAMA, as follows:

1. That the Development Agreement between the City of Mountain Brook and Ajlouny Investments, LLC, which is attached hereto and incorporated herein, shall be and is hereby approved.
2. That the Mayor of the City of Mountain Brook shall be and hereby is authorized to execute and enter into a Development Agreement with Ajlouny, in substantial conformity with the Agreement attached hereto and made a part hereof as Exhibit A. and deliver the Agreement set forth in this Resolution to the other parties to the Agreement or to their representatives.
3. That the Mayor shall further be authorized to make such corrections or revisions to the text or form of the Agreement as necessary prior to such execution, provided that any such correction or revision shall not alter the material terms of the Agreement.
4. That, after due consideration, the City Council finds and determines that the expenditure of public funds for the purposes and in the manner specified in the Agreement, and

the execution of the Agreement approved in this Resolution serve valid and sufficient public purposes, notwithstanding any individual benefit accruing to Evson, Inc., Daniel Realty Company, LLC, or any other private entity or entities.

5. That the public benefits to the City of Mountain Brook resulting from the Agreement and transactions hereby approved include improvements to infrastructure, public roadways and sidewalks; promotion of local economic and commercial development and the stimulation of the local economy; increase of employment opportunities in the City; increase of the City's tax base, which will result in significant additional tax revenues for the City; a significant increase in tax revenues for the schools operating in the City; relocation of a community grocery store for the Crestline Village area; expansion and retention of commercial enterprises in the City; preservation of and improvement to the aesthetic quality of commercial development; the replacement of aging commercial structures; provision of a much needed parking solution for Crestline Village; improvements to traffic and pedestrian circulation in and around Vine Street; provision of a safe and effective pedestrian connection between Vine and Church Streets; and improvement of public facilities around the Property, all of which inure to the economic health and public welfare of the City.

6. That any exchange of consideration resulting from the Development Agreement herein approved was fully negotiated between the parties to it and the City Council specifically finds and concludes that such consideration, as applicable, is based upon and equal to the fair market value of the interests being acquired.

ADOPTED AND APPROVED this the 16th day of December, 2014.

Virginia Carruthers Smith, City Council President

Attest: _____
Steven Boone, City Clerk

Lawrence T. Oden, Mayor, City of Mountain Brook

EXHIBIT A
To Be Attached.

EXHIBIT B

**LEGAL NOTICE OF ACTION PROPOSED TO BE TAKEN BY
THE CITY OF MOUNTAIN BROOK, ALABAMA WITH REGARD TO A
DEVELOPMENT AGREEMENT**

Pursuant to Amendment No. 772 to the Constitution of Alabama (1901) (Section 94.01(a)(3) of the Recompiled Constitution of Alabama and hereinafter referred to as "Amendment No. 772"), the City of Mountain Brook, Alabama (the "City") gives notice that its City Council, as the governing body of the City, will consider at a public meeting to be held on December 16, 2014, beginning at 5:30 p.m. at Mountain Brook City Hall, City Council meeting room, 56 Church Street, Mountain Brook, Alabama, approving a resolution that authorizes the execution and delivery of a Development Agreement (the "Agreement") by and between the City and Ajlouny Investments, LLC, an Alabama Limited Liability Company ("Ajlouny").

BACKGROUND

Ajlouny plans to acquire six (6) lots ("Property") on Vine Street and Church Street in Crestline Village in the City of Mountain Brook as shown on Exhibit A, including 22 Vine Street ("Parking Lot Parcel") and 39 Church Street ("Regions Access Parcel"). Ajlouny has proposed to redevelop that Property as well as a City-owned lot located at 32 Vine Street ("City-owned Lot") for the construction of a Piggly Wiggly neighborhood grocery store, public parking and an access from Church Street to the Property and the City-owned Lot.

The redevelopment will result in the replacement of outdated commercial space, relocation of a civic club (the Pops Club) to a more appropriate location across the street, the return to Crestline Village of the grocery store that, before its closing, served the community for decades, provision of a public parking solution for Crestline Village, provision of a safe pedestrian connection between Vine Street and Church Street, improvement of parking facilities, provide vehicular access from Church Street to the site, and generate significant sales and property taxes for the City and its schools.

SUMMARY OF TERMS OF THE AGREEMENT

In consideration for and as an inducement for the redevelopment of the Property, the City is considering the execution of a Development Agreement with Ajlouny whereby the City would reimburse Ajlouny for site improvements through reimbursements and the sharing of tax revenues resulting from the Development. In that Agreement, the City proposes to pay to Ajlouny \$1,200,000.00 for improvements to parking areas, access roads, other public improvements and the conveyance of the Parking Lot Parcel and the Regions Access Parcel to the City. Such payment shall not be due from the City until after the improvements have been made by Ajlouny and a certificate of occupancy has been issued for the Piggly Wiggly grocery store to be constructed on the site. The Agreement further provides that the "Regions Access Parcel" and the "Parking Lot Parcel" parcels shall be made available for use by both patrons of Piggly Wiggly and the public after they are conveyed to the City.

In further consideration for and as an inducement for the redevelopment of the Property, the City further agrees to share sales tax revenues (to the extent they exceed revenues attributable to the Property prior to redevelopment) resulting from the redevelopment of the Property. The

sales tax revenues will be shared with Ajlouny by paying Ajlouny an amount equal to (i) 75% of the sales tax revenues for a period of five years from the date the retail sales of the Piggly Wiggly are commenced on the property and (ii) 50% of sales tax revenues after the original five year period. The term for sharing sales tax revenues shall be from the date retail sales attributable to the Piggly Wiggly commence on the Property until the earlier of the (i) date when sales tax revenues paid to Ajlouny reaches \$4,000,000.00 or (ii) 20 years. The Agreement is also expected to provide for a property tax abatement on non-educational ad valorem taxes for the Property effective for any year that retail sales attributable to the Piggly Wiggly exceeds \$17,500,000.00 for a term of 15 years. Any school taxes generated by the Property shall not be subject to the revenue sharing and the Mountain Brook City Board of Education will benefit from all increased taxes resulting from the development of the Property

While Ajlouny would receive certain benefits under the Agreement (summarized above), the City Council expects to determine at its public meeting that the expenditure of public funds in connection with the Agreement will serve a valid and sufficient public purpose, notwithstanding any incidental benefit accruing to Ajlouny or any other private business. The public benefits sought and expected to be achieved by the approval of the Agreement include: improvements to infrastructure, public roadways and sidewalks, promotion of local economic and commercial development and the stimulation of the local economy; increase of employment opportunities in the City; increase of the City's tax base, which will result in significant additional tax revenues for the City; a significant increase in tax revenues for the schools operating in the City; relocation of a community grocery store for the Crestline Village area, expansion and retention of commercial enterprises in the City; preservation of and improvement to the aesthetic quality of commercial development; and the replacement of aging commercial structures, provision of a much needed parking solution for Crestline Village, improvements to traffic and pedestrian circulation in and around Vine Street, provision of a safe and effective pedestrian connection between Vine and Church Streets and improvement of public facilities around the Property, all of which inure to the economic health and public welfare of the City.

INVITATION TO ATTEND AND COMMENT

All members of the public are invited to attend the meeting described above or to submit written opinions or comments regarding the proposed action to the City Council prior to the meeting.

[DATE]

s/ Steve Boone, City Clerk
City of Mountain Brook, Alabama