

CHAPEL HILL COOPERATIVE PRESCHOOL

TRAFFIC IMPACT STUDY



Prepared for:

The Town of Chapel Hill
Public Works Department - Engineering

Prepared by:

HNTB North Carolina, PC

*343 East Six Forks Road
Suite 200
Raleigh, NC 27609*

NCBELS License #: C-1554

December 2017

HNTB

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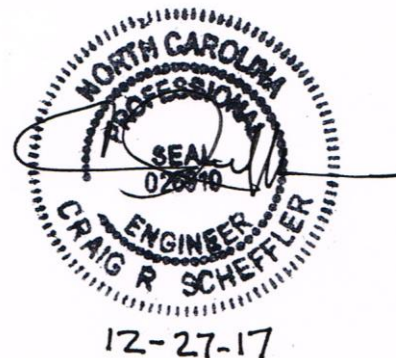




Table of Contents

	<u>Page</u>
LIST OF FIGURES.....	ii
LIST OF TABLES/APPENDICES	ii
 I. Existing Conditions.....	 1
A. Project Overview	1
B. Site Location and Study Area	1
C. Site Description.....	2
D. Existing and Proposed Uses in Vicinity of Site	2
E. Existing and Committed Surface Transportation Network.....	2
F. Existing Traffic Conditions	5
 II. 2019 Build-Out Year + 1 & 2022 Future Year Conditions	 6
A. Future Ambient Area-Wide Traffic Growth Estimation.....	6
B. Approved Background Development Traffic Estimation	6
C. Proposed Project Traffic.....	6
i.) Trip Generation.....	6
ii.) Adjustments to Trip Generation Rates	9
iii.) Trip Distribution	9
iv.) Trip Assignment.....	10
D. Future Traffic Forecasts with the Proposed Development	10
 III. Impact Analyses	 10
A. Peak Hour Intersection Level-of-Service Analysis	10
i.) Methodology	10
ii.) 2017 Existing Conditions Results.....	12
iii.) 2019 No-Build Scenario (Condition 2) Results.....	13
iv.) 2019 Build Scenario (Condition 3) Results	14
v.) 2019 Mitigation Scenario (Condition 4) Results.....	16
vi.) 2022 Build Scenario (Condition 5) Results	17
B. Access Analysis	18
C. Signal Warrant Analysis	18
D. Sight Distance Analysis.....	18
E. Crash Analysis	18
F. Other Transportation-Related Analyses.....	20
G. Special Analysis/Issues Related to the Project.....	20
 IV. Mitigation Measures/Recommendations	 21
A. Planned Improvements.....	21
B. Background Committed Improvements.....	22
C. Applicant Committed Improvements.....	22
D. Necessary Improvements.....	22



List of Figures

Figure

- 1) Project Study Area
- 2) Site Concept Plan
- 3) Existing Laneage and Geometrics
- 4) Study Area Pedestrian and Bicycle Facilities
- 5) Study Area Transit Routes
- 6) 2017 Existing Peak Hour Traffic Volumes
- 7) 2019 Peak Hour Traffic Volumes Without Site
- 8) 2019 Site Trip Distribution Percentages
- 9) 2019 Site Traffic Assignment
- 10) 2019 Peak Hour Traffic Volumes With Site
- 11) 2022 Background Traffic Generator Volumes
- 12) 2022 Peak Hour Traffic Volumes With Site
- 13) Crash Analysis Details
- 14) Committed and Recommended Improvements

List of Tables

Table

Page

1) Existing Study Area Roadways.....	3
2) Existing Study Area Intersection Details	4
3) Current Study Area Weekday Transit Service	5
4) Traffic Count Information	5
5) Weekday Daily and Peak Hour Vehicle Trip Generation Summary.....	8
6) Level of Service (LOS) Characteristics	11
7) Capacity Analysis Results for Study Area Intersections Condition 1 – 2017 Existing Traffic	13
8) Capacity Analysis Results for Study Area Intersections Condition 2 – 2019 Traffic Without Site	14
9) Capacity Analysis Results for Study Area Intersections Condition 3 – 2019 Traffic With Site	15
10) Capacity Analysis Results for Study Area Intersections Condition 4 – 2019 Traffic With Site & Mitigation.....	16
11) Capacity Analysis Results for Study Area Intersections Condition 5 – 2022 Traffic With Site & Obey Creek Full Build-Out.....	17
12) Study Area Crash Rate Comparison – Mt. Carmel Church Road Corridor	19
13) Study Area Intersection Crash Summary	19
14) Other Transportation-Related Analyses.....	20

Appendices

- A. Figures
- B. Traffic Count Data
- C. Trip Generation Data
- D. Scenario Volume Development Results
- E. Synchro Signalized Analysis Output
- F. Synchro Unsignalized Analysis Output
- G. SIDRA Roundabout Analysis Output
- H. Crash Data



I. EXISTING CONDITIONS

A. Project Overview

A new institutional development, known as the Chapel Hill Cooperative Preschool, located along Mount Carmel Church Road near its intersection with US Highway 15-501 is being proposed in Chapel Hill. The project proposes to construct a 9,000 square foot preschool with an ultimate student population of 100 and 22 staff (originally studied as 80 students and 20 staff) on several existing parcels on the north side of Mt. Carmel Church Road. **Figure 1** (found in **Appendix A**) shows the general location of the site. The project is anticipated to be fully complete by 2018. This report analyzes the complete build-out scenario for the year 2019 (one year after anticipated completion), the no-build scenario for 2019, a 2022 future scenario to include the full effects of the nearby Obey Creek development, as well as 2017 existing year traffic conditions.

The proposed site concept plan shows a single restricted movement access driveway (right-turn in/right-turn out only) along Mt. Carmel Church Road. No other vehicular access connections are proposed. **Figure 2** displays the preliminary site plan for the Chapel Hill Cooperative Preschool and nearby land uses and roadways. The project is expected to provide 37 parking spaces and eight parent drop-off parking stalls on surface parking lots.

B. Site Location and Study Area

This report analyzes and presents the transportation impacts that the Chapel Hill Cooperative Preschool will have on the following intersections in the project study area:

- US 15-501 and Mt. Carmel Church Road / Culbreth Road
- US 15-501 and Arlen Park Drive / Bennett Road
- Mt. Carmel Church Road and Bennett Road
- Mt. Carmel Church Road and proposed Site Driveway (Right-turn In/Right-turn Out Only)

The impacts of the proposed site at the study area intersections were evaluated during the AM, noon, and PM peak hours of an average weekday.

There are no Town-approved/recently completed developments in the immediate project study area that were considered to be fully built-out by 2019 that are expected to generate additional background traffic to the project study area. There are multiple locations located beyond the study area that are either approved or currently in the development review process that may also contribute to background traffic growth. To account for this, an area-wide ambient future traffic growth percentage of 1.2 percent per year was applied to the existing 2017 volumes, based on historical average annual daily traffic (AADT) growth rate data provided by the Town of Chapel Hill and the North Carolina Department of Transportation (NCDOT), and consistent with recent traffic impact studies near the project study area.

To account for future potential impacts of full build-out of the Obey Creek development, a 2022 analysis scenario was included in this study that includes background traffic volumes projected for the Obey Creek development as analyzed in the *Obey Creek Mixed-Use Development Traffic Impact Study* (HNTB, 2014).



C. Site Description

The Chapel Hill Cooperative Preschool site currently contains several wooded land parcels that are mostly undeveloped. It borders residential neighborhoods to the east and south and the US 15-501 highway corridor to the west. It is located immediately adjacent to Morgan Creek and Town-owned institutional lands to the north.

All vehicular access will utilize Mt. Carmel Church Road via a proposed restricted access site driveway that limits movements to right-turns in and

right-turns out through the use of a proposed concrete median along Mt. Carmel Church Road. The proposed site plan, shown in **Figure 2**, indicates all parking will be accommodated on-site, with paved surface parking facilities. No other specific transportation improvements are shown on the site plan, with the exception of a note that the site would have a future easement for a connection to the Morgan Creek Greenway trail system.



Chapel Hill Cooperative Preschool Site
(Google Earth Aerial Image, 2017)

D. Existing and Proposed Uses in Vicinity of Site

The land uses and development in the study area along Mt Carmel Church Road are primarily residential. The Existing Land Use Plan shown in the 2020 *Town of Chapel Hill Comprehensive Plan* and adopted June 25, 2012, indicates that the proposed site is designated as “Low Density Residential – 1-4 units/acre”. The Future Land Use Plan, that is also a part of the Town Comprehensive Plan, indicates that the parcel would continue to be designated as “Low Density Residential, 1-4 units/acre”. The parcel is currently zoned “R-1” – delineating it as “Residential – 3 units/acre”. Institutional uses, such as preschools, are permitted uses within residentially zoned land

E. Existing and Committed Surface Transportation Network

Roadways

The Chapel Hill Cooperative Preschool project study area features three major arterial roadways serving areas throughout the Town of Chapel Hill and points beyond, as well as some smaller collector and local access streets. **Table 1**, on the following page, summarizes pertinent information on the study area roadway facilities. Average Annual Daily Traffic (AADT) data was taken from 2015 AADT mapping produced by the NCDOT Traffic Survey Unit. **Figure 3** shows the existing lane configuration, traffic control, and speed limits for these study area roadways.

Detailed descriptions of several of the major study area roadways are as follows:

- **US 15-501** is a major north-south arterial that provides regional connectivity between Pittsboro, Chapel Hill and Durham. In the study area, US 15-501 is a divided facility south of the NC 54 Bypass interchange, and features a 35 mph speed limit through the project study area. Several bus stops are located along the facility, along with pedestrian sidewalk.



Table 1. Existing Study Area Roadways

Road Name	Functional Class*	Study Area Cross-Section	2015 AADT	Speed Limit	Sidewalk	On-Street Parking
US 15-501	Other Principal Arterial	4 lane divided / 5 lane undivided	26,000-41,000	35	Y	N
Culbreth Road	Minor Collector	3 lane undivided + center turn lane	4,900	35	Y	N
Mt Carmel Church Road	Minor Arterial	2 lane undivided	9,900	35	N	N
Arlen Park Drive	Local	2 lane divided	N/A	25	S	S
Bennett Road	Local	2 lane undivided	N/A	35	N	N

S = Some Sidewalk/Parking Present * - As defined on the NCDOT Urban Functional Classification Map (2017).
<https://ncdot.maps.arcgis.com/home/webmap/viewer.html>

- **Culbreth Road** is a local study area facility, serving Culbreth Middle School and other development between US 15-501 and Smith Level Road. In the study area vicinity, Culbreth Road is a three-lane undivided roadway with a center left-turn lane. There are several driveway access points along the roadway. On-street parking is not permitted. Several CHT bus stops are located along the facility and the facility is designated as a North Carolina Bike Route (Route 2). The posted speed limit is 35 mph in the project study area.
- **Mt. Carmel Church Road** is designated as a minor arterial facility that serves mostly residential developments to the south and east of the project study area. This roadway also provides linkage between the US 15-501 corridor and the Governor's Club area into Chatham County. The facility has a posted speed limit of 35 mph with no sidewalk present and on-street parking not permitted. It also is designated as NC Bike Route 2 in the project study area.
- **Bennett Road** is a local access street that connects US 15-501 and Mt. Carmel Church Road, serving several residential neighborhoods and a Town Fire Station. The posted speed limit is 35 mph on Bennett Road, with no pedestrian or bicycle facilities present. Some on-street parking is permitted east of the project study area.
- **Arlen Park Drive** are local access streets to and from US 15-501 for commercial and residential developments in the Southern Village neighborhood. These facilities have two travel lanes with some sections of on-street parking and sidewalk. Posted speed limits are 25 mph.

Intersections

Table 2 summarizes all three existing study area intersections, traffic control features, and pedestrian amenities at each. Laneage details and intersection turn bay lengths are also detailed on **Figure 3**.

The project study area features a mixture of signalized intersections at major intersections along the US 15-501 corridor and unsignalized intersections at minor local access street and private driveway connections. The US 15-501 corridor features coordinated signal operation for weekday peak hours.



Table 2. Existing Study Area Intersection Details

Intersection	Traffic Control	Signal Phases	Signal Operation	Cross walk	Ped Signals
US 15-501 and Mt. Carmel Church Road / Culbreth Road	Signal	8	Coordinated	Yes	Yes (1)
US 15-501 and Arlen Park Drive / Bennett Road	Signal	3	Coordinated	Yes	Yes (2)
Mt. Carmel Church Road and Bennett Road	TWSC	N/A	N/A	No	No

TWSC = Two-Way Stop-Controlled

Ped Signals (Number of Approaches Featuring Signals)

Bicycle Routes and Sidewalks

Specific bicycle facilities (bike lanes) are present in the immediate study area along US 15-501. Pedestrian sidewalk exists along the west side of US 15-501 through the study area. Crosswalks and pedestrian signals are present in at least one quadrant at the Mt. Carmel Church Road / Culbreth Road and Bennett Road / Arlen Park Drive intersections. The Morgan Creek greenway currently connects to US 15-501 and Culbreth Road in the western portion of the project study area. **Figure 4** displays a schematic of existing pedestrian/bicycle facilities in the project study area.

Transit Routes

Current Chapel Hill Transit (CHT) local Routes D, NS, and V serve the project study area along US 15-501 and Culbreth Road with weekday bus service. Express CHT Route CCX also traverses the project study area roadways. Several bus stops, with a range of amenities (shelters, benches), are present in the study area. There are no pedestrian connections (sidewalk, crossing at US 15-501 and Mt Carmel/ Culbreth) between the site and bus stops. **Table 3** details the four current CHT routes serving the study area. Most buses run on 10 minute, 30 minute, or hour headways during weekday peak service periods. **Figure 5** displays transit routes and bus stops that currently exist in the project study area. Transit trips that may be generated by the Chapel Hill Cooperative Preschool site are discussed in the following sections of this report.

Recommended/Committed Surface Transportation Improvement Projects

NCDOT is scheduled to construct STIP U-5854 intersection improvements (single-lane roundabout) at the Mt. Carmel Church Road / Bennett Road intersection in 2018. This project was included in all future year analyses, and was included as a comparison to existing conditions and traffic control for all scenarios. The Town of Chapel Hill has recently completed a laneage conversion along Mt. Carmel Church Road at the US 15-501 intersection, along with signal phasing and timing upgrades (all data and analyses completed for this study include this project as being complete for existing conditions).

There are no other committed/programmed NCDOT STIP projects, Town of Chapel Hill transportation improvement projects, or private development-related projects to improve roadway facilities in the study area that are expected to be complete by the 2019 design year. For the 2022 analysis year, additional mitigation improvements were recommended as part of the Obey Creek development process. One recommended improvement from that study was the recently completed Mt. Carmel Church restriping / signal upgrade described above. Additional improvements from that study are located outside the immediate project study area for this report.

NCDOT has on-going planning and feasibility studies (STIP U-5304A) for the US 15-501 and NC 54 Bypass corridors, but no recommendations have been made or approved from these studies and no assumptions related to potential improvements from those studies were made for this report.



Table 3. Current Study Area Weekday Transit Service

Route	Headways (minutes)			Study Area Stops	Destinations
	AM Peak	PM Peak	Off Peak		
CHT Local Service*					
D	10-20	20	30-50	• 15-501/Culbreth Road (Southbound Only)	• Franklin Street • Eastowne • Smith Level Road
NS	10	10	20	• 15-501/Culbreth Road (SB) • 15-501/Bennett Road	• UNC Campus/Hospitals Area • Eubanks Rd Park and Ride • Southern Village Park and Ride
V	35	25	50-80	• 15-501/Culbreth Road (SB) • 15-501/Bennett Road	• Meadowmont • Downtown Chapel Hill • Southern Village
CHT Express Service*					
CCX	15	15	20	• No Stops	• Chatham Cty UNC Park-and-Ride • Downtown Chapel Hill

* - Source: Chapel Hill Transit 2017 Fall Ride Guide

F. Existing Traffic Conditions

Figure 6 shows the existing AM, noon, and PM peak hour traffic volumes for the study area intersections. The turning movement counts used to determine these volumes were conducted in October 2017 for the study area intersections during the weekday periods 7:00 - 9:00 AM, 11:30 AM – 1:30 PM, and 4:00 – 6:00 PM. Traffic counts were conducted after the recent Mt. Carmel Church Road restriping project that included signal operational upgrades to the US 15-501 and Mt. Carmel Church Road / Culbreth Road intersection. All turning movement count output is found in **Appendix B**.

Traffic count information shows traffic flows on US 15-501 were heavy during the AM and PM peak count periods, with northbound flows into downtown Chapel Hill heaviest in the AM peak and southbound return flows heaviest in the PM peak. Traffic flows on Mt. Carmel Church Road and Culbreth Road were moderate to heavy during the peak commuting periods. Traffic flows on Bennett Road and Arlen Park Road were light to moderate during all peak periods. **Table 4** provides a detailed listing of each intersection count, peak hour, and count date.

Table 4. Traffic Count Information

Traffic Count Location	Period Counted	Peak Hour	Count Date
US 15-501 and Mt. Carmel Church Road / Culbreth Road	AM Peak	7:30 - 8:30 AM	10/11/17
	Noon Peak	12:15 AM -1:15 PM	
	PM Peak	4:30 - 5:30 PM	
US 15-501 and Arlen Park Drive / Bennett Road	AM Peak	7:15 - 8:15 AM	10/11/17
	Noon Peak	12:00 AM -1:00 PM	
	PM Peak	4:30 - 5:30 PM	
Mt. Carmel Church Road and Bennett Road	AM Peak	7:30 - 8:30 AM	10/11/17
	Noon Peak	11:45 AM -12:45 PM	
	PM Peak	4:45 - 5:45 PM	



II. 2019 BUILD-OUT YEAR+1 & 2022 FUTURE YEAR CONDITIONS

A. Future Ambient Area-Wide Traffic Growth Estimation

Based on information on average daily traffic collected by the Town of Chapel Hill and the NCDOT, a yearly ambient traffic growth rate of 1.2 percent per year was used for the short-term 2019 and 2022 design year capacity analyses. This rate is based on previous and anticipated growth trends for this area from Town and NCDOT average daily traffic information from the period 1990-2015, and matches detailed long-range growth estimates made for the *Obey Creek Mixed-Use Development Traffic Impact Study*, prepared by HNTB in April 2014.

B. Approved Background Development Traffic Estimation

Per information from Town of Chapel Hill staff and information from the Town's Planning Department Development Activity Map (current as of October 2017), no Town-approved developments that are either currently under construction or are expected to be built out and fully operational by the 2019 design analysis year exist within the specific project study area. Thus, for 2019 background traffic growth, only ambient area-wide growth projections will be used. **Figure 7** shows the estimated 2019 Build-out Year+1 peak hour estimated traffic volumes without the Chapel Hill Cooperative Preschool development.

The Obey Creek development was not specifically included in the 2019 background traffic growth calculations for this study, as it is not expected to be generating significant levels of traffic in that short of term. However, to consider the effects of the Obey Creek development on the project study area transportation system, a 2022 analysis year was included in this study. 2022 matches the build-out analysis year of the Obey Creek site used for its traffic impact study, completed in 2014. No other Town-approved developments were considered for the 2022 future year analysis.

Figure 11 shows the estimated 2022 future year peak hour specific background generator (Obey Creek) traffic volume projections. **Figure 12** shows the estimated 2022 future peak hour total traffic volume projections with the preschool site traffic included.

C. Proposed Project Traffic

i. Trip Generation

Projected trips for the proposed preschool were generated based on several sources of information, including:

- *ITE Trip Generation Manual* (Institute of Transportation Engineers, 9th Edition, 2013).
- NCDOT Municipal and School Transportation Assistance (MSTA) School Traffic Calculator (Version 110115, NCDOT, 2015)
- Applicant Trip Generation Data from the two existing Cooperative Preschool Sites (Collected October 3-5, 2016) – contained in "Narrative Describing Proposed Chapel Hill Cooperative Preschool" (Phillip Post & Associates/Pennoni, November 2016)

All trip generation raw output calculation sheets and background information are found in **Appendix C**.

Table 5 shows a comparison of the number of vehicular trips generated by the Chapel Hill Cooperative Preschool during the weekday AM, noon, and PM peak hours, based on the generation methodologies described above. A peak hour truck percentage of two percent was



estimated for all site-generated traffic. The following observations and conclusions were made from a comparison of the data sources, methodologies and projected daily and peak hour trip estimates:

ITE Trip Generation Data – ITE methodologies are available for calculation of generated trips by using the number of students, number of faculty/staff, and gross floor area of a day care center (Land Use Code 565). No ITE land use code for “preschool” exists, though through review of the existing information related to the Chapel Hill Cooperative Preschool available on their website (<http://www.chapelhillcoop.com/>) and through review of materials submitted by the Applicant for this project, the current facilities and future new facility will operate in a very similar fashion to a day care center facility and not a traditional elementary school (that may have preschool classes).

NCDOT recommends the use of the number of projected students as the most applicable trip-generating variable, which if compared to actual Applicant count information expanded to the ultimate 100 students/22 staff, is very similar for daily and peak hour generation estimates. The number of faculty/staff and gross floor area variables produce higher daily and peak hour trip estimates.

NCDOT MSTa Trip Generation Data – NCDOT MSTa calculations for AM and PM school trips generated include public/private and urban charter school categories. Utilizing the elementary school data inputs for 100 students and 22 staff, results in **Table 5** show the Urban Charter-type school generating consistently higher trips. It is important to note that these trip rates (and estimated queue data for internal parking and circulation at schools) were developed based on traditional school peak hour data and not adjacent street peak hour data, which was utilized for both the ITE and Applicant provided data sets. The results, when compared to the other two data sets are consistently higher in the AM peak and slightly lower in the PM peak.

Applicant-Provided Data – The Applicant provided trip generation data for three consecutive weekdays in October 2016. Trip generation data collected was done by parent and staff signing in and out when dropping children off/picking children up or arriving at work/leaving work. Parent trips for each 10 minute time period were considered to both be “entering” and “exiting” for each trip noted in the tally sheet. A summation of trips during peak hours of the adjacent streets (computed by actual field-collected traffic count data) was reported in **Table 5** and then expanded to the ultimate capacity of 100 students and 22 staff by using a 1.25 growth factor on the existing data sets.

The resulting projections were compared to the ITE and MSTa data. Since the actual collected trip-making patterns throughout the day provide a more realistic source of trip generation information than the ITE and MSTa methodologies, it was decided to use the actual data expanded to the ultimate preschool capacity as the trip generation estimates for this study. The ITE data provides close correlation with the Applicant provided data. The MSTa data, though having close correlation for some time periods, is based on a different pattern of activity and land use function – as was mentioned before the Chapel Hill Cooperative Preschool will function more closely to a “day care” facility than a traditional elementary school.



Table 5. Weekday Daily and Peak Hour Vehicle Trip Generation Summary
Chapel Hill Cooperative Preschool

Generation Estimator	LUC Code	Density	Daily			AM Peak Hour			Noon Peak Hour			PM Peak Hour		
						Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
ITE - Number of Students (NCDOT Recommended)	565	100	219	219	438	42	38	80	11	10	21	38	43	81
ITE - Number of Faculty/Staff	565	22	294	294	588	57	50	107	14	13	27	49	55	104
ITE - Total Gross Floor Area	565	9,000 SF	334	334	668	58	52	110	15	13	28	52	59	111
ITE Averages for 3 Variables			282	282	565	52	47	99	13	12	25	46	52	99
NCDOT MSTA - Elementary School	100 Students / 22 Staff		93	93	186	65	43	108	11	11	22	27	27	54
NCDOT MSTA - Urban Charter School	100 Students / 22 Staff		118	118	236	78	56	134	14	14	28	40	40	80
Applicant Information - Existing Sites (80 Students/20 Staff)			173	173	346	33	29	62	6	6	12	32	36	68
Expanding to 100 Students / 22 Staff (1.25 ratio)			216	216	433	41	36	78	8	8	16	40	45	85
Selected Values			216	216	433	41	36	78	8	8	16	40	45	85

Notes: No Noon Peak Hour ITE or MSTA Trip Generation Data Available – Assume 25% of AM Peak Hour Trips
 Data from Applicant Corresponds to Peak of Hour Adjacent Street Traffic, Similar to ITE Data



ii.) Adjustments to Trip Generation Rates

Raw ITE trip generation estimates for daily and peak hour trips have the potential to be adjusted for the following factors to reduce raw trip generation estimates to actual estimated vehicular trips produced by the Chapel Hill Cooperative Preschool development.

a.) Internal Capture

The land uses proposed for Chapel Hill Cooperative Preschool development would not exhibit the potential for internally-captured trips for the singular preschool land use. No modifications or reductions were made to trip generation results to account for internal capture.

b.) Modal Split

The study area is served by several CHT fixed bus routes with frequent existing service and also has facilities for pedestrians and bicyclists with connectivity to trip attractions in downtown Chapel Hill, the UNC Main Campus and areas of Southern Chapel Hill. However, there are no immediate pedestrian/bicycle facilities along Mt. Carmel Church Road immediately adjacent to the site. The trip generation for a day care/preschool type facility would almost exclusively be by motorized transportation, considering the ages of the students and location of the proposed facility. To provide a conservative estimate of vehicular trips, no adjustments to trip generation rates were made for transit, pedestrian, or bicycle trips.

c.) Pass-by Trips

The proposed preschool would not be a land use typically considered for “pass-by” trips. No adjustments were made for “pass-by” trip-making.

d.) Trip Generation Budget

Current information from the Applicant about the Chapel Hill Cooperative Preschool indicates that the project will be built out in one phase. No adjustments or recommendations for a trip generation budget are made for this study if the development is ultimately built to the building size and student population/staff size densities listed by the Applicant.

iii.) Trip Distribution

Trip distribution for site-related traffic was based on existing daily and peak hour traffic patterns and engineering judgment to determine the directional peak hour characteristics of traffic to and from the site from the major study area thoroughfares. It was assumed that a majority of trips entering the site from US 15-501 would use Mt. Carmel Church Road and make a u-turn at the proposed roundabout at Bennett Road to complete this maneuver. The possibility exists that these trips could turn into Old Bridge Lane or Mallard Court to complete a u-turn maneuver, but the difficulty in making this maneuver compared to using the efficiency of the roundabout would likely result in a minimal number of trips attempting to use local streets. A small number of trips were distributed to/from the Bennett Road connection between US 15-501 and Mt. Carmel Church Road as an alternative route. No trips exiting the site were assumed to u-turn at US 15-501 from Mt. Carmel Church Road. Any site-related traffic needing to utilize Mt. Carmel Church Road to the Chatham County/Governors Club area was assumed to use US 15-501 to Bennett Road back to Mt. Carmel Church Road.

No local trips to/from lower volume residential streets were estimated, though the possibility exists a small portion of trip-making may occur to/from these local streets. Basic distribution estimates for the proposed Chapel Hill Cooperative Preschool utilized existing peak hour turning movement counts, overall daily traffic volumes along the higher volume arterial and collector streets, and a spatial sense of the location of the preschool in relation to the overall Town of Chapel Hill urbanized



area to estimate a basic distribution of trips that would be consistent for all three peak analysis hours. **Figure 8** presents the projected trip distribution percentages for the proposed site in 2019.

iv.) Trip Assignment

Figure 9 shows the corresponding site traffic volumes distributed on the 2019 study area network. Total volumes into and out of the site correspond to total external vehicular trips generated, based on the trip generation methodology developed previously. Site traffic assignments for the 2022 future analysis year were assumed to remain the same as the 2019 Build-out Year+1 projections.

D. Future Traffic Forecasts with the Proposed Development

Figure 10 displays the 2019 Build-out+1 year projected study area traffic volumes with site traffic added. These traffic volumes represent the aggregate traffic growth over existing traffic volumes for ambient traffic growth and estimated site traffic assignments for the Chapel Hill Cooperative Preschool. **Figure 12** displays the 2022 Future Year projected study area traffic volumes that also include site traffic along with ambient area-wide traffic growth over a five year period and the Obey Creek full build-out peak hour site traffic assignments. **Appendix D** contains all information related to the development of traffic volumes and turning movements for all scenarios studied in this report.

III. IMPACT ANALYSES

A. Peak Hour Intersection Level of Service Analysis

i.) Methodology

Evaluation of traffic operations on suburban arterial and collector street facilities is most effective through the determination of level of service (LOS) criteria. The concept of level of service correlates qualitative aspects of traffic flow to quantitative terms. This enables transportation professionals to take the qualitative issues, such as congestion and substandard geometrics at intersections, and translate them into measurable quantities, such as operating speeds and vehicular delays. The 2010 *Highway Capacity Manual (HCM 2010)* characterizes level of service by letter designations A through F. Level of service A represents ideal low-volume traffic operations, and level of service F represents over-saturated high-volume traffic operations. Level of service is measured differently for various roadway facilities, but in general, level of service letter designations for signalized and unsignalized intersections are described by the following in **Table 6**.

The *Synchro Professional Version 9* operations analysis software was used to analyze peak hour conditions at signalized and unsignalized intersections. Synchro has the ability to analyze unsignalized intersections using HCM methodologies and computations. To analyze the future roundabout at Mt. Carmel Church Road and Bennett Road in the project study area, the SIDRA roundabout analysis software tool was used. The minimum acceptable peak hour intersection level of service established for this project is LOS D for signalized intersections or LOS E for critical movements at unsignalized intersections, or no increase in delay for signalized intersections operating below LOS D or unsignalized intersection critical movements operating below LOS E without the inclusion of site traffic. The basis for these thresholds is provided by the *Town of Chapel Hill Guidelines for the Preparation of Traffic Impact Analyses* and is consistent with NCDOT traffic impact analysis procedures. The following five conditions were evaluated:



Condition 1 – 2017 Existing Traffic

Condition 2 - 2019 Traffic without Site Traffic

Condition 3 - 2019 Traffic with Site Traffic Volumes Added

Condition 4 - 2019 Traffic with Site Traffic and Mitigation Improvements

Condition 5 – 2022 Traffic with Site Traffic and Future Obey Creek Development Traffic

Table 6. Level of Service (LOS) Characteristics

Level of Service Description	Per Vehicle Delay at Signal	Per Vehicle Delay at Stop Sign
LOS A ➤ Free flow ➤ Freedom to select desired speed and to maneuver is extremely high ➤ General level of comfort and convenience for motorists is excellent	< 10.0 sec	< 10.0 sec
LOS B ➤ Stable flow ➤ Other vehicles in the traffic stream become noticeable ➤ Reduction in freedom to maneuver from LOS A	10.0 – 20.0 sec	10.0 – 15.0 sec
LOS C ➤ Stable flow ➤ Maneuverability and operating speed are significantly affected by other vehicles ➤ General level of comfort and convenience declines noticeably	20.0 – 35.0 sec	15.0 – 25.0 sec
LOS D ➤ High density but stable flow ➤ Speed/freedom to maneuver are very restricted ➤ General level of comfort / convenience is poor ➤ Small increases in traffic will generally cause operational problems	35.0 – 55.0 sec	25.0 – 35.0 sec
LOS E ➤ Unstable flow ➤ Speed reduced to lower but relatively uniform value ➤ Volumes at or near capacity level ➤ Comfort and convenience are extremely poor ➤ Small flow increases or minor traffic stream disturbances will cause breakdowns	55.0 – 80.0 sec	35.0 – 50.0 sec
LOS F ➤ Forced or breakdown flow ➤ Volumes exceed roadway capacity ➤ Formation of unstable queues ➤ Stoppages for long periods of time because of traffic congestion	> 80.0 sec	> 50.0 sec

The results of this analysis are based on the procedures presented in the *HCM 2010* and performed with the corresponding capacity analysis software described previously. The methodology of evaluating each condition for signalized intersections is presented below:

- **Condition 1** – Use current Town of Chapel Hill data for the cycle length, splits and offsets of individual signalized intersections and report LOS and delay values from Synchro.
- **Conditions 2 and 3** – Reoptimize the cycle lengths and splits of individual intersections in Synchro, if existing timing data does not provide adequate overall intersection LOS. Adjust cycle lengths, splits, and offsets, if necessary, if the signal is currently operating in a coordinated



system. The optimized signal timing information will be held constant for both Conditions, to provide a means to compare effects of the proposed site traffic.

- **Conditions 4 and 5** – Optimize coordinated traffic signals for effects of recommended mitigation strategies that change existing/committed changes to lane geometrics. Evaluate the potential for different signal phasing schemes (left-turn lag phases, for example). Retain existing split minimums and any pedestrian timing values. Recommendations, if warranted, will be made to obtain at least LOS D for the intersection as a whole.

The net effect of this process is that direct comparisons, by movement, of delay and LOS between each of the three conditions are impossible because splits and cycle lengths can and do change between conditions. The pertinent statistic of this analysis is the *overall intersection level of service and delay*. Improvements to deficient intersections in Condition 3 were made by first attempting to adjust signal operations via changes in cycle lengths, splits and/or with acceptable adjustments to signal phasing. If that did not produce satisfactory results for all intersections, geometric improvements to improve intersection capacity were considered for the deficient intersections. **Appendix E** contains the Synchro output for all four conditions (where applicable).

The existing Bennett Road and proposed site driveway unsignalized intersections with Mt. Carmel Church Road were analyzed in Synchro using the HCM 2010 two-way stop control methodology and output function. Their results were evaluated on a per-movement basis, since the HCM computations do not produce an overall intersection level of service for unsignalized intersections. Thus, intersections with deficient (LOS F) movements in Condition 2 would need to be evaluated for improvements in Condition 3. This methodology differs from signalized intersections, where one or more movements at an intersection may be deficient in Condition 2, but if the overall intersection level of service does not fall below LOS D, no intersection improvements are deemed necessary. **Appendix F** contains the Synchro unsignalized intersection output for all unsignalized intersections under study. The proposed roundabout improvement operational results from the SIDRA software for all scenarios are found in **Appendix G**.

ii.) 2017 Existing Conditions Results

Table 7 presents the results for the existing year traffic conditions as compiled from field data. The table lists LOS and delay values for those movements that are in existence at this time. It also only lists data for individual movements encountering delay at the stop-controlled intersection (which does not have an overall intersection delay value produced by HCS). Currently, all study area signalized intersections operate at acceptable levels of service for all the analyzed 2017 peak hours. The recent improvements to the Mt. Carmel Church leg of its intersection with US 15-501 (including signal phasing and timing changes) were included in this analysis.

Field observation verified that AM and PM peak hour congestion occurs along the US 15-501 corridor between the NC 54 Bypass interchange ramps and southward to the nearby Mt. Carmel Church Road/Culbreth Road intersection. In the AM peak, congestion along the NC 54 Bypass and interchange area spills back through the Mt. Carmel Church Road/Culbreth Road intersection.

Operations at the Mt. Carmel Church Road/Bennett Road intersection for stop-controlled movements are acceptable, based on Town of Chapel Hill LOS E thresholds for unsignalized intersection movements. Field observation noted that there are periods where there are few acceptable gaps for Bennett Road left-turning vehicles, leading to some occasional lengthy delays, though the number of vehicles attempting left-turns from Bennett Road in either direction is small during the peak hours. **Table 7** also presents a comparison for the proposed NCDOT roundabout



project at this location using current traffic volumes. Results show the roundabout should function well (LOS A or B for all approaches) during peak travel periods.

**Table 7. Capacity Analysis Results for Study Area Intersections
Condition 1 – 2017 Existing Traffic**

Intersections / Movements	LOS			Average Vehicular Delay (seconds/vehicle)		
	AM	Noon	PM	AM	Noon	PM
US 15-501 & Culbreth Road / Mt. Carmel Church Road	D	B	C	41.8	17.6	31.8
EB LT	<i>F</i>	D	<i>E</i>	<i>96.1</i>	38.5	<i>76.7</i>
EB TH	D	C	<i>E</i>	50.0	31.4	<i>62.0</i>
EB RT	D	C	<i>E</i>	50.2	33.8	<i>58.7</i>
WB LT-TH	<i>E</i>	D	<i>E</i>	<i>70.2</i>	35.8	<i>71.4</i>
WB RT	D	C	C	42.5	26.2	28.9
NB LT	C	C	<i>E</i>	22.0	27.4	<i>56.5</i>
NB TH	D	C	C	37.1	22.8	34.6
NB RT	B	C	C	17.3	27.0	27.4
SB LT	<i>F</i>	B	<i>E</i>	<i>84.3</i>	11.7	<i>60.1</i>
SB TH	B	A	B	14.2	8.3	12.6
SB RT	A	A	A	3.1	2.4	2.2
US 15-501 & Arlen Park Drive / Bennett Road	B	A	A	16.7	8.4	8.5
EB LT	<i>E</i>	D	<i>E</i>	<i>62.6</i>	35.6	<i>71.7</i>
EB TH-RT	D	C	D	48.4	27.6	54.0
WB LT	<i>E</i>	C	<i>E</i>	<i>64.1</i>	32.2	<i>60.9</i>
WB TH-RT	D	C	D	47.2	28.2	51.6
NB LT	A	A	A	4.5	4.0	3.6
NB TH	A	A	A	9.7	6.3	7.0
NB RT	A	A	A	7.0	6.3	6.3
SB LT	B	A	A	10.9	4.6	0.5
SB TH	B	A	A	12.9	6.0	2.0
SB RT	B	A	A	12.6	6.5	0.6
Mt. Carmel Church Road & Bennett Road (Two-way Stop Control)	N/A	N/A	N/A	N/A	N/A	N/A
EB LT-TH-RT	D	B	C	32.2	12.3	21.2
WB LT-TH-RT	D	B	C	29.7	14.6	21.3
NB LT	A	A	A	8.4	8.0	9.2
SB LT	A	A	A	9.2	7.9	8.4
Mt. Carmel Church Road & Bennett Road (Roundabout)	A	A	A	9.4	5.2	8.5
EB LT-TH-RT	A	A	A	6.6	4.5	8.8
WB LT-TH-RT	A	A	A	9.2	4.4	5.3
NB LT-TH-RT	B	A	A	11.4	5.2	6.9
SB LT-TH-RT	A	A	A	6.7	5.4	9.8

N/A => Not Applicable, i.e. movement is non-existent or overall intersection values are not reported for unsignalized intersections

BOLD/ITALICS – Movement or overall intersection is over Town TIS Guidelines threshold capacity

iii.) 2019 No-Build Scenario (Condition 2) Results

Table 8 presents the results for the 2019 Build-out+1 analysis year estimated traffic conditions without the impacts of site-related traffic. This analysis includes the application of the 1.2 percent per year ambient growth factor and selected specific background development volumes to existing traffic volumes. A summary of operations is given after the tabular information.



Table 8. Capacity Analysis Results for Study Area Intersections
Condition 2 – 2019 Traffic Without Site

Intersections / Movements	LOS			Average Vehicular Delay (seconds/vehicle)		
	AM	Noon	PM	AM	Noon	PM
US 15-501 & Culbreth Road / Mt. Carmel Church Road	D	B	C	43.6	17.1	33.2
EB LT	<i>F</i>	D	<i>E</i>	<i>102.2</i>	38.5	<i>76.5</i>
EB TH	D	C	<i>E</i>	50.2	31.4	<i>61.6</i>
EB RT	D	C	<i>E</i>	50.4	33.8	<i>58.4</i>
WB LT-TH	<i>E</i>	D	<i>E</i>	<i>70.5</i>	35.9	<i>71.4</i>
WB RT	D	C	C	44.5	20.6	29.0
NB LT	C	C	<i>E</i>	22.1	27.2	<i>66.3</i>
NB TH	D	C	C	38.7	22.9	34.1
NB RT	B	C	C	17.7	26.8	32.9
SB LT	<i>F</i>	B	<i>E</i>	88.4	12.6	<i>69.0</i>
SB TH	B	A	B	14.4	8.4	13.2
SB RT	A	A	A	3.2	2.4	2.2
US 15-501 & Arlen Park Drive / Bennett Road	B	A	B	17.0	8.5	10.1
EB LT	<i>E</i>	D	<i>E</i>	<i>62.8</i>	35.6	<i>71.8</i>
EB TH-RT	D	C	D	48.3	27.4	53.9
WB LT	<i>E</i>	C	<i>E</i>	<i>64.0</i>	32.0	<i>63.6</i>
WB TH-RT	D	C	D	46.9	27.9	54.1
NB LT	A	A	A	4.7	4.0	3.7
NB TH	A	A	A	10.0	6.4	7.2
NB RT	A	A	A	7.0	6.4	6.4
SB LT	B	A	A	11.2	4.9	3.2
SB TH	B	A	A	13.3	6.2	4.4
SB RT	B	A	A	12.8	6.8	3.8
Mt. Carmel Church Road & Bennett Road (Two-way Stop Control)	N/A	N/A	N/A	N/A	N/A	N/A
EB LT-TH-RT	E	B	C	36.0	12.4	22.2
WB LT-TH-RT	D	B	C	31.9	14.9	22.2
NB LT	A	A	A	8.5	8.0	9.3
SB LT	A	A	A	9.3	7.9	8.4
Mt. Carmel Church Road & Bennett Road (Roundabout)	A	A	A	9.7	5.3	8.7
EB LT-TH-RT	A	A	A	6.7	4.5	9.1
WB LT-TH-RT	A	A	A	9.4	4.5	5.4
NB LT-TH-RT	B	A	A	11.9	5.3	7.0
SB LT-TH-RT	A	A	B	6.8	5.5	10.2

N/A => Not Applicable, i.e. movement is non-existent or overall intersection values are not reported for unsignalized intersections

BOLD/ITALICS – Movement or overall intersection is over Town TIS Guidelines threshold capacity

During Condition 2 - 2019 Without Site Traffic, all study area intersections are expected to operate at acceptable levels of service for all analyzed peak hours, with marginal increases in overall and movement delays as ambient traffic growth is experienced over the next few years. For the Condition 2 analysis, existing 2017 signal timings and system operations were held constant for signal cycle lengths, splits, and offsets to provide a comparison with existing system efficiency.

iv.) 2019 Build Scenario (Condition 3) Results

Table 9 presents results for 2019 Build-out+1 year estimated traffic conditions, including impacts of site-related traffic. In general, the addition of site-related traffic will marginally increase delays at the signalized interchange intersections, but not cause either to become deficient (overall LOS E or



F). As in Condition 2, signal timings were held constant from existing 2017 conditions. The impacts of the proposed site would be more pronounced at the Mt. Carmel Church Road and Bennett Road intersection if the roundabout project is not complete by 2019 when the site is fully operational. For the analysis in Table 9, site trips that would use the roundabout to make a u-turn back to enter the site were rerouted down to Bennett Road to make a left-turn onto Mt. Carmel Church Road. This causes potentially major delays and queue spillback for the eastbound Bennett Road approach, particularly in the AM Peak hour. Site driveway operations are acceptable, with minimal (less than two vehicles queued) in all 2019 peak hours analyzed.

Table 9. Capacity Analysis Results for Study Area Intersections
Condition 3 – 2019 Traffic With Site

Intersections / Movements	LOS			Average Vehicular Delay (seconds/vehicle)		
	AM	Noon	PM	AM	Noon	PM
US 15-501 & Culbreth Road / Mt. Carmel Church Road	D	B	D	46.9	17.2	37.4
EB LT	F	D	E	102.2	38.5	76.5
EB TH	D	C	E	50.4	31.4	62.1
EB RT	D	C	E	50.4	33.8	58.4
WB LT-TH	E	D	E	72.1	36.0	72.1
WB RT	D	C	C	49.0	20.6	26.0
NB LT	C	C	F	22.4	27.4	80.1
NB TH	D	C	D	39.6	23.1	36.1
NB RT	B	C	C	17.4	26.9	33.4
SB LT	F	B	F	111.6	13.0	90.7
SB TH	B	A	B	14.6	8.4	14.6
SB RT	A	A	A	3.2	2.4	2.5
US 15-501 & Arlen Park Drive / Bennett Road	B	A	B	17.0	8.6	10.2
EB LT	E	D	E	62.8	35.6	71.8
EB TH-RT	D	C	D	48.4	27.4	54.0
WB LT	E	C	E	64.0	32.0	63.9
WB TH-RT	D	C	D	46.8	27.9	54.5
NB LT	A	A	A	4.7	4.0	3.7
NB TH	B	A	A	10.0	6.4	7.9
NB RT	A	A	A	7.0	6.4	6.9
SB LT	B	A	A	11.1	5.1	3.1
SB TH	B	A	A	13.6	6.3	4.3
SB RT	B	A	A	13.0	6.9	3.7
Mt. Carmel Church Road & Bennett Road (Two-way Stop Control)	N/A	N/A	N/A	N/A	N/A	N/A
EB LT-TH-RT	F	B	F	249.8	13.8	71.7
WB LT-TH-RT	D	B	C	31.9	14.9	22.2
NB LT	A	A	A	8.5	8.0	9.3
SB LT	A	A	A	9.3	7.9	8.4
Mt. Carmel Church Road & Bennett Road (Roundabout)	B	A	A	10.7	5.3	9.4
EB LT-TH-RT	A	A	A	7.2	4.6	9.8
WB LT-TH-RT	B	A	A	10.0	4.5	5.7
NB LT-TH-RT	B	A	A	13.5	5.4	7.6
SB LT-TH-RT	A	A	B	7.2	5.6	10.8
Mt. Carmel Church Road & Site Driveway (RIRO)	N/A	N/A	N/A	N/A	N/A	N/A
WB RT	C	B	B	15.6	10.3	11.7

N/A => Not Applicable, i.e. movement is non-existent or overall intersection values are not reported for unsignalized intersections

BOLD/ITALICS – Movement or overall intersection is over Town TIS Guidelines threshold capacity



v.) 2019 Mitigation Scenario (Condition 4) Results

Based on capacity analysis results in the previous sections, no intersection in the project study is expected to require mitigation for issues related strictly to projected vehicular delay and LOS. However, considerations to optimize traffic operations and reduce potential queuing along the US 15-501 corridor were studied to allow traffic operations and vehicular delays to be at least at 2019 without site scenario levels. Current signal timings (cycle lengths/splits/offsets) were reoptimized for this analysis, with no geometric changes implemented.

Table 10 presents results for 2019 Build-out+1 year estimated traffic conditions, including impacts of site-related traffic and mitigation necessary to meet Town of Chapel Hill Guidelines and proposed recommendations from this study.

**Table 10. Capacity Analysis Results for Study Area Intersections
Condition 4 – 2019 Traffic With Site & Mitigation**

Intersections	LOS			Average Vehicular Delay (seconds/vehicle)		
	AM	Noon	PM	AM	Noon	PM
US 15-501 & Culbreth Road / Mt. Carmel Church Road	D	B	C	43.7	15.9	29.7
EB LT	<i>F</i>	D	<i>F</i>	<i>102.2</i>	49.1	<i>95.4</i>
EB TH	D	D	<i>E</i>	50.4	38.3	<i>69.3</i>
EB RT	D	D	<i>E</i>	50.4	41.6	<i>64.4</i>
WB LT-TH	<i>F</i>	D	<i>F</i>	<i>86.8</i>	42.4	<i>92.4</i>
WB RT	D	C	C	39.1	24.0	28.1
NB LT	C	B	C	23.3	13.2	31.5
NB TH	D	B	C	43.3	16.0	26.9
NB RT	B	B	C	19.0	11.5	21.9
SB LT	<i>E</i>	B	D	<i>73.1</i>	17.1	54.2
SB TH	B	A	B	13.3	7.3	10.6
SB RT	A	A	A	2.6	2.1	1.8
US 15-501 & Arlen Park Drive / Bennett Road	B	A	A	14.5	7.2	9.1
EB LT	<i>E</i>	D	<i>E</i>	<i>62.6</i>	41.6	<i>71.8</i>
EB TH-RT	D	C	D	48.3	31.8	54.0
WB LT	<i>E</i>	D	<i>E</i>	<i>64.9</i>	37.1	<i>62.1</i>
WB TH-RT	D	C	D	48.0	32.4	53.2
NB LT	A	A	A	8.2	6.8	4.0
NB TH	B	A	A	10.1	5.9	7.9
NB RT	A	A	A	7.1	5.9	6.9
SB LT	A	A	A	6.8	2.3	0.9
SB TH	A	A	A	5.4	3.1	2.4
SB RT	A	A	A	5.3	2.2	2.0

BOLD/ITALICS – Movement or overall intersection is over Town TIS Guidelines threshold capacity

As shown in **Table 10**, small changes to signal optimization to reflect changes in traffic patterns due to ambient background growth and impacts of additional site-related traffic are able to marginally improve overall intersection LOS and per vehicle delay to levels similar to the 2019 Without Site conditions.



vi.) 2022 Build Scenario (Condition 5) Results

Table 11 presents results for 2022 Build-out+1 year estimated traffic conditions, including impacts of site-related traffic and the full build-out of the Obey Creek development. In general, the addition of Obey Creek traffic will increase delays at the signalized intersections along US 15-501, but not cause either to become deficient (overall LOS E or F). This analysis does not include additional corridor-wide recommendations from the Obey Creek Traffic Impact Study that were developed to further mitigate impacts from that development, as the study area for the Obey Creek development was much larger than the study area for this report. Additional geometric and signal operations improvements along the US 15-501 corridor recommended in the Obey Creek study would likely produce more beneficial results than what are listed in **Table 11**.

**Table 11. Capacity Analysis Results for Study Area Intersections
Condition 5 – 2022 Traffic With Site & Obey Creek Full Build-Out**

Intersections / Movements	LOS			Average Vehicular Delay (seconds/vehicle)		
	AM	Noon	PM	AM	Noon	PM
US 15-501 & Culbreth Road / Mt. Carmel Church Road	D	B	D	54.1	18.7	45.7
EB LT	F	D	F	149.5	52.9	137.0
EB TH	E	D	F	61.0	39.4	82.9
EB RT	E	D	F	65.7	47.7	84.0
WB LT-TH	F	D	F	106.9	42.8	109.0
WB RT	E	C	C	65.7	24.3	31.7
NB LT	D	C	F	47.9	21.3	102.4
NB TH	D	B	D	53.7	17.9	50.9
NB RT	C	A	C	21.2	8.2	20.7
SB LT	F	D	F	101.0	39.5	109.8
SB TH	B	A	B	10.2	9.9	13.1
SB RT	A	A	A	1.8	2.3	1.7
US 15-501 & Arlen Park Drive / Bennett Road	B	A	B	18.2	7.6	11.7
EB LT	E	D	E	65.2	41.3	78.0
EB TH-RT	D	C	E	53.8	32.1	58.4
WB LT	E	D	E	78.5	40.2	74.1
WB TH-RT	D	C	E	53.4	32.2	57.5
NB LT	A	A	A	9.4	7.2	7.9
NB TH	B	A	B	15.5	7.4	10.8
NB RT	A	A	A	8.8	5.9	6.9
SB LT	B	A	A	11.2	2.6	3.3
SB TH	A	A	A	8.6	3.5	5.7
SB RT	A	A	A	7.7	2.0	2.3
Mt. Carmel Church Road & Bennett Road (Roundabout)	B	A	B	12.2	5.5	10.4
EB LT-TH-RT	A	A	B	7.9	4.9	11.3
WB LT-TH-RT	B	A	A	11.3	4.7	6.1
NB LT-TH-RT	C	A	A	15.7	5.7	8.1
SB LT-TH-RT	A	A	B	7.9	5.9	12.1
Mt. Carmel Church Road & Site Driveway (RIRO)	N/A	N/A	N/A	N/A	N/A	N/A
WB RT	C	B	B	16.1	10.4	11.9

N/A => Not Applicable, i.e. movement is non-existent or overall intersection values are not reported for unsignalized intersections

BOLD/ITALICS – Movement or overall intersection is over Town TIS Guidelines threshold capacity



B. Access Analysis

Vehicular site access is to be accommodated by a single restricted (RIRO) access driveway connecting to Mt. Carmel Church Road about 575 feet to the east of its signalized intersection with US 15-501. Design details related to driveway throat length are shown on the site plan and assume an approximate 50 foot driveway throat at this driveway, which is consistent with a required 50 foot throat depth in Figure 3.9 of the 2017 *Chapel Hill Public Works Engineering Design Manual*. An internal driveway circulation system to all surface parking areas and parent drop-off locations along the internal driveway traffic circle is also shown on the plans.

Driveway distances along Mt. Carmel Church Road from the signalized intersection at US 15-501 and the adjacent Old Bridge Road intersection are approximately 575 feet and 275 feet, respectively, and are acceptable, based on recommendations of 100 foot minimum corner clearance (between a driveway location and adjacent intersection) as set forth in the 2003 *NCDOT Policy on Street and Driveway Access to North Carolina Highways* and the 100 foot minimum along collector streets specified in the Town Design Manual. The proposed spacing between the proposed driveway and adjacent existing driveways (few existing in immediate vicinity of the project) is more than the recommended 50 foot spacing between driveway locations along collector roadways found in Table 3.2 in the Town Design Manual.

There are bike and pedestrian facilities in the project study area, though not specifically along Mt. Carmel Church Road to the proposed site. Sidewalk is present on the west side of US 15-501 and exists along the major street connection along Culbreth Road. Crosswalk and pedestrian signals exist in at least one quadrant of the signalized study area intersections near the Chapel Hill Cooperative Preschool site. Specific bicycle amenities are present along US 15-501 with striped lanes present in both directions. The Morgan Creek Greenway system and additional paved path linkages are present west of the US 15-501 corridor, along the creek and under the James Taylor Bridge.

C. Signal Warrant Analysis

Based on projected 2019 and 2022 traffic volumes and current/proposed access plans, no unsignalized study area intersection would warrant the installation of a traffic signal, based on the methodology found in the 2009 *Manual on Uniform Traffic Control Devices (MUTCD)*. The unsignalized intersection of Mt. Carmel Church Road and Bennett Road was not analyzed for signal warrants, as the NCDOT U-5864 project proposed to construct a roundabout at this location.

D. Sight Distance Analysis

In general, sight distance issues entering/exiting the existing Chapel Hill Cooperative Preschool driveway should be minimal, considering the fact that the driveway is proposed to be restricted to a RIRO configuration. The current site plan shows sight distance triangles at the driveway stopbar which should provide adequate sight distance provided that the area within the triangles be kept free of any sight obstructions. There is both horizontal and vertical curvature upstream of this location, but the driveway is located on the outside of the horizontal curve, which should aid in visibility of upstream approaching traffic.

E. Crash Analysis

Project study area crash data from the NCDOT Traffic Safety Unit TEAAS database was extracted by HNTB for the five year period from 8/31/2012 to 9/1/2017. This information included crash segment data along Mt. Carmel Church Road between US 15-501 and Bennett Road and crash reports for the US 15-501/Mt. Carmel Church Road and Bennett Road/Mt. Carmel Church Road intersections adjacent



to the site. Raw intersection and corridor segment crash data is located in **Appendix H** and results are shown in **Tables 12 and 13** and summarized in **Figure 13** for the Mt. Carmel Church Road segment between US 15-501 and Bennett Road.

Mt. Carmel Church Road Corridor

Table 12 presents a comparison between the Mt. Carmel Church Road corridor study area crash rates and the latest North Carolina statewide rates for the period 2013-2015 (compiled by NCDOT Traffic Safety Unit). These rates are for similar facilities, in terms of cross-section, relative location, and functional classification, across North Carolina. Overall, the crash rate along Mt. Carmel Church Road in the project study area was considerably higher than statewide averages for similar facilities for all crash characteristic categories. Rear-end crashes and angle crashes were the most common crash types – with 11 of each type representing approximately 50 percent of the 40 crashes reported along the 0.38 mile segment. Spatial distribution of crashes along the corridor varies, with 11 crashes on Mt. Carmel Church Road near Bennett Road, four near Lombard Drive, two near Mallard Drive, two near Old Bridge Road and 21 in the vicinity of US 15-501.

Table 12. Study Area Crash Rate Comparison – Mt. Carmel Church Road Corridor

Statistic	Crashes Per 100 Million Vehicle Miles	
	Mt. Carmel Church Road	NC Statewide Average
	US 15-501 to Bennett Road	Urban Secondary Routes (Two-Lane Undivided)
Total Crash Rate	576.47	247.39
Fatal Crash Rate	0.00	1.18
Non-Fatal (Injury) Crash Rate	259.41	76.16
Wet Pavement Crash Rate	100.88	46.04
Night Crash Rate	100.88	65.51

Study Area Intersections

In addition to the crash comparison for the Mt. Carmel Church Road project study corridor, individual intersection crash data in the vicinity of the proposed site for the same five year period was provided by NCDOT and results are shown in **Table 13**. The crash data reveals that the Mt. Carmel Church Road / Bennett Road intersection has a higher overall rate of crashes than the higher volume US 15-501 intersection with Mt. Carmel Church Road / Culbreth Road, but a lower rate of injury crashes. The primary crash type at both intersections was rear-end collisions. No pedestrian or bicycle crashes were reported at either intersection. The proposed roundabout at Mt. Carmel Church Road and Bennett Road should have a positive effect on crash rates at this location.

Table 13. Study Area Intersection Crash Summary

Intersection	Total Crashes (Injury)	Crashes Per 100 Million Vehicles Entered				
		Total	Fatal	Injury	Night	Wet
US 15-501 and Mt. Carmel Church Road / Culbreth Road	33 (17)	44.08	0.00	22.71	4.01	8.01
Mt. Carmel Church Road and Bennett Road	15 (3)	78.24	0.00	15.65	5.22	5.22



F. Other Transportation-Related Analyses

Other transportation-related analyses relevant to the 2001 Town of Chapel Hill Guidelines for the preparation of Traffic Impact Studies were completed as appropriate. The topics listed in **Table 14** are germane to the scope of this study.

Table 14. Other Transportation-Related Analyses

Analysis	Comment
Long-Range Planning Level Daily Volume-Capacity Analysis	Due to the fact that the proposed site will add less than 500 daily trips to the study area network, no long-range daily v/c analysis was conducted for this study.
Turn Lane Storage Requirements	Storage bay lengths at study area intersections were analyzed using Synchro and HCS 95 th percentile (max) queue length estimates for the 2019 and 2022 Build Scenarios. The US 15-501 and Mt. Carmel Church Road / Culbreth Road intersection westbound approach has projected queues that near the capacity of its current redesigned storage bays that may need additional mitigation by retiming the signalized intersection to prevent excessive queue spillback that would block the proposed site driveway. No other recommendations for improvements to storage bays are expected, based on the analysis results.
Appropriateness of Acceleration/Deceleration Lanes	The site concept plan shows no specifics related to acceleration/deceleration lanes. Based on previous recommendations from NCDOT regarding this project, and considering the need to provide efficient operations in the vicinity of the site driveway intersection, a 100 foot deceleration taper for right-turns into the site is recommended. No other specific acceleration/deceleration lane issues were analyzed in the project study area.
Pedestrian and Bicycle Analysis	Existing pedestrian and bicycle access and connectivity exists along the US 15-501 corridor adjacent to the site, but no amenities for pedestrians or bicycles exist along Mt. Carmel Church Road adjacent to the site. Sidewalk exists along the US 15-501 corridor and pedestrian crossings and signals are present on at least one quadrant of signalized intersections. Delineated bicycle lanes are present along the corridor in the project study area. The Morgan Creek Trail Greenway has access to existing roadway facilities and adjacent neighborhoods and may provide the best non-motorized connection for the proposed site.
Public Transportation Analysis	Public transportation service to the study area, and to the proposed site, is available with bus stops located along US 15-501 and Culbreth Road and local CHT bus routes serving the area. However, no direct access connections from the stops to the site currently exist, nor is there a northbound stop along US 15-501 near Mt. Carmel Church Road.

G. Special Analysis/Issues Related to Project

Based on discussions with Town of Chapel Hill staff, a review of previously submitted materials by the Applicant, Town and NCDOT was made for this study to compare results/recommendations from those sets of information to the current traffic impact analysis.

In general, the NCDOT results and recommendations are consistent with data and results from this study with regards to trip generation values (at the current levels of the existing preschool facilities) and to operational results for study area intersections. One of the primary purposes of conducting a full



traffic impact study for the proposed preschool was to make an independent comprehensive analysis of all project details - trip generation information, the effects of the recent Town project to restripe the Mt. Carmel Church Road approach to US 15-501 and associated signal phasing upgrades, the comparison of operations at the Mt. Carmel Church Road/Bennett Road intersection between the proposed roundabout and existing traffic control and the ultimate effects on operations of the build-out traffic associated with the Obey Creek development. This report assesses all of these parameters and scenarios.

In addition, to better understand safety concerns raised by local residents about traffic operations and safety along Mt. Carmel Church Road in the vicinity of the proposed site location, a field analysis was completed on 10/17/17 to observe AM and PM peak hour queues at the Mt. Carmel Church Road intersection with US 15-501 after the Town project was complete and open to traffic for approximately one week. Traffic patterns were observed from 7:30 – 8:30 AM and from 5:00 – 6:00 PM, peak hour times that correspond to the highest reported traffic count data at the US 15-501/Mt. Carmel Church Road – Culbreth Road intersection. Maximum observed queues (number of vehicles in the outside right-turn lane in the new dual right-turn lane configuration) were collected in approximate two-minute increments – which corresponded to the traffic signal cycle length and dispersion of queue during each signal cycle. Observations were limited to the outer lane because it was noted that this lane was far more utilized than the inner lane. Results are as follows:

- AM Peak hour – average maximum queue length = 13 vehicles = 325 feet, worst case maximum queue length = 25 vehicles = 625 feet.
- PM Peak hour – average maximum queue length = 6 vehicles = 150 feet, worst case maximum queue length = 14 vehicles = 350 feet.

In the AM peak hour, queue observations noted that the worst-case queues would occasionally (2-3 times during the peak hour) reach the area of where the proposed preschool driveway would be located. The prime factor in these circumstances was the inability for right-turning traffic at the intersection to enter the intersection due to congestion on the NC 54 Bypass eastbound on-ramp and congestion northbound through the interchange area. When there was availability of gaps to move the Mt. Carmel Church Road eastbound right-turning traffic, queues quickly reduced. No issues were noted for queuing for the new shared left-turn/through traffic movement on Mt. Carmel Church Road.

IV. MITIGATION MEASURES/RECOMMENDATIONS

A. Planned Improvements

NCDOT STIP U-5864 proposes to construct a single-lane roundabout at the intersection of Mt. Carmel Church Road and Bennett Road, with construction occurring in 2018. To account for this improvement project, all 2019 and 2022 analysis conditions for this study include a scenario that assesses the operational performance of the proposed roundabout given its design parameters and anticipated traffic volumes.

There are no other Town of Chapel Hill or North Carolina Department of Transportation improvement projects for study area roadway facilities within the analysis year time frame of 2017-2022. NCDOT continues to study the US 15-501 corridor in and around Chapel Hill through feasibility studies and NCDOT Strategic Prioritization studies, but no committed projects are expected in the 2017-2022 timeframe. NCDOT has an identified STIP project (U-5304A) that may include improvements to the NC 54 Bypass interchange, and US 15-501 in the vicinity of the interchange, included as part of its design,



but no committed design exists at this time. U-5304A is currently slated for construction beginning in 2026.

B. Background Committed Improvements

There are no specific geometric or operational improvements to study area roadway intersections or facilities related to background private development projects that are expected to be completed between 2017 and 2019. Additional changes and improvements to intersections along the US 15-501 corridor that were recommended/committed to as part of the Obey Creek Mixed-Use development are all located at intersections that are beyond the specific study area for the Chapel Hill Cooperative Preschool. One recommended improvement from the Obey Creek study, the pavement marking restriping on Mt. Carmel Church Road and signal design and timing upgrades at its intersection with US 15-501 have recently been completed.

C. Applicant Committed Improvements

Based on the site concept plan and supporting development information provided, there are the following specific transportation-related improvements proposed adjacent to the Chapel Hill Cooperative Preschool:

- Construction of a concrete median along Mt. Carmel Church Road at the proposed site driveway to block ingress and egress of left-turning vehicles along with appropriate signage to prevent wrong-way maneuvers.
- Commitment to providing an easement along Mt. Carmel Church Road site frontage to connect to the Morgan Creek Greenway system.

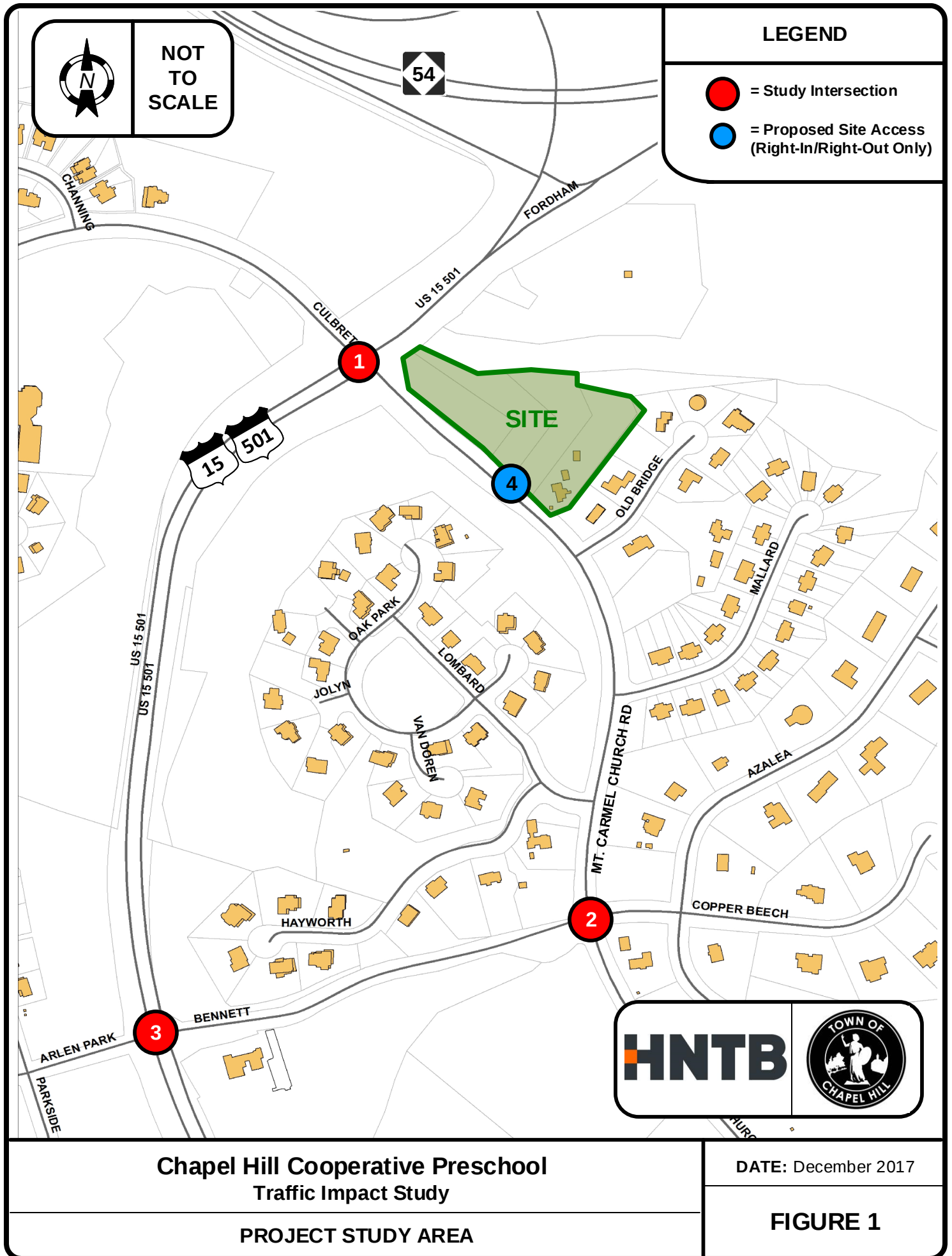
D. Necessary Improvements

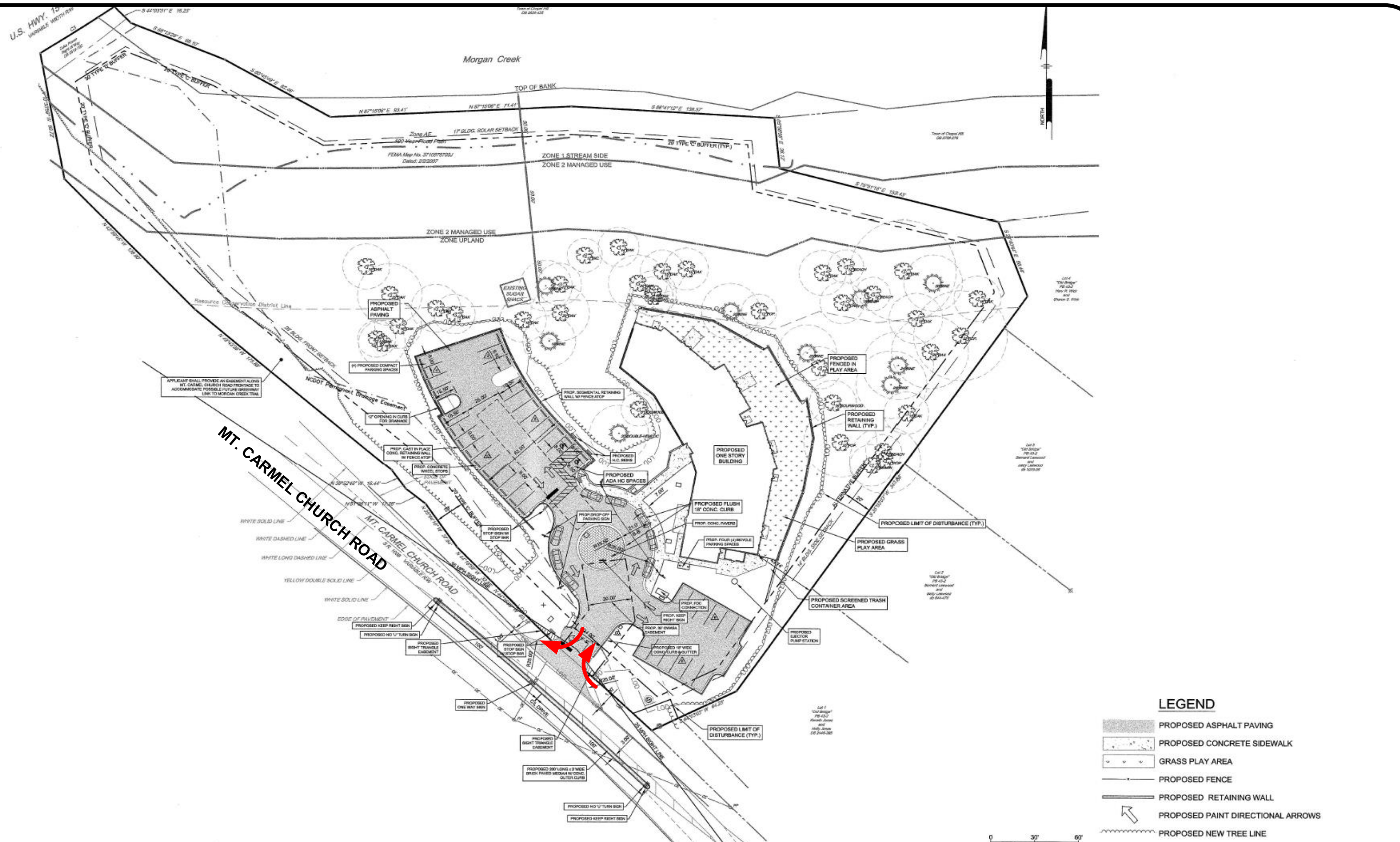
Based on traffic capacity analyses for the 2019 build-out+1 year and 2022 future analysis year, and analyses of the proposed site plan and internal driveways/circulation, the following improvements are recommended as being necessary for adequate transportation network operations (see **Figure 14**).

- 1) Retime the traffic signals along the US 15-501 corridor from the NC 54 Bypass interchange through Arlen Park Drive / Bennett Road to offset the impacts of site-related traffic and ensure that queuing along Mt. Carmel Church Road can be contained as efficiently as possible within the existing 375 foot dual right-turn lane configuration.
- 2) To provide safe and efficient operations in the direct vicinity of the proposed site driveway along Mt. Carmel Church Road, a dedicated 100 foot right-turn taper (matching previous NCDOT recommendations) should be constructed along Mt. Carmel Church Road.

These recommendations assume the construction of the NCDOT STIP U-5864 roundabout at Mt. Carmel Church Road / Bennett Road occurs before the preschool is built-out. If the U-5864 project is delayed, it is recommended that the Applicant coordinate with school staff and parents to inform them that traffic needs to use the alternative route inbound of US 15-501 to Bennett Road to Mt. Carmel Church Road. Operational results for this scenario indicate that this alternative may lead to lengthy delays for site trips at the eastbound Bennett Road stop-controlled approach. Construction of the roundabout will eliminate these operational issues and should provide a quicker means of accessing the site.

Appendix A – Figures





HNTB



**NOT
TO
SCALE**

LEGEND



= PROPOSED SITE ACCESS

**Chapel Hill Cooperative Preschool
Traffic Impact Study**

SITE CONCEPT PLAN

DATE: December 2017

FIGURE 2

LEGEND

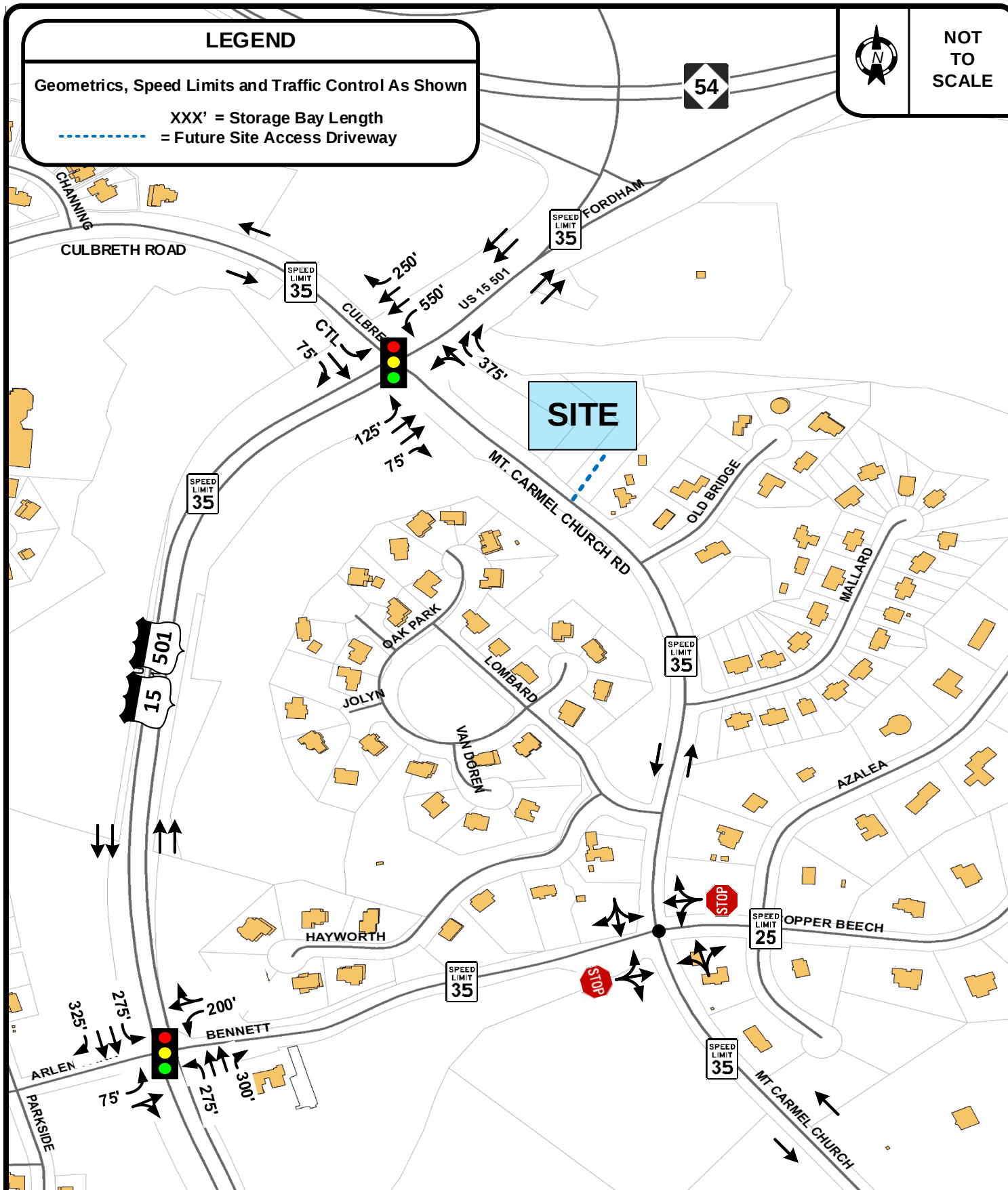
Geometrics, Speed Limits and Traffic Control As Shown

XXX' = Storage Bay Length

----- = Future Site Access Driveway



NOT
TO
SCALE



HNTB

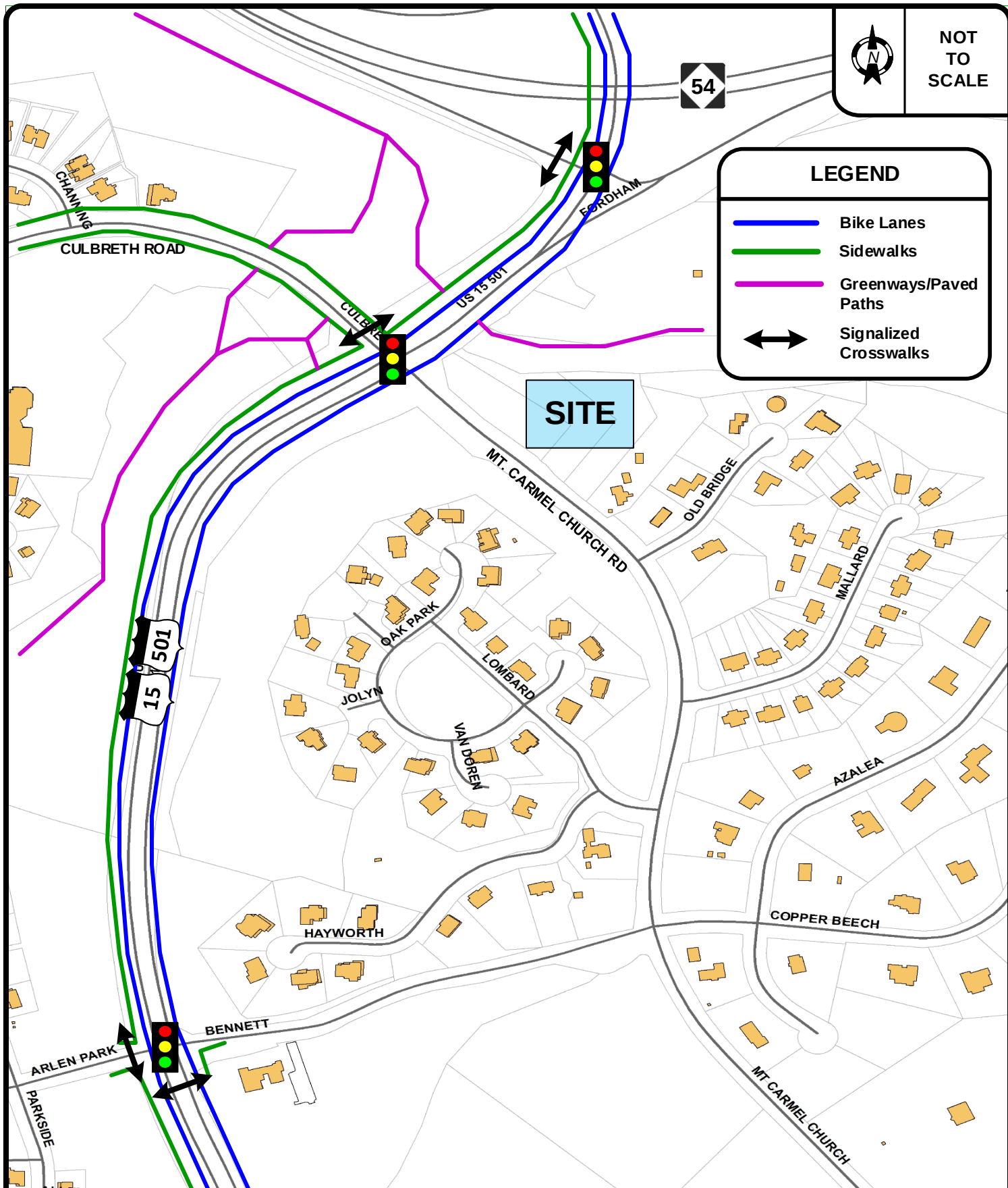


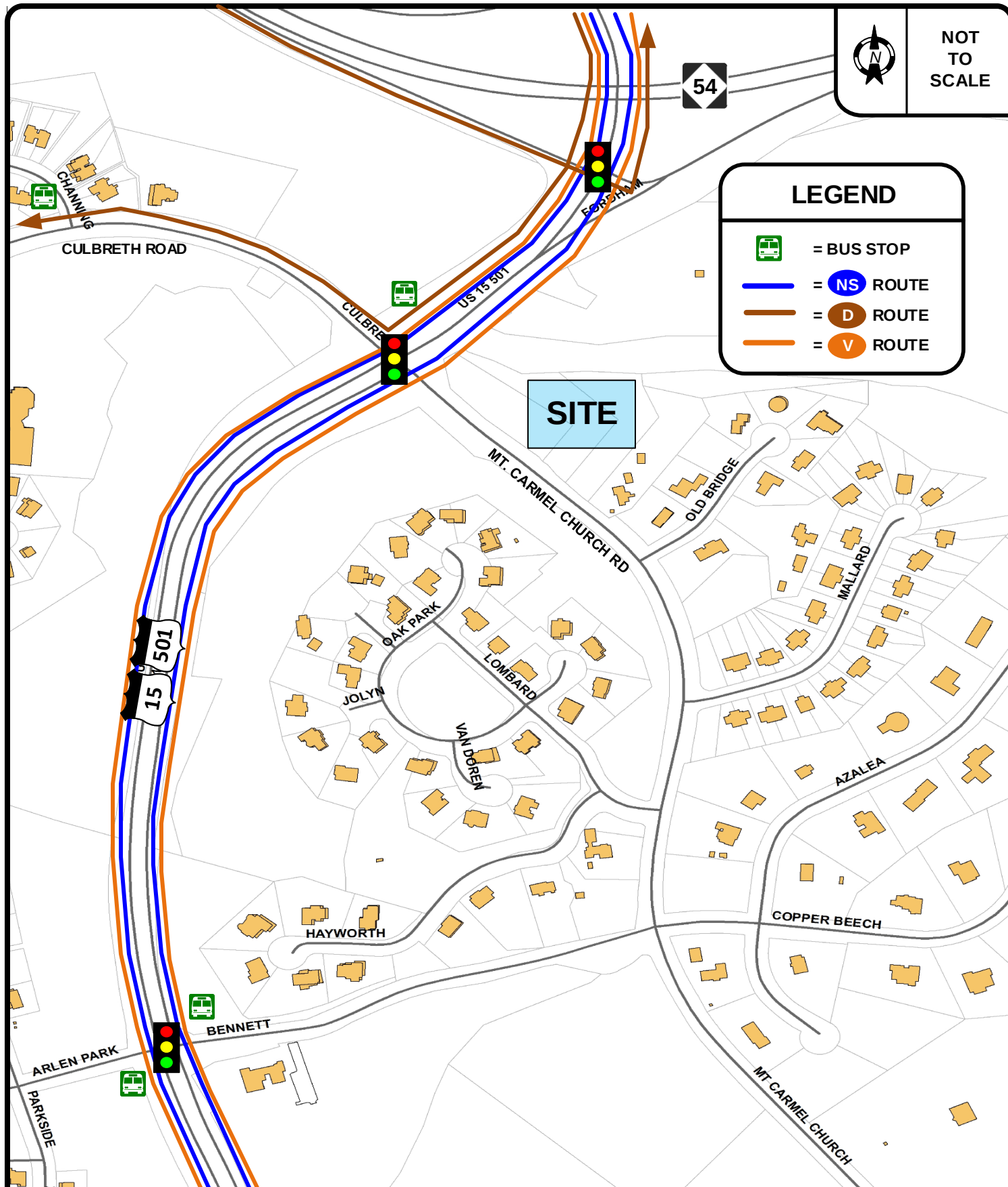
Chapel Hill Cooperative Preschool Traffic Impact Study

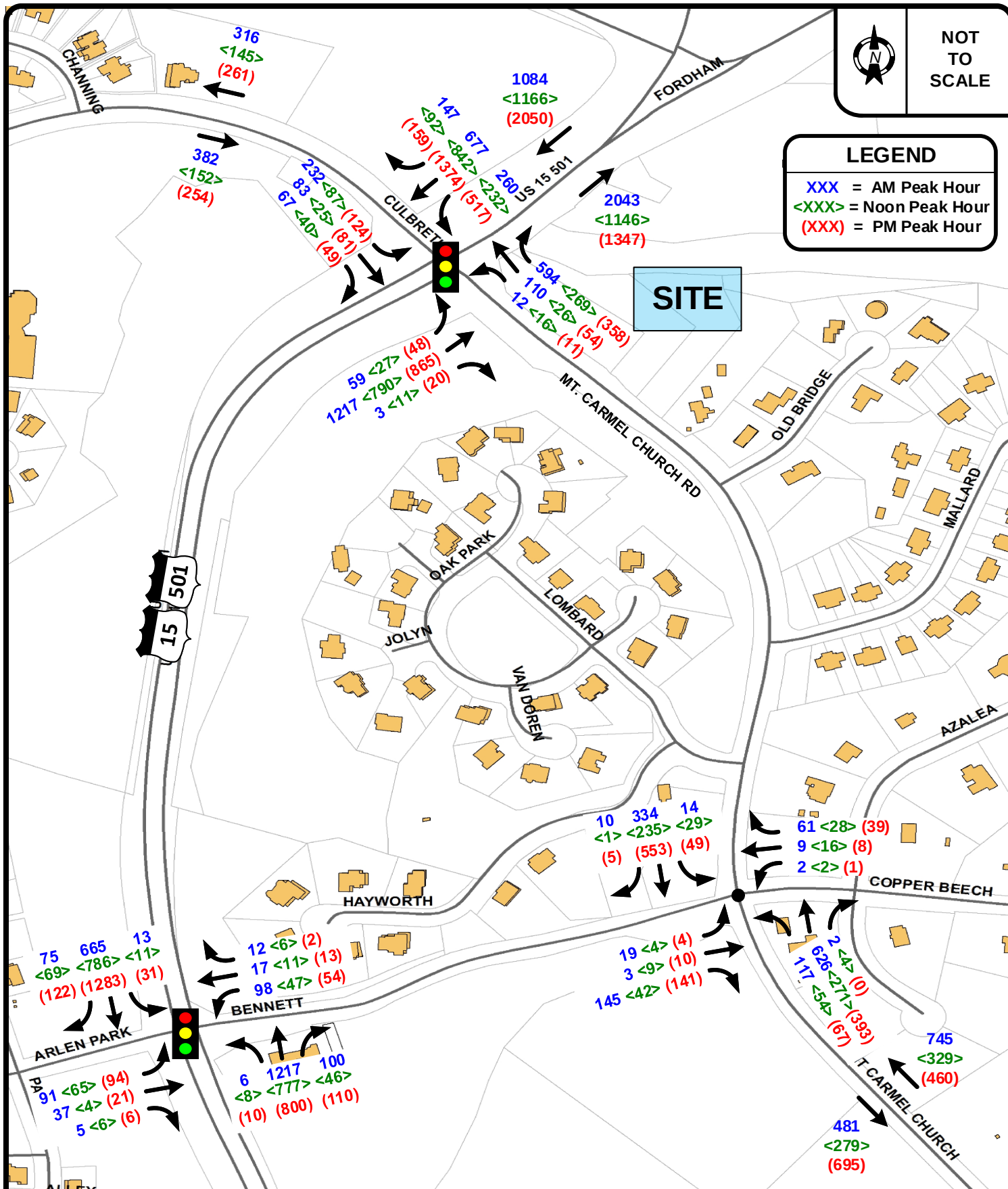
EXISTING LANEAGE AND GEOMETRICS

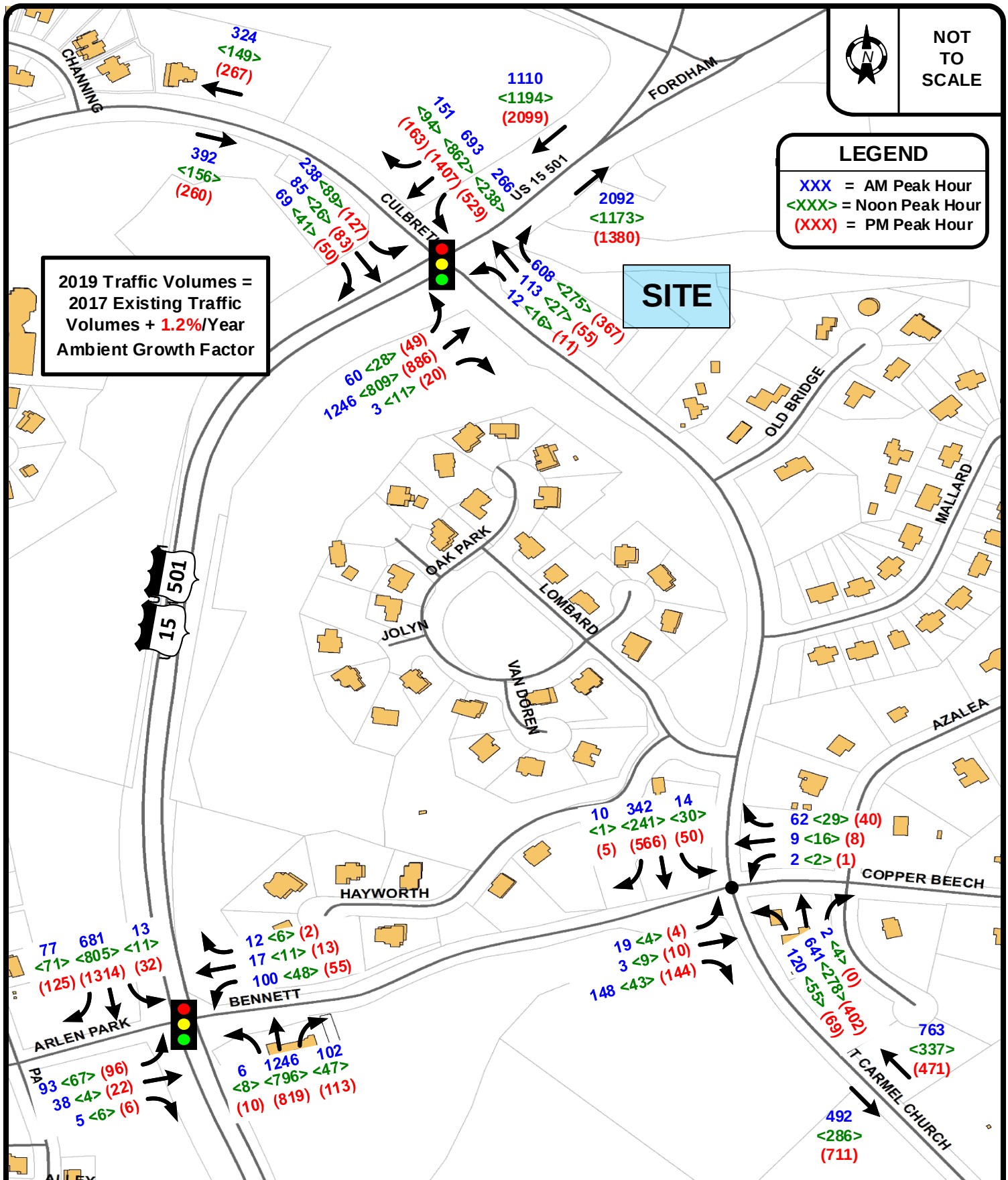
DATE: December 2017

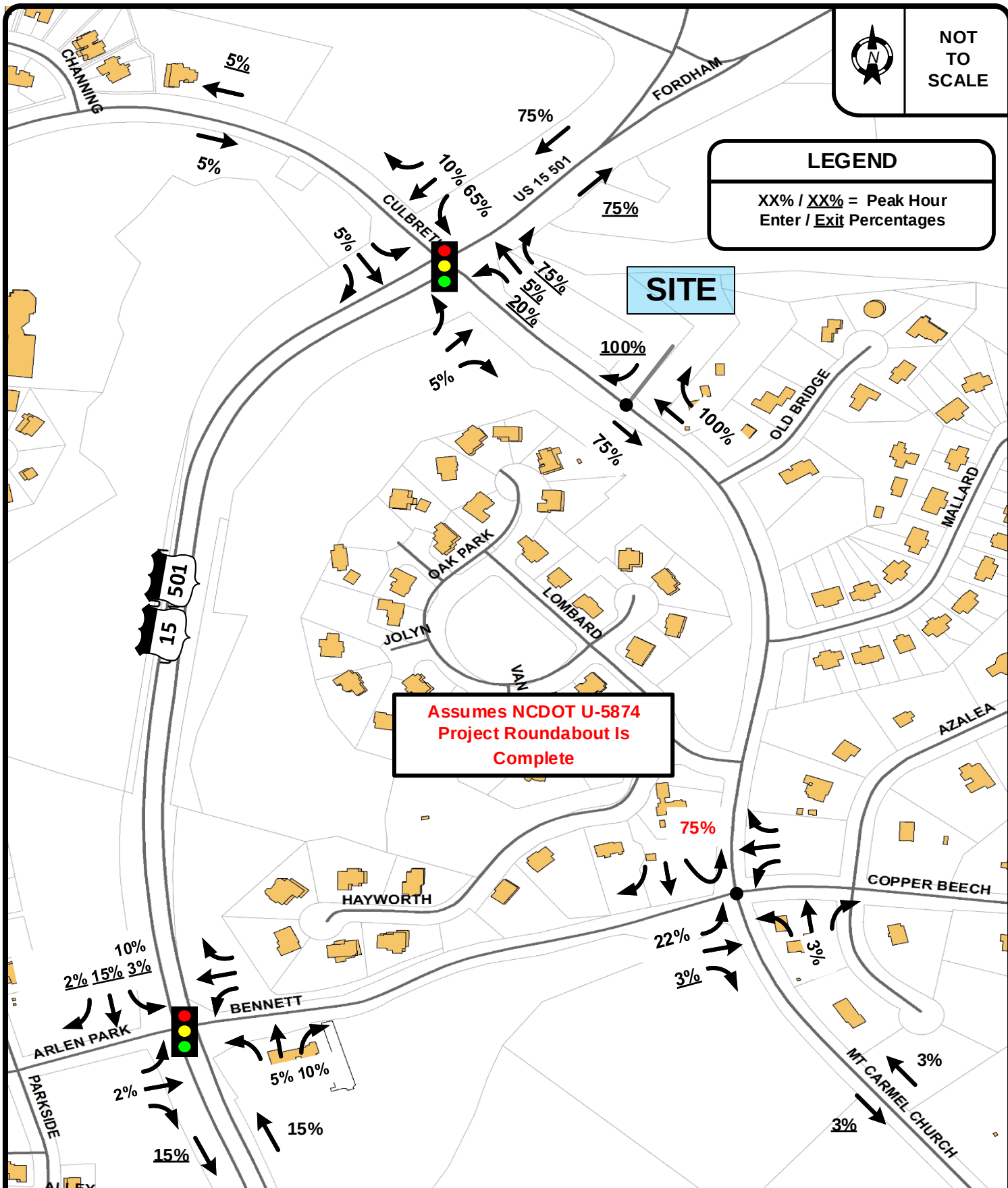
FIGURE 3

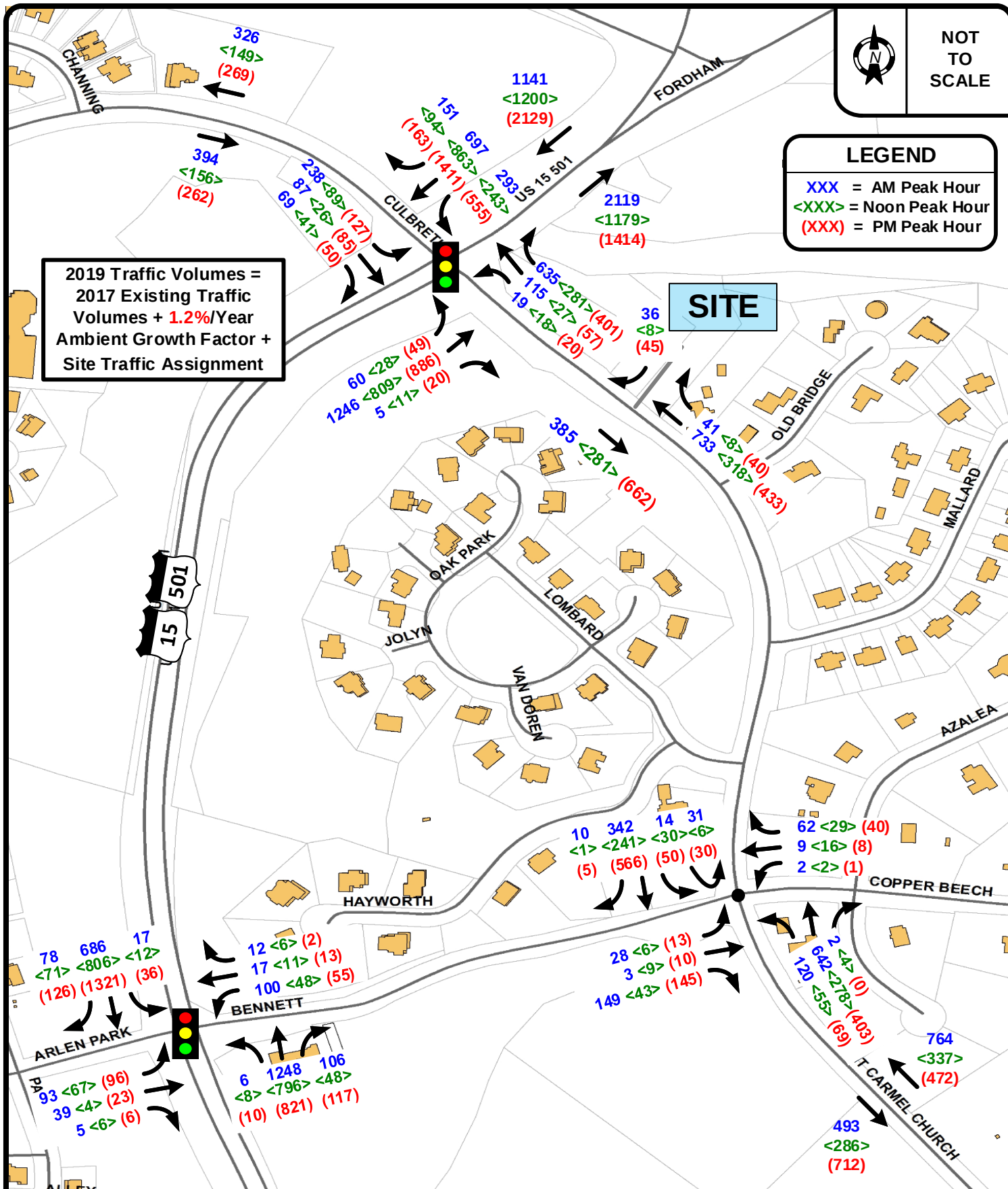












HNTB

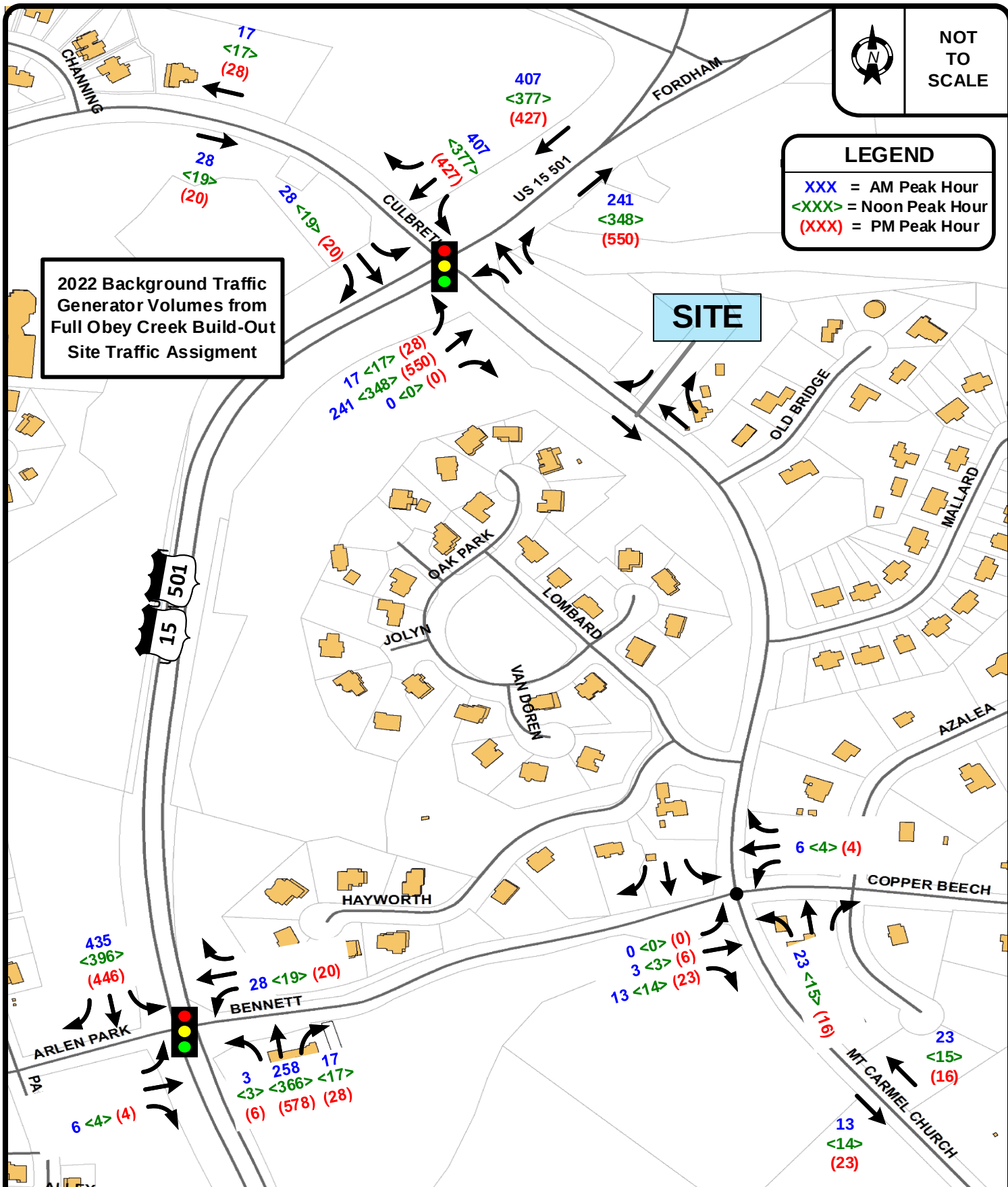


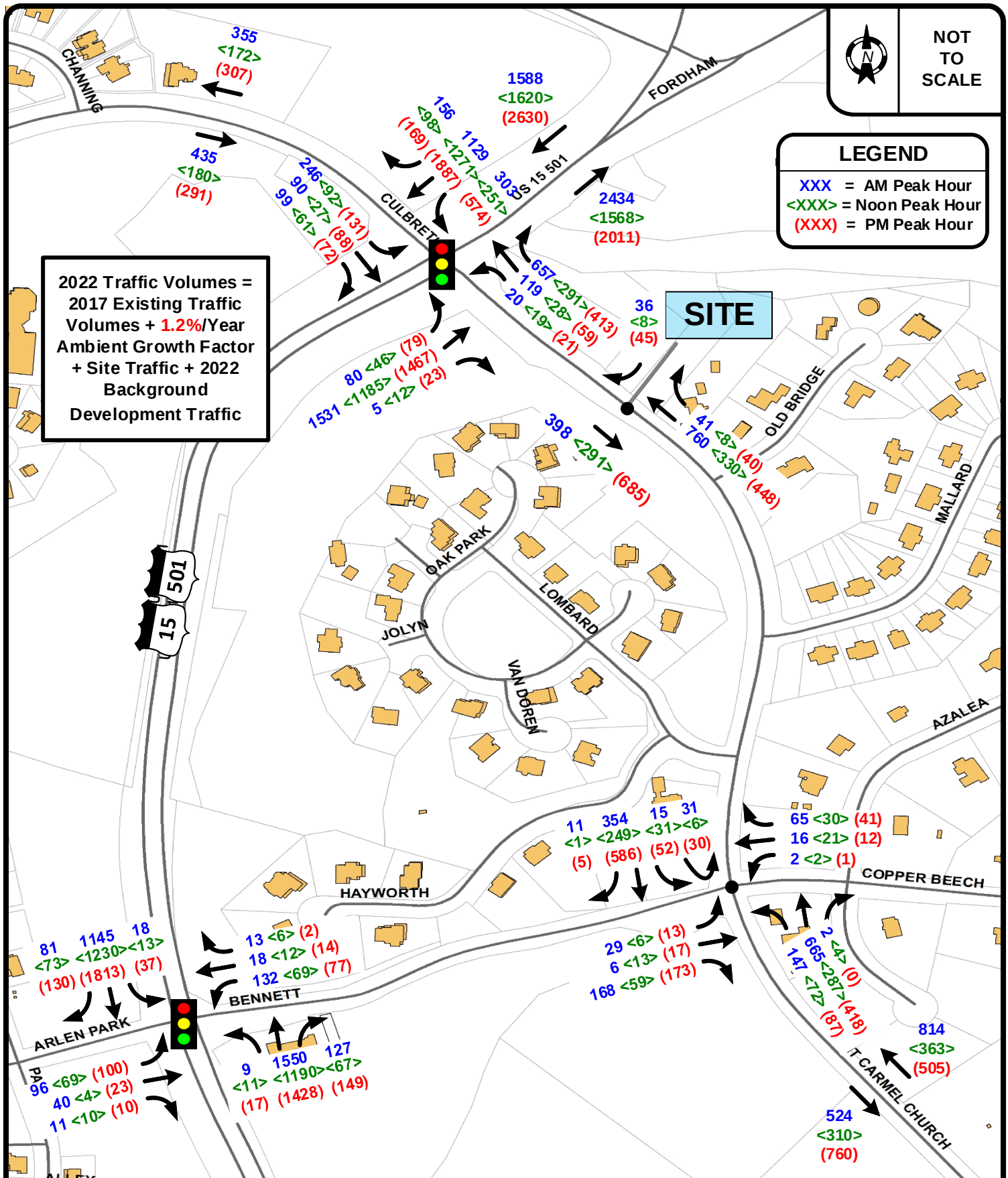
Chapel Hill Cooperative Preschool Traffic Impact Study

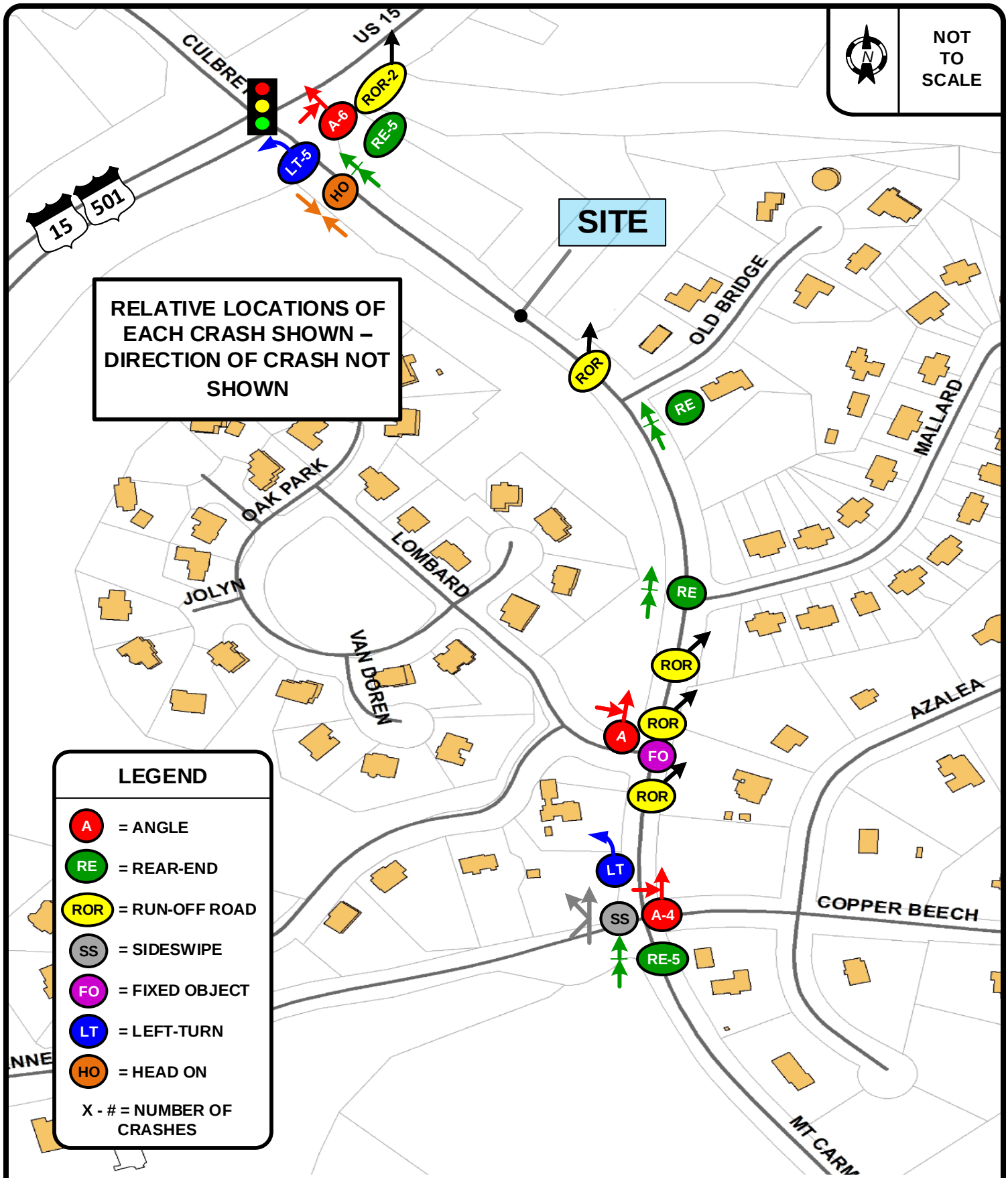
2019 PEAK HOUR TRAFFIC VOLUMES
WITH SITE

DATE: December 2017

FIGURE 10







LEGEND



= NCDOT Committed Improvement



= Applicant Committed Improvement



= Applicant Committed Greenway Easement



= Recommended Improvement

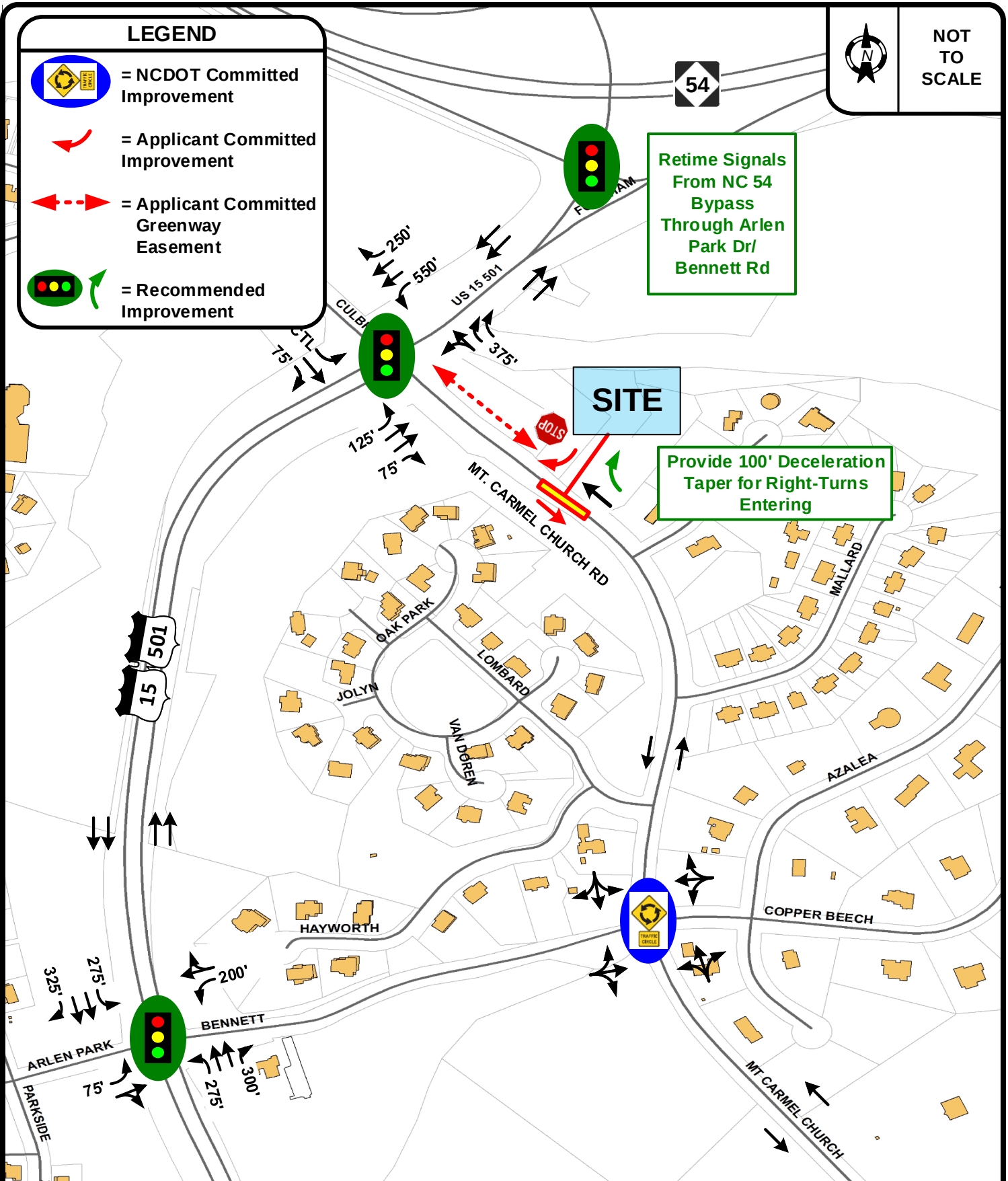


NOT TO SCALE

Retime Signals From NC 54 Bypass Through Arlen Park Dr/ Bennett Rd

SITE

Provide 100' Deceleration Taper for Right-Turns Entering



HNTB



Chapel Hill Cooperative Preschool
Traffic Impact Study

COMMITTED AND RECOMMENDED
IMPROVEMENTS

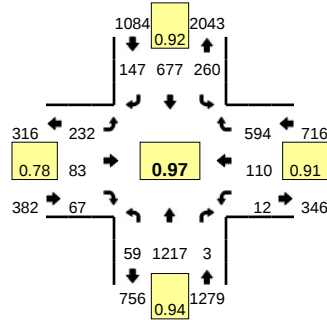
DATE: December 2017

FIGURE 14

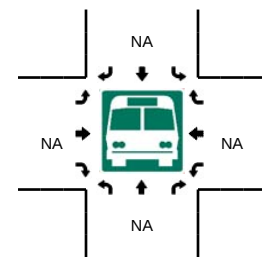
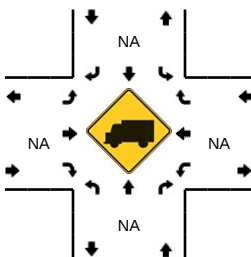
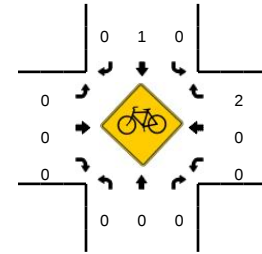
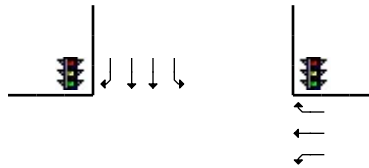
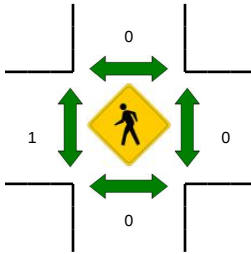
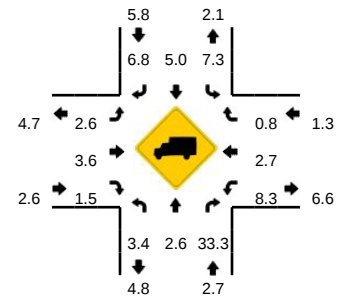
Appendix B – Traffic Count Data

LOCATION: US 15/501 -- Culbreth Rd/Mt Carmel Church Rd
CITY/STATE: Chapel Hill, NC

QC JOB #: 14526201
DATE: Wed, Oct 11 2017



Peak-Hour: 7:30 AM -- 8:30 AM
Peak 15-Min: 8:00 AM -- 8:15 AM



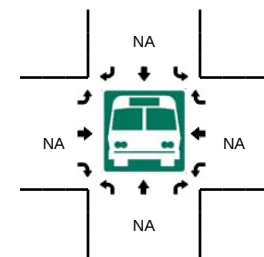
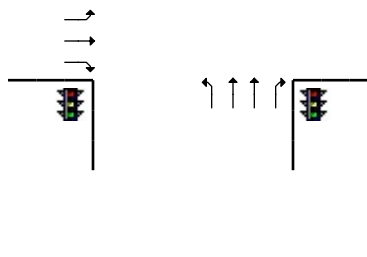
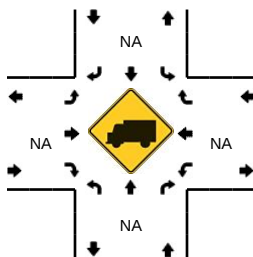
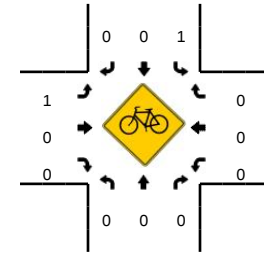
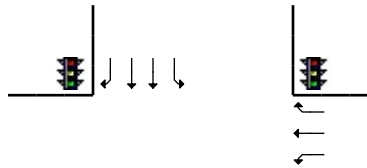
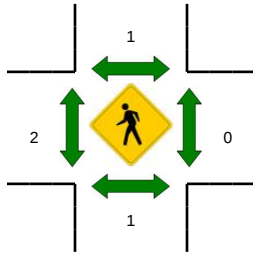
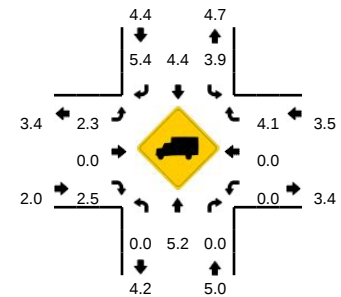
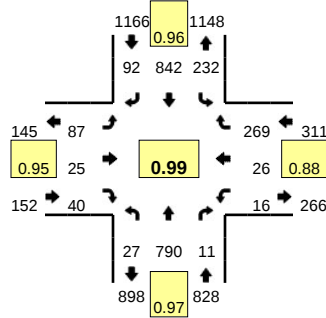
15-Min Count Period Beginning At	US 15/501 (Northbound)				US 15/501 (Southbound)				Culbreth Rd/Mt Carmel Church (Eastbound)				Culbreth Rd/Mt Carmel Church (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	247	0	0	23	122	14	0	30	1	1	0	1	5	83	0	527	3020
7:15 AM	2	326	0	0	51	169	17	0	60	11	5	0	0	10	128	0	779	
7:30 AM	16	330	1	0	61	154	37	0	58	14	12	0	1	18	169	0	871	
7:45 AM	25	283	1	0	80	185	33	0	44	16	13	0	3	28	132	0	843	
8:00 AM	14	303	1	0	59	178	46	0	60	33	29	0	1	29	138	0	891	
8:15 AM	4	301	0	0	60	160	31	0	70	20	13	0	7	35	155	0	856	
8:30 AM	9	295	1	0	70	173	16	0	30	12	10	0	5	33	138	0	792	
8:45 AM	8	301	1	0	66	173	10	0	37	11	9	0	4	14	131	0	765	
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	56	1212	4	0	236	712	184	0	240	132	116	0	4	116	552	0	3564	
Heavy Trucks	0	20	4		24	36	16		16	12	4		0	0	4		136	
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	1	0		0	0	0		0	0	0		1	
Railroad																		
Stopped Buses																		

Comments:

LOCATION: US 15/501 -- Culbreth Rd/Mt Carmel Church Rd
CITY/STATE: Chapel Hill, NC

QC JOB #: 14526202
DATE: Wed, Oct 11 2017

Peak-Hour: 12:15 PM -- 1:15 PM
Peak 15-Min: 12:45 PM -- 1:00 PM



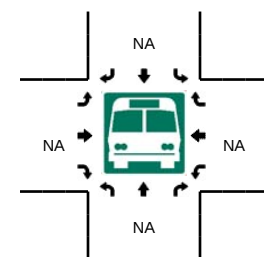
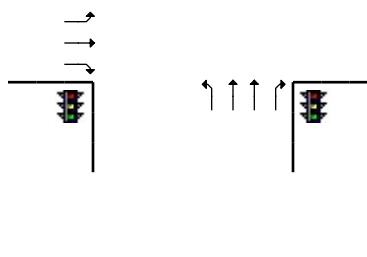
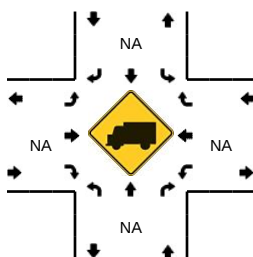
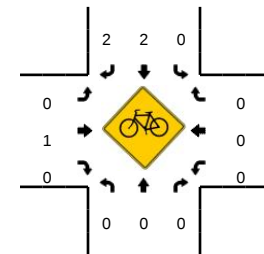
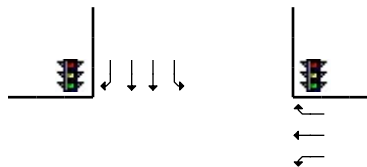
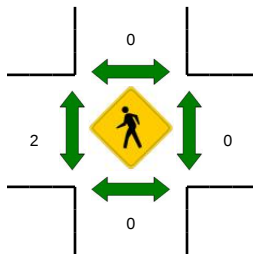
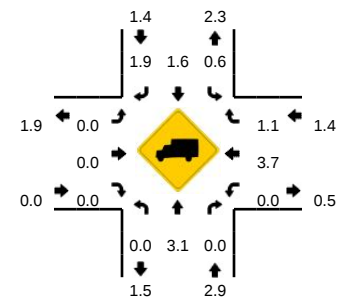
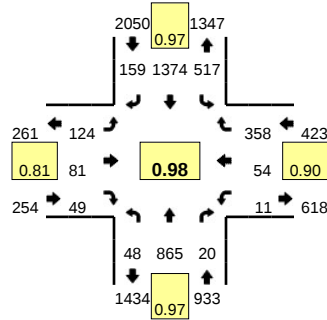
15-Min Count Period Beginning At	US 15/501 (Northbound)				US 15/501 (Southbound)				Culbreth Rd/Mt Carmel Church Rd (Eastbound)				Culbreth Rd/Mt Carmel Church Rd (Westbound)				Rd Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:30 AM	5	168	3	0	50	173	13	0	19	5	7	0	5	4	67	0	519	
11:45 AM	8	196	2	0	82	186	14	0	17	9	8	0	2	9	81	0	614	
12:00 PM	2	217	1	0	51	203	23	0	14	13	5	0	3	6	66	0	604	
12:15 PM	8	194	1	0	46	210	31	0	21	6	12	0	3	3	66	0	601	2338
12:30 PM	2	212	2	0	56	199	25	1	19	9	9	0	2	8	73	0	617	2436
12:45 PM	6	200	5	0	65	221	17	1	24	7	5	0	4	5	63	0	623	2445
1:00 PM	11	184	3	0	63	212	19	0	23	3	14	0	7	10	67	0	616	2457
1:15 PM	5	205	1	0	49	191	18	0	20	5	7	0	2	5	66	0	574	2430
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	24	800	20	0	260	884	68	4	96	28	20	0	16	20	252	0	2492	
Heavy Trucks	0	60	0		12	28	0		4	0	0		0	0	16		120	
Pedestrians	0	0	0		4	0	0		0	0	0		0	0	0		4	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Railroad																		
Stopped Buses																		

Comments:

LOCATION: US 15/501 -- Culbreth Rd/Mt Carmel Church Rd
CITY/STATE: Chapel Hill, NC

QC JOB #: 14526207
DATE: Wed, Oct 11 2017

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Peak 15-Min: 5:15 PM -- 5:30 PM



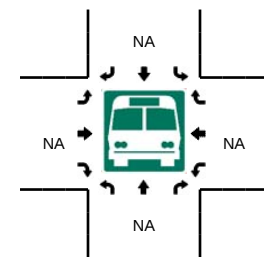
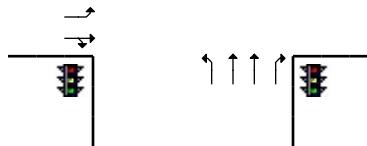
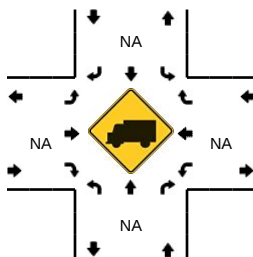
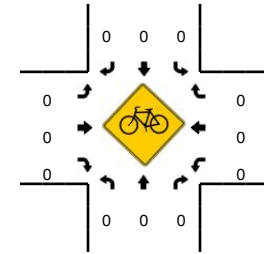
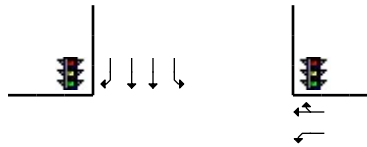
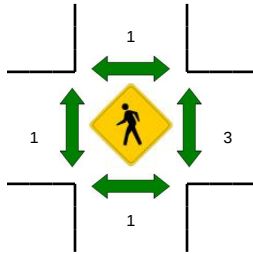
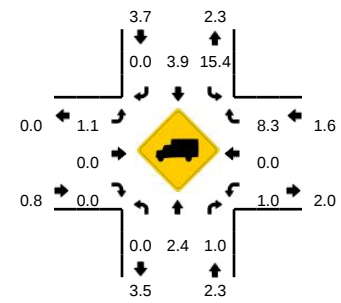
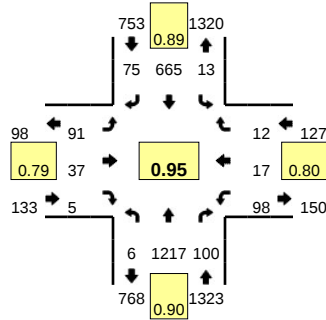
15-Min Count Period Beginning At	US 15/501 (Northbound)				US 15/501 (Southbound)				Culbreth Rd/Mt Carmel Church Rd (Eastbound)				Culbreth Rd/Mt Carmel Church Rd (Westbound)				Rd Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	6	151	2	0	104	305	30	0	18	30	17	0	3	7	66	0	739	
4:15 PM	3	203	2	0	114	272	34	0	21	23	11	0	0	9	56	0	748	
4:30 PM	16	218	7	0	131	350	41	0	34	16	11	0	4	14	82	0	924	
4:45 PM	11	203	6	0	124	332	33	0	34	16	11	0	3	19	84	0	876	3287
5:00 PM	12	215	3	0	107	355	46	0	27	23	17	0	4	17	102	0	928	3476
5:15 PM	9	229	4	0	155	337	39	0	29	26	10	0	0	4	90	0	932	3660
5:30 PM	7	229	5	0	134	315	44	0	19	13	15	0	5	27	93	0	906	3642
5:45 PM	14	231	4	0	112	289	44	0	33	26	21	0	5	13	75	0	867	3633
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	36	916	16	0	620	1348	156	0	116	104	40	0	0	16	360	0	3728	
Heavy Trucks	0	28	0		4	24	0		0	0	0		0	4	4		64	
Pedestrians		0				0				4				0			4	
Bicycles	0	0	0		0	1	1		0	0	0		0	0	0		2	
Railroad																		
Stopped Buses																		

Comments:

LOCATION: US 15/501 -- Arlen Park Dr/Bennett Rd
CITY/STATE: Chapel Hill, NC

QC JOB #: 14526205
DATE: Wed, Oct 11 2017

Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:30 AM -- 7:45 AM



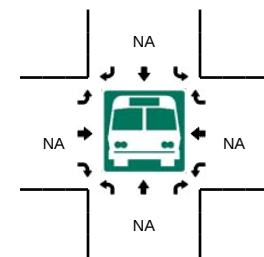
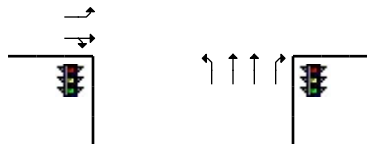
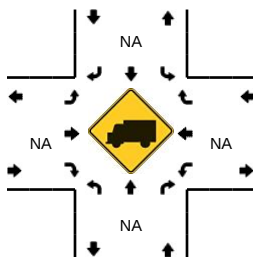
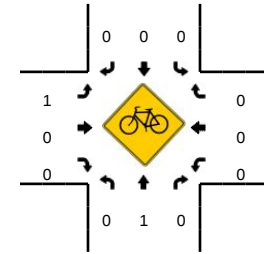
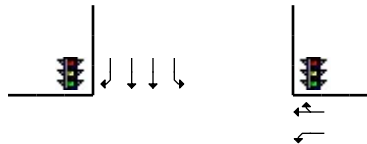
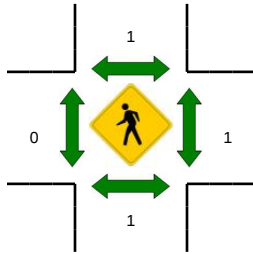
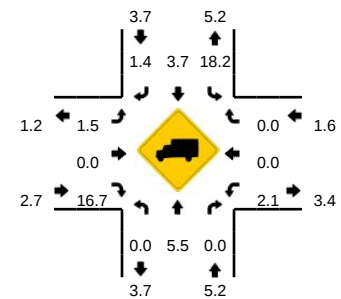
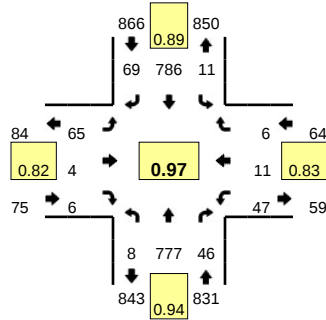
15-Min Count Period Beginning At	US 15/501 (Northbound)				US 15/501 (Southbound)				Arlen Park Dr/Bennett Rd (Eastbound)				Arlen Park Dr/Bennett Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	227	4	0	0	136	5	0	17	5	0	0	5	0	2	0	401	
7:15 AM	2	352	9	0	1	167	6	0	24	3	0	0	15	4	0	0	583	
7:30 AM	2	343	22	0	1	149	12	0	28	11	3	0	34	5	5	0	615	
7:45 AM	1	269	43	0	3	171	26	0	20	11	1	0	26	6	4	0	581	2180
8:00 AM	1	253	26	0	8	178	31	0	19	12	1	0	23	2	3	0	557	2336
8:15 AM	1	263	28	0	4	155	19	0	19	1	3	0	24	7	1	0	525	2278
8:30 AM	1	289	9	0	1	157	14	2	31	3	0	0	19	4	2	0	532	2195
8:45 AM	1	242	9	0	3	169	13	2	27	3	0	0	20	4	2	0	495	2109
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	8	1372	88	0	4	596	48	0	112	44	12	0	136	20	20	0	2460	
Heavy Trucks	0	36	4		0	32	0		0	0	0		0	0	0		72	
Pedestrians		0				0				0				4			4	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Railroad																		
Stopped Buses																		

Comments:

LOCATION: US 15/501 -- Arlen Park Dr/Bennett Rd
CITY/STATE: Chapel Hill, NC

QC JOB #: 14526206
DATE: Wed, Oct 11 2017

Peak-Hour: 12:00 PM -- 1:00 PM
Peak 15-Min: 12:15 PM -- 12:30 PM



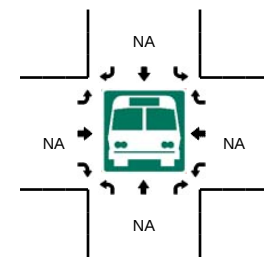
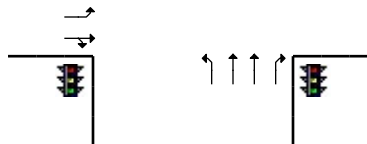
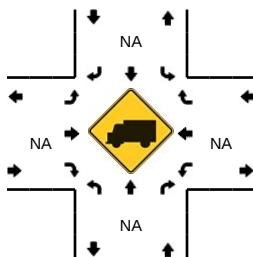
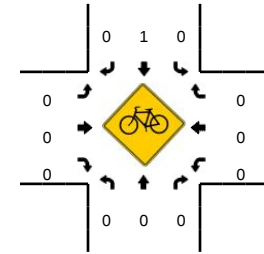
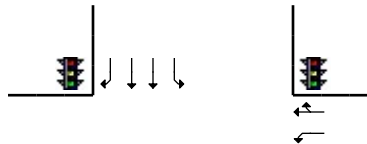
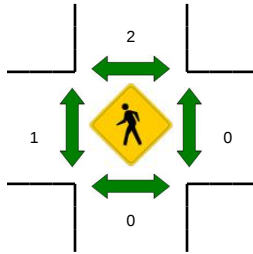
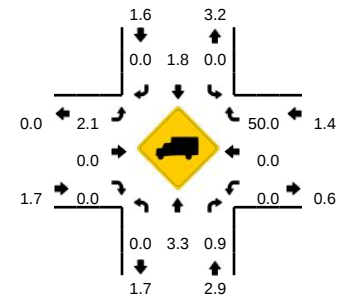
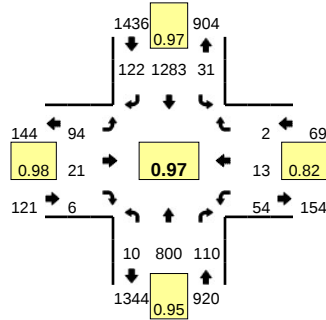
15-Min Count Period Beginning At	US 15/501 (Northbound)				US 15/501 (Southbound)				Arlen Park Dr/Bennett Rd (Eastbound)				Arlen Park Dr/Bennett Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:30 AM	0	174	7	0	2	177	9	0	11	3	2	0	5	1	1	0	392	
11:45 AM	0	195	11	1	0	182	12	1	14	2	1	0	18	1	1	0	439	
12:00 PM	1	188	12	2	2	201	20	0	22	0	2	0	9	3	0	0	462	
12:15 PM	2	196	14	1	1	201	20	0	16	1	1	0	14	3	2	0	472	1765
12:30 PM	0	185	9	0	2	193	12	0	18	1	1	0	18	4	0	0	443	1816
12:45 PM	1	208	11	1	4	191	17	2	9	2	2	0	6	1	4	0	459	1836
1:00 PM	0	172	13	0	0	230	19	2	12	3	0	0	8	2	0	0	461	1835
1:15 PM	1	213	16	1	0	185	10	2	13	2	1	0	13	4	1	0	462	1825
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	8	784	56	4	4	804	80	0	64	4	4	0	56	12	8	0	1888	
Heavy Trucks	0	32	0		0	48	0		0	0	0		0	0	0		80	
Pedestrians	0				0				0				0				0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Railroad																		
Stopped Buses																		

Comments:

LOCATION: US 15/501 -- Arlen Park Dr/Bennett Rd
CITY/STATE: Chapel Hill, NC

QC JOB #: 14526209
DATE: Wed, Oct 11 2017

Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 4:45 PM -- 5:00 PM



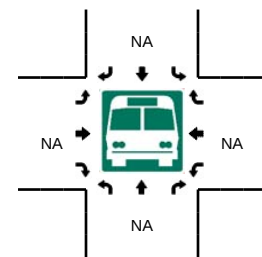
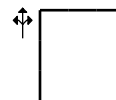
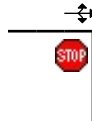
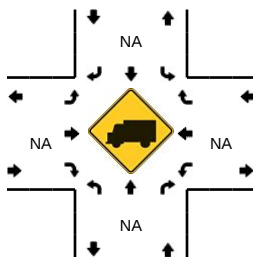
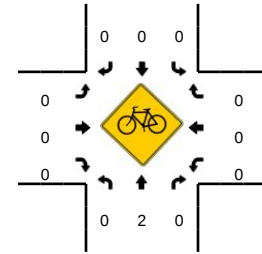
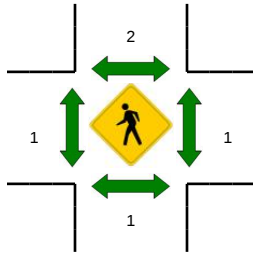
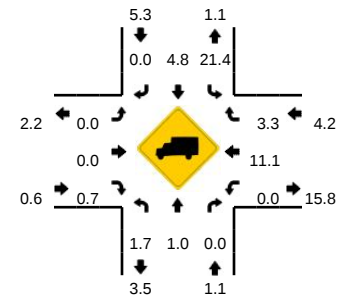
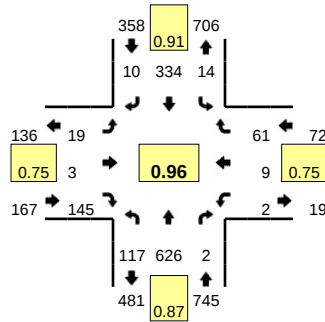
15-Min Count Period Beginning At	US 15/501 (Northbound)				US 15/501 (Southbound)				Arlen Park Dr/Bennett Rd (Eastbound)				Arlen Park Dr/Bennett Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	160	21	1	2	291	30	0	15	2	2	0	10	0	0	0	535	
4:15 PM	3	182	23	2	1	276	17	0	16	4	2	0	10	2	1	0	539	
4:30 PM	5	207	25	0	5	308	36	4	27	4	0	0	12	1	1	0	635	
4:45 PM	2	201	32	1	3	333	33	2	24	3	3	0	13	2	1	0	653	2362
5:00 PM	2	210	22	0	4	324	30	2	23	5	3	0	18	1	0	0	644	2471
5:15 PM	0	182	31	0	11	318	23	0	20	9	0	0	11	9	0	0	614	2546
5:30 PM	2	214	31	1	3	296	32	0	25	3	1	0	22	3	1	0	634	2545
5:45 PM	1	219	23	1	1	284	40	1	24	0	1	0	15	5	0	0	615	2507
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	8	804	128	4	12	1332	132	8	96	12	12	0	52	8	4	0	2612	
Heavy Trucks	0	24	0		0	20	0		0	0	0		0	0	0		44	
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	1	0		0	0	0		0	0	0		1	
Railroad																		
Stopped Buses																		

Comments:

LOCATION: Mt Carmel Church Rd -- Bennett Rd
CITY/STATE: Chapel Hill, NC

QC JOB #: 14526203
DATE: Wed, Oct 11 2017

Peak-Hour: 7:30 AM -- 8:30 AM
Peak 15-Min: 8:15 AM -- 8:30 AM



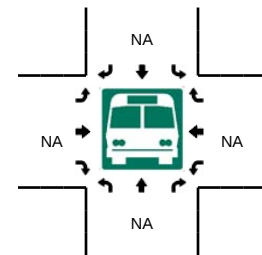
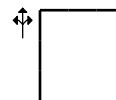
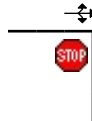
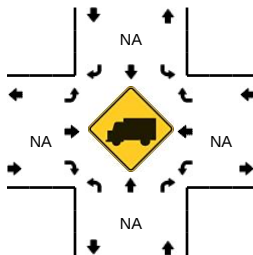
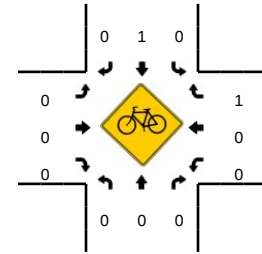
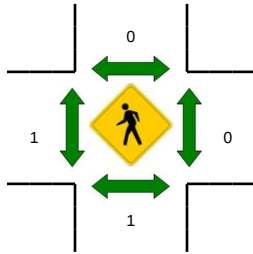
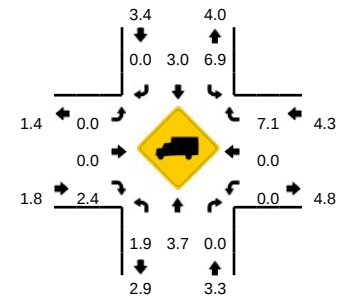
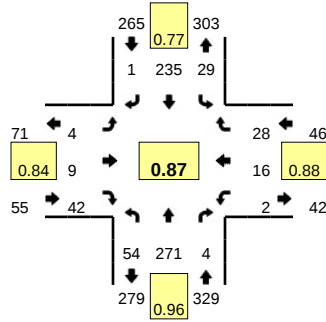
15-Min Count Period Beginning At	Mt Carmel Church Rd (Northbound)				Mt Carmel Church Rd (Southbound)				Bennett Rd (Eastbound)				Bennett Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	6	80	0	0	0	25	0	0	0	0	8	0	0	0	9	0	128	
7:15 AM	16	123	0	0	4	55	2	0	0	1	13	0	1	0	11	0	226	
7:30 AM	42	172	1	0	2	73	3	0	5	0	28	0	1	0	13	0	340	
7:45 AM	29	133	0	0	3	89	3	0	10	1	45	0	0	2	7	0	322	1016
8:00 AM	22	144	0	0	7	88	3	0	3	2	37	0	1	3	19	0	329	1217
8:15 AM	24	177	1	0	2	84	1	0	1	0	35	0	0	4	22	0	351	1342
8:30 AM	24	139	2	0	3	74	0	0	0	1	10	0	1	0	13	0	267	1269
8:45 AM	25	142	3	0	5	66	0	0	1	3	12	0	1	1	13	0	272	1219
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	96	708	4	0	8	336	4	0	4	0	140	0	0	16	88	0	1404	
Heavy Trucks	4	0	0		4	8	0		0	0	0		0	0	4		20	
Pedestrians		4				0				0				0			4	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Railroad																		
Stopped Buses																		

Comments:

LOCATION: Mt Carmel Church Rd -- Bennett Rd
CITY/STATE: Chapel Hill, NC

QC JOB #: 14526204
DATE: Wed, Oct 11 2017

Peak-Hour: 11:45 AM -- 12:45 PM
Peak 15-Min: 11:45 AM -- 12:00 PM



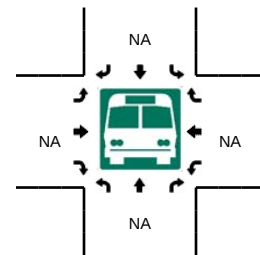
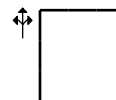
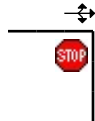
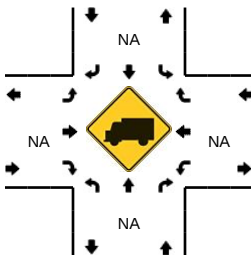
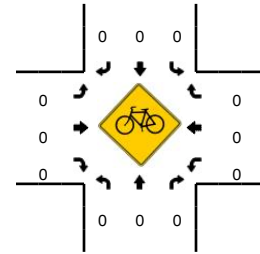
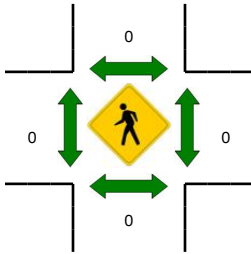
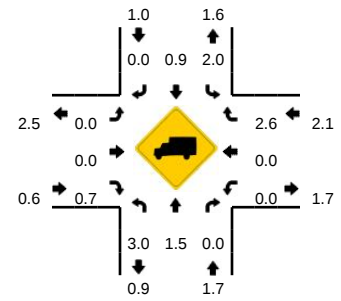
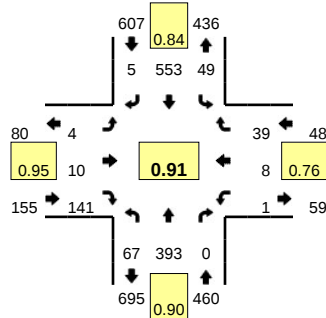
15-Min Count Period Beginning At	Mt Carmel Church Rd (Northbound)				Mt Carmel Church Rd (Southbound)				Bennett Rd (Eastbound)				Bennett Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:30 AM	6	71	0	0	6	52	0	0	0	0	9	0	0	0	8	0	152	
11:45 AM	13	71	2	0	10	76	0	0	2	1	11	0	0	6	7	0	199	
12:00 PM	13	65	0	0	6	60	0	0	0	3	12	0	1	2	7	0	169	
12:15 PM	13	64	2	0	6	48	0	0	1	2	13	0	1	3	7	0	160	680
12:30 PM	15	71	0	0	7	51	1	0	1	3	6	0	0	5	7	0	167	695
12:45 PM	11	58	0	0	10	60	0	0	1	1	11	0	0	0	12	0	164	660
1:00 PM	5	67	0	0	8	60	3	0	1	1	15	0	0	0	10	0	170	661
1:15 PM	16	63	0	0	11	39	0	0	1	1	15	0	0	1	6	0	153	654
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	52	284	8	0	40	304	0	0	8	4	44	0	0	24	28	0	796	
Heavy Trucks	0	16	0	0	0	8	0	0	0	0	4	0	0	0	0	0	28	
Pedestrians	4				0					4				0			8	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1		1	
Railroad																		
Stopped Buses																		

Comments:

LOCATION: Mt Carmel Church Rd -- Bennett Rd
CITY/STATE: Chapel Hill, NC

QC JOB #: 14526208
DATE: Wed, Oct 11 2017

Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:15 PM -- 5:30 PM



15-Min Count Period Beginning At	Mt Carmel Church Rd (Northbound)				Mt Carmel Church Rd (Southbound)				Bennett Rd (Eastbound)				Bennett Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	10	62	1	0	14	104	0	0	1	5	21	0	0	1	11	0	230	
4:15 PM	12	56	1	0	7	127	1	0	3	1	24	0	1	2	6	0	241	
4:30 PM	12	86	1	0	4	135	1	0	2	3	29	0	1	1	8	0	283	
4:45 PM	11	89	0	0	12	143	1	0	1	2	38	0	0	1	10	0	308	1062
5:00 PM	17	112	0	0	15	114	1	0	1	2	29	0	1	2	10	0	304	1136
5:15 PM	21	96	0	0	10	169	1	0	1	1	39	0	0	2	10	0	350	1245
5:30 PM	18	96	0	0	12	127	2	0	1	5	35	0	0	3	9	0	308	1270
5:45 PM	16	88	1	0	13	126	0	0	2	2	22	0	0	4	14	0	288	1250
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	84	384	0	0	40	676	4	0	4	4	156	0	0	8	40	0	1400	
Heavy Trucks	8	12	0	0	0	8	0	0	0	0	0	0	0	0	0	0	28	
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Railroad																		
Stopped Buses																		

Comments:

Appendix C - Trip Generation Data

Trip Generation Summary

Alternative: Alternative 1

Phase:

Open Date: 10/17/2017

Project: Chapel Hill Cooperative Preschool

Analysis Date: 10/17/2017

ITE	Land Use	Weekday Average Daily Trips				Weekday AM Peak Hour of Adjacent Street Traffic				Weekday PM Peak Hour of Adjacent Street Traffic			
		*	Enter	Exit	Total	*	Enter	Exit	Total	*	Enter	Exit	Total
565	CHCP (Day Care Center)		294	294	588		57	50	107		49	55	104
	22 Employees												
Unadjusted Volume			294	294	588		57	50	107		49	55	104
Internal Capture Trips			0	0	0		0	0	0		0	0	0
Pass-By Trips			0	0	0		0	0	0		0	0	0
Volume Added to Adjacent Streets			294	294	588		57	50	107		49	55	104

Total Weekday Average Daily Trips Internal Capture = 0 Percent

Total Weekday AM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent

Total Weekday PM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent

* - Custom rate used for selected time period.

Source: Institute of Transportation Engineers, Trip Generation Manual 9th Edition, 2012

TRIP GENERATION 2014, TRAFFICWARE, LLC

P. 1

Trip Generation Summary

Alternative: Alternative 1

Phase:

Open Date: 10/17/2017

Project: Chapel Hill Cooperative Preschool

Analysis Date: 10/17/2017

ITE	Land Use	Weekday Average Daily Trips				Weekday AM Peak Hour of Adjacent Street Traffic				Weekday PM Peak Hour of Adjacent Street Traffic			
		*	Enter	Exit	Total	*	Enter	Exit	Total	*	Enter	Exit	Total
565	CHCP (Day Care Center)		334	333	667		58	52	110		52	59	111
	9 Gross Floor Area 1000 SF												
Unadjusted Volume			334	333	667		58	52	110		52	59	111
Internal Capture Trips			0	0	0		0	0	0		0	0	0
Pass-By Trips			0	0	0		0	0	0		0	0	0
Volume Added to Adjacent Streets			334	333	667		58	52	110		52	59	111

Total Weekday Average Daily Trips Internal Capture = 0 Percent

Total Weekday AM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent

Total Weekday PM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent

* - Custom rate used for selected time period.

Source: Institute of Transportation Engineers, Trip Generation Manual 9th Edition, 2012

TRIP GENERATION 2014, TRAFFICWARE, LLC

P. 1

Trip Generation Summary

Alternative: Alternative 1

Phase:

Open Date: 10/17/2017

Project: Chapel Hill Cooperative Preschool

Analysis Date: 10/17/2017

ITE	Land Use	Weekday Average Daily Trips				Weekday AM Peak Hour of Adjacent Street Traffic				Weekday PM Peak Hour of Adjacent Street Traffic			
		*	Enter	Exit	Total	*	Enter	Exit	Total	*	Enter	Exit	Total
565	CHCP (Day Care Center)		219	219	438		42	38	80		38	43	81
	100 Students												
Unadjusted Volume			219	219	438		42	38	80		38	43	81
Internal Capture Trips			0	0	0		0	0	0		0	0	0
Pass-By Trips			0	0	0		0	0	0		0	0	0
Volume Added to Adjacent Streets			219	219	438		42	38	80		38	43	81

Total Weekday Average Daily Trips Internal Capture = 0 Percent

Total Weekday AM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent

Total Weekday PM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent

* - Custom rate used for selected time period.

Source: Institute of Transportation Engineers, Trip Generation Manual 9th Edition, 2012

TRIP GENERATION 2014, TRAFFICWARE, LLC

P. 1

AM and PM Peak Traffic Estimates
(These numbers do not reflect peak hour traffic volumes)

Private & Charter school data is based on few to no buses and uses the same percentages for all school types (elementary, middle, & high).

NOTES

- **Average Queue Length does not** include an alternative traffic pattern required for high traffic demand days.
- **Average Queue Length does not** include the Student Loading Zone.
- Peak traffic volumes at schools normally occur within a 30-minute time period. (justifying a PHF of 0.5)

MSTA School Traffic Calculations

AM and PM Peak Traffic Estimates
(These numbers do not reflect peak hour traffic volumes)

AM Cars / Student	PM Cars / Student	Avg. Car Length	PM At one Time
55.94%	39.15%	22.19	48.67%
52.91%	47.50%	22.19	46.12%
50.08%	47.58%	22.83	55.71%

School Name: Chapel Hill Cooperative Preschool

This is an **Urban Charter**

Version: 111015

MSTA School Queue Input					Calculations					
Type School	Student Population	Number of Buses	Staff Members	Student Drivers	PM Total Vehicles	PM Peak Vehicles	Average Queue Length	Total AM Trips	Total PM Trips	High Demand Length
Grade K-10	100		22		40	19	432	134	80	30%
Grade 11										
Grade 12										
Sum >>	100		22		40	19	432	134	80	562

Grade K-10									
AM Trips Generated				PM Trips Generated					
Direction	Parents	Buses	Staff	Trips	Parents	Buses	Staff	Trips	
IN	56		22	78	40			40	
OUT	56			56	40			40	
AM K-10 Trips				134	PM K-10 Trips				80

ADT
236

Grade 11									
AM Trips Generated					PM Trips Generated				
Direction	Parents	Buses	Staff	Trips	Parents	Buses	Staff	Trips	
IN									
OUT									
AM 11 Trips					PM 11 Trips				

Grade 12									
AM Trips Generated					PM Trips Generated				
Direction	Parents	Buses	Staff	Trips	Parents	Buses	Staff	Trips	
IN									
OUT									
AM 12 Trips					PM 12 Trips				

All AM TRIPS	In	78
	Out	56
	Total	134

All PM TRIPS	In	40
	Out	40
	Total	80

NOTES

- Average Queue Length does not include an alternative traffic pattern required for high traffic demand days.
- Average Queue Length may include the Student Loading Zone.
- Peak traffic volumes at schools normally occur within a 30-minute time period. (justifying a PHF of 0.5)

Narrative Describing Proposed Chapel Hill Cooperative Preschool

The Chapel Hill Cooperative Preschool was originally organized in 1960 by the Community Church in Chapel Hill as a parent cooperative and the first integrated preschool in the area. The Preschool is a non-profit childcare center governed by a board of directors, including parents and community representative(s). The preschool first extended its enrollment to the full year in 1972. The two (2) year old and Infant/Toddler programs were started in 1980 and 1997 respectively.

Currently there are two (2) school locations. Both Sites are state licensed through the Division of Child Development and accredited by the National Association for the Education of Young Children. The Preschool site is located at the Community Church (106 Purefoy Road, Chapel Hill) and the Infant/Toddler site is located at the Church of Reconciliation (110 N. Elliott Road, Chapel Hill). These two facilities contain a maximum of eighty (80) children and twenty (20) teachers (including the Executive Director). These existing facilities will be combined at the proposed Mt. Carmel Church Road site.

The Chapel Hill Cooperative Preschool is proposing to construct an 8,929-sf one-story building with an adjacent playground, a 23-space off-street parking area and associated site improvements.

The hours of operation for the school is 7:30-5:30. Families begin dropping off students between 7:30am and 9:00am and pick up times is between 12:00-5:30. There are several enrollment options for families to choose; consequently, it is not unusual to have fewer than 80 students and 20 staff on-site. Enrollment options (i.e.: duration of day) for the children are: half day (7:30-12:00), $\frac{3}{4}$ day (7:30-3:00), and full day (7:30-5:30). Additionally, students can be enrolled on a full-time (5 days a week) or on a part-time basis (2 to 3 days per week). Staff have staggered work schedules; there are morning and afternoon shift teachers. The staggering of staff and children will minimize the traffic impact to the surrounding area. This as well as site access will be discussed in more detail in the Traffic section of this narrative.

CHCP offer a breakfast snack, lunch and afternoon snack to the children. Food preparation on-site is limited; most food is brought to the site prepared and only requires warming and portioning for the students.

The Chapel Hill Cooperative Preschool and the design team have thoroughly reviewed the site and the present/future needs for the school. The application being presented has been designed to utilize the character of this site while minimize the impact (to the site) and the surrounding area. A few examples of this are as follows:

- Existing on-site structures such as the “Sugar Shack” and the dwelling are being re-used. The “Sugar Shack” will be utilized by the staff/children for activities and learning opportunities within the woods.
- The existing dwelling will be used during construction as a construction office for the contractor(s). This has been reviewed with the Chapel Hill Inspections Department and found to be acceptable as a temporary use. Once the proposed preschool building has sufficiently progressed, the construction office will be relocated into the new building and the dwelling will be vacated. The dwelling will then be demolished to the existing foundation prior to obtaining a certificate of occupancy for the new preschool building.
- An effort was made to maintain as many existing trees as possible and to integrate them into the design of the site. Specifically, the 20” double Hemlock tree at the center of the site was the major factor for the placement of the proposed building and parking area. This CHCP wants to utilize this tree and the immediate area around it as another learning opportunity which is unique to this site.
- Land disturbance was minimized and kept below 40,000 sf.

Traffic

During the TRT meeting (including the comments issued by the TRT) the following topics were identified as concerns:

- Trip generation,
- The arrive/departure times of staff/students, and
- The concern of cars potentially queuing onto Mt. Carmel Church road if students are dropped off at a car loading zone within the driveway circle on-site

Based upon the comments received and discussions held during the TRT meeting, traffic counts were performed at both CHCP sites on Monday October 3, 2016, Tuesday October 4, 2016 & Wednesday October 5, 2016. The results of these counts have been attached to this narrative.

These results indicate the following:

- On average, the majority of students arrive on-site between 8:00 and 9:10 with the peak occurring between 8:40 am to 9:00 am.
- Staff starts arriving on site around 7:00 am and is staggered throughout the morning.
- Approximately 40% of the students and approximately half of the staff (8-10) leave the site for the day by 4 pm.
- Based upon these counts, traffic generation is distributed throughout the day; this will minimize traffic impacts to the surrounding area/neighborhoods.
- To eliminate the concern of cars potentially queuing onto Mt. Carmel Church Road, the CHCP will have all parents park their cars on-site and walk the children into the building. To accommodate this volume of cars, the parking lot has been expanded to 23 spaces (including four (4) compact spaces). Operationally, the CHCP staff will occupy the westerly most spaces, this will also include temporary stacking of staff vehicles within the westerly end drive aisle during the peak morning time. The operational moving of staff vehicles is similar to how the current sites operate. This approach is being used to minimize the impervious area on-site.

- Proposed access to the site will be restricted to right turns into the site and right turns out of the site. This will be accomplished using a raised brick median within Mt. Carmel Church Road. CHCP staff and families will be instructed to access the site via Bennett Road and not utilize the surrounding residential street such as Old Bridge Lane for any of their traffic movements (i.e.: U-turns). CHCP will work with families/neighborhood to enforce this policy.

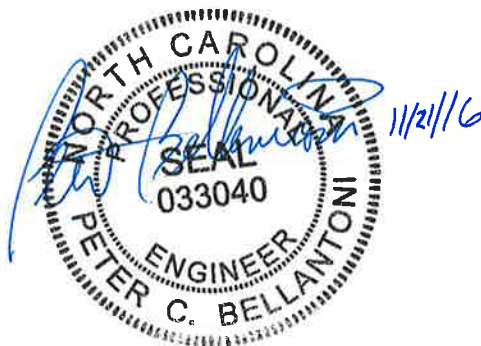
Deliveries to the site are infrequent. Refuse collection will be coordinated with the private collection company (or town) to minimize traffic impacts to the surrounding area.

In conjunction with the development of this site, the CHCP is committed to working with the NCDOT and Town during the Mobility Plan update. This will include the institution of a Transportation Management Plan; said plan will encourage the staff/parents to carpool, possible use of an off-site parking areas for staff with shuttle service to/from the site and to use the walking/biking infrastructure in the area (once constructed) to the maximum extent practicable. As previously indicated, the parents will be instructed to utilize the Bennett Road roundabout (once constructed) to not impact the adjacent residential neighborhoods.

Solid Waste

Due to the uniqueness of the site and how the CHCP is attempting to minimizing the impact of the development on the site; consequently, alternative methods of recycling/trash pick-up are being proposed. CHCP will be requesting a waiver from Orange County picking up the site recyclables; this will be accomplished by use of a private company or families taking the recyclables off-site to an Orange County facility. Regarding trash pickup, the CHCP is proposing to compost on-site to reduce the volume generated by the school; a preliminary composting plan has been prepared by the CHCP and has been attached to this narrative. The remaining trash from the site will need to be picked up. The CHCP would request to discuss the possibility with the Town of an alternative trash collection vehicle serving this site; if this is not possible then the CHCP will contract this service with a private collector.

Amended November 18, 2016



TRAFFIC

TOTAL TRIP GENERATION

TIME	Monday - 10/3/16	Tuesday - 10/4/16	Wednesday - 10/5/16	AVERAGE TRIPS
7:00-7:09	1	0	0	0.33
7:10-7:19	2	4	3	3.00
7:20-7:29	4	5	3	4.00
7:30-7:39	5	2	4	3.67
7:40-7:49	2	5	5	4.00
7:50-7:59	4	3	6	4.33
8:00-8:09	7	5	8	6.67
8:10-8:19	11	9	8	9.33
8:20-8:29	5	6	3	4.67
8:30-8:39	9	6	6	7.00
8:40-8:49	8	11	12	10.33
8:50-8:59	10	7	16	11.00
9:00-9:09	10	13	5	9.33
9:10-9:19	5	5	2	4.00
9:20-9:29	1	0	0	0.33
9:30-9:39	1	1	0	0.67
9:40-9:49	0	0	1	0.33
9:50-9:59	1	0	0	0.33
10:00-10:09	0	0	0	0.00
10:10-10:19	0	1	0	0.33
10:20-10:29	0	0	0	0.00
10:30-10:39	0	0	0	0.00
10:40-10:49	1	0	0	0.33
10:50-10:59	1	0	0	0.33
11:00-11:09	0	0	0	0.00
11:10-11:19	0	0	0	0.00
11:20-11:29	0	0	0	0.00
11:30-11:39	0	0	0	0.00
11:40-11:49	0	0	1	0.33
11:50-11:59	1	2	1	1.33
12:00-12:09	3	2	0	1.67
12:10-12:19	0	0	0	0.00
12:20-12:29	0	0	0	0.00
12:30-12:39	1	1	2	1.33
12:40-12:49	0	0	0	0.00
12:50-12:59	0	1	0	0.33
1:00-1:09	5	1	3	3.00
1:10-1:19	1	1	0	0.67
1:20-1:29	0	0	0	0.00
1:30-1:39	0	0	1	0.33
1:40-1:49	1	0	0	0.33
1:50-1:59	0	0	0	0.00
2:00-2:09	1	2	2	1.67
2:10-2:19	1	2	2	1.67
2:20-2:29	1	0	0	0.33
2:30-2:39	4	1	2	2.33
2:40-2:49	4	3	3	3.33
2:50-2:59	11	8	10	9.67
3:00-3:09	8	9	9	8.67
3:10-3:19	3	0	3	2.00
3:20-3:29	1	1	2	1.33
3:30-3:39	0	1	0	0.33
3:40-3:49	1	3	1	1.67
3:50-3:59	1	1	0	0.67
4:00-4:09	0	0	3	1.00
4:10-4:19	0	0	0	0.00
4:20-4:29	2	2	0	1.33
4:30-4:39	2	2	3	2.33
4:40-4:49	1	4	4	3.00
4:50-4:59	3	4	4	3.67
5:00-5:09	9	4	3	5.33
5:10-5:19	12	13	10	11.67
5:20-5:29	8	8	11	9.00
5:30-5:39	5	9	4	6.00
5:40-5:49	3	0	2	1.67
5:50-5:59	0	0	0	0.00

STAFF TRIP GENERATION

TIME	Monday - 10/3/16	Tuesday - 10/4/16	Wednesday - 10/5/16	AVERAGE TRIPS
7:00-7:09	1	0	0	0.33
7:10-7:19	2	4	3	3.00
7:20-7:29	3	2	3	2.67
7:30-7:39	1	0	1	0.67
7:40-7:49	0	0	0	0.00
7:50-7:59	0	0	0	0.00
8:00-8:09	3	2	0	1.67
8:10-8:19	2	0	2	1.33
8:20-8:29	0	1	0	0.33
8:30-8:39	1	0	0	0.33
8:40-8:49	1	3	0	1.33
8:50-8:59	2	1	2	1.67
9:00-9:09	3	3	2	2.67
9:10-9:19	1	0	1	0.67
9:20-9:29	0	0	0	0.00
9:30-9:39	0	0	0	0.00
9:40-9:49	0	0	0	0.00
9:50-9:59	0	0	0	0.00
10:00-10:09	0	0	0	0.00
10:10-10:19	0	0	0	0.00
10:20-10:29	0	0	0	0.00
10:30-10:39	0	0	0	0.00
10:40-10:49	0	0	0	0.00
10:50-10:59	0	0	0	0.00
11:00-11:09	0	0	0	0.00
11:10-11:19	0	0	0	0.00
11:20-11:29	0	0	0	0.00
11:30-11:39	0	0	0	0.00
11:40-11:49	0	0	0	0.00
11:50-11:59	0	0	0	0.00
12:00-12:09	0	0	0	0.00
12:10-12:19	0	0	0	0.00
12:20-12:29	0	0	0	0.00
12:30-12:39	0	0	0	0.00
12:40-12:49	0	0	0	0.00
12:50-12:59	0	0	0	0.00
1:00-1:09	0	0	0	0.00
1:10-1:19	0	0	0	0.00
1:20-1:29	0	0	0	0.00
1:30-1:39	0	0	0	0.00
1:40-1:49	0	0	0	0.00
1:50-1:59	0	0	0	0.00
2:00-2:09	0	1	1	0.67
2:10-2:19	1	0	0	0.33
2:20-2:29	0	0	0	0.00
2:30-2:39	1	1	1	1.00
2:40-2:49	1	0	0	0.33
2:50-2:59	0	0	0	0.00
3:00-3:09	2	2	3	2.33
3:10-3:19	2	0	2	1.33
3:20-3:29	1	1	2	1.33
3:30-3:39	0	1	0	0.33
3:40-3:49	1	0	1	0.67
3:50-3:59	0	0	0	0.00
4:00-4:09	0	0	0	0.00
4:10-4:19	0	0	0	0.00
4:20-4:29	0	0	0	0.00
4:30-4:39	0	0	0	0.00
4:40-4:49	0	0	1	0.33
4:50-4:59	1	1	0	0.67
5:00-5:09	3	1	1	1.67
5:10-5:19	0	0	0	0.00
5:20-5:29	1	0	2	1.00
5:30-5:39	3	7	2	4.00
5:40-5:49	2	0	2	1.33
5:50-5:59	0	0	0	0.00

STUDENT TRIP GENERATION

TIME	Monday - 10/3/16	Tuesday - 10/4/16	Wednesday - 10/5/16	AVERAGE TRIPS
7:00-7:09	0	0	0	0.00
7:10-7:19	0	0	0	0.00
7:20-7:29	1	3	0	1.33
7:30-7:39	4	2	3	3.00
7:40-7:49	2	5	5	4.00
7:50-7:59	4	3	6	4.33
8:00-8:09	4	3	8	5.00
8:10-8:19	9	9	6	8.00
8:20-8:29	5	5	3	4.33
8:30-8:39	8	6	6	6.67
8:40-8:49	7	8	12	9.00
8:50-8:59	8	6	14	9.33
9:00-9:09	7	10	3	6.67
9:10-9:19	4	5	1	3.33
9:20-9:29	1	0	0	0.33
9:30-9:39	1	1	0	0.67
9:40-9:49	0	0	1	0.33
9:50-9:59	1	0	0	0.33
10:00-10:09	0	0	0	0.00
10:10-10:19	0	1	0	0.33
10:20-10:29	0	0	0	0.00
10:30-10:39	0	0	0	0.00
10:40-10:49	1	0	0	0.33
10:50-10:59	1	0	0	0.33
11:00-11:09	0	0	0	0.00
11:10-11:19	0	0	0	0.00
11:20-11:29	0	0	0	0.00
11:30-11:39	0	0	0	0.00
11:40-11:49	0	0	1	0.33
11:50-11:59	1	2	1	1.33
12:00-12:09	3	2	0	1.67
12:10-12:19	0	0	0	0.00
12:20-12:29	0	0	0	0.00
12:30-12:39	1	1	2	1.33
12:40-12:49	0	0	0	0.00
12:50-12:59	0	1	0	0.33
1:00-1:09	5	1	3	3.00
1:10-1:19	1	1	0	0.67
1:20-1:29	0	0	0	0.00
1:30-1:39	0	0	1	0.33
1:40-1:49	1	0	0	0.33
1:50-1:59	0	0	0	0.00
2:00-2:09	1	1	1	1.00
2:10-2:19	0	2	2	1.33
2:20-2:29	1	0	0	0.33
2:30-2:39	3	0	1	1.33
2:40-2:49	3	3	3	3.00
2:50-2:59	11	8	10	9.67
3:00-3:09	6	7	6	6.33
3:10-3:19	1	0	1	0.67
3:20-3:29	0	0	0	0.00
3:30-3:39	0	0	0	0.00
3:40-3:49	0	3	0	1.00
3:50-3:59	1	1	0	0.67
4:00-4:09	0	0	3	1.00
4:10-4:19	0	0	0	0.00
4:20-4:29	2	2	0	1.33
4:30-4:39	2	2	3	2.33
4:40-4:49	1	4	3	2.67
4:50-4:59	2	3	4	3.00
5:00-5:09	6	3	2	3.67
5:10-5:19	12	13	10	11.67
5:20-5:29	7	8	9	8.00
5:30-5:39	2	2	2	2.00
5:40-5:49	1	0	0	0.33
5:50-5:59	0	0	0	0.00

STAFF PARKING DEMAND

TIME	Monday - 10/3/16	Tuesday - 10/4/16	Wednesday - 10/5/16	AVERAGE TRIPS
7:00-7:09	1	0	0	
7:10-7:19	3	4	3	
7:20-7:29	6	6	6	
7:30-7:39	7	6	7	
7:40-7:49	7	6	7	
7:50-7:59	7	6	7	
8:00-8:09	10	8	7	
8:10-8:19	12	8	9	
8:20-8:29	12	9	9	
8:30-8:39	13	9	9	
8:40-8:49	14	12	9	
8:50-8:59	16	13	11	
9:00-9:09	19	16	13	
9:10-9:19	20	16	14	
9:20-9:29	20	16	14	
9:30-9:39	20	16	14	
9:40-9:49	20	16	14	
9:50-9:59				
10:00-10:09				
10:10-10:19				
10:20-10:29				
10:30-10:39				
10:40-10:49				
10:50-10:59				
11:00-11:09				
11:10-11:19				
11:20-11:29				
11:30-11:39				
11:40-11:49				
11:50-11:59				
12:00-12:09				
12:10-12:19				
12:20-12:29				
12:30-12:39				
12:40-12:49				
12:50-12:59				
1:00-1:09				
1:10-1:19				
1:20-1:29				
1:30-1:39				
1:40-1:49				
1:50-1:59				
2:00-2:09				
2:10-2:19				
2:20-2:29				
2:30-2:39				
2:40-2:49				
2:50-2:59				
3:00-3:09				
3:10-3:19				
3:20-3:29				
3:30-3:39				
3:40-3:49				
3:50-3:59				
4:00-4:09				
4:10-4:19				
4:20-4:29				
4:30-4:39				
4:40-4:49				
4:50-4:59				
5:00-5:09				
5:10-5:19				
5:20-5:29				
5:30-5:39				
5:40-5:49				
5:50-5:59				

STUDENT PARKING DEMAND

TIME	Monday - 10/3/16	Tuesday - 10/4/16	Wednesday - 10/5/16	AVERAGE TRIPS
7:00-7:09	0	0	0	
7:10-7:19	0	0	0	
7:20-7:29	1	3	0	
7:30-7:39	4.5	3.5	3	
7:40-7:49	4	6	6.5	
7:50-7:59	5	5.5	8.5	
8:00-8:09	6	4.5	11	
8:10-8:19	11	10.5	10	
8:20-8:29	9.5	9.5	6	
8:30-8:39	10.5	8.5	7.5	
8:40-8:49	11	11	15	
8:50-8:59	11.5	10	20	
9:00-9:09	11	13	10	
9:10-9:19	7.5	10	2.5	
9:20-9:29	3	2.5	0.5	
9:30-9:39	1.5	1	0	
9:40-9:49	0.5	0.5	1	
9:50-9:59				
10:00-10:09				
10:10-10:19				
10:20-10:29				
10:30-10:39				
10:40-10:49				
10:50-10:59				
11:00-11:09				
11:10-11:19				
11:20-11:29				
11:30-11:39				
11:40-11:49				
11:50-11:59				
12:00-12:09				
12:10-12:19				
12:20-12:29				
12:30-12:39				
12:40-12:49				
12:50-12:59				
1:00-1:09				
1:10-1:19				
1:20-1:29				
1:30-1:39				
1:40-1:49				
1:50-1:59				
2:00-2:09				
2:10-2:19				
2:20-2:29				
2:30-2:39				
2:40-2:49				
2:50-2:59				
3:00-3:09				
3:10-3:19				
3:20-3:29				
3:30-3:39				
3:40-3:49				
3:50-3:59				
4:00-4:09				
4:10-4:19				
4:20-4:29				
4:30-4:39				
4:40-4:49				
4:50-4:59				
5:00-5:09				
5:10-5:19				
5:20-5:29				
5:30-5:39				
5:40-5:49				
5:50-5:59				

TOTAL PARKING DEMAND

TIME	Monday - 10/3/16	Tuesday - 10/4/16	Wednesday - 10/5/16	AVERAGE TRIPS
7:00-7:09	1	0	0	
7:10-7:19	3	4	3	
7:20-7:29	7	9	6	
7:30-7:39	11.5	9.5	10	
7:40-7:49	11	12	13.5	
7:50-7:59	12	11.5	15.5	
8:00-8:09	16	12.5	18	
8:10-8:19	23	18.5	19	
8:20-8:29	21.5	18.5	15	
8:30-8:39	23.5	17.5	16.5	
8:40-8:49	25	23	24	
8:50-8:59	27.5	23	31	
9:00-9:09	30	29	23	
9:10-9:19	27.5	26	16.5	
9:20-9:29	23	18.5	14.5	
9:30-9:39	21.5	17	14	
9:40-9:49	20.5	16.5	15	
9:50-9:59	0	0	0	
10:00-10:09				
10:10-10:19				
10:20-10:29				
10:30-10:39				
10:40-10:49				
10:50-10:59				
11:00-11:09				
11:10-11:19				
11:20-11:29				
11:30-11:39				
11:40-11:49				
11:50-11:59				
12:00-12:09				
12:10-12:19				
12:20-12:29				
12:30-12:39				
12:40-12:49				
12:50-12:59				
1:00-1:09				
1:10-1:19				
1:20-1:29				
1:30-1:39				
1:40-1:49				
1:50-1:59				
2:00-2:09				
2:10-2:19				
2:20-2:29				
2:30-2:39				
2:40-2:49				
2:50-2:59				
3:00-3:09				
3:10-3:19				
3:20-3:29				
3:30-3:39				
3:40-3:49				
3:50-3:59				
4:00-4:09				
4:10-4:19				
4:20-4:29				
4:30-4:39				
4:40-4:49				
4:50-4:59				
5:00-5:09				
5:10-5:19				
5:20-5:29				
5:30-5:39				
5:40-5:49				
5:50-5:59				

SOLID WASTE

Compost Proposal Plan for the Chapel Hill Cooperative Preschool

The Preschool is a cooperative preschool that requires families to volunteer 6 hours to the program completing daily, weekly, and monthly pragmatic duties. The Composting job would be a parent Job that would fulfill the monthly participation requirement.

CHCP is looking at the benefits composting has:

- The amount of trash our school produces are reduced.
- Nutrients are recycled back into the soil.
- Soil erosion is prevented when you add compost.
- Awareness is created around recycling and waste reduction efforts with the kids, staff and families.

Some of the steps we would go through to begin the process of starting a composting plan at CHCP:

1. We would share our ideas and seek out others who may be supportive. We would include food service staff, teachers, parents, a knowledgeable compost staff through Orange County. We would start by having a forum to discuss how composting can be done at our school.
 2. Recruit parents/teachers to develop the idea to form a Composting Committee. Members can come from, administration, kitchen staff, teachers, parents. The committee would be responsible for developing a clear plan of action, promoting the program, coordinating the actual work, and evaluating what's working and what's not.
 3. Research what is involved in a school-wide composting operation. This is to determine the system that will work best for our school. Some things to think about is if the school will compost on or off site.
 4. Define the scope of the project, plan the scope of the composting program our school is envisioning. Some ideas are to maybe start with a small pilot program or develop the program in phases.
 5. Planning the details for the plan on composting in our program. For example, placing a table next to where kids compost, recycle and throw things away. Having signage to help kids visually see what waste items they are separating.
- Another method would be cutting a table to fit three buckets for these three options.

Appendix D – Traffic Volume Development Spreadsheets

Trip Generation Data

Generation Estimator	LUC Code	Density	Daily			AM Peak Hour			Noon Peak Hour			PM Peak Hour		
			Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
ITE - Number of Students (NCDOT Recommended)	565	100	219	219	438	42	38	80	11	10	21	38	43	81
ITE - Number of Faculty/Staff	565	22	294	294	588	57	50	107	14	13	27	49	55	104
ITE - Total Gross Floor Area	565	9,000 SF	334	334	668	58	52	110	15	13	28	52	59	111
ITE Averages for 3 Variables			282	282	565	52	47	99	13	12	25	46	52	99
NCDOT MSTA - Elementary School	100 Students/22 Staff		93	93	186	65	43	108	11	11	22	27	27	54
NCDOT MSTA - Urban Charter School	100 Students/22 Staff		118	118	236	78	56	134	14	14	28	40	40	80
Applicant Information For Existing Sites (80 Students/20 Staff)			173	173	346	33	29	62	6	6	12	32	36	68
Expanding to 100 Students/22 Staff (1.25 ratio)			216	216	433	41	36	78	8	8	16	40	45	85
Selected Values			216	216	433	41	36	78	8	8	16	40	45	85

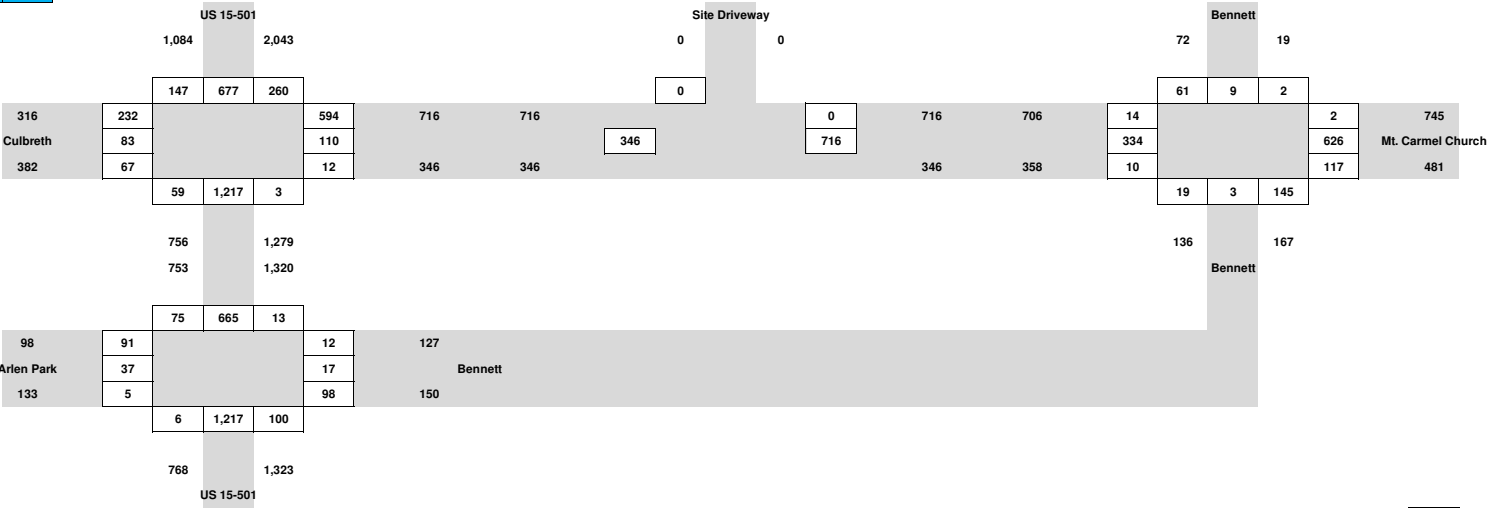
=using peak hour of adjacent streets (matching ITE/NCDOT Recommended)

=assuming 25% of AM data

2017 Count Data

10/17/17

Peak AM

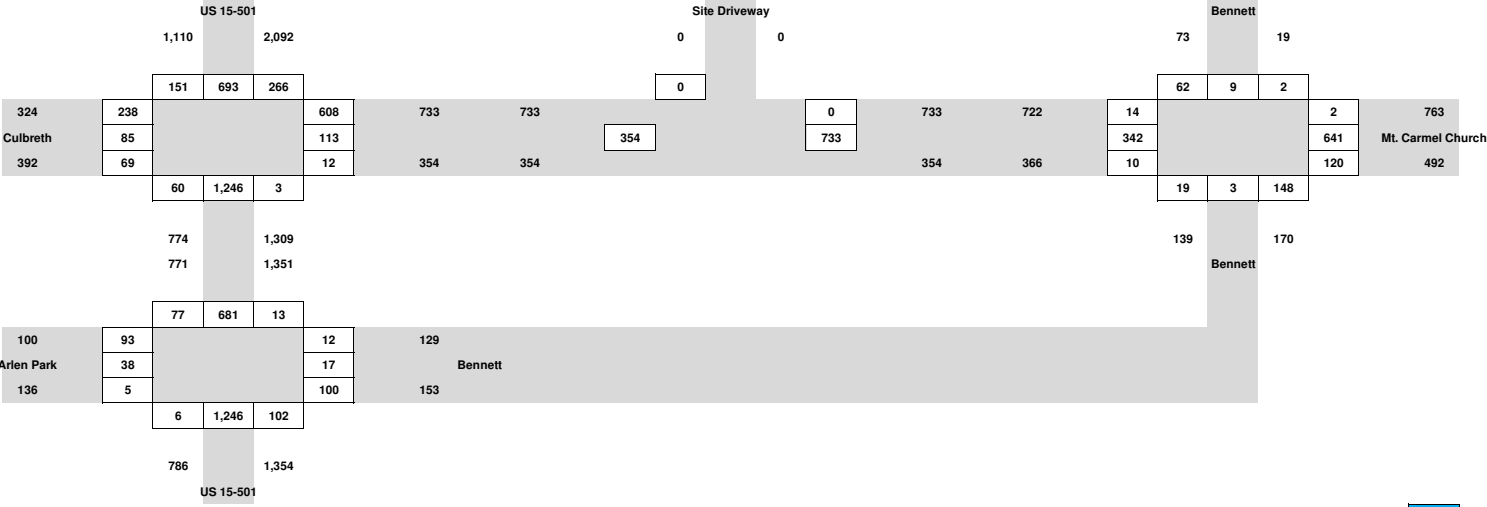


2019 Ambient Growth Data

Ambient Growth Rate/Yr =	1.2%
Ambient Growth Total =	1.024

10/17/17

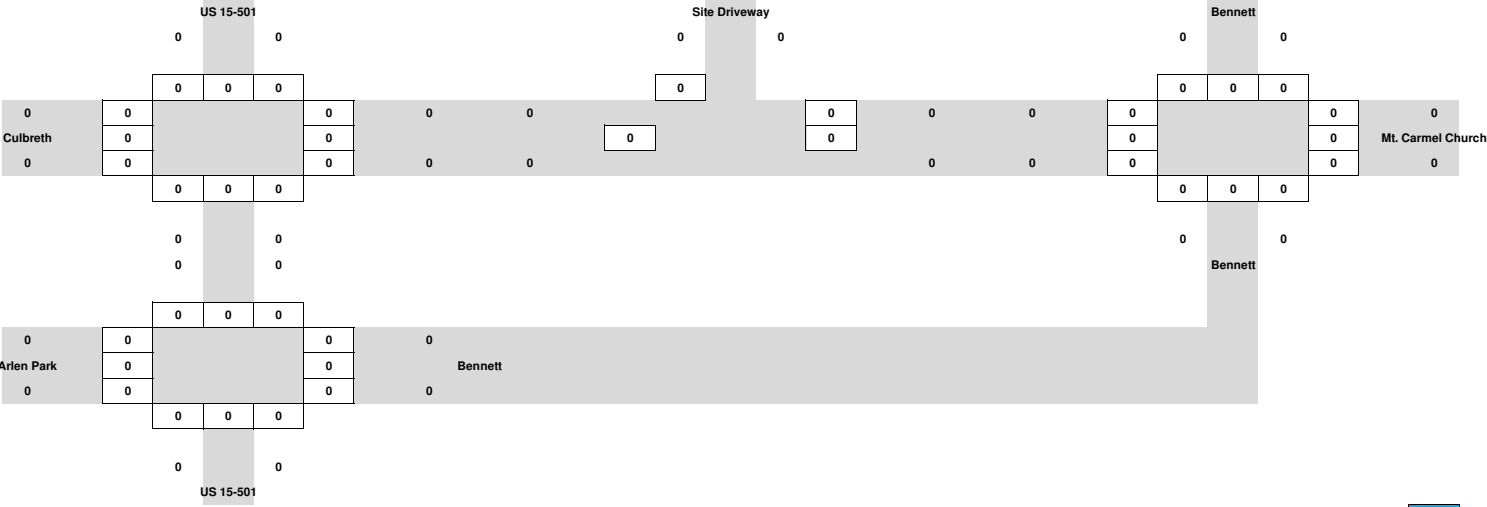
Peak AM



2019 Background Traffic Growth Totals

10/17/17

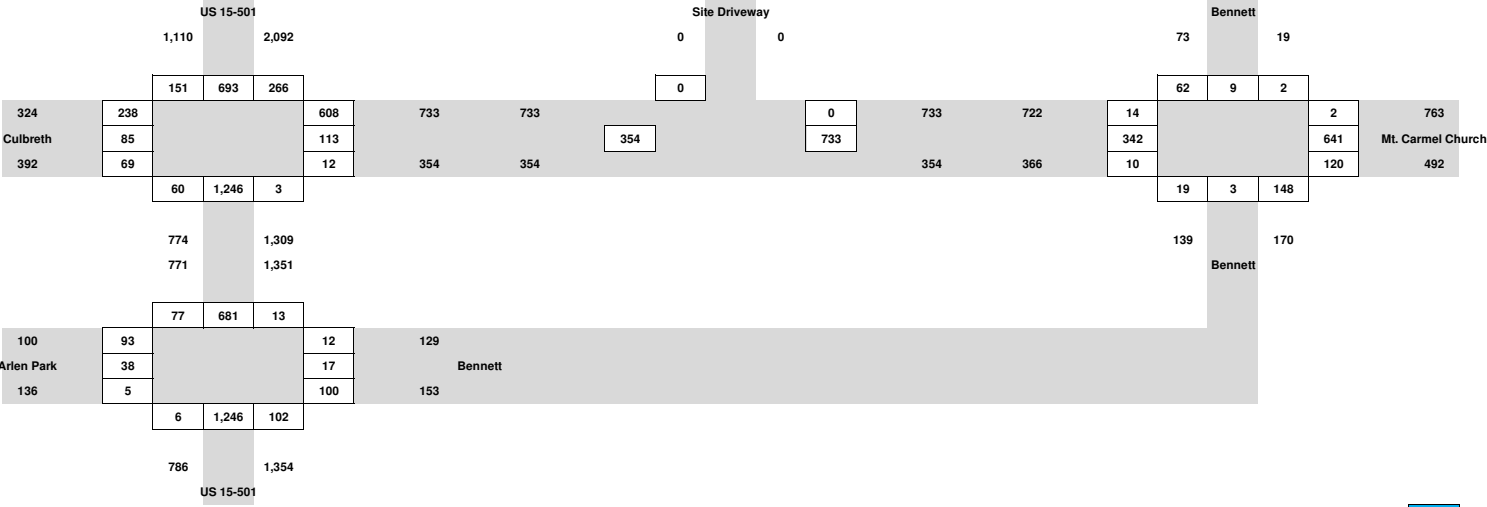
Peak AM



2019 Traffic Volumes Without Site

10/17/17

Peak AM

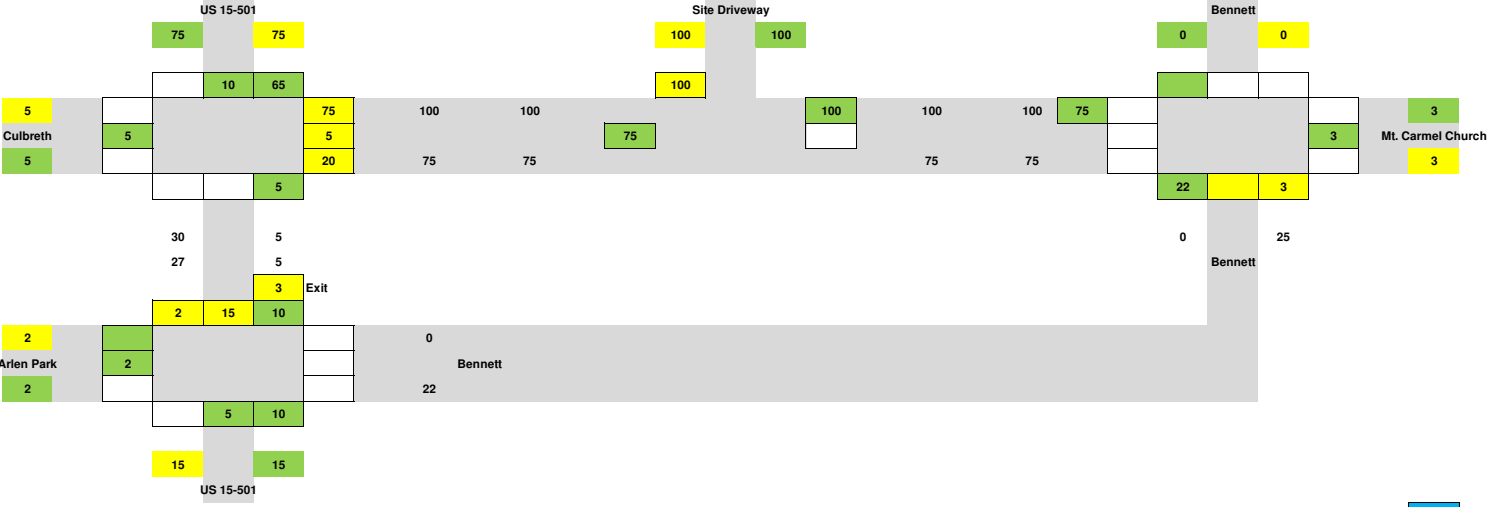


2019 Site Trip Distribution Percentages

External Check	Enter	100
	Exit	100

10/17/17

Peak AM



[illegible]

2019 Traffic Volumes With Site

Peak AM

The site plan illustrates the layout of the property and its connections to the surrounding road network. The main road runs horizontally across the center. To the north, there is a road labeled 'US 15-501' and a 'Site Driveway'. To the south, there is another road labeled 'US 15-501'. The plan also shows several other roads and areas, including 'Culbreth', 'Arlen Park', 'Bennett', and 'Mt. Carmel Church'. Traffic volumes are indicated by numbers in boxes at various points along the roads. For example, on the main road, there are volumes of 326, 394, 385, 385, 385, 366, 342, and 10. On the 'US 15-501' road to the north, there are volumes of 1,141, 2,119, 151, 697, 293, 635, 115, 19, 60, 1,246, 5, 785, 1,311, 781, 1,353, 78, 686, 17, 101, 93, 39, 5, 6, 1,248, 106, 791, and 1,360. On the 'US 15-501' road to the south, there are volumes of 101, 93, 39, 5, 6, 1,248, 106, 791, and 1,360. On the 'Site Driveway', there are volumes of 36, 41, 36, 41, 774, 732, 385, and 366. On the 'Bennett' road, there are volumes of 73, 19, 62, 9, 2, 14, 342, 10, 28, 3, 149, 139, and 180. On the 'Mt. Carmel Church' road, there are volumes of 764 and 493. The plan also shows several other areas, including 'Culbreth', 'Arlen Park', and 'Bennett', which are shaded in gray. The overall layout shows a complex network of roads and intersections, with traffic volumes indicating the level of activity during the 2019 Peak AM period.

[illegible][illegible]

2022 Traffic Volumes With Site

Peak

AM

10/17/17

The figure is a site plan illustrating traffic volumes during the 2022 AM peak. The plan shows a network of roads and several key locations. Traffic volumes are indicated by numbers placed on the roads and at specific intersection points.

Locations and Roads:

- US 15-501:** Runs vertically through the center of the plan.
- Site Driveway:** A horizontal road connecting US 15-501 to the right side of the plan.
- Bennett:** A road running horizontally on the right side of the plan.
- Culbreth:** A road running horizontally on the left side of the plan.
- Arien Park:** A road running horizontally on the bottom left of the plan.
- Mt. Carmel Church:** A road running horizontally on the bottom right of the plan.

Traffic Volumes (AM Peak):

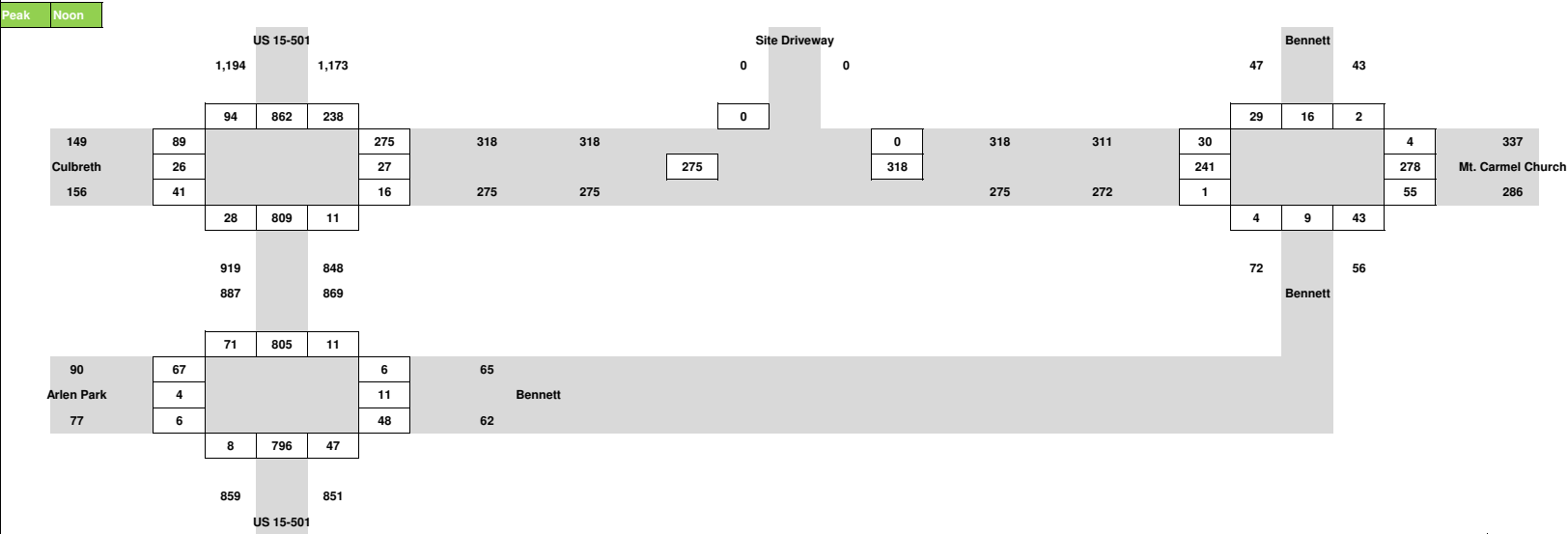
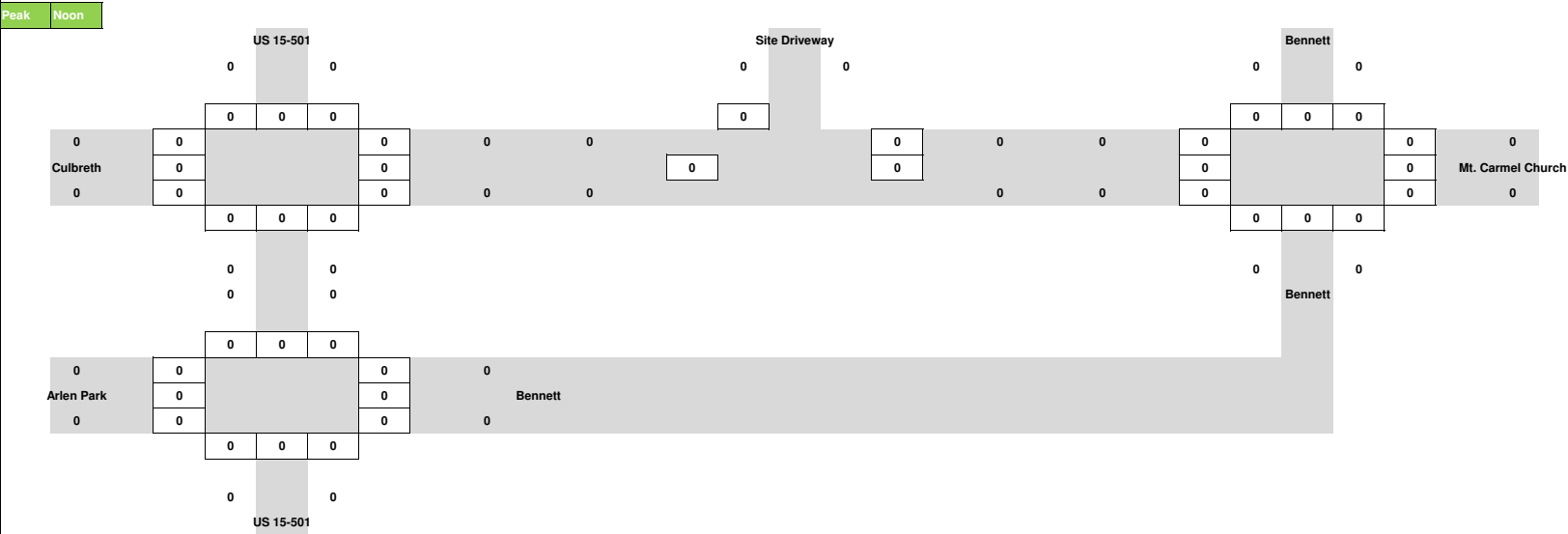
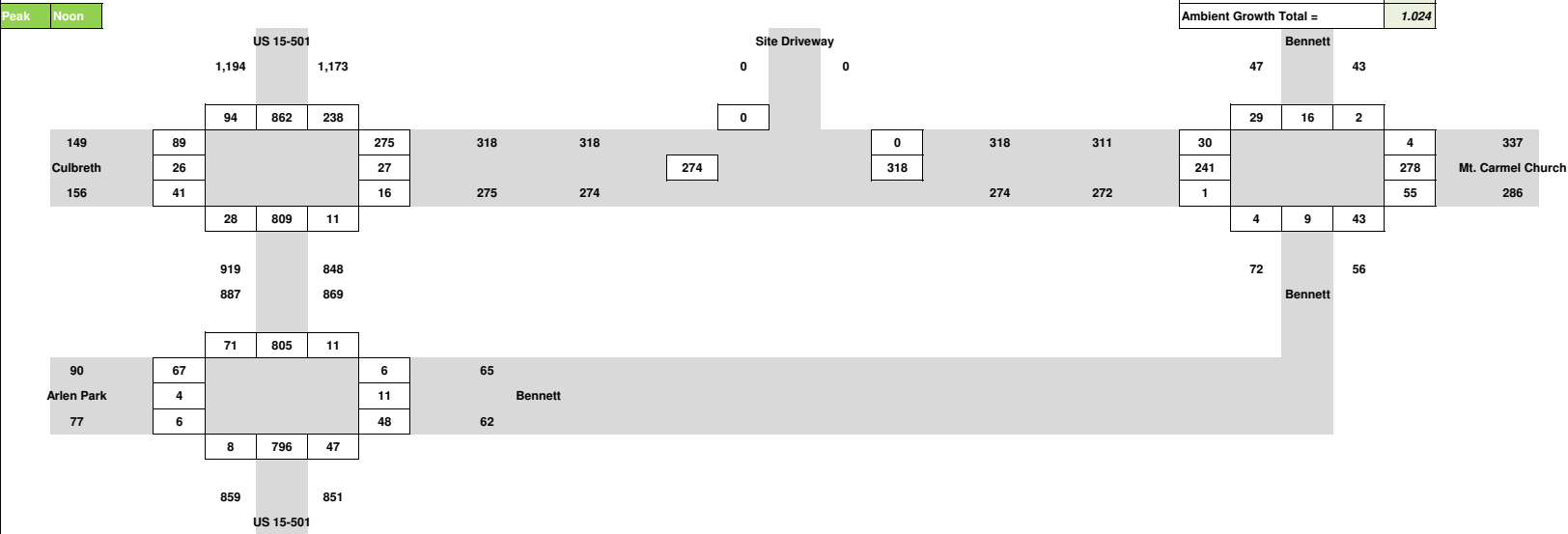
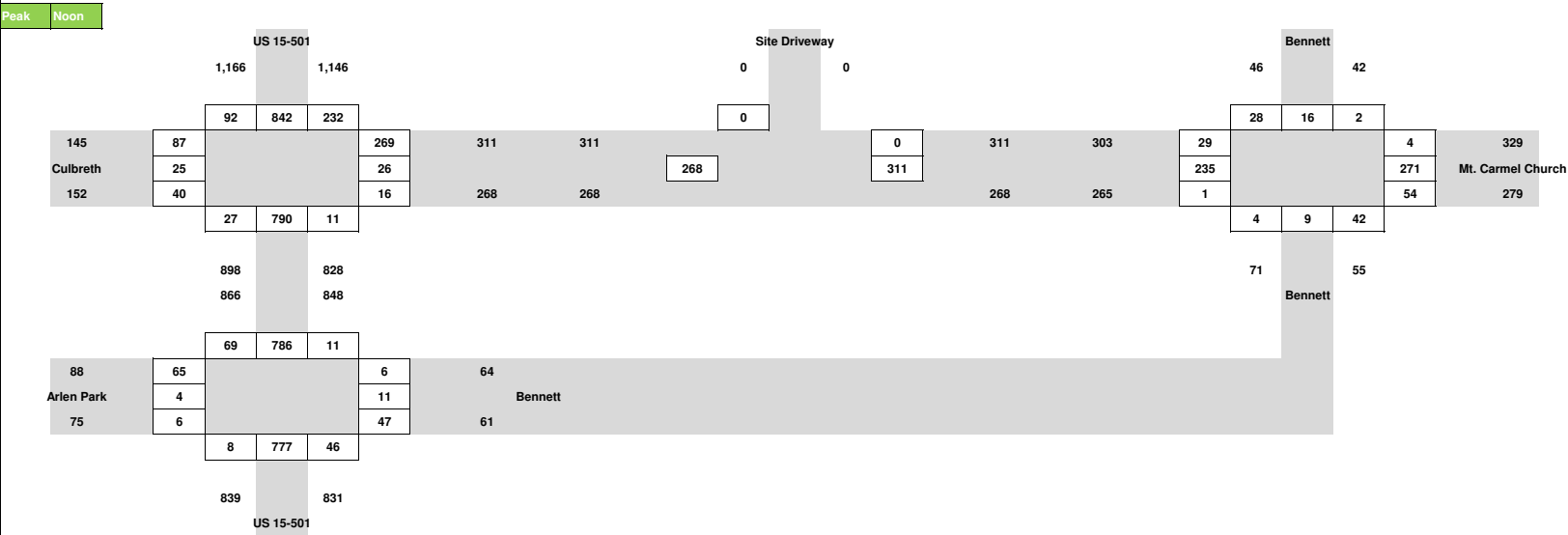
- US 15-501 (Top):** 1,588 (left), 2,434 (right).
- US 15-501 (Bottom):** 1,248 (left), 1,616 (right); 1,244 (left), 1,659 (right).
- Site Driveway:** 36 (left), 41 (right).
- Bennett (Top):** 83 (left), 23 (right).
- Bennett (Bottom):** 174 (left), 203 (right).
- Culbreth:** 355 (left), 435 (left); 246 (right), 90 (right), 99 (right).
- Arien Park:** 108 (left), 147 (left); 96 (right), 40 (right), 11 (right).
- Mt. Carmel Church:** 814 (left), 524 (left); 2 (right), 665 (right), 147 (right).

Intersection Volumes:

- US 15-501 & Site Driveway:** 36 (left), 41 (right).
- US 15-501 & Bennett (Top):** 65 (left), 16 (right), 2 (right).
- US 15-501 & Bennett (Bottom):** 29 (left), 6 (right), 168 (right).
- Culbreth & US 15-501:** 196 (left), 1,129 (right), 303 (right); 657 (right), 119 (right), 20 (right).
- Arien Park & US 15-501:** 81 (left), 1,145 (right), 18 (right); 13 (right), 18 (right), 132 (right).

Page

A10



2019 Site Traffic Assignment - Total New Trips

Peak Noon

Trip Generation Enter 8 Exit 8

External Check Enter 8 Exit 8

10/17/17

The diagram illustrates the traffic flow and trip generation for the 2019 Site Traffic Assignment. It shows the following locations and their associated traffic data:

- US 15-501:**
 - Northbound: 6 (Peak), 6 (Noon)
 - Southbound: 2 (Peak), 0 (Noon)
- Culbreth:**
 - Peak: 0 (Enter), 0 (Exit)
 - Noon: 0 (Enter), 0 (Exit)
- Arien Park:**
 - Peak: 0 (Enter), 0 (Exit)
 - Noon: 0 (Enter), 0 (Exit)
- Site Driveway:**
 - Peak: 8 (Enter), 8 (Exit)
 - Noon: 8 (Enter), 8 (Exit)
- Bennett:**
 - Peak: 0 (Enter), 0 (Exit)
 - Noon: 0 (Enter), 0 (Exit)
- Mt. Carmel Church:**
 - Peak: 0 (Enter), 0 (Exit)
 - Noon: 0 (Enter), 0 (Exit)

The diagram also shows the following trip generation and external check data:

- Trip Generation:** 8 (Peak), 8 (Noon)
- External Check:** 8 (Peak), 8 (Noon)

The diagram includes a legend for the traffic flow directions: Northbound (green arrow), Southbound (red arrow), and Eastbound (blue arrow). The diagram also shows the following trip generation and external check data:

- Trip Generation:** 8 (Peak), 8 (Noon)
- External Check:** 8 (Peak), 8 (Noon)

2019 Traffic Volumes With Site

Peak Noon

The map displays traffic volumes for the 2019 project area. The main road shown is US 15-501, which runs north-south. Other roads include Site Driveway, Bennett, and Culbreth. Traffic volumes are indicated by numbers in boxes or along the road segments. The map is divided into sections for Peak and Noon periods.

Peak Period:

- US 15-501 Northbound: 1,200 (Approach), 1,179 (Departure)
- US 15-501 Southbound: 860 (Approach), 852 (Departure)
- Site Driveway: 8 (Approach), 8 (Departure)
- Bennett: 47 (Approach), 43 (Departure)
- Culbreth: 149 (Approach), 156 (Departure)
- Arlen Park: 90 (Approach), 77 (Departure)
- Mt. Carmel Church: 337 (Approach), 286 (Departure)

Noon Period:

- US 15-501 Northbound: 94, 863, 243
- US 15-501 Southbound: 71, 806, 12
- Site Driveway: 8 (Approach), 8 (Departure)
- Bennett: 29, 16, 2 (Approach); 30, 241, 1 (Departure)
- Culbreth: 89, 26, 41 (Approach); 281, 27, 18 (Departure)
- Arlen Park: 67, 4, 6 (Approach); 6, 11, 48 (Departure)
- Mt. Carmel Church: 4, 278, 55 (Approach); 6, 9, 43 (Departure)

2022 Ambient Growth Data

Peak

Noon

US 15-501

1,237

1,214

Site Driveway

0

0

155

Culbreth

161

92

27

42

98

893

246

285

28

17

330

285

330

285

0

285

0

330

321

281

31

249

1

30

17

2

4

10

45

4

287

57

348

296

93

Arlen Park

79

69

4

6

73

833

12

6

12

50

68

65

Bennett

889

881

US 15-501

952

878

918

899

US 15-501

49

45

Bennett

75

59

Ambient Growth Rate/Yr =

1.2%

Ambient Growth Total =

1.060

10/17/17

Page

N8

2022 Background Traffic Growth Totals															10/17/17			
Peak	Noon																	
		US 15-501			Site Driveway										Bennett			
		377		348	0			0	4						3			
		0	377	0	0			0	0						4	0		
17	0				0	0	0	0		0	0	0	0	0	15			
Culbreth	0				0	0	0	0		0	0	0	0	0	0			
19	19				0	0	0	0		0	0	0	0	15	14			
		17	348	0											0	3	14	
		396		365											19	17		
		396		366											Bennett			
		0	396	0	19													
3	0				0	Bennett												
Arlen Park	0				0	17												
4	4				19													
		3	366	17														
		419		386														
		US 15-501																
Page N9																		

2022 Traffic Volumes With Site

10/17/17

Peak

Noon

US 15-501

1,620

1,568

Site Driveway

8

8

Bennett

53

48

98

1,271

251

8

30

21

2

172

92

291

338

338

8

338

323

31

4

363

Culbreth

27

28

287

180

61

19

291

291

330

291

281

1

72

310

Mt. Carmel Church

46

1,185

12

6

13

59

1,350

1,243

94

78

1,316

1,265

Bennett

73

1,230

13

6

12

69

96

69

87

Bennett

Arlen Park

4

84

83

10

11

1,190

67

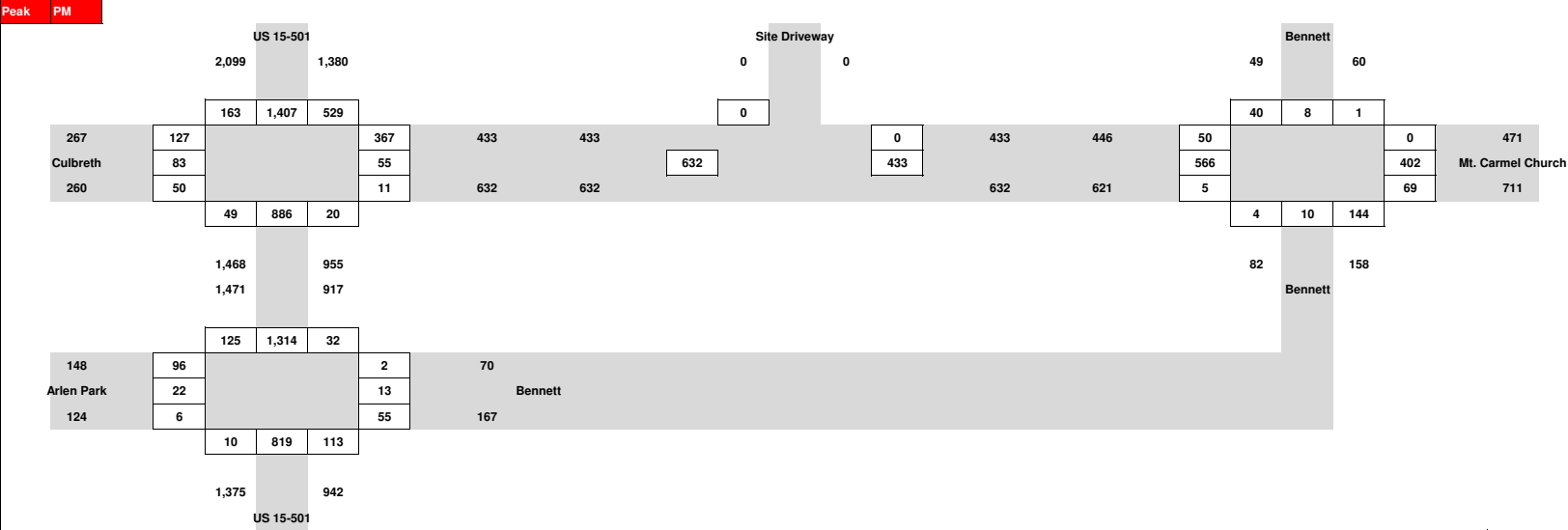
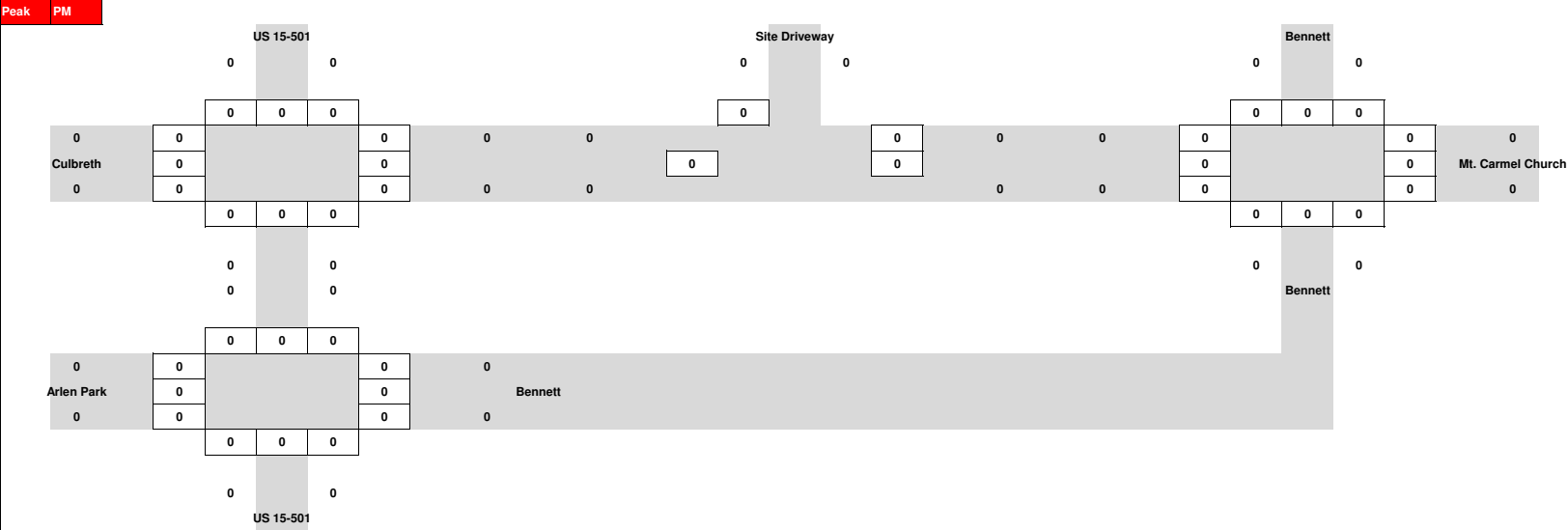
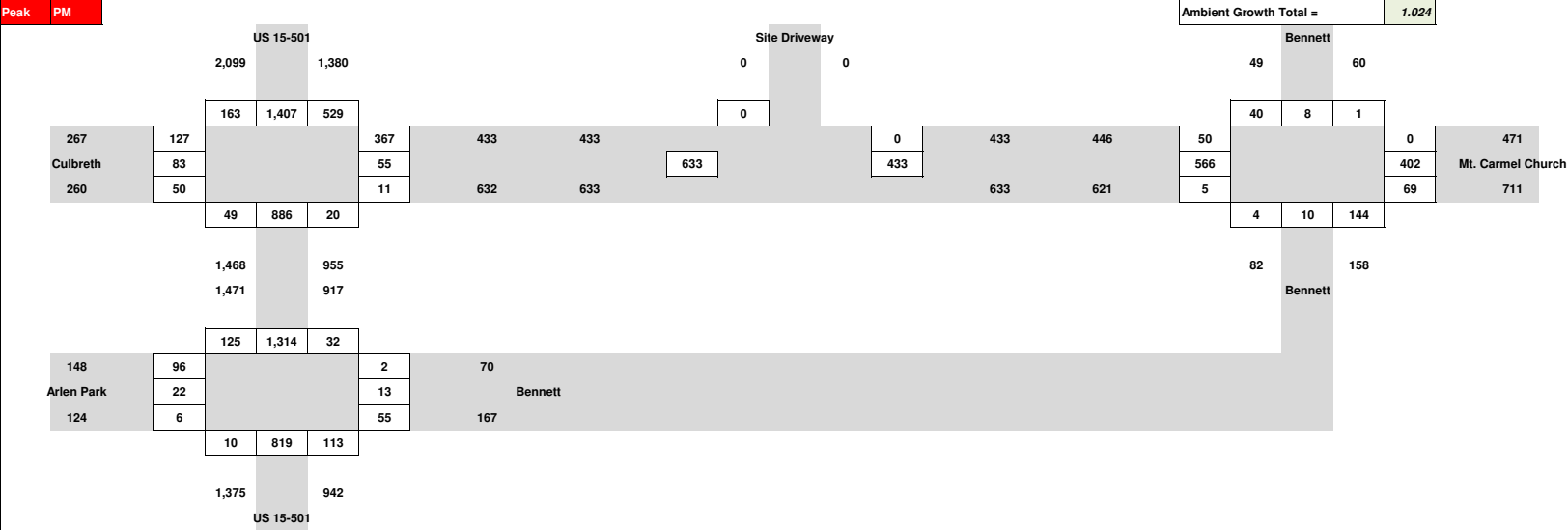
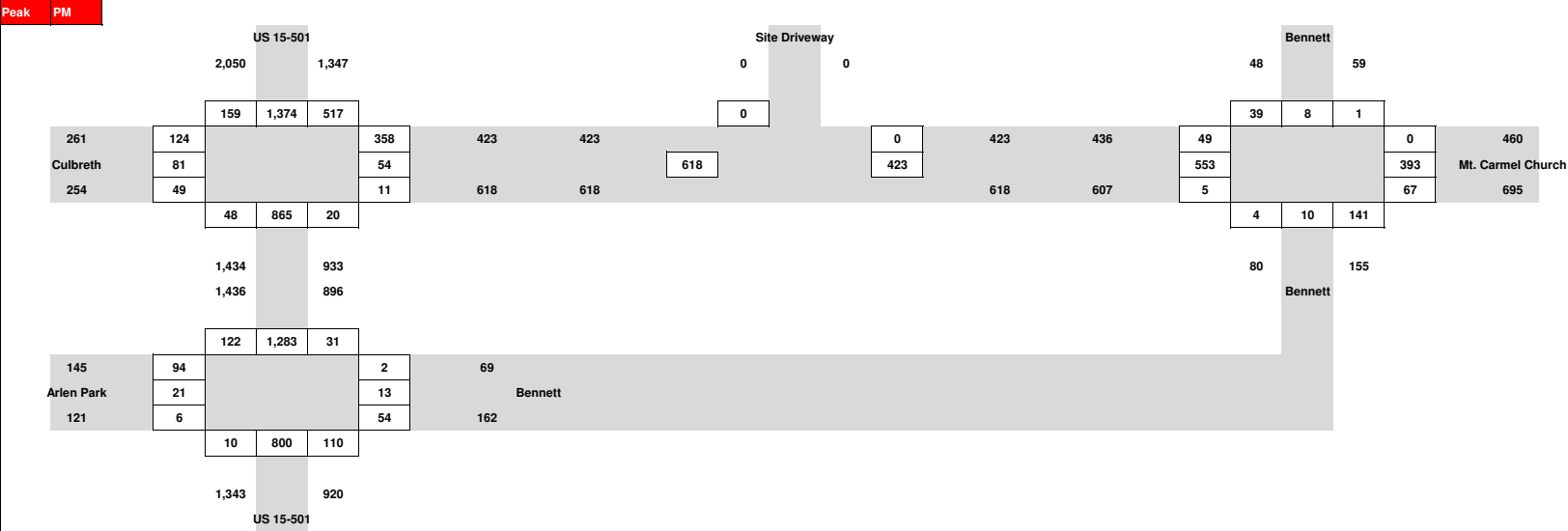
1,309

1,268

US 15-501

Page

N10



2019 Site Traffic Assignment - Total New Trips										10/17/17	
Peak	PM										
		US 15-501 30 34 4 26									
		2 34 45 45 45 40 40 40 30 30 1 1									
Culbreth	2	2 30 40 40 30 30 1 1									
	2	2 30 40 40 30 30 1 1									
		13 2 13 2 1 4 1 7 1 4 0 9									
Arlen Park	1	1 2 1 4 0 9									
	1	1 2 1 4 0 9									
		7 6 0 9									
		US 15-501 7 6 0 9									

2019 Traffic Volumes With Site

10/17/17

Peak

PM

Page

P7

[illegible][illegible]

2022 Traffic Volumes With Site

Peak PM 10/17/17

The site plan illustrates the layout of the property and surrounding roads. Key features include:

- US 15-501:** The main north-south corridor.
- Site Driveway:** The access road to the site.
- Bennett:** A road running east-west, intersecting US 15-501 and Site Driveway.
- Culbreth:** A road running north-south, intersecting US 15-501.
- Arlen Park:** A road running north-south, intersecting US 15-501.
- Mt. Carmel Church:** A large building located east of the site.

Traffic volumes are provided for various approaches and intersections. The following table summarizes the data:

Location / Approach	Volume
US 15-501 Northbound (Approach to Culbreth)	2,630
US 15-501 Southbound (Approach to Culbreth)	2,011
US 15-501 Northbound (Approach to Arlen Park)	1,980
US 15-501 Southbound (Approach to Arlen Park)	1,569
US 15-501 Northbound (Approach to Mt. Carmel Church)	1,980
US 15-501 Southbound (Approach to Mt. Carmel Church)	1,530
US 15-501 Northbound (Approach to Site)	1,900
US 15-501 Southbound (Approach to Site)	1,594
Site Driveway Northbound	45
Site Driveway Southbound	40
Bennett Northbound (Approach to Site)	54
Bennett Southbound (Approach to Site)	69
Culbreth Northbound (Approach to Site)	131
Culbreth Southbound (Approach to Site)	291
Arlen Park Northbound (Approach to Site)	161
Arlen Park Southbound (Approach to Site)	133
Mt. Carmel Church Northbound (Approach to Site)	505
Mt. Carmel Church Southbound (Approach to Site)	760
Intersection: Culbreth / US 15-501	169, 1,887, 574
Intersection: Arlen Park / US 15-501	130, 1,813, 37
Intersection: Bennett / US 15-501	104, 203
Intersection: Site Driveway / US 15-501	45, 40
Intersection: Culbreth / Bennett	413, 493, 493, 488, 472, 52, 586, 5
Intersection: Arlen Park / Bennett	93, 209
Intersection: Mt. Carmel Church / Bennett	0, 418, 87
Intersection: Culbreth / Site Driveway	131, 88, 72
Intersection: Arlen Park / Site Driveway	100, 23, 10
Intersection: Bennett / Site Driveway	41, 12, 1
Intersection: Culbreth / Bennett (Approach to Site)	169, 1,887, 574
Intersection: Arlen Park / Bennett (Approach to Site)	130, 1,813, 37
Intersection: Bennett / Site Driveway (Approach to Site)	41, 12, 1

Page P10

Appendix E – Synchro Signalized Capacity Analysis **Output**

Lanes, Volumes, Timings

1: US 15-501 & Mt. Carmel Church Road/Culbreth Road

10/19/2017

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	232	83	67	12	110	594	59	1217	3	260	677	147
Future Volume (vph)	232	83	67	12	110	594	59	1217	3	260	677	147
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			-8%			-2%			2%	
Storage Length (ft)	0		75	0		350	125		75	550		250
Storage Lanes	1		1	0		2	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor							1.00					0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950				0.995		0.950			0.950		
Satd. Flow (prot)	1743	1835	1560	0	1928	2898	1770	3540	1584	1702	3404	1523
Flt Permitted	0.950				0.995		0.309			0.068		
Satd. Flow (perm)	1743	1835	1560	0	1928	2898	575	3540	1584	122	3404	1487
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		526			870			563			635	
Travel Time (s)		10.2			16.9			11.0			12.4	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.78	0.78	0.78	0.91	0.91	0.91	0.94	0.94	0.94	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	5%	5%	5%
Adj. Flow (vph)	297	106	86	13	121	653	63	1295	3	283	736	160
Shared Lane Traffic (%)												
Lane Group Flow (vph)	297	106	86	0	134	653	63	1295	3	283	736	160
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	0.95	0.95	0.95	0.99	0.99	0.99	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Split	NA	Perm	Split	NA	pm+ov	Perm	NA	Perm	pm+pt	NA	pm+ov
Protected Phases	3	3		4	4	1		2		1	6	3
Permitted Phases			3			4	2		2	6		6
Detector Phase	3	3	3	4	4	1	2	2	2	1	6	3
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	12.0	12.0	12.0	7.0	12.0	7.0
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0	13.0	19.0	19.0	19.0	13.0	26.0	14.0
Total Split (s)	28.0	28.0	28.0	22.0	22.0	24.0	56.0	56.0	56.0	24.0	80.0	28.0
Total Split (%)	21.5%	21.5%	21.5%	16.9%	16.9%	18.5%	43.1%	43.1%	43.1%	18.5%	61.5%	21.5%
Maximum Green (s)	21.6	21.6	21.6	15.0	15.0	18.9	49.8	49.8	49.8	18.9	73.8	21.6
Yellow Time (s)	3.7	3.7	3.7	4.3	4.3	3.0	4.6	4.6	4.6	3.0	4.6	3.7
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.1	1.6	1.6	1.6	2.1	1.6	2.7
Lost Time Adjust (s)	-1.4	-1.4	-1.4		-2.0	-0.1	-1.2	-1.2	-1.2	-0.1	-1.2	-1.4
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lead	Lag		Lead

Lanes, Volumes, Timings

1: US 15-501 & Mt. Carmel Church Road/Culbreth Road

10/19/2017

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	3.0	6.0	6.0	6.0	3.0	6.0	1.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	None	C-Max	None
Walk Time (s)											7.0	
Flash Dont Walk (s)											12.0	
Pedestrian Calls (#/hr)											0	
Act Effect Green (s)	23.0	23.0	23.0		13.9	32.9	54.1	54.1	54.1	78.1	78.1	101.1
Actuated g/C Ratio	0.18	0.18	0.18		0.11	0.25	0.42	0.42	0.42	0.60	0.60	0.78
v/c Ratio	0.96	0.33	0.31		0.65	0.89	0.26	0.88	0.00	0.93	0.36	0.14
Control Delay	96.1	50.0	50.2		70.2	42.5	22.0	37.1	17.3	84.3	14.2	3.1
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	96.1	50.0	50.2		70.2	42.5	22.0	37.1	17.3	84.3	14.2	3.1
LOS	F	D	D		E	D	C	D	B	F	B	A
Approach Delay		78.0			47.2			36.4			29.5	
Approach LOS		E			D			D			C	
Queue Length 50th (ft)	251	79	64		110	191	37	537	2	188	159	23
Queue Length 95th (ft)	#339	116	99		176	234	42	#696	m1	#367	210	42
Internal Link Dist (ft)		446			790			483			555	
Turn Bay Length (ft)			75			350	125		75	550		250
Base Capacity (vph)	308	324	276		252	733	239	1473	659	304	2044	1162
Starvation Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.33	0.31		0.53	0.89	0.26	0.88	0.00	0.93	0.36	0.14

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 98 (75%), Referenced to phase 2:NETL and 6:SWTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 41.8

Intersection LOS: D

Intersection Capacity Utilization 80.1%

ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 1: US 15-501 & Mt. Carmel Church Road/Culbreth Road

 Ø2 (R)	 Ø1	 Ø3	 Ø4
56 s	24 s	28 s	22 s
 Ø6 (R)			
80 s			

Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	91	37	5	98	17	12	6	1217	100	13	665	75
Future Volume (vph)	91	37	5	98	17	12	6	1217	100	13	665	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-5%			-1%			0%	
Storage Length (ft)	75		0	200		0	275		300	275		325
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00	1.00		1.00	0.99		1.00		0.98			0.98
Frt		0.983			0.937				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1761	1819	0	1814	1779	0	1778	3557	1591	1736	3471	1553
Flt Permitted	0.734			0.722			0.350			0.157		
Satd. Flow (perm)	1359	1819	0	1377	1779	0	655	3557	1555	287	3471	1516
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		387			1318			2738			1759	
Travel Time (s)		10.6			35.9			41.5			26.7	
Confl. Peds. (#/hr)	1		1	1		1	1		3	3		1
Peak Hour Factor	0.79	0.79	0.79	0.80	0.80	0.80	0.90	0.90	0.90	0.89	0.89	0.89
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	4%	4%	4%
Adj. Flow (vph)	115	47	6	123	21	15	7	1352	111	15	747	84
Shared Lane Traffic (%)												
Lane Group Flow (vph)	115	53	0	123	36	0	7	1352	111	15	747	84
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	0.97	0.97	0.97	0.99	0.99	0.99	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	14.0	14.0	7.0	14.0	14.0
Minimum Split (s)	37.0	37.0		15.0	15.0		14.0	21.0	21.0	13.0	25.0	25.0
Total Split (s)	37.0	37.0		37.0	37.0		20.0	73.0	73.0	20.0	73.0	73.0
Total Split (%)	28.5%	28.5%		28.5%	28.5%		15.4%	56.2%	56.2%	15.4%	56.2%	56.2%
Maximum Green (s)	30.4	30.4		29.9	29.9		13.4	66.4	66.4	14.1	66.4	66.4
Yellow Time (s)	3.2	3.2		3.8	3.8		3.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	3.4	3.4		3.3	3.3		3.6	2.0	2.0	2.9	2.0	2.0
Lost Time Adjust (s)	-1.6	-1.6		-2.1	-2.1		-1.6	-1.6	-1.6	-0.9	-1.6	-1.6
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag

Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)	4.0	4.0									7.0	7.0
Flash Dont Walk (s)	26.0	26.0									10.0	10.0
Pedestrian Calls (#/hr)	0	0									0	0
Act Effect Green (s)	19.0	19.0		19.0	19.0		99.3	95.8	95.8	99.9	98.3	98.3
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.76	0.74	0.74	0.77	0.76	0.76
v/c Ratio	0.58	0.20		0.61	0.14		0.01	0.52	0.10	0.05	0.28	0.07
Control Delay	62.6	48.4		64.1	47.2		4.5	9.7	7.0	10.9	12.9	12.6
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.6	48.4		64.1	47.2		4.5	9.7	7.0	10.9	12.9	12.6
LOS	E	D		E	D		A	A	A	B	B	B
Approach Delay		58.1			60.3			9.5			12.8	
Approach LOS		E			E			A			B	
Queue Length 50th (ft)	92	40		100	28		1	183	19	4	132	24
Queue Length 95th (ft)	127	66		m136	m49		6	408	61	m18	298	80
Internal Link Dist (ft)		307			1238			2658			1679	
Turn Bay Length (ft)	75			200			275		300	275		325
Base Capacity (vph)	334	447		338	437		638	2622	1146	390	2624	1145
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.12		0.36	0.08		0.01	0.52	0.10	0.04	0.28	0.07

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 71 (55%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.61

Intersection Signal Delay: 16.7

Intersection LOS: B

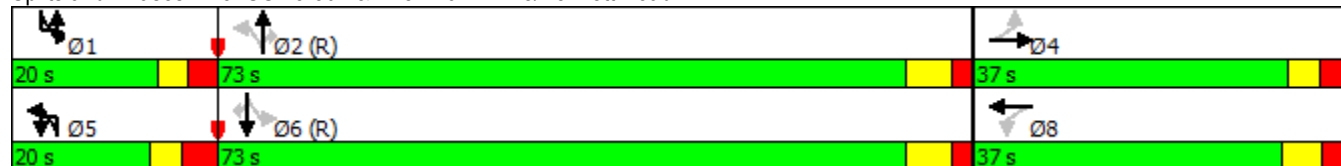
Intersection Capacity Utilization 54.1%

ICU Level of Service A

Analysis Period (min) 15

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

Splits and Phases: 3: US 15-501 & Arlen Park Drive/Bennett Road



Lanes, Volumes, Timings

1: US 15-501 & Mt. Carmel Church Road/Culbreth Road

10/19/2017

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	87	25	40	16	26	269	27	790	11	232	842	92
Future Volume (vph)	87	25	40	16	26	269	27	790	11	232	842	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			-8%			-2%			2%	
Storage Length (ft)	0		75	0		350	125		75	550		250
Storage Lanes	1		1	0		2	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99		1.00	0.98	1.00					0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950				0.982		0.950			0.950		
Satd. Flow (prot)	1743	1835	1560	0	1884	2870	1736	3472	1553	1718	3436	1537
Flt Permitted	0.950				0.982		0.324			0.208		
Satd. Flow (perm)	1740	1835	1538	0	1882	2807	591	3472	1553	376	3436	1500
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		526			870			563			635	
Travel Time (s)		10.2			16.9			11.0			12.4	
Confl. Peds. (#/hr)	1		1	1		1	2					2
Peak Hour Factor	0.95	0.95	0.95	0.88	0.88	0.88	0.97	0.97	0.97	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	5%	5%	5%	4%	4%	4%
Adj. Flow (vph)	92	26	42	18	30	306	28	814	11	242	877	96
Shared Lane Traffic (%)												
Lane Group Flow (vph)	92	26	42	0	48	306	28	814	11	242	877	96
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	0.95	0.95	0.95	0.99	0.99	0.99	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Split	NA	Perm	Split	NA	pm+ov	Perm	NA	Perm	pm+pt	NA	pm+ov
Protected Phases	3	3		4	4	1		2		1	6	3
Permitted Phases			3			4	2		2	6		6
Detector Phase	3	3	3	4	4	1	2	2	2	1	6	3
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	12.0	12.0	12.0	7.0	12.0	7.0
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0	13.0	19.0	19.0	19.0	13.0	26.0	14.0
Total Split (s)	19.0	19.0	19.0	16.0	16.0	17.0	28.0	28.0	28.0	17.0	45.0	19.0
Total Split (%)	23.8%	23.8%	23.8%	20.0%	20.0%	21.3%	35.0%	35.0%	35.0%	21.3%	56.3%	23.8%
Maximum Green (s)	12.6	12.6	12.6	9.6	9.6	11.9	21.8	21.8	21.8	11.9	38.0	12.6
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.0	4.6	4.6	4.6	3.0	4.3	3.7
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.1	1.6	1.6	1.6	2.1	2.7	2.7
Lost Time Adjust (s)	-1.4	-1.4	-1.4		-1.4	-0.1	-1.2	-1.2	-1.2	-0.1	-2.0	-1.4
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lead		Lead

Lanes, Volumes, Timings

1: US 15-501 & Mt. Carmel Church Road/Culbreth Road

10/19/2017

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	3.0	6.0	6.0	6.0	3.0	1.0	1.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	None	C-Max	None
Walk Time (s)											7.0	
Flash Dont Walk (s)											12.0	
Pedestrian Calls (#/hr)											0	
Act Effect Green (s)	9.8	9.8	9.8		8.6	17.5	37.3	37.3	37.3	54.6	55.6	62.8
Actuated g/C Ratio	0.12	0.12	0.12		0.11	0.22	0.47	0.47	0.47	0.68	0.70	0.78
v/c Ratio	0.43	0.12	0.22		0.24	0.49	0.10	0.50	0.02	0.52	0.37	0.08
Control Delay	38.5	31.4	33.8		35.8	26.2	27.4	22.8	27.0	11.7	8.3	2.4
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.5	31.4	33.8		35.8	26.2	27.4	22.8	27.0	11.7	8.3	2.4
LOS	D	C	C		D	C	C	C	C	B	A	A
Approach Delay		36.1			27.5			23.0			8.5	
Approach LOS		D			C			C			A	
Queue Length 50th (ft)	44	12	20		22	67	8	137	3	52	114	9
Queue Length 95th (ft)	84	33	47		52	91	43	#302	m18	103	181	19
Internal Link Dist (ft)		446			790			483			555	
Turn Bay Length (ft)			75			350	125		75	550		250
Base Capacity (vph)	305	321	269		259	646	275	1618	723	473	2388	1237
Starvation Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.08	0.16		0.19	0.47	0.10	0.50	0.02	0.51	0.37	0.08

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 11 (14%), Referenced to phase 2:NETL and 6:SWTL, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.52

Intersection Signal Delay: 17.6

Intersection LOS: B

Intersection Capacity Utilization 58.7%

ICU Level of Service B

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 1: US 15-501 & Mt. Carmel Church Road/Culbreth Road

			
Ø1	Ø2 (R)	Ø3	Ø4
17 s	28 s	19 s	16 s
			
Ø5 (R)			
45 s			

Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	65	4	6	47	11	6	4	4	777	46	2	9
Future Volume (vph)	65	4	6	47	11	6	4	4	777	46	2	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-5%				-1%			
Storage Length (ft)	75		0	200		0		275		300		275
Storage Lanes	1		0	1		0		1		1		1
Taper Length (ft)	25			25				25				25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Ped Bike Factor	1.00	0.99		1.00	1.00					0.98		1.00
Frt		0.912			0.947					0.850		
Flt Protected	0.950			0.950				0.950				0.950
Satd. Flow (prot)	1744	1661	0	1814	1800	0	0	1728	3455	1546	0	1736
Flt Permitted	0.744			0.750				0.287				0.319
Satd. Flow (perm)	1365	1661	0	1431	1800	0	0	522	3455	1512	0	583
Right Turn on Red			No			No				No		
Satd. Flow (RTOR)												
Link Speed (mph)		25			25				45			
Link Distance (ft)		387			1318				2738			
Travel Time (s)		10.6			35.9				41.5			
Confl. Peds. (#/hr)	1		1	1		1				1		1
Peak Hour Factor	0.82	0.82	0.82	0.83	0.83	0.83	0.94	0.94	0.94	0.94	0.89	0.89
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	5%	5%	5%	5%	4%	4%
Adj. Flow (vph)	79	5	7	57	13	7	4	4	827	49	2	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	79	12	0	57	20	0	0	8	827	49	0	12
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	R NA	Left	Left	Right	R NA	Left
Median Width(ft)		12			12				12			
Link Offset(ft)		0			0				0			
Crosswalk Width(ft)		16			16				16			
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	0.97	0.97	0.97	0.99	0.99	0.99	0.99	1.00	1.00
Turning Speed (mph)	15		9	15		9	9	15		9	9	15
Turn Type	Perm	NA		Perm	NA		pm+pt	pm+pt	NA	Perm	pm+pt	pm+pt
Protected Phases		4			8		5	5	2		1	1
Permitted Phases	4			8			2	2		2	6	6
Detector Phase	4	4		8	8		5	5	2	2	1	1
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	7.0	14.0	14.0	7.0	7.0
Minimum Split (s)	37.0	37.0		15.0	15.0		14.0	14.0	21.0	21.0	13.0	13.0
Total Split (s)	37.0	37.0		37.0	37.0		14.0	14.0	29.0	29.0	14.0	14.0
Total Split (%)	46.3%	46.3%		46.3%	46.3%		17.5%	17.5%	36.3%	36.3%	17.5%	17.5%
Maximum Green (s)	30.4	30.4		29.9	29.9		7.4	7.4	22.4	22.4	8.1	8.1
Yellow Time (s)	3.2	3.2		3.8	3.8		3.0	3.0	4.6	4.6	3.0	3.0
All-Red Time (s)	3.4	3.4		3.3	3.3		3.6	3.6	2.0	2.0	2.9	2.9
Lost Time Adjust (s)	-1.6	-1.6		-2.1	-2.1			-1.6	-1.6	-1.6		-0.9
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0	5.0	5.0		5.0
Lead/Lag							Lead	Lead	Lag	Lag	Lead	Lead

Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017



Lane Group	SBT	SBR
Lane Configurations	↑↑	↑
Traffic Volume (vph)	786	69
Future Volume (vph)	786	69
Ideal Flow (vphpl)	1900	1900
Grade (%)	0%	
Storage Length (ft)		325
Storage Lanes		1
Taper Length (ft)		
Lane Util. Factor	0.95	1.00
Ped Bike Factor		
Frt		0.850
Flt Protected		
Satd. Flow (prot)	3471	1553
Flt Permitted		
Satd. Flow (perm)	3471	1553
Right Turn on Red		No
Satd. Flow (RTOR)		
Link Speed (mph)	45	
Link Distance (ft)	1759	
Travel Time (s)	26.7	
Confl. Peds. (#/hr)		
Peak Hour Factor	0.89	0.89
Heavy Vehicles (%)	4%	4%
Adj. Flow (vph)	883	78
Shared Lane Traffic (%)		
Lane Group Flow (vph)	883	78
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	16	
Two way Left Turn Lane		
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Turn Type	NA	Perm
Protected Phases	6	
Permitted Phases		6
Detector Phase	6	6
Switch Phase		
Minimum Initial (s)	14.0	14.0
Minimum Split (s)	25.0	25.0
Total Split (s)	29.0	29.0
Total Split (%)	36.3%	36.3%
Maximum Green (s)	22.4	22.4
Yellow Time (s)	4.6	4.6
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)	-1.6	-1.6
Total Lost Time (s)	5.0	5.0
Lead/Lag	Lag	Lag

Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	None	C-Max	C-Max	None	None
Walk Time (s)	4.0	4.0										
Flash Dont Walk (s)	26.0	26.0										
Pedestrian Calls (#/hr)	0	0										
Act Effect Green (s)	11.9	11.9		12.0	12.0			60.0	59.2	59.2		59.7
Actuated g/C Ratio	0.15	0.15		0.15	0.15			0.75	0.74	0.74		0.75
v/c Ratio	0.39	0.05		0.27	0.07			0.02	0.32	0.04		0.02
Control Delay	35.6	27.6		32.2	28.2			4.0	6.3	6.3		4.6
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0		0.0
Total Delay	35.6	27.6		32.2	28.2			4.0	6.3	6.3		4.6
LOS	D	C		C	C			A	A	A		A
Approach Delay		34.5			31.2				6.2			
Approach LOS		C			C				A			
Queue Length 50th (ft)	36	5		26	9			1	62	6		1
Queue Length 95th (ft)	65	17		51	24			5	177	28		m6
Internal Link Dist (ft)		307			1238				2658			
Turn Bay Length (ft)	75			200				275		300		275
Base Capacity (vph)	546	664		572	720			527	2558	1119		566
Starvation Cap Reductn	0	0		0	0			0	0	0		0
Spillback Cap Reductn	0	0		0	0			0	0	0		0
Storage Cap Reductn	0	0		0	0			0	0	0		0
Reduced v/c Ratio	0.14	0.02		0.10	0.03			0.02	0.32	0.04		0.02

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 18 (23%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.39

Intersection Signal Delay: 8.4

Intersection LOS: A

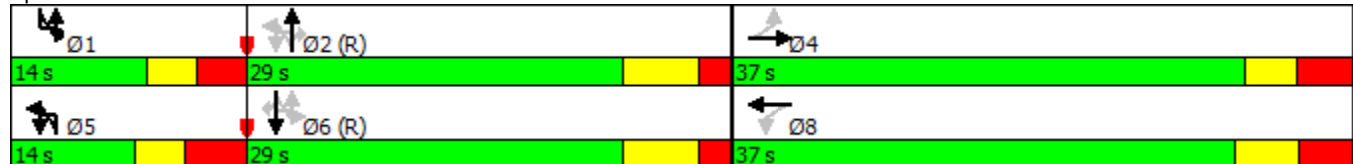
Intersection Capacity Utilization 40.8%

ICU Level of Service A

Analysis Period (min) 15

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

Splits and Phases: 3: US 15-501 & Arlen Park Drive/Bennett Road



Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017



Lane Group	SBT	SBR
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	3.0	3.0
Recall Mode	C-Max	C-Max
Walk Time (s)	7.0	7.0
Flash Dont Walk (s)	10.0	10.0
Pedestrian Calls (#/hr)	0	0
Act Effect Green (s)	59.1	59.1
Actuated g/C Ratio	0.74	0.74
v/c Ratio	0.34	0.07
Control Delay	6.0	6.5
Queue Delay	0.0	0.0
Total Delay	6.0	6.5
LOS	A	A
Approach Delay	6.0	
Approach LOS	A	
Queue Length 50th (ft)	62	8
Queue Length 95th (ft)	135	37
Internal Link Dist (ft)	1679	
Turn Bay Length (ft)		325
Base Capacity (vph)	2564	1147
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.34	0.07
Intersection Summary		

Lanes, Volumes, Timings

1: US 15-501 & Mt. Carmel Church Road/Culbreth Road

10/19/2017

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	124	81	49	11	54	358	48	865	20	517	1374	159
Future Volume (vph)	124	81	49	11	54	358	48	865	20	517	1374	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			-8%			-2%			2%	
Storage Length (ft)	0		75	0		350	125		75	550		250
Storage Lanes	1		1	0		2	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor												0.97
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950				0.992		0.950			0.950		
Satd. Flow (prot)	1743	1835	1560	0	1922	2898	1770	3540	1584	1752	3504	1567
Flt Permitted	0.950				0.992		0.115			0.215		
Satd. Flow (perm)	1743	1835	1560	0	1922	2898	214	3540	1584	396	3504	1525
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		526			870			563			635	
Travel Time (s)		10.2			16.9			11.0			12.4	
Confl. Peds. (#/hr)							2					2
Peak Hour Factor	0.81	0.81	0.81	0.90	0.90	0.90	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	2%	2%	2%
Adj. Flow (vph)	153	100	60	12	60	398	49	892	21	533	1416	164
Shared Lane Traffic (%)												
Lane Group Flow (vph)	153	100	60	0	72	398	49	892	21	533	1416	164
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	0.95	0.95	0.95	0.99	0.99	0.99	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Split	NA	Perm	Split	NA	pm+ov	Perm	NA	Perm	pm+pt	NA	pm+ov
Protected Phases	3	3		4	4	1		2		1	6	3
Permitted Phases			3			4	2		2	6		6
Detector Phase	3	3	3	4	4	1	2	2	2	1	6	3
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	12.0	12.0	12.0	7.0	12.0	7.0
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0	13.0	19.0	19.0	19.0	13.0	26.0	14.0
Total Split (s)	40.0	40.0	40.0	25.0	25.0	35.0	40.0	40.0	40.0	35.0	75.0	40.0
Total Split (%)	28.6%	28.6%	28.6%	17.9%	17.9%	25.0%	28.6%	28.6%	28.6%	25.0%	53.6%	28.6%
Maximum Green (s)	33.6	33.6	33.6	18.0	18.0	29.9	33.8	33.8	33.8	29.9	68.8	33.6
Yellow Time (s)	3.7	3.7	3.7	4.3	4.3	3.0	4.6	4.6	4.6	3.0	4.6	3.7
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.1	1.6	1.6	1.6	2.1	1.6	2.7
Lost Time Adjust (s)	-1.4	-1.4	-1.4		-2.0	-0.1	-1.2	-1.2	-1.2	-0.1	-1.2	-1.4
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lead	Lag		Lead

Lanes, Volumes, Timings

1: US 15-501 & Mt. Carmel Church Road/Culbreth Road

10/19/2017

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	3.0	6.0	6.0	6.0	3.0	6.0	1.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	None	C-Max	None
Walk Time (s)											7.0	
Flash Dont Walk (s)											12.0	
Pedestrian Calls (#/hr)											0	
Act Effct Green (s)	17.2	17.2	17.2		11.1	39.3	64.5	64.5	64.5	99.5	99.5	116.7
Actuated g/C Ratio	0.12	0.12	0.12		0.08	0.28	0.46	0.46	0.46	0.71	0.71	0.83
v/c Ratio	0.71	0.44	0.31		0.47	0.49	0.50	0.55	0.03	0.93	0.57	0.13
Control Delay	76.7	62.0	58.7		71.4	28.9	56.5	34.6	27.4	60.1	12.6	2.2
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.7	62.0	58.7		71.4	28.9	56.5	34.6	27.4	60.1	12.6	2.2
LOS	E	E	E		E	C	E	C	C	E	B	A
Approach Delay		68.6			35.4			35.6			23.8	
Approach LOS		E			D			D			C	
Queue Length 50th (ft)	136	86	51		64	120	35	342	12	288	320	19
Queue Length 95th (ft)	180	123	83		115	135	#107	471	35	#576	486	38
Internal Link Dist (ft)		446			790			483			555	
Turn Bay Length (ft)			75			350	125		75	550		250
Base Capacity (vph)	435	458	390		274	814	98	1629	729	572	2489	1430
Starvation Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.22	0.15		0.26	0.49	0.50	0.55	0.03	0.93	0.57	0.11

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 65 (46%), Referenced to phase 2:NETL and 6:SWTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 31.8

Intersection LOS: C

Intersection Capacity Utilization 78.6%

ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: US 15-501 & Mt. Carmel Church Road/Culbreth Road

 Ø2 (R)	 Ø1	 Ø3	 Ø4
40 s	35 s	40 s	25 s
 Ø6 (R)			
75 s			

Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	94	21	6	54	13	2	1	9	800	110	8	23
Future Volume (vph)	94	21	6	54	13	2	1	9	800	110	8	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-5%				-1%			
Storage Length (ft)	75		0	200		0		275		300		275
Storage Lanes	1		0	1		0		1		1		1
Taper Length (ft)	25			25				25				25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Ped Bike Factor	1.00				1.00							
Frt		0.967			0.983					0.850		
Flt Protected	0.950			0.950				0.950				0.950
Satd. Flow (prot)	1761	1792	0	1814	1874	0	0	1761	3522	1576	0	1770
Flt Permitted	0.746			0.740				0.178				0.306
Satd. Flow (perm)	1379	1792	0	1413	1874	0	0	330	3522	1576	0	570
Right Turn on Red			No			No				No		
Satd. Flow (RTOR)												
Link Speed (mph)		25			25				45			
Link Distance (ft)		387			1318				2738			
Travel Time (s)		10.6			35.9				41.5			
Confl. Peds. (#/hr)	2					2		1				
Peak Hour Factor	0.98	0.98	0.98	0.82	0.82	0.82	0.95	0.95	0.95	0.95	0.97	0.97
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	2%	2%
Adj. Flow (vph)	96	21	6	66	16	2	1	9	842	116	8	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	96	27	0	66	18	0	0	10	842	116	0	32
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	R NA	Left	Left	Right	R NA	Left
Median Width(ft)		12			12				12			
Link Offset(ft)		0			0				0			
Crosswalk Width(ft)		16			16				16			
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	0.97	0.97	0.97	0.99	0.99	0.99	0.99	1.00	1.00
Turning Speed (mph)	15		9	15		9	9	15		9	9	15
Turn Type	Perm	NA		Perm	NA		pm+pt	pm+pt	NA	Perm	pm+pt	pm+pt
Protected Phases		4			8		5	5	2		1	1
Permitted Phases	4			8			2	2		2	6	6
Detector Phase	4	4		8	8		5	5	2	2	1	1
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	7.0	14.0	14.0	7.0	7.0
Minimum Split (s)	37.0	37.0		15.0	15.0		14.0	14.0	21.0	21.0	13.0	13.0
Total Split (s)	40.0	40.0		40.0	40.0		25.0	25.0	75.0	75.0	25.0	25.0
Total Split (%)	28.6%	28.6%		28.6%	28.6%		17.9%	17.9%	53.6%	53.6%	17.9%	17.9%
Maximum Green (s)	33.4	33.4		32.9	32.9		18.4	18.4	68.4	68.4	19.1	19.1
Yellow Time (s)	3.2	3.2		3.8	3.8		3.0	3.0	4.6	4.6	3.0	3.0
All-Red Time (s)	3.4	3.4		3.3	3.3		3.6	3.6	2.0	2.0	2.9	2.9
Lost Time Adjust (s)	-1.6	-1.6		-2.1	-2.1			-1.6	-1.6	-1.6		-0.9
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0	5.0	5.0		5.0
Lead/Lag							Lead	Lead	Lag	Lag	Lead	Lead

Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017



Lane Group	SBT	SBR
Lane Configurations	↑↑	↑
Traffic Volume (vph)	1283	122
Future Volume (vph)	1283	122
Ideal Flow (vphpl)	1900	1900
Grade (%)	0%	
Storage Length (ft)		325
Storage Lanes		1
Taper Length (ft)		
Lane Util. Factor	0.95	1.00
Ped Bike Factor		0.98
Frt		0.850
Flt Protected		
Satd. Flow (prot)	3539	1583
Flt Permitted		
Satd. Flow (perm)	3539	1545
Right Turn on Red		No
Satd. Flow (RTOR)		
Link Speed (mph)	45	
Link Distance (ft)	1759	
Travel Time (s)	26.7	
Confl. Peds. (#/hr)		1
Peak Hour Factor	0.97	0.97
Heavy Vehicles (%)	2%	2%
Adj. Flow (vph)	1323	126
Shared Lane Traffic (%)		
Lane Group Flow (vph)	1323	126
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	16	
Two way Left Turn Lane		
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Turn Type	NA	Perm
Protected Phases	6	
Permitted Phases		6
Detector Phase	6	6
Switch Phase		
Minimum Initial (s)	14.0	14.0
Minimum Split (s)	25.0	25.0
Total Split (s)	75.0	75.0
Total Split (%)	53.6%	53.6%
Maximum Green (s)	68.4	68.4
Yellow Time (s)	4.6	4.6
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)	-1.6	-1.6
Total Lost Time (s)	5.0	5.0
Lead/Lag	Lag	Lag

Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	None	C-Max	C-Max	None	None
Walk Time (s)	4.0	4.0										
Flash Dont Walk (s)	26.0	26.0										
Pedestrian Calls (#/hr)	0	0										
Act Effect Green (s)	16.7	16.7		16.7	16.7		110.7	105.6	105.6			112.2
Actuated g/C Ratio	0.12	0.12		0.12	0.12		0.79	0.75	0.75			0.80
v/c Ratio	0.59	0.13		0.39	0.08		0.03	0.32	0.10			0.06
Control Delay	71.7	54.0		60.9	51.6		3.6	7.0	6.3			0.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0			0.0
Total Delay	71.7	54.0		60.9	51.6		3.6	7.0	6.3			0.5
LOS	E	D		E	D		A	A	A			A
Approach Delay		67.8			58.9				6.9			
Approach LOS		E			E				A			
Queue Length 50th (ft)	84	22		56	15		2	135	29			0
Queue Length 95th (ft)	139	50		m89	m33		6	197	58			m0
Internal Link Dist (ft)		307			1238				2658			
Turn Bay Length (ft)	75			200			275		300			275
Base Capacity (vph)	344	448		353	468		471	2655	1188			632
Starvation Cap Reductn	0	0		0	0		0	0	0			0
Spillback Cap Reductn	0	0		0	0		0	0	0			0
Storage Cap Reductn	0	0		0	0		0	0	0			0
Reduced v/c Ratio	0.28	0.06		0.19	0.04		0.02	0.32	0.10			0.05

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 114 (81%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 8.5

Intersection LOS: A

Intersection Capacity Utilization 55.7%

ICU Level of Service B

Analysis Period (min) 15

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

Splits and Phases: 3: US 15-501 & Arlen Park Drive/Bennett Road



Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017



Lane Group	SBT	SBR
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	3.0	3.0
Recall Mode	C-Max	C-Max
Walk Time (s)	7.0	7.0
Flash Dont Walk (s)	10.0	10.0
Pedestrian Calls (#/hr)	0	0
Act Effect Green (s)	110.6	110.6
Actuated g/C Ratio	0.79	0.79
v/c Ratio	0.47	0.10
Control Delay	2.0	0.6
Queue Delay	0.0	0.0
Total Delay	2.0	0.6
LOS	A	A
Approach Delay	1.8	
Approach LOS	A	
Queue Length 50th (ft)	2	0
Queue Length 95th (ft)	111	7
Internal Link Dist (ft)	1679	
Turn Bay Length (ft)		325
Base Capacity (vph)	2795	1220
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.47	0.10
Intersection Summary		

Lanes, Volumes, Timings

1: US 15-501 & Mt. Carmel Church Road/Culbreth Road

10/19/2017

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	238	85	69	12	113	608	60	1246	3	266	693	151
Future Volume (vph)	238	85	69	12	113	608	60	1246	3	266	693	151
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			-8%			-2%			2%	
Storage Length (ft)	0		75	0		350	125		75	550		250
Storage Lanes	1		1	0		2	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor							1.00					0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950				0.995		0.950			0.950		
Satd. Flow (prot)	1743	1835	1560	0	1928	2898	1770	3540	1584	1702	3404	1523
Flt Permitted	0.950				0.995		0.300			0.068		
Satd. Flow (perm)	1743	1835	1560	0	1928	2898	558	3540	1584	122	3404	1487
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		526			870			563			635	
Travel Time (s)		10.2			16.9			11.0			12.4	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.78	0.78	0.78	0.91	0.91	0.91	0.94	0.94	0.94	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	5%	5%	5%
Adj. Flow (vph)	305	109	88	13	124	668	64	1326	3	289	753	164
Shared Lane Traffic (%)												
Lane Group Flow (vph)	305	109	88	0	137	668	64	1326	3	289	753	164
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	0.95	0.95	0.95	0.99	0.99	0.99	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Split	NA	Perm	Split	NA	pm+ov	Perm	NA	Perm	pm+pt	NA	pm+ov
Protected Phases	3	3		4	4	1		2		1	6	3
Permitted Phases			3			4	2		2	6		6
Detector Phase	3	3	3	4	4	1	2	2	2	1	6	3
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	12.0	12.0	12.0	7.0	12.0	7.0
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0	13.0	19.0	19.0	19.0	13.0	26.0	14.0
Total Split (s)	28.0	28.0	28.0	22.0	22.0	24.0	56.0	56.0	56.0	24.0	80.0	28.0
Total Split (%)	21.5%	21.5%	21.5%	16.9%	16.9%	18.5%	43.1%	43.1%	43.1%	18.5%	61.5%	21.5%
Maximum Green (s)	21.6	21.6	21.6	15.0	15.0	18.9	49.8	49.8	49.8	18.9	73.8	21.6
Yellow Time (s)	3.7	3.7	3.7	4.3	4.3	3.0	4.6	4.6	4.6	3.0	4.6	3.7
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.1	1.6	1.6	1.6	2.1	1.6	2.7
Lost Time Adjust (s)	-1.4	-1.4	-1.4		-2.0	-0.1	-1.2	-1.2	-1.2	-0.1	-1.2	-1.4
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lead	Lag		Lead

Lanes, Volumes, Timings

1: US 15-501 & Mt. Carmel Church Road/Culbreth Road

10/19/2017

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	3.0	6.0	6.0	6.0	3.0	6.0	1.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	None	C-Max	None
Walk Time (s)											7.0	
Flash Dont Walk (s)											12.0	
Pedestrian Calls (#/hr)											0	
Act Effect Green (s)	23.0	23.0	23.0		14.0	33.0	54.0	54.0	54.0	78.0	78.0	101.0
Actuated g/C Ratio	0.18	0.18	0.18		0.11	0.25	0.42	0.42	0.42	0.60	0.60	0.78
v/c Ratio	0.99	0.34	0.32		0.66	0.91	0.28	0.90	0.00	0.95	0.37	0.14
Control Delay	102.2	50.2	50.4		70.5	44.5	22.1	38.7	17.7	88.4	14.4	3.2
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	102.2	50.2	50.4		70.5	44.5	22.1	38.7	17.7	88.4	14.4	3.2
LOS	F	D	D		E	D	C	D	B	F	B	A
Approach Delay		81.8			48.9			37.9			30.6	
Approach LOS		F			D			D			C	
Queue Length 50th (ft)	259	81	65		112	196	37	557	2	194	164	24
Queue Length 95th (ft)	#353	119	101		179	#241	41	#725	m1	#378	216	43
Internal Link Dist (ft)		446			790			483			555	
Turn Bay Length (ft)			75			350	125		75	550		250
Base Capacity (vph)	308	324	276		252	736	231	1469	657	304	2041	1161
Starvation Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.99	0.34	0.32		0.54	0.91	0.28	0.90	0.00	0.95	0.37	0.14

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 98 (75%), Referenced to phase 2:NETL and 6:SWTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.99

Intersection Signal Delay: 43.6

Intersection LOS: D

Intersection Capacity Utilization 81.5%

ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 1: US 15-501 & Mt. Carmel Church Road/Culbreth Road

				
Ø2 (R)		Ø1	Ø3	Ø4
56 s		24 s	28 s	22 s
Ø6 (R)				
80 s				

Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	93	38	5	100	17	12	6	1246	102	13	681	77
Future Volume (vph)	93	38	5	100	17	12	6	1246	102	13	681	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-5%			-1%			0%	
Storage Length (ft)	75		0	200		0	275		300	275		325
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00	1.00		1.00	0.99		1.00		0.98			0.98
Frt		0.983			0.937				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1761	1819	0	1814	1779	0	1778	3557	1591	1736	3471	1553
Flt Permitted	0.734			0.722			0.342			0.150		
Satd. Flow (perm)	1359	1819	0	1377	1779	0	640	3557	1555	274	3471	1516
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		387			1318			2738			1759	
Travel Time (s)		10.6			35.9			41.5			26.7	
Confl. Peds. (#/hr)	1		1	1		1	1		3	3		1
Peak Hour Factor	0.79	0.79	0.79	0.80	0.80	0.80	0.90	0.90	0.90	0.89	0.89	0.89
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	4%	4%	4%
Adj. Flow (vph)	118	48	6	125	21	15	7	1384	113	15	765	87
Shared Lane Traffic (%)												
Lane Group Flow (vph)	118	54	0	125	36	0	7	1384	113	15	765	87
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	0.97	0.97	0.97	0.99	0.99	0.99	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	14.0	14.0	7.0	14.0	14.0
Minimum Split (s)	37.0	37.0		15.0	15.0		14.0	21.0	21.0	13.0	25.0	25.0
Total Split (s)	37.0	37.0		37.0	37.0		20.0	73.0	73.0	20.0	73.0	73.0
Total Split (%)	28.5%	28.5%		28.5%	28.5%		15.4%	56.2%	56.2%	15.4%	56.2%	56.2%
Maximum Green (s)	30.4	30.4		29.9	29.9		13.4	66.4	66.4	14.1	66.4	66.4
Yellow Time (s)	3.2	3.2		3.8	3.8		3.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	3.4	3.4		3.3	3.3		3.6	2.0	2.0	2.9	2.0	2.0
Lost Time Adjust (s)	-1.6	-1.6		-2.1	-2.1		-1.6	-1.6	-1.6	-0.9	-1.6	-1.6
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag

Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)	4.0	4.0									7.0	7.0
Flash Dont Walk (s)	26.0	26.0									10.0	10.0
Pedestrian Calls (#/hr)	0	0									0	0
Act Effct Green (s)	19.2	19.2		19.2	19.2		99.1	95.6	95.6	99.7	98.1	98.1
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.76	0.74	0.74	0.77	0.75	0.75
v/c Ratio	0.59	0.20		0.62	0.14		0.01	0.53	0.10	0.05	0.29	0.08
Control Delay	62.8	48.3		64.0	46.9		4.7	10.0	7.0	11.2	13.3	12.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.8	48.3		64.0	46.9		4.7	10.0	7.0	11.2	13.3	12.8
LOS	E	D		E	D		A	A	A	B	B	B
Approach Delay		58.2			60.2			9.7			13.2	
Approach LOS		E			E			A			B	
Queue Length 50th (ft)	94	40		102	28		1	192	20	4	142	26
Queue Length 95th (ft)	129	67		m137	m49		6	425	63	m18	309	83
Internal Link Dist (ft)		307			1238			2658			1679	
Turn Bay Length (ft)	75			200			275		300	275		325
Base Capacity (vph)	334	447		338	437		627	2616	1143	381	2618	1143
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.12		0.37	0.08		0.01	0.53	0.10	0.04	0.29	0.08

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 71 (55%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.62

Intersection Signal Delay: 17.0

Intersection LOS: B

Intersection Capacity Utilization 55.0%

ICU Level of Service B

Analysis Period (min) 15

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

Splits and Phases: 3: US 15-501 & Arlen Park Drive/Bennett Road



Lanes, Volumes, Timings

1: US 15-501 & Mt. Carmel Church Road/Culbreth Road

10/19/2017

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	89	26	41	16	27	275	28	809	11	238	862	94
Future Volume (vph)	89	26	41	16	27	275	28	809	11	238	862	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			-8%			-2%			2%	
Storage Length (ft)	0		75	0		350	125		75	550		250
Storage Lanes	1		1	0		2	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99		1.00	0.98	1.00					0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950				0.982		0.950			0.950		
Satd. Flow (prot)	1743	1835	1560	0	1884	2870	1736	3472	1553	1718	3436	1537
Flt Permitted	0.950				0.982		0.317			0.197		
Satd. Flow (perm)	1740	1835	1538	0	1883	2808	579	3472	1553	356	3436	1500
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		526			870			563			635	
Travel Time (s)		10.2			16.9			11.0			12.4	
Confl. Peds. (#/hr)	1		1	1		1	2					2
Peak Hour Factor	0.95	0.95	0.95	0.88	0.88	0.88	0.97	0.97	0.97	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	5%	5%	5%	4%	4%	4%
Adj. Flow (vph)	94	27	43	18	31	313	29	834	11	248	898	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	94	27	43	0	49	313	29	834	11	248	898	98
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	0.95	0.95	0.95	0.99	0.99	0.99	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Split	NA	Perm	Split	NA	pm+ov	Perm	NA	Perm	pm+pt	NA	pm+ov
Protected Phases	3	3		4	4	1		2		1	6	3
Permitted Phases			3			4	2		2	6		6
Detector Phase	3	3	3	4	4	1	2	2	2	1	6	3
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	12.0	12.0	12.0	7.0	12.0	7.0
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0	13.0	19.0	19.0	19.0	13.0	26.0	14.0
Total Split (s)	16.0	16.0	16.0	19.0	19.0	17.0	28.0	28.0	28.0	17.0	45.0	16.0
Total Split (%)	20.0%	20.0%	20.0%	23.8%	23.8%	21.3%	35.0%	35.0%	35.0%	21.3%	56.3%	20.0%
Maximum Green (s)	9.6	9.6	9.6	12.6	12.6	11.9	21.8	21.8	21.8	11.9	38.0	9.6
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.0	4.6	4.6	4.6	3.0	4.3	3.7
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.1	1.6	1.6	1.6	2.1	2.7	2.7
Lost Time Adjust (s)	-1.4	-1.4	-1.4		-1.4	-0.1	-1.2	-1.2	-1.2	-0.1	-2.0	-1.4
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead		Lag

Lanes, Volumes, Timings

1: US 15-501 & Mt. Carmel Church Road/Culbreth Road

10/19/2017

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	3.0	6.0	6.0	6.0	3.0	1.0	1.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	None	C-Max	None
Walk Time (s)											7.0	
Flash Dont Walk (s)											12.0	
Pedestrian Calls (#/hr)											0	
Act Effect Green (s)	9.9	9.9	9.9		8.6	17.8	37.0	37.0	37.0	54.5	55.5	62.8
Actuated g/C Ratio	0.12	0.12	0.12		0.11	0.22	0.46	0.46	0.46	0.68	0.69	0.78
v/c Ratio	0.44	0.12	0.23		0.24	0.49	0.11	0.52	0.02	0.55	0.38	0.08
Control Delay	38.5	31.4	33.8		35.9	20.6	27.2	22.9	26.8	12.6	8.4	2.4
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.5	31.4	33.8		35.9	20.6	27.2	22.9	26.8	12.6	8.4	2.4
LOS	D	C	C		D	C	C	C	C	B	A	A
Approach Delay		36.1			22.7			23.1			8.8	
Approach LOS		D			C			C			A	
Queue Length 50th (ft)	45	12	20		23	48	8	143	3	53	117	9
Queue Length 95th (ft)	86	34	47		53	56	44	#315	m17	112	186	20
Internal Link Dist (ft)		446			790			483			555	
Turn Bay Length (ft)			75			350	125		75	550		250
Base Capacity (vph)	247	261	218		329	652	267	1606	718	465	2385	1199
Starvation Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.10	0.20		0.15	0.48	0.11	0.52	0.02	0.53	0.38	0.08

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 11 (14%), Referenced to phase 2:NETL and 6:SWTL, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.55

Intersection Signal Delay: 17.1

Intersection LOS: B

Intersection Capacity Utilization 59.6%

ICU Level of Service B

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 1: US 15-501 & Mt. Carmel Church Road/Culbreth Road



Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	67	4	6	48	11	6	4	4	796	47	2	9
Future Volume (vph)	67	4	6	48	11	6	4	4	796	47	2	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-5%				-1%			
Storage Length (ft)	75		0	200		0		275		300		275
Storage Lanes	1		0	1		0		1		1		1
Taper Length (ft)	25			25				25				25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Ped Bike Factor	1.00	0.99		1.00	1.00					0.98		1.00
Frt		0.912			0.947					0.850		
Flt Protected	0.950			0.950				0.950				0.950
Satd. Flow (prot)	1744	1661	0	1814	1800	0	0	1728	3455	1546	0	1736
Flt Permitted	0.744			0.750				0.279				0.310
Satd. Flow (perm)	1365	1661	0	1431	1800	0	0	507	3455	1512	0	566
Right Turn on Red			No			No				No		
Satd. Flow (RTOR)												
Link Speed (mph)		25			25				45			
Link Distance (ft)		387			1318				2738			
Travel Time (s)		10.6			35.9				41.5			
Confl. Peds. (#/hr)	1		1	1		1				1		1
Peak Hour Factor	0.82	0.82	0.82	0.83	0.83	0.83	0.94	0.94	0.94	0.94	0.89	0.89
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	5%	5%	5%	5%	4%	4%
Adj. Flow (vph)	82	5	7	58	13	7	4	4	847	50	2	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	82	12	0	58	20	0	0	8	847	50	0	12
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	R NA	Left	Left	Right	R NA	Left
Median Width(ft)		12			12				12			
Link Offset(ft)		0			0				0			
Crosswalk Width(ft)		16			16				16			
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	0.97	0.97	0.97	0.99	0.99	0.99	0.99	1.00	1.00
Turning Speed (mph)	15		9	15		9	9	15		9	9	15
Turn Type	Perm	NA		Perm	NA		pm+pt	pm+pt	NA	Perm	pm+pt	pm+pt
Protected Phases		4			8		5	5	2		1	1
Permitted Phases	4			8			2	2		2	6	6
Detector Phase	4	4		8	8		5	5	2	2	1	1
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	7.0	14.0	14.0	7.0	7.0
Minimum Split (s)	37.0	37.0		15.0	15.0		14.0	14.0	21.0	21.0	13.0	13.0
Total Split (s)	37.0	37.0		37.0	37.0		14.0	14.0	29.0	29.0	14.0	14.0
Total Split (%)	46.3%	46.3%		46.3%	46.3%		17.5%	17.5%	36.3%	36.3%	17.5%	17.5%
Maximum Green (s)	30.4	30.4		29.9	29.9		7.4	7.4	22.4	22.4	8.1	8.1
Yellow Time (s)	3.2	3.2		3.8	3.8		3.0	3.0	4.6	4.6	3.0	3.0
All-Red Time (s)	3.4	3.4		3.3	3.3		3.6	3.6	2.0	2.0	2.9	2.9
Lost Time Adjust (s)	-1.6	-1.6		-2.1	-2.1			-1.6	-1.6	-1.6		-0.9
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0	5.0	5.0		5.0
Lead/Lag							Lead	Lead	Lag	Lag	Lead	Lead

Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017



Lane Group	SBT	SBR
Lane Configurations	↑↑	↑
Traffic Volume (vph)	805	71
Future Volume (vph)	805	71
Ideal Flow (vphpl)	1900	1900
Grade (%)	0%	
Storage Length (ft)		325
Storage Lanes		1
Taper Length (ft)		
Lane Util. Factor	0.95	1.00
Ped Bike Factor		
Frt		0.850
Flt Protected		
Satd. Flow (prot)	3471	1553
Flt Permitted		
Satd. Flow (perm)	3471	1553
Right Turn on Red		No
Satd. Flow (RTOR)		
Link Speed (mph)	45	
Link Distance (ft)	1759	
Travel Time (s)	26.7	
Confl. Peds. (#/hr)		
Peak Hour Factor	0.89	0.89
Heavy Vehicles (%)	4%	4%
Adj. Flow (vph)	904	80
Shared Lane Traffic (%)		
Lane Group Flow (vph)	904	80
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	16	
Two way Left Turn Lane		
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Turn Type	NA	Perm
Protected Phases	6	
Permitted Phases		6
Detector Phase	6	6
Switch Phase		
Minimum Initial (s)	14.0	14.0
Minimum Split (s)	25.0	25.0
Total Split (s)	29.0	29.0
Total Split (%)	36.3%	36.3%
Maximum Green (s)	22.4	22.4
Yellow Time (s)	4.6	4.6
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)	-1.6	-1.6
Total Lost Time (s)	5.0	5.0
Lead/Lag	Lag	Lag

Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	None	C-Max	C-Max	None	None
Walk Time (s)	4.0	4.0										
Flash Dont Walk (s)	26.0	26.0										
Pedestrian Calls (#/hr)	0	0										
Act Effect Green (s)	12.1	12.1		12.2	12.2			59.8	59.1	59.1		59.5
Actuated g/C Ratio	0.15	0.15		0.15	0.15			0.75	0.74	0.74		0.74
v/c Ratio	0.40	0.05		0.27	0.07			0.02	0.33	0.04		0.02
Control Delay	35.6	27.4		32.0	27.9			4.0	6.4	6.4		4.9
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0		0.0
Total Delay	35.6	27.4		32.0	27.9			4.0	6.4	6.4		4.9
LOS	D	C		C	C			A	A	A		A
Approach Delay		34.6			30.9				6.4			
Approach LOS		C			C				A			
Queue Length 50th (ft)	38	5		26	9			1	64	6		1
Queue Length 95th (ft)	67	17		52	24			5	183	29		m6
Internal Link Dist (ft)		307			1238				2658			
Turn Bay Length (ft)	75			200				275		300		275
Base Capacity (vph)	546	664		572	720			516	2551	1116		554
Starvation Cap Reductn	0	0		0	0			0	0	0		0
Spillback Cap Reductn	0	0		0	0			0	0	0		0
Storage Cap Reductn	0	0		0	0			0	0	0		0
Reduced v/c Ratio	0.15	0.02		0.10	0.03			0.02	0.33	0.04		0.02

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 18 (23%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.40

Intersection Signal Delay: 8.5

Intersection LOS: A

Intersection Capacity Utilization 41.4%

ICU Level of Service A

Analysis Period (min) 15

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

Splits and Phases: 3: US 15-501 & Arlen Park Drive/Bennett Road

 Ø1	 Ø2 (R)	 Ø4
14 s	29 s	37 s
 Ø5	 Ø6 (R)	 Ø8
14 s	29 s	37 s

Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017



Lane Group	SBT	SBR
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	3.0	3.0
Recall Mode	C-Max	C-Max
Walk Time (s)	7.0	7.0
Flash Dont Walk (s)	10.0	10.0
Pedestrian Calls (#/hr)	0	0
Act Effect Green (s)	58.9	58.9
Actuated g/C Ratio	0.74	0.74
v/c Ratio	0.35	0.07
Control Delay	6.2	6.8
Queue Delay	0.0	0.0
Total Delay	6.2	6.8
LOS	A	A
Approach Delay	6.2	
Approach LOS	A	
Queue Length 50th (ft)	65	9
Queue Length 95th (ft)	135	37
Internal Link Dist (ft)	1679	
Turn Bay Length (ft)		325
Base Capacity (vph)	2557	1144
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.35	0.07
Intersection Summary		

Lanes, Volumes, Timings

1: US 15-501 & Mt. Carmel Church Road/Culbreth Road

10/19/2017

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	127	83	50	11	55	367	49	886	20	529	1407	163
Future Volume (vph)	127	83	50	11	55	367	49	886	20	529	1407	163
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			-8%			-2%			2%	
Storage Length (ft)	0		75	0		350	125		75	550		250
Storage Lanes	1		1	0		2	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor												0.97
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950				0.992		0.950			0.950		
Satd. Flow (prot)	1743	1835	1560	0	1922	2898	1770	3540	1584	1752	3504	1567
Flt Permitted	0.950				0.992		0.106			0.205		
Satd. Flow (perm)	1743	1835	1560	0	1922	2898	197	3540	1584	378	3504	1525
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		526			870			563			635	
Travel Time (s)		10.2			16.9			11.0			12.4	
Confl. Peds. (#/hr)							2					2
Peak Hour Factor	0.81	0.81	0.81	0.90	0.90	0.90	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	2%	2%	2%
Adj. Flow (vph)	157	102	62	12	61	408	51	913	21	545	1451	168
Shared Lane Traffic (%)												
Lane Group Flow (vph)	157	102	62	0	73	408	51	913	21	545	1451	168
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	0.95	0.95	0.95	0.99	0.99	0.99	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Split	NA	Perm	Split	NA	pm+ov	Perm	NA	Perm	pm+pt	NA	pm+ov
Protected Phases	3	3		4	4	1		2		1	6	3
Permitted Phases			3			4	2		2	6		6
Detector Phase	3	3	3	4	4	1	2	2	2	1	6	3
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	12.0	12.0	12.0	7.0	12.0	7.0
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0	13.0	19.0	19.0	19.0	13.0	26.0	14.0
Total Split (s)	40.0	40.0	40.0	25.0	25.0	35.0	40.0	40.0	40.0	35.0	75.0	40.0
Total Split (%)	28.6%	28.6%	28.6%	17.9%	17.9%	25.0%	28.6%	28.6%	28.6%	25.0%	53.6%	28.6%
Maximum Green (s)	33.6	33.6	33.6	18.0	18.0	29.9	33.8	33.8	33.8	29.9	68.8	33.6
Yellow Time (s)	3.7	3.7	3.7	4.3	4.3	3.0	4.6	4.6	4.6	3.0	4.6	3.7
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.1	1.6	1.6	1.6	2.1	1.6	2.7
Lost Time Adjust (s)	-1.4	-1.4	-1.4		-2.0	-0.1	-1.2	-1.2	-1.2	-0.1	-1.2	-1.4
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lead	Lag		Lead

Lanes, Volumes, Timings

1: US 15-501 & Mt. Carmel Church Road/Culbreth Road

10/19/2017

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	3.0	6.0	6.0	6.0	3.0	6.0	1.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	None	C-Max	None
Walk Time (s)											7.0	
Flash Dont Walk (s)											12.0	
Pedestrian Calls (#/hr)											0	
Act Effect Green (s)	17.6	17.6	17.6		11.2	39.4	64.0	64.0	64.0	99.0	99.0	116.6
Actuated g/C Ratio	0.13	0.13	0.13		0.08	0.28	0.46	0.46	0.46	0.71	0.71	0.83
v/c Ratio	0.72	0.44	0.32		0.48	0.50	0.57	0.56	0.03	0.97	0.59	0.13
Control Delay	76.5	61.6	58.4		71.4	29.0	66.3	34.1	32.9	69.0	13.2	2.2
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.5	61.6	58.4		71.4	29.0	66.3	34.1	32.9	69.0	13.2	2.2
LOS	E	E	E		E	C	E	C	C	E	B	A
Approach Delay		68.3			35.4			35.7			26.4	
Approach LOS		E			D			D			C	
Queue Length 50th (ft)	140	87	52		65	123	28	267	10	317	337	19
Queue Length 95th (ft)	184	126	85		115	136	#119	456	38	#617	510	39
Internal Link Dist (ft)		446			790			483			555	
Turn Bay Length (ft)			75			350	125		75	550		250
Base Capacity (vph)	435	458	390		274	815	89	1619	724	561	2478	1427
Starvation Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.22	0.16		0.27	0.50	0.57	0.56	0.03	0.97	0.59	0.12

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 100 (71%), Referenced to phase 2:NETL and 6:SWTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.97

Intersection Signal Delay: 33.2

Intersection LOS: C

Intersection Capacity Utilization 80.0%

ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: US 15-501 & Mt. Carmel Church Road/Culbreth Road

 Ø2 (R)	 Ø1	 Ø3	 Ø4
40 s	35 s	40 s	25 s
 Ø6 (R)			
75 s			

Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	96	22	6	55	13	2	1	9	819	113	8	24
Future Volume (vph)	96	22	6	55	13	2	1	9	819	113	8	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-5%				-1%			
Storage Length (ft)	75		0	200		0		275		300		275
Storage Lanes	1		0	1		0		1		1		1
Taper Length (ft)	25			25				25				25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Ped Bike Factor	1.00				1.00							
Frt		0.968			0.983					0.850		
Flt Protected	0.950			0.950				0.950				0.950
Satd. Flow (prot)	1761	1794	0	1814	1874	0	0	1761	3522	1576	0	1770
Flt Permitted	0.746			0.739				0.170				0.299
Satd. Flow (perm)	1379	1794	0	1411	1874	0	0	315	3522	1576	0	557
Right Turn on Red			No			No				No		
Satd. Flow (RTOR)												
Link Speed (mph)		25			25				45			
Link Distance (ft)		387			1318				2738			
Travel Time (s)		10.6			35.9				41.5			
Confl. Peds. (#/hr)	2					2		1				
Peak Hour Factor	0.98	0.98	0.98	0.82	0.82	0.82	0.95	0.95	0.95	0.95	0.97	0.97
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	2%	2%
Adj. Flow (vph)	98	22	6	67	16	2	1	9	862	119	8	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	98	28	0	67	18	0	0	10	862	119	0	33
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	R NA	Left	Left	Right	R NA	Left
Median Width(ft)		12			12				12			
Link Offset(ft)		0			0				0			
Crosswalk Width(ft)		16			16				16			
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	0.97	0.97	0.97	0.99	0.99	0.99	0.99	1.00	1.00
Turning Speed (mph)	15		9	15		9	9	15		9	9	15
Turn Type	Perm	NA		Perm	NA		pm+pt	pm+pt	NA	Perm	pm+pt	pm+pt
Protected Phases		4			8		5	5	2		1	1
Permitted Phases	4			8			2	2		2	6	6
Detector Phase	4	4		8	8		5	5	2	2	1	1
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	7.0	14.0	14.0	7.0	7.0
Minimum Split (s)	37.0	37.0		15.0	15.0		14.0	14.0	21.0	21.0	13.0	13.0
Total Split (s)	40.0	40.0		40.0	40.0		25.0	25.0	75.0	75.0	25.0	25.0
Total Split (%)	28.6%	28.6%		28.6%	28.6%		17.9%	17.9%	53.6%	53.6%	17.9%	17.9%
Maximum Green (s)	33.4	33.4		32.9	32.9		18.4	18.4	68.4	68.4	19.1	19.1
Yellow Time (s)	3.2	3.2		3.8	3.8		3.0	3.0	4.6	4.6	3.0	3.0
All-Red Time (s)	3.4	3.4		3.3	3.3		3.6	3.6	2.0	2.0	2.9	2.9
Lost Time Adjust (s)	-1.6	-1.6		-2.1	-2.1			-1.6	-1.6	-1.6		-0.9
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0	5.0	5.0		5.0
Lead/Lag							Lead	Lead	Lag	Lag	Lead	Lead

Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017



Lane Group	SBT	SBR
Lane Configurations	↑↑	↑
Traffic Volume (vph)	1314	125
Future Volume (vph)	1314	125
Ideal Flow (vphpl)	1900	1900
Grade (%)	0%	
Storage Length (ft)		325
Storage Lanes		1
Taper Length (ft)		
Lane Util. Factor	0.95	1.00
Ped Bike Factor		0.98
Frt		0.850
Flt Protected		
Satd. Flow (prot)	3539	1583
Flt Permitted		
Satd. Flow (perm)	3539	1545
Right Turn on Red		No
Satd. Flow (RTOR)		
Link Speed (mph)	45	
Link Distance (ft)	1759	
Travel Time (s)	26.7	
Confl. Peds. (#/hr)		1
Peak Hour Factor	0.97	0.97
Heavy Vehicles (%)	2%	2%
Adj. Flow (vph)	1355	129
Shared Lane Traffic (%)		
Lane Group Flow (vph)	1355	129
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	16	
Two way Left Turn Lane		
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Turn Type	NA	Perm
Protected Phases	6	
Permitted Phases		6
Detector Phase	6	6
Switch Phase		
Minimum Initial (s)	14.0	14.0
Minimum Split (s)	25.0	25.0
Total Split (s)	75.0	75.0
Total Split (%)	53.6%	53.6%
Maximum Green (s)	68.4	68.4
Yellow Time (s)	4.6	4.6
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)	-1.6	-1.6
Total Lost Time (s)	5.0	5.0
Lead/Lag	Lag	Lag

Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	None	C-Max	C-Max	None	None
Walk Time (s)	4.0	4.0										
Flash Dont Walk (s)	26.0	26.0										
Pedestrian Calls (#/hr)	0	0										
Act Effect Green (s)	16.9	16.9		16.9	16.9		110.5	105.4	105.4			112.0
Actuated g/C Ratio	0.12	0.12		0.12	0.12		0.79	0.75	0.75			0.80
v/c Ratio	0.59	0.13		0.39	0.08		0.03	0.33	0.10			0.06
Control Delay	71.8	53.9		63.6	54.1		3.7	7.2	6.4			3.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0			0.0
Total Delay	71.8	53.9		63.6	54.1		3.7	7.2	6.4			3.2
LOS	E	D		E	D		A	A	A			A
Approach Delay		67.8			61.6				7.0			
Approach LOS		E			E				A			
Queue Length 50th (ft)	86	23		57	15		2	141	30			5
Queue Length 95th (ft)	142	52		m91	m33		6	204	60			m9
Internal Link Dist (ft)		307			1238				2658			
Turn Bay Length (ft)	75			200			275		300			275
Base Capacity (vph)	344	448		352	468		461	2650	1185			623
Starvation Cap Reductn	0	0		0	0		0	0	0			0
Spillback Cap Reductn	0	0		0	0		0	0	0			0
Storage Cap Reductn	0	0		0	0		0	0	0			0
Reduced v/c Ratio	0.28	0.06		0.19	0.04		0.02	0.33	0.10			0.05

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 114 (81%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 10.1

Intersection LOS: B

Intersection Capacity Utilization 56.6%

ICU Level of Service B

Analysis Period (min) 15

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

Splits and Phases: 3: US 15-501 & Arlen Park Drive/Bennett Road

			
Ø1	Ø2 (R)		Ø4
25 s	75 s		40 s
			
Ø5	Ø6 (R)		Ø8
25 s	75 s		40 s

Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017



Lane Group	SBT	SBR
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	3.0	3.0
Recall Mode	C-Max	C-Max
Walk Time (s)	7.0	7.0
Flash Dont Walk (s)	10.0	10.0
Pedestrian Calls (#/hr)	0	0
Act Effect Green (s)	110.4	110.4
Actuated g/C Ratio	0.79	0.79
v/c Ratio	0.49	0.11
Control Delay	4.4	3.8
Queue Delay	0.0	0.0
Total Delay	4.4	3.8
LOS	A	A
Approach Delay	4.3	
Approach LOS	A	
Queue Length 50th (ft)	123	18
Queue Length 95th (ft)	143	37
Internal Link Dist (ft)	1679	
Turn Bay Length (ft)		325
Base Capacity (vph)	2790	1218
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.49	0.11
Intersection Summary		

Lanes, Volumes, Timings

1: US 15-501 & Mt. Carmel Church Road/Culbreth Road

10/19/2017

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	238	87	69	19	115	635	60	1246	5	293	697	151
Future Volume (vph)	238	87	69	19	115	635	60	1246	5	293	697	151
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			-8%			-2%			2%	
Storage Length (ft)	0		75	0		350	125		75	550		250
Storage Lanes	1		1	0		2	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor							1.00					0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950				0.993		0.950			0.950		
Satd. Flow (prot)	1743	1835	1560	0	1924	2898	1770	3540	1584	1702	3404	1523
Flt Permitted	0.950				0.993		0.297			0.068		
Satd. Flow (perm)	1743	1835	1560	0	1924	2898	553	3540	1584	122	3404	1487
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		526			623			563			635	
Travel Time (s)		10.2			12.1			11.0			12.4	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.78	0.78	0.78	0.91	0.91	0.91	0.94	0.94	0.94	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	5%	5%	5%
Adj. Flow (vph)	305	112	88	21	126	698	64	1326	5	318	758	164
Shared Lane Traffic (%)												
Lane Group Flow (vph)	305	112	88	0	147	698	64	1326	5	318	758	164
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	0.95	0.95	0.95	0.99	0.99	0.99	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Split	NA	Perm	Split	NA	pm+ov	Perm	NA	Perm	pm+pt	NA	pm+ov
Protected Phases	3	3		4	4	1		2		1	6	3
Permitted Phases			3			4	2		2	6		6
Detector Phase	3	3	3	4	4	1	2	2	2	1	6	3
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	12.0	12.0	12.0	7.0	12.0	7.0
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0	13.0	19.0	19.0	19.0	13.0	26.0	14.0
Total Split (s)	28.0	28.0	28.0	22.0	22.0	24.0	56.0	56.0	56.0	24.0	80.0	28.0
Total Split (%)	21.5%	21.5%	21.5%	16.9%	16.9%	18.5%	43.1%	43.1%	43.1%	18.5%	61.5%	21.5%
Maximum Green (s)	21.6	21.6	21.6	15.0	15.0	18.9	49.8	49.8	49.8	18.9	73.8	21.6
Yellow Time (s)	3.7	3.7	3.7	4.3	4.3	3.0	4.6	4.6	4.6	3.0	4.6	3.7
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.1	1.6	1.6	1.6	2.1	1.6	2.7
Lost Time Adjust (s)	-1.4	-1.4	-1.4		-2.0	-0.1	-1.2	-1.2	-1.2	-0.1	-1.2	-1.4
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lead	Lag		Lead

Lanes, Volumes, Timings

1: US 15-501 & Mt. Carmel Church Road/Culbreth Road

10/19/2017

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	3.0	6.0	6.0	6.0	3.0	6.0	1.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	None	C-Max	None
Walk Time (s)											7.0	
Flash Dont Walk (s)											12.0	
Pedestrian Calls (#/hr)											0	
Act Effect Green (s)	23.0	23.0	23.0		14.4	33.4	53.6	53.6	53.6	77.6	77.6	100.6
Actuated g/C Ratio	0.18	0.18	0.18		0.11	0.26	0.41	0.41	0.41	0.60	0.60	0.77
v/c Ratio	0.99	0.35	0.32		0.69	0.94	0.28	0.91	0.01	1.05	0.37	0.14
Control Delay	102.2	50.4	50.4		72.1	49.0	22.4	39.6	17.4	111.6	14.6	3.2
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	102.2	50.4	50.4		72.1	49.0	22.4	39.6	17.4	111.6	14.6	3.2
LOS	F	D	D		E	D	C	D	B	F	B	A
Approach Delay		81.7			53.0			38.7			38.0	
Approach LOS		F			D			D			D	
Queue Length 50th (ft)	259	84	65		120	205	38	562	3	~243	168	25
Queue Length 95th (ft)	#353	122	101		191	#274	42	#726	m3	#436	217	43
Internal Link Dist (ft)		446			543			483			555	
Turn Bay Length (ft)			75			350	125		75	550		250
Base Capacity (vph)	308	324	276		251	745	227	1458	652	303	2030	1156
Starvation Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.99	0.35	0.32		0.59	0.94	0.28	0.91	0.01	1.05	0.37	0.14

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 98 (75%), Referenced to phase 2:NETL and 6:SWTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.05

Intersection Signal Delay: 46.9

Intersection LOS: D

Intersection Capacity Utilization 83.0%

ICU Level of Service E

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

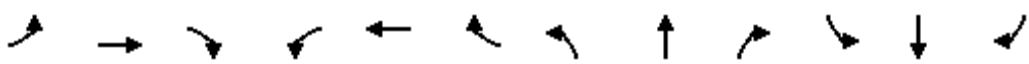
Splits and Phases: 1: US 15-501 & Mt. Carmel Church Road/Culbreth Road

 Ø2 (R)	 Ø1	 Ø3	 Ø4
56 s	24 s	28 s	22 s
 Ø5 (R)			
80 s			

Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	93	39	5	100	17	12	6	1248	106	17	686	78
Future Volume (vph)	93	39	5	100	17	12	6	1248	106	17	686	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-5%			-1%			0%	
Storage Length (ft)	75		0	200		0	275		300	275		325
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00	1.00		1.00	0.99		1.00		0.98			0.98
Frt		0.984			0.937				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1761	1821	0	1814	1779	0	1778	3557	1591	1736	3471	1553
Flt Permitted	0.734			0.721			0.339			0.149		
Satd. Flow (perm)	1359	1821	0	1375	1779	0	634	3557	1555	272	3471	1516
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		387			1318			2738			1759	
Travel Time (s)		10.6			35.9			41.5			26.7	
Confl. Peds. (#/hr)	1		1	1		1	1		3	3		1
Peak Hour Factor	0.79	0.79	0.79	0.80	0.80	0.80	0.90	0.90	0.90	0.89	0.89	0.89
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	4%	4%	4%
Adj. Flow (vph)	118	49	6	125	21	15	7	1387	118	19	771	88
Shared Lane Traffic (%)												
Lane Group Flow (vph)	118	55	0	125	36	0	7	1387	118	19	771	88
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	0.97	0.97	0.97	0.99	0.99	0.99	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	14.0	14.0	7.0	14.0	14.0
Minimum Split (s)	37.0	37.0		15.0	15.0		14.0	21.0	21.0	13.0	25.0	25.0
Total Split (s)	37.0	37.0		37.0	37.0		20.0	73.0	73.0	20.0	73.0	73.0
Total Split (%)	28.5%	28.5%		28.5%	28.5%		15.4%	56.2%	56.2%	15.4%	56.2%	56.2%
Maximum Green (s)	30.4	30.4		29.9	29.9		13.4	66.4	66.4	14.1	66.4	66.4
Yellow Time (s)	3.2	3.2		3.8	3.8		3.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	3.4	3.4		3.3	3.3		3.6	2.0	2.0	2.9	2.0	2.0
Lost Time Adjust (s)	-1.6	-1.6		-2.1	-2.1		-1.6	-1.6	-1.6	-0.9	-1.6	-1.6
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag

Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)	4.0	4.0									7.0	7.0
Flash Dont Walk (s)	26.0	26.0									10.0	10.0
Pedestrian Calls (#/hr)	0	0									0	0
Act Effct Green (s)	19.2	19.2		19.2	19.2		99.1	95.6	95.6	99.7	98.1	98.1
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.76	0.74	0.74	0.77	0.75	0.75
v/c Ratio	0.59	0.21		0.62	0.14		0.01	0.53	0.10	0.06	0.29	0.08
Control Delay	62.8	48.4		64.0	46.8		4.7	10.0	7.0	11.1	13.6	13.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.8	48.4		64.0	46.8		4.7	10.0	7.0	11.1	13.6	13.0
LOS	E	D		E	D		A	B	A	B	B	B
Approach Delay		58.2			60.1			9.8			13.5	
Approach LOS		E			E			A			B	
Queue Length 50th (ft)	94	41		102	28		1	193	21	6	152	28
Queue Length 95th (ft)	129	67		m138	m48		6	426	65	m22	310	84
Internal Link Dist (ft)		307			1238			2658			1679	
Turn Bay Length (ft)	75			200			275		300	275		325
Base Capacity (vph)	334	448		338	437		623	2616	1143	379	2618	1143
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.12		0.37	0.08		0.01	0.53	0.10	0.05	0.29	0.08

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 71 (55%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.62

Intersection Signal Delay: 17.0

Intersection LOS: B

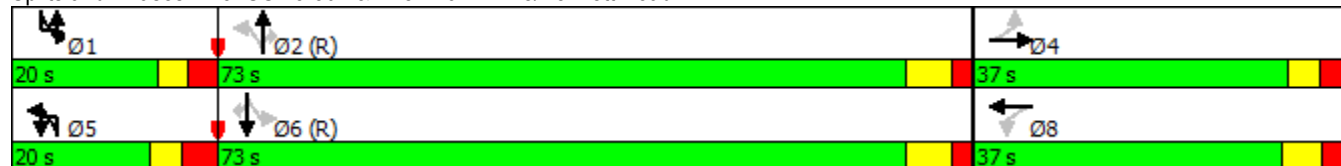
Intersection Capacity Utilization 55.1%

ICU Level of Service B

Analysis Period (min) 15

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

Splits and Phases: 3: US 15-501 & Arlen Park Drive/Bennett Road



Lanes, Volumes, Timings

1: US 15-501 & Mt. Carmel Church Road/Culbreth Road

10/19/2017

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	89	26	41	18	27	281	28	809	11	243	863	94
Future Volume (vph)	89	26	41	18	27	281	28	809	11	243	863	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			-8%			-2%			2%	
Storage Length (ft)	0		75	0		350	125		75	550		250
Storage Lanes	1		1	0		2	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99		1.00	0.98	1.00					0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950				0.981		0.950			0.950		
Satd. Flow (prot)	1743	1835	1560	0	1882	2870	1736	3472	1553	1718	3436	1537
Flt Permitted	0.950				0.981		0.317			0.196		
Satd. Flow (perm)	1740	1835	1538	0	1881	2808	579	3472	1553	354	3436	1500
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		526			638			563			635	
Travel Time (s)		10.2			12.4			11.0			12.4	
Confl. Peds. (#/hr)	1		1	1		1	2					2
Peak Hour Factor	0.95	0.95	0.95	0.88	0.88	0.88	0.97	0.97	0.97	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	5%	5%	5%	4%	4%	4%
Adj. Flow (vph)	94	27	43	20	31	319	29	834	11	253	899	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	94	27	43	0	51	319	29	834	11	253	899	98
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	0.95	0.95	0.95	0.99	0.99	0.99	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Split	NA	Perm	Split	NA	pm+ov	Perm	NA	Perm	pm+pt	NA	pm+ov
Protected Phases	3	3		4	4	1		2		1	6	3
Permitted Phases			3			4	2		2	6		6
Detector Phase	3	3	3	4	4	1	2	2	2	1	6	3
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	12.0	12.0	12.0	7.0	12.0	7.0
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0	13.0	19.0	19.0	19.0	13.0	26.0	14.0
Total Split (s)	16.0	16.0	16.0	19.0	19.0	17.0	28.0	28.0	28.0	17.0	45.0	16.0
Total Split (%)	20.0%	20.0%	20.0%	23.8%	23.8%	21.3%	35.0%	35.0%	35.0%	21.3%	56.3%	20.0%
Maximum Green (s)	9.6	9.6	9.6	12.6	12.6	11.9	21.8	21.8	21.8	11.9	38.0	9.6
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.0	4.6	4.6	4.6	3.0	4.3	3.7
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.1	1.6	1.6	1.6	2.1	2.7	2.7
Lost Time Adjust (s)	-1.4	-1.4	-1.4		-1.4	-0.1	-1.2	-1.2	-1.2	-0.1	-2.0	-1.4
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead		Lag

Lanes, Volumes, Timings

1: US 15-501 & Mt. Carmel Church Road/Culbreth Road

10/19/2017

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	3.0	6.0	6.0	6.0	3.0	1.0	1.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	None	C-Max	None
Walk Time (s)											7.0	
Flash Dont Walk (s)											12.0	
Pedestrian Calls (#/hr)											0	
Act Effct Green (s)	9.9	9.9	9.9		8.6	17.9	36.8	36.8	36.8	54.5	55.5	62.7
Actuated g/C Ratio	0.12	0.12	0.12		0.11	0.22	0.46	0.46	0.46	0.68	0.69	0.78
v/c Ratio	0.44	0.12	0.23		0.25	0.50	0.11	0.52	0.02	0.55	0.38	0.08
Control Delay	38.5	31.4	33.8		36.0	20.6	27.4	23.1	26.9	13.0	8.4	2.4
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.5	31.4	33.8		36.0	20.6	27.4	23.1	26.9	13.0	8.4	2.4
LOS	D	C	C		D	C	C	C	C	B	A	A
Approach Delay		36.1			22.7			23.2			8.9	
Approach LOS		D			C			C			A	
Queue Length 50th (ft)	45	12	20		24	49	8	146	3	55	117	9
Queue Length 95th (ft)	86	34	47		54	57	44	#315	m17	117	188	20
Internal Link Dist (ft)		446			558			483			555	
Turn Bay Length (ft)			75			350	125		75	550		250
Base Capacity (vph)	247	261	218		329	656	266	1598	715	464	2383	1199
Starvation Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.10	0.20		0.16	0.49	0.11	0.52	0.02	0.55	0.38	0.08

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 11 (14%), Referenced to phase 2:NETL and 6:SWTL, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.55

Intersection Signal Delay: 17.2

Intersection LOS: B

Intersection Capacity Utilization 59.9%

ICU Level of Service B

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 1: US 15-501 & Mt. Carmel Church Road/Culbreth Road



Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	67	4	6	48	11	6	4	4	796	48	2	10
Future Volume (vph)	67	4	6	48	11	6	4	4	796	48	2	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-5%				-1%			
Storage Length (ft)	75		0	200		0		275		300		275
Storage Lanes	1		0	1		0		1		1		1
Taper Length (ft)	25			25				25				25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Ped Bike Factor	1.00	0.99		1.00	1.00					0.98		1.00
Frt		0.912			0.947					0.850		
Flt Protected	0.950			0.950				0.950				0.950
Satd. Flow (prot)	1744	1661	0	1814	1800	0	0	1728	3455	1546	0	1736
Flt Permitted	0.744			0.750				0.278				0.310
Satd. Flow (perm)	1365	1661	0	1431	1800	0	0	506	3455	1512	0	566
Right Turn on Red			No			No				No		
Satd. Flow (RTOR)												
Link Speed (mph)		25			25				45			
Link Distance (ft)		387			1318				2738			
Travel Time (s)		10.6			35.9				41.5			
Confl. Peds. (#/hr)	1		1	1		1				1		1
Peak Hour Factor	0.82	0.82	0.82	0.83	0.83	0.83	0.94	0.94	0.94	0.94	0.89	0.89
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	5%	5%	5%	5%	4%	4%
Adj. Flow (vph)	82	5	7	58	13	7	4	4	847	51	2	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	82	12	0	58	20	0	0	8	847	51	0	13
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	R NA	Left	Left	Right	R NA	Left
Median Width(ft)		12			12				12			
Link Offset(ft)		0			0				0			
Crosswalk Width(ft)		16			16				16			
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	0.97	0.97	0.97	0.99	0.99	0.99	0.99	1.00	1.00
Turning Speed (mph)	15		9	15		9	9	15		9	9	15
Turn Type	Perm	NA		Perm	NA		pm+pt	pm+pt	NA	Perm	pm+pt	pm+pt
Protected Phases		4			8		5	5	2		1	1
Permitted Phases	4			8			2	2		2	6	6
Detector Phase	4	4		8	8		5	5	2	2	1	1
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	7.0	14.0	14.0	7.0	7.0
Minimum Split (s)	37.0	37.0		15.0	15.0		14.0	14.0	21.0	21.0	13.0	13.0
Total Split (s)	37.0	37.0		37.0	37.0		14.0	14.0	29.0	29.0	14.0	14.0
Total Split (%)	46.3%	46.3%		46.3%	46.3%		17.5%	17.5%	36.3%	36.3%	17.5%	17.5%
Maximum Green (s)	30.4	30.4		29.9	29.9		7.4	7.4	22.4	22.4	8.1	8.1
Yellow Time (s)	3.2	3.2		3.8	3.8		3.0	3.0	4.6	4.6	3.0	3.0
All-Red Time (s)	3.4	3.4		3.3	3.3		3.6	3.6	2.0	2.0	2.9	2.9
Lost Time Adjust (s)	-1.6	-1.6		-2.1	-2.1			-1.6	-1.6	-1.6		-0.9
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0	5.0	5.0		5.0
Lead/Lag							Lead	Lead	Lag	Lag	Lead	Lead

Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017



Lane Group	SBT	SBR
Lane Configurations	↑↑	↑
Traffic Volume (vph)	806	71
Future Volume (vph)	806	71
Ideal Flow (vphpl)	1900	1900
Grade (%)	0%	
Storage Length (ft)		325
Storage Lanes		1
Taper Length (ft)		
Lane Util. Factor	0.95	1.00
Ped Bike Factor		
Frt		0.850
Flt Protected		
Satd. Flow (prot)	3471	1553
Flt Permitted		
Satd. Flow (perm)	3471	1553
Right Turn on Red		No
Satd. Flow (RTOR)		
Link Speed (mph)	45	
Link Distance (ft)	1759	
Travel Time (s)	26.7	
Confl. Peds. (#/hr)		
Peak Hour Factor	0.89	0.89
Heavy Vehicles (%)	4%	4%
Adj. Flow (vph)	906	80
Shared Lane Traffic (%)		
Lane Group Flow (vph)	906	80
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	16	
Two way Left Turn Lane		
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Turn Type	NA	Perm
Protected Phases	6	
Permitted Phases		6
Detector Phase	6	6
Switch Phase		
Minimum Initial (s)	14.0	14.0
Minimum Split (s)	25.0	25.0
Total Split (s)	29.0	29.0
Total Split (%)	36.3%	36.3%
Maximum Green (s)	22.4	22.4
Yellow Time (s)	4.6	4.6
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)	-1.6	-1.6
Total Lost Time (s)	5.0	5.0
Lead/Lag	Lag	Lag

Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	None	C-Max	C-Max	None	None
Walk Time (s)	4.0	4.0										
Flash Dont Walk (s)	26.0	26.0										
Pedestrian Calls (#/hr)	0	0										
Act Effct Green (s)	12.1	12.1		12.2	12.2			59.8	59.1	59.1		59.5
Actuated g/C Ratio	0.15	0.15		0.15	0.15			0.75	0.74	0.74		0.74
v/c Ratio	0.40	0.05		0.27	0.07			0.02	0.33	0.05		0.02
Control Delay	35.6	27.4		32.0	27.9			4.0	6.4	6.4		5.1
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0		0.0
Total Delay	35.6	27.4		32.0	27.9			4.0	6.4	6.4		5.1
LOS	D	C		C	C			A	A	A		A
Approach Delay		34.6			30.9				6.4			
Approach LOS		C			C				A			
Queue Length 50th (ft)	38	5		26	9			1	64	6		1
Queue Length 95th (ft)	67	17		52	24			5	183	29		m6
Internal Link Dist (ft)		307			1238				2658			
Turn Bay Length (ft)	75			200				275		300		275
Base Capacity (vph)	546	664		572	720			516	2551	1116		554
Starvation Cap Reductn	0	0		0	0			0	0	0		0
Spillback Cap Reductn	0	0		0	0			0	0	0		0
Storage Cap Reductn	0	0		0	0			0	0	0		0
Reduced v/c Ratio	0.15	0.02		0.10	0.03			0.02	0.33	0.05		0.02

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 18 (23%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.40

Intersection Signal Delay: 8.6

Intersection LOS: A

Intersection Capacity Utilization 41.5%

ICU Level of Service A

Analysis Period (min) 15

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

Splits and Phases: 3: US 15-501 & Arlen Park Drive/Bennett Road

 Ø1	 Ø2 (R)	 Ø4
14 s	29 s	37 s
 Ø5	 Ø6 (R)	 Ø8
14 s	29 s	37 s

Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017



Lane Group	SBT	SBR
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	3.0	3.0
Recall Mode	C-Max	C-Max
Walk Time (s)	7.0	7.0
Flash Dont Walk (s)	10.0	10.0
Pedestrian Calls (#/hr)	0	0
Act Effect Green (s)	58.9	58.9
Actuated g/C Ratio	0.74	0.74
v/c Ratio	0.35	0.07
Control Delay	6.3	6.9
Queue Delay	0.0	0.0
Total Delay	6.3	6.9
LOS	A	A
Approach Delay	6.3	
Approach LOS	A	
Queue Length 50th (ft)	65	9
Queue Length 95th (ft)	138	38
Internal Link Dist (ft)	1679	
Turn Bay Length (ft)		325
Base Capacity (vph)	2557	1144
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.35	0.07
Intersection Summary		

Lanes, Volumes, Timings

1: US 15-501 & Mt. Carmel Church Road/Culbreth Road

10/19/2017

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	127	85	50	20	57	401	49	886	22	555	1411	163
Future Volume (vph)	127	85	50	20	57	401	49	886	22	555	1411	163
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			-8%			-2%			2%	
Storage Length (ft)	0		75	0		350	125		75	550		250
Storage Lanes	1		1	0		2	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor												0.97
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950				0.987		0.950			0.950		
Satd. Flow (prot)	1743	1835	1560	0	1912	2898	1770	3540	1584	1752	3504	1567
Flt Permitted	0.950				0.987		0.097			0.198		
Satd. Flow (perm)	1743	1835	1560	0	1912	2898	181	3540	1584	365	3504	1525
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		526			630			563			635	
Travel Time (s)		10.2			12.3			11.0			12.4	
Confl. Peds. (#/hr)							2					2
Peak Hour Factor	0.81	0.81	0.81	0.90	0.90	0.90	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	2%	2%	2%
Adj. Flow (vph)	157	105	62	22	63	446	51	913	23	572	1455	168
Shared Lane Traffic (%)												
Lane Group Flow (vph)	157	105	62	0	85	446	51	913	23	572	1455	168
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	0.95	0.95	0.95	0.99	0.99	0.99	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Split	NA	Perm	Split	NA	pm+ov	Perm	NA	Perm	pm+pt	NA	pm+ov
Protected Phases	3	3		4	4	1		2		1	6	3
Permitted Phases			3			4	2		2	6		6
Detector Phase	3	3	3	4	4	1	2	2	2	1	6	3
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	12.0	12.0	12.0	7.0	12.0	7.0
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0	13.0	19.0	19.0	19.0	13.0	26.0	14.0
Total Split (s)	40.0	40.0	40.0	25.0	25.0	35.0	40.0	40.0	40.0	35.0	75.0	40.0
Total Split (%)	28.6%	28.6%	28.6%	17.9%	17.9%	25.0%	28.6%	28.6%	28.6%	25.0%	53.6%	28.6%
Maximum Green (s)	33.6	33.6	33.6	18.0	18.0	29.9	33.8	33.8	33.8	29.9	68.8	33.6
Yellow Time (s)	3.7	3.7	3.7	4.3	4.3	3.0	4.6	4.6	4.6	3.0	4.6	3.7
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.1	1.6	1.6	1.6	2.1	1.6	2.7
Lost Time Adjust (s)	-1.4	-1.4	-1.4		-2.0	-0.1	-1.2	-1.2	-1.2	-0.1	-1.2	-1.4
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lead	Lag		Lead

Lanes, Volumes, Timings

1: US 15-501 & Mt. Carmel Church Road/Culbreth Road

10/19/2017

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	3.0	6.0	6.0	6.0	3.0	6.0	1.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	None	C-Max	None
Walk Time (s)											7.0	
Flash Dont Walk (s)											12.0	
Pedestrian Calls (#/hr)											0	
Act Effct Green (s)	17.6	17.6	17.6		12.0	42.0	60.4	60.4	60.4	95.4	95.4	113.0
Actuated g/C Ratio	0.13	0.13	0.13		0.09	0.30	0.43	0.43	0.43	0.68	0.68	0.81
v/c Ratio	0.72	0.46	0.32		0.52	0.51	0.65	0.60	0.03	1.05	0.61	0.14
Control Delay	76.5	62.1	58.4		72.1	26.0	80.1	36.1	33.4	90.7	14.6	2.5
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.5	62.1	58.4		72.1	26.0	80.1	36.1	33.4	90.7	14.6	2.5
LOS	E	E	E		E	C	F	D	C	F	B	A
Approach Delay		68.4			33.4			38.3			33.5	
Approach LOS		E			C			D			C	
Queue Length 50th (ft)	140	90	52		76	134	31	274	11	~399	348	21
Queue Length 95th (ft)	184	128	85		130	147	#127	456	41	#689	525	41
Internal Link Dist (ft)		446			550			483			555	
Turn Bay Length (ft)			75			350	125		75	550		250
Base Capacity (vph)	435	458	390		273	869	78	1528	683	545	2388	1420
Starvation Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.23	0.16		0.31	0.51	0.65	0.60	0.03	1.05	0.61	0.12

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 100 (71%), Referenced to phase 2:NETL and 6:SWTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.05

Intersection Signal Delay: 37.4

Intersection LOS: D

Intersection Capacity Utilization 81.4%

ICU Level of Service D

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: US 15-501 & Mt. Carmel Church Road/Culbreth Road

 Ø2 (R)	 Ø1	 Ø3	 Ø4
40 s	35 s	40 s	25 s
 Ø6 (R)			
75 s			

Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	96	23	6	55	13	2	1	9	821	117	8	28
Future Volume (vph)	96	23	6	55	13	2	1	9	821	117	8	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-5%				-1%			
Storage Length (ft)	75		0	200		0		275		300		275
Storage Lanes	1		0	1		0		1		1		1
Taper Length (ft)	25			25				25				25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Ped Bike Factor	1.00				1.00							
Frt		0.969			0.983					0.850		
Flt Protected	0.950			0.950				0.950				0.950
Satd. Flow (prot)	1761	1796	0	1814	1874	0	0	1761	3522	1576	0	1770
Flt Permitted	0.746			0.738				0.171				0.292
Satd. Flow (perm)	1379	1796	0	1409	1874	0	0	317	3522	1576	0	544
Right Turn on Red			No			No				No		
Satd. Flow (RTOR)												
Link Speed (mph)		25			25				45			
Link Distance (ft)		387			1318				2738			
Travel Time (s)		10.6			35.9				41.5			
Confl. Peds. (#/hr)	2					2		1				
Peak Hour Factor	0.98	0.98	0.98	0.82	0.82	0.82	0.95	0.95	0.95	0.95	0.97	0.97
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	2%	2%
Adj. Flow (vph)	98	23	6	67	16	2	1	9	864	123	8	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	98	29	0	67	18	0	0	10	864	123	0	37
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	R NA	Left	Left	Right	R NA	Left
Median Width(ft)		12			12				12			
Link Offset(ft)		0			0				0			
Crosswalk Width(ft)		16			16				16			
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	0.97	0.97	0.97	0.99	0.99	0.99	0.99	1.00	1.00
Turning Speed (mph)	15		9	15		9	9	15		9	9	15
Turn Type	Perm	NA		Perm	NA		pm+pt	pm+pt	NA	Perm	pm+pt	pm+pt
Protected Phases		4			8		5	5	2		1	1
Permitted Phases	4			8			2	2		2	6	6
Detector Phase	4	4		8	8		5	5	2	2	1	1
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	7.0	14.0	14.0	7.0	7.0
Minimum Split (s)	37.0	37.0		15.0	15.0		14.0	14.0	21.0	21.0	13.0	13.0
Total Split (s)	40.0	40.0		40.0	40.0		25.0	25.0	75.0	75.0	25.0	25.0
Total Split (%)	28.6%	28.6%		28.6%	28.6%		17.9%	17.9%	53.6%	53.6%	17.9%	17.9%
Maximum Green (s)	33.4	33.4		32.9	32.9		18.4	18.4	68.4	68.4	19.1	19.1
Yellow Time (s)	3.2	3.2		3.8	3.8		3.0	3.0	4.6	4.6	3.0	3.0
All-Red Time (s)	3.4	3.4		3.3	3.3		3.6	3.6	2.0	2.0	2.9	2.9
Lost Time Adjust (s)	-1.6	-1.6		-2.1	-2.1			-1.6	-1.6	-1.6		-0.9
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0	5.0	5.0		5.0
Lead/Lag							Lead	Lead	Lag	Lag	Lead	Lead

Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017



Lane Group	SBT	SBR
Lane Configurations	↑↑	↑
Traffic Volume (vph)	1321	126
Future Volume (vph)	1321	126
Ideal Flow (vphpl)	1900	1900
Grade (%)	0%	
Storage Length (ft)		325
Storage Lanes		1
Taper Length (ft)		
Lane Util. Factor	0.95	1.00
Ped Bike Factor		0.98
Frt		0.850
Flt Protected		
Satd. Flow (prot)	3539	1583
Flt Permitted		
Satd. Flow (perm)	3539	1545
Right Turn on Red		No
Satd. Flow (RTOR)		
Link Speed (mph)	45	
Link Distance (ft)	1759	
Travel Time (s)	26.7	
Confl. Peds. (#/hr)		1
Peak Hour Factor	0.97	0.97
Heavy Vehicles (%)	2%	2%
Adj. Flow (vph)	1362	130
Shared Lane Traffic (%)		
Lane Group Flow (vph)	1362	130
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	16	
Two way Left Turn Lane		
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Turn Type	NA	Perm
Protected Phases	6	
Permitted Phases		6
Detector Phase	6	6
Switch Phase		
Minimum Initial (s)	14.0	14.0
Minimum Split (s)	25.0	25.0
Total Split (s)	75.0	75.0
Total Split (%)	53.6%	53.6%
Maximum Green (s)	68.4	68.4
Yellow Time (s)	4.6	4.6
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)	-1.6	-1.6
Total Lost Time (s)	5.0	5.0
Lead/Lag	Lag	Lag

Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	None	C-Max	C-Max	None	None
Walk Time (s)	4.0	4.0										
Flash Dont Walk (s)	26.0	26.0										
Pedestrian Calls (#/hr)	0	0										
Act Effect Green (s)	16.9	16.9		16.9	16.9		109.7	102.8	102.8			112.0
Actuated g/C Ratio	0.12	0.12		0.12	0.12		0.78	0.73	0.73			0.80
v/c Ratio	0.59	0.13		0.39	0.08		0.03	0.33	0.11			0.07
Control Delay	71.8	54.0		63.9	54.5		3.7	7.9	6.9			3.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0			0.0
Total Delay	71.8	54.0		63.9	54.5		3.7	7.9	6.9			3.1
LOS	E	D		E	D		A	A	A			A
Approach Delay		67.7			61.9				7.7			
Approach LOS		E			E				A			
Queue Length 50th (ft)	86	24		58	15		2	141	31			5
Queue Length 95th (ft)	142	53		m91	m33		6	205	62			m9
Internal Link Dist (ft)		307			1238				2658			
Turn Bay Length (ft)	75			200			275		300			275
Base Capacity (vph)	344	449		352	468		462	2585	1156			614
Starvation Cap Reductn	0	0		0	0		0	0	0			0
Spillback Cap Reductn	0	0		0	0		0	0	0			0
Storage Cap Reductn	0	0		0	0		0	0	0			0
Reduced v/c Ratio	0.28	0.06		0.19	0.04		0.02	0.33	0.11			0.06

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 114 (81%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 10.2

Intersection LOS: B

Intersection Capacity Utilization 56.8%

ICU Level of Service B

Analysis Period (min) 15

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

Splits and Phases: 3: US 15-501 & Arlen Park Drive/Bennett Road



Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017



Lane Group	SBT	SBR
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	3.0	3.0
Recall Mode	C-Max	C-Max
Walk Time (s)	7.0	7.0
Flash Dont Walk (s)	10.0	10.0
Pedestrian Calls (#/hr)	0	0
Act Effect Green (s)	110.4	110.4
Actuated g/C Ratio	0.79	0.79
v/c Ratio	0.49	0.11
Control Delay	4.3	3.7
Queue Delay	0.0	0.0
Total Delay	4.3	3.7
LOS	A	A
Approach Delay	4.3	
Approach LOS	A	
Queue Length 50th (ft)	120	18
Queue Length 95th (ft)	141	36
Internal Link Dist (ft)	1679	
Turn Bay Length (ft)		325
Base Capacity (vph)	2790	1218
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.49	0.11
Intersection Summary		

Lanes, Volumes, Timings

1: US 15-501 & Mt. Carmel Church Road/Culbreth Road

10/19/2017

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	238	87	69	19	115	635	60	1246	5	293	697	151
Future Volume (vph)	238	87	69	19	115	635	60	1246	5	293	697	151
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			-8%			-2%			2%	
Storage Length (ft)	0		75	0		350	125		75	550		250
Storage Lanes	1		1	0		2	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor							1.00					0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950				0.993		0.950			0.950		
Satd. Flow (prot)	1743	1835	1560	0	1924	2898	1770	3540	1584	1702	3404	1523
Flt Permitted	0.950				0.993		0.298			0.071		
Satd. Flow (perm)	1743	1835	1560	0	1924	2898	555	3540	1584	127	3404	1487
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		526			623			563			635	
Travel Time (s)		10.2			12.1			11.0			12.4	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.78	0.78	0.78	0.91	0.91	0.91	0.94	0.94	0.94	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	5%	5%	5%
Adj. Flow (vph)	305	112	88	21	126	698	64	1326	5	318	758	164
Shared Lane Traffic (%)												
Lane Group Flow (vph)	305	112	88	0	147	698	64	1326	5	318	758	164
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	0.95	0.95	0.95	0.99	0.99	0.99	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Split	NA	Perm	Split	NA	pm+ov	Perm	NA	Perm	pm+pt	NA	pm+ov
Protected Phases	3	3		4	4	1		2		1	6	3
Permitted Phases			3			4	2		2	6		6
Detector Phase	3	3	3	4	4	1	2	2	2	1	6	3
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	12.0	12.0	12.0	7.0	12.0	7.0
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0	13.0	19.0	19.0	19.0	13.0	26.0	14.0
Total Split (s)	28.0	28.0	28.0	18.0	18.0	28.0	56.0	56.0	56.0	28.0	84.0	28.0
Total Split (%)	21.5%	21.5%	21.5%	13.8%	13.8%	21.5%	43.1%	43.1%	43.1%	21.5%	64.6%	21.5%
Maximum Green (s)	21.6	21.6	21.6	11.0	11.0	22.9	49.8	49.8	49.8	22.9	77.8	21.6
Yellow Time (s)	3.7	3.7	3.7	4.3	4.3	3.0	4.6	4.6	4.6	3.0	4.6	3.7
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.1	1.6	1.6	1.6	2.1	1.6	2.7
Lost Time Adjust (s)	-1.4	-1.4	-1.4		-2.0	-0.1	-1.2	-1.2	-1.2	-0.1	-1.2	-1.4
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lead	Lag		Lead

Lanes, Volumes, Timings

1: US 15-501 & Mt. Carmel Church Road/Culbreth Road

10/19/2017

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	3.0	6.0	6.0	6.0	3.0	6.0	1.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	None	C-Max	None
Walk Time (s)											7.0	
Flash Dont Walk (s)											12.0	
Pedestrian Calls (#/hr)											0	
Act Effect Green (s)	23.0	23.0	23.0		12.5	35.5	51.5	51.5	51.5	79.5	79.5	102.5
Actuated g/C Ratio	0.18	0.18	0.18		0.10	0.27	0.40	0.40	0.40	0.61	0.61	0.79
v/c Ratio	0.99	0.35	0.32		0.80	0.88	0.29	0.95	0.01	0.89	0.36	0.14
Control Delay	102.2	50.4	50.4		86.8	39.1	23.3	43.3	19.0	73.1	13.3	2.6
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	102.2	50.4	50.4		86.8	39.1	23.3	43.3	19.0	73.1	13.3	2.6
LOS	F	D	D		F	D	C	D	B	E	B	A
Approach Delay		81.7			47.4			42.3			27.2	
Approach LOS		F			D			D			C	
Queue Length 50th (ft)	259	84	65		123	199	26	574	2	214	160	22
Queue Length 95th (ft)	#353	122	101		#229	#281	39	#703	m3	#385	200	35
Internal Link Dist (ft)		446			543			483			555	
Turn Bay Length (ft)			75			350	125		75	550		250
Base Capacity (vph)	308	324	276		192	790	219	1402	627	356	2082	1179
Starvation Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.99	0.35	0.32		0.77	0.88	0.29	0.95	0.01	0.89	0.36	0.14

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 91 (70%), Referenced to phase 2:NETL and 6:SWTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.99

Intersection Signal Delay: 43.7

Intersection LOS: D

Intersection Capacity Utilization 83.0%

ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

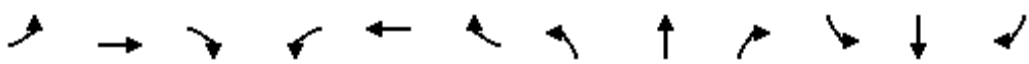
Splits and Phases: 1: US 15-501 & Mt. Carmel Church Road/Culbreth Road

 Ø2 (R)	 Ø1	 Ø3	 Ø4
56 s	28 s	28 s	18 s
 Ø6 (R)			
84 s			

Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	93	39	5	100	17	12	6	1248	106	17	686	78
Future Volume (vph)	93	39	5	100	17	12	6	1248	106	17	686	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-5%			-1%			0%	
Storage Length (ft)	75		0	200		0	275		300	275		325
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00	1.00		1.00	0.99		1.00		0.98			0.98
Frt		0.984			0.937				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1761	1821	0	1814	1779	0	1778	3557	1591	1736	3471	1553
Flt Permitted	0.734			0.721			0.315			0.163		
Satd. Flow (perm)	1359	1821	0	1375	1779	0	589	3557	1555	298	3471	1516
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		387			1318			2738			1759	
Travel Time (s)		10.6			35.9			41.5			26.7	
Confl. Peds. (#/hr)	1		1	1		1	1		3	3		1
Peak Hour Factor	0.79	0.79	0.79	0.80	0.80	0.80	0.90	0.90	0.90	0.89	0.89	0.89
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	4%	4%	4%
Adj. Flow (vph)	118	49	6	125	21	15	7	1387	118	19	771	88
Shared Lane Traffic (%)												
Lane Group Flow (vph)	118	55	0	125	36	0	7	1387	118	19	771	88
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	0.97	0.97	0.97	0.99	0.99	0.99	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	14.0	14.0	7.0	14.0	14.0
Minimum Split (s)	37.0	37.0		15.0	15.0		14.0	21.0	21.0	13.0	25.0	25.0
Total Split (s)	39.0	39.0		39.0	39.0		14.0	78.0	78.0	13.0	77.0	77.0
Total Split (%)	30.0%	30.0%		30.0%	30.0%		10.8%	60.0%	60.0%	10.0%	59.2%	59.2%
Maximum Green (s)	32.4	32.4		31.9	31.9		7.4	71.4	71.4	7.1	70.4	70.4
Yellow Time (s)	3.2	3.2		3.8	3.8		3.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	3.4	3.4		3.3	3.3		3.6	2.0	2.0	2.9	2.0	2.0
Lost Time Adjust (s)	-1.6	-1.6		-2.1	-2.1		-1.6	-1.6	-1.6	-0.9	-1.6	-1.6
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag							Lead	Lead	Lead	Lag	Lag	Lag

Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)	4.0	4.0									7.0	7.0
Flash Dont Walk (s)	26.0	26.0									10.0	10.0
Pedestrian Calls (#/hr)	0	0									0	0
Act Effect Green (s)	19.3	19.3		19.3	19.3		95.5	95.5	95.5	98.0	98.0	98.0
Actuated g/C Ratio	0.15	0.15		0.15	0.15		0.73	0.73	0.73	0.75	0.75	0.75
v/c Ratio	0.59	0.20		0.62	0.14		0.01	0.53	0.10	0.06	0.29	0.08
Control Delay	62.6	48.3		64.9	48.0		8.2	10.1	7.1	6.8	5.4	5.3
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.6	48.3		64.9	48.0		8.2	10.1	7.1	6.8	5.4	5.3
LOS	E	D		E	D		A	B	A	A	A	A
Approach Delay		58.1			61.1			9.8			5.4	
Approach LOS		E			E			A			A	
Queue Length 50th (ft)	94	41		101	28		1	193	21	3	71	13
Queue Length 95th (ft)	129	67		m138	m48		8	428	66	m14	146	m44
Internal Link Dist (ft)		307			1238			2658			1679	
Turn Bay Length (ft)	75			200			275		300	275		325
Base Capacity (vph)	355	476		359	465		515	2614	1142	313	2617	1143
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.12		0.35	0.08		0.01	0.53	0.10	0.06	0.29	0.08

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 84 (65%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.62

Intersection Signal Delay: 14.5

Intersection LOS: B

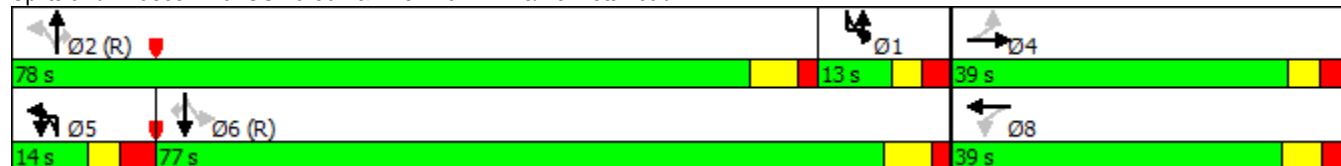
Intersection Capacity Utilization 55.1%

ICU Level of Service B

Analysis Period (min) 15

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

Splits and Phases: 3: US 15-501 & Arlen Park Drive/Bennett Road



Lanes, Volumes, Timings

1: US 15-501 & Mt. Carmel Church Road/Culbreth Road

10/19/2017

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	89	26	41	18	27	281	28	809	11	243	863	94
Future Volume (vph)	89	26	41	18	27	281	28	809	11	243	863	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			-8%			-2%			2%	
Storage Length (ft)	0		75	0		350	125		75	550		250
Storage Lanes	1		1	0		2	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99		1.00	0.98	1.00					0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950				0.981		0.950			0.950		
Satd. Flow (prot)	1743	1835	1560	0	1882	2870	1736	3472	1553	1718	3436	1537
Flt Permitted	0.950				0.981		0.272			0.254		
Satd. Flow (perm)	1739	1835	1537	0	1880	2807	497	3472	1553	459	3436	1499
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		526			638			563			635	
Travel Time (s)		10.2			12.4			11.0			12.4	
Confl. Peds. (#/hr)	1		1	1		1	2					2
Peak Hour Factor	0.95	0.95	0.95	0.88	0.88	0.88	0.97	0.97	0.97	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	5%	5%	5%	4%	4%	4%
Adj. Flow (vph)	94	27	43	20	31	319	29	834	11	253	899	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	94	27	43	0	51	319	29	834	11	253	899	98
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	0.95	0.95	0.95	0.99	0.99	0.99	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Split	NA	Perm	Split	NA	pm+ov	Perm	NA	Perm	pm+pt	NA	pm+ov
Protected Phases	3	3		4	4	1		2		1	6	3
Permitted Phases			3			4	2		2	6		6
Detector Phase	3	3	3	4	4	1	2	2	2	1	6	3
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	12.0	12.0	12.0	7.0	12.0	7.0
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0	13.0	19.0	19.0	19.0	13.0	26.0	14.0
Total Split (s)	15.0	15.0	15.0	14.0	14.0	20.0	41.0	41.0	41.0	20.0	61.0	15.0
Total Split (%)	16.7%	16.7%	16.7%	15.6%	15.6%	22.2%	45.6%	45.6%	45.6%	22.2%	67.8%	16.7%
Maximum Green (s)	8.6	8.6	8.6	7.6	7.6	14.9	34.8	34.8	34.8	14.9	54.0	8.6
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.0	4.6	4.6	4.6	3.0	4.3	3.7
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.1	1.6	1.6	1.6	2.1	2.7	2.7
Lost Time Adjust (s)	-1.4	-1.4	-1.4		-1.4	-0.1	-1.2	-1.2	-1.2	-0.1	-2.0	-1.4
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lead	Lag		Lead

Lanes, Volumes, Timings

1: US 15-501 & Mt. Carmel Church Road/Culbreth Road

10/19/2017

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	3.0	6.0	6.0	6.0	3.0	1.0	1.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	None	C-Max	None
Walk Time (s)											7.0	
Flash Dont Walk (s)											12.0	
Pedestrian Calls (#/hr)											0	
Act Effect Green (s)	9.3	9.3	9.3		8.5	20.2	42.5	42.5	42.5	62.5	62.5	71.8
Actuated g/C Ratio	0.10	0.10	0.10		0.09	0.22	0.47	0.47	0.47	0.69	0.69	0.80
v/c Ratio	0.53	0.14	0.27		0.29	0.50	0.12	0.51	0.01	0.48	0.38	0.08
Control Delay	49.1	38.3	41.6		42.4	24.0	13.2	16.0	11.5	17.1	7.3	2.1
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.1	38.3	41.6		42.4	24.0	13.2	16.0	11.5	17.1	7.3	2.1
LOS	D	D	D		D	C	B	B	B	B	A	A
Approach Delay		45.4			26.5			15.8			8.8	
Approach LOS		D			C			B			A	
Queue Length 50th (ft)	51	14	23		28	57	11	198	4	56	120	9
Queue Length 95th (ft)	101	39	55		61	82	11	154	m5	94	163	19
Internal Link Dist (ft)		446			558			483			555	
Turn Bay Length (ft)			75			350	125		75	550		250
Base Capacity (vph)	193	203	170		188	639	234	1640	734	528	2387	1212
Starvation Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.13	0.25		0.27	0.50	0.12	0.51	0.01	0.48	0.38	0.08

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 32 (36%), Referenced to phase 2:NETL and 6:SWTL, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.53

Intersection Signal Delay: 15.9

Intersection LOS: B

Intersection Capacity Utilization 59.9%

ICU Level of Service B

Analysis Period (min) 15

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

Splits and Phases: 1: US 15-501 & Mt. Carmel Church Road/Culbreth Road

							
Ø2 (R)	Ø1	Ø3	Ø4				
41 s	20 s	15 s	14 s				
Ø6 (R)							
61 s							

Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	67	4	6	48	11	6	4	4	796	48	2	10
Future Volume (vph)	67	4	6	48	11	6	4	4	796	48	2	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-5%				-1%			
Storage Length (ft)	75		0	200		0		275		300		275
Storage Lanes	1		0	1		0		1		1		1
Taper Length (ft)	25			25				25				25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Ped Bike Factor	1.00	0.99		1.00	1.00					0.98		
Frt		0.912			0.947					0.850		
Flt Protected	0.950			0.950				0.950				0.950
Satd. Flow (prot)	1744	1661	0	1814	1800	0	0	1728	3455	1546	0	1736
Flt Permitted	0.744			0.750				0.315				0.279
Satd. Flow (perm)	1364	1661	0	1431	1800	0	0	573	3455	1513	0	510
Right Turn on Red			No			No				No		
Satd. Flow (RTOR)												
Link Speed (mph)		25			25				45			
Link Distance (ft)		387			1318				2738			
Travel Time (s)		10.6			35.9				41.5			
Confl. Peds. (#/hr)	1		1	1		1				1		1
Peak Hour Factor	0.82	0.82	0.82	0.83	0.83	0.83	0.94	0.94	0.94	0.94	0.89	0.89
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	5%	5%	5%	5%	4%	4%
Adj. Flow (vph)	82	5	7	58	13	7	4	4	847	51	2	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	82	12	0	58	20	0	0	8	847	51	0	13
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	R NA	Left	Left	Right	R NA	Left
Median Width(ft)		12			12				12			
Link Offset(ft)		0			0				0			
Crosswalk Width(ft)		16			16				16			
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	0.97	0.97	0.97	0.99	0.99	0.99	0.99	1.00	1.00
Turning Speed (mph)	15		9	15		9	9	15		9	9	15
Turn Type	Perm	NA		Perm	NA		pm+pt	pm+pt	NA	Perm	pm+pt	pm+pt
Protected Phases		4			8		5	5	2		1	1
Permitted Phases	4			8			2	2		2	6	6
Detector Phase	4	4		8	8		5	5	2	2	1	1
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	7.0	14.0	14.0	7.0	7.0
Minimum Split (s)	37.0	37.0		15.0	15.0		14.0	14.0	21.0	21.0	13.0	13.0
Total Split (s)	37.0	37.0		37.0	37.0		14.0	14.0	40.0	40.0	13.0	13.0
Total Split (%)	41.1%	41.1%		41.1%	41.1%		15.6%	15.6%	44.4%	44.4%	14.4%	14.4%
Maximum Green (s)	30.4	30.4		29.9	29.9		7.4	7.4	33.4	33.4	7.1	7.1
Yellow Time (s)	3.2	3.2		3.8	3.8		3.0	3.0	4.6	4.6	3.0	3.0
All-Red Time (s)	3.4	3.4		3.3	3.3		3.6	3.6	2.0	2.0	2.9	2.9
Lost Time Adjust (s)	-1.6	-1.6		-2.1	-2.1			-1.6	-1.6	-1.6		-0.9
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0	5.0	5.0		5.0
Lead/Lag							Lag	Lag	Lag	Lag	Lead	Lead

Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017



Lane Group	SBT	SBR
Lane Configurations	↑↑	↑
Traffic Volume (vph)	806	71
Future Volume (vph)	806	71
Ideal Flow (vphpl)	1900	1900
Grade (%)	0%	
Storage Length (ft)		325
Storage Lanes		1
Taper Length (ft)		
Lane Util. Factor	0.95	1.00
Ped Bike Factor		
Frt		0.850
Flt Protected		
Satd. Flow (prot)	3471	1553
Flt Permitted		
Satd. Flow (perm)	3471	1553
Right Turn on Red		No
Satd. Flow (RTOR)		
Link Speed (mph)	45	
Link Distance (ft)	1759	
Travel Time (s)	26.7	
Confl. Peds. (#/hr)		
Peak Hour Factor	0.89	0.89
Heavy Vehicles (%)	4%	4%
Adj. Flow (vph)	906	80
Shared Lane Traffic (%)		
Lane Group Flow (vph)	906	80
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	16	
Two way Left Turn Lane		
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Turn Type	NA	Perm
Protected Phases	6	
Permitted Phases		6
Detector Phase	6	6
Switch Phase		
Minimum Initial (s)	14.0	14.0
Minimum Split (s)	25.0	25.0
Total Split (s)	39.0	39.0
Total Split (%)	43.3%	43.3%
Maximum Green (s)	32.4	32.4
Yellow Time (s)	4.6	4.6
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)	-1.6	-1.6
Total Lost Time (s)	5.0	5.0
Lead/Lag	Lead	Lead

Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	None	C-Max	C-Max	None	None
Walk Time (s)	4.0	4.0										
Flash Dont Walk (s)	26.0	26.0										
Pedestrian Calls (#/hr)	0	0										
Act Effect Green (s)	12.6	12.6		12.7	12.7			68.6	68.6	68.6		67.3
Actuated g/C Ratio	0.14	0.14		0.14	0.14			0.76	0.76	0.76		0.75
v/c Ratio	0.43	0.05		0.29	0.08			0.01	0.32	0.04		0.03
Control Delay	41.6	31.8		37.1	32.4			6.8	5.9	5.9		2.3
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0		0.0
Total Delay	41.6	31.8		37.1	32.4			6.8	5.9	5.9		2.3
LOS	D	C		D	C			A	A	A		A
Approach Delay		40.3			35.9				5.9			
Approach LOS		D			D				A			
Queue Length 50th (ft)	43	6		30	10			1	67	6		0
Queue Length 95th (ft)	75	19		58	27			8	184	29		m3
Internal Link Dist (ft)		307			1238				2658			
Turn Bay Length (ft)	75			200				275		300		275
Base Capacity (vph)	484	590		508	640			545	2632	1152		490
Starvation Cap Reductn	0	0		0	0			0	0	0		0
Spillback Cap Reductn	0	0		0	0			0	0	0		0
Storage Cap Reductn	0	0		0	0			0	0	0		0
Reduced v/c Ratio	0.17	0.02		0.11	0.03			0.01	0.32	0.04		0.03

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 8 (9%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.43

Intersection Signal Delay: 7.2

Intersection LOS: A

Intersection Capacity Utilization 41.5%

ICU Level of Service A

Analysis Period (min) 15

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

Splits and Phases: 3: US 15-501 & Arlen Park Drive/Bennett Road

 Ø1	 Ø2 (R)	 Ø4
13 s	40 s	37 s
 Ø6 (R)	 Ø5	 Ø8
39 s	14 s	37 s

Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017



Lane Group	SBT	SBR
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	3.0	3.0
Recall Mode	C-Max	C-Max
Walk Time (s)	7.0	7.0
Flash Dont Walk (s)	10.0	10.0
Pedestrian Calls (#/hr)	0	0
Act Effect Green (s)	68.3	68.3
Actuated g/C Ratio	0.76	0.76
v/c Ratio	0.34	0.07
Control Delay	3.1	2.2
Queue Delay	0.0	0.0
Total Delay	3.1	2.2
LOS	A	A
Approach Delay	3.0	
Approach LOS	A	
Queue Length 50th (ft)	8	1
Queue Length 95th (ft)	78	12
Internal Link Dist (ft)	1679	
Turn Bay Length (ft)		325
Base Capacity (vph)	2635	1179
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.34	0.07
Intersection Summary		

Lanes, Volumes, Timings

1: US 15-501 & Mt. Carmel Church Road/Culbreth Road

10/19/2017

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	127	85	50	20	57	401	49	886	22	555	1411	163
Future Volume (vph)	127	85	50	20	57	401	49	886	22	555	1411	163
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			-8%			-2%			2%	
Storage Length (ft)	0		75	0		350	125		75	550		250
Storage Lanes	1		1	0		2	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor							1.00					0.97
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950				0.987		0.950			0.950		
Satd. Flow (prot)	1743	1835	1560	0	1912	2898	1770	3540	1584	1752	3504	1567
Flt Permitted	0.950				0.987		0.181			0.165		
Satd. Flow (perm)	1743	1835	1560	0	1912	2898	337	3540	1584	304	3504	1525
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		526			630			563			635	
Travel Time (s)		10.2			12.3			11.0			12.4	
Confl. Peds. (#/hr)							2					2
Peak Hour Factor	0.81	0.81	0.81	0.90	0.90	0.90	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	2%	2%	2%
Adj. Flow (vph)	157	105	62	22	63	446	51	913	23	572	1455	168
Shared Lane Traffic (%)												
Lane Group Flow (vph)	157	105	62	0	85	446	51	913	23	572	1455	168
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	0.95	0.95	0.95	0.99	0.99	0.99	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Split	NA	Perm	Split	NA	pm+ov	Perm	NA	Perm	pm+pt	NA	pm+ov
Protected Phases	3	3		4	4	1		2		1	6	3
Permitted Phases			3			4	2		2	6		6
Detector Phase	3	3	3	4	4	1	2	2	2	1	6	3
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	12.0	12.0	12.0	7.0	12.0	7.0
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0	13.0	19.0	19.0	19.0	13.0	26.0	14.0
Total Split (s)	21.0	21.0	21.0	14.0	14.0	44.0	61.0	61.0	61.0	44.0	105.0	21.0
Total Split (%)	15.0%	15.0%	15.0%	10.0%	10.0%	31.4%	43.6%	43.6%	43.6%	31.4%	75.0%	15.0%
Maximum Green (s)	14.6	14.6	14.6	7.0	7.0	38.9	54.8	54.8	54.8	38.9	98.8	14.6
Yellow Time (s)	3.7	3.7	3.7	4.3	4.3	3.0	4.6	4.6	4.6	3.0	4.6	3.7
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.1	1.6	1.6	1.6	2.1	1.6	2.7
Lost Time Adjust (s)	-1.4	-1.4	-1.4		-2.0	-0.1	-1.2	-1.2	-1.2	-0.1	-1.2	-1.4
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead		Lag

Lanes, Volumes, Timings

1: US 15-501 & Mt. Carmel Church Road/Culbreth Road

10/19/2017

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	3.0	6.0	6.0	6.0	3.0	6.0	1.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	None	C-Max	None
Walk Time (s)											7.0	
Flash Dont Walk (s)											12.0	
Pedestrian Calls (#/hr)											0	
Act Effect Green (s)	15.0	15.0	15.0		9.0	46.3	58.6	58.6	58.6	101.0	101.0	116.0
Actuated g/C Ratio	0.11	0.11	0.11		0.06	0.33	0.42	0.42	0.42	0.72	0.72	0.83
v/c Ratio	0.84	0.53	0.37		0.70	0.47	0.36	0.62	0.03	0.95	0.58	0.13
Control Delay	95.4	69.3	64.4		92.4	28.1	31.5	26.9	21.9	54.2	10.6	1.8
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	95.4	69.3	64.4		92.4	28.1	31.5	26.9	21.9	54.2	10.6	1.8
LOS	F	E	E		F	C	C	C	C	D	B	A
Approach Delay		81.0			38.4			27.0			21.3	
Approach LOS		F			D			C			C	
Queue Length 50th (ft)	141	91	53		77	125	24	232	9	369	310	17
Queue Length 95th (ft)	#212	138	91		#160	164	49	266	22	#600	364	27
Internal Link Dist (ft)		446			550			483			555	
Turn Bay Length (ft)			75			350	125		75	550		250
Base Capacity (vph)	199	209	178		122	995	140	1483	663	623	2526	1278
Starvation Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.79	0.50	0.35		0.70	0.45	0.36	0.62	0.03	0.92	0.58	0.13

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 111 (79%), Referenced to phase 2:NETL and 6:SWTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.95

Intersection Signal Delay: 29.7

Intersection LOS: C

Intersection Capacity Utilization 81.4%

ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: US 15-501 & Mt. Carmel Church Road/Culbreth Road

			
Ø1	Ø2 (R)	Ø4	Ø3
44 s	61 s	14 s	21 s
			
Ø5 (R)			
105 s			

Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	96	23	6	55	13	2	1	9	821	117	8	28
Future Volume (vph)	96	23	6	55	13	2	1	9	821	117	8	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-5%				-1%			
Storage Length (ft)	75		0	200		0		275		300		275
Storage Lanes	1		0	1		0		1		1		1
Taper Length (ft)	25			25				25				25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Ped Bike Factor	1.00				1.00							
Frt		0.969			0.983					0.850		
Flt Protected	0.950			0.950				0.950				0.950
Satd. Flow (prot)	1761	1796	0	1814	1874	0	0	1761	3522	1576	0	1770
Flt Permitted	0.746			0.738				0.162				0.298
Satd. Flow (perm)	1379	1796	0	1409	1874	0	0	300	3522	1576	0	555
Right Turn on Red			No			No				No		
Satd. Flow (RTOR)												
Link Speed (mph)		25			25				45			
Link Distance (ft)		387			1318				2738			
Travel Time (s)		10.6			35.9				41.5			
Confl. Peds. (#/hr)	2					2		1				
Peak Hour Factor	0.98	0.98	0.98	0.82	0.82	0.82	0.95	0.95	0.95	0.95	0.97	0.97
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	2%	2%
Adj. Flow (vph)	98	23	6	67	16	2	1	9	864	123	8	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	98	29	0	67	18	0	0	10	864	123	0	37
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	R NA	Left	Left	Right	R NA	Left
Median Width(ft)		12			12				12			
Link Offset(ft)		0			0				0			
Crosswalk Width(ft)		16			16				16			
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	0.97	0.97	0.97	0.99	0.99	0.99	0.99	1.00	1.00
Turning Speed (mph)	15		9	15		9	9	15		9	9	15
Turn Type	Perm	NA		Perm	NA		pm+pt	pm+pt	NA	Perm	pm+pt	pm+pt
Protected Phases		4			8		5	5	2		1	1
Permitted Phases	4			8			2	2		2	6	6
Detector Phase	4	4		8	8		5	5	2	2	1	1
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	7.0	14.0	14.0	7.0	7.0
Minimum Split (s)	37.0	37.0		15.0	15.0		14.0	14.0	21.0	21.0	13.0	13.0
Total Split (s)	40.0	40.0		40.0	40.0		14.0	14.0	87.0	87.0	13.0	13.0
Total Split (%)	28.6%	28.6%		28.6%	28.6%		10.0%	10.0%	62.1%	62.1%	9.3%	9.3%
Maximum Green (s)	33.4	33.4		32.9	32.9		7.4	7.4	80.4	80.4	7.1	7.1
Yellow Time (s)	3.2	3.2		3.8	3.8		3.0	3.0	4.6	4.6	3.0	3.0
All-Red Time (s)	3.4	3.4		3.3	3.3		3.6	3.6	2.0	2.0	2.9	2.9
Lost Time Adjust (s)	-1.6	-1.6		-2.1	-2.1			-1.6	-1.6	-1.6		-0.9
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0	5.0	5.0		5.0
Lead/Lag							Lag	Lag	Lead	Lead	Lag	Lag

Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017



Lane Group	SBT	SBR
Lane Configurations	↑↑	↑
Traffic Volume (vph)	1321	126
Future Volume (vph)	1321	126
Ideal Flow (vphpl)	1900	1900
Grade (%)	0%	
Storage Length (ft)		325
Storage Lanes		1
Taper Length (ft)		
Lane Util. Factor	0.95	1.00
Ped Bike Factor		0.98
Frt		0.850
Flt Protected		
Satd. Flow (prot)	3539	1583
Flt Permitted		
Satd. Flow (perm)	3539	1545
Right Turn on Red		No
Satd. Flow (RTOR)		
Link Speed (mph)	45	
Link Distance (ft)	1759	
Travel Time (s)	26.7	
Confl. Peds. (#/hr)		1
Peak Hour Factor	0.97	0.97
Heavy Vehicles (%)	2%	2%
Adj. Flow (vph)	1362	130
Shared Lane Traffic (%)		
Lane Group Flow (vph)	1362	130
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	16	
Two way Left Turn Lane		
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Turn Type	NA	Perm
Protected Phases	6	
Permitted Phases		6
Detector Phase	6	6
Switch Phase		
Minimum Initial (s)	14.0	14.0
Minimum Split (s)	25.0	25.0
Total Split (s)	86.0	86.0
Total Split (%)	61.4%	61.4%
Maximum Green (s)	79.4	79.4
Yellow Time (s)	4.6	4.6
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)	-1.6	-1.6
Total Lost Time (s)	5.0	5.0
Lead/Lag	Lead	Lead

Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	None	C-Max	C-Max	None	None
Walk Time (s)	4.0	4.0										
Flash Dont Walk (s)	26.0	26.0										
Pedestrian Calls (#/hr)	0	0										
Act Effect Green (s)	16.9	16.9		16.9	16.9			111.4	102.8	102.8		113.5
Actuated g/C Ratio	0.12	0.12		0.12	0.12			0.80	0.73	0.73		0.81
v/c Ratio	0.59	0.13		0.39	0.08			0.03	0.33	0.11		0.07
Control Delay	71.8	54.0		62.1	53.2			4.0	7.9	6.9		0.9
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0		0.0
Total Delay	71.8	54.0		62.1	53.2			4.0	7.9	6.9		0.9
LOS	E	D		E	D			A	A	A		A
Approach Delay		67.7			60.3				7.7			
Approach LOS		E			E				A			
Queue Length 50th (ft)	86	24		58	15			2	141	31		1
Queue Length 95th (ft)	142	53		m92	m33			6	205	62		m3
Internal Link Dist (ft)		307			1238				2658			
Turn Bay Length (ft)	75			200				275		300		275
Base Capacity (vph)	344	449		352	468			333	2585	1156		519
Starvation Cap Reductn	0	0		0	0			0	0	0		0
Spillback Cap Reductn	0	0		0	0			0	0	0		0
Storage Cap Reductn	0	0		0	0			0	0	0		0
Reduced v/c Ratio	0.28	0.06		0.19	0.04			0.03	0.33	0.11		0.07

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 108 (77%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 9.1

Intersection LOS: A

Intersection Capacity Utilization 56.8%

ICU Level of Service B

Analysis Period (min) 15

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

Splits and Phases: 3: US 15-501 & Arlen Park Drive/Bennett Road

					
Ø2 (R)			Ø1		Ø4
87 s			13 s		40 s
					
Ø6 (R)			Ø5		Ø8
86 s			14 s		40 s

Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017



Lane Group	SBT	SBR
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	3.0	3.0
Recall Mode	C-Max	C-Max
Walk Time (s)	7.0	7.0
Flash Dont Walk (s)	10.0	10.0
Pedestrian Calls (#/hr)	0	0
Act Effect Green (s)	110.3	110.3
Actuated g/C Ratio	0.79	0.79
v/c Ratio	0.49	0.11
Control Delay	2.4	2.0
Queue Delay	0.0	0.0
Total Delay	2.4	2.0
LOS	A	A
Approach Delay	2.4	
Approach LOS	A	
Queue Length 50th (ft)	36	5
Queue Length 95th (ft)	110	m28
Internal Link Dist (ft)	1679	
Turn Bay Length (ft)		325
Base Capacity (vph)	2788	1217
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.49	0.11
Intersection Summary		

Lanes, Volumes, Timings

1: US 15-501 & Mt. Carmel Church Road/Culbreth Road

10/19/2017

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	246	90	99	20	119	657	80	1531	5	303	1129	156
Future Volume (vph)	246	90	99	20	119	657	80	1531	5	303	1129	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			-8%			-2%			2%	
Storage Length (ft)	0		75	0		350	125		75	550		250
Storage Lanes	1		1	0		2	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor												0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950				0.993		0.950			0.950		
Satd. Flow (prot)	1743	1835	1560	0	1924	2898	1770	3540	1584	1702	3404	1523
Flt Permitted	0.950				0.993		0.146			0.055		
Satd. Flow (perm)	1743	1835	1560	0	1924	2898	272	3540	1584	99	3404	1486
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		526			623			563			635	
Travel Time (s)		10.2			12.1			11.0			12.4	
Confl. Peds. (#/hr)							1					1
Peak Hour Factor	0.78	0.78	0.78	0.91	0.91	0.91	0.94	0.94	0.94	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	5%	5%	5%
Adj. Flow (vph)	315	115	127	22	131	722	85	1629	5	329	1227	170
Shared Lane Traffic (%)												
Lane Group Flow (vph)	315	115	127	0	153	722	85	1629	5	329	1227	170
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	0.95	0.95	0.95	0.99	0.99	0.99	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Split	NA	Perm	Split	NA	pm+ov	Perm	NA	Perm	pm+pt	NA	pm+ov
Protected Phases	3	3		4	4	1		2		1	6	3
Permitted Phases			3			4	2		2	6		6
Detector Phase	3	3	3	4	4	1	2	2	2	1	6	3
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	12.0	12.0	12.0	7.0	12.0	7.0
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0	13.0	19.0	19.0	19.0	13.0	26.0	14.0
Total Split (s)	29.0	29.0	29.0	19.0	19.0	29.0	73.0	73.0	73.0	29.0	102.0	29.0
Total Split (%)	19.3%	19.3%	19.3%	12.7%	12.7%	19.3%	48.7%	48.7%	48.7%	19.3%	68.0%	19.3%
Maximum Green (s)	22.6	22.6	22.6	12.0	12.0	23.9	66.8	66.8	66.8	23.9	95.8	22.6
Yellow Time (s)	3.7	3.7	3.7	4.3	4.3	3.0	4.6	4.6	4.6	3.0	4.6	3.7
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.1	1.6	1.6	1.6	2.1	1.6	2.7
Lost Time Adjust (s)	-1.4	-1.4	-1.4		-2.0	-0.1	-1.2	-1.2	-1.2	-0.1	-1.2	-1.4
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lead	Lag		Lead

Lanes, Volumes, Timings

1: US 15-501 & Mt. Carmel Church Road/Culbreth Road

10/19/2017

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	3.0	6.0	6.0	6.0	3.0	6.0	1.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	None	C-Max	None
Walk Time (s)											7.0	
Flash Dont Walk (s)											12.0	
Pedestrian Calls (#/hr)											0	
Act Effect Green (s)	24.0	24.0	24.0		13.8	37.8	68.2	68.2	68.2	97.2	97.2	121.2
Actuated g/C Ratio	0.16	0.16	0.16		0.09	0.25	0.45	0.45	0.45	0.65	0.65	0.81
v/c Ratio	1.13	0.39	0.51		0.87	0.99	0.69	1.01	0.01	1.03	0.56	0.14
Control Delay	149.5	61.0	65.7		106.9	65.7	47.9	53.7	21.2	101.0	10.2	1.8
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	149.5	61.0	65.7		106.9	65.7	47.9	53.7	21.2	101.0	10.2	1.8
LOS	F	E	E		F	E	D	D	C	F	B	A
Approach Delay		112.1			72.9			53.3			26.7	
Approach LOS		F			E			D			C	
Queue Length 50th (ft)	~356	102	115		150	273	32	~885	2	~295	185	20
Queue Length 95th (ft)	#441	143	159		#280	#389	m#113	#1005	m3	m#498	202	m23
Internal Link Dist (ft)		446			543			483			555	
Turn Bay Length (ft)			75			350	125		75	550		250
Base Capacity (vph)	278	293	249		179	729	123	1610	720	320	2206	1206
Starvation Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.13	0.39	0.51		0.85	0.99	0.69	1.01	0.01	1.03	0.56	0.14

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 144 (96%), Referenced to phase 2:NETL and 6:SWTL, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.13

Intersection Signal Delay: 54.1

Intersection LOS: D

Intersection Capacity Utilization 91.9%

ICU Level of Service F

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 1: US 15-501 & Mt. Carmel Church Road/Culbreth Road

 Ø2 (R)	 Ø1	 Ø3	 Ø4
73 s	29 s	29 s	19 s
 Ø5 (R)			
102 s			

Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	40	11	132	18	13	9	1550	127	18	1145	81
Future Volume (vph)	96	40	11	132	18	13	9	1550	127	18	1145	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-5%			-1%			0%	
Storage Length (ft)	75		0	200		0	275		300	275		325
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00	1.00		1.00	0.99				0.98			0.98
Frt		0.968			0.938				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1761	1789	0	1814	1781	0	1778	3557	1591	1736	3471	1553
Flt Permitted	0.732			0.715			0.157			0.092		
Satd. Flow (perm)	1355	1789	0	1363	1781	0	294	3557	1556	168	3471	1515
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		387			1318			2738			1759	
Travel Time (s)		10.6			35.9			41.5			26.7	
Confl. Peds. (#/hr)	1		1	1		1	1		3	3		1
Peak Hour Factor	0.79	0.79	0.79	0.80	0.80	0.80	0.90	0.90	0.90	0.89	0.89	0.89
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	4%	4%	4%
Adj. Flow (vph)	122	51	14	165	23	16	10	1722	141	20	1287	91
Shared Lane Traffic (%)												
Lane Group Flow (vph)	122	65	0	165	39	0	10	1722	141	20	1287	91
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	0.97	0.97	0.97	0.99	0.99	0.99	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	14.0	14.0	7.0	14.0	14.0
Minimum Split (s)	37.0	37.0		15.0	15.0		14.0	21.0	21.0	13.0	25.0	25.0
Total Split (s)	37.0	37.0		37.0	37.0		14.0	100.0	100.0	13.0	99.0	99.0
Total Split (%)	24.7%	24.7%		24.7%	24.7%		9.3%	66.7%	66.7%	8.7%	66.0%	66.0%
Maximum Green (s)	30.4	30.4		29.9	29.9		7.4	93.4	93.4	7.1	92.4	92.4
Yellow Time (s)	3.2	3.2		3.8	3.8		3.0	4.6	4.6	3.0	4.6	4.6
All-Red Time (s)	3.4	3.4		3.3	3.3		3.6	2.0	2.0	2.9	2.0	2.0
Lost Time Adjust (s)	-1.6	-1.6		-2.1	-2.1		-1.6	-1.6	-1.6	-0.9	-1.6	-1.6
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag							Lead	Lead	Lead	Lag	Lag	Lag

Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)	4.0	4.0									7.0	7.0
Flash Dont Walk (s)	26.0	26.0									10.0	10.0
Pedestrian Calls (#/hr)	0	0									0	0
Act Effect Green (s)	25.0	25.0		25.0	25.0		107.2	107.2	107.2	109.5	109.5	109.5
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.71	0.71	0.71	0.73	0.73	0.73
v/c Ratio	0.54	0.22		0.73	0.13		0.03	0.68	0.13	0.10	0.51	0.08
Control Delay	65.2	53.8		78.5	53.4		9.4	15.5	8.8	11.2	8.6	7.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.2	53.8		78.5	53.4		9.4	15.5	8.8	11.2	8.6	7.7
LOS	E	D		E	D		A	B	A	B	A	A
Approach Delay		61.2			73.7			15.0			8.6	
Approach LOS		E			E			B			A	
Queue Length 50th (ft)	110	56		155	34		3	518	46	3	123	13
Queue Length 95th (ft)	148	85		m197	m58		11	690	84	m12	303	m49
Internal Link Dist (ft)		307			1238			2658			1679	
Turn Bay Length (ft)	75			200			275		300	275		325
Base Capacity (vph)	289	381		290	379		299	2541	1111	206	2534	1106
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.17		0.57	0.10		0.03	0.68	0.13	0.10	0.51	0.08

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 136 (91%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 18.2

Intersection LOS: B

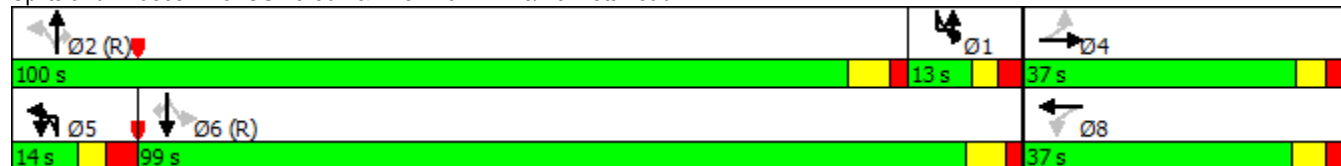
Intersection Capacity Utilization 65.2%

ICU Level of Service C

Analysis Period (min) 15

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

Splits and Phases: 3: US 15-501 & Arlen Park Drive/Bennett Road



Lanes, Volumes, Timings

1: US 15-501 & Mt. Carmel Church Road/Culbreth Road

10/19/2017

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	92	27	61	19	28	291	46	1185	12	251	1271	98
Future Volume (vph)	92	27	61	19	28	291	46	1185	12	251	1271	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			-8%			-2%			2%	
Storage Length (ft)	0		75	0		350	125		75	550		250
Storage Lanes	1		1	0		2	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99		1.00	0.98	1.00					0.98
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950				0.980		0.950			0.950		
Satd. Flow (prot)	1743	1835	1560	0	1880	2870	1736	3472	1553	1718	3436	1537
Flt Permitted	0.950				0.980		0.136			0.124		
Satd. Flow (perm)	1738	1835	1536	0	1878	2806	248	3472	1553	224	3436	1499
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		526			638			563			635	
Travel Time (s)		10.2			12.4			11.0			12.4	
Confl. Peds. (#/hr)	1		1	1		1	2					2
Peak Hour Factor	0.95	0.95	0.95	0.88	0.88	0.88	0.97	0.97	0.97	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	5%	5%	5%	4%	4%	4%
Adj. Flow (vph)	97	28	64	22	32	331	47	1222	12	261	1324	102
Shared Lane Traffic (%)												
Lane Group Flow (vph)	97	28	64	0	54	331	47	1222	12	261	1324	102
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	0.95	0.95	0.95	0.99	0.99	0.99	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Split	NA	Perm	Split	NA	pm+ov	Perm	NA	Perm	pm+pt	NA	pm+ov
Protected Phases	3	3		4	4	1		2		1	6	3
Permitted Phases			3			4	2		2	6		6
Detector Phase	3	3	3	4	4	1	2	2	2	1	6	3
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	12.0	12.0	12.0	7.0	12.0	7.0
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0	13.0	19.0	19.0	19.0	13.0	26.0	14.0
Total Split (s)	14.0	14.0	14.0	14.0	14.0	17.0	45.0	45.0	45.0	17.0	62.0	14.0
Total Split (%)	15.6%	15.6%	15.6%	15.6%	15.6%	18.9%	50.0%	50.0%	50.0%	18.9%	68.9%	15.6%
Maximum Green (s)	7.6	7.6	7.6	7.6	7.6	11.9	38.8	38.8	38.8	11.9	55.0	7.6
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.0	4.6	4.6	4.6	3.0	4.3	3.7
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.1	1.6	1.6	1.6	2.1	2.7	2.7
Lost Time Adjust (s)	-1.4	-1.4	-1.4		-1.4	-0.1	-1.2	-1.2	-1.2	-0.1	-2.0	-1.4
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lead	Lead	Lag		Lead

Lanes, Volumes, Timings

1: US 15-501 & Mt. Carmel Church Road/Culbreth Road

10/19/2017

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	3.0	6.0	6.0	6.0	3.0	1.0	1.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	None	C-Max	None
Walk Time (s)											7.0	
Flash Dont Walk (s)											12.0	
Pedestrian Calls (#/hr)											0	
Act Effct Green (s)	8.8	8.8	8.8		8.5	18.9	43.4	43.4	43.4	60.4	60.4	69.1
Actuated g/C Ratio	0.10	0.10	0.10		0.09	0.21	0.48	0.48	0.48	0.67	0.67	0.77
v/c Ratio	0.57	0.16	0.43		0.30	0.56	0.39	0.73	0.02	0.75	0.57	0.09
Control Delay	52.9	39.4	47.7		42.8	24.3	21.3	17.9	8.2	39.5	9.9	2.3
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.9	39.4	47.7		42.8	24.3	21.3	17.9	8.2	39.5	9.9	2.3
LOS	D	D	D		D	C	C	B	A	D	A	A
Approach Delay		49.1			26.9			17.9			14.0	
Approach LOS		D			C			B			B	
Queue Length 50th (ft)	54	15	35		29	65	18	309	4	70	208	10
Queue Length 95th (ft)	#110	41	75		63	94	m16	136	m2	#189	273	19
Internal Link Dist (ft)		446			558			483			555	
Turn Bay Length (ft)			75			350	125		75	550		250
Base Capacity (vph)	174	183	153		188	596	119	1673	748	349	2305	1159
Starvation Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.15	0.42		0.29	0.56	0.39	0.73	0.02	0.75	0.57	0.09

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 32 (36%), Referenced to phase 2:NETL and 6:SWTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 18.7

Intersection LOS: B

Intersection Capacity Utilization 70.9%

ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 1: US 15-501 & Mt. Carmel Church Road/Culbreth Road

					
Ø2 (R)		Ø1	Ø3	Ø4	
45 s		17 s	14 s	14 s	
Ø6 (R)					
62 s					

Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	69	4	10	69	12	6	5	6	1190	67	2	11
Future Volume (vph)	69	4	10	69	12	6	5	6	1190	67	2	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-5%				-1%			
Storage Length (ft)	75		0	200		0		275		300		275
Storage Lanes	1		0	1		0		1		1		1
Taper Length (ft)	25			25				25				25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Ped Bike Factor	1.00	0.99		1.00	1.00					0.98		
Frt		0.894			0.950					0.850		
Flt Protected	0.950			0.950				0.950				0.950
Satd. Flow (prot)	1744	1626	0	1814	1806	0	0	1728	3455	1546	0	1736
Flt Permitted	0.744			0.746				0.169				0.155
Satd. Flow (perm)	1364	1626	0	1423	1806	0	0	307	3455	1513	0	283
Right Turn on Red			No			No				No		
Satd. Flow (RTOR)												
Link Speed (mph)		25			25				45			
Link Distance (ft)		387			1318				2738			
Travel Time (s)		10.6			35.9				41.5			
Confl. Peds. (#/hr)	1		1	1		1				1		1
Peak Hour Factor	0.82	0.82	0.82	0.83	0.83	0.83	0.94	0.94	0.94	0.94	0.89	0.89
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	5%	5%	5%	5%	4%	4%
Adj. Flow (vph)	84	5	12	83	14	7	5	6	1266	71	2	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	84	17	0	83	21	0	0	11	1266	71	0	14
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	R NA	Left	Left	Right	R NA	Left
Median Width(ft)		12			12				12			
Link Offset(ft)		0			0				0			
Crosswalk Width(ft)		16			16				16			
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	0.97	0.97	0.97	0.99	0.99	0.99	0.99	1.00	1.00
Turning Speed (mph)	15		9	15		9	9	15		9	9	15
Turn Type	Perm	NA		Perm	NA		pm+pt	pm+pt	NA	Perm	pm+pt	pm+pt
Protected Phases		4			8		5	5	2		1	1
Permitted Phases	4			8			2	2		2	6	6
Detector Phase	4	4		8	8		5	5	2	2	1	1
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	7.0	14.0	14.0	7.0	7.0
Minimum Split (s)	37.0	37.0		15.0	15.0		14.0	14.0	21.0	21.0	13.0	13.0
Total Split (s)	37.0	37.0		37.0	37.0		14.0	14.0	40.0	40.0	13.0	13.0
Total Split (%)	41.1%	41.1%		41.1%	41.1%		15.6%	15.6%	44.4%	44.4%	14.4%	14.4%
Maximum Green (s)	30.4	30.4		29.9	29.9		7.4	7.4	33.4	33.4	7.1	7.1
Yellow Time (s)	3.2	3.2		3.8	3.8		3.0	3.0	4.6	4.6	3.0	3.0
All-Red Time (s)	3.4	3.4		3.3	3.3		3.6	3.6	2.0	2.0	2.9	2.9
Lost Time Adjust (s)	-1.6	-1.6		-2.1	-2.1			-1.6	-1.6	-1.6		-0.9
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0	5.0	5.0		5.0
Lead/Lag							Lag	Lag	Lag	Lag	Lead	Lead

Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017



Lane Group	SBT	SBR
Lane Configurations	↑↑	↑
Traffic Volume (vph)	1230	73
Future Volume (vph)	1230	73
Ideal Flow (vphpl)	1900	1900
Grade (%)	0%	
Storage Length (ft)		325
Storage Lanes		1
Taper Length (ft)		
Lane Util. Factor	0.95	1.00
Ped Bike Factor		
Frt		0.850
Flt Protected		
Satd. Flow (prot)	3471	1553
Flt Permitted		
Satd. Flow (perm)	3471	1553
Right Turn on Red		No
Satd. Flow (RTOR)		
Link Speed (mph)	45	
Link Distance (ft)	1759	
Travel Time (s)	26.7	
Confl. Peds. (#/hr)		
Peak Hour Factor	0.89	0.89
Heavy Vehicles (%)	4%	4%
Adj. Flow (vph)	1382	82
Shared Lane Traffic (%)		
Lane Group Flow (vph)	1382	82
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	16	
Two way Left Turn Lane		
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Turn Type	NA	Perm
Protected Phases	6	
Permitted Phases		6
Detector Phase	6	6
Switch Phase		
Minimum Initial (s)	14.0	14.0
Minimum Split (s)	25.0	25.0
Total Split (s)	39.0	39.0
Total Split (%)	43.3%	43.3%
Maximum Green (s)	32.4	32.4
Yellow Time (s)	4.6	4.6
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)	-1.6	-1.6
Total Lost Time (s)	5.0	5.0
Lead/Lag	Lead	Lead

Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	None	C-Max	C-Max	None	None
Walk Time (s)	4.0	4.0										
Flash Dont Walk (s)	26.0	26.0										
Pedestrian Calls (#/hr)	0	0										
Act Effect Green (s)	12.8	12.8		12.9	12.9			68.3	68.3	68.3		67.1
Actuated g/C Ratio	0.14	0.14		0.14	0.14			0.76	0.76	0.76		0.75
v/c Ratio	0.43	0.07		0.41	0.08			0.03	0.48	0.06		0.04
Control Delay	41.3	32.1		40.2	32.2			7.2	7.4	5.9		2.6
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0		0.0
Total Delay	41.3	32.1		40.2	32.2			7.2	7.4	5.9		2.6
LOS	D	C		D	C			A	A	A		A
Approach Delay		39.8			38.6				7.4			
Approach LOS		D			D				A			
Queue Length 50th (ft)	44	9		44	11			1	122	9		0
Queue Length 95th (ft)	76	23		76	27			10	322	38		m2
Internal Link Dist (ft)		307			1238				2658			
Turn Bay Length (ft)	75			200				275		300		275
Base Capacity (vph)	484	578		505	642			371	2622	1148		339
Starvation Cap Reductn	0	0		0	0			0	0	0		0
Spillback Cap Reductn	0	0		0	0			0	0	0		0
Storage Cap Reductn	0	0		0	0			0	0	0		0
Reduced v/c Ratio	0.17	0.03		0.16	0.03			0.03	0.48	0.06		0.04

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 8 (9%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.53

Intersection Signal Delay: 7.6

Intersection LOS: A

Intersection Capacity Utilization 53.3%

ICU Level of Service A

Analysis Period (min) 15

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

Splits and Phases: 3: US 15-501 & Arlen Park Drive/Bennett Road

			
Ø1	Ø2 (R)		Ø4
13 s	40 s		37 s
			
Ø6 (R)		Ø5	Ø8
39 s		14 s	37 s

Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017



Lane Group	SBT	SBR
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	3.0	3.0
Recall Mode	C-Max	C-Max
Walk Time (s)	7.0	7.0
Flash Dont Walk (s)	10.0	10.0
Pedestrian Calls (#/hr)	0	0
Act Effect Green (s)	68.1	68.1
Actuated g/C Ratio	0.76	0.76
v/c Ratio	0.53	0.07
Control Delay	3.5	2.0
Queue Delay	0.0	0.0
Total Delay	3.5	2.0
LOS	A	A
Approach Delay	3.5	
Approach LOS	A	
Queue Length 50th (ft)	12	1
Queue Length 95th (ft)	308	m12
Internal Link Dist (ft)	1679	
Turn Bay Length (ft)		325
Base Capacity (vph)	2626	1175
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.53	0.07
Intersection Summary		

Lanes, Volumes, Timings

1: US 15-501 & Mt. Carmel Church Road/Culbreth Road

10/19/2017

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	131	88	72	21	59	413	79	1467	23	574	1887	169
Future Volume (vph)	131	88	72	21	59	413	79	1467	23	574	1887	169
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		3%			-8%			-2%			2%	
Storage Length (ft)	0		75	0		350	125		75	550		250
Storage Lanes	1		1	0		2	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor							1.00					0.97
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950				0.987		0.950			0.950		
Satd. Flow (prot)	1743	1835	1560	0	1912	2898	1770	3540	1584	1752	3504	1567
Flt Permitted	0.950				0.987		0.110			0.058		
Satd. Flow (perm)	1743	1835	1560	0	1912	2898	205	3540	1584	107	3504	1524
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		526			630			563			635	
Travel Time (s)		10.2			12.3			11.0			12.4	
Confl. Peds. (#/hr)							2					2
Peak Hour Factor	0.81	0.81	0.81	0.90	0.90	0.90	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	2%	2%	2%
Adj. Flow (vph)	162	109	89	23	66	459	81	1512	24	592	1945	174
Shared Lane Traffic (%)												
Lane Group Flow (vph)	162	109	89	0	89	459	81	1512	24	592	1945	174
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	0.95	0.95	0.95	0.99	0.99	0.99	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Split	NA	Perm	Split	NA	pm+ov	Perm	NA	Perm	pm+pt	NA	pm+ov
Protected Phases	3	3		4	4	1		2		1	6	3
Permitted Phases			3			4	2		2	6		6
Detector Phase	3	3	3	4	4	1	2	2	2	1	6	3
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	12.0	12.0	12.0	7.0	12.0	7.0
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0	13.0	19.0	19.0	19.0	13.0	26.0	14.0
Total Split (s)	19.0	19.0	19.0	14.0	14.0	47.0	70.0	70.0	70.0	47.0	117.0	19.0
Total Split (%)	12.7%	12.7%	12.7%	9.3%	9.3%	31.3%	46.7%	46.7%	46.7%	31.3%	78.0%	12.7%
Maximum Green (s)	12.6	12.6	12.6	7.0	7.0	41.9	63.8	63.8	63.8	41.9	110.8	12.6
Yellow Time (s)	3.7	3.7	3.7	4.3	4.3	3.0	4.6	4.6	4.6	3.0	4.6	3.7
All-Red Time (s)	2.7	2.7	2.7	2.7	2.7	2.1	1.6	1.6	1.6	2.1	1.6	2.7
Lost Time Adjust (s)	-1.4	-1.4	-1.4		-2.0	-0.1	-1.2	-1.2	-1.2	-0.1	-1.2	-1.4
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead		Lag

Lanes, Volumes, Timings

1: US 15-501 & Mt. Carmel Church Road/Culbreth Road

10/19/2017

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	3.0	6.0	6.0	6.0	3.0	6.0	1.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	None	C-Max	None
Walk Time (s)											7.0	
Flash Dont Walk (s)											12.0	
Pedestrian Calls (#/hr)											0	
Act Effect Green (s)	14.0	14.0	14.0		9.0	51.0	65.0	65.0	65.0	112.0	112.0	126.0
Actuated g/C Ratio	0.09	0.09	0.09		0.06	0.34	0.43	0.43	0.43	0.75	0.75	0.84
v/c Ratio	1.00	0.64	0.61		0.78	0.47	0.92	0.99	0.03	1.10	0.74	0.14
Control Delay	137.0	82.9	84.0		109.0	31.7	102.4	50.9	20.7	109.8	13.1	1.7
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	137.0	82.9	84.0		109.0	31.7	102.4	50.9	20.7	109.8	13.1	1.7
LOS	F	F	F		F	C	F	D	C	F	B	A
Approach Delay		107.5			44.2			53.0			33.5	
Approach LOS		F			D			D			C	
Queue Length 50th (ft)	161	105	85		88	148	75	769	9	~602	512	18
Queue Length 95th (ft)	#271	154	132		#186	193	#190	#920	m16	#843	592	27
Internal Link Dist (ft)		446			550			483			555	
Turn Bay Length (ft)			75			350	125		75	550		250
Base Capacity (vph)	162	171	145		114	985	88	1534	686	540	2616	1284
Starvation Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0		0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.00	0.64	0.61		0.78	0.47	0.92	0.99	0.03	1.10	0.74	0.14

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 11 (7%), Referenced to phase 2:NETL and 6:SWTL, Start of Green

Natural Cycle: 140

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.10

Intersection Signal Delay: 45.7

Intersection LOS: D

Intersection Capacity Utilization 98.8%

ICU Level of Service F

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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

Splits and Phases: 1: US 15-501 & Mt. Carmel Church Road/Culbreth Road

			
Ø1	Ø2 (R)	Ø4	Ø3
47 s	70 s	14 s	19 s
			
Ø6 (R)			
117 s			

Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	100	23	10	77	14	2	2	15	1428	149	8	29
Future Volume (vph)	100	23	10	77	14	2	2	15	1428	149	8	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			-5%				-1%			
Storage Length (ft)	75		0	200		0		275		300		275
Storage Lanes	1		0	1		0		1		1		1
Taper Length (ft)	25			25				25				25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	1.00	0.95	1.00
Ped Bike Factor	1.00				1.00							
Frt		0.955			0.984					0.850		
Flt Protected	0.950			0.950				0.950				0.950
Satd. Flow (prot)	1761	1770	0	1814	1876	0	0	1761	3522	1576	0	1770
Flt Permitted	0.745			0.736				0.065				0.145
Satd. Flow (perm)	1377	1770	0	1405	1876	0	0	121	3522	1576	0	270
Right Turn on Red			No			No				No		
Satd. Flow (RTOR)												
Link Speed (mph)		25			25				45			
Link Distance (ft)		387			1318				2738			
Travel Time (s)		10.6			35.9				41.5			
Confl. Peds. (#/hr)	2					2		1				
Peak Hour Factor	0.98	0.98	0.98	0.82	0.82	0.82	0.95	0.95	0.95	0.95	0.97	0.97
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	2%	2%
Adj. Flow (vph)	102	23	10	94	17	2	2	16	1503	157	8	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	102	33	0	94	19	0	0	18	1503	157	0	38
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	R NA	Left	Left	Right	R NA	Left
Median Width(ft)		12			12				12			
Link Offset(ft)		0			0				0			
Crosswalk Width(ft)		16			16				16			
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	0.97	0.97	0.97	0.99	0.99	0.99	0.99	1.00	1.00
Turning Speed (mph)	15		9	15		9	9	15		9	9	15
Turn Type	Perm	NA		Perm	NA		pm+pt	pm+pt	NA	Perm	pm+pt	pm+pt
Protected Phases		4			8		5	5	2		1	1
Permitted Phases	4			8			2	2		2	6	6
Detector Phase	4	4		8	8		5	5	2	2	1	1
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	7.0	14.0	14.0	7.0	7.0
Minimum Split (s)	37.0	37.0		15.0	15.0		14.0	14.0	21.0	21.0	13.0	13.0
Total Split (s)	37.0	37.0		37.0	37.0		14.0	14.0	100.0	100.0	13.0	13.0
Total Split (%)	24.7%	24.7%		24.7%	24.7%		9.3%	9.3%	66.7%	66.7%	8.7%	8.7%
Maximum Green (s)	30.4	30.4		29.9	29.9		7.4	7.4	93.4	93.4	7.1	7.1
Yellow Time (s)	3.2	3.2		3.8	3.8		3.0	3.0	4.6	4.6	3.0	3.0
All-Red Time (s)	3.4	3.4		3.3	3.3		3.6	3.6	2.0	2.0	2.9	2.9
Lost Time Adjust (s)	-1.6	-1.6		-2.1	-2.1			-1.6	-1.6	-1.6		-0.9
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0	5.0	5.0		5.0
Lead/Lag							Lead	Lead	Lead	Lead	Lag	Lag

Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017



Lane Group	SBT	SBR
Lane Configurations	↑↑	↑
Traffic Volume (vph)	1813	130
Future Volume (vph)	1813	130
Ideal Flow (vphpl)	1900	1900
Grade (%)	0%	
Storage Length (ft)		325
Storage Lanes		1
Taper Length (ft)		
Lane Util. Factor	0.95	1.00
Ped Bike Factor		0.98
Frt		0.850
Flt Protected		
Satd. Flow (prot)	3539	1583
Flt Permitted		
Satd. Flow (perm)	3539	1545
Right Turn on Red		No
Satd. Flow (RTOR)		
Link Speed (mph)	45	
Link Distance (ft)	1759	
Travel Time (s)	26.7	
Confl. Peds. (#/hr)		1
Peak Hour Factor	0.97	0.97
Heavy Vehicles (%)	2%	2%
Adj. Flow (vph)	1869	134
Shared Lane Traffic (%)		
Lane Group Flow (vph)	1869	134
Enter Blocked Intersection	No	No
Lane Alignment	Left	Right
Median Width(ft)	12	
Link Offset(ft)	0	
Crosswalk Width(ft)	16	
Two way Left Turn Lane		
Headway Factor	1.00	1.00
Turning Speed (mph)		9
Turn Type	NA	Perm
Protected Phases	6	
Permitted Phases		6
Detector Phase	6	6
Switch Phase		
Minimum Initial (s)	14.0	14.0
Minimum Split (s)	25.0	25.0
Total Split (s)	99.0	99.0
Total Split (%)	66.0%	66.0%
Maximum Green (s)	92.4	92.4
Yellow Time (s)	4.6	4.6
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)	-1.6	-1.6
Total Lost Time (s)	5.0	5.0
Lead/Lag	Lag	Lag

Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		None	None	C-Max	C-Max	None	None
Walk Time (s)	4.0	4.0										
Flash Dont Walk (s)	26.0	26.0										
Pedestrian Calls (#/hr)	0	0										
Act Effect Green (s)	18.0	18.0		18.0	18.0		111.6	111.6	111.6	111.6		113.8
Actuated g/C Ratio	0.12	0.12		0.12	0.12		0.74	0.74	0.74	0.74		0.76
v/c Ratio	0.62	0.16		0.56	0.08		0.10	0.57	0.13	0.13		0.13
Control Delay	78.0	58.4		74.1	57.5		7.9	10.8	6.9	3.3		3.3
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0		0.0
Total Delay	78.0	58.4		74.1	57.5		7.9	10.8	6.9	3.3		3.3
LOS	E	E		E	E		A	B	A	A		A
Approach Delay		73.2			71.3				10.4			
Approach LOS		E			E				B			
Queue Length 50th (ft)	96	29		88	17		4	335	43	3		3
Queue Length 95th (ft)	155	61		m129	m36		14	465	79	m5		m5
Internal Link Dist (ft)		307			1238				2658			
Turn Bay Length (ft)	75			200			275		300			275
Base Capacity (vph)	293	377		299	400		188	2620	1172	284		284
Starvation Cap Reductn	0	0		0	0		0	0	0	0		0
Spillback Cap Reductn	0	0		0	0		0	0	0	0		0
Storage Cap Reductn	0	0		0	0		0	0	0	0		0
Reduced v/c Ratio	0.35	0.09		0.31	0.05		0.10	0.57	0.13	0.13		0.13

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 12 (8%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 11.7

Intersection LOS: B

Intersection Capacity Utilization 70.7%

ICU Level of Service C

Analysis Period (min) 15

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

Splits and Phases: 3: US 15-501 & Arlen Park Drive/Bennett Road



Lanes, Volumes, Timings

3: US 15-501 & Arlen Park Drive/Bennett Road

10/19/2017



Lane Group	SBT	SBR
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	3.0	3.0
Recall Mode	C-Max	C-Max
Walk Time (s)	7.0	7.0
Flash Dont Walk (s)	10.0	10.0
Pedestrian Calls (#/hr)	0	0
Act Effect Green (s)	113.8	113.8
Actuated g/C Ratio	0.76	0.76
v/c Ratio	0.70	0.11
Control Delay	5.7	2.3
Queue Delay	0.0	0.0
Total Delay	5.7	2.3
LOS	A	A
Approach Delay	5.4	
Approach LOS	A	
Queue Length 50th (ft)	90	12
Queue Length 95th (ft)	551	m18
Internal Link Dist (ft)	1679	
Turn Bay Length (ft)		325
Base Capacity (vph)	2685	1172
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.70	0.11
Intersection Summary		

Appendix F – Synchro Unsignalized HCM Analysis **Output**

HCM 2010 TWSC
2: Mt. Carmel Church Road & Bennett Road

10/19/2017

Intersection												
Int Delay, s/veh	7.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	19	3	145	2	9	61	117	626	2	14	334	10
Future Vol, veh/h	19	3	145	2	9	61	117	626	2	14	334	10
Conflicting Peds, #/hr	2	0	1	1	0	2	1	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-2	-	-	3	-	-	-2	-	-	2	-
Peak Hour Factor	75	75	75	75	75	75	87	87	87	91	91	91
Heavy Vehicles, %	2	2	2	4	4	4	2	2	2	5	5	5
Mvmt Flow	25	4	193	3	12	81	134	720	2	15	367	11

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1442	1396	375	1494	1401	724	379	0	0	723	0	0
Stage 1	404	404	-	991	991	-	-	-	-	-	-	-
Stage 2	1038	992	-	503	410	-	-	-	-	-	-	-
Critical Hdwy	6.72	6.12	6.02	7.74	7.14	6.54	4.12	-	-	4.15	-	-
Critical Hdwy Stg 1	5.72	5.12	-	6.74	6.14	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.72	5.12	-	6.74	6.14	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.536	4.036	3.336	2.218	-	-	2.245	-	-
Pot Cap-1 Maneuver	129	165	685	78	110	398	1179	-	-	866	-	-
Stage 1	652	627	-	249	273	-	-	-	-	-	-	-
Stage 2	313	361	-	503	553	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	77	130	684	46	87	397	1178	-	-	864	-	-
Mov Cap-2 Maneuver	77	130	-	46	87	-	-	-	-	-	-	-
Stage 1	528	613	-	201	221	-	-	-	-	-	-	-
Stage 2	190	292	-	350	540	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	32.2		29.7		1.3		0.4	
HCM LOS	D		D					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1178	-	-	347	240	864	-
HCM Lane V/C Ratio	0.114	-	-	0.642	0.4	0.018	-
HCM Control Delay (s)	8.4	0	-	32.2	29.7	9.2	0
HCM Lane LOS	A	A	-	D	D	A	A
HCM 95th %tile Q(veh)	0.4	-	-	4.2	1.8	0.1	-

HCM 2010 TWSC
2: Mt. Carmel Church Road & Bennett Road

10/19/2017

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	4	9	42	2	16	29	54	271	4	29	235	1
Future Vol, veh/h	4	9	42	2	16	29	54	271	4	29	235	1
Conflicting Peds, #/hr	0	0	1	1	0	0	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-2	-	-	3	-	-	-2	-	-	2	-
Peak Hour Factor	84	84	84	88	88	88	96	96	96	77	77	77
Heavy Vehicles, %	2	2	2	4	4	4	3	3	3	3	3	3
Mvmt Flow	5	11	50	2	18	33	56	282	4	38	305	1

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	804	781	308	810	780	284	307	0	0	286	0	0
Stage 1	382	382	-	397	397	-	-	-	-	-	-	-
Stage 2	422	399	-	413	383	-	-	-	-	-	-	-
Critical Hdwy	6.72	6.12	6.02	7.74	7.14	6.54	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	5.72	5.12	-	6.74	6.14	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.72	5.12	-	6.74	6.14	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.536	4.036	3.336	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	329	356	745	259	285	733	1248	-	-	1270	-	-
Stage 1	668	639	-	585	562	-	-	-	-	-	-	-
Stage 2	639	629	-	572	571	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	278	325	744	220	260	733	1247	-	-	1270	-	-
Mov Cap-2 Maneuver	278	325	-	220	260	-	-	-	-	-	-	-
Stage 1	632	615	-	554	532	-	-	-	-	-	-	-
Stage 2	558	596	-	505	550	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	12.3		14.6		1.3		0.9	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1247	-	-	558	427	1270	-
HCM Lane V/C Ratio	0.045	-	-	0.117	0.125	0.03	-
HCM Control Delay (s)	8	0	-	12.3	14.6	7.9	0
HCM Lane LOS	A	A	-	B	B	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.4	0.4	0.1	-

HCM 2010 TWSC
2: Mt. Carmel Church Road & Bennett Road

10/19/2017

Intersection												
Int Delay, s/veh	4.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	10	141	1	8	39	67	393	0	49	553	5
Future Vol, veh/h	4	10	141	1	8	39	67	393	0	49	553	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-2	-	-	3	-	-	-2	-	-	2	-
Peak Hour Factor	95	95	95	76	76	76	90	90	90	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	11	148	1	11	51	74	437	0	58	658	6

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	1394	1364	661	1443	1367	437	664	0
Stage 1	778	778	-	586	586	-	-	-
Stage 2	616	586	-	857	781	-	-	-
Critical Hdwy	6.72	6.12	6.02	7.72	7.12	6.52	4.12	-
Critical Hdwy Stg 1	5.72	5.12	-	6.72	6.12	-	-	-
Critical Hdwy Stg 2	5.72	5.12	-	6.72	6.12	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-
Pot Cap-1 Maneuver	139	172	480	86	117	597	925	-
Stage 1	424	443	-	450	451	-	-	-
Stage 2	512	530	-	305	356	-	-	-
Platoon blocked, %								-
Mov Cap-1 Maneuver	101	141	480	48	96	597	925	-
Mov Cap-2 Maneuver	101	141	-	48	96	-	-	-
Stage 1	379	407	-	402	403	-	-	-
Stage 2	407	474	-	188	327	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	21.2	21.3	1.3	0.7
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	925	-	-	383	283	1123	-
HCM Lane V/C Ratio	0.08	-	-	0.426	0.223	0.052	-
HCM Control Delay (s)	9.2	0	-	21.2	21.3	8.4	0
HCM Lane LOS	A	A	-	C	C	A	A
HCM 95th %tile Q(veh)	0.3	-	-	2.1	0.8	0.2	-

HCM 2010 TWSC
2: Mt. Carmel Church Road & Bennett Road

10/19/2017

Intersection												
Int Delay, s/veh	7.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	19	3	148	2	9	62	120	641	2	14	342	10
Future Vol, veh/h	19	3	148	2	9	62	120	641	2	14	342	10
Conflicting Peds, #/hr	2	0	1	1	0	2	1	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-2	-	-	3	-	-	-2	-	-	2	-
Peak Hour Factor	75	75	75	75	75	75	87	87	87	91	91	91
Heavy Vehicles, %	2	2	2	4	4	4	2	2	2	5	5	5
Mvmt Flow	25	4	197	3	12	83	138	737	2	15	376	11

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1476	1429	383	1529	1434	741	388	0	0	740	0	0
Stage 1	413	413	-	1015	1015	-	-	-	-	-	-	-
Stage 2	1063	1016	-	514	419	-	-	-	-	-	-	-
Critical Hdwy	6.72	6.12	6.02	7.74	7.14	6.54	4.12	-	-	4.15	-	-
Critical Hdwy Stg 1	5.72	5.12	-	6.74	6.14	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.72	5.12	-	6.74	6.14	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.536	4.036	3.336	2.218	-	-	2.245	-	-
Pot Cap-1 Maneuver	123	158	679	73	104	388	1170	-	-	853	-	-
Stage 1	645	622	-	241	265	-	-	-	-	-	-	-
Stage 2	304	353	-	495	547	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	71	123	678	42	81	387	1169	-	-	851	-	-
Mov Cap-2 Maneuver	71	123	-	42	81	-	-	-	-	-	-	-
Stage 1	516	608	-	193	212	-	-	-	-	-	-	-
Stage 2	180	282	-	341	534	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	36	31.9	1.3	0.4
HCM LOS	E	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1169	-	-	333	229	851	-
HCM Lane V/C Ratio	0.118	-	-	0.681	0.425	0.018	-
HCM Control Delay (s)	8.5	0	-	36	31.9	9.3	0
HCM Lane LOS	A	A	-	E	D	A	A
HCM 95th %tile Q(veh)	0.4	-	-	4.7	2	0.1	-

HCM 2010 TWSC
2: Mt. Carmel Church Road & Bennett Road

10/19/2017

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	9	43	2	16	29	55	278	4	30	241	1
Future Vol, veh/h	4	9	43	2	16	29	55	278	4	30	241	1
Conflicting Peds, #/hr	0	0	1	1	0	0	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-2	-	-	3	-	-	-2	-	-	2	-
Peak Hour Factor	84	84	84	88	88	88	96	96	96	77	77	77
Heavy Vehicles, %	2	2	2	4	4	4	3	3	3	3	3	3
Mvmt Flow	5	11	51	2	18	33	57	290	4	39	313	1

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	825	801	316	830	799	292	315	0	0	294	0	0
Stage 1	393	393	-	406	406	-	-	-	-	-	-	-
Stage 2	432	408	-	424	393	-	-	-	-	-	-	-
Critical Hdwy	6.72	6.12	6.02	7.74	7.14	6.54	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	5.72	5.12	-	6.74	6.14	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.72	5.12	-	6.74	6.14	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.536	4.036	3.336	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	320	347	737	250	277	725	1240	-	-	1262	-	-
Stage 1	660	633	-	577	556	-	-	-	-	-	-	-
Stage 2	631	624	-	563	564	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	269	315	736	211	252	725	1239	-	-	1262	-	-
Mov Cap-2 Maneuver	269	315	-	211	252	-	-	-	-	-	-	-
Stage 1	623	609	-	545	525	-	-	-	-	-	-	-
Stage 2	549	590	-	495	543	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	12.4		14.9		1.3		0.9	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1239	-	-	550	416	1262	-
HCM Lane V/C Ratio	0.046	-	-	0.121	0.128	0.031	-
HCM Control Delay (s)	8	0	-	12.4	14.9	7.9	0
HCM Lane LOS	A	A	-	B	B	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.4	0.4	0.1	-

HCM 2010 TWSC
2: Mt. Carmel Church Road & Bennett Road

10/19/2017

Intersection												
Int Delay, s/veh	4.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	10	144	1	8	40	69	402	0	50	566	5
Future Vol, veh/h	4	10	144	1	8	40	69	402	0	50	566	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-2	-	-	3	-	-	-2	-	-	2	-
Peak Hour Factor	95	95	95	76	76	76	90	90	90	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	11	152	1	11	53	77	447	0	60	674	6

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1428	1396	677	1477	1399	447	680	0	0	447	0	0
Stage 1	796	796	-	600	600	-	-	-	-	-	-	-
Stage 2	632	600	-	877	799	-	-	-	-	-	-	-
Critical Hdwy	6.72	6.12	6.02	7.72	7.12	6.52	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	5.72	5.12	-	6.72	6.12	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.72	5.12	-	6.72	6.12	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	132	165	470	81	111	589	912	-	-	1113	-	-
Stage 1	416	436	-	441	443	-	-	-	-	-	-	-
Stage 2	502	524	-	296	348	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	94	134	470	44	90	589	912	-	-	1113	-	-
Mov Cap-2 Maneuver	94	134	-	44	90	-	-	-	-	-	-	-
Stage 1	369	398	-	392	393	-	-	-	-	-	-	-
Stage 2	395	465	-	178	318	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	22.2		22.2		1.4		0.7	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	912	-	-	373	273	1113	-
HCM Lane V/C Ratio	0.084	-	-	0.446	0.236	0.053	-
HCM Control Delay (s)	9.3	0	-	22.2	22.2	8.4	0
HCM Lane LOS	A	A	-	C	C	A	A
HCM 95th %tile Q(veh)	0.3	-	-	2.2	0.9	0.2	-

HCM 2010 TWSC
2: Mt. Carmel Church Road & Bennett Road

10/20/2017

Intersection												
Int Delay, s/veh	44.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	57	3	149	2	9	62	120	642	2	14	342	10
Future Vol, veh/h	57	3	149	2	9	62	120	642	2	14	342	10
Conflicting Peds, #/hr	2	0	1	1	0	2	1	0	1	1	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-2	-	-	3	-	-	-2	-	-	2	-
Peak Hour Factor	75	75	75	75	75	75	87	87	87	91	91	91
Heavy Vehicles, %	2	2	2	4	4	4	2	2	2	5	5	5
Mvmt Flow	76	4	199	3	12	83	138	738	2	15	376	11

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1477	1430	383	1530	1435	742	388	0	0	741	0	0
Stage 1	413	413	-	1016	1016	-	-	-	-	-	-	-
Stage 2	1064	1017	-	514	419	-	-	-	-	-	-	-
Critical Hdwy	6.72	6.12	6.02	7.74	7.14	6.54	4.12	-	-	4.15	-	-
Critical Hdwy Stg 1	5.72	5.12	-	6.74	6.14	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.72	5.12	-	6.74	6.14	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.536	4.036	3.336	2.218	-	-	2.245	-	-
Pot Cap-1 Maneuver	123	158	679	73	104	388	1170	-	-	852	-	-
Stage 1	645	622	-	240	264	-	-	-	-	-	-	-
Stage 2	304	353	-	495	547	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 71	123	678	42	81	387	1169	-	-	850	-	-
Mov Cap-2 Maneuver	~ 71	123	-	42	81	-	-	-	-	-	-	-
Stage 1	515	607	-	192	211	-	-	-	-	-	-	-
Stage 2	180	282	-	339	534	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	249.8		31.9		1.3		0.4	
HCM LOS	F		D					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1169	-	-	200	229	850	-
HCM Lane V/C Ratio	0.118	-	-	1.393	0.425	0.018	-
HCM Control Delay (s)	8.5	0	-	249.8	31.9	9.3	0
HCM Lane LOS	A	A	-	F	D	A	A
HCM 95th %tile Q(veh)	0.4	-	-	16.3	2	0.1	-

Notes			
~: Volume exceeds capacity	\$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection

Int Delay, s/veh 0.5

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↑	↑			↑
Traffic Vol, veh/h	0	385	733	41	0	36
Future Vol, veh/h	0	385	733	41	0	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	5	-5	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	428	814	46	0	40

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	- 0 - 814
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - 6.22
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - 3.318
Pot Cap-1 Maneuver	0	-	0 0 378
Stage 1	0	-	0 0 -
Stage 2	0	-	0 0 -
Platoon blocked, %	-	-	
Mov Cap-1 Maneuver	-	-	- - 378
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach	SE	NW	SW
HCM Control Delay, s	0	0	15.6
HCM LOS			C

Minor Lane/Major Mvmt	NWT	SETSWLn1
Capacity (veh/h)	-	- 378
HCM Lane V/C Ratio	-	- 0.106
HCM Control Delay (s)	-	- 15.6
HCM Lane LOS	-	- C
HCM 95th %tile Q(veh)	-	- 0.4

HCM 2010 TWSC
2: Mt. Carmel Church Road & Bennett Road

10/20/2017

Intersection												
Int Delay, s/veh	3.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	12	9	43	2	16	29	55	278	4	30	241	1
Future Vol, veh/h	12	9	43	2	16	29	55	278	4	30	241	1
Conflicting Peds, #/hr	0	0	1	1	0	0	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-2	-	-	3	-	-	-2	-	-	2	-
Peak Hour Factor	84	84	84	88	88	88	96	96	96	77	77	77
Heavy Vehicles, %	2	2	2	4	4	4	3	3	3	3	3	3
Mvmt Flow	14	11	51	2	18	33	57	290	4	39	313	1

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	825	801	316	830	799	292	315	0	0	294	0	0
Stage 1	393	393	-	406	406	-	-	-	-	-	-	-
Stage 2	432	408	-	424	393	-	-	-	-	-	-	-
Critical Hdwy	6.72	6.12	6.02	7.74	7.14	6.54	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	5.72	5.12	-	6.74	6.14	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.72	5.12	-	6.74	6.14	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.536	4.036	3.336	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	320	347	737	250	277	725	1240	-	-	1262	-	-
Stage 1	660	633	-	577	556	-	-	-	-	-	-	-
Stage 2	631	624	-	563	564	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	269	315	736	211	252	725	1239	-	-	1262	-	-
Mov Cap-2 Maneuver	269	315	-	211	252	-	-	-	-	-	-	-
Stage 1	623	609	-	545	525	-	-	-	-	-	-	-
Stage 2	549	590	-	495	543	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	13.8		14.9		1.3		0.9	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1239	-	-	486	416	1262	-
HCM Lane V/C Ratio	0.046	-	-	0.157	0.128	0.031	-
HCM Control Delay (s)	8	0	-	13.8	14.9	7.9	0
HCM Lane LOS	A	A	-	B	B	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.6	0.4	0.1	-

Intersection

Int Delay, s/veh 0.1

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↑	↑			↑
Traffic Vol, veh/h	0	281	318	8	0	8
Future Vol, veh/h	0	281	318	8	0	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	5	-5	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	312	353	9	0	9

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	- 0 - 353
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - 6.22
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - 3.318
Pot Cap-1 Maneuver	0	-	0 0 691
Stage 1	0	-	0 0 -
Stage 2	0	-	0 0 -
Platoon blocked, %	-	-	
Mov Cap-1 Maneuver	-	-	- - 691
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach	SE	NW	SW
HCM Control Delay, s	0	0	10.3
HCM LOS			B

Minor Lane/Major Mvmt	NWT	SETSWLn1
Capacity (veh/h)	-	- 691
HCM Lane V/C Ratio	-	- 0.013
HCM Control Delay (s)	-	- 10.3
HCM Lane LOS	-	- B
HCM 95th %tile Q(veh)	-	- 0

HCM 2010 TWSC
2: Mt. Carmel Church Road & Bennett Road

10/20/2017

Intersection												
Int Delay, s/veh	11.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	41	10	145	1	8	40	69	403	0	50	566	5
Future Vol, veh/h	41	10	145	1	8	40	69	403	0	50	566	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-2	-	-	3	-	-	-2	-	-	2	-
Peak Hour Factor	95	95	95	76	76	76	90	90	90	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	43	11	153	1	11	53	77	448	0	60	674	6

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1429	1397	677	1478	1400	448	680	0	0	448	0	0
Stage 1	796	796	-	601	601	-	-	-	-	-	-	-
Stage 2	633	601	-	877	799	-	-	-	-	-	-	-
Critical Hdwy	6.72	6.12	6.02	7.72	7.12	6.52	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	5.72	5.12	-	6.72	6.12	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.72	5.12	-	6.72	6.12	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	132	165	470	81	111	588	912	-	-	1112	-	-
Stage 1	416	436	-	441	443	-	-	-	-	-	-	-
Stage 2	502	523	-	296	348	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	94	134	470	44	90	588	912	-	-	1112	-	-
Mov Cap-2 Maneuver	94	134	-	44	90	-	-	-	-	-	-	-
Stage 1	369	398	-	392	393	-	-	-	-	-	-	-
Stage 2	395	464	-	178	318	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	71.7		22.2		1.4		0.7	
HCM LOS	F		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	912	-	-	239 273	1112	-	-
HCM Lane V/C Ratio	0.084	-	-	0.863 0.236	0.054	-	-
HCM Control Delay (s)	9.3	0	-	71.7 22.2	8.4	0	-
HCM Lane LOS	A	A	-	F C	A	A	-
HCM 95th %tile Q(veh)	0.3	-	-	7 0.9	0.2	-	-

Intersection

Int Delay, s/veh 0.5

Movement SEL SET NWT NWR SWL SWR

Lane Configurations

Traffic Vol, veh/h 0 662 433 40 0 45

Future Vol, veh/h 0 662 433 40 0 45

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - Free - None

Storage Length - - - - - 0

Veh in Median Storage, # - 0 0 - 0 -

Grade, % - 5 -5 - 0 -

Peak Hour Factor 90 90 90 90 90 90

Heavy Vehicles, % 2 2 2 2 2 2

Mvmt Flow 0 736 481 44 0 50

Major/Minor Major1 Major2 Minor2

Conflicting Flow All - 0 - 0 - 481

Stage 1 - - - - -

Stage 2 - - - - -

Critical Hdwy - - - - - 6.22

Critical Hdwy Stg 1 - - - - -

Critical Hdwy Stg 2 - - - - -

Follow-up Hdwy - - - - - 3.318

Pot Cap-1 Maneuver 0 - - 0 0 585

Stage 1 0 - - 0 0 -

Stage 2 0 - - 0 0 -

Platoon blocked, % - -

Mov Cap-1 Maneuver - - - - - 585

Mov Cap-2 Maneuver - - - - -

Stage 1 - - - - -

Stage 2 - - - - -

Approach SE NW SW

HCM Control Delay, s 0 0 11.7

HCM LOS B

Minor Lane/Major Mvmt NWT SETSWLn1

Capacity (veh/h) - - 585

HCM Lane V/C Ratio - - 0.085

HCM Control Delay (s) - - 11.7

HCM Lane LOS - - B

HCM 95th %tile Q(veh) - - 0.3

Intersection

Int Delay, s/veh 0.5

Movement SEL SET NWT NWR SWL SWR

Lane Configurations

Traffic Vol, veh/h 0 398 760 41 0 36

Future Vol, veh/h 0 398 760 41 0 36

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - Free - None

Storage Length - - - - - 0

Veh in Median Storage, # - 0 0 - 0 -

Grade, % - 5 -5 - 0 -

Peak Hour Factor 90 90 90 90 90 90

Heavy Vehicles, % 2 2 2 2 2 2

Mvmt Flow 0 442 844 46 0 40

Major/Minor Major1 Major2 Minor2

Conflicting Flow All - 0 - 0 - 844

Stage 1 - - - - -

Stage 2 - - - - -

Critical Hdwy - - - - - 6.22

Critical Hdwy Stg 1 - - - - -

Critical Hdwy Stg 2 - - - - -

Follow-up Hdwy - - - - - 3.318

Pot Cap-1 Maneuver 0 - - 0 0 363

Stage 1 0 - - 0 0 -

Stage 2 0 - - 0 0 -

Platoon blocked, % - -

Mov Cap-1 Maneuver - - - - - 363

Mov Cap-2 Maneuver - - - - -

Stage 1 - - - - -

Stage 2 - - - - -

Approach SE NW SW

HCM Control Delay, s 0 0 16.1

HCM LOS C

Minor Lane/Major Mvmt NWT SETSWLn1

Capacity (veh/h) - - 363

HCM Lane V/C Ratio - - 0.11

HCM Control Delay (s) - - 16.1

HCM Lane LOS - - C

HCM 95th %tile Q(veh) - - 0.4

Intersection

Int Delay, s/veh 0.1

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations		↑	↑			↑
Traffic Vol, veh/h	0	291	330	8	0	8
Future Vol, veh/h	0	291	330	8	0	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	5	-5	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	323	367	9	0	9

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	- 0 - 367
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - 6.22
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - 3.318
Pot Cap-1 Maneuver	0	-	0 0 678
Stage 1	0	-	0 0 -
Stage 2	0	-	0 0 -
Platoon blocked, %	-	-	
Mov Cap-1 Maneuver	-	-	- - 678
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach	SE	NW	SW
HCM Control Delay, s	0	0	10.4
HCM LOS			B

Minor Lane/Major Mvmt	NWT	SETSWLn1
Capacity (veh/h)	-	- 678
HCM Lane V/C Ratio	-	- 0.013
HCM Control Delay (s)	-	- 10.4
HCM Lane LOS	-	- B
HCM 95th %tile Q(veh)	-	- 0

Intersection

Int Delay, s/veh 0.5

Movement SEL SET NWT NWR SWL SWR

Lane Configurations		↑	↑			↑
Traffic Vol, veh/h	0	685	448	40	0	45
Future Vol, veh/h	0	685	448	40	0	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	5	-5	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	761	498	44	0	50

Major/Minor Major1 Major2 Minor2

Conflicting Flow All	-	0	-	0	-	498
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	0	0	572
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	572
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach SE NW SW

HCM Control Delay, s	0	0	11.9
HCM LOS			B

Minor Lane/Major Mvmt NWT SETSWLn1

Capacity (veh/h)	-	-	572
HCM Lane V/C Ratio	-	-	0.087
HCM Control Delay (s)	-	-	11.9
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.3

Appendix G – SIDRA Roundabout Analysis Output

LANE LEVEL OF SERVICE

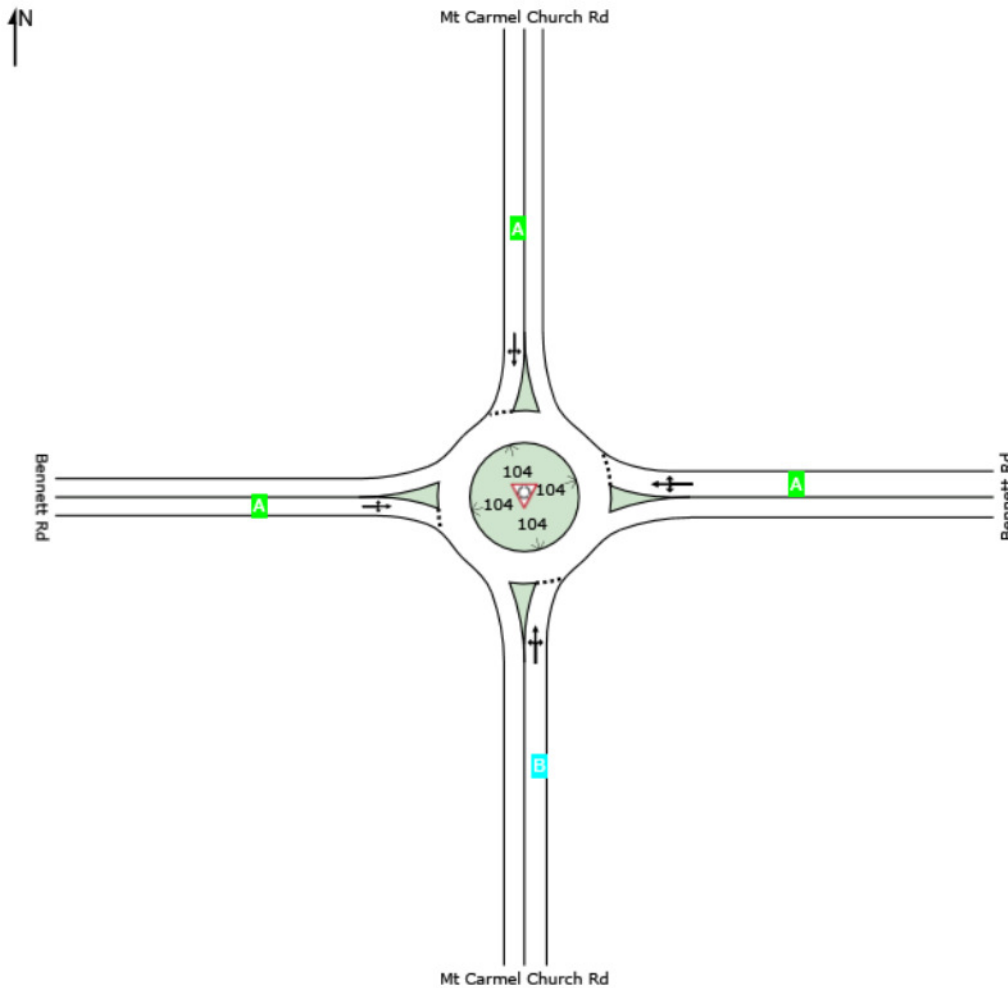
Lane Level of Service

 **Site: 101 [Mt Carmel Church_Bennett 2017 Existing AM]**

Mt Carmel Church Rd & Bennett Rd
Roundabout

All Movement Classes

	South	East	North	West	Intersection
LOS	B	A	A	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.

LOS F will result if $v/c > 1$ irrespective of lane delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

MOVEMENT SUMMARY

 **Site: 101 [Mt Carmel Church_Bennett 2017 Existing AM]**

Mt Carmel Church Rd & Bennett Rd
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Mt Carmel Church Rd											
3	L2	134	2.0	0.663	11.4	LOS B	7.1	181.5	0.37	0.16	23.3
8	T1	720	2.0	0.663	11.4	LOS B	7.1	181.5	0.37	0.16	22.0
18	R2	2	2.0	0.663	11.4	LOS B	7.1	181.5	0.37	0.16	20.9
Approach		856	2.0	0.663	11.4	LOS B	7.1	181.5	0.37	0.16	22.2
East: Bennett Rd											
1	L2	3	4.0	0.181	9.2	LOS A	0.7	17.6	0.67	0.67	23.1
6	T1	12	4.0	0.181	9.2	LOS A	0.7	17.6	0.67	0.67	21.0
16	R2	81	4.0	0.181	9.2	LOS A	0.7	17.6	0.67	0.67	21.5
Approach		96	4.0	0.181	9.2	LOS A	0.7	17.6	0.67	0.67	21.5
North: Mt Carmel Church Rd											
7	L2	15	5.0	0.350	6.7	LOS A	1.9	49.7	0.39	0.24	13.1
4	T1	367	5.0	0.350	6.7	LOS A	1.9	49.7	0.39	0.24	23.2
14	R2	11	5.0	0.350	6.7	LOS A	1.9	49.7	0.39	0.24	23.6
Approach		393	5.0	0.350	6.7	LOS A	1.9	49.7	0.39	0.24	22.8
West: Bennett Rd											
5	L2	25	2.0	0.249	6.6	LOS A	1.1	29.1	0.54	0.47	24.4
2	T1	4	2.0	0.249	6.6	LOS A	1.1	29.1	0.54	0.47	21.8
12	R2	193	2.0	0.249	6.6	LOS A	1.1	29.1	0.54	0.47	23.3
Approach		223	2.0	0.249	6.6	LOS A	1.1	29.1	0.54	0.47	23.4
All Vehicles		1568	2.9	0.663	9.4	LOS A	7.1	181.5	0.42	0.25	22.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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LANE LEVEL OF SERVICE

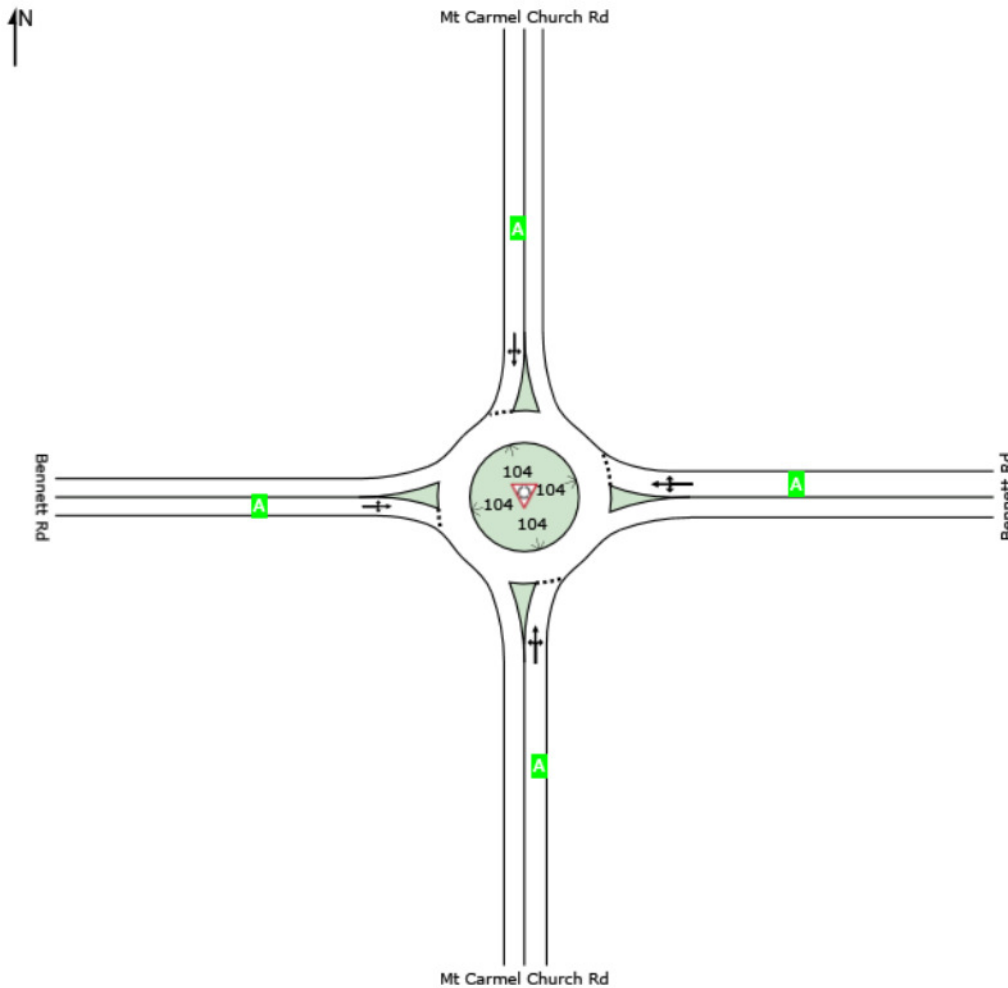
Lane Level of Service

 **Site: 101 [Mt Carmel Church_Bennett 2017 Existing Noon]**

Mt Carmel Church Rd & Bennett Rd
Roundabout

All Movement Classes

	South	East	North	West	Intersection
LOS	A	A	A	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.

LOS F will result if $v/c > 1$ irrespective of lane delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

MOVEMENT SUMMARY

 **Site: 101 [Mt Carmel Church_Bennett 2017 Existing Noon]**

Mt Carmel Church Rd & Bennett Rd
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Mt Carmel Church Rd											
3	L2	56	3.0	0.270	5.2	LOS A	1.5	37.2	0.21	0.08	24.9
8	T1	282	3.0	0.270	5.2	LOS A	1.5	37.2	0.21	0.08	23.4
18	R2	4	3.0	0.270	5.2	LOS A	1.5	37.2	0.21	0.08	23.0
Approach		343	3.0	0.270	5.2	LOS A	1.5	37.2	0.21	0.08	23.7
East: Bennett Rd											
1	L2	2	4.0	0.056	4.4	LOS A	0.2	5.8	0.44	0.32	25.2
6	T1	18	4.0	0.056	4.4	LOS A	0.2	5.8	0.44	0.32	22.8
16	R2	32	4.0	0.056	4.4	LOS A	0.2	5.8	0.44	0.32	23.3
Approach		52	4.0	0.056	4.4	LOS A	0.2	5.8	0.44	0.32	23.2
North: Mt Carmel Church Rd											
7	L2	38	3.0	0.278	5.4	LOS A	1.5	38.3	0.26	0.12	13.3
4	T1	305	3.0	0.278	5.4	LOS A	1.5	38.3	0.26	0.12	23.5
14	R2	1	3.0	0.278	5.4	LOS A	1.5	38.3	0.26	0.12	23.8
Approach		344	3.0	0.278	5.4	LOS A	1.5	38.3	0.26	0.12	22.3
West: Bennett Rd											
5	L2	5	2.0	0.070	4.5	LOS A	0.3	7.2	0.45	0.33	25.0
2	T1	11	2.0	0.070	4.5	LOS A	0.3	7.2	0.45	0.33	22.7
12	R2	50	2.0	0.070	4.5	LOS A	0.3	7.2	0.45	0.33	23.9
Approach		65	2.0	0.070	4.5	LOS A	0.3	7.2	0.45	0.33	23.8
All Vehicles		805	3.0	0.278	5.2	LOS A	1.5	38.3	0.26	0.14	23.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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LANE LEVEL OF SERVICE

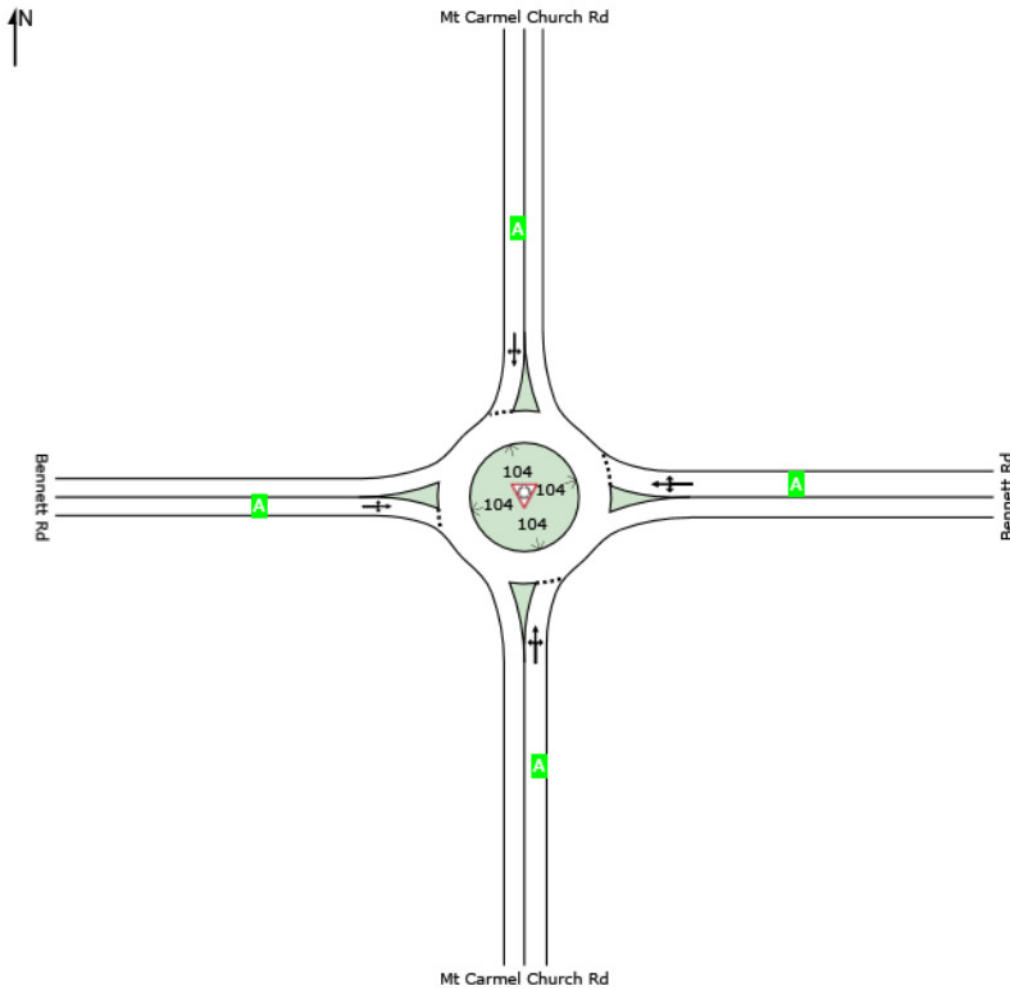
Lane Level of Service

 **Site: 101 [Mt Carmel Church_Bennett 2017 Existing PM]**

Mt Carmel Church Rd & Bennett Rd
Roundabout

All Movement Classes

	South	East	North	West	Intersection
LOS	A	A	A	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.

LOS F will result if $v/c > 1$ irrespective of lane delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

MOVEMENT SUMMARY

 **Site: 101 [Mt Carmel Church_Bennett 2017 Existing PM]**

Mt Carmel Church Rd & Bennett Rd
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Mt Carmel Church Rd											
3	L2	74	2.0	0.409	6.9	LOS A	2.6	67.2	0.29	0.14	24.5
8	T1	437	2.0	0.409	6.9	LOS A	2.6	67.2	0.29	0.14	23.1
18	R2	1	2.0	0.409	6.9	LOS A	2.6	67.2	0.29	0.14	22.5
Approach		512	2.0	0.409	6.9	LOS A	2.6	67.2	0.29	0.14	23.3
East: Bennett Rd											
1	L2	1	2.0	0.080	5.3	LOS A	0.3	8.1	0.54	0.45	24.7
6	T1	11	2.0	0.080	5.3	LOS A	0.3	8.1	0.54	0.45	22.4
16	R2	51	2.0	0.080	5.3	LOS A	0.3	8.1	0.54	0.45	22.9
Approach		63	2.0	0.080	5.3	LOS A	0.3	8.1	0.54	0.45	22.9
North: Mt Carmel Church Rd											
7	L2	58	2.0	0.584	9.8	LOS A	5.0	126.5	0.43	0.23	12.7
4	T1	658	2.0	0.584	9.8	LOS A	5.0	126.5	0.43	0.23	22.5
14	R2	6	2.0	0.584	9.8	LOS A	5.0	126.5	0.43	0.23	22.8
Approach		723	2.0	0.584	9.8	LOS A	5.0	126.5	0.43	0.23	21.6
West: Bennett Rd											
5	L2	4	2.0	0.255	8.8	LOS A	1.1	26.9	0.66	0.66	23.9
2	T1	11	2.0	0.255	8.8	LOS A	1.1	26.9	0.66	0.66	21.1
12	R2	148	2.0	0.255	8.8	LOS A	1.1	26.9	0.66	0.66	22.8
Approach		163	2.0	0.255	8.8	LOS A	1.1	26.9	0.66	0.66	22.8
All Vehicles		1461	2.0	0.584	8.5	LOS A	5.0	126.5	0.41	0.26	22.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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LANE LEVEL OF SERVICE

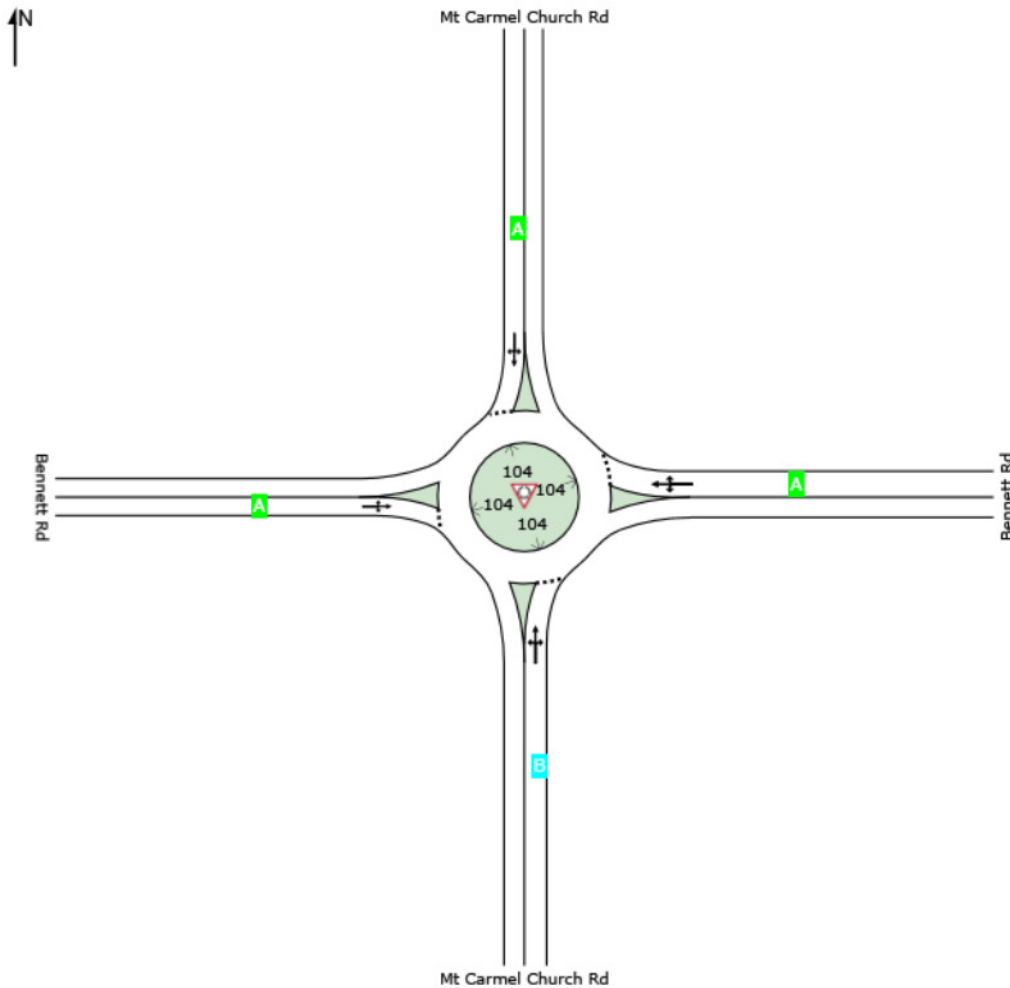
Lane Level of Service

 **Site: 101 [Mt Carmel Church_Bennett 2019 Without Site AM]**

Mt Carmel Church Rd & Bennett Rd
Roundabout

All Movement Classes

	South	East	North	West	Intersection
LOS	B	A	A	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.

LOS F will result if $v/c > 1$ irrespective of lane delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

MOVEMENT SUMMARY

 **Site: 101 [Mt Carmel Church_Bennett 2019 Without Site AM]**

Mt Carmel Church Rd & Bennett Rd
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Mt Carmel Church Rd											
3	L2	138	2.0	0.679	11.9	LOS B	7.6	193.5	0.39	0.16	23.2
8	T1	737	2.0	0.679	11.9	LOS B	7.6	193.5	0.39	0.16	21.9
18	R2	2	2.0	0.679	11.9	LOS B	7.6	193.5	0.39	0.16	20.8
Approach		877	2.0	0.679	11.9	LOS B	7.6	193.5	0.39	0.16	22.1
East: Bennett Rd											
1	L2	3	4.0	0.187	9.4	LOS A	0.7	18.1	0.67	0.67	23.0
6	T1	12	4.0	0.187	9.4	LOS A	0.7	18.1	0.67	0.67	20.9
16	R2	83	4.0	0.187	9.4	LOS A	0.7	18.1	0.67	0.67	21.4
Approach		97	4.0	0.187	9.4	LOS A	0.7	18.1	0.67	0.67	21.4
North: Mt Carmel Church Rd											
7	L2	15	5.0	0.359	6.8	LOS A	2.0	51.4	0.40	0.25	13.1
4	T1	376	5.0	0.359	6.8	LOS A	2.0	51.4	0.40	0.25	23.2
14	R2	11	5.0	0.359	6.8	LOS A	2.0	51.4	0.40	0.25	23.5
Approach		402	5.0	0.359	6.8	LOS A	2.0	51.4	0.40	0.25	22.8
West: Bennett Rd											
5	L2	25	2.0	0.255	6.7	LOS A	1.2	30.0	0.55	0.48	24.3
2	T1	4	2.0	0.255	6.7	LOS A	1.2	30.0	0.55	0.48	21.7
12	R2	197	2.0	0.255	6.7	LOS A	1.2	30.0	0.55	0.48	23.2
Approach		227	2.0	0.255	6.7	LOS A	1.2	30.0	0.55	0.48	23.3
All Vehicles		1603	2.9	0.679	9.7	LOS A	7.6	193.5	0.43	0.26	22.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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LANE LEVEL OF SERVICE

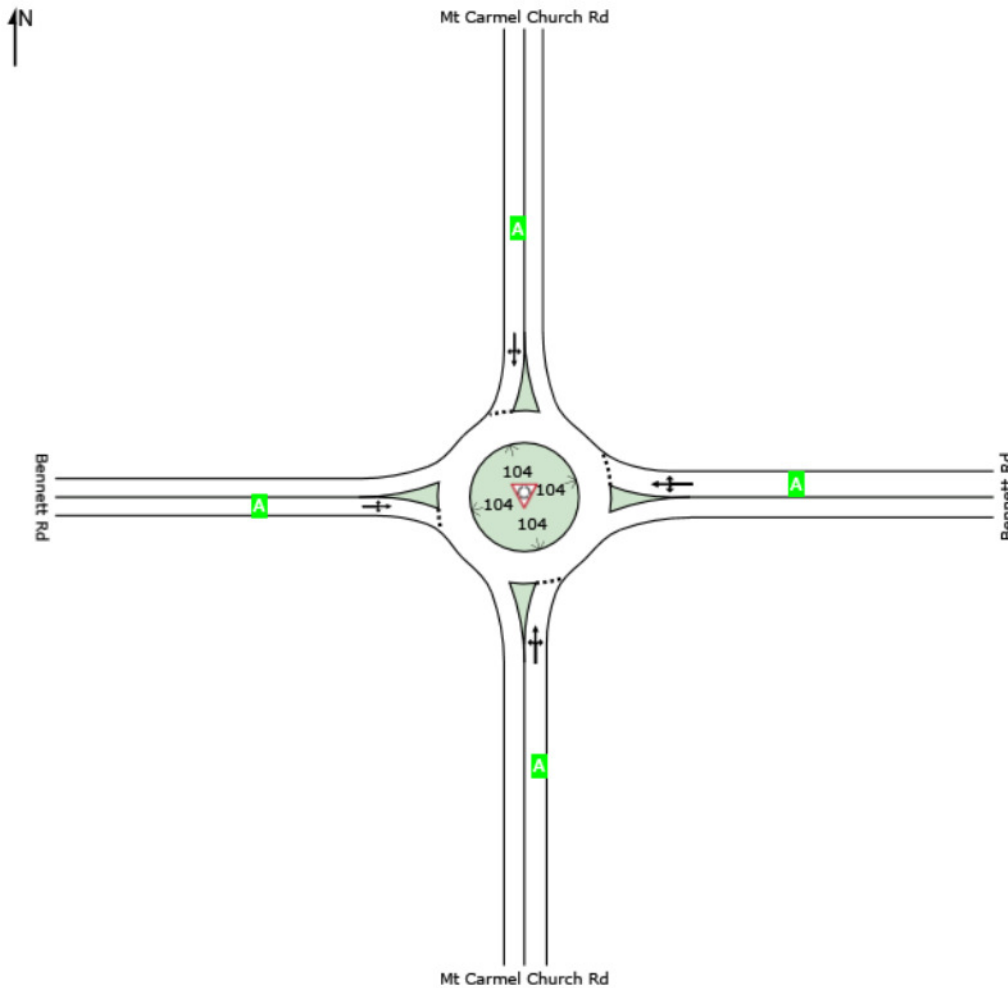
Lane Level of Service

 **Site: 101 [Mt Carmel Church_Bennett 2019 Without Site Noon]**

Mt Carmel Church Rd & Bennett Rd
Roundabout

All Movement Classes

	South	East	North	West	Intersection
LOS	A	A	A	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.

LOS F will result if $v/c > 1$ irrespective of lane delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

MOVEMENT SUMMARY

 **Site: 101 [Mt Carmel Church_Bennett 2019 Without Site Noon]**

Mt Carmel Church Rd & Bennett Rd
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Mt Carmel Church Rd											
3	L2	57	3.0	0.277	5.3	LOS A	1.5	38.5	0.21	0.09	24.9
8	T1	290	3.0	0.277	5.3	LOS A	1.5	38.5	0.21	0.09	23.4
18	R2	4	3.0	0.277	5.3	LOS A	1.5	38.5	0.21	0.09	23.0
Approach		351	3.0	0.277	5.3	LOS A	1.5	38.5	0.21	0.09	23.6
East: Bennett Rd											
1	L2	2	4.0	0.058	4.5	LOS A	0.2	6.0	0.45	0.32	25.2
6	T1	18	4.0	0.058	4.5	LOS A	0.2	6.0	0.45	0.32	22.8
16	R2	33	4.0	0.058	4.5	LOS A	0.2	6.0	0.45	0.32	23.3
Approach		53	4.0	0.058	4.5	LOS A	0.2	6.0	0.45	0.32	23.2
North: Mt Carmel Church Rd											
7	L2	39	3.0	0.286	5.5	LOS A	1.5	39.7	0.26	0.13	13.3
4	T1	313	3.0	0.286	5.5	LOS A	1.5	39.7	0.26	0.13	23.4
14	R2	1	3.0	0.286	5.5	LOS A	1.5	39.7	0.26	0.13	23.8
Approach		353	3.0	0.286	5.5	LOS A	1.5	39.7	0.26	0.13	22.2
West: Bennett Rd											
5	L2	5	2.0	0.071	4.5	LOS A	0.3	7.4	0.46	0.34	25.0
2	T1	11	2.0	0.071	4.5	LOS A	0.3	7.4	0.46	0.34	22.7
12	R2	51	2.0	0.071	4.5	LOS A	0.3	7.4	0.46	0.34	23.9
Approach		67	2.0	0.071	4.5	LOS A	0.3	7.4	0.46	0.34	23.8
All Vehicles		824	3.0	0.286	5.3	LOS A	1.5	39.7	0.27	0.14	23.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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LANE LEVEL OF SERVICE

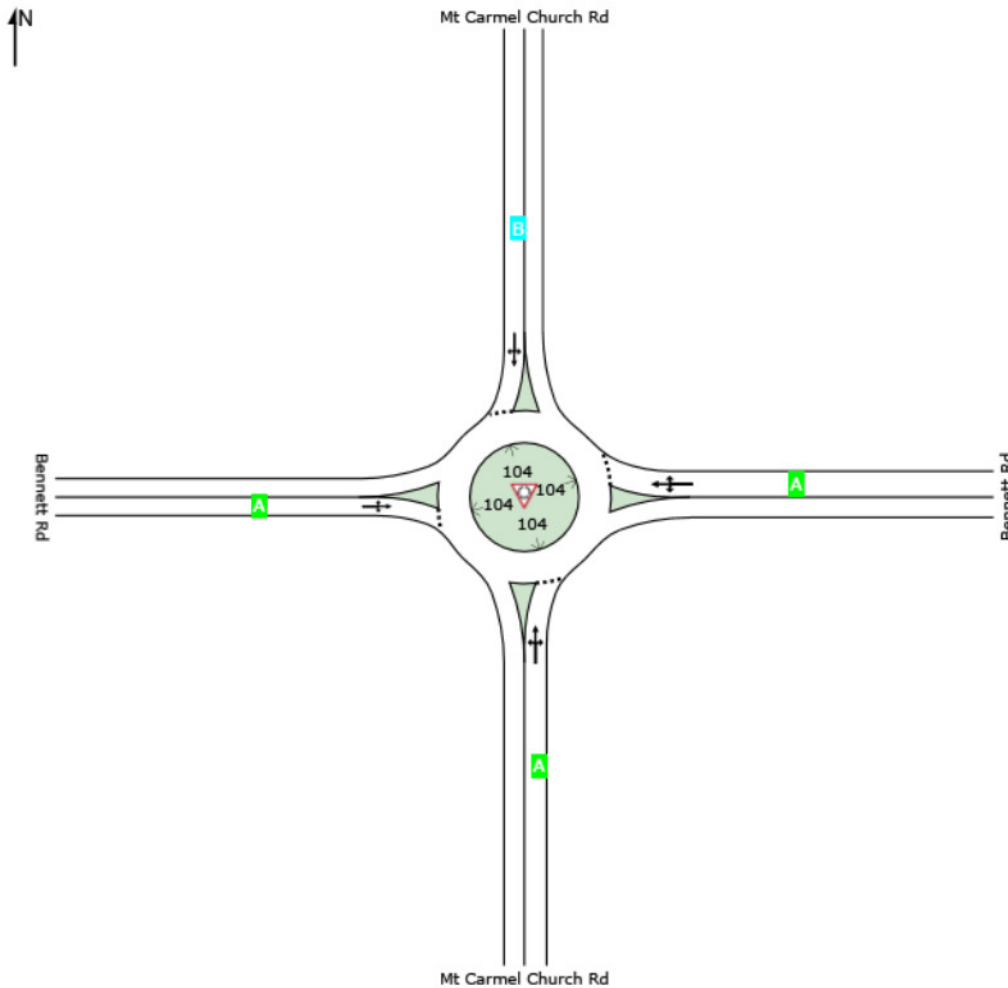
Lane Level of Service

 **Site: 101 [Mt Carmel Church_Bennett 2019 Without Site PM]**

Mt Carmel Church Rd & Bennett Rd
Roundabout

All Movement Classes

	South	East	North	West	Intersection
LOS	A	A	B	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.

LOS F will result if $v/c > 1$ irrespective of lane delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

MOVEMENT SUMMARY

 **Site: 101 [Mt Carmel Church_Bennett 2019 Without Site PM]**

Mt Carmel Church Rd & Bennett Rd
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Mt Carmel Church Rd											
3	L2	77	2.0	0.419	7.0	LOS A	2.7	69.8	0.30	0.15	24.4
8	T1	447	2.0	0.419	7.0	LOS A	2.7	69.8	0.30	0.15	23.0
18	R2	1	2.0	0.419	7.0	LOS A	2.7	69.8	0.30	0.15	22.4
Approach		524	2.0	0.419	7.0	LOS A	2.7	69.8	0.30	0.15	23.2
East: Bennett Rd											
1	L2	1	2.0	0.083	5.4	LOS A	0.3	8.3	0.54	0.46	24.7
6	T1	11	2.0	0.083	5.4	LOS A	0.3	8.3	0.54	0.46	22.4
16	R2	53	2.0	0.083	5.4	LOS A	0.3	8.3	0.54	0.46	22.9
Approach		64	2.0	0.083	5.4	LOS A	0.3	8.3	0.54	0.46	22.8
North: Mt Carmel Church Rd											
7	L2	60	2.0	0.599	10.2	LOS B	5.2	133.1	0.45	0.24	12.7
4	T1	674	2.0	0.599	10.2	LOS B	5.2	133.1	0.45	0.24	22.4
14	R2	6	2.0	0.599	10.2	LOS B	5.2	133.1	0.45	0.24	22.7
Approach		739	2.0	0.599	10.2	LOS B	5.2	133.1	0.45	0.24	21.6
West: Bennett Rd											
5	L2	4	2.0	0.264	9.1	LOS A	1.1	27.9	0.67	0.67	23.8
2	T1	11	2.0	0.264	9.1	LOS A	1.1	27.9	0.67	0.67	21.1
12	R2	152	2.0	0.264	9.1	LOS A	1.1	27.9	0.67	0.67	22.8
Approach		166	2.0	0.264	9.1	LOS A	1.1	27.9	0.67	0.67	22.7
All Vehicles		1495	2.0	0.599	8.7	LOS A	5.2	133.1	0.42	0.27	22.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Project: C:\Users\mquesenberry\Desktop\Chapel Hill Preschool TIS.sip7

LANE LEVEL OF SERVICE

Lane Level of Service

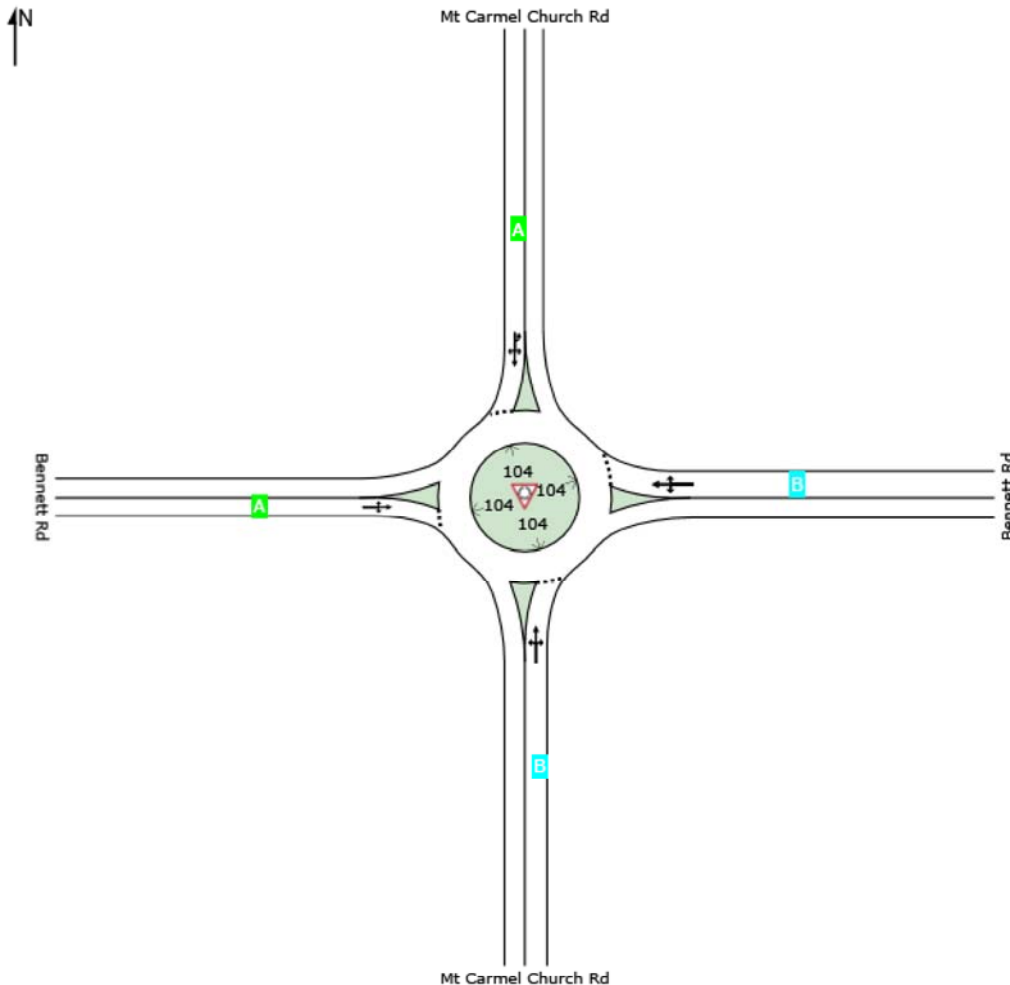


Site: 101 [Mt Carmel Church_Bennett 2019 With Site AM]

Mt Carmel Church Rd & Bennett Rd
Roundabout

All Movement Classes

	South	East	North	West	Intersection
LOS	B	B	A	A	B



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.

LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

MOVEMENT SUMMARY

 **Site: 101 [Mt Carmel Church_Bennett 2019 With Site AM]**

Mt Carmel Church Rd & Bennett Rd
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Mt Carmel Church Rd											
3	L2	138	2.0	0.714	13.5	LOS B	8.0	202.5	0.58	0.33	22.9
8	T1	738	2.0	0.714	13.5	LOS B	8.0	202.5	0.58	0.33	21.6
18	R2	2	2.0	0.714	13.5	LOS B	8.0	202.5	0.58	0.33	20.3
Approach		878	2.0	0.714	13.5	LOS B	8.0	202.5	0.58	0.33	21.8
East: Bennett Rd											
1	L2	3	4.0	0.197	10.0	LOS B	0.7	18.9	0.68	0.68	22.7
6	T1	12	4.0	0.197	10.0	LOS B	0.7	18.9	0.68	0.68	20.7
16	R2	83	4.0	0.197	10.0	LOS B	0.7	18.9	0.68	0.68	21.2
Approach		97	4.0	0.197	10.0	LOS B	0.7	18.9	0.68	0.68	21.2
North: Mt Carmel Church Rd											
7u	U	34	5.0	0.389	7.2	LOS A	2.2	57.8	0.41	0.26	25.1
7	L2	15	5.0	0.389	7.2	LOS A	2.2	57.8	0.41	0.26	13.1
4	T1	376	5.0	0.389	7.2	LOS A	2.2	57.8	0.41	0.26	23.0
14	R2	11	5.0	0.389	7.2	LOS A	2.2	57.8	0.41	0.26	23.3
Approach		436	5.0	0.389	7.2	LOS A	2.2	57.8	0.41	0.26	22.8
West: Bennett Rd											
5	L2	37	2.0	0.281	7.2	LOS A	1.3	33.1	0.58	0.53	24.2
2	T1	4	2.0	0.281	7.2	LOS A	1.3	33.1	0.58	0.53	21.5
12	R2	199	2.0	0.281	7.2	LOS A	1.3	33.1	0.58	0.53	23.1
Approach		240	2.0	0.281	7.2	LOS A	1.3	33.1	0.58	0.53	23.2
All Vehicles		1652	2.9	0.714	10.7	LOS B	8.0	202.5	0.54	0.36	22.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE LEVEL OF SERVICE

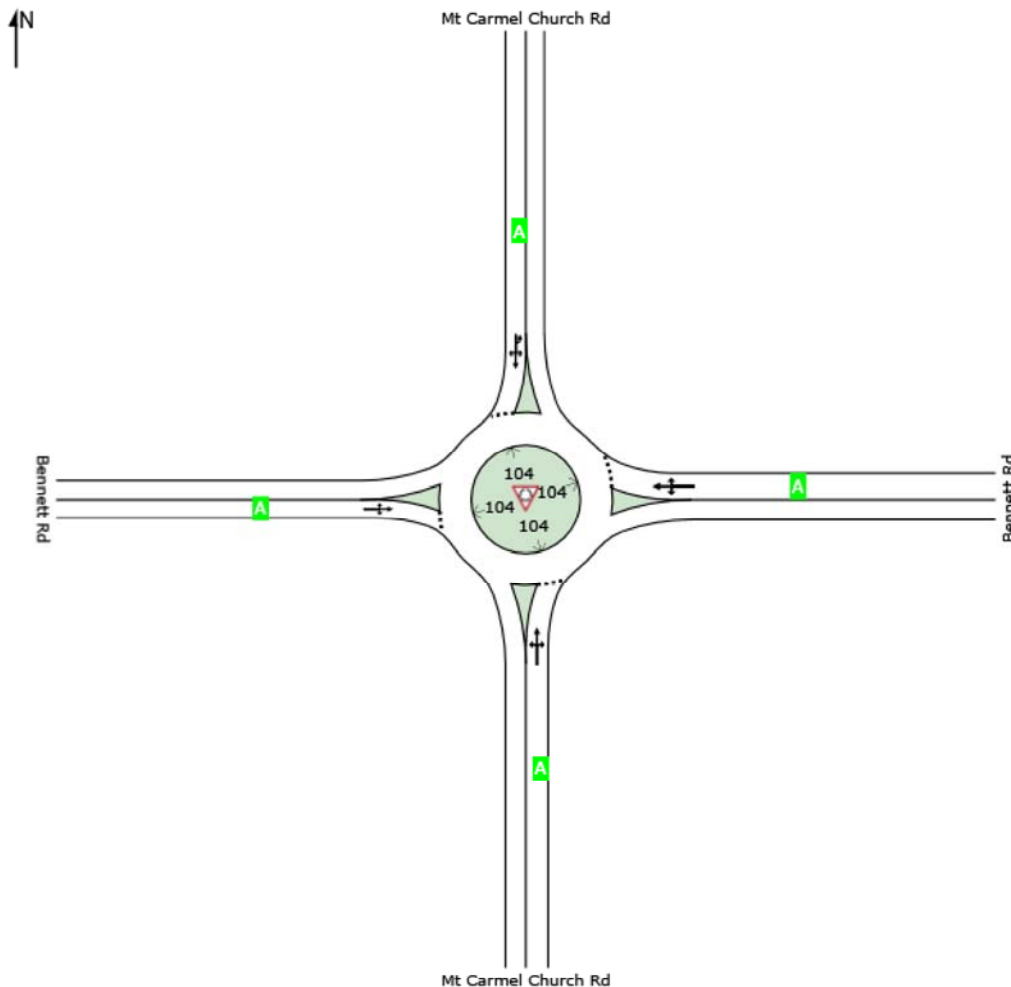
Lane Level of Service

 **Site: 101 [Mt Carmel Church_Bennett 2019 With Site Noon]**

Mt Carmel Church Rd & Bennett Rd
Roundabout

All Movement Classes

	South	East	North	West	Intersection
LOS	A	A	A	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.

LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

MOVEMENT SUMMARY

 **Site: 101 [Mt Carmel Church_Bennett 2019 With Site Noon]**

Mt Carmel Church Rd & Bennett Rd
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Mt Carmel Church Rd											
3	L2	57	3.0	0.280	5.4	LOS A	1.5	38.8	0.23	0.10	24.8
8	T1	290	3.0	0.280	5.4	LOS A	1.5	38.8	0.23	0.10	23.4
18	R2	4	3.0	0.280	5.4	LOS A	1.5	38.8	0.23	0.10	23.0
Approach		351	3.0	0.280	5.4	LOS A	1.5	38.8	0.23	0.10	23.6
East: Bennett Rd											
1	L2	2	4.0	0.059	4.5	LOS A	0.2	6.0	0.46	0.33	25.2
6	T1	18	4.0	0.059	4.5	LOS A	0.2	6.0	0.46	0.33	22.8
16	R2	33	4.0	0.059	4.5	LOS A	0.2	6.0	0.46	0.33	23.3
Approach		53	4.0	0.059	4.5	LOS A	0.2	6.0	0.46	0.33	23.2
North: Mt Carmel Church Rd											
7u	U	8	3.0	0.292	5.6	LOS A	1.6	40.8	0.26	0.13	25.5
7	L2	39	3.0	0.292	5.6	LOS A	1.6	40.8	0.26	0.13	13.2
4	T1	313	3.0	0.292	5.6	LOS A	1.6	40.8	0.26	0.13	23.4
14	R2	1	3.0	0.292	5.6	LOS A	1.6	40.8	0.26	0.13	23.7
Approach		361	3.0	0.292	5.6	LOS A	1.6	40.8	0.26	0.13	22.3
West: Bennett Rd											
5	L2	7	2.0	0.075	4.6	LOS A	0.3	7.8	0.46	0.34	25.0
2	T1	11	2.0	0.075	4.6	LOS A	0.3	7.8	0.46	0.34	22.6
12	R2	51	2.0	0.075	4.6	LOS A	0.3	7.8	0.46	0.34	23.8
Approach		69	2.0	0.075	4.6	LOS A	0.3	7.8	0.46	0.34	23.8
All Vehicles		835	3.0	0.292	5.3	LOS A	1.6	40.8	0.28	0.15	23.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Project: P:\38435 Chapel Hill TIA\Chapel Hill Preschool SIDRA\Chapel Hill Preschool TIS.sip7

LANE LEVEL OF SERVICE

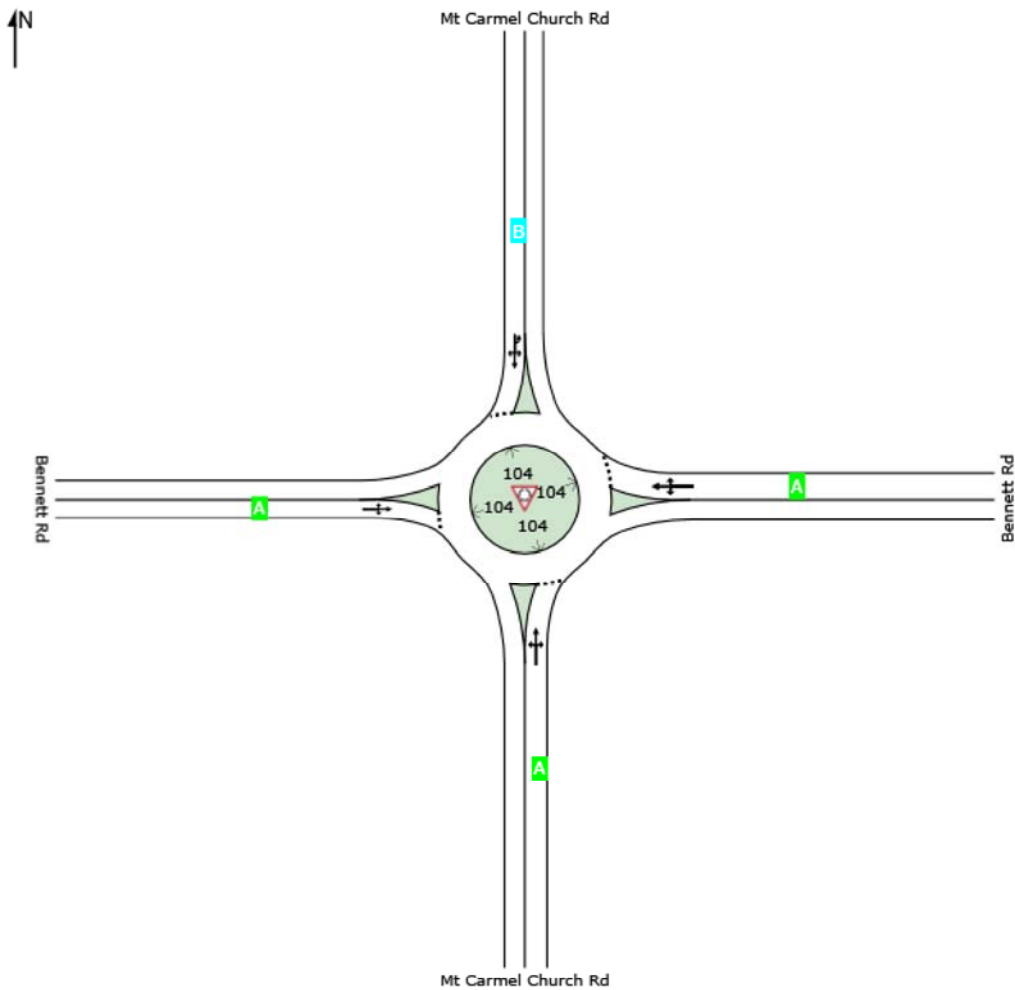
Lane Level of Service

 **Site: 101 [Mt Carmel Church_Bennett 2019 With Site PM]**

Mt Carmel Church Rd & Bennett Rd
Roundabout

All Movement Classes

	South	East	North	West	Intersection
LOS	A	A	B	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

MOVEMENT SUMMARY

 **Site: 101 [Mt Carmel Church_Bennett 2019 With Site PM]**

Mt Carmel Church Rd & Bennett Rd
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Mt Carmel Church Rd											
3	L2	77	2.0	0.440	7.6	LOS A	2.9	72.9	0.40	0.23	24.3
8	T1	448	2.0	0.440	7.6	LOS A	2.9	72.9	0.40	0.23	22.9
18	R2	1	2.0	0.440	7.6	LOS A	2.9	72.9	0.40	0.23	22.2
Approach		526	2.0	0.440	7.6	LOS A	2.9	72.9	0.40	0.23	23.1
East: Bennett Rd											
1	L2	1	2.0	0.087	5.7	LOS A	0.3	8.7	0.56	0.50	24.6
6	T1	11	2.0	0.087	5.7	LOS A	0.3	8.7	0.56	0.50	22.3
16	R2	53	2.0	0.087	5.7	LOS A	0.3	8.7	0.56	0.50	22.8
Approach		64	2.0	0.087	5.7	LOS A	0.3	8.7	0.56	0.50	22.7
North: Mt Carmel Church Rd											
7u	U	36	2.0	0.628	10.8	LOS B	5.8	147.8	0.47	0.26	24.1
7	L2	60	2.0	0.628	10.8	LOS B	5.8	147.8	0.47	0.26	12.6
4	T1	674	2.0	0.628	10.8	LOS B	5.8	147.8	0.47	0.26	22.2
14	R2	6	2.0	0.628	10.8	LOS B	5.8	147.8	0.47	0.26	22.5
Approach		775	2.0	0.628	10.8	LOS B	5.8	147.8	0.47	0.26	21.5
West: Bennett Rd											
5	L2	14	2.0	0.291	9.8	LOS A	1.2	30.9	0.68	0.68	23.6
2	T1	11	2.0	0.291	9.8	LOS A	1.2	30.9	0.68	0.68	20.8
12	R2	153	2.0	0.291	9.8	LOS A	1.2	30.9	0.68	0.68	22.6
Approach		177	2.0	0.291	9.8	LOS A	1.2	30.9	0.68	0.68	22.6
All Vehicles		1542	2.0	0.628	9.4	LOS A	5.8	147.8	0.47	0.31	22.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE LEVEL OF SERVICE

Lane Level of Service

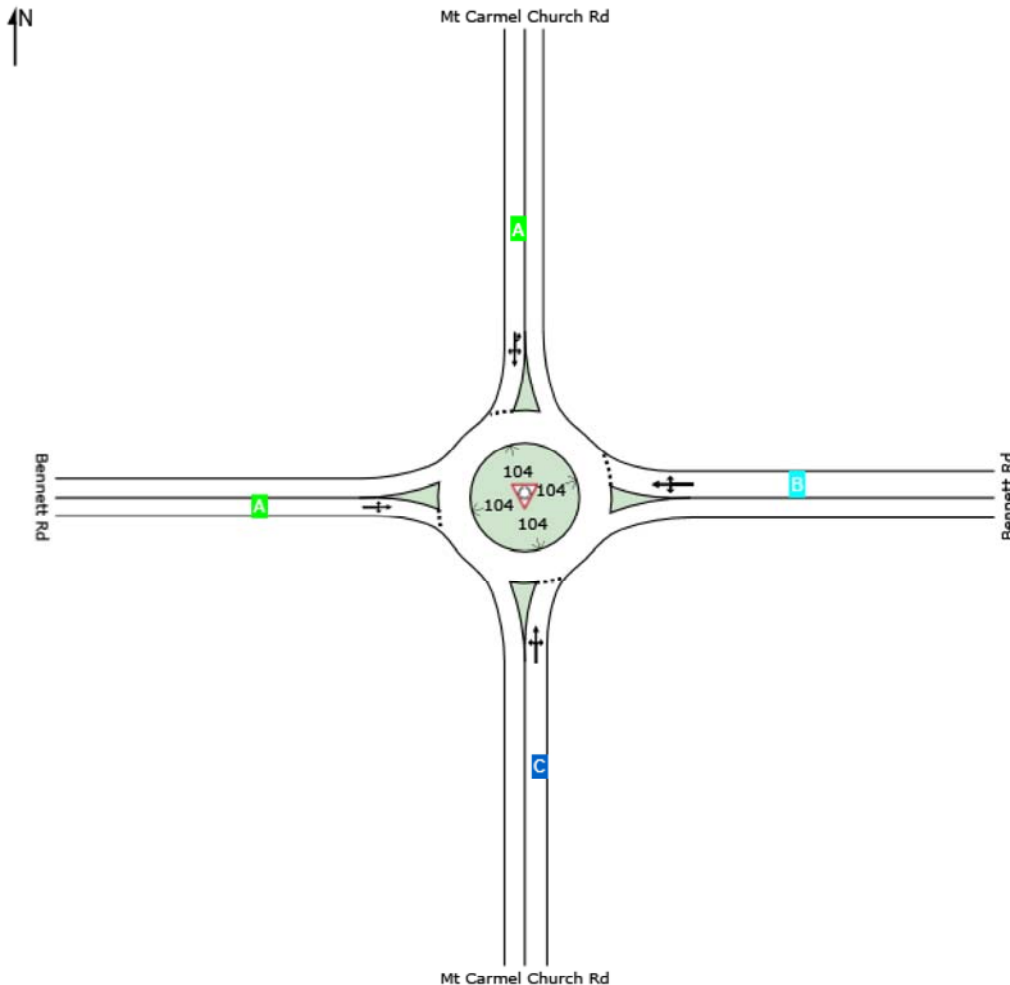


Site: 101 [Mt Carmel Church_Bennett 2022 With Site AM]

Mt Carmel Church Rd & Bennett Rd
Roundabout

All Movement Classes

	South	East	North	West	Intersection
LOS	C	B	A	A	B



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.

LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

MOVEMENT SUMMARY

 **Site: 101 [Mt Carmel Church_Bennett 2022 With Site AM]**

Mt Carmel Church Rd & Bennett Rd
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Mt Carmel Church Rd											
3	L2	169	2.0	0.766	15.7	LOS C	9.6	245.1	0.68	0.40	22.3
8	T1	764	2.0	0.766	15.7	LOS C	9.6	245.1	0.68	0.40	21.1
18	R2	2	2.0	0.766	15.7	LOS C	9.6	245.1	0.68	0.40	19.6
Approach		936	2.0	0.766	15.7	LOS C	9.6	245.1	0.68	0.40	21.3
East: Bennett Rd											
1	L2	3	4.0	0.238	11.3	LOS B	0.9	22.9	0.71	0.71	22.3
6	T1	21	4.0	0.238	11.3	LOS B	0.9	22.9	0.71	0.71	20.4
16	R2	87	4.0	0.238	11.3	LOS B	0.9	22.9	0.71	0.71	20.8
Approach		111	4.0	0.238	11.3	LOS B	0.9	22.9	0.71	0.71	20.7
North: Mt Carmel Church Rd											
7u	U	34	5.0	0.420	7.9	LOS A	2.4	63.0	0.47	0.33	24.9
7	L2	16	5.0	0.420	7.9	LOS A	2.4	63.0	0.47	0.33	13.0
4	T1	389	5.0	0.420	7.9	LOS A	2.4	63.0	0.47	0.33	22.9
14	R2	12	5.0	0.420	7.9	LOS A	2.4	63.0	0.47	0.33	23.2
Approach		452	5.0	0.420	7.9	LOS A	2.4	63.0	0.47	0.33	22.6
West: Bennett Rd											
5	L2	39	2.0	0.321	7.9	LOS A	1.5	38.9	0.60	0.56	24.0
2	T1	8	2.0	0.321	7.9	LOS A	1.5	38.9	0.60	0.56	21.3
12	R2	224	2.0	0.321	7.9	LOS A	1.5	38.9	0.60	0.56	22.9
Approach		271	2.0	0.321	7.9	LOS A	1.5	38.9	0.60	0.56	23.1
All Vehicles		1769	2.9	0.766	12.2	LOS B	9.6	245.1	0.62	0.42	21.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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LANE LEVEL OF SERVICE

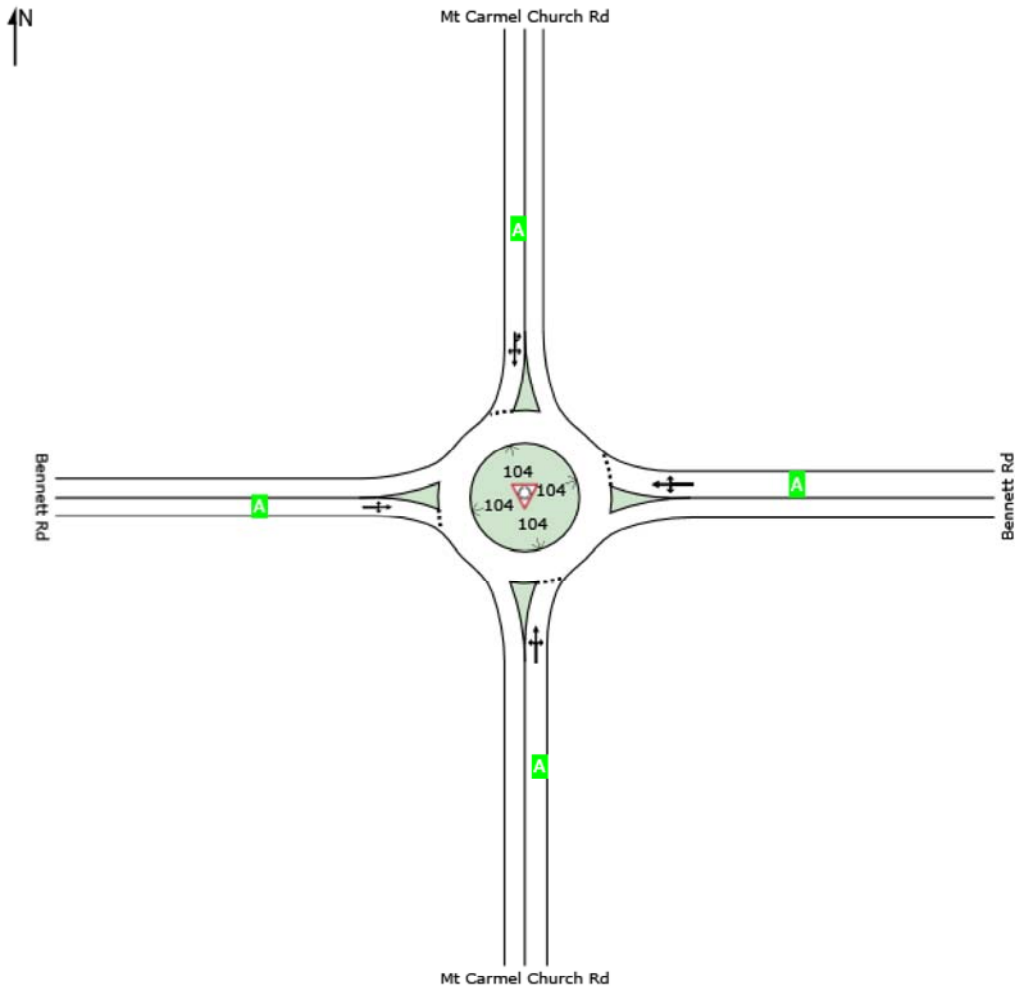
Lane Level of Service

 **Site: 101 [Mt Carmel Church_Bennett 2022 With Site Noon]**

Mt Carmel Church Rd & Bennett Rd
Roundabout

All Movement Classes

	South	East	North	West	Intersection
LOS	A	A	A	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

MOVEMENT SUMMARY

 **Site: 101 [Mt Carmel Church_Bennett 2022 With Site Noon]**

Mt Carmel Church Rd & Bennett Rd
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Mt Carmel Church Rd											
3	L2	75	3.0	0.304	5.7	LOS A	1.7	43.2	0.25	0.12	24.7
8	T1	299	3.0	0.304	5.7	LOS A	1.7	43.2	0.25	0.12	23.3
18	R2	4	3.0	0.304	5.7	LOS A	1.7	43.2	0.25	0.12	22.8
Approach		378	3.0	0.304	5.7	LOS A	1.7	43.2	0.25	0.12	23.6
East: Bennett Rd											
1	L2	2	4.0	0.068	4.7	LOS A	0.3	7.0	0.47	0.36	25.1
6	T1	24	4.0	0.068	4.7	LOS A	0.3	7.0	0.47	0.36	22.7
16	R2	34	4.0	0.068	4.7	LOS A	0.3	7.0	0.47	0.36	23.2
Approach		60	4.0	0.068	4.7	LOS A	0.3	7.0	0.47	0.36	23.1
North: Mt Carmel Church Rd											
7u	U	8	3.0	0.309	5.9	LOS A	1.7	43.6	0.31	0.17	25.5
7	L2	40	3.0	0.309	5.9	LOS A	1.7	43.6	0.31	0.17	13.2
4	T1	323	3.0	0.309	5.9	LOS A	1.7	43.6	0.31	0.17	23.3
14	R2	1	3.0	0.309	5.9	LOS A	1.7	43.6	0.31	0.17	23.6
Approach		373	3.0	0.309	5.9	LOS A	1.7	43.6	0.31	0.17	22.2
West: Bennett Rd											
5	L2	7	2.0	0.102	4.9	LOS A	0.4	10.7	0.48	0.37	24.9
2	T1	15	2.0	0.102	4.9	LOS A	0.4	10.7	0.48	0.37	22.5
12	R2	70	2.0	0.102	4.9	LOS A	0.4	10.7	0.48	0.37	23.8
Approach		93	2.0	0.102	4.9	LOS A	0.4	10.7	0.48	0.37	23.7
All Vehicles		904	3.0	0.309	5.6	LOS A	1.7	43.6	0.31	0.18	23.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Project: P:\38435 Chapel Hill TIA\Chapel Hill Preschool SIDRA\Chapel Hill Preschool TIS.sip7

LANE LEVEL OF SERVICE

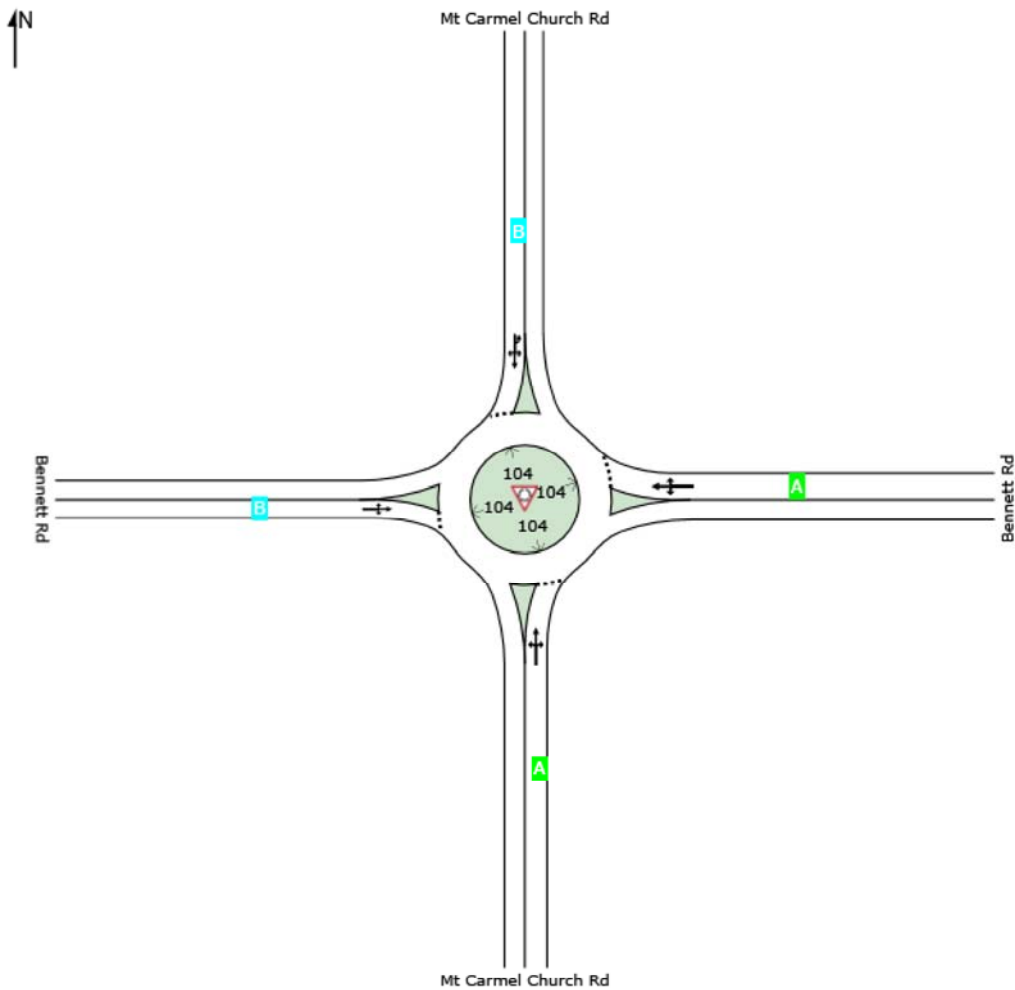
Lane Level of Service

 **Site: 101 [Mt Carmel Church_Bennett 2022 With Site PM]**

Mt Carmel Church Rd & Bennett Rd
Roundabout

All Movement Classes

	South	East	North	West	Intersection
LOS	A	A	B	B	B



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

MOVEMENT SUMMARY

 **Site: 101 [Mt Carmel Church_Bennett 2022 With Site PM]**

Mt Carmel Church Rd & Bennett Rd
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Mt Carmel Church Rd											
3	L2	97	2.0	0.475	8.1	LOS A	3.2	82.2	0.43	0.26	24.1
8	T1	464	2.0	0.475	8.1	LOS A	3.2	82.2	0.43	0.26	22.7
18	R2	1	2.0	0.475	8.1	LOS A	3.2	82.2	0.43	0.26	22.0
Approach		562	2.0	0.475	8.1	LOS A	3.2	82.2	0.43	0.26	23.0
East: Bennett Rd											
1	L2	1	2.0	0.099	6.1	LOS A	0.4	9.9	0.58	0.53	24.4
6	T1	16	2.0	0.099	6.1	LOS A	0.4	9.9	0.58	0.53	22.2
16	R2	54	2.0	0.099	6.1	LOS A	0.4	9.9	0.58	0.53	22.7
Approach		71	2.0	0.099	6.1	LOS A	0.4	9.9	0.58	0.53	22.6
North: Mt Carmel Church Rd											
7u	U	36	2.0	0.667	12.1	LOS B	6.4	163.3	0.57	0.34	23.8
7	L2	62	2.0	0.667	12.1	LOS B	6.4	163.3	0.57	0.34	12.5
4	T1	698	2.0	0.667	12.1	LOS B	6.4	163.3	0.57	0.34	21.9
14	R2	6	2.0	0.667	12.1	LOS B	6.4	163.3	0.57	0.34	22.2
Approach		801	2.0	0.667	12.1	LOS B	6.4	163.3	0.57	0.34	21.2
West: Bennett Rd											
5	L2	14	2.0	0.362	11.3	LOS B	1.6	41.9	0.71	0.75	23.2
2	T1	18	2.0	0.362	11.3	LOS B	1.6	41.9	0.71	0.75	20.3
12	R2	182	2.0	0.362	11.3	LOS B	1.6	41.9	0.71	0.75	22.2
Approach		214	2.0	0.362	11.3	LOS B	1.6	41.9	0.71	0.75	22.2
All Vehicles		1648	2.0	0.667	10.4	LOS B	6.4	163.3	0.54	0.38	22.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Appendix H – Crash Data

**North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Strip Analysis Report**

Study Criteria Summary

County: ORANGE **City:** All and Rural
Date: 09/01/2012 to 08/31/2017 **Study:** MTCARMELCHRDSTRIP
Location: SR 1008 (Mt. Carmel Church Rd) from SR 1913 (Bennett Rd) to US 15-501

Report Details

Acc No	Crash ID	Milepost	Date	Accident Type	Total Damage	Injuries				Condition			Road		Trfc Ctl	
						F	A	B	C	R	L	W	Ch	Ci	Dv	Op
1	103642249	2.460	12/10/2012 15:49	ANGLE	\$ 21000	0	0	1	2	1	1	1	1	0	1	1
Unit	1 : 1	Alchl/Drgs:	0	Speed: 45 MPH Dir: E		Veh Mnvr/Ped Actn:				4			Obj Strk:		20	
Unit	2 : 5	Alchl/Drgs:	0	Speed: 35 MPH Dir: N		Veh Mnvr/Ped Actn:				4			Obj Strk:			
Unit	3 : 1	Alchl/Drgs:	0	Speed: 0 MPH Dir: W		Veh Mnvr/Ped Actn:				1			Obj Strk:			
2	103790229	2.460	06/21/2013 09:00	REAR END, SLOW OR STOP	\$ 4000	0	0	0	0	1	1	1	5	0	0	2
Unit	1 : 1	Alchl/Drgs:	0	Speed: 50 MPH Dir: W		Veh Mnvr/Ped Actn:				4			Obj Strk:			
Unit	2 : 5	Alchl/Drgs:	0	Speed: 0 MPH Dir: W		Veh Mnvr/Ped Actn:				1			Obj Strk:			
3	103819598	2.460	07/30/2013 15:16	ANGLE	\$ 4000	0	0	0	0	1	1	1	5	0	1	1
Unit	1 : 1	Alchl/Drgs:	0	Speed: 35 MPH Dir: S		Veh Mnvr/Ped Actn:				4			Obj Strk:			
Unit	2 : 1	Alchl/Drgs:	0	Speed: 10 MPH Dir: W		Veh Mnvr/Ped Actn:				4			Obj Strk:			
4	103995414	2.460	02/27/2014 15:50	ANGLE	\$ 5000	0	0	0	0	1	1	1	6	0	1	1
Unit	1 : 1	Alchl/Drgs:	0	Speed: 20 MPH Dir: N		Veh Mnvr/Ped Actn:				4			Obj Strk:			
Unit	2 : 4	Alchl/Drgs:	0	Speed: 25 MPH Dir: W		Veh Mnvr/Ped Actn:				4			Obj Strk:			
5	104023905	2.460	03/21/2014 15:30	ANGLE	\$ 23550	0	0	1	0	1	1	1	7	0	1	1
Unit	1 : 1	Alchl/Drgs:	0	Speed: 35 MPH Dir: E		Veh Mnvr/Ped Actn:				4			Obj Strk:		34	
Unit	2 : 2	Alchl/Drgs:	0	Speed: 35 MPH Dir: N		Veh Mnvr/Ped Actn:				4			Obj Strk:		37	
6	104068224	2.460	05/16/2014 09:54	SIDESWIPE, SAME DIRECTION	\$ 1500	0	0	0	0	1	1	1	5	0		
Unit	1 : 1	Alchl/Drgs:	0	Speed: 25 MPH Dir: N		Veh Mnvr/Ped Actn:				6			Obj Strk:			
Unit	2 : 4	Alchl/Drgs:	0	Speed: 0 MPH Dir: N		Veh Mnvr/Ped Actn:				1			Obj Strk:			
7	104458428	2.460	08/06/2015 18:17	REAR END, SLOW OR STOP	\$ 1100	0	0	0	0	2	1	3	1	1	13	1
Unit	1 : 1	Alchl/Drgs:	0	Speed: 35 MPH Dir: S		Veh Mnvr/Ped Actn:				4			Obj Strk:			
Unit	2 : 2	Alchl/Drgs:	0	Speed: 0 MPH Dir: S		Veh Mnvr/Ped Actn:				1			Obj Strk:			
8	104769791	2.460	06/01/2016 08:17	REAR END, SLOW OR STOP	\$ 4500	0	0	0	0	1	1	1	5	0	0	2
Unit	1 : 2	Alchl/Drgs:	0	Speed: 35 MPH Dir: N		Veh Mnvr/Ped Actn:				11			Obj Strk:			

North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Strip Analysis Report

Acc No	Crash ID	Milepost	Date	Accident Type			Total Damage	Injuries				Condition			Road		Trfc Ctl	
								F	A	B	C	R	L	W	Ch	Ci	Dv	Op
Unit	2 : 5	Alchl/Drgs:	0	Speed:	0 MPH	Dir:	N	Veh Mnvr/Ped Actn:				1	Obj Strk:					
9	104829284	2.460	08/23/2016 18:26	LEFT TURN, DIFFERENT ROADWAYS			\$ 2700	0	0	0	0	1	1	1	3	0	1	1
Unit	1 : 4	Alchl/Drgs:	0	Speed:	25 MPH	Dir:	E	Veh Mnvr/Ped Actn:				8	Obj Strk:					
Unit	2 : 4	Alchl/Drgs:	0	Speed:	0 MPH	Dir:	N	Veh Mnvr/Ped Actn:				1	Obj Strk:					
10	105105736	2.461	05/15/2017 07:50	REAR END, SLOW OR STOP			\$ 1100	0	0	0	0	1	1	1	1	0	1	2
Unit	1 : 2	Alchl/Drgs:	0	Speed:	5 MPH	Dir:	W	Veh Mnvr/Ped Actn:				7	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed:	0 MPH	Dir:	W	Veh Mnvr/Ped Actn:				8	Obj Strk:					
11	103633900	2.479	12/07/2012 18:32	REAR END, SLOW OR STOP			\$ 4000	0	0	0	1	1	5	1	1	0	0	2
Unit	1 : 1	Alchl/Drgs:	0	Speed:	30 MPH	Dir:	N	Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed:	0 MPH	Dir:	N	Veh Mnvr/Ped Actn:				11	Obj Strk:					
12	103588814	2.517	10/25/2012 07:07	RAN OFF ROAD - RIGHT			\$ 10000	0	0	0	0	1	5	1	1	0	0	
Unit	1 : 1	Alchl/Drgs:	7	Speed:	35 MPH	Dir:	W	Veh Mnvr/Ped Actn:				12	Obj Strk:					
13	103744204	2.530	04/29/2013 09:39	FIXED OBJECT			\$ 2000	0	0	0	1	2	1	2	1	0	2	2
Unit	1 : 4	Alchl/Drgs:	0	Speed:	25 MPH	Dir:	N	Veh Mnvr/Ped Actn:				15	Obj Strk: 33					
14	103908423	2.530	10/26/2013 12:31	ANGLE			\$ 7000	0	0	0	4	1	1	1	7	0		2
Unit	1 : 1	Alchl/Drgs:	0	Speed:	40 MPH	Dir:	W	Veh Mnvr/Ped Actn:				6	Obj Strk:					
Unit	2 : 5	Alchl/Drgs:	0	Speed:	20 MPH	Dir:	W	Veh Mnvr/Ped Actn:				8	Obj Strk:					
15	105210029	2.552	08/26/2017 01:03	RAN OFF ROAD - LEFT			\$ 15000	0	0	1	0	2	4	2	3	0	13	1
Unit	1 : 1	Alchl/Drgs:	1	Speed:	55 MPH	Dir:	SW	Veh Mnvr/Ped Actn:				4	Obj Strk: 33					
16	104959786	2.565	11/26/2016 08:01	RAN OFF ROAD - RIGHT			\$ 6500	0	0	2	0	1	1	2	6	0	1	1
Unit	1 : 1	Alchl/Drgs:	5	Speed:	61 MPH	Dir:	W	Veh Mnvr/Ped Actn:				4	Obj Strk: 64					
17	104599122	2.590	12/14/2015 07:26	REAR END, SLOW OR STOP			\$ 1700	0	0	0	0	2	1	2	3	0	0	2
Unit	1 : 1	Alchl/Drgs:	0	Speed:	35 MPH	Dir:	E	Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed:	0 MPH	Dir:	E	Veh Mnvr/Ped Actn:				1	Obj Strk:					
18	103581690	2.680	10/18/2012 15:19	REAR END, SLOW OR STOP			\$ 6200	0	0	0	0	1	1	1	6	0	0	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	0 MPH	Dir:	E	Veh Mnvr/Ped Actn:				1	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed:	0 MPH	Dir:	E	Veh Mnvr/Ped Actn:				1	Obj Strk:					

**North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Strip Analysis Report**

Acc No	Crash ID	Milepost	Date	Accident Type	Total Damage	Injuries				Condition			Road		Trfc Ctl	
						F	A	B	C	R	L	W	Ch	Ci	Dv	Op
19	104001320	2.701	02/15/2014 21:56	RAN OFF ROAD - LEFT	\$ 3500	0	0	0	2	4	5	2	3	1	13	1
Unit	1 : 4	Alchl/Drugs: 0	Speed: 30 MPH Dir: SE	Veh Mnvr/Ped Actn: 4				Obj Strk: 59								
20	105169485	2.798	07/17/2017 20:36	RAN OFF ROAD - RIGHT	\$ 9000	0	0	0	0	1	1	2	2	0		1
Unit	1 : 5	Alchl/Drugs: 0	Speed: 0 MPH Dir: E	Veh Mnvr/Ped Actn: 2				Obj Strk: 20								
Unit	2 : 2	Alchl/Drugs: 7	Speed: 35 MPH Dir: E	Veh Mnvr/Ped Actn: 4				Obj Strk:								
21	104940320	2.835	11/19/2016 11:17	REAR END, SLOW OR STOP	\$ 2000	0	0	0	0	1	1	1	4	0	3	1
Unit	1 : 1	Alchl/Drugs: 0	Speed: 35 MPH Dir: NW	Veh Mnvr/Ped Actn: 1				Obj Strk:								
Unit	2 : 1	Alchl/Drugs: 0	Speed: 35 MPH Dir: NW	Veh Mnvr/Ped Actn: 4				Obj Strk:								
22	105047256	2.835	03/22/2017 09:40	REAR END, SLOW OR STOP	\$ 4000	0	0	0	0	1	1	1	4	0	3	1
Unit	1 : 1	Alchl/Drugs: 0	Speed: 0 MPH Dir: W	Veh Mnvr/Ped Actn: 11				Obj Strk:								
Unit	2 : 1	Alchl/Drugs: 0	Speed: 0 MPH Dir: W	Veh Mnvr/Ped Actn: 11				Obj Strk:								
23	103572083	2.840	10/04/2012 17:27	ANGLE	\$ 2500	0	0	0	0	1	1	1	1	0	3	1
Unit	1 : 1	Alchl/Drugs: 0	Speed: 45 MPH Dir: S	Veh Mnvr/Ped Actn: 4				Obj Strk:								
Unit	2 : 4	Alchl/Drugs: 0	Speed: 10 MPH Dir: NW	Veh Mnvr/Ped Actn: 8				Obj Strk:								
24	103637547	2.840	12/12/2012 17:44	ANGLE	\$ 6000	0	0	0	1	2	4	3	1	0	3	1
Unit	1 : 1	Alchl/Drugs: 0	Speed: 5 MPH Dir: W	Veh Mnvr/Ped Actn: 8				Obj Strk:								
Unit	2 : 4	Alchl/Drugs: 0	Speed: 45 MPH Dir: S	Veh Mnvr/Ped Actn: 4				Obj Strk:								
25	103668186	2.840	01/14/2013 16:43	ANGLE	\$ 11000	0	0	0	2	2	1	2	1	0	3	1
Unit	1 : 1	Alchl/Drugs: 0	Speed: 25 MPH Dir: W	Veh Mnvr/Ped Actn: 4				Obj Strk:								
Unit	2 : 3	Alchl/Drugs: 0	Speed: 35 MPH Dir: N	Veh Mnvr/Ped Actn: 4				Obj Strk:								
Unit	3 : 4	Alchl/Drugs: 0	Speed: 10 MPH Dir: S	Veh Mnvr/Ped Actn: 4				Obj Strk:								
26	103904087	2.840	10/14/2013 12:35	HEAD ON	\$ 15000	0	0	0	2	1	1	1	1	0	3	2
Unit	1 : 13	Alchl/Drugs: 0	Speed: 20 MPH Dir: W	Veh Mnvr/Ped Actn: 4				Obj Strk:								
Unit	2 : 2	Alchl/Drugs: 0	Speed: 30 MPH Dir: N	Veh Mnvr/Ped Actn: 4				Obj Strk:								
Unit	3 : 1	Alchl/Drugs: 0	Speed: 20 MPH Dir: S	Veh Mnvr/Ped Actn: 8				Obj Strk:								
27	104245262	2.840	12/07/2014 10:58	ANGLE	\$ 3200	0	0	0	0	1	1	1	3	0	3	1
Unit	1 : 1	Alchl/Drugs: 0	Speed: 20 MPH Dir: W	Veh Mnvr/Ped Actn: 4				Obj Strk:								
Unit	2 : 1	Alchl/Drugs: 0	Speed: 30 MPH Dir: S	Veh Mnvr/Ped Actn: 4				Obj Strk:								

North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Strip Analysis Report

Acc No	Crash ID	Milepost	Date	Accident Type	Total Damage	Injuries				Condition			Road		Trfc Ctl	
						F	A	B	C	R	L	W	Ch	Ci	Dv	Op
28	104355676	2.840	03/22/2015 21:05	ANGLE	\$ 5000	0	0	0	3	1	5	1	4	0	3	1
Unit	1 : 5	Alchl/Drgs:	0	Speed: 10 MPH Dir: SE		Veh Mnvr/Ped Actn: 8				Obj Strk:						
Unit	2 : 1	Alchl/Drgs:	0	Speed: 25 MPH Dir: NW		Veh Mnvr/Ped Actn: 4				Obj Strk:						
29	104355973	2.840	04/04/2015 20:54	LEFT TURN, SAME ROADWAY	\$ 55000	0	0	0	0	1	2	1	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed: 20 MPH Dir: SE		Veh Mnvr/Ped Actn: 8				Obj Strk:						
Unit	2 : 1	Alchl/Drgs:	0	Speed: 35 MPH Dir: N		Veh Mnvr/Ped Actn: 4				Obj Strk:						
30	104446270	2.840	07/27/2015 08:38	REAR END, SLOW OR STOP	\$ 1500	0	0	0	0	1	1	1	1	0	3	2
Unit	1 : 1	Alchl/Drgs:	0	Speed: 10 MPH Dir: W		Veh Mnvr/Ped Actn: 4				Obj Strk:						
Unit	2 : 1	Alchl/Drgs:	0	Speed: 0 MPH Dir: W		Veh Mnvr/Ped Actn: 1				Obj Strk:						
31	104518631	2.840	09/30/2015 11:46	LEFT TURN, SAME ROADWAY	\$ 7100	0	0	0	3	1	1	2	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed: 40 MPH Dir: N		Veh Mnvr/Ped Actn: 4				Obj Strk:						
Unit	2 : 4	Alchl/Drgs:	0	Speed: 5 MPH Dir: SW		Veh Mnvr/Ped Actn: 8				Obj Strk:						
32	104812969	2.840	07/16/2016 07:59	RAN OFF ROAD - LEFT	\$ 5500	0	0	3	0	1	1	2	7	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed: 10 MPH Dir: E		Veh Mnvr/Ped Actn: 8				Obj Strk:						
Unit	2 : 2	Alchl/Drgs:	0	Speed: 35 MPH Dir: S		Veh Mnvr/Ped Actn: 4				Obj Strk:						
33	104860168	2.840	08/31/2016 14:28	LEFT TURN, SAME ROADWAY	\$ 6000	0	0	0	2	1	1	1	1	0	3	2
Unit	1 : 1	Alchl/Drgs:	0	Speed: 30 MPH Dir: W		Veh Mnvr/Ped Actn: 8				Obj Strk:						
Unit	2 : 1	Alchl/Drgs:	0	Speed: 35 MPH Dir: N		Veh Mnvr/Ped Actn: 4				Obj Strk:						
34	104917643	2.840	11/09/2016 15:08	LEFT TURN, DIFFERENT ROADWAYS	\$ 2400	0	0	2	1	1	1	1	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed: 25 MPH Dir: SE		Veh Mnvr/Ped Actn: 8				Obj Strk:			34			
Unit	2 : 4	Alchl/Drgs:	0	Speed: 40 MPH Dir: NE		Veh Mnvr/Ped Actn: 4				Obj Strk:						
35	104982969	2.840	12/20/2016 18:15	RAN OFF ROAD - STRAIGHT	\$ 6000	0	0	0	1	1	4	1	1	0	3	1
Unit	1 : 32	Alchl/Drgs:	1	Speed: 25 MPH Dir: N		Veh Mnvr/Ped Actn: 8				Obj Strk:						
Unit	2 : 5	Alchl/Drgs:	0	Speed: 35 MPH Dir: S		Veh Mnvr/Ped Actn: 4				Obj Strk:						
36	104984808	2.840	12/21/2016 13:12	LEFT TURN, SAME ROADWAY	\$ 4000	0	0	0	0	1	1	1	3	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed: 30 MPH Dir: W		Veh Mnvr/Ped Actn: 4				Obj Strk:						
Unit	2 : 1	Alchl/Drgs:	0	Speed: 30 MPH Dir: NE		Veh Mnvr/Ped Actn: 8				Obj Strk:						

**North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Strip Analysis Report**

Acc No	Crash ID	Milepost	Date	Accident Type	Total Damage	Injuries				Condition			Road		Trfc Ctl	
						F	A	B	C	R	L	W	Ch	Ci	Dv	Op
37	104983024	2.840	12/21/2016 14:29	ANGLE	\$ 8500	0	0	0	0	1	1	1	3	0	3	1
Unit	1 : 4	Alchl/Drgs:	0	Speed: 30 MPH Dir: E		Veh Mnvr/Ped Actn:				8	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed: 35 MPH Dir: S		Veh Mnvr/Ped Actn:				4	Obj Strk:					
38	105029679	2.840	02/19/2017 12:42	OTHER COLLISION WITH VEHICLE	\$ 5000	0	0	1	1	1	1	1	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed: 20 MPH Dir: NW		Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 5	Alchl/Drgs:	0	Speed: 35 MPH Dir: SW		Veh Mnvr/Ped Actn:				4	Obj Strk:					
39	105076527	2.840	04/14/2017 14:35	RIGHT TURN, DIFFERENT ROADWAYS	\$ 2000	0	0	0	0	1	1	2	1	0	3	1
Unit	1 : 10	Alchl/Drgs:	0	Speed: 10 MPH Dir: W		Veh Mnvr/Ped Actn:				7	Obj Strk:					
Unit	2 : 4	Alchl/Drgs:	0	Speed: 35 MPH Dir: N		Veh Mnvr/Ped Actn:				4	Obj Strk:					
40	105117129	2.840	05/23/2017 10:13	REAR END, SLOW OR STOP	\$ 1200	0	0	0	0	2	1	2	3	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed: 15 MPH Dir: W		Veh Mnvr/Ped Actn:				4	Obj Strk:					
Unit	2 : 1	Alchl/Drgs:	0	Speed: 5 MPH Dir: W		Veh Mnvr/Ped Actn:				1	Obj Strk:					

**Legend for
Report Details:**

Acc No - Accident Number
Injuries: F - Fatal, A - Class A, B - Class B, C - Class C
Condition: R - Road Surface, L - Ambient Light, W - Weather
Rd Ch - Road Character
Rd Ci - Roadway Contributing Circumstances
Trfc Ctl - Traffic Control: Dv - Device, Op - Operating
Alchl/Drgs - Alcohol Drugs Suspected
Veh Mnvr/Ped Actn - Vehicle Maneuver/Pedestrian Action
Obj Strk - Object Struck

North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Strip Analysis Report

Summary Statistics

High Level Crash Summary

Crash Type	Number of Crashes	Percent of Total
Total Crashes	40	100.00
Fatal Crashes	0	0.00
Non-Fatal Injury Crashes	18	45.00
Total Injury Crashes	18	45.00
Property Damage Only Crashes	22	55.00
Night Crashes	7	17.50
Wet Crashes	7	17.50
Alcohol/Drugs Involvement Crashes	3	7.50

Crash Severity Summary

Crash Type	Number of Crashes	Percent of Total
Total Crashes	40	100.00
Fatal Crashes	0	0.00
Class A Crashes	0	0.00
Class B Crashes	7	17.50
Class C Crashes	11	27.50
Property Damage Only Crashes	22	55.00

Vehicle Exposure Statistics

Annual ADT = 10000

Total Length = 0.38 (Miles) 0.612 (Kilometers)

Total Vehicle Exposure = 6.94 (MVMT) 11.17 (MVKMT)

Crash Rate	Crashes Per 100 Million Vehicle Miles	Crashes Per 100 Million Vehicle Kilometers
Total Crash Rate	576.47	358.20
Fatal Crash Rate	0.00	0.00
Non Fatal Crash Rate	259.41	161.19
Night Crash Rate	100.88	62.69
Wet Crash Rate	100.88	62.69
EPDO Rate	2496.11	1551.01

**North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Strip Analysis Report**

Miscellaneous Statistics

Severity Index =	4.33
EPDO Crash Index =	173.20
Estimated Property Damage Total = \$	286250.00

Accident Type Summary

Accident Type	Number of Crashes	Percent of Total
ANGLE	11	27.50
FIXED OBJECT	1	2.50
HEAD ON	1	2.50
LEFT TURN, DIFFERENT ROADWAYS	2	5.00
LEFT TURN, SAME ROADWAY	4	10.00
OTHER COLLISION WITH VEHICLE	1	2.50
RAN OFF ROAD - LEFT	3	7.50
RAN OFF ROAD - RIGHT	3	7.50
RAN OFF ROAD - STRAIGHT	1	2.50
REAR END, SLOW OR STOP	11	27.50
RIGHT TURN, DIFFERENT ROADWAYS	1	2.50
SIDESWIPE, SAME DIRECTION	1	2.50

Injury Summary

Injury Type	Number of Injuries	Percent of Total
Fatal Injuries	0	0.00
Class A Injuries	0	0.00
Class B Injuries	11	29.73
Class C Injuries	26	70.27
Total Non-Fatal Injuries	37	100.00
Total Injuries	37	100.00

North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Strip Analysis Report

Monthly Summary

Month	Number of Crashes	Percent of Total
Jan	1	2.50
Feb	3	7.50
Mar	3	7.50
Apr	3	7.50
May	3	7.50
Jun	2	5.00
Jul	4	10.00
Aug	4	10.00
Sep	1	2.50
Oct	5	12.50
Nov	3	7.50
Dec	8	20.00

Daily Summary

Day	Number of Crashes	Percent of Total
Mon	8	20.00
Tue	4	10.00
Wed	8	20.00
Thu	5	12.50
Fri	5	12.50
Sat	7	17.50
Sun	3	7.50

North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Strip Analysis Report

Hourly Summary

Hour	Number of Crashes	Percent of Total
0000-0059	0	0.00
0100-0159	1	2.50
0200-0259	0	0.00
0300-0359	0	0.00
0400-0459	0	0.00
0500-0559	0	0.00
0600-0659	0	0.00
0700-0759	4	10.00
0800-0859	3	7.50
0900-0959	4	10.00
1000-1059	2	5.00
1100-1159	2	5.00
1200-1259	3	7.50
1300-1359	1	2.50
1400-1459	3	7.50
1500-1559	6	15.00
1600-1659	1	2.50
1700-1759	2	5.00
1800-1859	4	10.00
1900-1959	0	0.00
2000-2059	2	5.00
2100-2159	2	5.00
2200-2259	0	0.00
2300-2359	0	0.00

North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Strip Analysis Report

Light and Road Conditions Summary

Condition	Dry	Wet	Other	Total
Day	27	5	0	32
Dark	4	2	1	7
Other	1	0	0	1
Total	32	7	1	40

Object Struck Summary

Object Type	Times Struck	Percent of Total
EMBANKMENT	1	11.11
OFFICIAL HIGHWAY SIGN NON-BREAKAWAY	1	11.11
OTHER FIXED OBJECT	1	11.11
PARKED MOTOR VEHICLE	2	22.22
TREE	2	22.22
UTILITY POLE	2	22.22

Vehicle Type Summary

Vehicle Type	Number Involved	Percent of Total
LIGHT TRUCK (MINI-VAN, PANEL)	1	1.28
PASSENGER CAR	46	58.97
PICKUP	7	8.97
SINGLE UNIT TRUCK (2-AXLE, 6-TIRE)	1	1.28
SPORT UTILITY	13	16.67
TRUCK/TRACTOR	1	1.28
UNKNOWN	1	1.28
VAN	8	10.26

North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Strip Analysis Report

Yearly Totals Summary

Accident Totals

Year	Total Accidents	Fatal Accidents	Injury Accidents	Property Damage Only Accidents
2012	6	0	3	3
2013	6	0	4	2
2014	5	0	2	3
2015	6	0	2	4
2016	10	0	5	5
2017	7	0	2	5
Total	40	0	18	22

Injury Totals

Year	Fatal Injuries	Class A, B, or C Injuries
2012	0	5
2013	0	9
2014	0	3
2015	0	6
2016	0	11
2017	0	3
Total	0	37

Miscellaneous Totals

Year	Property Damage	EPDO Index
2012	\$ 49700	28.20
2013	\$ 43000	35.60
2014	\$ 36750	19.80
2015	\$ 71400	20.80
2016	\$ 48100	47.00
2017	\$ 37300	21.80
Total	\$ 286250	173.20

Type of Accident Totals

Year	Left Turn	Right Turn	Rear End	Run Off Road &			
				Fixed Object	Angle	Side Swipe	Other
2012	0	0	2	1	3	0	0
2013	0	0	1	1	3	0	1
2014	0	0	0	1	3	1	0

**North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Strip Analysis Report**

Run Off Road &							
Year	Left Turn	Right Turn	Rear End	Fixed Object	Angle	Side Swipe	Other
2015	2	0	3	0	1	0	0
2016	4	0	2	3	1	0	0
2017	0	1	3	2	0	0	1
Total	6	1	11	8	11	1	2

**North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Strip Analysis Report**

Strip Diagram

Features				Milepost	Crash IDs
SR 1913 SR 2009 BAYBERRY BENNET				2.46	103642249 103790229 103819598 103995414
					104023905 104068224 104458428 104769791
					104829284 105105736
				2.47	
				2.48	103633900
				2.49	
				2.50	
				2.51	
				2.52	103588814
				2.53	103744204 103908423
LOMBARD				2.54	
				2.55	105210029
				2.56	
				2.57	104959786
				2.58	
				2.59	104599122
				2.60	
				2.61	
				2.62	
				2.63	
MALLARD				2.64	
				2.65	
				2.66	
				2.67	
				2.68	103581690
				2.69	
				2.70	104001320
				2.71	
				2.72	
				2.73	
OLD BRIDGE				2.74	
				2.75	
				2.76	
				2.77	
				2.78	
				2.79	
				2.80	105169485
				2.81	
				2.82	
				2.83	
US 15 US 501 SR 1994 CULBRETH				2.84	104940320 105047256 103572083 103637547
					103668186 103904087 104245262 104355676
					104355973 104446270 104518631 104812969

North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Strip Analysis Report

Features	Milepost	Crash IDs
		104860168 104917643 104982969 104984808
		104983024 105029679 105076527 105117129

Study Criteria Summary

County:	ORANGE	City:	All and Rural
Date:	09/01/2012 to 08/31/2017	Study:	MTCARMELCHRDATUS15501
Location:	SR 1008 (Mt. Carmel Ch Rd)/SR 1994 (Culbreth Rd) at US 15-501		

Report Details

Acc No	Crash ID	Date	Accident Type						Total Damage	Injuries				Condition			Road		Trfc Ctl	
										F	A	B	C	R	L	W	Ch	Ci	Dv	Op
1	103572083	10/04/2012 17:27	ANGLE						\$ 2500	0	0	0	0	1	1	1	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	45 MPH	Dir:	S	Veh Mnvr / Ped Actn:				4	Obj Strk:							
Unit	2 : 4	Alchl/Drgs:	0	Speed:	10 MPH	Dir:	NW	Veh Mnvr / Ped Actn:				8	Obj Strk:							
2	103637547	12/12/2012 17:44	ANGLE						\$ 6000	0	0	0	1	2	4	3	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	5 MPH	Dir:	W	Veh Mnvr / Ped Actn:				8	Obj Strk:							
Unit	2 : 4	Alchl/Drgs:	0	Speed:	45 MPH	Dir:	S	Veh Mnvr / Ped Actn:				4	Obj Strk:							
3	103668186	01/14/2013 16:43	ANGLE						\$ 11000	0	0	0	2	2	1	2	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	25 MPH	Dir:	W	Veh Mnvr / Ped Actn:				4	Obj Strk:							
Unit	2 : 3	Alchl/Drgs:	0	Speed:	35 MPH	Dir:	N	Veh Mnvr / Ped Actn:				4	Obj Strk:							
Unit	3 : 4	Alchl/Drgs:	0	Speed:	10 MPH	Dir:	S	Veh Mnvr / Ped Actn:				4	Obj Strk:							
4	103769225	05/31/2013 17:00	REAR END, SLOW OR STOP						\$ 2500	0	0	0	0	1	1	1	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	0 MPH	Dir:	S	Veh Mnvr / Ped Actn:				1	Obj Strk:							
Unit	2 : 4	Alchl/Drgs:	0	Speed:	10 MPH	Dir:	S	Veh Mnvr / Ped Actn:				4	Obj Strk:							
5	103904087	10/14/2013 12:35	HEAD ON						\$ 15000	0	0	0	2	1	1	1	1	0	3	2
Unit	1 : 13	Alchl/Drgs:	0	Speed:	20 MPH	Dir:	W	Veh Mnvr / Ped Actn:				4	Obj Strk:							
Unit	2 : 2	Alchl/Drgs:	0	Speed:	30 MPH	Dir:	N	Veh Mnvr / Ped Actn:				4	Obj Strk:							
Unit	3 : 1	Alchl/Drgs:	0	Speed:	20 MPH	Dir:	S	Veh Mnvr / Ped Actn:				8	Obj Strk:							
6	103961754	12/09/2013 12:11	REAR END, SLOW OR STOP						\$ 4000	0	0	0	1	2	1	3	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	5 MPH	Dir:	S	Veh Mnvr / Ped Actn:				12	Obj Strk:							
Unit	2 : 2	Alchl/Drgs:	0	Speed:	15 MPH	Dir:	S	Veh Mnvr / Ped Actn:				4	Obj Strk:							
7	104122993	08/04/2014 12:46	REAR END, SLOW OR STOP						\$ 1000	0	0	0	0	1	1	1	1	0	3	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	0 MPH	Dir:	N	Veh Mnvr / Ped Actn:				1	Obj Strk:							
Unit	2 : 16	Alchl/Drgs:	0	Speed:	5 MPH	Dir:	N	Veh Mnvr / Ped Actn:				11	Obj Strk:							

**North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Intersection Analysis Report**

Acc No	Crash ID	Date	Accident Type	Total Damage	Injuries				Condition			Road		Trfc Ctl	
					F	A	B	C	R	L	W	Ch	Ci	Dv	Op
8	104245262	12/07/2014 10:58	ANGLE	\$ 3200	0	0	0	0	1	1	1	3	0	3	1
Unit	1 : 1	Alchl/Drgs: 0	Speed: 20 MPH Dir: W	Veh Mnvr / Ped Actn:				4	Obj Strk:						
Unit	2 : 1	Alchl/Drgs: 0	Speed: 30 MPH Dir: S	Veh Mnvr / Ped Actn:				4	Obj Strk:						
9	104355676	03/22/2015 21:05	ANGLE	\$ 5000	0	0	0	3	1	5	1	4	0	3	1
Unit	1 : 5	Alchl/Drgs: 0	Speed: 10 MPH Dir: SE	Veh Mnvr / Ped Actn:				8	Obj Strk:						
Unit	2 : 1	Alchl/Drgs: 0	Speed: 25 MPH Dir: NW	Veh Mnvr / Ped Actn:				4	Obj Strk:						
10	104355973	04/04/2015 20:54	LEFT TURN, SAME ROADWAY	\$ 55000	0	0	0	0	1	2	1	1	0	3	1
Unit	1 : 1	Alchl/Drgs: 0	Speed: 20 MPH Dir: SE	Veh Mnvr / Ped Actn:				8	Obj Strk:						
Unit	2 : 1	Alchl/Drgs: 0	Speed: 35 MPH Dir: N	Veh Mnvr / Ped Actn:				4	Obj Strk:						
11	104355917	04/20/2015 16:35	REAR END, SLOW OR STOP	\$ 8000	0	0	0	1	1	1	2	3	0	3	1
Unit	1 : 1	Alchl/Drgs: 0	Speed: 25 MPH Dir: SW	Veh Mnvr / Ped Actn:				11	Obj Strk:						
Unit	2 : 1	Alchl/Drgs: 0	Speed: 30 MPH Dir: SW	Veh Mnvr / Ped Actn:				4	Obj Strk:						
12	104380833	04/30/2015 17:45	REAR END, SLOW OR STOP	\$ 14500	0	0	0	4	2	1	3	1	0	3	1
Unit	1 : 4	Alchl/Drgs: 0	Speed: 0 MPH Dir: SE	Veh Mnvr / Ped Actn:				1	Obj Strk:						
Unit	2 : 4	Alchl/Drgs: 0	Speed: 0 MPH Dir: SE	Veh Mnvr / Ped Actn:				1	Obj Strk:						
Unit	3 : 1	Alchl/Drgs: 0	Speed: 35 MPH Dir: SE	Veh Mnvr / Ped Actn:				4	Obj Strk:						
13	104446270	07/27/2015 08:38	REAR END, SLOW OR STOP	\$ 1500	0	0	0	0	1	1	1	1	0	3	2
Unit	1 : 1	Alchl/Drgs: 0	Speed: 10 MPH Dir: W	Veh Mnvr / Ped Actn:				4	Obj Strk:						
Unit	2 : 1	Alchl/Drgs: 0	Speed: 0 MPH Dir: W	Veh Mnvr / Ped Actn:				1	Obj Strk:						
14	104518631	09/30/2015 11:46	LEFT TURN, SAME ROADWAY	\$ 7100	0	0	0	3	1	1	2	1	0	3	1
Unit	1 : 1	Alchl/Drgs: 0	Speed: 40 MPH Dir: N	Veh Mnvr / Ped Actn:				4	Obj Strk:						
Unit	2 : 4	Alchl/Drgs: 0	Speed: 5 MPH Dir: SW	Veh Mnvr / Ped Actn:				8	Obj Strk:						
15	104516497	10/07/2015 10:43	REAR END, SLOW OR STOP	\$ 4500	0	0	0	0	1	1	1	1	0	0	
Unit	1 : 1	Alchl/Drgs: 0	Speed: 20 MPH Dir: NE	Veh Mnvr / Ped Actn:				11	Obj Strk:						
Unit	2 : 5	Alchl/Drgs: 0	Speed: 0 MPH Dir: NE	Veh Mnvr / Ped Actn:				1	Obj Strk:						
16	104567838	11/06/2015 14:37	REAR END, SLOW OR STOP	\$ 5000	0	0	0	1	2	1	2	1	0	3	1
Unit	1 : 1	Alchl/Drgs: 0	Speed: 0 MPH Dir: N	Veh Mnvr / Ped Actn:				1	Obj Strk:						
Unit	2 : 1	Alchl/Drgs: 0	Speed: 15 MPH Dir: N	Veh Mnvr / Ped Actn:				11	Obj Strk:						

**North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Intersection Analysis Report**

Acc No	Crash ID	Date	Accident Type	Total Damage	Injuries				Condition			Road		Trfc Ctl	
					F	A	B	C	R	L	W	Ch	Ci	Dv	Op
17	104868292	12/26/2015 13:42	SIDESWIPE, SAME DIRECTION	\$ 1550	0	0	0	3	1	1	1	1	0	3	1
Unit	1 : 1	Alchl/Drugs: 0	Speed: 20 MPH Dir: S	Veh Mnvr / Ped Actn: 5				Obj Strk:							
Unit	2 : 5	Alchl/Drugs: 0	Speed: 20 MPH Dir: S	Veh Mnvr / Ped Actn: 5				Obj Strk:							
18	104676074	03/05/2016 10:36	REAR END, SLOW OR STOP	\$ 1000	0	0	0	1	1	1	1	1	0	3	1
Unit	1 : 2	Alchl/Drugs: 0	Speed: 5 MPH Dir: N	Veh Mnvr / Ped Actn: 4				Obj Strk:							
Unit	2 : 4	Alchl/Drugs: 0	Speed: 0 MPH Dir: N	Veh Mnvr / Ped Actn: 1				Obj Strk:							
19	104812969	07/16/2016 07:59	RAN OFF ROAD - LEFT	\$ 5500	0	0	3	0	1	1	2	7	0	3	1
Unit	1 : 1	Alchl/Drugs: 0	Speed: 10 MPH Dir: E	Veh Mnvr / Ped Actn: 8				Obj Strk:							
Unit	2 : 2	Alchl/Drugs: 0	Speed: 35 MPH Dir: S	Veh Mnvr / Ped Actn: 4				Obj Strk:							
20	104860168	08/31/2016 14:28	LEFT TURN, SAME ROADWAY	\$ 6000	0	0	0	2	1	1	1	1	0	3	2
Unit	1 : 1	Alchl/Drugs: 0	Speed: 30 MPH Dir: W	Veh Mnvr / Ped Actn: 8				Obj Strk:							
Unit	2 : 1	Alchl/Drugs: 0	Speed: 35 MPH Dir: N	Veh Mnvr / Ped Actn: 4				Obj Strk:							
21	104903576	10/31/2016 16:08	OTHER NON-COLLISION	\$ 2000	0	0	0	0	1	1	1	7	0	13	1
Unit	1 : 5	Alchl/Drugs: 0	Speed: 10 MPH Dir: N	Veh Mnvr / Ped Actn: 4				Obj Strk:							
22	104917643	11/09/2016 15:08	LEFT TURN, DIFFERENT ROADWAYS	\$ 2400	0	0	2	1	1	1	1	1	0	3	1
Unit	1 : 1	Alchl/Drugs: 0	Speed: 25 MPH Dir: SE	Veh Mnvr / Ped Actn: 8				Obj Strk:			34				
Unit	2 : 4	Alchl/Drugs: 0	Speed: 40 MPH Dir: NE	Veh Mnvr / Ped Actn: 4				Obj Strk:							
23	104940320	11/19/2016 11:17	REAR END, SLOW OR STOP	\$ 2000	0	0	0	0	1	1	1	4	0	3	1
Unit	1 : 1	Alchl/Drugs: 0	Speed: 35 MPH Dir: NW	Veh Mnvr / Ped Actn: 1				Obj Strk:							
Unit	2 : 1	Alchl/Drugs: 0	Speed: 35 MPH Dir: NW	Veh Mnvr / Ped Actn: 4				Obj Strk:							
24	104975883	12/15/2016 10:38	REAR END, SLOW OR STOP	\$ 12500	0	0	0	0	1	1	1	1	0	3	1
Unit	1 : 5	Alchl/Drugs: 0	Speed: 30 MPH Dir: N	Veh Mnvr / Ped Actn: 11				Obj Strk:							
Unit	2 : 4	Alchl/Drugs: 0	Speed: 20 MPH Dir: N	Veh Mnvr / Ped Actn: 11				Obj Strk:							
25	104982969	12/20/2016 18:15	RAN OFF ROAD - STRAIGHT	\$ 6000	0	0	0	1	1	4	1	1	0	3	1
Unit	1 : 32	Alchl/Drugs: 1	Speed: 25 MPH Dir: N	Veh Mnvr / Ped Actn: 8				Obj Strk:							
Unit	2 : 5	Alchl/Drugs: 0	Speed: 35 MPH Dir: S	Veh Mnvr / Ped Actn: 4				Obj Strk:							
26	104984808	12/21/2016 13:12	LEFT TURN, SAME ROADWAY	\$ 4000	0	0	0	0	1	1	1	3	0	3	1
Unit	1 : 1	Alchl/Drugs: 0	Speed: 30 MPH Dir: W	Veh Mnvr / Ped Actn: 4				Obj Strk:							

North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Intersection Analysis Report

Acc No	Crash ID	Date	Accident Type	Total Damage	Injuries				Condition			Road		Trfc Ctl	
					F	A	B	C	R	L	W	Ch	Ci	Dv	Op
Unit	2 : 1	Alchl/Drugs: 0	Speed: 30 MPH Dir: NE	Veh Mnvr / Ped Actn:	8				Obj Strk:						
27	104983024	12/21/2016 14:29	ANGLE	\$ 8500	0	0	0	0	1	1	1	3	0	3	1
Unit	1 : 4	Alchl/Drugs: 0	Speed: 30 MPH Dir: E	Veh Mnvr / Ped Actn:	8				Obj Strk:						
Unit	2 : 1	Alchl/Drugs: 0	Speed: 35 MPH Dir: S	Veh Mnvr / Ped Actn:	4				Obj Strk:						
28	105029679	02/19/2017 12:42	OTHER COLLISION WITH VEHICLE	\$ 5000	0	0	1	1	1	1	1	1	0	3	1
Unit	1 : 1	Alchl/Drugs: 0	Speed: 20 MPH Dir: NW	Veh Mnvr / Ped Actn:	4				Obj Strk:						
Unit	2 : 5	Alchl/Drugs: 0	Speed: 35 MPH Dir: SW	Veh Mnvr / Ped Actn:	4				Obj Strk:						
29	105030097	02/20/2017 10:46	SIDESWIPE, SAME DIRECTION	\$ 1600	0	0	0	0	1	1	1	3	0	3	1
Unit	1 : 1	Alchl/Drugs: 0	Speed: 30 MPH Dir: NE	Veh Mnvr / Ped Actn:	4				Obj Strk:						
Unit	2 : 1	Alchl/Drugs: 0	Speed: 25 MPH Dir: NE	Veh Mnvr / Ped Actn:	7				Obj Strk:						
30	105047256	03/22/2017 09:40	REAR END, SLOW OR STOP	\$ 4000	0	0	0	0	1	1	1	4	0	3	1
Unit	1 : 1	Alchl/Drugs: 0	Speed: 0 MPH Dir: W	Veh Mnvr / Ped Actn:	11				Obj Strk:						
Unit	2 : 1	Alchl/Drugs: 0	Speed: 0 MPH Dir: W	Veh Mnvr / Ped Actn:	11				Obj Strk:						
31	105076527	04/14/2017 14:35	RIGHT TURN, DIFFERENT ROADWAYS	\$ 2000	0	0	0	0	1	1	2	1	0	3	1
Unit	1 : 10	Alchl/Drugs: 0	Speed: 10 MPH Dir: W	Veh Mnvr / Ped Actn:	7				Obj Strk:						
Unit	2 : 4	Alchl/Drugs: 0	Speed: 35 MPH Dir: N	Veh Mnvr / Ped Actn:	4				Obj Strk:						
32	105099287	05/07/2017 10:34	RAN OFF ROAD - LEFT	\$ 5900	0	0	0	1	1	1	1	1	0	3	1
Unit	1 : 4	Alchl/Drugs: 0	Speed: 0 MPH Dir: S	Veh Mnvr / Ped Actn:	1				Obj Strk:						
Unit	2 : 1	Alchl/Drugs: 0	Speed: 0 MPH Dir: S	Veh Mnvr / Ped Actn:	1				Obj Strk:						
Unit	3 : 1	Alchl/Drugs: 0	Speed: 30 MPH Dir: S	Veh Mnvr / Ped Actn:	4				Obj Strk:						
33	105117129	05/23/2017 10:13	REAR END, SLOW OR STOP	\$ 1200	0	0	0	0	2	1	2	3	0	3	1
Unit	1 : 1	Alchl/Drugs: 0	Speed: 15 MPH Dir: W	Veh Mnvr / Ped Actn:	4				Obj Strk:						
Unit	2 : 1	Alchl/Drugs: 0	Speed: 5 MPH Dir: W	Veh Mnvr / Ped Actn:	1				Obj Strk:						

Legend for Report Details:

Acc No - Accident Number
Injuries: F - Fatal, A - Class A, B - Class B, C - Class C
Condition: R - Road Surface, L - Ambient Light, W - Weather
Rd Ch - Road Character
Rd Ci - Roadway Contributing Circumstances
Trfc Ctl - Traffic Control: Dv - Device, Op - Operating
Alchl/Drugs - Alcohol Drugs Suspected
Veh Mnvr/Ped Actn - Vehicle Maneuver/Pedestrian Action
Obj Strk - Object Struck

North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Intersection Analysis Report

Summary Statistics

High Level Crash Summary

Crash Type	Number of Crashes	Percent of Total
Total Crashes	33	100.00
Fatal Crashes	0	0.00
Non-Fatal Injury Crashes	17	51.52
Total Injury Crashes	17	51.52
Property Damage Only Crashes	16	48.48
Night Crashes	3	9.09
Wet Crashes	6	18.18
Alcohol/Drugs Involvement Crashes	1	3.03

Crash Severity Summary

Crash Type	Number of Crashes	Percent of Total
Total Crashes	33	100.00
Fatal Crashes	0	0.00
Class A Crashes	0	0.00
Class B Crashes	3	9.09
Class C Crashes	14	42.42
Property Damage Only Crashes	16	48.48

Vehicle Exposure Statistics

Annual ADT = 41000

Total Vehicle Exposure = 74.87 (MEV)

Crash Rate	Crashes Per 100 Million Vehicles Entered
Total Crash Rate	44.08
Fatal Crash Rate	0.00
Non Fatal Crash Rate	22.71
Night Crash Rate	4.01
Wet Crash Rate	8.01
EPDO Rate	212.11

**North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Intersection Analysis Report**

Miscellaneous Statistics

Severity Index =	4.81
EPDO Crash Index =	158.80
Estimated Property Damage Total = \$	216950.00

Accident Type Summary

Accident Type	Number of Crashes	Percent of Total
ANGLE	6	18.18
HEAD ON	1	3.03
LEFT TURN, DIFFERENT ROADWAYS	1	3.03
LEFT TURN, SAME ROADWAY	4	12.12
OTHER COLLISION WITH VEHICLE	1	3.03
OTHER NON-COLLISION	1	3.03
RAN OFF ROAD - LEFT	2	6.06
RAN OFF ROAD - STRAIGHT	1	3.03
REAR END, SLOW OR STOP	13	39.39
RIGHT TURN, DIFFERENT ROADWAYS	1	3.03
SIDESWIPE, SAME DIRECTION	2	6.06

Injury Summary

Injury Type	Number of Injuries	Percent of Total
Fatal Injuries	0	0.00
Class A Injuries	0	0.00
Class B Injuries	6	17.65
Class C Injuries	28	82.35
Total Non-Fatal Injuries	34	100.00
Total Injuries	34	100.00

North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Intersection Analysis Report

Monthly Summary

Month	Number of Crashes	Percent of Total
Jan	1	3.03
Feb	2	6.06
Mar	3	9.09
Apr	4	12.12
May	3	9.09
Jun	0	0.00
Jul	2	6.06
Aug	2	6.06
Sep	1	3.03
Oct	4	12.12
Nov	3	9.09
Dec	8	24.24

Daily Summary

Day	Number of Crashes	Percent of Total
Mon	8	24.24
Tue	2	6.06
Wed	8	24.24
Thu	3	9.09
Fri	3	9.09
Sat	5	15.15
Sun	4	12.12

North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Intersection Analysis Report

Hourly Summary

Hour	Number of Crashes	Percent of Total
0000-0059	0	0.00
0100-0159	0	0.00
0200-0259	0	0.00
0300-0359	0	0.00
0400-0459	0	0.00
0500-0559	0	0.00
0600-0659	0	0.00
0700-0759	1	3.03
0800-0859	1	3.03
0900-0959	1	3.03
1000-1059	7	21.21
1100-1159	2	6.06
1200-1259	4	12.12
1300-1359	2	6.06
1400-1459	4	12.12
1500-1559	1	3.03
1600-1659	3	9.09
1700-1759	4	12.12
1800-1859	1	3.03
1900-1959	0	0.00
2000-2059	1	3.03
2100-2159	1	3.03
2200-2259	0	0.00
2300-2359	0	0.00

North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Intersection Analysis Report

Light and Road Conditions Summary

Condition	Dry	Wet	Other	Total
Day	24	5	0	29
Dark	2	1	0	3
Other	1	0	0	1
Total	27	6	0	33

Object Struck Summary

Object Type	Times Struck	Percent of Total
UTILITY POLE	1	100.00

Vehicle Type Summary

Vehicle Type	Number Involved	Percent of Total
LIGHT TRUCK (MINI-VAN, PANEL)	1	1.45
PASSENGER CAR	40	57.97
PICKUP	4	5.80
SINGLE UNIT TRUCK (2-AXLE, 6-TIRE)	1	1.45
SPORT UTILITY	13	18.84
TRUCK/TRACTOR	1	1.45
UNKNOWN	1	1.45
UNKNOWN HEAVY TRUCK	1	1.45
VAN	7	10.14

North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Intersection Analysis Report

Yearly Totals Summary

Accident Totals

Year	Total Accidents	Fatal Accidents	Injury Accidents	Property Damage Only Accidents
2012	2	0	1	1
2013	4	0	3	1
2014	2	0	0	2
2015	9	0	6	3
2016	10	0	5	5
2017	6	0	2	4
Total	33	0	17	16

Injury Totals

Year	Fatal Injuries	Class A, B, or C Injuries
2012	0	1
2013	0	5
2014	0	0
2015	0	15
2016	0	10
2017	0	3
Total	0	34

Miscellaneous Totals

Year	Property Damage	EPDO Index
2012	\$ 8500	9.40
2013	\$ 32500	26.20
2014	\$ 4200	2.00
2015	\$ 102150	53.40
2016	\$ 49900	47.00
2017	\$ 19700	20.80
Total	\$ 216950	158.80

Type of Accident Totals

Year	Left Turn	Right Turn	Rear End	Run Off Road &				Other
				Fixed Object	Angle	Side Swipe		
2012	0	0	0	0	2	0		0
2013	0	0	2	0	1	0		1
2014	0	0	1	0	1	0		0

**North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Intersection Analysis Report**

Year	Left Turn	Right Turn	Run Off Road &		Angle	Side Swipe	Other
			Rear End	Fixed Object			
2015	2	0	5	0	1	1	0
2016	3	0	3	2	1	0	1
2017	0	1	2	1	0	1	1
Total	5	1	13	3	6	2	3

Study Criteria Summary

County:	ORANGE	City:	All and Rural
Date:	9/1/2012	to	8/31/2017
Study:	MTCARMELCHRDATBENNETTRD		
Location:	SR 1008 (Mt. Carmel Ch Rd) at SR 1913 (Bennett Rd)		

Report Details

Acc No	Crash ID	Date	Accident Type					Total Damage	Injuries				Condition			Road		Trfc Ctl	
									F	A	B	C	R	L	W	Ch	Ci	Dv	Op
1	103605783	11/07/2012 16:07	REAR END, SLOW OR STOP					\$ 2350	0	0	0	0	1	1	1	1	0	13	1
Unit	1 : 4	Alchl/Drgs:	0	Speed:	20 MPH	Dir:	E	Veh Mnvr / Ped Actn:				11	Obj Strk:						
Unit	2 : 1	Alchl/Drgs:	0	Speed:	20 MPH	Dir:	N	Veh Mnvr / Ped Actn:				4	Obj Strk:						
2	103633900	12/07/2012 18:32	REAR END, SLOW OR STOP					\$ 4000	0	0	0	1	1	5	1	1	0	0	2
Unit	1 : 1	Alchl/Drgs:	0	Speed:	30 MPH	Dir:	N	Veh Mnvr / Ped Actn:				4	Obj Strk:						
Unit	2 : 1	Alchl/Drgs:	0	Speed:	0 MPH	Dir:	N	Veh Mnvr / Ped Actn:				11	Obj Strk:						
3	103642249	12/10/2012 15:49	ANGLE					\$ 21000	0	0	1	2	1	1	1	1	0	1	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	45 MPH	Dir:	E	Veh Mnvr / Ped Actn:				4	Obj Strk:				20		
Unit	2 : 5	Alchl/Drgs:	0	Speed:	35 MPH	Dir:	N	Veh Mnvr / Ped Actn:				4	Obj Strk:						
Unit	3 : 1	Alchl/Drgs:	0	Speed:	0 MPH	Dir:	W	Veh Mnvr / Ped Actn:				1	Obj Strk:						
4	103735630	04/22/2013 03:00	BACKING UP					\$ 1500	0	0	0	0	1	2	1	1	0	1	2
Unit	1 : 1	Alchl/Drgs:	0	Speed:	15 MPH	Dir:	S	Veh Mnvr / Ped Actn:				10	Obj Strk:						
Unit	2 : 32	Alchl/Drgs:	7	Speed:	0 MPH	Dir:	S	Veh Mnvr / Ped Actn:				1	Obj Strk:						
5	103790229	06/21/2013 09:00	REAR END, SLOW OR STOP					\$ 4000	0	0	0	0	1	1	1	5	0	0	2
Unit	1 : 1	Alchl/Drgs:	0	Speed:	50 MPH	Dir:	W	Veh Mnvr / Ped Actn:				4	Obj Strk:						
Unit	2 : 5	Alchl/Drgs:	0	Speed:	0 MPH	Dir:	W	Veh Mnvr / Ped Actn:				1	Obj Strk:						
6	103819598	07/30/2013 15:16	ANGLE					\$ 4000	0	0	0	0	1	1	1	5	0	1	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	35 MPH	Dir:	S	Veh Mnvr / Ped Actn:				4	Obj Strk:						
Unit	2 : 1	Alchl/Drgs:	0	Speed:	10 MPH	Dir:	W	Veh Mnvr / Ped Actn:				4	Obj Strk:						
7	103995414	02/27/2014 15:50	ANGLE					\$ 5000	0	0	0	0	1	1	1	6	0	1	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	20 MPH	Dir:	N	Veh Mnvr / Ped Actn:				4	Obj Strk:						
Unit	2 : 4	Alchl/Drgs:	0	Speed:	25 MPH	Dir:	W	Veh Mnvr / Ped Actn:				4	Obj Strk:						
8	104023905	03/21/2014 15:30	ANGLE					\$ 23550	0	0	1	0	1	1	1	7	0	1	1
Unit	1 : 1	Alchl/Drgs:	0	Speed:	35 MPH	Dir:	E	Veh Mnvr / Ped Actn:				4	Obj Strk:				34		

**North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Intersection Analysis Report**

Acc No	Crash ID	Date	Accident Type	Total Damage	Injuries				Condition			Road		Trfc Ctl	
					F	A	B	C	R	L	W	Ch	Ci	Dv	Op
Unit	2 : 2	Alchl/Drugs: 0	Speed: 35 MPH Dir: N	Veh Mnvr / Ped Actn:	4				Obj Strk:			37			
9	104068224	05/16/2014 09:54	SIDESWIPE, SAME DIRECTION	\$ 1500	0	0	0	0	1	1	1	5	0		
Unit	1 : 1	Alchl/Drugs: 0	Speed: 25 MPH Dir: N	Veh Mnvr / Ped Actn:	6				Obj Strk:						
Unit	2 : 4	Alchl/Drugs: 0	Speed: 0 MPH Dir: N	Veh Mnvr / Ped Actn:	1				Obj Strk:						
10	104458428	08/06/2015 18:17	REAR END, SLOW OR STOP	\$ 1100	0	0	0	0	2	1	3	1	1	13	1
Unit	1 : 1	Alchl/Drugs: 0	Speed: 35 MPH Dir: S	Veh Mnvr / Ped Actn:	4				Obj Strk:						
Unit	2 : 2	Alchl/Drugs: 0	Speed: 0 MPH Dir: S	Veh Mnvr / Ped Actn:	1				Obj Strk:						
11	104668922	03/01/2016 08:37	REAR END, SLOW OR STOP	\$ 2200	0	0	0	0	1	1	1	7	0		2
Unit	1 : 1	Alchl/Drugs: 0	Speed: 35 MPH Dir: N	Veh Mnvr / Ped Actn:	1				Obj Strk:						
Unit	2 : 1	Alchl/Drugs: 0	Speed: 35 MPH Dir: N	Veh Mnvr / Ped Actn:	11				Obj Strk:						
12	104769791	06/01/2016 08:17	REAR END, SLOW OR STOP	\$ 4500	0	0	0	0	1	1	1	5	0	0	2
Unit	1 : 2	Alchl/Drugs: 0	Speed: 35 MPH Dir: N	Veh Mnvr / Ped Actn:	11				Obj Strk:						
Unit	2 : 5	Alchl/Drugs: 0	Speed: 0 MPH Dir: N	Veh Mnvr / Ped Actn:	1				Obj Strk:						
13	104829284	08/23/2016 18:26	LEFT TURN, DIFFERENT ROADWAYS	\$ 2700	0	0	0	0	1	1	1	3	0	1	1
Unit	1 : 4	Alchl/Drugs: 0	Speed: 25 MPH Dir: E	Veh Mnvr / Ped Actn:	8				Obj Strk:						
Unit	2 : 4	Alchl/Drugs: 0	Speed: 0 MPH Dir: N	Veh Mnvr / Ped Actn:	1				Obj Strk:						
14	105006366	01/15/2017 16:57	REAR END, SLOW OR STOP	\$ 2500	0	0	0	0	1	1	1	3	0	0	2
Unit	1 : 1	Alchl/Drugs: 0	Speed: 30 MPH Dir: S	Veh Mnvr / Ped Actn:	1				Obj Strk:						
Unit	2 : 1	Alchl/Drugs: 7	Speed: 30 MPH Dir: S	Veh Mnvr / Ped Actn:	4				Obj Strk:						
15	105105736	05/15/2017 07:50	REAR END, SLOW OR STOP	\$ 1100	0	0	0	0	1	1	1	1	0	1	2
Unit	1 : 2	Alchl/Drugs: 0	Speed: 5 MPH Dir: W	Veh Mnvr / Ped Actn:	7				Obj Strk:						
Unit	2 : 1	Alchl/Drugs: 0	Speed: 0 MPH Dir: W	Veh Mnvr / Ped Actn:	8				Obj Strk:						

Legend for Report Details:

- Acc No - Accident Number
- Injuries: F - Fatal, A - Class A, B - Class B, C - Class C
- Condition: R - Road Surface, L - Ambient Light, W - Weather
- Rd Ch - Road Character
- Rd Ci - Roadway Contributing Circumstances
- Trfc Ctl - Traffic Control: Dv - Device, Op - Operating
- Alchl/Drugs - Alcohol Drugs Suspected
- Veh Mnvr/Ped Actn - Vehicle Maneuver/Pedestrian Action
- Obj Strk - Object Struck

North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Intersection Analysis Report

Summary Statistics

High Level Crash Summary

Crash Type	Number of Crashes	Percent of Total
Total Crashes	15	100.00
Fatal Crashes	0	0.00
Non-Fatal Injury Crashes	3	20.00
Total Injury Crashes	3	20.00
Property Damage Only Crashes	12	80.00
Night Crashes	1	6.67
Wet Crashes	1	6.67
Alcohol/Drugs Involvement Crashes	0	0.00

Crash Severity Summary

Crash Type	Number of Crashes	Percent of Total
Total Crashes	15	100.00
Fatal Crashes	0	0.00
Class A Crashes	0	0.00
Class B Crashes	2	13.33
Class C Crashes	1	6.67
Property Damage Only Crashes	12	80.00

Vehicle Exposure Statistics

Annual ADT = 10500

Total Vehicle Exposure = 19.17 (MEV)

Crash Rate	Crashes Per 100 Million Vehicles Entered
Total Crash Rate	78.24
Fatal Crash Rate	0.00
Non Fatal Crash Rate	15.65
Night Crash Rate	5.22
Wet Crash Rate	5.22
EPDO Rate	194.02

**North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Intersection Analysis Report**

Miscellaneous Statistics

Severity Index =	2.48
EPDO Crash Index =	37.20
Estimated Property Damage Total = \$	81000.00

Accident Type Summary

Accident Type	Number of Crashes	Percent of Total
ANGLE	4	26.67
BACKING UP	1	6.67
LEFT TURN, DIFFERENT ROADWAYS	1	6.67
REAR END, SLOW OR STOP	8	53.33
SIDESWIPE, SAME DIRECTION	1	6.67

Injury Summary

Injury Type	Number of Injuries	Percent of Total
Fatal Injuries	0	0.00
Class A Injuries	0	0.00
Class B Injuries	2	40.00
Class C Injuries	3	60.00
Total Non-Fatal Injuries	5	100.00
Total Injuries	5	100.00

North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Intersection Analysis Report

Monthly Summary

Month	Number of Crashes	Percent of Total
Jan	1	6.67
Feb	1	6.67
Mar	2	13.33
Apr	1	6.67
May	2	13.33
Jun	2	13.33
Jul	1	6.67
Aug	2	13.33
Sep	0	0.00
Oct	0	0.00
Nov	1	6.67
Dec	2	13.33

Daily Summary

Day	Number of Crashes	Percent of Total
Mon	3	20.00
Tue	3	20.00
Wed	2	13.33
Thu	2	13.33
Fri	4	26.67
Sat	0	0.00
Sun	1	6.67

North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Intersection Analysis Report

Hourly Summary

Hour	Number of Crashes	Percent of Total
0000-0059	0	0.00
0100-0159	0	0.00
0200-0259	0	0.00
0300-0359	1	6.67
0400-0459	0	0.00
0500-0559	0	0.00
0600-0659	0	0.00
0700-0759	1	6.67
0800-0859	2	13.33
0900-0959	2	13.33
1000-1059	0	0.00
1100-1159	0	0.00
1200-1259	0	0.00
1300-1359	0	0.00
1400-1459	0	0.00
1500-1559	4	26.67
1600-1659	2	13.33
1700-1759	0	0.00
1800-1859	3	20.00
1900-1959	0	0.00
2000-2059	0	0.00
2100-2159	0	0.00
2200-2259	0	0.00
2300-2359	0	0.00

North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Intersection Analysis Report

Light and Road Conditions Summary

Condition	Dry	Wet	Other	Total
Day	12	1	0	13
Dark	1	0	0	1
Other	1	0	0	1
Total	14	1	0	15

Object Struck Summary

Object Type	Times Struck	Percent of Total
OFFICIAL HIGHWAY SIGN NON-BREAKAWAY	1	33.33
PARKED MOTOR VEHICLE	1	33.33
UTILITY POLE	1	33.33

Vehicle Type Summary

Vehicle Type	Number Involved	Percent of Total
PASSENGER CAR	18	58.06
PICKUP	4	12.90
SPORT UTILITY	5	16.13
UNKNOWN	1	3.23
VAN	3	9.68

North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Intersection Analysis Report

Yearly Totals Summary

Accident Totals

Year	Total Accidents	Fatal Accidents	Injury Accidents	Property Damage Only Accidents
2012	3	0	2	1
2013	3	0	0	3
2014	3	0	1	2
2015	1	0	0	1
2016	3	0	0	3
2017	2	0	0	2
Total	15	0	3	12

Injury Totals

Year	Fatal Injuries	Class A, B, or C Injuries
2012	0	4
2013	0	0
2014	0	1
2015	0	0
2016	0	0
2017	0	0
Total	0	5

Miscellaneous Totals

Year	Property Damage	EPDO Index
2012	\$ 27350	17.80
2013	\$ 9500	3.00
2014	\$ 30050	10.40
2015	\$ 1100	1.00
2016	\$ 9400	3.00
2017	\$ 3600	2.00
Total	\$ 81000	37.20

Type of Accident Totals

Year	Left Turn	Right Turn	Rear End	Run Off Road &			
				Fixed Object	Angle	Side Swipe	Other
2012	0	0	2	0	1	0	0
2013	0	0	1	0	1	0	1
2014	0	0	0	0	2	1	0

**North Carolina Department of Transportation
Traffic Engineering Accident Analysis System
Intersection Analysis Report**

Year	Run Off Road &						
	Left Turn	Right Turn	Rear End	Fixed Object	Angle	Side Swipe	Other
2015	0	0	1	0	0	0	0
2016	1	0	2	0	0	0	0
2017	0	0	2	0	0	0	0
Total	1	0	8	0	4	1	1
