

CHAPEL HILL HIGH SCHOOL EXPANSION

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

November 2017

HNTB

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I. EXISTING CONDITIONS

A. Project Overview

A redevelopment of Chapel Hill-Carrboro City Schools' (CHCCS) Chapel Hill High School, located along High School Road between Homestead Road and Seawell School Road is being proposed in Chapel Hill. The project will construct new classroom space and reconfigure the existing school buildings, on-campus parking lots, and access roadway connections to the existing site parcel. **Figure 1** (found in **Appendix A**) shows the general location of the site. The project is anticipated to be fully complete by 2020. This report analyzes the complete build-out scenario for the year 2021 (one year after anticipated completion), the no-build scenario for 2021, as well as 2017 existing year traffic conditions.

The proposed site concept plan shows the retention of several existing full movement access driveways along High School Road adjacent to the site. Two existing driveways will be closed and a new driveway and student parking lot created in this vicinity. Another new access point that will connect to the existing Smith Middle School parking lot and connection to Seawell School Road is also proposed. Additional roadway and parking lot reconfigurations are being proposed within the high school campus. **Figure 2** displays the preliminary concept plan of the Chapel Hill High School Expansion and nearby land uses and roadways. The project is expected to provide approximately 580 total parking spaces (slightly higher than existing parking spaces) in on-site surface parking facilities for student drivers, visitors, faculty/staff and on-site events.

B. Site Location and Study Area

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

- Homestead Road and High School Road
- High School Road and Existing Staff – Event - Bus Driveway / Celtic Circle
- High School Road and Existing Parent Unloading/Loading Entrance Driveway
- High School Road and Existing Parent Unloading/Loading Exit Driveway
- High School Road and Existing Staff Driveway
- High School Road and Student Parking - Event Driveway / Bus Facility Access
- Seawell School Road and High School Road
- Seawell School Road and Smith Middle School Access

The impacts of the proposed site at the study area intersections will be evaluated during the AM and PM peak hours of an average weekday. The AM and PM peak hours are defined by the highest volumes of school-related traffic and not the peak hour of adjacent street traffic. The study is based on background traffic for the existing year, 2017, the year following the estimated site build out year of 2020, as well as the estimated site-generated traffic produced by the school campus redevelopment.

There are no Town-approved developments within the immediate Chapel Hill High School Expansion study area that were considered to specifically contribute to background traffic growth by 2021. There are multiple locations located beyond the study area that are either under construction, 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 2.0 percent per year was applied to the existing 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 conservatively considering the potential for nearby development projects to increase overall study area traffic volumes.

C. Site Description

The existing Chapel Hill High School site currently contains several connected school classroom buildings and maintenance buildings on the campus, served by multiple full access driveways along High School Road. The site borders established residential neighborhoods along Homestead Road and Seawell School Road in the surrounding area. It is located immediately to the north of Smith Middle School and Seawell Elementary School.



**Chapel Hill High School Expansion Site
(Existing Staff/Event/Bus Driveway)**

All vehicular traffic and school buses currently utilizes existing access connections along High School, depending on whether trips are related to the current parking lot configuration for student drivers, staff/faculty, visitors or parent unloading/loading operations. The proposed site plan, shown in **Figure 2**, indicates all parking will continue to be accommodated on-site, though in different configurations and locations, in some cases, than the current layout. The concept plans show the new roadway connection between Smith Middle School and the site.

D. Existing and Proposed Uses in Vicinity of Site

The land uses and development in the study area along Homestead Road, High School Road, and Seawell School Road are primarily lower density single-family residential, with nearby middle and elementary schools. The Existing Land Use Plan shown in the 2020 *Town of Chapel Hill Comprehensive Plan* and adopted December 25, 2012, indicates that the proposed site is designated as “institutional”. The 2020 Future Land Use Plan, that is also a part of the Town Comprehensive Plan, indicates that the parcel would continue to be designated as “institutional”. The parcel is currently zoned “R-1” – delineating it as “Lower-Density Residential – 3 units/acre”.

E. Existing and Committed Surface Transportation Network

Roadways

The Chapel Hill High School Expansion project study area features a combination of minor arterial and collector street roadways serving areas throughout the Town of Chapel Hill and Town of Carrboro and points beyond, as well as facilitating local access on the northwest side of Chapel Hill. **Table 1**, on the following page, summarizes pertinent information on the study area roadway facilities.

Average Annual Daily Traffic (AADT) data was taken from recent 2013 and 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.



Table 1. Existing Study Area Roadways

Road Name	Functional Class*	Study Area Cross-Section	Recent AADT	Speed Limit	Sidewalk	On-Street Parking
Homestead Road	Minor Arterial	2 lane undivided with auxiliary turn lanes & continuous center left-turn lane	7,200	35	Y	N
Seawell School Road	Minor Collector	2 lane undivided with auxiliary turn lanes	3,700	35	Y	N
High School Road	Local	2 lane undivided with auxiliary turn lanes	3,300	25	Y	N
Celtic Circle	Local	2 lane undivided	N/A	25	Y	Y

TWLT - Two-Way Left-turn Lane * - As defined on the *NCDOT Urban Functional Classification Map (2017)*.
<https://ncdot.maps.arcgis.com/home/webmap/viewer.html>

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

- **Homestead Road** is an east-west minor arterial in the study area, serving areas in northern and western portions of Chapel Hill and the Town of Carrboro. In the study area vicinity, Homestead Road is a two-lane undivided facility with auxiliary turn lanes and some portions include a continuous center left-turn lane. On-street parking is not permitted along Homestead Road in the study area. Most of the corridor has concrete sidewalk on at least one side of the roadway. The posted speed limit is 35 mph in the project vicinity.
- **Seawell School Road** is a north-south collector street connecting the Homestead Road corridor to the north and the Estes Drive Extension corridor to the south. It features a two-lane undivided cross-section with auxiliary turn lanes at major intersections and school driveways. On-street parking is not allowed. Sidewalk and/or an off-roadway paved path is present on the western side of the road for most of the corridor in the study area, with sidewalk on the eastern side provided north of the high school. The posted speed limit is 35 mph in the vicinity of the middle and high schools.
- **High School Road** is a two-lane local access street with auxiliary turn lanes at major intersections/school driveways in the project study area. It primarily serves the high school, bus facility and some residential development in the vicinity of the high school and has a 25 mph posted speed limit. Sidewalk is present along the facility, with no on-street parking allowed.

Intersections

Table 2 summarizes all eight 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 signalized intersection at the Homestead Road/High School Road intersection and unsignalized intersections at all other local access street and driveway connections. There are crosswalks at several approaches at both the Homestead Road and Seawell School Road intersections.



Table 2. Existing Study Area Intersection Details

Intersection	Traffic Control	Signal Phases	Signal Operation	Cross walk	Ped Signals
Homestead Road and High School Road	Signal	3	Free-Run	Yes (3)	Yes (3)
High School Road and Existing Staff – Event - Bus Driveway / Celtic Circle	Unsig	N/A	N/A	Yes (1)	No
High School Road and Existing Parent Unloading/Loading Entrance Driveway	Unsig	N/A	N/A	No	No
High School Road and Existing Parent Unloading/Loading Exit Driveway	Unsig	N/A	N/A	No	No
High School Road and Existing Staff Driveway	Unsig	N/A	N/A	No	No
High School Road and Student Parking - Event Driveway / Bus Facility Access	Unsig	N/A	N/A	No	No
Seawell School Road and High School Road	Unsig	N/A	N/A	Yes (2)	No
Seawell School Road and Smith Middle School Access	Unsig	N/A	N/A	No	No

Sig – Signalized, Unsig – Unsignalized Ped Signals (Number of Approaches Featuring Signals)

Bicycle Routes and Sidewalks

Specific bicycle facilities (bike lanes) are present in the immediate study area along the west side of Seawell School Road from High School Road southbound and along Homestead Road in both directions in the vicinity of the site. Pedestrian sidewalk exists along at least one side of Homestead Road, High School Road Seawell School Road and Celtic Circle. Crosswalks and pedestrian signals are present at the Homestead Road / High School Road intersection. Additional crosswalks are present at the Celtic Circle / Staff-Event Parking Lot intersection with High School Road and at the High School Road / Seawell School Road intersection. **Figure 4** displays a schematic of existing pedestrian/bicycle facilities in the project study area.

Transit/School Bus Routes

Current Chapel Hill Transit (CHT) local route HS serves the project study area along Seawell School Road, High School Road, and Homestead Road with weekday bus service. Several bus stops, with no amenities (posted signs only), are present in the study area. **Table 3** details the current HS CHT route serving the study area. Buses run on 30 minute headways during weekday peak service periods. No regional bus service is provided in the immediate study area.

School bus operations at the existing high school utilize the westernmost driveway access point and parking lot for unloading/loading operations. In the AM unloading period, buses exit the site and are parked at the Chapel Hill-Carrboro Schools facility nearby. Per information from Chapel Hill-Carrboro Schools, 22 AM and 16 PM buses are currently in operation.

Figure 5 displays transit routes and bus stops that currently exist in the project study area. Transit trips generated by the Chapel Hill High School Expansion site are discussed in the following sections of 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*					
HS	30	30	One bus during Noon Peak	<ul style="list-style-type: none"> • Chapel Hill High School • Smith Middle School • Camden Lane 	<ul style="list-style-type: none"> • Morris Grove Elementary • Southern Human Services • NC 86 (Martin Luther King, Jr Blvd)

* - Source: Chapel Hill Transit 2016 Fall Ride Guide

Recommended/Committed Surface Transportation Improvement Projects

The current 2016-2025 NCDOT State Transportation Improvement Program (STIP) contains no committed/programmed projects which directly affect the project study area. There are no other 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 2021.

F. Existing Traffic Conditions

Figure 6 shows the existing AM and school PM peak hour traffic volumes for the study area intersections. The turning movement counts used to determine these volumes were conducted on Thursday May 25th, 2017 for all the study area intersections during the weekday periods 7:30 – 9:30 AM and 3:00 – 5:00 PM. These two-hour periods represented the range of peak period traffic operations expected with current CHHS bell times of 8:45 AM and 3:55 PM, which are expected to remain the same for the future redevelopment. All turning movement count output is found in **Appendix B**.

Traffic count information shows traffic flows on study area roadways to and from the site were heavy during the AM peak count periods from 7:55-8:55 AM, with a 15 minute peak between 8:35 and 8:50 AM. PM peak volumes were, in general, lower since the school PM peak does not coincide with typical PM peak commuter time periods. Overall in the project study area, PM peak traffic flows were highest from 3:55 to 4:55 PM, with 15 minute spike at 4:00-4:15 PM. **Table 4** provides a detailed listing of each intersection count, peak hour, and count date.

In comparing the traffic count data from 5 minute bins for appropriate peak hour durations for analysis purposes, results indicate that driveway peaks in the AM timeframe are generally consistent, with the Middle School Access Driveway peak hour differing due to earlier middle school-related traffic affecting the peak 60 minute totals. In the PM peak, there is some variation as to a general study area peak hour. In review of the data, the 3:55 – 4:55 PM time period was selected as it represented the highest totals of overall driveway activity entering/existing the CHHS campus. Count data in **Appendix B** is provided in the 5 minute durations for all study area intersections, along with heavy vehicle (bus/truck) and pedestrian/bicycle information. There were a considerable number of students walking to/from school along High School Road.



Table 4. Traffic Count Information

Traffic Count Location	Period Counted	Peak Hour	Count Date
Homestead Road and High School Road	AM Peak	7:55 – 8:55 AM	5/25/17
	PM Peak	4:00 – 5:00 PM**	
High School Road and Staff-Event Driveway / Celtic Circle	AM Peak	7:55 – 8:55 AM	
	PM Peak	3:55 – 4:55 PM	
High School Road and Parent Unloading/Loading – Visitor Driveway Entrance	AM Peak	7:55 – 8:55 AM	
	PM Peak	3:35 - 4:35 PM**	
High School Road and Parent Unloading/Loading – Visitor Driveway Exit	AM Peak	7:55 – 8:55 AM	
	PM Peak	3:35 - 4:35 PM**	
High School Road and Staff Driveway	AM Peak	7:55 – 8:55 AM	
	PM Peak	3:35 - 4:35 PM**	
High School Road and Student Parking Lot - Event Driveway / Bus Facility Access	AM Peak	7:55 – 8:55 AM	
	PM Peak	3:55 – 4:55 PM	
Seawell School Road and High School Road	AM Peak	7:45 – 8:45 AM**	
	PM Peak	3:15 - 4:15 PM**	
Seawell School Road and Smith Middle School Access Driveway	AM Peak	7:30 – 8:30 AM**	
	PM Peak	3:10 – 4:10 PM**	

** - Peak Hour Differs from Overall Study Area Peak Hour – Intersection Analyzed for Overall Peak Hour Traffic Volumes

II. 2021 BUILD-OUT YEAR+1 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 2.0 percent per year was used for the short-term 2021 design year capacity analyses. This rate is based on previous growth trends for this area from Town and NCDOT average daily traffic information from the period 2003-2015 and adjusted upward to conservatively account for future development in the vicinity of the high school.

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 June 2017), there are no Town-approved developments in the immediate study area. Several development projects along the Homestead Road corridor north and east of the high school are expected to contribute to background traffic growth by the 2021 design analysis year, but the effects of development traffic from these locations were accounted for in the ambient growth rate above. **Figure 7** shows the estimated 2021 Build-out Year+1 peak hour total traffic volume projections without site traffic, which include the ambient area-wide growth as described in the previous section, with no additional specific background generator growth added.

C. Proposed Project Traffic

i. Trip Generation

Projected peak period trips for the proposed Chapel Hill High School Expansion redevelopment were generated based on the latest version of the NCDOT Municipal and School Transportation Assistance (MSTA) school trip generation spreadsheet (accessed from NCDOT MSTA website May 2017). This information was supplemented with data from traffic counts for all existing site



driveways. See **Appendix C** for trip generation output and details. Adjustments to trip generation rates (due to internal trips, pass-by trips, transit trips, pedestrian/bicycle trips) are discussed in the following sections. Existing school bus traffic information (provided by the Applicant) was included as part of the MSTA trip generation methodology and included 22 buses in the AM peak hour and 16 in the PM peak hour. Future bus estimates were developed by applying the growth factor of future ultimate student population (1,625 students) compared to existing enrollment (1,468 students) to the existing bus data – a 1.11 growth factor. MSTA estimates for faculty/staff were adjusted to match current levels (152 employees).

Table 5 shows the number of total and “net” new vehicular trips generated by the Chapel Hill High School Expansion during the weekday school AM and school PM peak hours, based on the generation methodologies and comparisons described above and detailed below. No daily traffic generation estimate or count was made for the existing facility. The MSTA estimates provide a direct comparison to existing count data, which shows strong correlation between actual counts and MSTA estimates except for exiting vehicles in the AM peak hour. The other discrepancy between the MSTA estimate and field data is the differences between number of estimated student drivers and actual student parking lot driveway counts – and the corresponding difference in parent drop-off/pick-up data. Count data indicates more CHHS students utilize parent drop-off/pick-up, and conversely do not drive to school, than what MSTA data predicts.

The projected traffic data utilized for future Build Scenario analyses uses the actual driveway traffic counts and applies the student growth factor (1.11) to estimate trip-making activities for each trip type. MSTA queue estimates and methodologies will still be utilized in analyzing the sufficiency of the proposed design, along with field observations of parent PM peak period pick-ups conducted on October 25, 2017 (see **Section III.G** for additional details).

ii.) Adjustments to Trip Generation Rates

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 High School Expansion development.

a.) Internal Capture

The land uses and general program proposed for the Chapel Hill High School Expansion would not exhibit the potential for internally-captured trips between two land use types and thus no modifications or reductions were made to trip generation results to account for internal capture.

b.) Modal Split

The study area is served by a CHT fixed bus route with existing peak period service and also has some facilities for pedestrians and bicyclists with connectivity to nearby neighborhoods and areas of western Chapel Hill and Carrboro. To be conservative, and considering factors such as transit, bicycle and walk trips are factored in to the vehicular trip generation estimates using the MSTA source along with having actual field count data for a base comparison, no additional trip reductions for transit or pedestrian/bicycles were considered for this study.

c.) Pass-by Trips

The proposed Chapel Hill High School Expansion would not be considered a potential pass-by trip generator. No modifications or reductions were made to trip generation results to account for pass-by trips.



Table 5. Weekday Peak Hour Vehicle Trip Generation Summary
Chapel Hill High School Expansion

MSTA Estimates - Existing	AM Peak			PM Peak		
	In	Out	Total	In	Out	Total
Student Drivers	420	0	420	0	420	420
Parent Drop-Off/Pick-Up	135	135	270	64	64	128
Buses	22	0	22	0	22	22
Faculty/Staff	152	0	152	0	0	0
Total Existing - MSTA	729	135	864	64	506	570

Traffic Count Estimates - Existing	AM Peak			PM Peak		
	In	Out	Total	In	Out	Total
Student Drivers	243	0	243	0	200	200
Parent Drop-Off / Pick-Up	329	329	658	113	113	226
Buses	22	22	44	0	16	16
Faculty/Staff/Visitors	145	55	200	29	103	132
Total Existing - Traffic Counts	739	406	1,145	142	432	574

Aggregate External Driveway Totals **739** **406** **142** **432**
Growth Factor **1.11**

Traffic Count Estimates - Proposed Expansion	AM Peak			PM Peak		
	In	Out	Total	In	Out	Total
Student Drivers	269	0	269	0	221	221
Parent Drop-Off / Pick-Up	364	364	728	125	125	250
Buses	25	25	49	0	18	18
Faculty/Staff/Visitors	161	61	221	32	114	146
Total New - Growth Over Existing Data	819	450	1,269	157	478	635

Net Growth Factor	80	44	124	15	46	61
Traffic Increase Estimate						



d.) Trip Generation Budget

Current information from the Applicant about the Chapel Hill High School Expansion 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 density listed by the Applicant.

iii.) Trip Distribution

Trip distribution for site-related traffic was based on existing 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.

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 High School Expansion utilized existing peak hour turning movement counts (particularly the existing distribution from site driveway entrances/exits) to estimate a basic distribution of trips that would be consistent for the two peak analysis hours. Separate distributions of trips for parent unloading/loading, staff and visitor parking, student parking, and bus operations were estimated, as the proposed driveway and parking lot access scheme will have specific delineations for these separate trip types. The staff / visitor / event parking trip type will be able to utilize multiple lots, so trip distributions and assignments were proportioned to the relative proposed lot sizes for these trip types. **Figure 8** presents the projected trip distribution traffic percentages, and their spatial breakout at each driveway, for the proposed site in 2021.

iv.) Trip Assignment

Figure 9 shows the corresponding total site traffic volumes distributed on the 2021 study area network. Total volumes into and out of the site correspond to total external vehicular trips generated for each trip type, based on the trip generation methodology developed previously.

D. Future Traffic Forecasts with the Proposed Development

Figure 10 displays the 2021 Build-out+1year projected study area traffic volumes with site redevelopment traffic added. These traffic volumes represent the aggregate traffic growth over existing 2017 traffic volumes for ambient traffic growth and the subsequent removal of existing site traffic for existing driveway locations and at external intersections (see **Appendix D** for details). After existing site traffic removal, the estimated site traffic assignments for the Chapel Hill High School Expansion were added to the network.



III. IMPACT ANALYSES

A. Peak Hour Intersection Level of Service Analysis

i.) Methodology

Evaluation of traffic operations on suburban arterials 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, 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 are described in **Table 6**.

The *Synchro Professional Version 9* operations analysis software was used to analyze peak hour conditions at signalized intersections and at all existing and proposed site driveway intersections in all analysis scenarios. The Synchro HCM 2010 two-way stop controlled intersection output function was used to analyze and report peak hour conditions results at all other unsignalized intersections in all other scenarios. 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 following four conditions were evaluated:

Condition 1 – 2017 Existing Traffic

Condition 2 - 2021 Traffic without Site Traffic

Condition 3 - 2021 Traffic with Site Traffic Volumes Added

Condition 4 - 2021 Traffic with Site Traffic and Improvements

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.
- **Condition 4** – 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.



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 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 LOS 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 signalized output for all four conditions (where applicable).

The existing and future study area unsignalized intersections were analyzed in Synchro using the HCM 2010 unsignalized intersection analysis and reporting function. Their results were evaluated on a per-movement basis, since HCM methods do not produce an overall intersection level of service for unsignalized intersections. Thus, intersections with deficient (LOS F) movements in Condition 3 would need to be evaluated for improvements in Condition 4. This methodology differs from signalized intersections, where one or more movements at an intersection may be deficient in Conditions 2 and 3, but as long as the overall intersection level of service does not fall below LOS



D, no intersection improvements are deemed necessary. **Appendix F** contains the Synchro 2010 HCM two-way stop controlled intersection output for all intersections under study.

In all analysis scenarios, site driveway intersections with High School Road were adjusted to use field recorded peak hour factors (PHFs) for through travel movements and further assumptions were made to account for high concentrations of school-related traffic within 15-30 minute periods within the peak hour. This was done by selecting a 0.50 PHF for each school driveway turning movement (entering and exiting) at each intersection.

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 intersections (which do not have an overall intersection delay value produced by HCM methods).

Currently, the Homestead Road / High School Road signalized intersection operates at acceptable levels of service for the analyzed 2017 school PM peak hour, but is over capacity (overall LOS F) during the AM peak period. Operations at the existing unsignalized intersections are mostly acceptable, based on Town of Chapel Hill LOS E thresholds for unsignalized intersection movements, except at the following locations:

- High School Road and Parent Unloading Exit (AM Peak) – results indicate LOS F operations for the exiting stop-controlled movement.
- High School Road and Student Driveway / Bus Facility Access (AM Peak) – results indicate LOS F operations for the northbound stop-controlled left-turn/through movement.
- Seawell School Road and High School Road (both peaks) – results indicate deficient LOS F operations for the single eastbound shared left-turn/through/right-turn lane, with little movement capacity in the AM Peak hour.



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

Intersections / Movements	LOS		Average Vehicular Delay (seconds/vehicle)	
	AM	School PM	AM	School PM
Homestead Road and High School Road	F	C	100.0	26.0
WB LT	D	D	43.3	44.4
WB RT	B	B	19.6	14.8
NB TH-RT	F	C	160.6	30.6
SB LT	D	A	36.5	7.4
SB TH	A	A	5.8	9.2
High School Road and Staff / Event / Bus Driveway - Celtic Circle	N/A	N/A	N/A	N/A
EB LT	A	A	8.1	8.3
WB LT	B	A	10.1	8.4
NB LT-TH-RT	C	D	22.9	25.0
SB LT-TH-RT	C	B	21.6	12.7
High School Road and Parent Unloading / Loading Entr	N/A	N/A	N/A	N/A
WB LT	A*	A*	5.3*	1.7*
High School Road and Parent Unloading / Loading Exit	N/A	N/A	N/A	N/A
NB LT-RT	F	B	84.2	13.3
High School Road and Staff Driveway	N/A	N/A	N/A	N/A
WB LT	A	A	8.8	7.9
NB LT-TH-RT	C	B	22.4	12.1
High School Road and Student / Event Driveway / Bus Facility Access	N/A	N/A	N/A	N/A
EB LT	B	A	10.5	8.8
WB LT	B	A	10.0	7.9
NB LT-TH	F	D	136.4	26.7
NB RT	B	B	11.4	12.1
SB LT-TH-RT	D	B	34.0	12.8
Seawell School Road and High School Road	N/A	N/A	N/A	N/A
EB LT-TH-RT	F	F	669.1	176.6
WB LT-TH-RT	F	C	163.9	21.7
NB LT	A	A	9.4	8.1
SB LT	A	A	7.7	7.5
Seawell School Road and Smith Middle School Access	N/A	N/A	N/A	N/A
EB LT-RT	C	C	21.1	16.1
NB LT	A	A	9.0	8.3

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

* - HCM 2000 Methodology Results – No LOS/Delay Computed in HCM 2010 Methodology



iii.) 2021 No-Build Scenario (Condition 2) Results

Table 8 presents the results for the 2021 Build-out+1 analysis year estimated traffic conditions without the impacts of site-related traffic. This analysis includes the application of the 2.0 percent per year ambient growth factor to existing traffic volumes and no specific retiming of existing signals and no geometric changes anticipated for any study area intersections. A summary of operations is given below.

During Condition 2 - 2021 Without Site Expansion Traffic, the same deficiencies indicated in the 2017 Existing Conditions analysis will continue to occur at the same study area intersections noted previously. All other intersections and critical movements are expected to operate at acceptable levels of service for the two analyzed peak hours. For the Condition 2 analysis, existing 2017 signal timings (maximum green times) and system free-run operations were kept constant to allow a direct comparison of the impacts of increasing background traffic levels.

iv.) 2021 Build Scenario (Condition 3) Results

Table 9 presents results for 2021 Build-out+1 year estimated traffic conditions, including impacts of site-related traffic that has been redistributed to new/modified driveways and access points. In general, the effects of the site redevelopment to the study area network will result in the following deficient (overall LOS E or F) signalized intersections or (LOS F) critical stop-controlled movements.

- Homestead Road and High School Road – AM peak hour LOS at this signalized intersection is expected to remain at LOS F, similar to existing and 2021 No-Build scenarios, though the redistribution of traffic volumes in the vicinity of the high school site should allow the intersection to operate with slightly lower overall delays than the 2021 No-Build scenario in the AM peak hour. PM peak hour operations are an acceptable overall LOS D, though this represents a drop from projected overall LOS C operations in the No-Build analysis.
- High School Road and Staff/Visitor/Event Driveway – Bus Facility Driveway – AM peak hour northbound left-turn/through lane stop-controlled LOS is expected to be LOS F, similar to existing and 2021 No-Build conditions, with potentially lower vehicular delays and queuing due to lower redistributed traffic volumes at this site access point.
- Seawell School Road and High School Road – AM and PM peak hour eastbound and westbound stop-controlled approaches remain at LOS F values, with little movement capacity, similar to existing and 2021 No-Build scenario results.
- Seawell School Road and Smith Middle School Access/High School Parent Unloading/Loading Access – AM peak hour stop-controlled LOS for the left-turn exit lane is reported as LOS F. High exiting volumes, coupled with high levels of conflicting traffic on Seawell School Road offer little capacity for this critical movement.

The 2021 Build Scenario analysis assumes existing external intersection geometrics and traffic control remain as shown for 2017 Existing and 2021 No-Build Conditions. The 2021 mitigation scenario examines improvements recommended to intersections and site access plans, some of which have been incorporated by the Applicant in **Figure 2**.



Table 8. Capacity Analysis Results for Study Area Intersections
Condition 2 – 2021 Traffic Without Site

Intersections / Movements	LOS		Average Vehicular Delay (seconds/vehicle)	
	AM	School PM	AM	School PM
Homestead Road and High School Road	F	C	129.3	30.8
WB LT	D	E	45.5	59.7
WB RT	B	B	19.8	15.9
NB TH-RT	F	C	212.2	32.2
SB LT	D	A	44.1	7.5
SB TH	A	A	6.0	9.2
High School Road and Staff / Event / Bus Driveway - Celtic Circle	N/A	N/A	N/A	N/A
EB LT	A	A	8.2	8.4
WB LT	B	A	10.4	8.4
NB LT-TH-RT	D	D	26.7	29.4
SB LT-TH-RT	C	B	24.5	13.0
High School Road and Parent Unloading / Loading Entr	N/A	N/A	N/A	N/A
WB LT	A*	A*	5.9*	1.8*
High School Road and Parent Unloading / Loading Exit	N/A	N/A	N/A	N/A
NB LT-RT	F	B	139.9	14.3
High School Road and Staff Driveway	N/A	N/A	N/A	N/A
WB LT	A	A	9.1	7.9
NB LT-TH-RT	D	B	27.5	12.6
High School Road and Student / Event Driveway / Bus Facility Access	N/A	N/A	N/A	N/A
EB LT	B	A	10.8	8.9
WB LT	B	A	10.5	7.9
NB LT-TH	F	D	218.7	33.9
NB RT	B	B	11.8	12.7
SB LT-TH-RT	E	B	43.1	13.7
Seawell School Road and High School Road	N/A	N/A	N/A	N/A
EB LT-TH-RT	F	F	1017	268.1
WB LT-TH-RT	F	C	260.0	23.8
NB LT	A	A	9.7	8.2
SB LT	A	A	7.7	7.6
Seawell School Road and Smith Middle School Access	N/A	N/A	N/A	N/A
EB LT-RT	C	C	23.3	17.4
NB LT	A	A	9.1	8.4

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

* - HCM 2000 Methodology Results – No LOS/Delay Computed in HCM 2010 Methodology



Table 9. Capacity Analysis Results for Study Area Intersections
Condition 3 – 2021 Traffic With Site

Intersections / Movements	LOS		Average Vehicular Delay (seconds/vehicle)	
	AM	School PM	AM	School PM
Homestead Road and High School Road	F	D	109.7	38.8
WB LT	D	F	46.6	83.7
WB RT	B	B	17.0	15.3
NB TH-RT	F	C	172.5	30.9
SB LT	C	A	32.7	7.2
SB TH	A	A	6.2	9.4
High School Road and Staff / Event / Bus Driveway - Celtic Circle	N/A	N/A	N/A	N/A
EB LT	A	A	7.9	8.6
WB LT	B	A	10.0	8.4
NB LT-TH-RT	D	D	32.8	25.2
SB LT-TH-RT	C	B	19.2	13.8
High School Road and Student Lot Driveway	N/A	N/A	N/A	N/A
WB LT	B	A	10.4	7.7
NB LT-RT	D	D	26.8	28.8
High School Road and Visitors / Event Driveway	N/A	N/A	N/A	N/A
WB LT	A	A	8.1	8.2
NB LT-TH-RT	B	B	14.5	12.9
High School Road and Staff / Visitors / Event Driveway - Bus Facility Access	N/A	N/A	N/A	N/A
EB LT	B	A	12.0	8.9
WB LT	A	A	8.2	8.2
NB LT-TH	F	C	57.6	22.5
NB RT	B	B	10.4	11.4
SB LT-TH-RT	C	B	20.5	12.4
Seawell School Road and High School Road	N/A	N/A	N/A	N/A
EB LT-TH-RT	F	F	963	289.2
WB LT-TH-RT	F	D	1021	31.4
NB LT	B	A	11.4	8.5
SB LT	A	A	8.0	7.7
Seawell School Road and Smith Middle School Access / High School Parent Unloading-Loading Access	N/A	N/A	N/A	N/A
EB LT	F	E	1246	45.7
EB RT	B	B	13.0	11.0
NB LT	A	A	8.7	8.2

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

BLUE – New/Modified Driveway or Change in Designated Access (Parent/Student/Staff/Visitor)



v.) 2021 Mitigation Scenario (Condition 4) Results

Based on capacity analysis results in the previous sections, several intersections in the project study were studied for mitigation improvements for issues related to projected vehicular delay and LOS and potential queuing. The following changes were tested:

- Homestead Road and High School Road – this intersection operates at an overall LOS F in the AM peak hour for all analyzed scenarios. It currently features free-run signal operations with defined maximum green times for each phase. A potential improvement at this location would be to retime the signal for the Build Scenario to give additional maximum green time to the northbound through movement and rebalance other maximum green times for improved efficiency and reduction in queuing, in addition to providing a northbound right-turn auxiliary lane with 150 feet of storage. Analysis of the proposed retiming and signal phasing (to allow overlap northbound right-turn phase) indicates that the improvements provide operational benefits that allow overall AM peak hour LOS to improve to B, significantly better than current or 2021 No-Build Scenario conditions, with reductions in queuing for all movements. See **Appendix E** for detailed results.
- High School Road and Student Lot Driveway – this intersection is projected to operate at an acceptable LOS D with a single egress lane in the 2021 PM peak hour. To mitigate potential exit queuing, separate left-turn and right-turn lanes were analyzed. Critical movement LOS improves to LOS C and potential queues are reduced to less than 100 feet.
- Seawell School Road and High School Road – The eastbound single shared left-turn/through/right-turn lane operates poorly in both peak hours in all analysis scenarios, with limited estimated capacity and significant queuing. The redistribution of site-related trips due to new parking lot and parent loading/unloading locations does not improve conditions. To mitigate the existing and future deficiencies, separate stop-controlled left-turn and through / right-turn exit lanes were tested. Though HCM results indicate the left-turn exit lane would still operate at a LOS F, this improvement would offer the potential of reducing congestion and queuing for this approach. Overall approach delay is improved from 963 seconds per vehicle to 157 seconds per vehicle in the AM peak hour. The westbound approach also has projected LOS F operations, but has very light/intermittent traffic volume and was not tested for mitigation improvements.
- Seawell School Road and Smith Middle School Access Driveway (Future CHHS Parent Unloading/Loading Access) – existing and 2021 Without Site analyses of this stop-controlled driveway indicate that operations are/should be acceptable during the high school peak hour of traffic (since middle school traffic operations do not directly coincide with the high school peak hour). However, the utilization of this driveway connection as the primary ingress and egress point for parent unloading and loading operations causes the proposed eastbound left-turn exit lane to operate at a LOS F in the 2021 AM peak hour. Mitigation for this condition could include intersection signalization or construction of a roundabout to serve the middle school and high school traffic flows. Both options provide substantially improved operations and queue reductions for this intersection. **Appendix E** contains the signalized mitigation results, and **Appendix G** contains the SIDRA roundabout evaluation software output.

One other study area intersection is estimated to have deficient stop-controlled critical movement operations in the 2021 With Site scenario. The High School Road intersection with the Staff –



Visitors – Event Driveway and Bus Facility access driveway is expected to operate at a LOS F in the 2021 AM peak hour. However, volumes and projected queues at this location are not significant and no further mitigation was tested at this location. **Table 10** shows the AM and PM peak hour operational effects caused by these proposed study area improvements.

**Table 10. Capacity Analysis Results for Study Area Intersections
 Condition 4 – 2021 Traffic With Site and Mitigation**

Intersections	LOS		Average Vehicular Delay (seconds/vehicle)	
	AM	PM	AM	PM
Homestead Road and High School Road	B	B	15.6	18.9
WB LT	C	C	25.9	26.0
WB RT	A	A	9.1	7.4
NB TH	C	C	26.4	29.5
NB RT	A	A	9.6	3.4
SB LT	B	B	11.3	13.9
SB TH	A	B	8.9	17.5
Seawell School Road and High School Road	N/A	N/A	N/A	N/A
EB LT	F	F	969	148.5
EB TH-RT	C	B	19.7	13.4
WB LT-TH-RT	F	D	1021	31.4
NB LT	B	A	11.4	8.5
SB LT	A	A	8.0	7.7
High School Road and Student Lot Driveway	N/A	N/A	N/A	N/A
WB LT	B	A	10.4	7.7
NB LT	E	C	41.7	20.5
NB RT	B	B	11.7	11.0
Seawell School Road and Smith Middle School Access / High School Parent Unloading-Loading Access (Signalized)	C	B	24.9	18.3
EB LT	D	D	39.8	39.2
EB RT	A	B	8.5	16.1
NB LT	D	D	47.7	39.8
NB TH	B	A	14.2	6.6
SB TH	C	B	34.9	17.7
SB RT	B	A	10.2	4.6
Seawell School Road and Smith Middle School Access / High School Parent Unloading-Loading Access (Roundabout)	C	A	18.5	7.0
EB LT	A	A	9.1	5.5
EB RT	A	A	6.1	4.6
NB LT-TH	D	A	27.4	7.3
SB TH-RT	C	A	21.3	7.9

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
BLUE – New/Modified Recommended Improvement



B. Access Analysis

Vehicular site access is to be accommodated by modifications to the existing access driveways connecting to High School Road and Seawell School Road, with a redevelopment of on-site parking lots and access circulation for the various trip types served by the high school. Access details for each driveway are given below:

- High School Road and Existing Staff-Event-Bus Unloading/Loading Driveway – this driveway access point and operations are considered to remain essentially the same in the proposed site plan.
- High School Road and Student Parking Driveway – this driveway provides a singular point of access for student drivers, along with a single parking facility for student vehicles. It replaces the current parent unloading/loading – visitor parking one way loop and provides more separation between the Staff-Event-Bus Driveway than the current configuration.
- High School Road and Visitors/Event Driveway – this driveway and revised parking lot replaces the existing small staff driveway/parking area.
- High School Road and Staff-Event-Visitors Driveway – Bus Facility Access – this intersection design remains unchanged from existing conditions, with internal driveway and parking lot design changes to allow it to function as access for staff and visitor parking instead of being the primary access for student parking. It will have internal connectivity to the proposed roadway from the Smith Middle School parking lot via a new roadway connecting to the south side of the school.
- Seawell School Road and Smith Middle School Driveway – this access point is envisioned to become the primary access point for High School parent unloading/loading operations. A new internal roadway connecting the two schools will provide connectivity for unloading/loading operations to be conducted in a proposed loop at the southern side of the high school.

Design details related to driveway throat length are shown on the concept plan. Comparing throat lengths to estimated 95th percentile queues in the 2021 Build Scenario AM and PM peak hours indicate that throat lengths are adequate for driveways along High School Road. Throat length at the middle school access driveway is approximately 100 feet to the internal middle school circulating driveway. Throat length for high school traffic at this driveway is not expected to be an issue because of the staggered school bell times and high school/middle school traffic volumes not conflicting with each other.

Driveway distances along High School Road from the signalized intersection at Homestead Road to the nearest school driveway is approximately 500 feet, and is acceptable, based on recommendations of 100 foot minimum corner clearance 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 2005 *Town of Chapel Hill Design Manual*.

The spacing between the proposed driveways and the nearest adjacent existing streets along High School Road is more than the recommended 100 foot spacing along collector roadways found in Table 4-A-1 in the Town Design Manual. All driveways are spaced 300 feet or more apart from each other along the roadway, except for the 150 foot separation between the Student Lot and Visitors Circle Driveways.



Access for pedestrians and bicyclists is adequate in the project study area. Crosswalk and pedestrian signals exist across minor street approaches at the Homestead Road signalized study area intersection near the Chapel Hill High School Expansion site and sidewalk is present on at least one side of both High School Road and Seawell School Road. Unsignalized crosswalks also exist at the High School Road / Seawell School Road intersection. Painted bicycle lanes are also present along Homestead Road and on the west side of Seawell School Road. No bicycle facilities are present along the High School Road.

C. Signal Warrant Analysis

Based on projected 2021 traffic volumes, operational analysis results, and current/proposed access plans, the existing unsignalized intersections at High School Road and the Smith Middle School Driveway with Seawell School Road would both warrant the installation of a traffic signal, based on the Peak Hour Warrant methodology found in the *2009 Manual on Uniform Traffic Control Devices (MUTCD)*. These intersections, due to their high side street volumes in the AM peak hour, do satisfy Warrant 3 – Peak Hour Warrant in the MUTCD methodology. Though warranted, final recommendations for improvements at these intersections are not necessarily limited to implementation of a traffic signal. Satisfaction of multiple warrants of a longer duration than a single peak hour, along with consideration of other geometric improvements and access strategies need to be considered, as well. **Appendix H** contains the HCS signal warrant analysis output.

D. Sight Distance Analysis

In general, sight distance issues entering/exiting the existing/proposed Chapel Hill High School Expansion driveways should be minimal, because the driveway access points along High School Road are on a nearly tangential section, with only slight horizontal curvature, giving drivers exiting the site adequate distance to observe oncoming traffic. Vertical curvature along High School Road is minimal in most areas, with some curvature on the eastern portion of the roadway, but no significant issues noted for sight distance from existing/proposed school driveways.

E. Crash Analysis

Data from the NCDOT Traffic Safety Unit TEAAS software tool was compiled for a five year period (5/1/2012 to 4/30/2017) for the length of High School Road (0.43 mile segment) in the project study area. Raw segment crash data is located in **Appendix I. Table 11** presents a comparison between the High School Road corridor study area crash rates and the latest North Carolina statewide rates for the period 2013-2015 (compiled by NCDOT Traffic Safety Unit).

Overall, the crash rate along High School Road in the project study area was slightly lower than statewide averages for similar facilities for all crash types. Crash types included two rear-end crashes, two run-off-road crashes, and two left-turn/angle crashes. There were two reported crashes at the Seawell School Road intersection, one at the Student – Event Driveway intersection and three at the Homestead Road intersection.



Table 11. Study Area Crash Rate Comparison – High School Road Corridor

Statistic	Crashes Per 100 Million Vehicle Miles	
	High School Road Homestead Road to Seawell School Road	NC Statewide Average* 2-Lane Undivided
Total Crash Rate	224.75	247.39
Fatal Crash Rate	0.00	1.18
Non-Fatal (Injury) Crash Rate	74.92	76.16
Night Crash Rate	37.46	65.51
Wet Crash Rate	37.46	46.04

* - Data for Urban Secondary Routes

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 12** are germane to the scope of this study.

Table 12. Other Transportation-Related Analyses

Analysis	Comment
Long-Range Planning Level Daily Volume-Capacity Analysis	No long-range planning-level volume-capacity analysis was completed for this project.
Turn Lane Storage Requirements	<p>Storage bay lengths at study area intersections were analyzed using Synchro and HCS 95th percentile (max) queue length estimates for the 2021 Build Scenario. The Homestead Road/High School Road intersection northbound AM peak hour queue estimate are excessive and may benefit from a right-turn lane to improve intersection efficiency and reduce queues if a minimum of 150 feet of storage is provided.</p> <p>An eastbound right-turn lane at the High School Road/Seawell School Road intersection will benefit operations at this location and create the need to potentially reduce the existing westbound left-turn lane on High School Road at the existing Student Parking Lot access driveway. 100 feet of storage for both these left-turn movements should be sufficient to contain queues – with the potential need to provide a traffic control officer to monitor left-turn queues at the eastbound approach to Seawell School Road.</p> <p>The proposed initial concept design for Middle School Access Driveway and connecting roadway to the high school was revised to provide adequate storage for exiting movements and internal access to both the middle school and high school parent drop-off/pick-up area. Egress from the high school connection requires two exiting lanes with 300 feet of storage to the west of Seawell School Road.</p>



Table 12 (Continued). Other Transportation-Related Analyses

Analysis	Comment
Appropriateness of Acceleration/Deceleration Lanes	The site concept plan shows no specifics related to acceleration/deceleration lanes. Several auxiliary lanes for deceleration exist at major study area intersections. Based on capacity analysis results and 25 mph speed limit along High School Road, no other additional acceleration or deceleration lanes are recommended in the project study area.
Pedestrian and Bicycle Analysis	Existing pedestrian access and connectivity is adequate in the project study area adjacent to the site. Sidewalk exists along most study area facilities on at least one side of the road, with pedestrian crossings and signals at Homestead Road/High School Road. Unsignalized crosswalks exist at Seawell School Road/High School Road. Continuous sidewalk on both sides of the High School Road is recommended, with marked crosswalks at the Student Lot and Visitor/Staff/Event Driveways across High School Road. Bicycle lanes exist along both sides of Homestead Road in the vicinity of the school. One southbound bicycle lane exists along Seawell School Road along the frontage of the high school and middle school. No specific bicycle amenities are present along High School Road. The implementation of striped bicycle lanes along High School Road is recommended.
Public Transportation Analysis	Public transportation service to the study area, and to the proposed site, is adequate with multiple bus stops in the study area and the HS Chapel Hill Transit fixed bus route serving the area. Existing school bus operations are expected to remain unchanged in terms of access and operations.

G. Special Analysis/Issues Related to Project

Based on discussions with Town of Chapel Hill staff, this study will also address issues required by the NCDOT MST A program with regards to the sufficiency of internal driveway aisle student loading/unloading and bus operations. Issues related to internal student loading/unloading operations are discussed below.

1. Confirm that the school generated traffic can be contained in the campus driveways on average school days and during high traffic demand days.

To verify existing PM peak hour parent loading queues and operations, field observations were recorded on October 25th, 2017 along the High School Road in the vicinity of the existing parent loading driveway. The following notes were made between 3:30 PM and 4:15 PM:

- 3:30 PM – 15 vehicles in pick-up lane
- 3:55 PM (Bell Time) – 27 vehicles in pick-up lane (fully capacity, but not formally organized to maximize curb utilization), 36 vehicles queued on either side of High School Road, eastbound queues extend to Homestead Road - 63 vehicles total queued
- 4:05 PM – Vehicle queues on High School Road dissipate, Student Lot emptying at Student Driveway, bus exits begin from Bus Lot Driveway
- 4:15 PM – Bus Lot cleared, Student Lot cleared, occasional Parent Loading operations continue
- General notes – Sunny conditions / 65 degrees. No significant issues along Seawell School Road or at its intersection with High School Driveway. Lengthy queues experienced exiting on High School Road at Homestead Road signalized intersection for short (10 minute) duration. High number of student pedestrians heading to Homestead Road corridor.



In assessing the field data collected related to Parent Loading operations, the following quantitative data was obtained/can be estimated:

- There is approximately 625 feet of curb space available for Parental Pick-ups, with 27 vehicles observed, yielding an average of 23.25 feet per vehicle
- Using the observed demand of 63 vehicles and applying a 1.30 High Demand Day MSTa factor, a maximum demand of 82 vehicles can be estimated.
- Further, if a 1.11 expansion factor for student growth is assumed from data on existing student population to future projections, potentially the Average Demand Day would equal 70 vehicles and the High Demand Day would equal 91 vehicles.
- Using MSTa averages for per vehicle queue length (22.83 feet/vehicle for Urban Charter schools or 24.42 feet/vehicle for Typical Public High School), the corresponding Average and High Demand Day queue lengths are 1,600 – 1,700 feet and 2,075 – 2,225 feet, respectively.

The MSTa trip generation spreadsheets (found in **Appendix C**), field data described above, and estimations made from the latest site plan reveal the following:

Table 13. MSTa Internal Queue Storage Check

Driveway	Internal Queue Storage	Average Queue Length		High Demand Queue Length	
		MSTa Estimate	Field Estimate	MSTa Estimate	Field Estimate
Smith Middle School (HS Parent Unloading Loading Access Connection)	1,950 feet (Drop-Off to Intersection with Seawell School Road)	1,701 feet	1,600 – 1,700 feet	2,211 feet	2,075 – 2,225 feet

Based on results in **Table 13**, average day school generated traffic queues should be able to be accommodated within the proposed site based on site plan details. MSTa estimates were derived by applying a surrogate number of students (2,900) in the MSTa spreadsheet to generate the desired number of future parent pick-up demand (125 vehicles). High demand days may not be completely internally stored based on the estimates in **Table 13**, though it should be noted that the queue storage estimated from the site plan does not (per MSTa recommendations) include the actual pick-up zone, which can accommodate an additional six vehicles, or approximately 150 feet of additional queue storage.

2. Using Synchro 9.1, adjust the Peak Hour Factor (PHF) for school related traffic

The PHF was adjusted in the 2021 with site capacity analysis calculations in Synchro 9.1 to 0.50 for all site-related traffic movements at the two site driveway intersections. It was not adjusted at the other study area intersections, as a larger proportion of peak hour traffic flows at those intersections would be represented by background (non-site related) traffic volumes. These intersections were analyzed using existing PHFs (often only slightly higher than the assumed PHF of 0.50) for all scenarios analyzed in this report.



3. Address the school vehicle loading delays and platooning

2021 With Site + Mitigation Synchro files were converted to SimTraffic microsimulation analyses using MSTA recommended protocol to simulate unloading/loading operations in the AM and PM peak hours. Parameters were adjusted to account for PHF adjustment and simulated traffic signal operations at the loading/unloading area. Results indicate that parent drop-off and pick-up operations can be accommodated internal to the site.

IV. MITIGATION MEASURES/RECOMMENDATIONS

A. Planned Improvements

There are no Town of Chapel Hill, or NCDOT roadway improvement projects for study area roadway facilities within the analysis year time frame of 2017-2021.

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 2021.

C. Applicant Committed Improvements

Based on the preliminary site concept plans and supporting development information provided, there are no external transportation-related improvements proposed adjacent to the Chapel Hill High School Expansion, but numerous substantive changes to existing roadways and internal circulation within the campus (see **Figure 2** details). The following are a summary of internal access improvements highlighted in **Section III. B.** of this report.

- Staff / Bus / Event Driveway Access – to remain as currently in operation at the western-most driveway.
- Creation of student parking lot with 243 spaces and single access point located in the vicinity of the current parent drop-off/pick-up one-way loop driveway. Closure of existing parent entrance only driveway.
- Reconfiguration of existing staff parking lot to the east of current parent drop-off/pick-up one way loop. Potential conversion of this parking lot for visitor/event parking.
- Reconfiguration of internal parking lots and access driveway on south side of school. Current student parking converted to staff/visitor and event parking areas. Creation of internal parent drop-off/pickup loop.
- Modification of existing Smith Middle School access driveway to provide a direct connection to CHHS and internal parking facilities and proposed parent drop-off/pick-up circle.

D. Necessary Improvements

Based on traffic capacity analyses for the 2021 design year, and analyses of existing study area turning bay storage lengths and site access, the following improvements are recommended as being necessary for adequate transportation network operations (see **Figure 11**).

- 1) To improve overall intersection operational performance in the AM peak hour to acceptable levels and reduce projected queue issues, it is recommended that a northbound right-turn lane with a minimum of 150 feet of storage be constructed at the intersection of Homestead Road



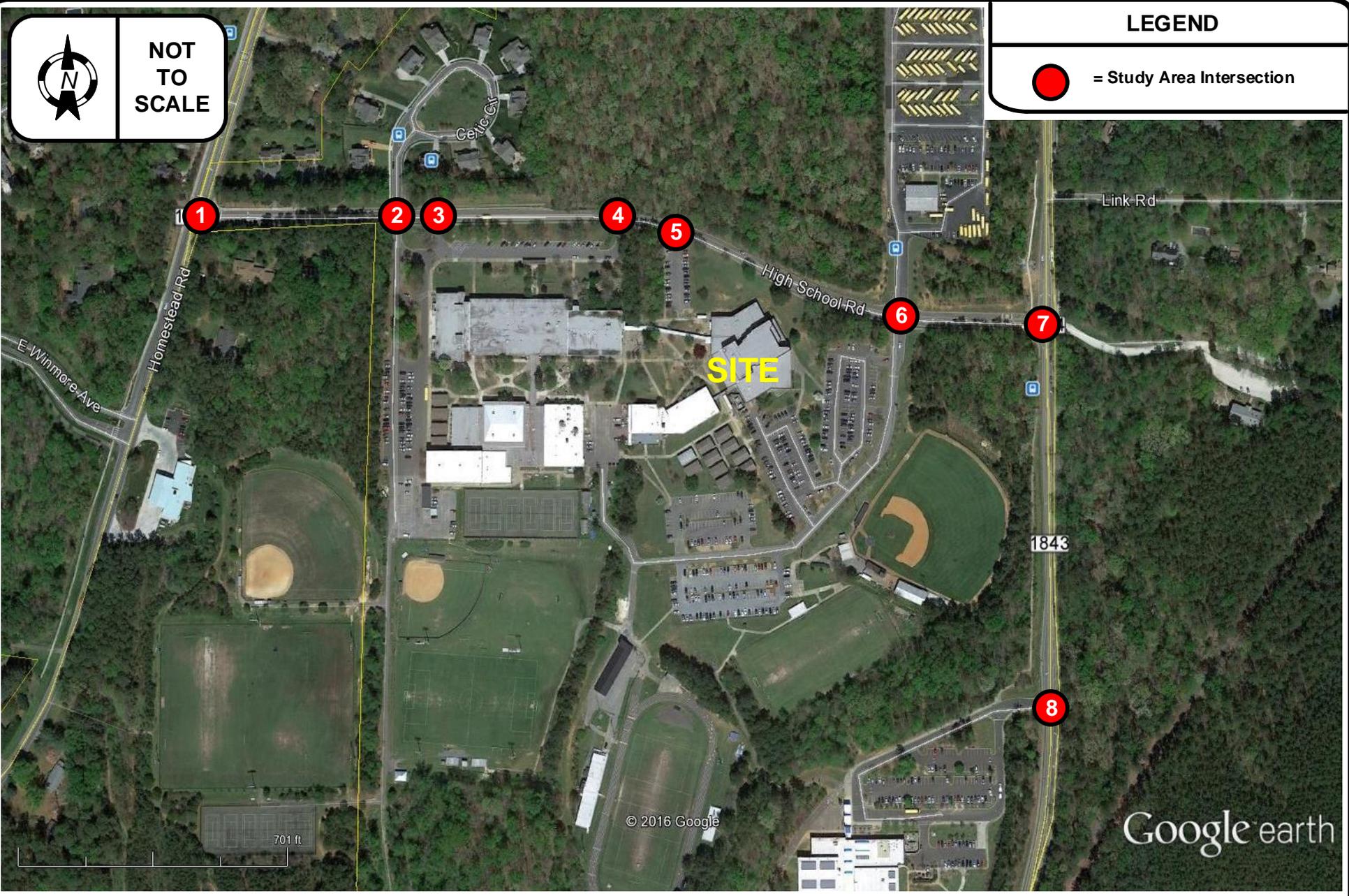
and High School Road. The traffic signal should be upgraded to include a right-turn signal overlap phase for this movement. This recommendation is necessary whether or not the Chapel Hill High School redevelopment occurs.

- 2) To reduce internal parking lot queuing and improve PM peak hour traffic operations at the High School Road intersection with the proposed Student Driveway, separate northbound left-turn and right-turn lanes should be constructed.
- 3) Current traffic counts from the Student Parking Lots indicate potentially 240 student vehicles accessing the existing parking facilities in the AM peak hour, with a projection of up to 270 vehicles in the 2021 Build Scenario. If current student parking permits/numbers indicate that demand exceeds the proposed 243 space capacity, additional parking spaces in the proposed Student lot may be necessary or a cap on permits may need to be implemented.
- 4) To provide safe access for pedestrian and bicycling trips to/from the CHHS campus, High School Road should be upgraded for connected sidewalks on both sides of the street (in areas currently not featuring sidewalk) from Homestead Road to Seawell School Road. Unsignalized crosswalks across High School Road should be considered at the Student Lot Driveway and the Staff/Visitor/Event Driveway. Striped bicycle lanes in both directions should be constructed along High School Road, as well, allowing connections to existing bicycle facilities along Homestead Road and Seawell School Road.
- 5) To mitigate deficient existing and projected eastbound stop-controlled traffic operations at the High School Road and Seawell School Road intersection, an eastbound left-turn lane with 100 or more feet of storage should be created at this intersection. A designated traffic control officer from CHHS should monitor the intersection, and queues in this left-turn lane, to interrupt traffic flow on Seawell School Road, as needed, to clear the eastbound left-turn lane queue.
- 6) The creation of an eastbound left-turn lane in recommendation 5) necessitates the reduction in storage length for the westbound left-turn lane accessing the proposed staff-visitor-event parking areas (currently student parking). If this westbound left-turn lane is reduced to 100 feet, 2021 Build scenario queue results indicate this should be adequate.
- 7) To mitigate potentially significant traffic queues and excessive stop-controlled delays in the AM peak hour, the intersection of Seawell School Road and the Middle School Driveway (future CHHS parent unloading/loading connection) should be improved with the installation of a traffic signal at this location utilizing existing laneage on Seawell School Road and improvements shown on the current concept design that would allow 300 feet of left-turn and right-turn lane storage from the existing Middle School Driveway eastbound approach, and extend the existing southbound right-turn lane at this intersection to 250 feet of full storage.

This improvement is recommended due to the impact of the Chapel Hill High School Expansion.

- 8) To provide adequate access and internal queue storage for unloading/loading operations for both the high school and middle school, design changes to initial site concept plans were provided internal to the site for the roadway alignment and laneage between the Middle School Driveway access and the Parent Drop-off/Pick-up circle. **Figures 2 and 11** highlight these updated changes that increase on-site vehicle storage and provide adequate circulation for both the staggered operations between the Middle School and High School.

Appendix A – Figures



HNTB

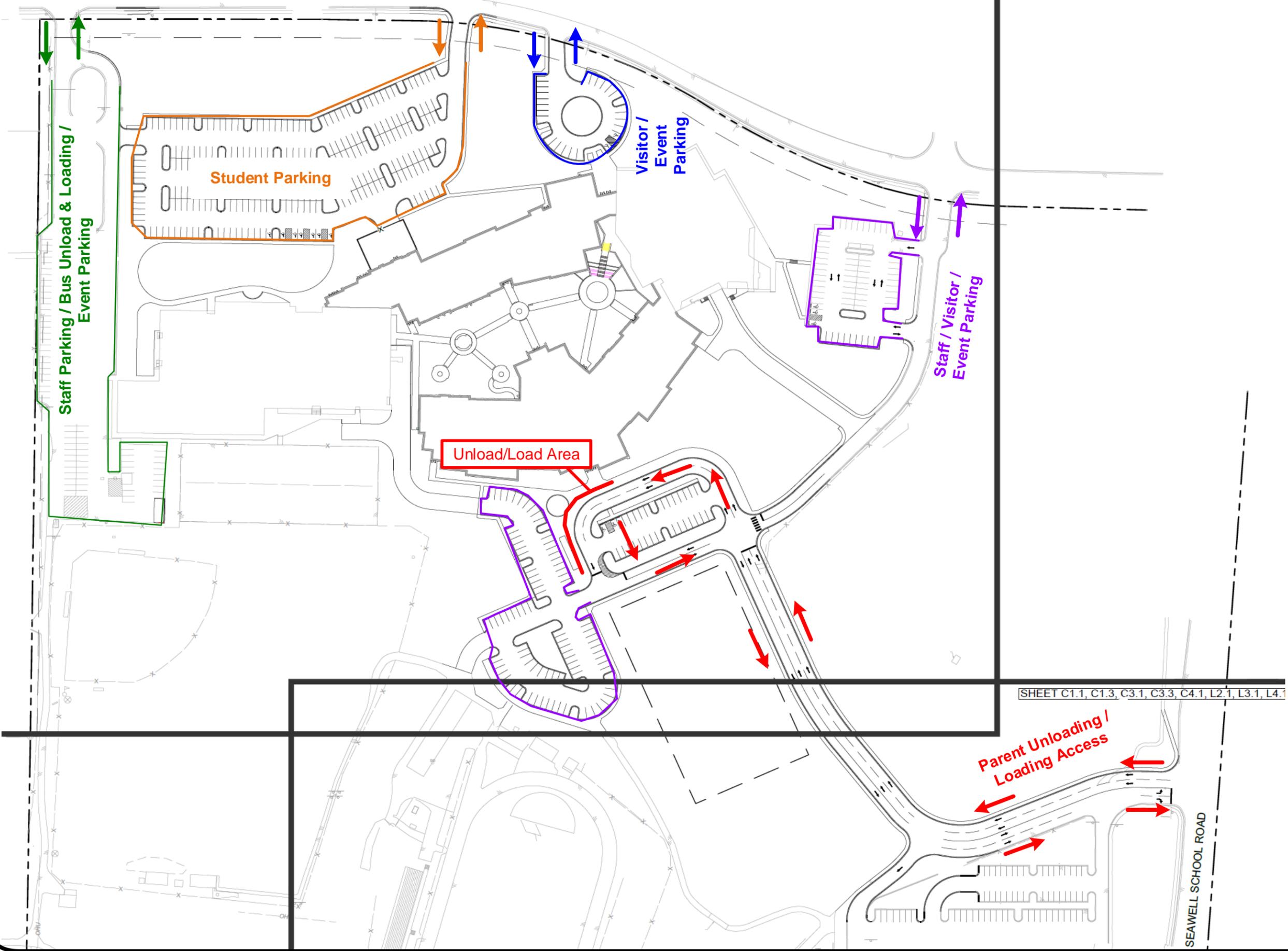


**Chapel Hill High School Expansion
 Traffic Impact Study**

PROJECT STUDY AREA

DATE: November 2017

FIGURE 1



LEGEND	
	= Specific Parking Areas and Access Points Delineated by Color

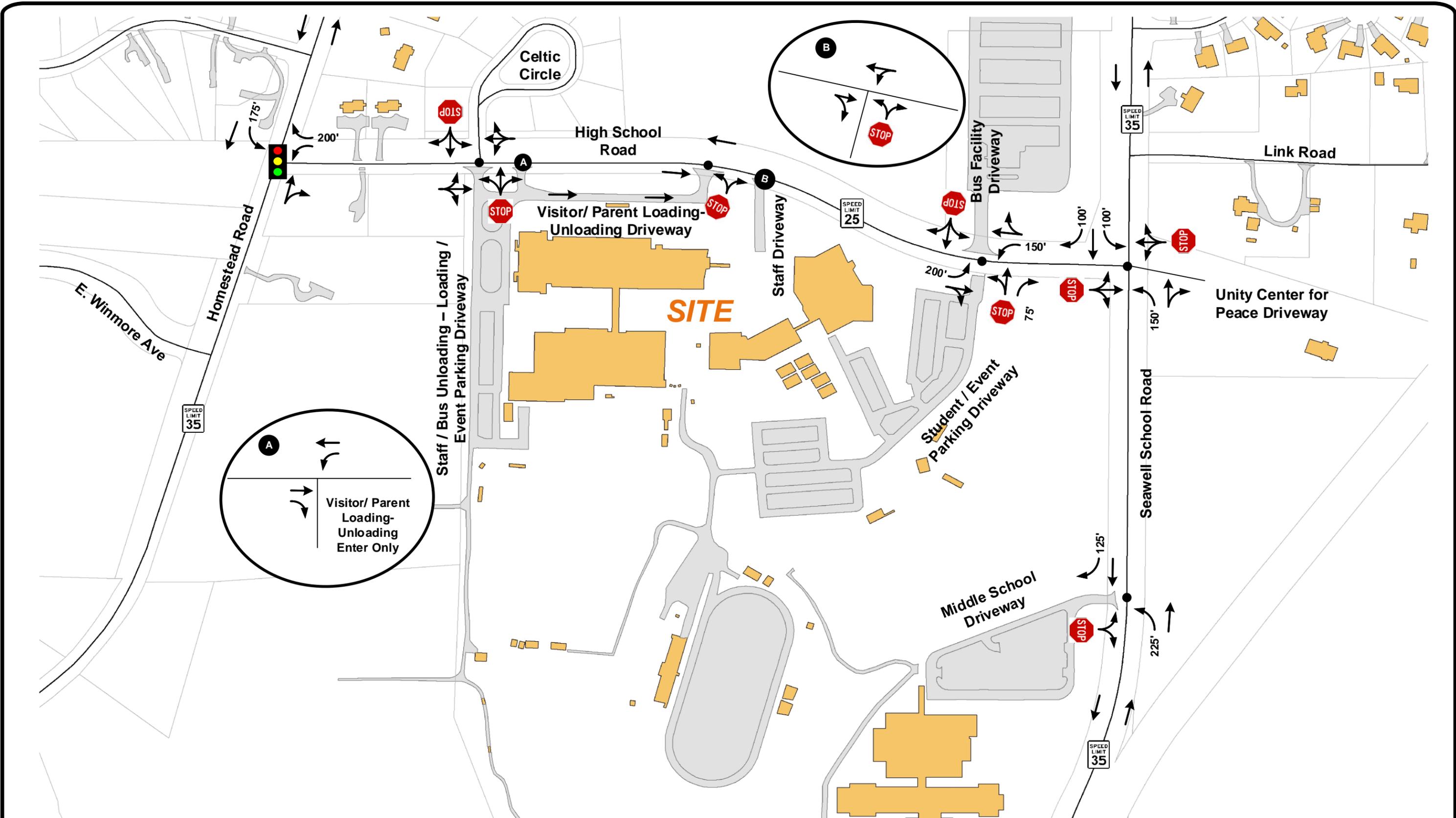
	NOT TO SCALE
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Chapel Hill High School Expansion
Traffic Impact Study

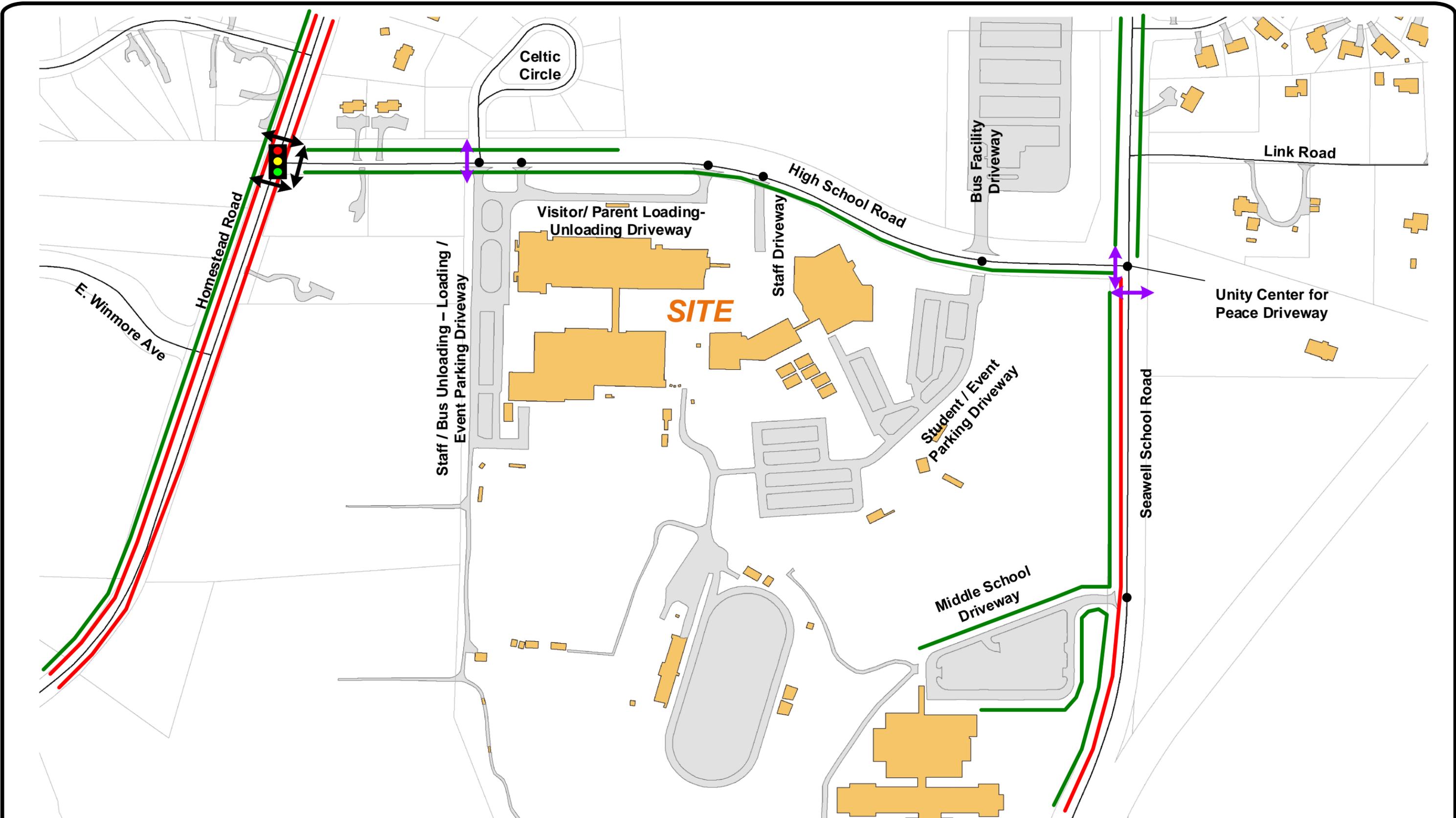
UPDATED SITE CONCEPT PLAN

DATE: November 2017

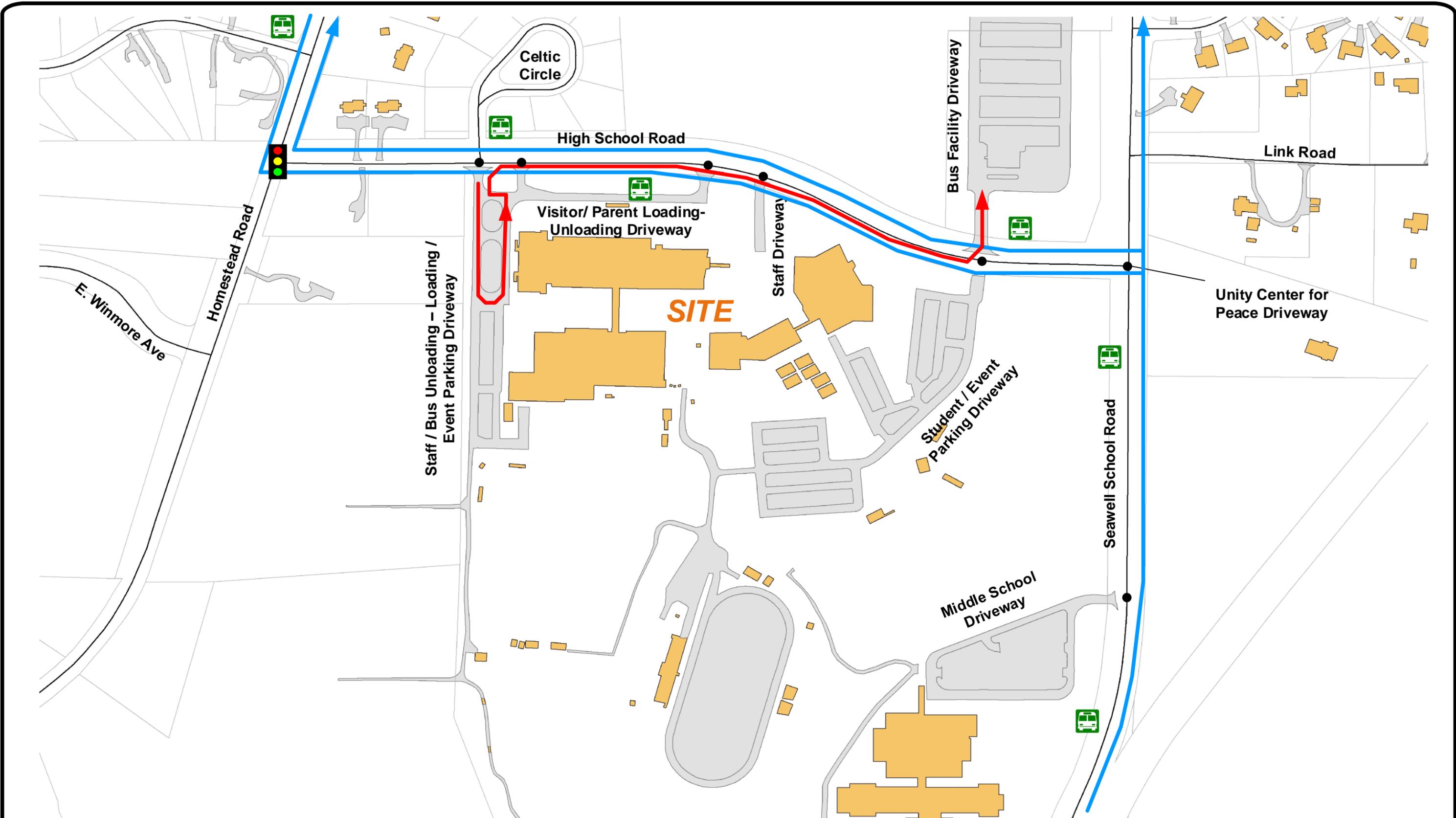
FIGURE 2



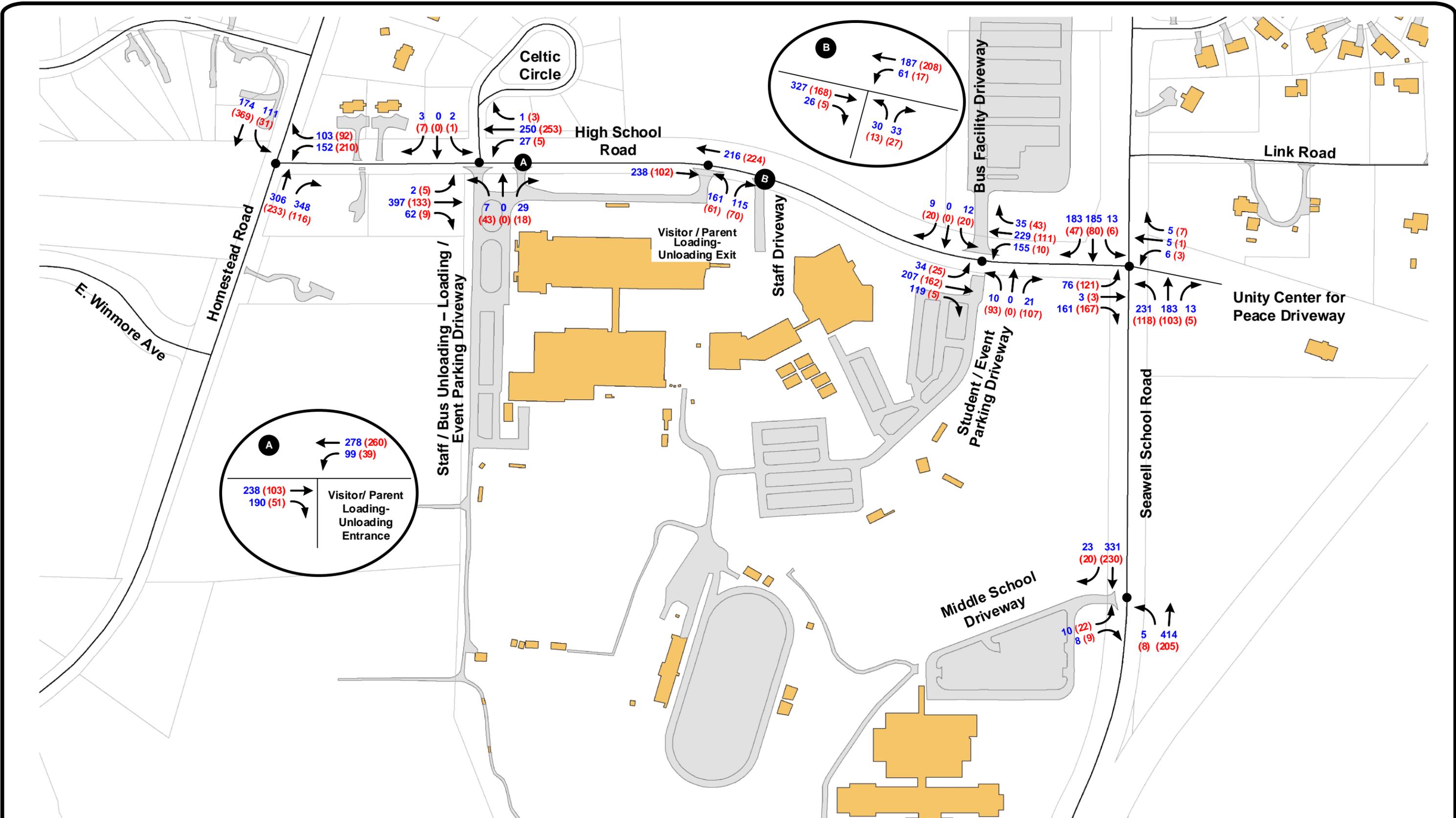
		LEGEND			NOT TO SCALE	Chapel Hill High School Expansion Traffic Impact Study		DATE: November 2017	
		GEOMETRICS, SPEED LIMITS & TRAFFIC CONTROL AS SHOWN				EXISTING LANEAGE & GEOMETRICS		FIGURE 3	



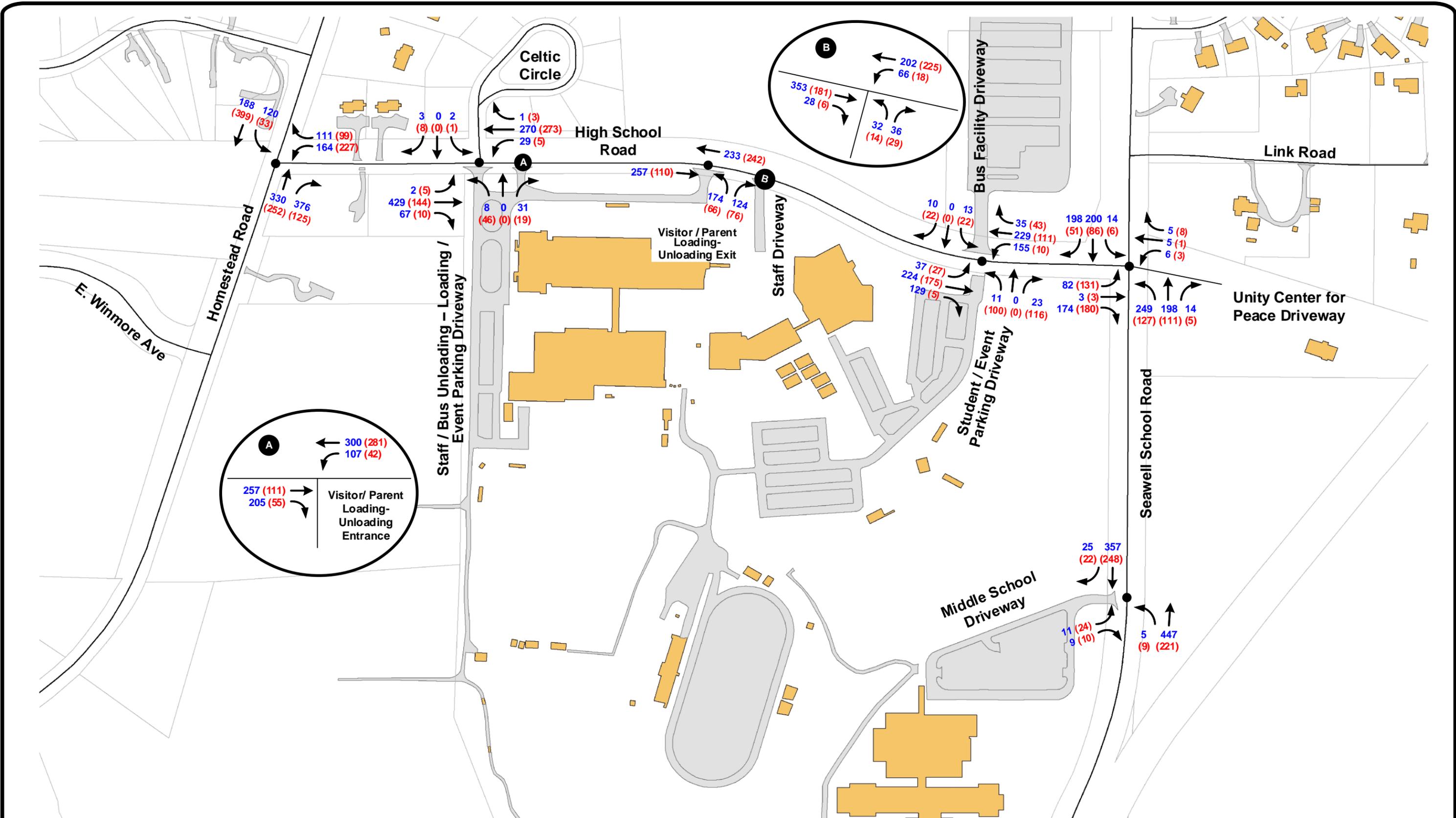
		LEGEND			NOT TO SCALE	Chapel Hill High School Expansion Traffic Impact Study		DATE: November 2017
		Sidewalks Bicycle Lanes	Crosswalks with pedestrian signal heads Unsignalized Crosswalks			EXISTING PEDESTRIAN/BICYCLE FACILITIES		FIGURE 4



		LEGEND			NOT TO SCALE	Chapel Hill High School Expansion Traffic Impact Study		DATE: November 2017
		= CHT BUS STOP = HS Route	= AM Bus Unloading and Parking Route			EXISTING SCHOOL BUS / TRANSIT ROUTES		FIGURE 5



 	<p align="center">LEGEND</p> <p>XXX = School AM Peak Hour Traffic Volume (XXX) = School PM Peak Hour Traffic Volume</p>		<p align="center">NOT TO SCALE</p>	<p align="center">Chapel Hill High School Expansion Traffic Impact Study</p>	<p>DATE: November 2017</p>
				<p align="center">2017 EXISTING PEAK HOUR TRAFFIC VOLUMES</p>	<p align="center">FIGURE 6</p>



LEGEND

XXX = School AM Peak Hour Traffic Volume
 (XXX) = School PM Peak Hour Traffic Volume



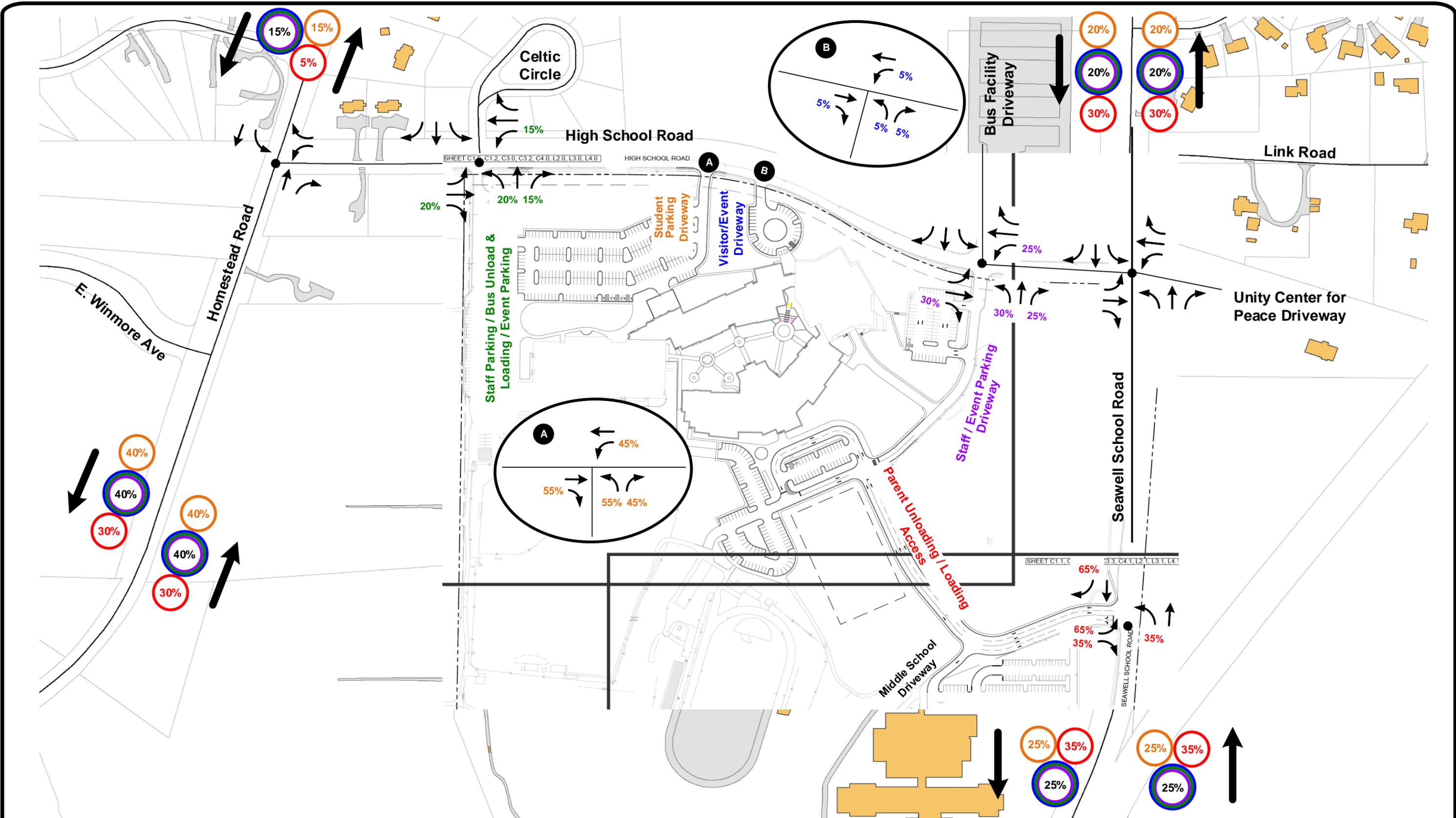
NOT TO SCALE

Chapel Hill High School Expansion
 Traffic Impact Study

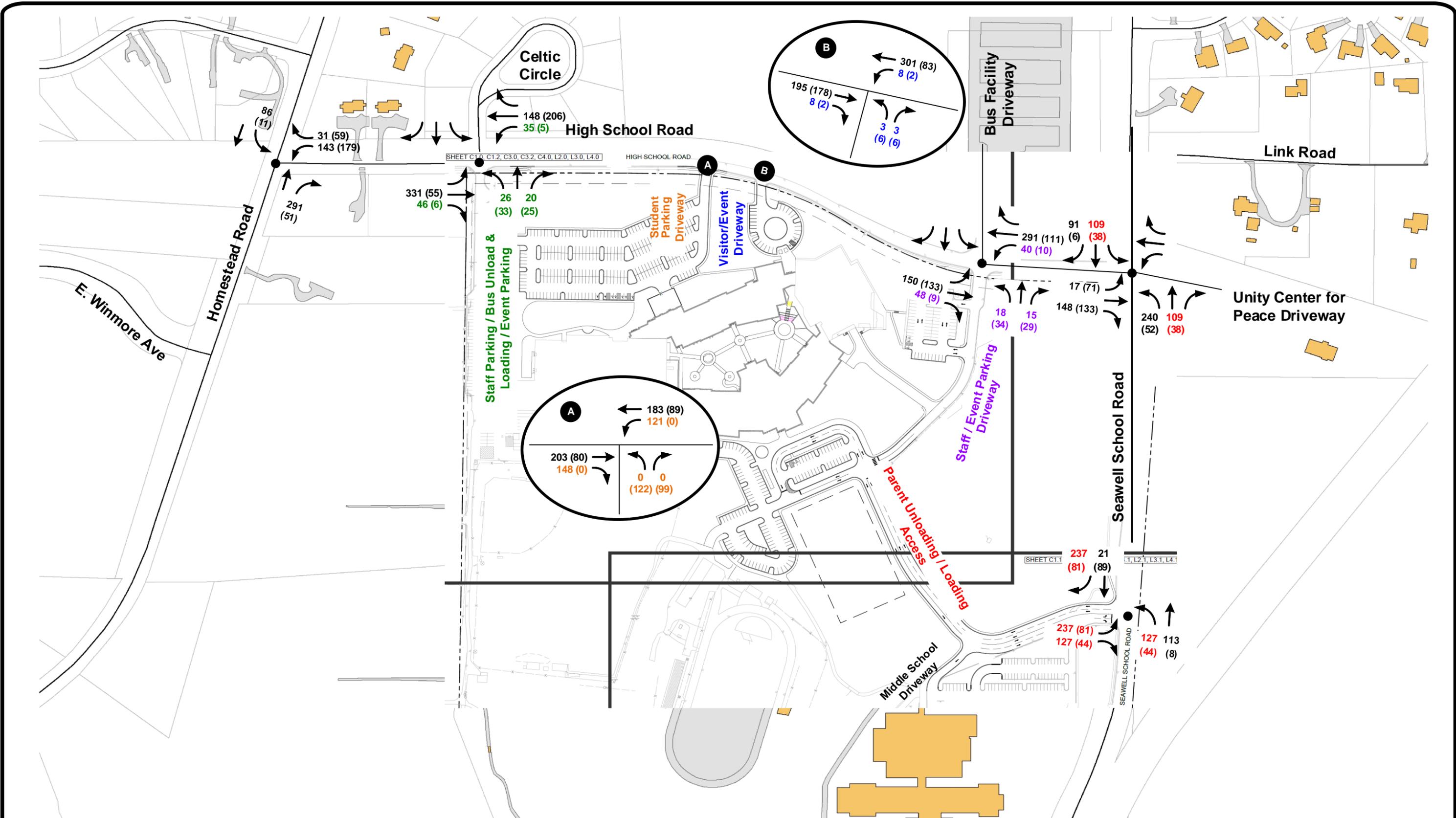
2021 WITHOUT SITE REDEVELOPMENT
 PEAK HOUR TRAFFIC VOLUMES

DATE: November 2017

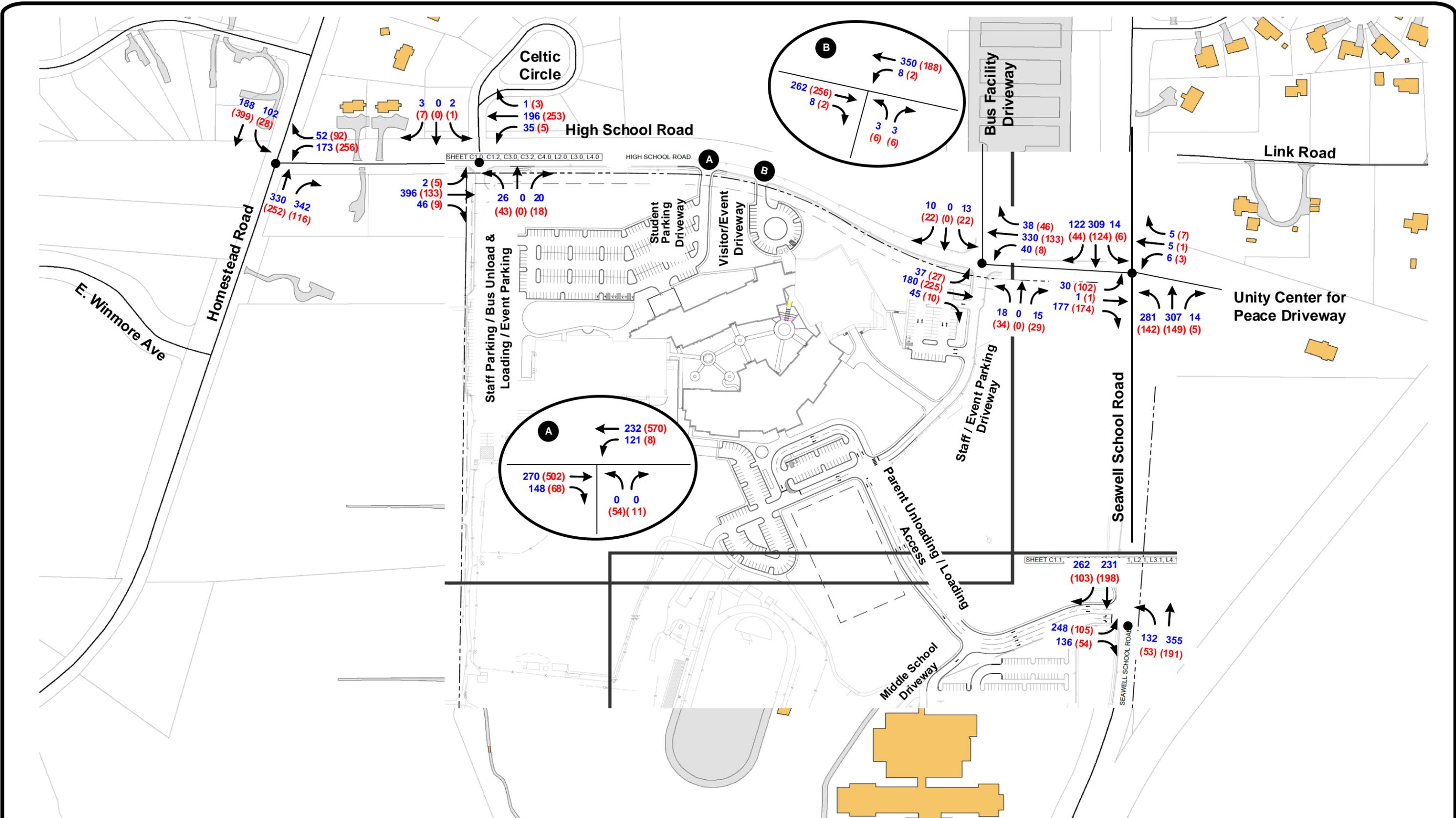
FIGURE 7



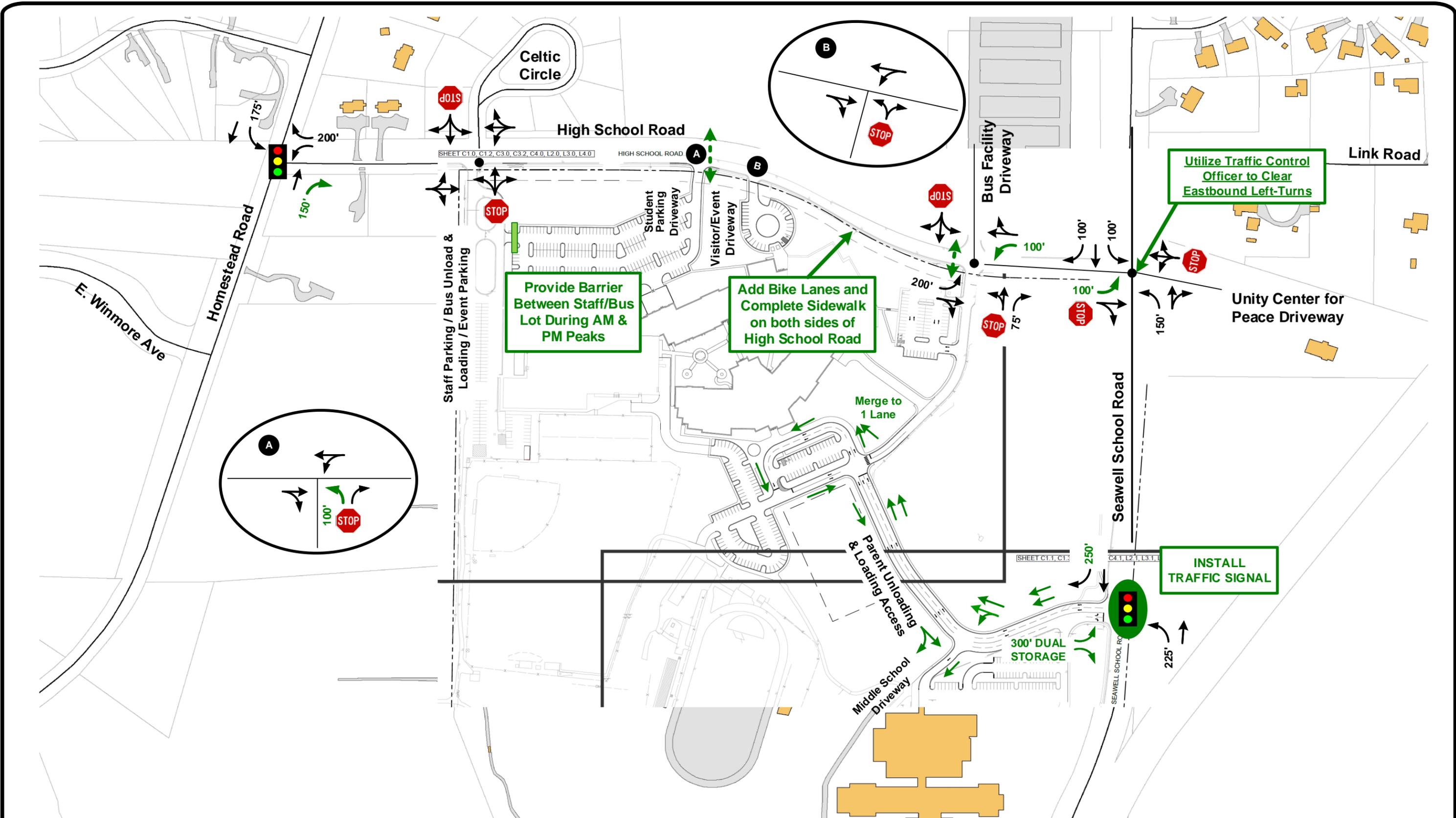
		LEGEND		NOT TO SCALE	Chapel Hill High School Expansion Traffic Impact Study	DATE: November 2017
		Driveway/Parking Lot Trip Distribution Percentages by Color for Each Trip Type = Overall External Trip Percentage by Driveway/Parking Lot Color / Direction			SITE TRIP DISTRIBUTION PERCENTAGES	FIGURE 8



		LEGEND		NOT TO SCALE	Chapel Hill High School Expansion Traffic Impact Study	DATE: November 2017
		XX (XX) = Combined Entering/Exiting Site Traffic Assignment Volume – AM & (PM) Peak Hour XX (XX) = Specific Trip Assignment Volume at Driveways – AM & (PM) Peak Hour			SITE TRAFFIC ASSIGNMENT PEAK HOUR TRAFFIC VOLUMES	FIGURE 9



		LEGEND		NOT TO SCALE	Chapel Hill High School Expansion Traffic Impact Study	DATE: November 2017
		XXX = School AM Peak Hour Traffic Volume (XXX) = School PM Peak Hour Traffic Volume			2021 WITH SITE REDEVELOPMENT PEAK HOUR TRAFFIC VOLUMES	FIGURE 10

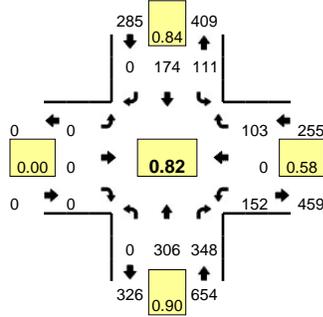


		LEGEND			NOT TO SCALE	Chapel Hill High School Expansion Traffic Impact Study	DATE: November 2017
		= NECESSARY INTERSECTION IMPROVEMENT	= NECESSARY GEOMETRIC IMPROVEMENT WITH STORAGE DISTANCE INDICATED = PROPOSED CROSSWALK				RECOMMENDED IMPROVEMENTS

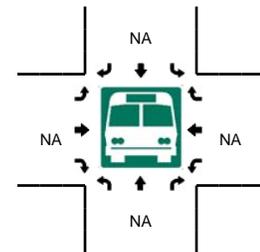
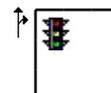
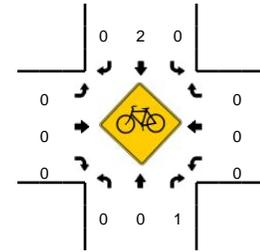
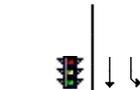
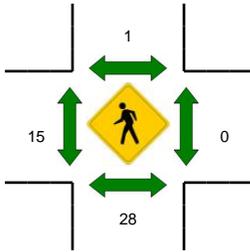
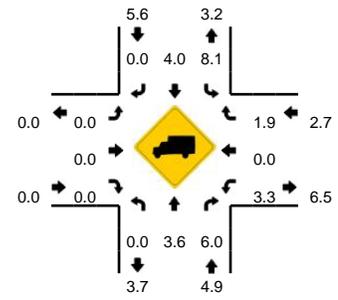
Appendix B – Traffic Count Data

LOCATION: Homestead Rd -- High School Rd
CITY/STATE: Chapel Hill, NC

QC JOB #: 14424201
DATE: Thu, May 25 2017



Peak-Hour: 7:55 AM -- 8:55 AM
Peak 15-Min: 8:35 AM -- 8:50 AM



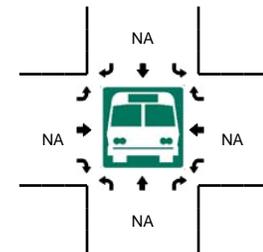
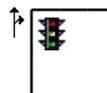
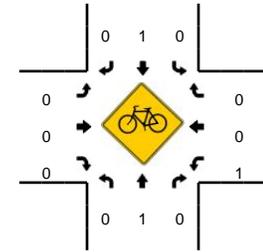
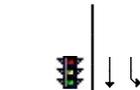
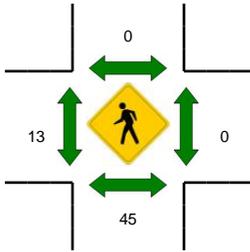
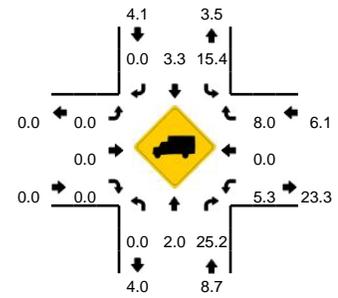
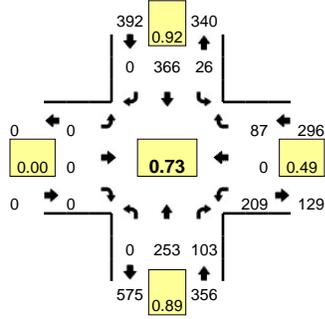
5-Min Count Period Beginning At	Homestead Rd (Northbound)				Homestead Rd (Southbound)				High School Rd (Eastbound)				High School Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:30 AM	0	29	14	0	4	13	0	0	0	0	0	0	4	0	3	0	67	
7:35 AM	0	29	18	0	2	5	0	0	0	0	0	0	5	0	1	0	60	
7:40 AM	0	38	15	0	2	9	0	0	0	0	0	0	6	0	2	0	72	
7:45 AM	0	39	10	0	3	9	0	0	0	0	0	0	7	0	0	0	68	
7:50 AM	0	21	16	0	4	8	0	0	0	0	0	0	5	0	1	0	55	
7:55 AM	0	31	15	0	8	16	0	0	0	0	0	0	5	0	2	0	77	
8:00 AM	0	26	16	0	6	17	0	0	0	0	0	0	7	0	7	0	79	
8:05 AM	0	34	19	0	8	12	0	0	0	0	0	0	4	0	3	0	80	
8:10 AM	0	30	29	0	8	16	0	0	0	0	0	0	9	0	8	0	100	
8:15 AM	0	32	22	0	7	15	0	0	0	0	0	0	8	0	8	0	92	
8:20 AM	0	17	37	0	9	13	0	0	0	0	0	0	14	0	8	0	98	
8:25 AM	0	19	49	0	11	12	0	0	0	0	0	0	12	0	5	0	108	956
8:30 AM	0	13	47	0	15	19	0	0	0	0	0	0	19	0	11	0	124	1013
8:35 AM	0	17	29	0	12	11	0	0	0	0	0	0	14	0	10	0	93	1046
8:40 AM	0	26	36	0	15	13	0	0	0	0	0	0	30	0	24	0	144	1118
8:45 AM	0	35	35	0	5	21	0	0	0	0	0	0	21	0	12	0	129	1179
8:50 AM	0	26	14	0	7	9	0	0	0	0	0	0	9	0	5	0	70	1194
8:55 AM	0	29	6	0	3	10	0	0	0	0	0	0	6	0	4	0	58	1175
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9:05 AM	0	20	2	0	1	13	0	0	0	0	0	0	1	0	2	0	39	1119
9:10 AM	0	20	11	0	3	23	0	0	0	0	0	0	2	0	3	0	62	1081
9:15 AM	0	26	6	0	1	11	0	0	0	0	0	0	5	0	1	0	50	1039
9:20 AM	0	19	6	0	1	14	0	0	0	0	0	0	4	0	1	0	45	986
9:25 AM	0	16	6	0	0	10	0	0	0	0	0	0	4	0	1	0	37	915
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	0	312	400	0	128	180	0	0	0	0	0	0	260	0	184	0	1464	
Heavy Trucks	0	12	20		4	8	0		0	0	0		4	0	4		52	
Pedestrians		40				0				24				0			64	
Bicycles	0	0	1		0	0	0		0	0	0		0	0	0		1	
Railroad																		
Stopped Buses																		

Comments:

LOCATION: Homestead Rd -- High School Rd
CITY/STATE: Chapel Hill, NC

QC JOB #: 14424202
DATE: Thu, May 25 2017

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



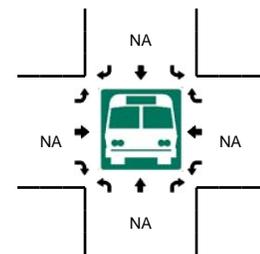
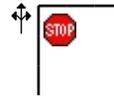
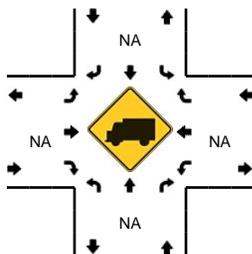
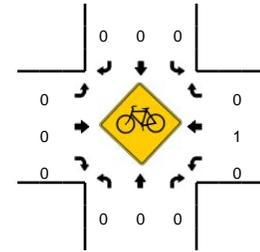
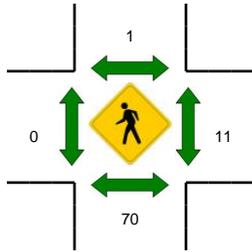
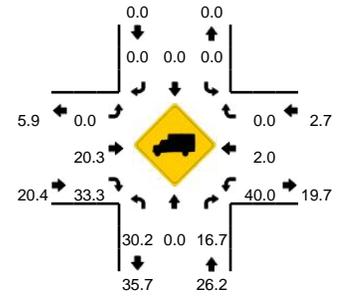
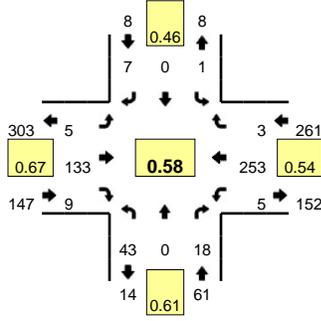
5-Min Count Period Beginning At	Homestead Rd (Northbound)				Homestead Rd (Southbound)				High School Rd (Eastbound)				High School Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	0	21	12	0	4	13	0	0	0	0	0	0	9	0	3	0	62	
3:05 PM	0	17	8	0	2	19	0	0	0	0	0	0	26	0	1	0	73	
3:10 PM	0	21	9	0	6	29	0	0	0	0	0	0	7	0	0	0	72	
3:15 PM	0	8	7	0	3	14	0	0	0	0	0	0	8	0	3	0	43	
3:20 PM	0	16	5	0	5	15	0	0	0	0	0	0	16	0	5	0	62	
3:25 PM	0	24	5	0	0	21	0	0	0	0	0	0	6	0	2	0	58	
3:30 PM	0	27	5	0	5	18	0	0	0	0	0	0	3	0	0	0	58	
3:35 PM	0	10	8	0	3	30	0	0	0	0	0	0	8	0	5	0	64	
3:40 PM	0	18	10	0	4	15	0	0	0	0	0	0	7	0	3	0	57	
3:45 PM	0	13	11	0	9	21	0	0	0	0	0	0	2	0	3	0	59	
3:50 PM	0	18	9	0	6	24	0	0	0	0	0	0	5	0	10	0	72	
3:55 PM	0	7	5	0	1	27	0	1	0	0	0	0	13	0	9	0	63	743
4:00 PM	0	20	12	0	5	28	0	0	0	0	0	0	29	0	14	0	108	789
4:05 PM	0	25	11	0	1	43	0	0	0	0	0	0	38	0	11	0	129	845
4:10 PM	0	25	7	0	1	28	0	0	0	0	0	0	50	0	12	0	123	896
4:15 PM	0	15	7	0	5	30	0	0	0	0	0	0	21	0	6	0	84	937
4:20 PM	0	16	5	0	2	34	0	0	0	0	0	0	4	0	6	0	67	942
4:25 PM	0	19	9	0	2	27	0	0	0	0	0	0	7	0	4	0	68	952
4:30 PM	0	17	8	0	5	24	0	0	0	0	0	0	15	0	11	0	80	974
4:35 PM	0	21	11	0	1	35	0	0	0	0	0	0	5	0	6	0	79	989
4:40 PM	0	24	6	0	2	24	0	0	0	0	0	0	8	0	3	0	67	999
4:45 PM	0	16	8	0	1	31	0	0	0	0	0	0	6	0	6	0	68	1008
4:50 PM	0	28	10	0	0	38	0	0	0	0	0	0	14	0	4	0	94	1030
4:55 PM	0	27	9	0	1	24	0	0	0	0	0	0	12	0	4	0	77	1044
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	0	280	120	0	28	396	0	0	0	0	0	0	468	0	148	0	1440	
Heavy Trucks	0	8	16		8	24	0		0	0	0		36	0	16		108	
Pedestrians		180				0				48				0			228	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Railroad																		
Stopped Buses																		

Comments:

LOCATION: Celtic Cir/HS Access 1 -- High School Rd
CITY/STATE: Chapel Hill, NC

QC JOB #: 14424204
DATE: Thu, May 25 2017

Peak-Hour: 3:55 PM -- 4:55 PM
Peak 15-Min: 4:00 PM -- 4:15 PM



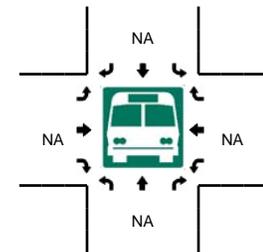
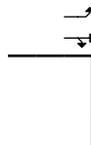
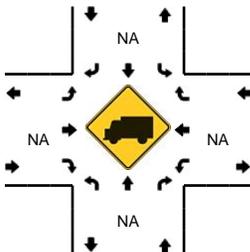
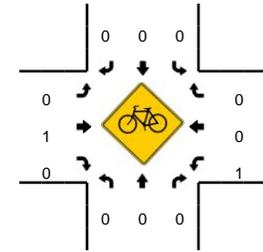
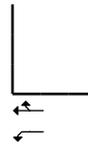
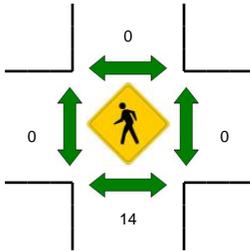
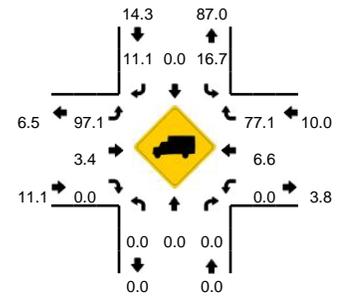
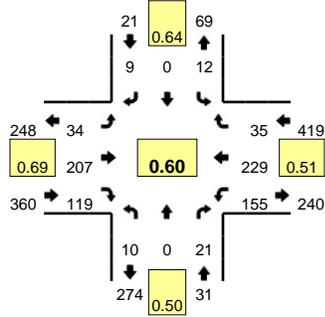
5-Min Count Period Beginning At	Celtic Cir/HS Access 1 (Northbound)				Celtic Cir/HS Access 1 (Southbound)				High School Rd (Eastbound)				High School Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	2	0	0	0	0	0	0	0	1	14	0	0	0	12	0	0	29	
3:05 PM	0	0	0	0	0	0	0	0	1	9	0	0	2	24	0	0	36	
3:10 PM	0	0	2	0	0	0	0	0	1	12	2	0	0	8	0	0	25	
3:15 PM	0	0	0	0	0	0	1	0	1	9	0	0	0	10	0	0	21	
3:20 PM	1	0	1	0	0	0	1	0	0	10	1	0	1	18	0	0	33	
3:25 PM	0	0	0	0	0	0	0	0	0	4	1	0	3	8	0	0	16	
3:30 PM	0	0	2	0	0	0	0	0	0	9	0	0	2	3	0	0	16	
3:35 PM	1	0	1	0	0	0	0	0	0	9	3	0	2	12	0	0	28	
3:40 PM	5	0	2	0	0	0	0	0	0	11	1	0	1	6	0	0	26	
3:45 PM	1	0	2	0	0	0	0	0	0	10	0	0	2	4	1	0	20	
3:50 PM	3	0	2	0	0	0	3	0	1	2	2	0	1	7	0	0	21	
3:55 PM	3	0	2	0	0	0	2	0	2	10	0	0	0	37	0	0	56	327
4:00 PM	8	0	2	0	0	0	1	0	2	28	2	0	0	22	0	0	65	363
4:05 PM	10	0	4	0	1	0	1	0	0	9	2	0	2	41	0	0	70	397
4:10 PM	4	0	1	0	0	0	0	0	0	8	1	0	0	56	0	0	70	442
4:15 PM	1	0	3	0	0	0	0	0	0	12	1	0	0	17	0	0	34	455
4:20 PM	4	0	0	0	0	0	0	0	0	7	0	0	0	8	0	0	19	441
4:25 PM	1	0	1	0	0	0	0	0	0	10	0	0	0	10	0	0	22	447
4:30 PM	4	0	2	0	0	0	1	0	0	13	0	0	1	20	1	0	42	473
4:35 PM	5	0	1	0	0	0	1	0	0	12	1	0	1	4	0	0	25	470
4:40 PM	0	0	1	0	0	0	0	0	0	8	0	0	0	9	1	0	19	463
4:45 PM	0	0	0	0	0	0	1	0	0	7	1	0	1	13	0	0	23	466
4:50 PM	3	0	1	0	0	0	0	0	1	9	1	0	0	16	1	0	32	477
4:55 PM	2	0	0	0	0	0	1	0	0	9	1	0	0	12	0	0	25	446
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	88	0	28	0	4	0	8	0	8	180	20	0	8	476	0	0	820	
Heavy Trucks	52	0	12		0	0	0		0	12	12		4	0	0		92	
Pedestrians		112				0				0				16			128	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Railroad																		
Stopped Buses																		

Comments:

LOCATION: HS Access 5/Bus Lot -- High School Rd
CITY/STATE: Chapel Hill, NC

QC JOB #: 14424205
DATE: Thu, May 25 2017

Peak-Hour: 7:55 AM -- 8:55 AM
Peak 15-Min: 8:30 AM -- 8:45 AM

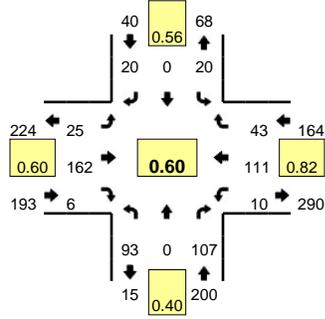


5-Min Count Period Beginning At	HS Access 5/Bus Lot (Northbound)				HS Access 5/Bus Lot (Southbound)				High School Rd (Eastbound)				High School Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:30 AM	0	0	1	0	0	0	0	0	0	20	1	0	2	7	0	0	31	
7:35 AM	0	0	1	0	0	0	0	0	0	17	4	0	1	10	0	0	33	
7:40 AM	0	0	0	0	0	0	0	0	0	15	1	0	1	7	0	0	24	
7:45 AM	0	0	0	0	0	0	0	0	0	12	0	0	2	10	0	0	24	
7:50 AM	0	0	1	0	0	0	0	0	0	12	1	0	0	9	0	0	23	
7:55 AM	1	0	0	0	0	0	0	0	0	19	1	0	1	6	1	0	29	
8:00 AM	2	0	0	0	1	0	0	0	0	7	2	0	5	14	1	0	32	
8:05 AM	0	0	1	0	0	0	0	0	0	18	2	0	2	16	0	0	39	
8:10 AM	0	0	1	0	0	0	0	0	0	18	7	0	5	18	1	0	50	
8:15 AM	1	0	1	0	2	0	0	0	0	14	7	0	7	13	1	0	46	
8:20 AM	0	0	1	0	0	0	0	0	1	13	9	0	6	24	5	0	59	
8:25 AM	0	0	0	0	0	0	0	0	8	13	26	0	14	21	0	0	82	472
8:30 AM	1	0	3	0	0	0	2	0	5	17	17	0	23	31	5	0	104	545
8:35 AM	1	0	2	0	1	0	1	0	6	19	12	0	34	35	3	0	114	626
8:40 AM	1	0	5	0	0	0	3	0	2	25	21	0	37	25	11	0	130	732
8:45 AM	2	0	5	0	5	0	2	0	7	26	13	0	15	17	4	0	96	804
8:50 AM	1	0	2	0	3	0	1	0	5	18	2	0	6	9	3	0	50	831
8:55 AM	0	0	1	0	4	1	3	0	1	4	3	0	3	2	3	0	25	827
9:00 AM	1	0	0	0	5	0	2	0	2	4	2	0	2	4	0	0	22	817
9:05 AM	1	0	2	0	7	1	1	0	0	1	1	0	5	1	0	0	20	798
9:10 AM	0	0	1	0	2	0	2	0	1	7	3	0	0	2	2	0	20	768
9:15 AM	0	0	0	0	2	0	2	1	1	6	1	0	5	6	0	0	24	746
9:20 AM	0	0	1	0	1	0	2	0	0	4	2	0	1	5	1	0	17	704
9:25 AM	0	0	0	0	5	0	2	0	0	2	2	0	2	1	2	0	16	638
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	12	0	40	0	4	0	24	0	52	244	200	0	376	364	76	0	1392	
Heavy Trucks	0	0	0	0	0	0	0	0	52	0	0	0	0	16	68	0	136	
Pedestrians		16			0				0	0			0	0			16	
Bicycles	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	
Railroad																		
Stopped Buses																		

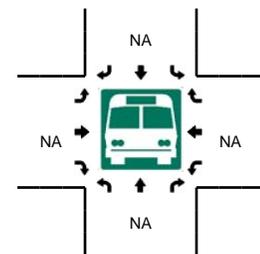
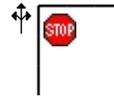
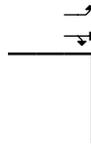
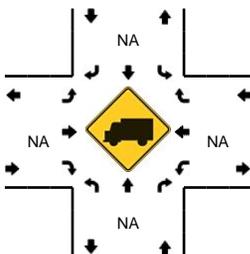
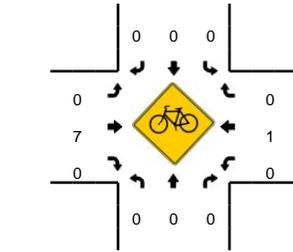
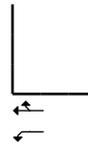
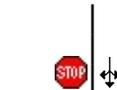
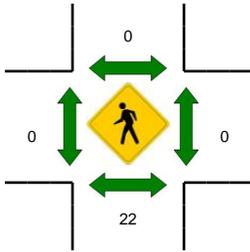
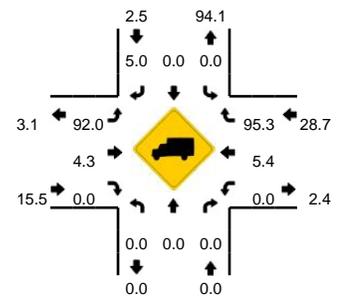
Comments:

LOCATION: HS Access 5/Bus Lot -- High School Rd
CITY/STATE: Chapel Hill, NC

QC JOB #: 14424206
DATE: Thu, May 25 2017



Peak-Hour: 3:55 PM -- 4:55 PM
Peak 15-Min: 4:00 PM -- 4:15 PM



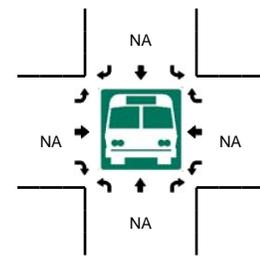
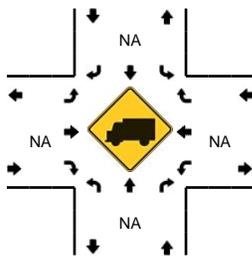
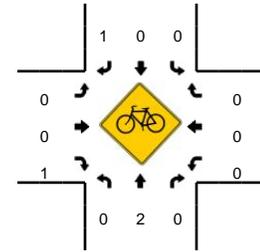
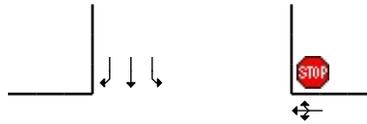
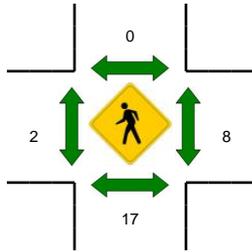
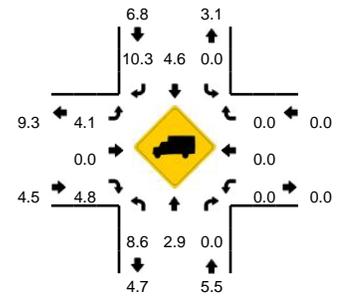
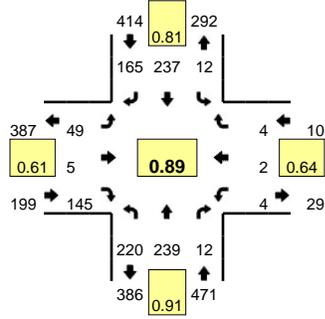
5-Min Count Period Beginning At	HS Access 5/Bus Lot (Northbound)				HS Access 5/Bus Lot (Southbound)				High School Rd (Eastbound)				High School Rd (Westbound)				Total	Hourly Totals	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U			
3:00 PM	9	0	5	0	2	0	1	0	1	15	1	0	2	6	0	0	42		
3:05 PM	18	0	17	0	0	0	0	0	2	7	0	0	2	6	1	0	53		
3:10 PM	0	0	3	0	3	0	0	0	0	16	0	0	0	7	1	0	30		
3:15 PM	2	0	2	0	1	0	0	0	0	5	0	0	1	15	0	0	26		
3:20 PM	4	0	1	0	0	0	1	0	0	7	0	0	0	12	0	0	25		
3:25 PM	3	0	3	0	0	0	0	0	0	5	0	0	0	8	0	0	19		
3:30 PM	0	0	1	0	0	0	0	0	0	10	1	0	1	11	3	0	27		
3:35 PM	1	0	0	0	0	0	0	0	1	7	0	0	1	16	0	0	26		
3:40 PM	3	0	0	0	1	0	1	0	0	11	0	0	1	11	1	0	29		
3:45 PM	0	0	4	0	0	0	0	0	1	3	1	0	0	14	0	0	23		
3:50 PM	0	0	4	0	0	0	2	0	0	5	1	0	1	21	0	0	34		
3:55 PM	17	0	18	0	0	0	0	0	0	23	1	0	0	18	2	0	79	413	
4:00 PM	17	0	17	0	0	0	1	0	0	27	0	0	1	13	0	0	76	447	
4:05 PM	15	0	19	0	0	0	2	0	0	29	0	0	1	11	1	1	79	473	
4:10 PM	25	0	35	0	0	0	1	0	2	16	1	0	1	13	0	0	94	537	
4:15 PM	8	0	3	0	0	0	1	0	4	8	1	0	3	3	3	0	34	545	
4:20 PM	2	0	5	0	1	0	0	0	1	10	0	0	0	7	6	0	32	552	
4:25 PM	0	0	4	0	3	0	0	0	3	5	0	0	0	6	10	0	31	564	
4:30 PM	2	0	4	0	4	0	4	0	5	11	1	0	3	11	4	0	49	586	
4:35 PM	2	0	2	0	2	0	2	0	5	12	0	0	0	3	3	0	31	591	
4:40 PM	1	0	0	0	2	0	3	0	1	8	1	0	0	4	4	0	24	586	
4:45 PM	2	0	0	0	3	0	3	0	3	6	0	0	0	10	6	0	33	596	
4:50 PM	2	0	0	0	5	0	3	0	1	7	1	0	0	12	4	0	35	597	
4:55 PM	0	0	0	0	2	0	5	0	1	7	0	0	0	9	0	0	24	542	
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	228	0	284	0	0	0	16	0	8	288	4	0	12	148	4	4	996		
Heavy Trucks	0	0	0	0	0	0	0	0	4	20	0	0	0	4	4	0	32		
Pedestrians		44				0				0				0			44		
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Railroad																			
Stopped Buses																			

Comments:

LOCATION: Seawell School Rd -- High School Rd
CITY/STATE: Chapel Hill, NC

QC JOB #: 14424207
DATE: Thu, May 25 2017

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

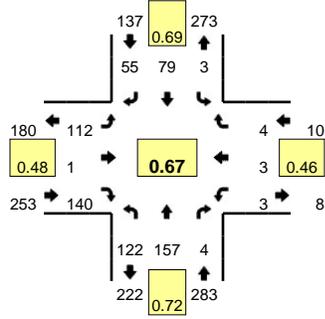


5-Min Count Period Beginning At	Seawell School Rd (Northbound)				Seawell School Rd (Southbound)				High School Rd (Eastbound)				High School Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:30 AM	8	17	1	0	0	31	1	0	0	1	20	0	0	0	0	0	79	
7:35 AM	10	17	0	0	0	36	1	0	0	0	19	0	0	0	1	0	84	
7:40 AM	8	17	2	0	0	38	0	0	1	1	11	0	0	0	0	0	78	
7:45 AM	11	32	1	0	0	32	1	0	0	1	13	0	0	0	0	0	91	
7:50 AM	7	29	0	0	0	29	2	0	0	1	10	0	1	0	1	0	80	
7:55 AM	5	28	0	0	1	35	3	0	2	1	18	0	0	0	0	0	93	
8:00 AM	12	27	2	0	1	26	8	0	1	0	7	0	0	0	0	0	84	
8:05 AM	17	21	2	0	2	32	2	0	0	1	15	0	0	0	0	0	92	
8:10 AM	14	31	0	0	3	25	10	0	2	0	18	0	0	0	0	0	103	
8:15 AM	13	24	1	0	0	23	7	0	6	0	12	0	0	1	1	0	88	
8:20 AM	22	24	0	0	1	8	12	0	3	0	11	0	0	0	1	0	82	
8:25 AM	22	7	4	0	1	9	14	0	5	0	6	0	3	0	1	0	72	1026
8:30 AM	29	5	0	0	1	7	32	0	8	0	13	0	0	0	0	0	95	1042
8:35 AM	36	6	0	0	0	7	38	0	4	0	9	0	0	0	0	0	100	1058
8:40 AM	32	5	2	0	2	4	36	0	18	1	13	0	0	1	0	0	114	1094
8:45 AM	19	2	1	0	1	4	19	0	19	0	22	0	2	0	0	0	89	1092
8:50 AM	10	3	1	0	0	5	2	0	8	0	17	0	1	3	2	0	52	1064
8:55 AM	4	7	0	0	0	5	4	0	2	1	8	0	0	0	0	0	31	1002
9:00 AM	4	4	0	0	1	3	2	0	0	0	8	0	1	0	0	0	23	941
9:05 AM	3	1	0	0	0	3	4	0	3	1	6	0	1	0	0	0	22	871
9:10 AM	2	3	0	0	1	5	0	0	4	1	6	0	3	1	0	0	26	794
9:15 AM	3	3	0	0	0	1	6	0	2	0	6	0	0	3	0	0	24	730
9:20 AM	3	4	0	0	0	2	3	0	2	0	4	0	0	0	0	0	18	666
9:25 AM	1	3	0	0	0	2	3	0	2	0	4	0	0	1	0	0	16	610
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	388	64	8	0	12	72	424	0	120	4	140	0	0	4	0	0	1236	
Heavy Trucks	20	0	0	0	0	4	60	0	0	0	0	0	0	0	0	0	84	
Pedestrians		12				0				4				0			16	
Bicycles	0	1	0		0	0	0		0	0	1		0	0	0		2	
Railroad																		
Stopped Buses																		

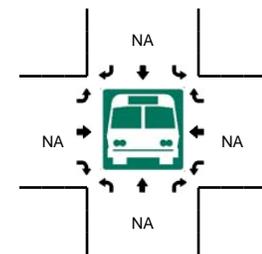
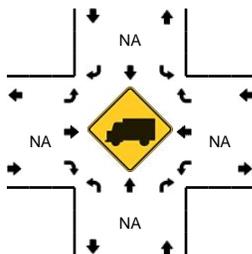
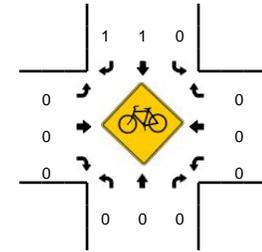
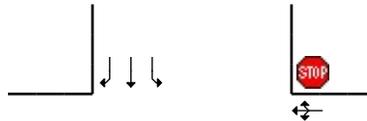
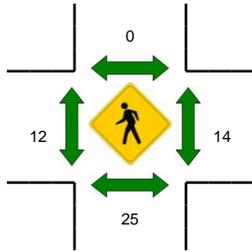
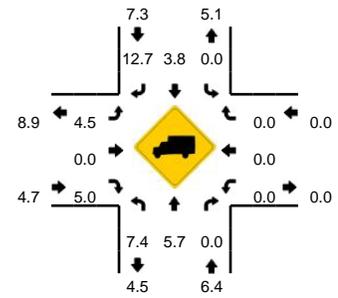
Comments:

LOCATION: Seawell School Rd -- High School Rd
CITY/STATE: Chapel Hill, NC

QC JOB #: 14424208
DATE: Thu, May 25 2017



Peak-Hour: 3:15 PM -- 4:15 PM
Peak 15-Min: 4:00 PM -- 4:15 PM



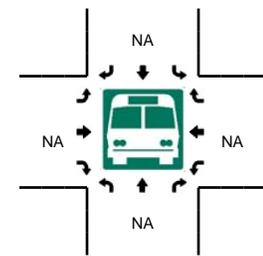
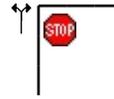
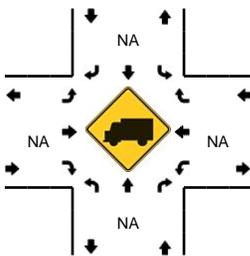
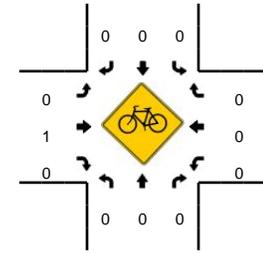
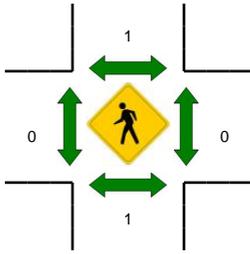
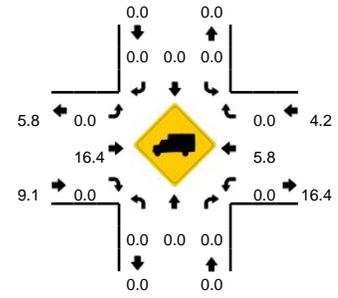
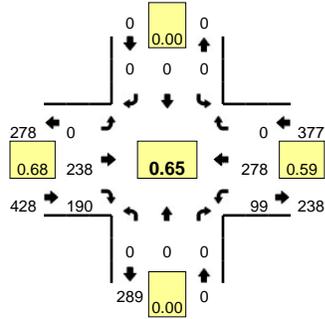
5-Min Count Period Beginning At	Seawell School Rd (Northbound)				Seawell School Rd (Southbound)				High School Rd (Eastbound)				High School Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	3	8	0	0	0	9	3	0	4	0	19	0	0	1	1	0	48	
3:05 PM	8	7	1	1	0	9	1	0	11	0	10	0	0	0	0	0	48	
3:10 PM	8	13	0	0	0	14	0	0	1	0	23	0	1	0	0	0	60	
3:15 PM	13	31	0	0	0	12	3	0	2	0	3	0	0	0	0	0	64	
3:20 PM	10	28	1	0	0	9	2	0	3	0	10	0	0	0	0	0	63	
3:25 PM	7	8	0	0	0	3	1	0	2	0	5	0	0	0	0	0	26	
3:30 PM	9	9	0	0	1	6	6	0	4	1	6	0	0	1	0	0	43	
3:35 PM	14	8	2	0	0	3	1	0	5	0	3	0	0	1	0	0	37	
3:40 PM	11	10	0	0	0	3	3	0	2	0	9	0	0	0	0	0	38	
3:45 PM	9	12	0	0	0	6	5	0	2	0	5	0	1	0	1	0	41	
3:50 PM	9	4	0	0	0	7	12	0	3	0	5	0	0	0	0	0	40	
3:55 PM	13	12	1	0	0	11	8	0	14	0	16	0	0	0	0	0	75	583
4:00 PM	8	7	0	0	0	8	6	0	23	0	22	0	1	1	2	0	78	613
4:05 PM	11	14	0	0	1	6	2	0	23	0	27	0	0	0	1	0	85	650
4:10 PM	8	14	0	0	1	5	6	0	29	0	29	0	1	0	0	0	93	683
4:15 PM	6	8	0	0	0	7	4	0	4	1	10	0	0	0	0	0	40	659
4:20 PM	10	9	1	0	0	5	2	0	4	0	11	0	0	0	0	0	42	638
4:25 PM	9	9	0	0	2	7	8	0	4	0	7	0	0	0	0	0	46	658
4:30 PM	13	5	2	0	1	4	4	0	8	1	12	0	0	0	1	0	51	666
4:35 PM	4	3	1	0	1	7	2	0	5	0	10	0	0	0	1	0	34	663
4:40 PM	8	4	0	0	0	5	0	0	3	0	6	0	0	0	1	0	27	652
4:45 PM	14	8	0	0	0	8	2	0	3	1	7	0	0	0	0	0	43	654
4:50 PM	14	10	0	0	0	7	3	0	1	0	10	0	1	0	1	0	47	661
4:55 PM	7	14	2	0	0	4	1	0	3	1	6	0	0	0	0	0	38	624
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	108	140	0	0	8	76	56	0	300	0	312	0	8	4	12	0	1024	
Heavy Trucks	8	0	0		0	0	0		4	0	16		0	0	0		28	
Pedestrians		56				0				32				40			128	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Railroad																		
Stopped Buses																		

Comments:

LOCATION: HS Access 2 -- High School Rd
CITY/STATE: Chapel Hill, NC

QC JOB #: 14424209
DATE: Thu, May 25 2017

Peak-Hour: 7:55 AM -- 8:55 AM
Peak 15-Min: 8:30 AM -- 8:45 AM



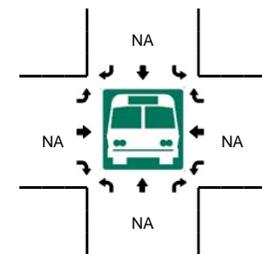
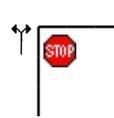
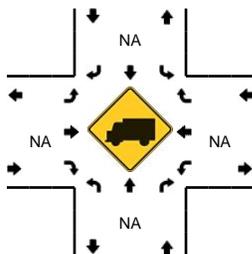
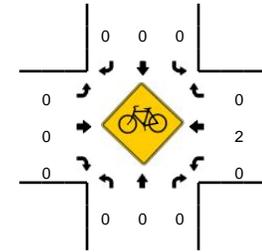
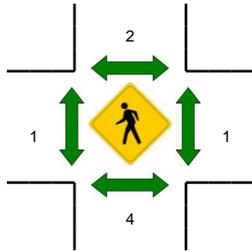
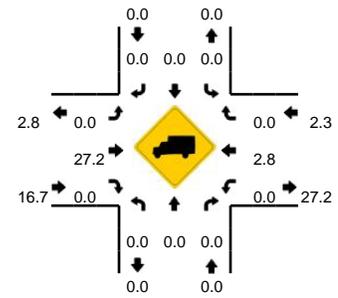
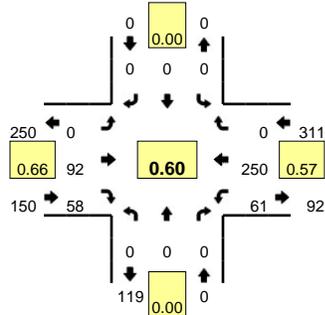
5-Min Count Period Beginning At	HS Access 2 (Northbound)				HS Access 2 (Southbound)				High School Rd (Eastbound)				High School Rd (Westbound)				Total	Hourly Totals	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U			
7:30 AM	0	0	0	0	0	0	0	0	0	20	0	0	0	0	10	0	0	30	
7:35 AM	0	0	0	0	0	0	0	0	0	18	0	0	0	1	8	0	0	27	
7:40 AM	0	0	0	0	0	0	0	0	0	16	1	0	0	0	6	0	0	23	
7:45 AM	0	0	0	0	0	0	0	0	0	11	1	0	0	3	9	0	0	24	
7:50 AM	0	0	0	0	0	0	0	0	0	11	6	0	0	1	7	0	0	25	
7:55 AM	0	0	0	0	0	0	0	0	0	17	4	0	0	2	9	0	0	32	
8:00 AM	0	0	0	0	0	0	0	0	0	11	6	0	0	0	15	0	0	32	
8:05 AM	0	0	0	0	0	0	0	0	0	18	5	0	0	5	12	0	0	40	
8:10 AM	0	0	0	0	0	0	0	0	0	16	17	0	0	7	19	0	0	59	
8:15 AM	0	0	0	0	0	0	0	0	0	14	12	0	0	4	20	0	0	50	
8:20 AM	0	0	0	0	0	0	0	0	0	18	16	0	0	9	24	0	0	67	
8:25 AM	0	0	0	0	0	0	0	0	0	40	26	0	0	11	20	0	0	97	506
8:30 AM	0	0	0	0	0	0	0	0	0	23	25	0	0	11	30	0	0	89	565
8:35 AM	0	0	0	0	0	0	0	0	0	16	27	0	0	14	34	0	0	91	629
8:40 AM	0	0	0	0	0	0	0	0	0	29	29	0	0	23	49	0	0	130	736
8:45 AM	0	0	0	0	0	0	0	0	0	22	17	0	0	9	30	0	0	78	790
8:50 AM	0	0	0	0	0	0	0	0	0	14	6	0	0	4	16	0	0	40	805
8:55 AM	0	0	0	0	0	0	0	0	0	6	0	0	0	0	6	0	0	12	785
9:00 AM	0	0	0	0	0	0	0	0	0	7	1	0	0	1	7	0	0	16	769
9:05 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	4	0	0	6	735
9:10 AM	0	0	0	0	0	0	0	0	0	10	3	0	0	0	4	0	0	17	693
9:15 AM	0	0	0	0	0	0	0	0	0	7	1	0	0	1	6	0	0	15	658
9:20 AM	0	0	0	0	0	0	0	0	0	6	1	0	0	1	7	0	0	15	606
9:25 AM	0	0	0	0	0	0	0	0	0	4	2	0	0	1	4	0	0	11	520
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	0	0	0	0	0	0	0	0	0	272	324	0	0	192	452	0	0	1240	
Heavy Trucks	0	0	0	0	0	0	0	0	0	56	0	0	0	0	24	0	0	80	
Pedestrians	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	4	
Bicycles	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	
Railroad																			
Stopped Buses																			

Comments:

LOCATION: HS Access 2 -- High School Rd
CITY/STATE: Chapel Hill, NC

QC JOB #: 14424210
DATE: Thu, May 25 2017

Peak-Hour: 3:35 PM -- 4:35 PM
Peak 15-Min: 4:00 PM -- 4:15 PM



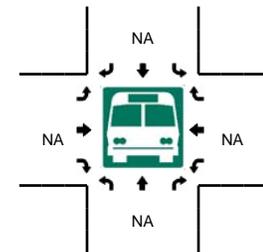
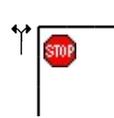
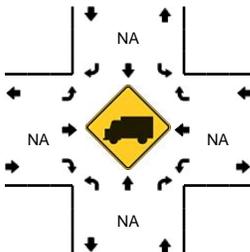
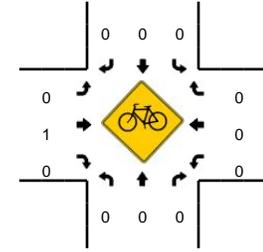
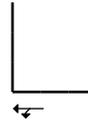
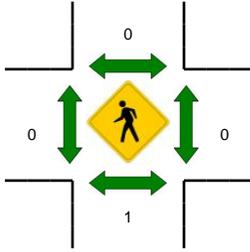
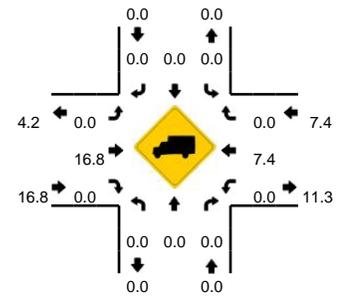
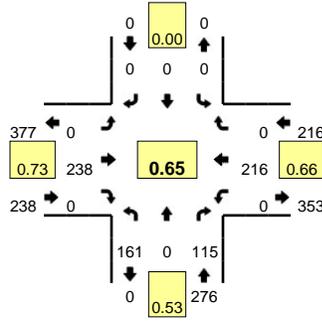
5-Min Count Period Beginning At	HS Access 2 (Northbound)				HS Access 2 (Southbound)				High School Rd (Eastbound)				High School Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	0	0	0	0	0	0	0	0	0	11	3	0	6	11	0	0	31	
3:05 PM	0	0	0	0	0	0	0	0	0	6	3	0	2	27	0	0	38	
3:10 PM	0	0	0	0	0	0	0	0	0	11	3	0	1	8	0	0	23	
3:15 PM	0	0	0	0	0	0	0	0	0	2	6	0	5	10	0	0	23	
3:20 PM	0	0	0	0	0	0	0	0	0	5	7	0	2	19	0	0	33	
3:25 PM	0	0	0	0	0	0	0	0	0	3	1	0	3	11	0	0	18	
3:30 PM	0	0	0	0	0	0	0	0	0	8	3	0	4	5	0	0	20	
3:35 PM	0	0	0	0	0	0	0	0	0	4	6	0	2	14	0	0	26	
3:40 PM	0	0	0	0	0	0	0	0	0	10	3	0	7	8	0	0	28	
3:45 PM	0	0	0	0	0	0	0	0	0	6	2	0	5	6	0	0	19	
3:50 PM	0	0	0	0	0	0	0	0	0	5	0	0	11	8	0	0	24	
3:55 PM	0	0	0	0	0	0	0	0	0	3	7	0	13	39	0	0	62	345
4:00 PM	0	0	0	0	0	0	0	0	0	10	23	0	5	24	0	0	62	376
4:05 PM	0	0	0	0	0	0	0	0	0	11	4	0	6	41	0	0	62	400
4:10 PM	0	0	0	0	0	0	0	0	0	5	4	0	7	53	0	0	69	446
4:15 PM	0	0	0	0	0	0	0	0	0	10	5	0	1	17	0	0	33	456
4:20 PM	0	0	0	0	0	0	0	0	0	5	2	0	4	8	0	0	19	442
4:25 PM	0	0	0	0	0	0	0	0	0	10	1	0	0	10	0	0	21	445
4:30 PM	0	0	0	0	0	0	0	0	0	13	1	0	0	22	0	0	36	461
4:35 PM	0	0	0	0	0	0	0	0	0	12	2	0	2	5	0	0	21	456
4:40 PM	0	0	0	0	0	0	0	0	0	9	0	0	0	10	0	0	19	447
4:45 PM	0	0	0	0	0	0	0	0	0	6	1	0	0	14	0	0	21	449
4:50 PM	0	0	0	0	0	0	0	0	0	9	1	0	1	17	0	0	28	453
4:55 PM	0	0	0	0	0	0	0	0	0	7	2	0	2	12	0	0	23	414
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	0	0	0	0	0	0	0	0	0	104	124	0	72	472	0	0	772	
Heavy Trucks	0	0	0	0	0	0	0	0	0	24	0	0	0	4	0	0	28	
Pedestrians		8				0				0				4			12	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Railroad																	0	
Stopped Buses																		

Comments:

LOCATION: HS Access 3 -- High School Rd
CITY/STATE: Chapel Hill, NC

QC JOB #: 14424211
DATE: Thu, May 25 2017

Peak-Hour: 7:55 AM -- 8:55 AM
Peak 15-Min: 8:35 AM -- 8:50 AM



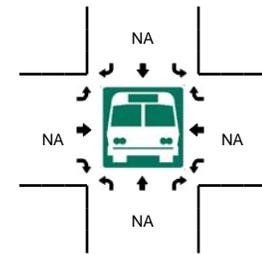
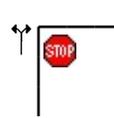
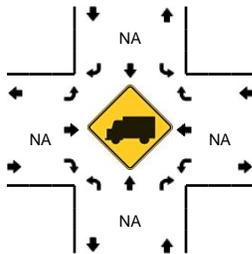
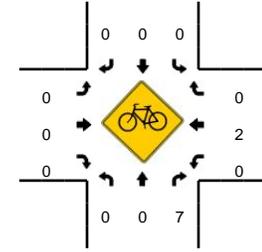
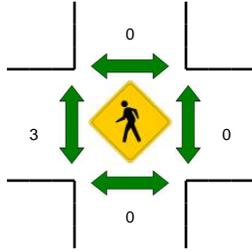
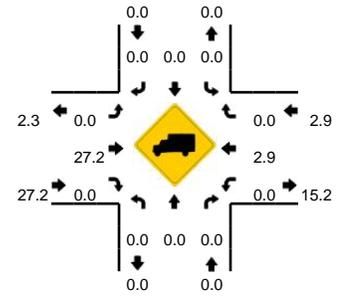
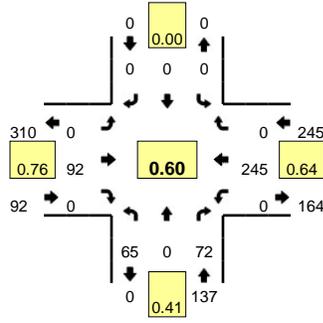
5-Min Count Period Beginning At	HS Access 3 (Northbound)				HS Access 3 (Southbound)				High School Rd (Eastbound)				High School Rd (Westbound)				Total	Hourly Totals	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U			
7:30 AM	1	0	1	0	0	0	0	0	0	18	0	0	0	9	0	0	0	29	
7:35 AM	0	0	0	0	0	0	0	0	0	21	0	0	0	9	0	0	0	30	
7:40 AM	0	0	1	0	0	0	0	0	0	16	0	0	0	6	0	0	0	23	
7:45 AM	1	0	1	0	0	0	0	0	0	10	0	0	0	11	0	0	0	23	
7:50 AM	0	0	3	0	0	0	0	0	0	11	0	0	0	8	0	0	0	22	
7:55 AM	5	0	2	0	0	0	0	0	0	18	0	0	0	6	0	0	0	31	
8:00 AM	5	0	2	0	0	0	0	0	0	10	0	0	0	11	0	0	0	28	
8:05 AM	1	0	3	0	0	0	0	0	0	19	0	0	0	16	0	0	0	39	
8:10 AM	12	0	11	0	0	0	0	0	0	14	0	0	0	14	0	0	0	51	
8:15 AM	9	0	5	0	0	0	0	0	0	16	0	0	0	14	0	0	0	44	
8:20 AM	13	0	9	0	0	0	0	0	0	15	0	0	0	22	0	0	0	59	
8:25 AM	14	0	8	0	0	0	0	0	0	42	0	0	0	16	0	0	0	80	459
8:30 AM	18	0	13	0	0	0	0	0	0	22	0	0	0	24	0	0	0	77	507
8:35 AM	29	0	12	0	0	0	0	0	0	17	0	0	0	28	0	0	0	86	563
8:40 AM	33	0	20	0	0	0	0	0	0	28	0	0	0	30	0	0	0	111	651
8:45 AM	14	0	22	0	0	0	0	0	0	24	0	0	0	23	0	0	0	83	711
8:50 AM	8	0	8	0	0	0	0	0	0	13	0	0	0	12	0	0	0	41	730
8:55 AM	1	0	0	0	0	0	0	0	0	7	0	0	0	5	0	0	0	13	712
9:00 AM	1	0	0	0	0	0	0	0	0	7	0	0	0	7	0	0	0	15	699
9:05 AM	1	0	1	0	0	0	0	0	0	2	0	0	0	3	0	0	0	7	667
9:10 AM	0	0	0	0	0	0	0	0	0	10	0	0	0	4	0	0	0	14	630
9:15 AM	0	0	1	0	0	0	0	0	0	7	0	0	0	7	0	0	0	15	601
9:20 AM	3	0	0	0	0	0	0	0	0	6	0	0	0	6	0	0	0	15	557
9:25 AM	1	0	0	0	0	0	0	0	0	4	0	0	0	3	0	0	0	8	485
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	304	0	216	0	0	0	0	0	0	276	0	0	0	324	0	0	0	1120	
Heavy Trucks	0	0	0	0	0	0	0	0	0	48	0	0	0	12	0	0	0	60	
Pedestrians	0	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	1	0	0	0	0	0	0	0	1	
Railroad																			
Stopped Buses																			

Comments:

LOCATION: HS Access 3 -- High School Rd
CITY/STATE: Chapel Hill, NC

QC JOB #: 14424212
DATE: Thu, May 25 2017

Peak-Hour: 3:35 PM -- 4:35 PM
Peak 15-Min: 3:55 PM -- 4:10 PM



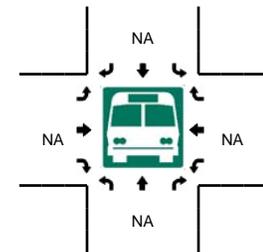
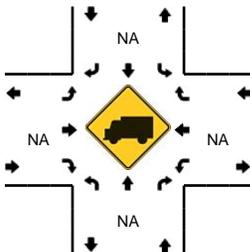
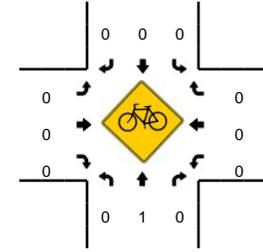
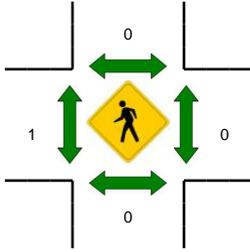
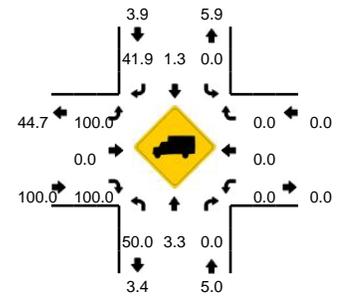
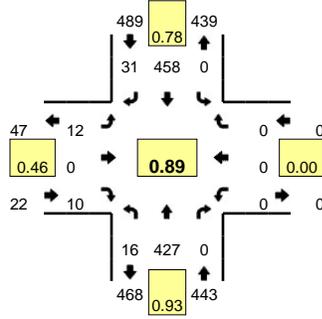
5-Min Count Period Beginning At	HS Access 3 (Northbound)				HS Access 3 (Southbound)				High School Rd (Eastbound)				High School Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	2	0	7	0	0	0	0	0	0	10	0	0	0	16	0	0	35	
3:05 PM	4	0	2	0	0	0	0	0	0	6	0	0	0	24	0	0	36	
3:10 PM	2	0	2	0	0	0	0	0	0	12	0	0	0	6	0	0	22	
3:15 PM	1	0	2	0	0	0	0	0	0	2	0	0	0	15	0	0	20	
3:20 PM	4	0	3	0	0	0	0	0	0	5	0	0	0	17	0	0	29	
3:25 PM	1	0	2	0	0	0	0	0	0	3	0	0	0	13	0	0	19	
3:30 PM	1	0	6	0	0	0	0	0	0	6	0	0	0	9	0	0	22	
3:35 PM	2	0	2	0	0	0	0	0	0	5	0	0	0	18	0	0	27	
3:40 PM	0	0	2	0	0	0	0	0	0	11	0	0	0	15	0	0	28	
3:45 PM	2	0	1	0	0	0	0	0	0	5	0	0	0	12	0	0	20	
3:50 PM	4	0	1	0	0	0	0	0	0	6	0	0	0	21	0	0	32	
3:55 PM	18	0	21	0	0	0	0	0	0	3	0	0	0	32	0	0	74	364
4:00 PM	10	0	18	0	0	0	0	0	0	9	0	0	0	25	0	0	62	391
4:05 PM	11	0	8	0	0	0	0	0	0	12	0	0	0	32	0	0	63	418
4:10 PM	6	0	9	0	0	0	0	0	0	4	0	0	0	40	0	0	59	455
4:15 PM	4	0	3	0	0	0	0	0	0	10	0	0	0	14	0	0	31	466
4:20 PM	4	0	4	0	0	0	0	0	0	6	0	0	0	8	0	0	22	459
4:25 PM	3	0	0	0	0	0	0	0	0	8	0	0	0	8	0	0	19	459
4:30 PM	1	0	3	0	0	0	0	0	0	13	0	0	0	20	0	0	37	474
4:35 PM	1	0	2	0	0	0	0	0	0	14	0	0	0	6	0	0	23	470
4:40 PM	2	0	1	0	0	0	0	0	0	8	0	0	0	8	0	0	19	461
4:45 PM	0	0	0	0	0	0	0	0	0	7	0	0	0	14	0	0	21	462
4:50 PM	1	0	1	0	0	0	0	0	0	8	0	0	0	17	0	0	27	457
4:55 PM	1	0	1	0	0	0	0	0	0	8	0	0	0	13	0	0	23	406
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	156	0	188	0	0	0	0	0	0	96	0	0	0	356	0	0	796	
Heavy Trucks	0	0	0	0	0	0	0	0	0	24	0	0	0	4	0	0	28	
Pedestrians										12				0			12	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Railroad																		
Stopped Buses																		

Comments:

LOCATION: Seawell School Rd -- Middle School Access
CITY/STATE: Chapel Hill, NC

QC JOB #: 14424215
DATE: Thu, May 25 2017

Peak-Hour: 7:30 AM -- 8:30 AM
Peak 15-Min: 7:45 AM -- 8:00 AM



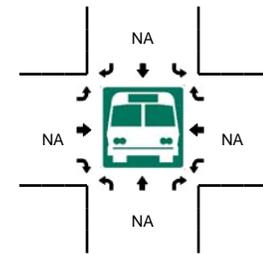
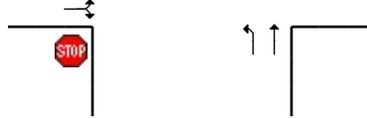
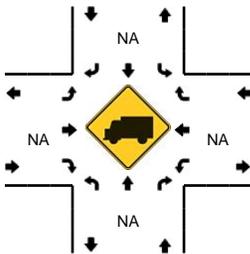
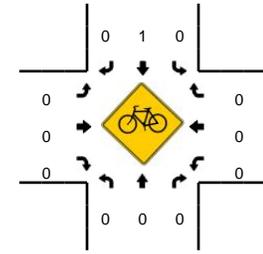
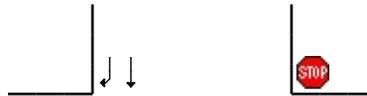
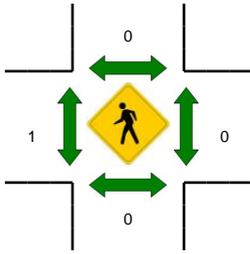
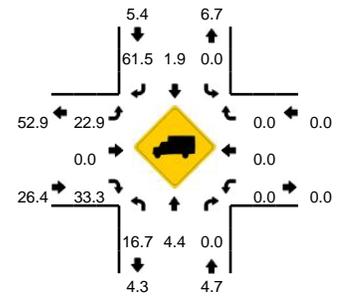
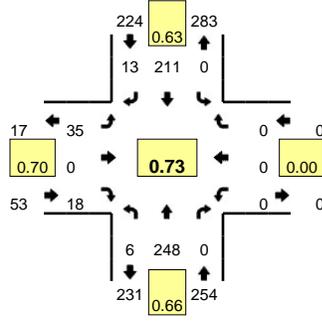
5-Min Count Period Beginning At	Seawell School Rd (Northbound)				Seawell School Rd (Southbound)				Middle School Access (Eastbound)				Middle School Access (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:30 AM	1	23	0	0	0	49	1	0	1	0	0	0	0	0	0	0	75	
7:35 AM	0	30	0	0	0	54	2	0	0	0	0	0	0	0	0	0	86	
7:40 AM	1	25	0	0	0	48	2	0	0	0	0	0	0	0	0	0	76	
7:45 AM	1	48	0	0	0	43	1	0	0	0	0	0	0	0	0	0	93	
7:50 AM	8	33	0	0	0	34	6	0	2	0	1	0	0	0	0	0	84	
7:55 AM	0	32	0	0	0	44	9	0	2	0	3	0	0	0	0	0	90	
8:00 AM	1	35	0	0	0	30	4	0	1	0	1	0	0	0	0	0	72	
8:05 AM	2	38	0	0	0	43	3	0	2	0	3	0	0	0	0	0	91	
8:10 AM	0	45	0	0	0	43	0	0	3	0	2	0	0	0	0	0	93	
8:15 AM	1	41	0	0	0	33	2	0	0	0	0	0	0	0	0	0	77	
8:20 AM	1	39	0	0	0	20	0	0	1	0	0	0	0	0	0	0	61	
8:25 AM	0	38	0	0	0	17	1	0	0	0	0	0	0	0	0	0	56	954
8:30 AM	0	31	0	0	0	20	0	0	0	0	0	0	0	0	0	0	51	930
8:35 AM	0	52	0	0	0	14	2	0	0	0	0	0	0	0	0	0	68	912
8:40 AM	0	27	0	0	0	16	1	0	0	0	0	0	0	0	0	0	44	880
8:45 AM	0	22	0	0	0	29	0	0	0	0	0	0	0	0	0	0	51	838
8:50 AM	0	14	0	0	0	22	1	0	1	0	0	0	0	0	0	0	38	792
8:55 AM	0	9	0	0	0	13	0	0	0	0	0	0	0	0	0	0	22	724
9:00 AM	0	7	0	0	0	11	0	0	0	0	0	0	0	0	0	0	18	670
9:05 AM	0	5	0	0	0	10	1	0	0	0	0	0	0	0	0	0	16	595
9:10 AM	1	5	0	0	0	14	0	0	0	0	0	0	0	0	0	0	20	522
9:15 AM	1	5	0	0	0	7	0	0	0	0	0	0	0	0	0	0	13	458
9:20 AM	1	7	0	0	0	6	0	0	0	0	0	0	0	0	0	0	14	411
9:25 AM	1	6	0	0	0	6	0	0	0	0	0	0	0	0	0	0	13	368
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	452	0	0	0	484	64	0	16	0	16	0	0	0	0	0	1068	
Heavy Trucks	24	4	0	0	0	4	28	0	16	0	16	0	0	0	0	0	92	
Pedestrians		0				0				0				0			0	
Bicycles		1				0				0				0			1	
Railroad																		
Stopped Buses																		

Comments:

LOCATION: Seawell School Rd -- Middle School Access
CITY/STATE: Chapel Hill, NC

QC JOB #: 14424216
DATE: Thu, May 25 2017

Peak-Hour: 3:10 PM -- 4:10 PM
Peak 15-Min: 3:10 PM -- 3:25 PM

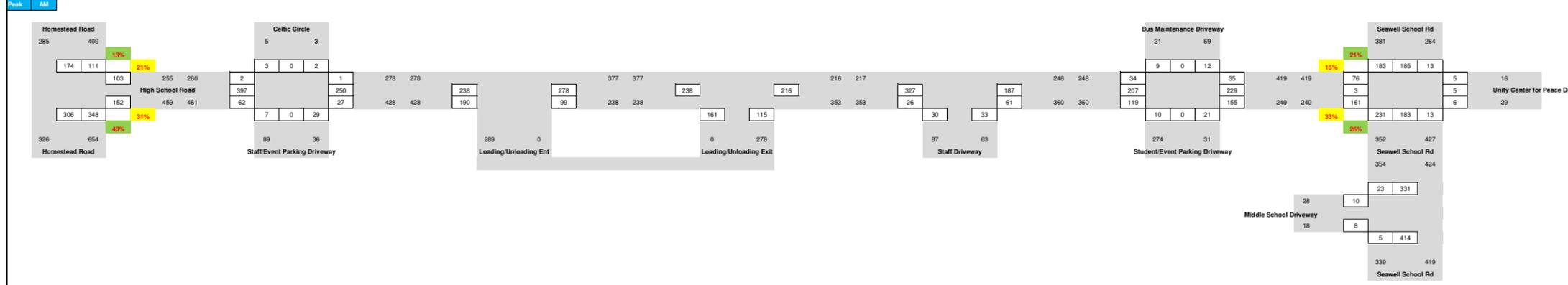


5-Min Count Period Beginning At	Seawell School Rd (Northbound)				Seawell School Rd (Southbound)				Middle School Access (Eastbound)				Middle School Access (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	0	12	0	0	0	25	2	0	1	0	0	0	0	0	0	0	40	
3:05 PM	1	15	0	0	0	20	1	0	1	0	1	0	0	0	0	0	39	
3:10 PM	0	18	0	1	0	34	3	0	3	0	1	0	0	0	0	0	60	
3:15 PM	0	43	0	1	0	14	2	0	3	0	2	0	0	0	0	0	65	
3:20 PM	0	33	0	0	0	16	3	0	4	0	2	0	0	0	0	0	58	
3:25 PM	0	11	0	0	0	8	0	0	3	0	1	0	0	0	0	0	23	
3:30 PM	1	19	0	0	0	9	2	0	3	0	2	0	0	0	0	0	36	
3:35 PM	0	20	0	0	0	7	0	0	2	0	0	0	0	0	0	0	29	
3:40 PM	0	16	0	0	0	11	1	0	5	0	5	0	0	0	0	0	38	
3:45 PM	0	14	0	0	0	11	0	0	5	0	2	0	0	0	0	0	32	
3:50 PM	0	15	0	0	0	13	0	0	0	0	1	0	0	0	0	0	29	
3:55 PM	3	20	0	0	0	25	0	0	4	0	0	0	0	0	0	0	52	501
4:00 PM	0	21	0	0	0	31	2	0	1	0	2	0	0	0	0	0	57	518
4:05 PM	0	18	0	0	0	32	0	0	2	0	0	0	0	0	0	0	52	531
4:10 PM	0	19	0	0	0	34	0	0	2	0	2	0	0	0	0	0	57	528
4:15 PM	0	15	0	0	0	19	0	0	1	0	0	0	0	0	0	0	35	498
4:20 PM	0	21	0	0	0	14	2	0	1	0	0	0	0	0	0	0	38	478
4:25 PM	0	13	0	0	0	12	2	0	2	0	1	0	0	0	0	0	30	485
4:30 PM	0	18	0	0	0	15	1	0	1	0	2	0	0	0	0	0	37	486
4:35 PM	1	8	0	0	0	13	3	0	1	0	0	0	0	0	0	0	26	483
4:40 PM	1	11	0	0	0	9	3	0	0	0	0	0	0	0	0	0	24	469
4:45 PM	1	23	0	0	0	12	3	0	2	0	2	0	0	0	0	0	43	480
4:50 PM	2	18	0	0	0	14	4	0	5	0	0	0	0	0	0	0	43	494
4:55 PM	2	12	0	0	0	8	2	0	10	0	1	0	0	0	0	0	35	477
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	0	376	0	8	0	256	32	0	40	0	20	0	0	0	0	0	732	
Heavy Trucks	0	16	0	0	0	4	28	0	20	0	16	0	0	0	0	0	84	
Pedestrians	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	4	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Railroad																		
Stopped Buses																		

Comments:

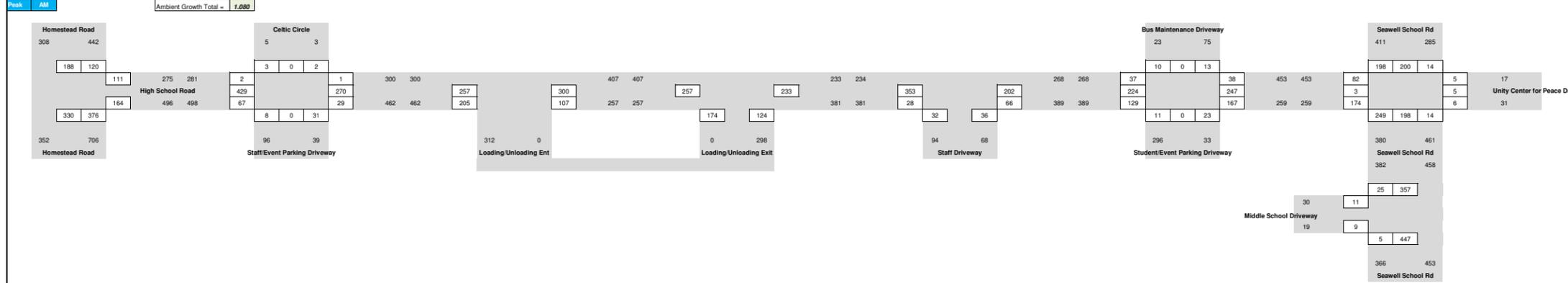
Appendix C – MSTA Trip Generation Output

Appendix D – Volume Development Spreadsheets

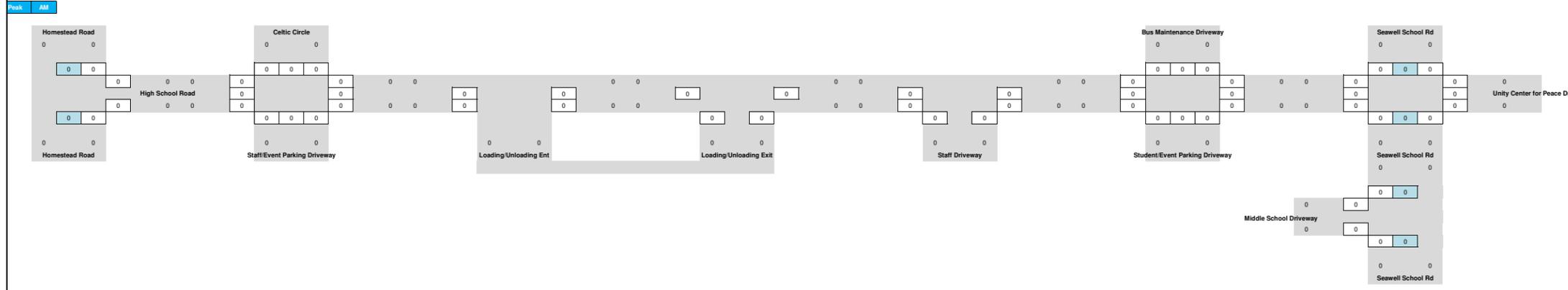


2021 Ambient Traffic Growth

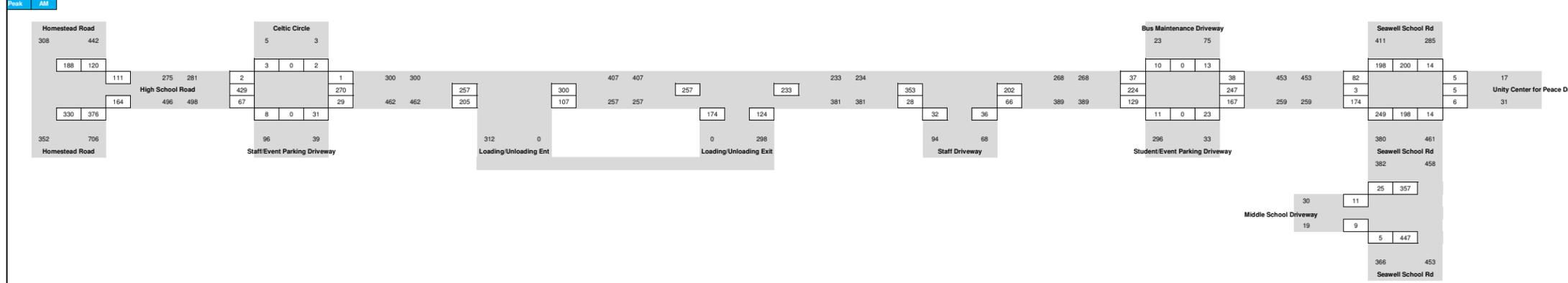
Ambient Growth Rate/Yr = 2.0%
Ambient Growth Total = 1,080

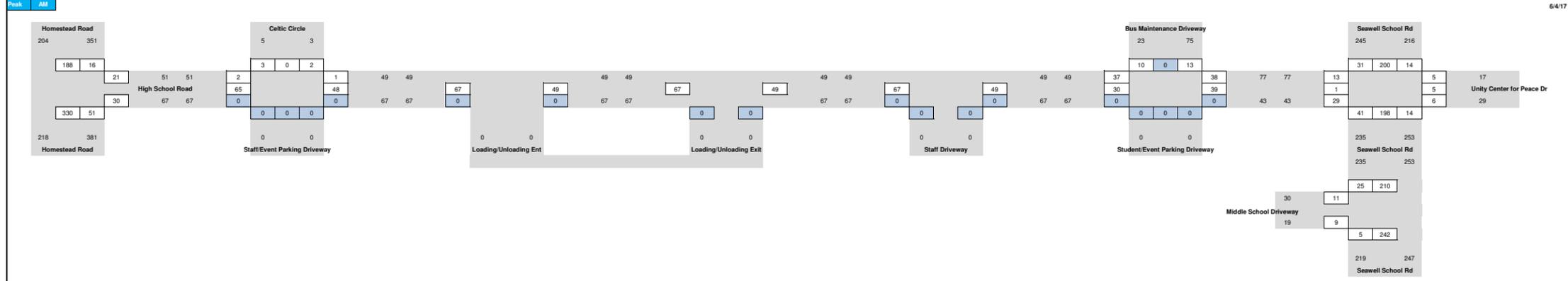


2021 Total Approved Background Traffic Volumes

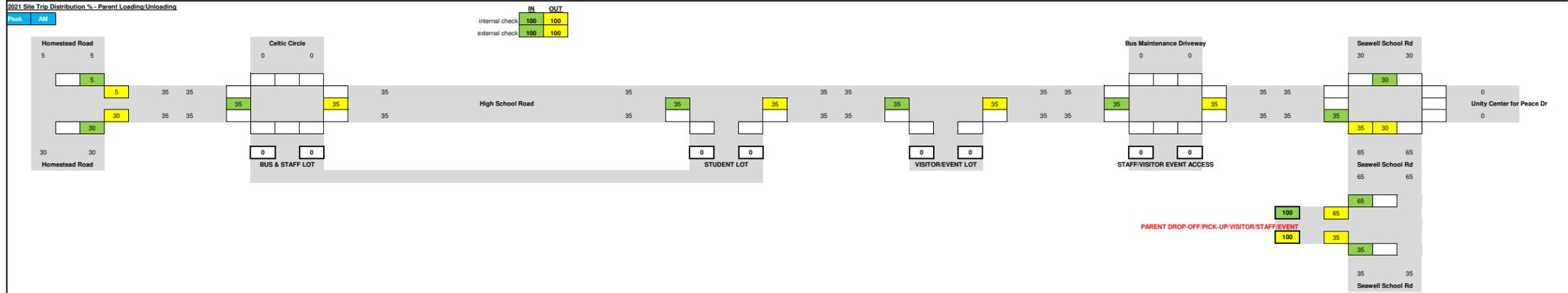


2021 Traffic Without Site Redevelopment

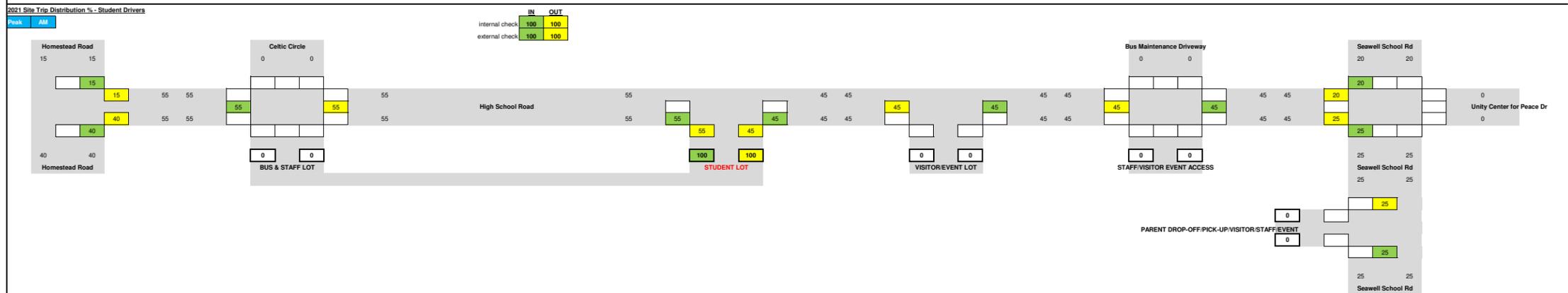




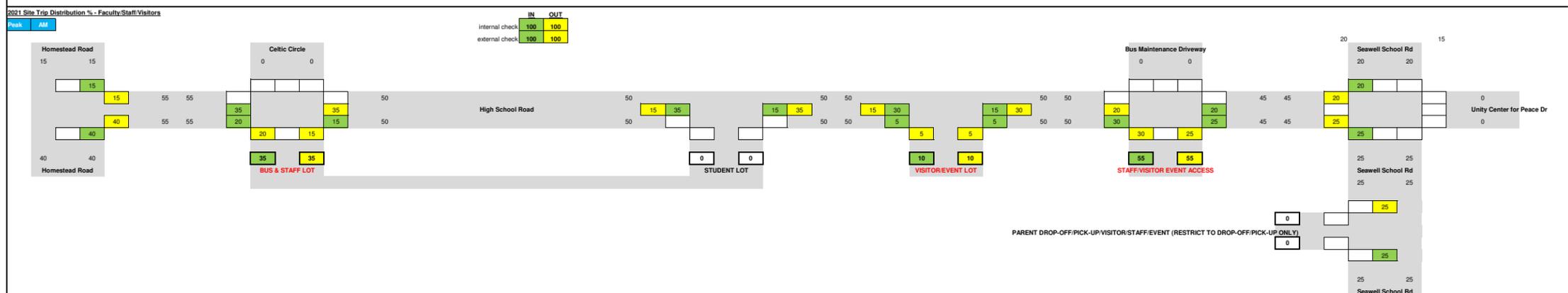
2021 Site Trip Distribution % - Parent Loading/Unloading



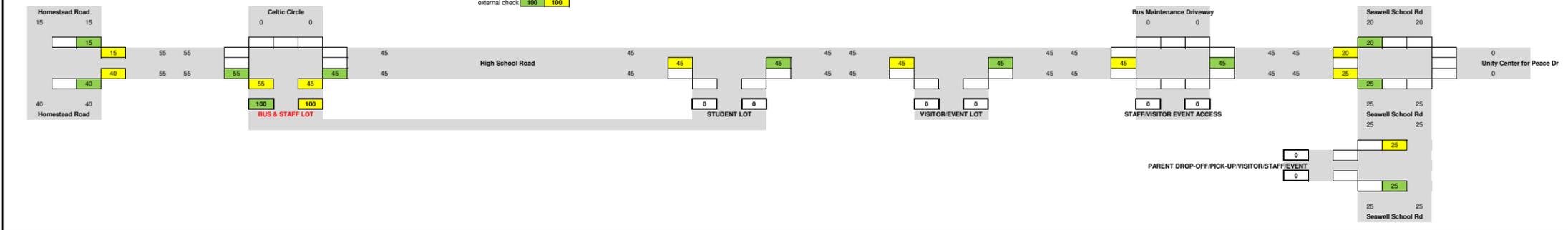
2021 Site Trip Distribution % - Student Drivers



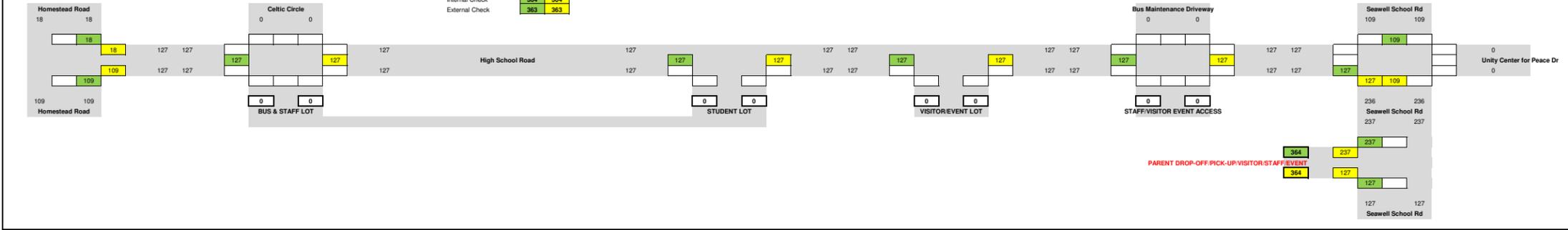
2021 Site Trip Distribution % - Faculty/Staff/Visitors



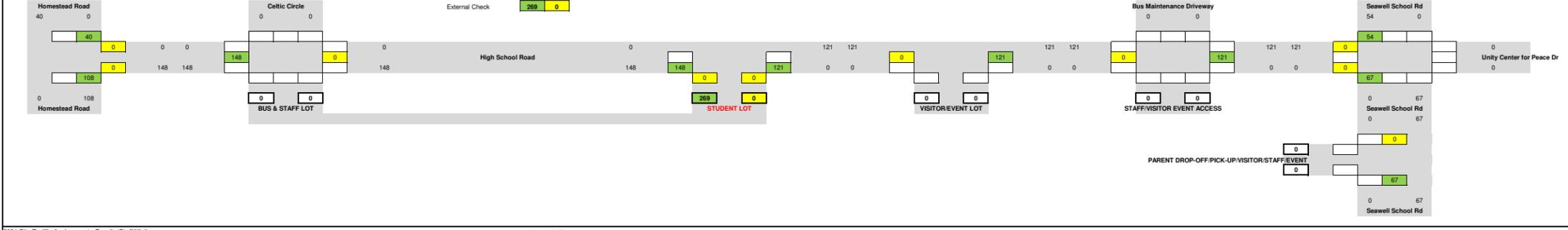
	IN	OUT
Internal check	100	100
external check	100	100



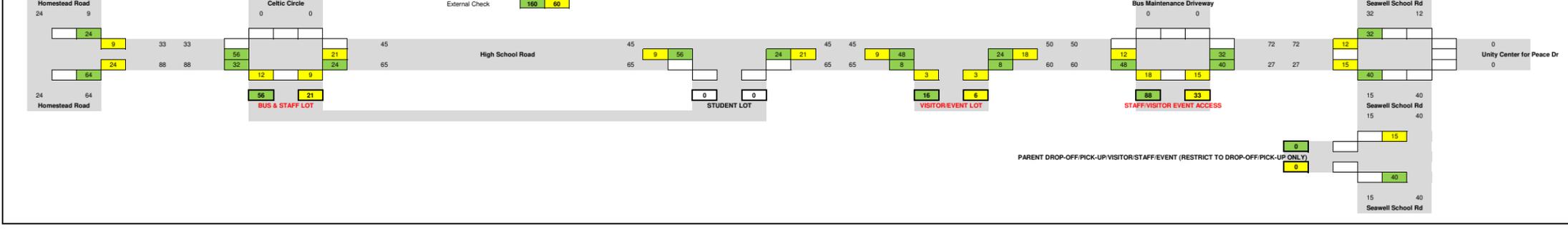
	IN	OUT
Input	364	364
Internal Check	364	364
External Check	363	363



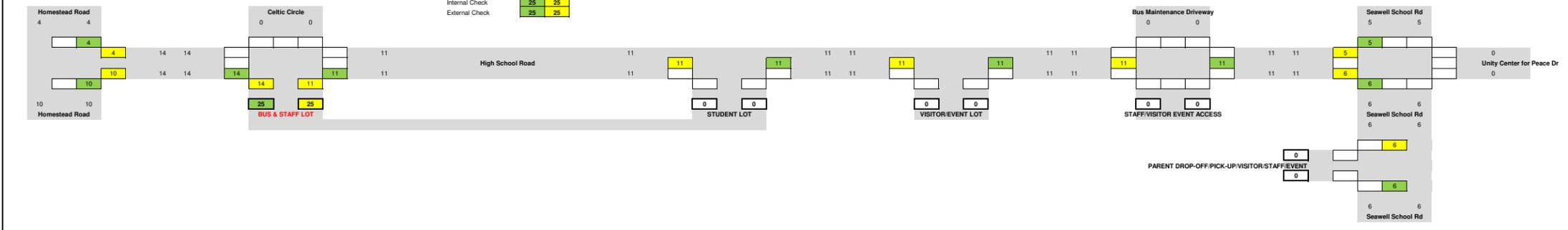
	IN	OUT
Input	269	0
Internal Check	269	0
External Check	269	0



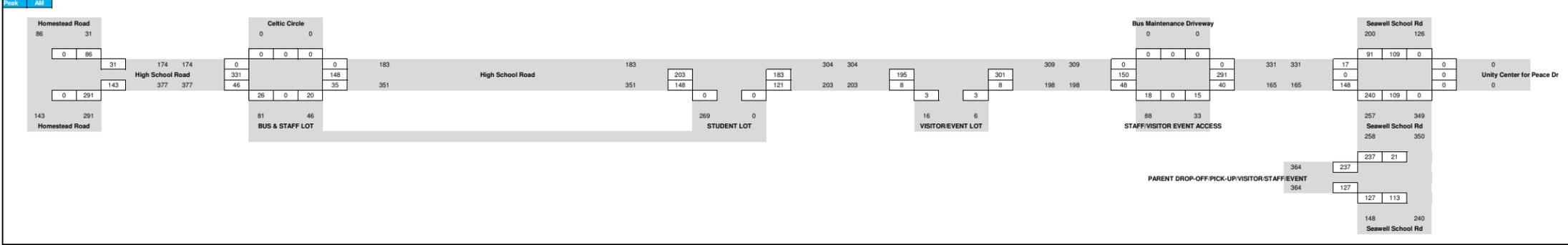
	IN	OUT
Input	181	81
Internal Check	180	80
External Check	180	80



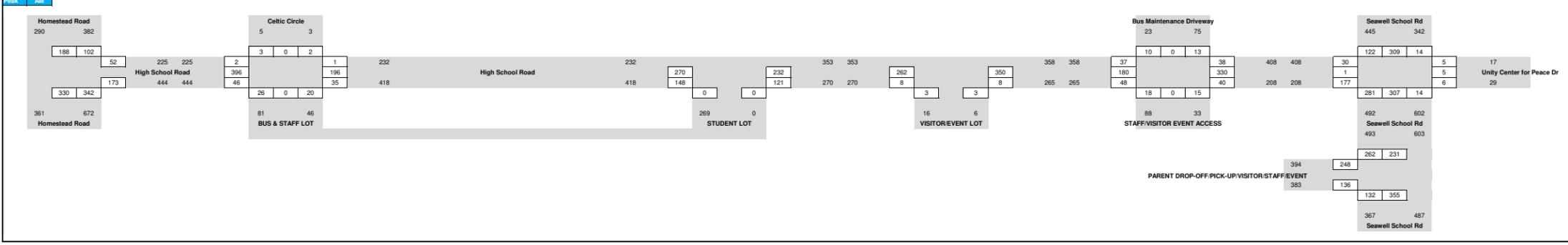
	IN	OUT
Input	25	25
Internal Check	25	25
External Check	25	25



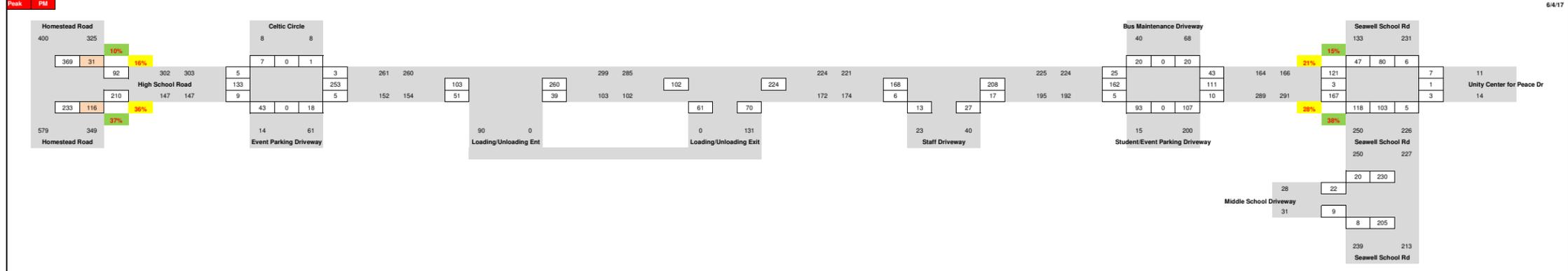
2021 Total Site Traffic Volumes



2021 Traffic Volumes With Site Redevelopment

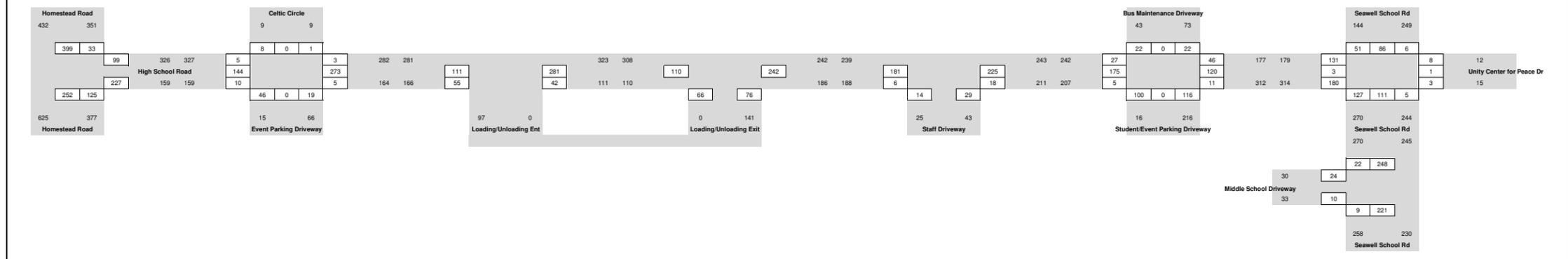


2017 Existing Traffic Volumes

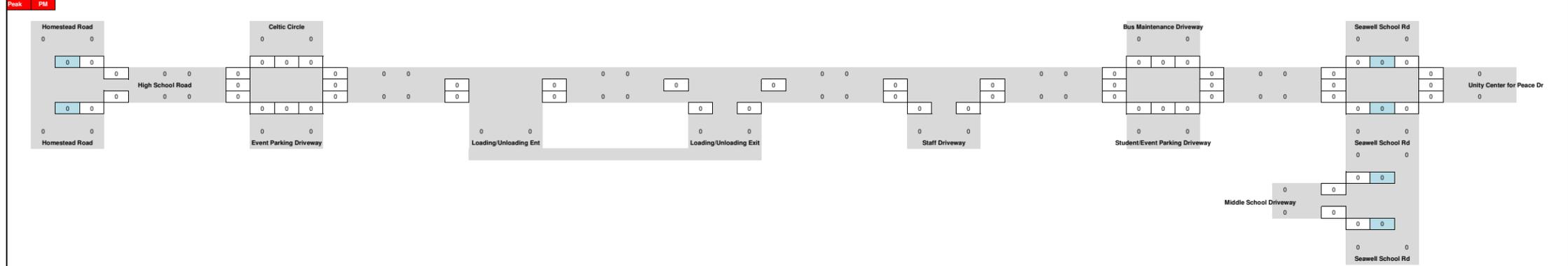


2021 Ambient Traffic Growth

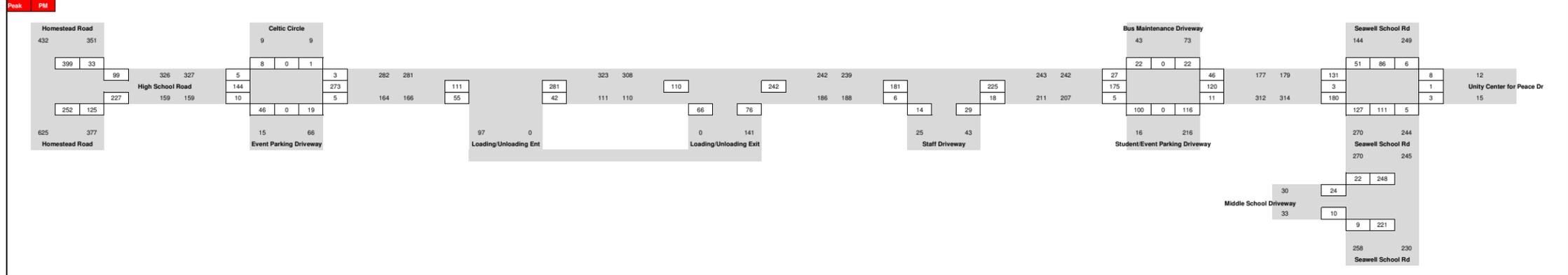
Ambient Growth Rate/Yr = 2.2%
Ambient Growth Total = 7,889

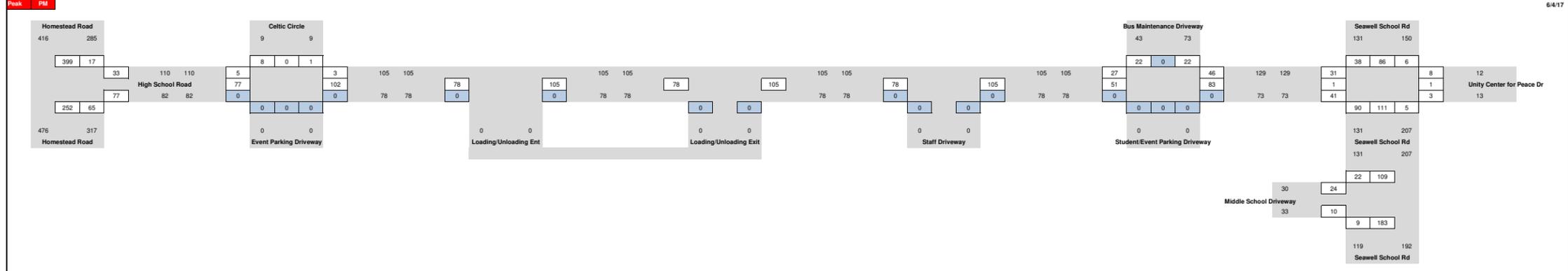


2021 Total Approved Background Traffic Volumes

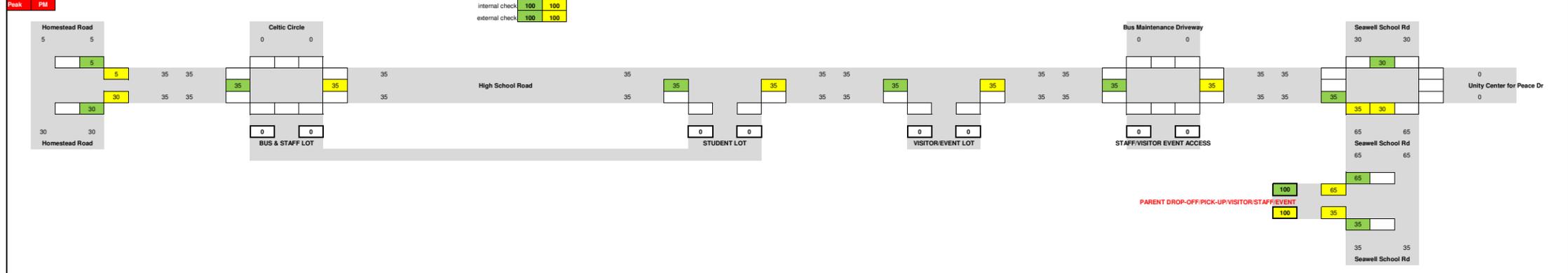


2021 Traffic Without Site Redevelopment

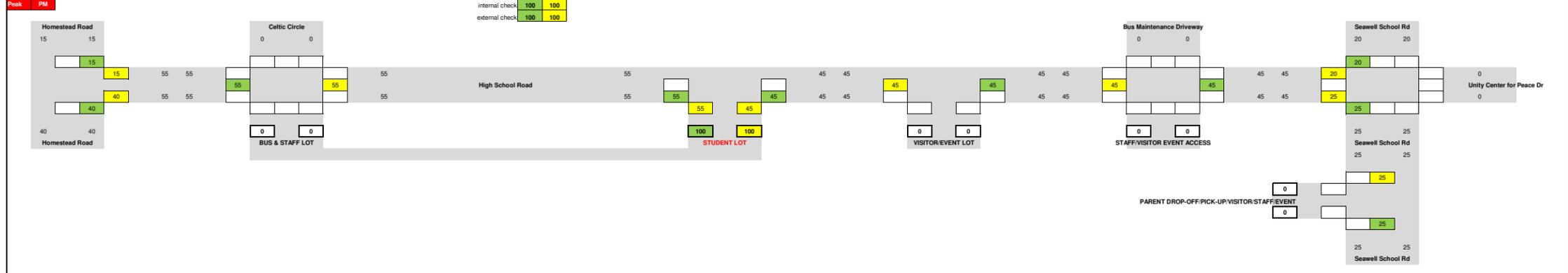




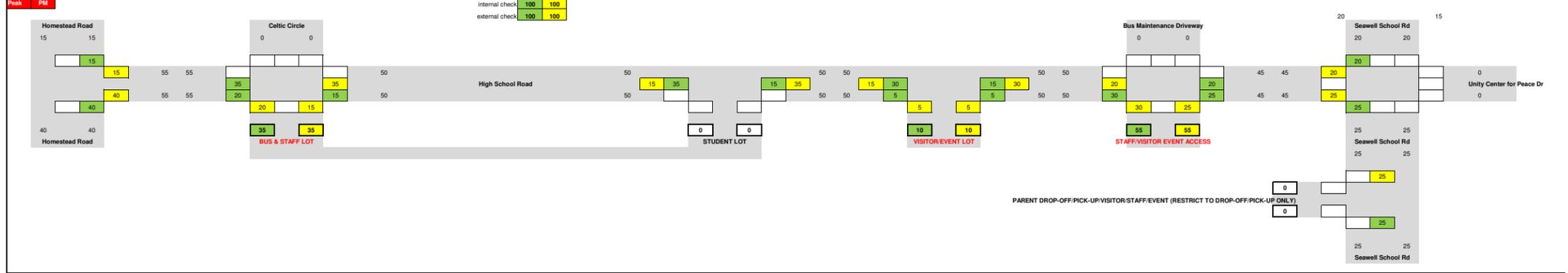
2021 Site Trip Distribution % - Parent Loading/Unloading

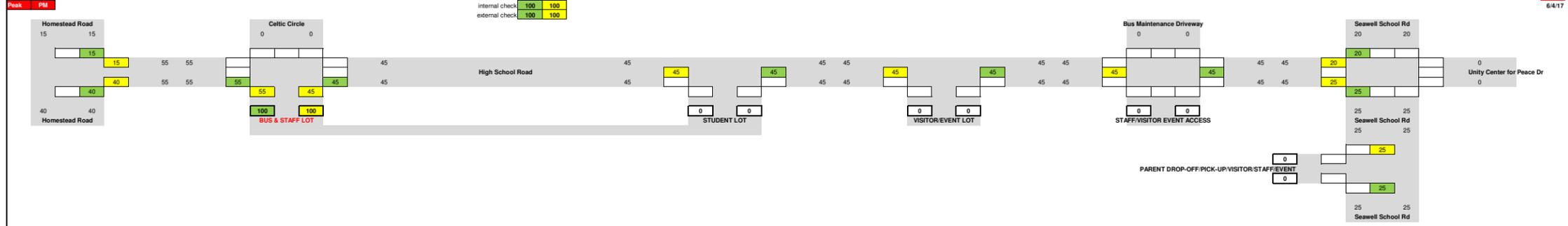


2021 Site Trip Distribution % - Student Drivers

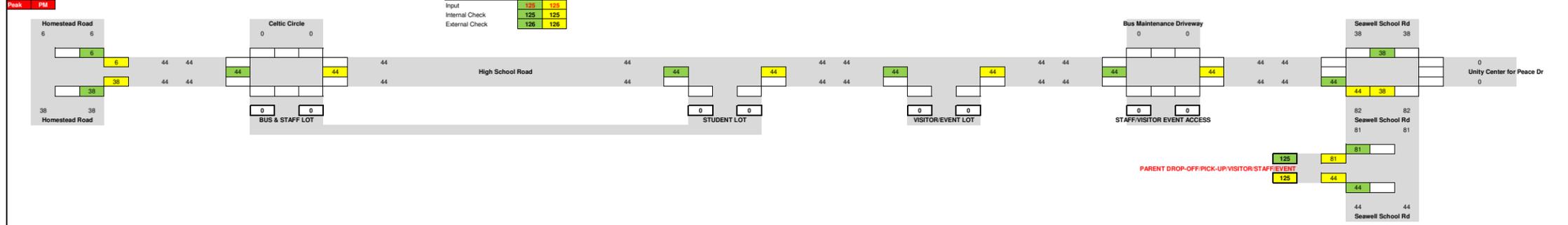


2021 Site Trip Distribution % - Faculty/Staff/Visitors

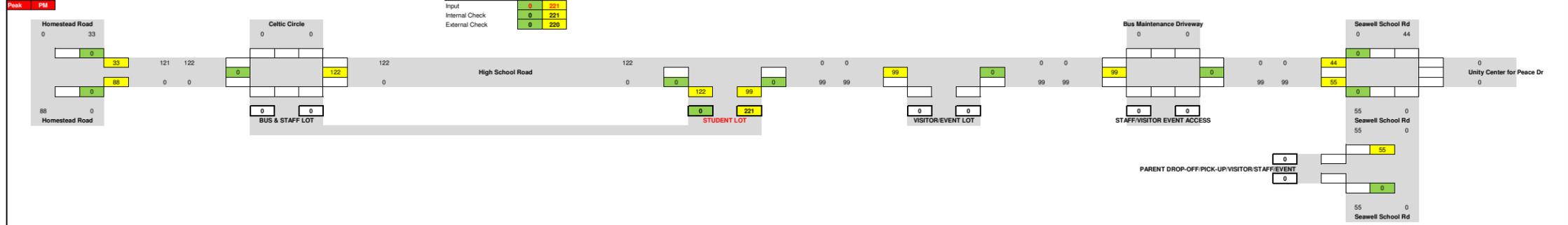




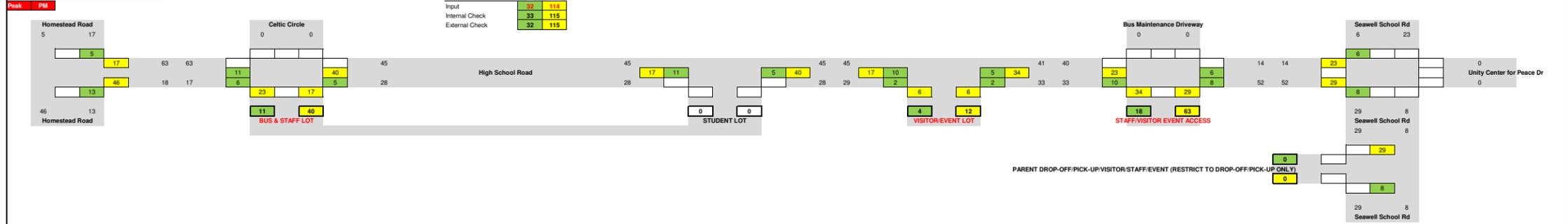
2021 Site Traffic Assignment - Parent Loading/Unloading

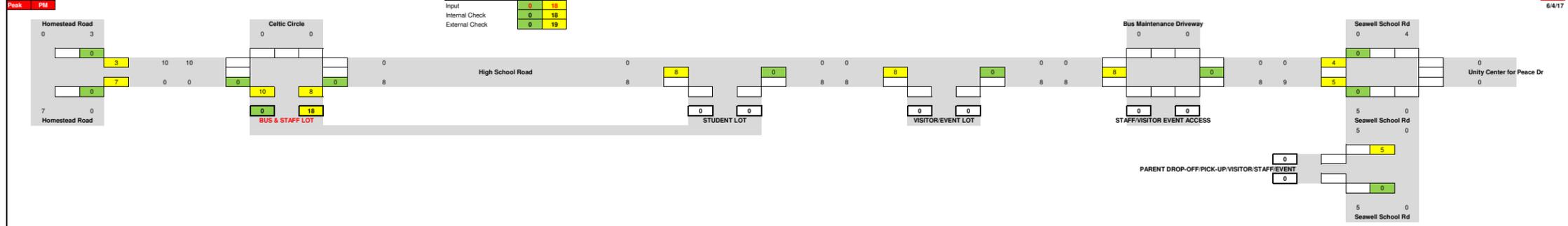


2021 Site Traffic Assignment - Student Drivers

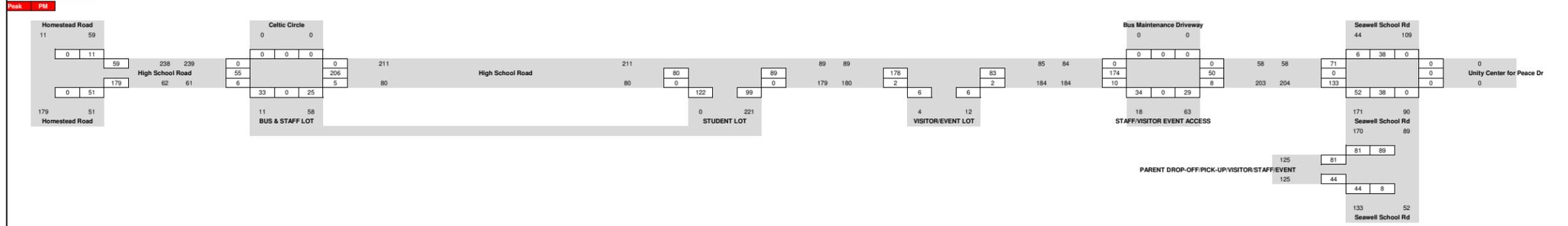


2021 Site Traffic Assignment - Faculty/Staff/Visitors

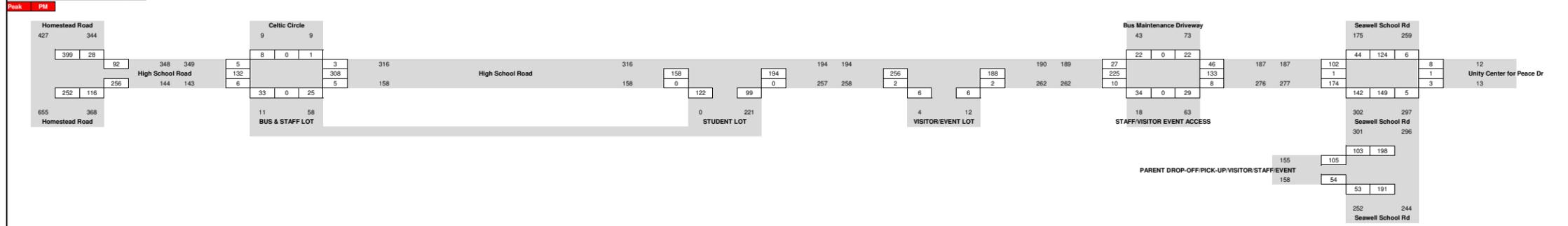




2021 Total Site Traffic Volumes



2021 Traffic Volumes With Site Redevelopment



**Appendix E – SYNCHRO Signalized Intersection
Analysis Output**

2017 Existing

Lanes, Volumes, Timings
1: Homestead Road & High School Road

11/03/2017

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	152	103	306	348	111	174
Future Volume (vph)	152	103	306	348	111	174
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%		1%			-1%
Storage Length (ft)	0	200		0	175	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.92	0.98				
Frt		0.850	0.909			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1752	1583	1636	0	1680	1836
Flt Permitted	0.950				0.089	
Satd. Flow (perm)	1613	1547	1636	0	157	1836
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	25		35			35
Link Distance (ft)	528		491			501
Travel Time (s)	14.4		9.6			9.8
Confl. Peds. (#/hr)	28	1				
Peak Hour Factor	0.58	0.58	0.90	0.50	0.50	0.84
Heavy Vehicles (%)	3%	2%	3%	6%	8%	4%
Adj. Flow (vph)	262	178	340	696	222	207
Shared Lane Traffic (%)						
Lane Group Flow (vph)	262	178	1036	0	222	207
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	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	1.00	1.00	1.01	1.01	0.99	0.99
Turning Speed (mph)	15	9		9	15	
Turn Type	Prot	pm+ov	NA		pm+pt	NA
Protected Phases	4	1	2		1	6
Permitted Phases		4			6	
Detector Phase	4	1	2		1	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	12.0		7.0	12.0
Minimum Split (s)	24.0	13.0	18.0		13.0	18.0
Total Split (s)	25.0	15.0	45.0		15.0	60.0
Total Split (%)	29.4%	17.6%	52.9%		17.6%	70.6%
Maximum Green (s)	19.7	9.7	39.6		9.7	54.5
Yellow Time (s)	3.0	3.0	4.2		3.0	4.5
All-Red Time (s)	2.3	2.3	1.2		2.3	1.0
Lost Time Adjust (s)	-0.3	-0.3	-0.4		-0.3	-0.5
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0
Lead/Lag		Lead	Lag		Lead	

Lanes, Volumes, Timings
 1: Homestead Road & High School Road

11/03/2017



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	Min		None	Min
Walk Time (s)	4.0					
Flash Dont Walk (s)	11.0					
Pedestrian Calls (#/hr)	0					
Act Effct Green (s)	16.5	26.2	40.1		54.7	54.7
Actuated g/C Ratio	0.20	0.32	0.49		0.67	0.67
v/c Ratio	0.74	0.35	1.28		0.78	0.17
Control Delay	43.3	19.6	160.6		36.5	5.8
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	43.3	19.6	160.6		36.5	5.8
LOS	D	B	F		D	A
Approach Delay	33.7		160.6			21.7
Approach LOS	C		F			C
Queue Length 50th (ft)	126	61	~700		62	35
Queue Length 95th (ft)	121	64	#966		48	61
Internal Link Dist (ft)	448		411			421
Turn Bay Length (ft)		200			175	
Base Capacity (vph)	432	510	807		293	1245
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.61	0.35	1.28		0.76	0.17

Intersection Summary

Area Type: Other
 Cycle Length: 85
 Actuated Cycle Length: 81.3
 Natural Cycle: 110
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.28
 Intersection Signal Delay: 100.0
 Intersection LOS: F
 Intersection Capacity Utilization 64.6%
 ICU Level of Service C
 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: Homestead Road & High School Road



Lanes, Volumes, Timings
 1: Homestead Road & High School Road

11/03/2017

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	210	92	233	116	31	369
Future Volume (vph)	210	92	233	116	31	369
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%		1%			-1%
Storage Length (ft)	0	200		0	175	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.87					
Frt		0.850	0.937			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1719	1495	1570	0	1577	1854
Flt Permitted	0.950				0.238	
Satd. Flow (perm)	1500	1495	1570	0	395	1854
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	25		35			35
Link Distance (ft)	528		491			501
Travel Time (s)	14.4		9.6			9.8
Confl. Peds. (#/hr)	45					
Peak Hour Factor	0.50	0.50	0.89	0.50	0.50	0.92
Heavy Vehicles (%)	5%	8%	2%	25%	15%	3%
Adj. Flow (vph)	420	184	262	232	62	401
Shared Lane Traffic (%)						
Lane Group Flow (vph)	420	184	494	0	62	401
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	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	1.00	1.00	1.01	1.01	0.99	0.99
Turning Speed (mph)	15	9		9	15	
Turn Type	Prot	pm+ov	NA		pm+pt	NA
Protected Phases	4	1	2		1	6
Permitted Phases		4			6	
Detector Phase	4	1	2		1	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	12.0		7.0	12.0
Minimum Split (s)	24.0	13.0	18.0		13.0	18.0
Total Split (s)	25.0	15.0	45.0		15.0	60.0
Total Split (%)	29.4%	17.6%	52.9%		17.6%	70.6%
Maximum Green (s)	19.7	9.7	39.6		9.7	54.5
Yellow Time (s)	3.0	3.0	4.2		3.0	4.5
All-Red Time (s)	2.3	2.3	1.2		2.3	1.0
Lost Time Adjust (s)	-0.3	-0.3	-0.4		-0.3	-0.5
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0
Lead/Lag		Lead	Lag		Lead	

Lanes, Volumes, Timings
 1: Homestead Road & High School Road

11/03/2017



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	Min		None	Min
Walk Time (s)	4.0					
Flash Dont Walk (s)	11.0					
Pedestrian Calls (#/hr)	0					
Act Effct Green (s)	20.3	33.0	27.2		39.9	39.9
Actuated g/C Ratio	0.29	0.47	0.39		0.57	0.57
v/c Ratio	0.85	0.26	0.82		0.18	0.38
Control Delay	44.4	14.8	30.6		7.4	9.2
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	44.4	14.8	30.6		7.4	9.2
LOS	D	B	C		A	A
Approach Delay	35.4		30.6			8.9
Approach LOS	D		C			A
Queue Length 50th (ft)	166	45	182		11	85
Queue Length 95th (ft)	157	57	291		13	132
Internal Link Dist (ft)	448		411			421
Turn Bay Length (ft)		200			175	
Base Capacity (vph)	496	755	906		394	1471
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.85	0.24	0.55		0.16	0.27

Intersection Summary

Area Type:	Other
Cycle Length:	85
Actuated Cycle Length:	70.3
Natural Cycle:	65
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.85
Intersection Signal Delay:	26.0
Intersection LOS:	C
Intersection Capacity Utilization:	45.7%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 1: Homestead Road & High School Road



2021 Without Site

Lanes, Volumes, Timings
1: Homestead Road & High School Road

11/03/2017

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	164	111	330	376	120	188
Future Volume (vph)	164	111	330	376	120	188
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%		1%			-1%
Storage Length (ft)	0	200		0	175	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.92	0.98				
Frt		0.850	0.909			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1752	1583	1636	0	1680	1836
Flt Permitted	0.950				0.089	
Satd. Flow (perm)	1613	1547	1636	0	157	1836
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	25		35			35
Link Distance (ft)	528		491			501
Travel Time (s)	14.4		9.6			9.8
Confl. Peds. (#/hr)	28	1				
Peak Hour Factor	0.58	0.58	0.90	0.50	0.50	0.84
Heavy Vehicles (%)	3%	2%	3%	6%	8%	4%
Adj. Flow (vph)	283	191	367	752	240	224
Shared Lane Traffic (%)						
Lane Group Flow (vph)	283	191	1119	0	240	224
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	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	1.00	1.00	1.01	1.01	0.99	0.99
Turning Speed (mph)	15	9		9	15	
Turn Type	Prot	pm+ov	NA		pm+pt	NA
Protected Phases	4	1	2		1	6
Permitted Phases		4			6	
Detector Phase	4	1	2		1	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	12.0		7.0	12.0
Minimum Split (s)	24.0	13.0	18.0		13.0	18.0
Total Split (s)	25.0	15.0	45.0		15.0	60.0
Total Split (%)	29.4%	17.6%	52.9%		17.6%	70.6%
Maximum Green (s)	19.7	9.7	39.6		9.7	54.5
Yellow Time (s)	3.0	3.0	4.2		3.0	4.5
All-Red Time (s)	2.3	2.3	1.2		2.3	1.0
Lost Time Adjust (s)	-0.3	-0.3	-0.4		-0.3	-0.5
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0
Lead/Lag		Lead	Lag		Lead	

Lanes, Volumes, Timings
 1: Homestead Road & High School Road

11/03/2017



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	Min		None	Min
Walk Time (s)	4.0					
Flash Dont Walk (s)	11.0					
Pedestrian Calls (#/hr)	0					
Act Effct Green (s)	17.3	27.1	40.1		54.9	54.9
Actuated g/C Ratio	0.21	0.33	0.49		0.67	0.67
v/c Ratio	0.77	0.37	1.40		0.84	0.18
Control Delay	45.5	19.8	212.2		44.1	6.0
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	45.5	19.8	212.2		44.1	6.0
LOS	D	B	F		D	A
Approach Delay	35.1		212.2			25.7
Approach LOS	D		F			C
Queue Length 50th (ft)	138	66	~811		75	41
Queue Length 95th (ft)	130	69	#1063		55	65
Internal Link Dist (ft)	448		411			421
Turn Bay Length (ft)		200			175	
Base Capacity (vph)	427	517	797		290	1231
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.66	0.37	1.40		0.83	0.18

Intersection Summary

Area Type: Other
 Cycle Length: 85
 Actuated Cycle Length: 82.2
 Natural Cycle: 150
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.40
 Intersection Signal Delay: 129.3
 Intersection LOS: F
 Intersection Capacity Utilization 68.7%
 ICU Level of Service C
 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: Homestead Road & High School Road



Lanes, Volumes, Timings
1: Homestead Road & High School Road

11/03/2017

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	227	99	252	125	33	399
Future Volume (vph)	227	99	252	125	33	399
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%		1%			-1%
Storage Length (ft)	0	200		0	175	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.87					
Frt		0.850	0.937			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1719	1495	1571	0	1577	1854
Flt Permitted	0.950				0.218	
Satd. Flow (perm)	1500	1495	1571	0	362	1854
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	25		35			35
Link Distance (ft)	528		491			501
Travel Time (s)	14.4		9.6			9.8
Confl. Peds. (#/hr)	45					
Peak Hour Factor	0.50	0.50	0.89	0.50	0.50	0.92
Heavy Vehicles (%)	5%	8%	2%	25%	15%	3%
Adj. Flow (vph)	454	198	283	250	66	434
Shared Lane Traffic (%)						
Lane Group Flow (vph)	454	198	533	0	66	434
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	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	1.00	1.00	1.01	1.01	0.99	0.99
Turning Speed (mph)	15	9		9	15	
Turn Type	Prot	pm+ov	NA		pm+pt	NA
Protected Phases	4	1	2		1	6
Permitted Phases		4			6	
Detector Phase	4	1	2		1	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	12.0		7.0	12.0
Minimum Split (s)	24.0	13.0	18.0		13.0	18.0
Total Split (s)	25.0	15.0	45.0		15.0	60.0
Total Split (%)	29.4%	17.6%	52.9%		17.6%	70.6%
Maximum Green (s)	19.7	9.7	39.6		9.7	54.5
Yellow Time (s)	3.0	3.0	4.2		3.0	4.5
All-Red Time (s)	2.3	2.3	1.2		2.3	1.0
Lost Time Adjust (s)	-0.3	-0.3	-0.4		-0.3	-0.5
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0
Lead/Lag		Lead	Lag		Lead	

Lanes, Volumes, Timings
 1: Homestead Road & High School Road

11/03/2017



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	Min		None	Min
Walk Time (s)	4.0					
Flash Dont Walk (s)	11.0					
Pedestrian Calls (#/hr)	0					
Act Effct Green (s)	20.3	33.0	29.2		41.9	41.9
Actuated g/C Ratio	0.28	0.46	0.40		0.58	0.58
v/c Ratio	0.94	0.29	0.84		0.20	0.40
Control Delay	59.7	15.9	32.2		7.5	9.2
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	59.7	15.9	32.2		7.5	9.2
LOS	E	B	C		A	A
Approach Delay	46.4		32.2			9.0
Approach LOS	D		C			A
Queue Length 50th (ft)	199	54	203		11	95
Queue Length 95th (ft)	170	61	326		14	146
Internal Link Dist (ft)	448		411			421
Turn Bay Length (ft)		200			175	
Base Capacity (vph)	481	732	879		380	1428
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.94	0.27	0.61		0.17	0.30

Intersection Summary

Area Type: Other
 Cycle Length: 85
 Actuated Cycle Length: 72.3
 Natural Cycle: 75
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.94
 Intersection Signal Delay: 30.8
 Intersection LOS: C
 Intersection Capacity Utilization 48.3%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 1: Homestead Road & High School Road



2021 With Site

Lanes, Volumes, Timings
1: Homestead Road & High School Road

11/03/2017

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	173	52	330	342	102	188
Future Volume (vph)	173	52	330	342	102	188
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%		1%			-1%
Storage Length (ft)	0	200		0	175	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.92	0.98				
Frt		0.850	0.912			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1752	1583	1643	0	1680	1836
Flt Permitted	0.950				0.089	
Satd. Flow (perm)	1613	1547	1643	0	157	1836
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	25		35			35
Link Distance (ft)	528		491			501
Travel Time (s)	14.4		9.6			9.8
Confl. Peds. (#/hr)	28	1				
Peak Hour Factor	0.58	0.58	0.90	0.50	0.50	0.84
Heavy Vehicles (%)	3%	2%	3%	6%	8%	4%
Adj. Flow (vph)	298	90	367	684	204	224
Shared Lane Traffic (%)						
Lane Group Flow (vph)	298	90	1051	0	204	224
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	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	1.00	1.00	1.01	1.01	0.99	0.99
Turning Speed (mph)	15	9		9	15	
Turn Type	Prot	pm+ov	NA		pm+pt	NA
Protected Phases	4	1	2		1	6
Permitted Phases		4			6	
Detector Phase	4	1	2		1	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	12.0		7.0	12.0
Minimum Split (s)	24.0	13.0	18.0		13.0	18.0
Total Split (s)	25.0	15.0	45.0		15.0	60.0
Total Split (%)	29.4%	17.6%	52.9%		17.6%	70.6%
Maximum Green (s)	19.7	9.7	39.6		9.7	54.5
Yellow Time (s)	3.0	3.0	4.2		3.0	4.5
All-Red Time (s)	2.3	2.3	1.2		2.3	1.0
Lost Time Adjust (s)	-0.3	-0.3	-0.4		-0.3	-0.5
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0
Lead/Lag		Lead	Lag		Lead	

Lanes, Volumes, Timings
 1: Homestead Road & High School Road

11/03/2017



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	Min		None	Min
Walk Time (s)	4.0					
Flash Dont Walk (s)	11.0					
Pedestrian Calls (#/hr)	0					
Act Effct Green (s)	17.8	27.1	40.1		54.4	54.4
Actuated g/C Ratio	0.22	0.33	0.49		0.66	0.66
v/c Ratio	0.79	0.18	1.31		0.74	0.18
Control Delay	46.6	17.0	172.5		32.7	6.2
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	46.6	17.0	172.5		32.7	6.2
LOS	D	B	F		C	A
Approach Delay	39.7		172.5			18.8
Approach LOS	D		F			B
Queue Length 50th (ft)	147	29	~748		55	43
Queue Length 95th (ft)	137	37	#981		41	65
Internal Link Dist (ft)	448		411			421
Turn Bay Length (ft)		200			175	
Base Capacity (vph)	427	527	801		289	1232
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.70	0.17	1.31		0.71	0.18

Intersection Summary

Area Type: Other
 Cycle Length: 85
 Actuated Cycle Length: 82.2
 Natural Cycle: 110
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.31
 Intersection Signal Delay: 109.7
 Intersection LOS: F
 Intersection Capacity Utilization 66.3%
 ICU Level of Service C
 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: Homestead Road & High School Road



Lanes, Volumes, Timings
1: Homestead Road & High School Road

11/03/2017

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	256	92	252	116	28	399
Future Volume (vph)	256	92	252	116	28	399
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		1%			-1%
Storage Length (ft)	0	200		0	175	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.87					
Frt		0.850	0.939			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1719	1495	1580	0	1577	1854
Flt Permitted	0.950				0.227	
Satd. Flow (perm)	1500	1495	1580	0	377	1854
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	25		35			35
Link Distance (ft)	528		491			501
Travel Time (s)	14.4		9.6			9.8
Confl. Peds. (#/hr)	45					
Confl. Bikes (#/hr)						
Peak Hour Factor	0.50	0.50	0.89	0.50	0.50	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	8%	2%	25%	15%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	512	184	283	232	56	434
Shared Lane Traffic (%)						
Lane Group Flow (vph)	512	184	515	0	56	434
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	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	1.00	1.00	1.01	1.01	0.99	0.99
Turning Speed (mph)	15	9		9	15	
Turn Type	Prot	pm+ov	NA		pm+pt	NA
Protected Phases	4	1	2		1	6
Permitted Phases		4			6	
Detector Phase	4	1	2		1	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	12.0		7.0	12.0
Minimum Split (s)	24.0	13.0	18.0		13.0	18.0
Total Split (s)	25.0	15.0	45.0		15.0	60.0
Total Split (%)	29.4%	17.6%	52.9%		17.6%	70.6%

Lanes, Volumes, Timings
 1: Homestead Road & High School Road

11/03/2017



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Maximum Green (s)	19.7	9.7	39.6		9.7	54.5
Yellow Time (s)	3.0	3.0	4.2		3.0	4.5
All-Red Time (s)	2.3	2.3	1.2		2.3	1.0
Lost Time Adjust (s)	-0.3	-0.3	-0.4		-0.3	-0.5
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0		3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0		0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0		0.0	0.0
Recall Mode	None	None	Min		None	Min
Walk Time (s)	4.0					
Flash Dont Walk (s)	11.0					
Pedestrian Calls (#/hr)	0					
Act Effct Green (s)	20.3	32.9	28.2		40.8	40.8
Actuated g/C Ratio	0.29	0.46	0.40		0.57	0.57
v/c Ratio	1.05	0.27	0.82		0.16	0.41
Control Delay	83.7	15.3	30.9		7.2	9.4
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	83.7	15.3	30.9		7.2	9.4
LOS	F	B	C		A	A
Approach Delay	65.6		30.9			9.1
Approach LOS	E		C			A
Queue Length 50th (ft)	~251	48	193		10	95
Queue Length 95th (ft)	193	57	306		12	146
Internal Link Dist (ft)	448		411			421
Turn Bay Length (ft)		200			175	
Base Capacity (vph)	489	744	899		386	1451
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	1.05	0.25	0.57		0.15	0.30

Intersection Summary

Area Type: Other
 Cycle Length: 85
 Actuated Cycle Length: 71.2
 Natural Cycle: 80
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.05
 Intersection Signal Delay: 38.8
 Intersection Capacity Utilization 45.8%
 Analysis Period (min) 15
 Intersection LOS: D
 ICU Level of Service A

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

Splits and Phases: 1: Homestead Road & High School Road



2021 Mitigated

Lanes, Volumes, Timings
1: Homestead Road & High School Road

11/03/2017

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	173	52	330	342	102	188
Future Volume (vph)	173	52	330	342	102	188
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%		1%			-1%
Storage Length (ft)	0	200		150	175	
Storage Lanes	1	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.92	0.98				
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1752	1583	1835	1516	1680	1836
Flt Permitted	0.950				0.297	
Satd. Flow (perm)	1605	1547	1835	1516	525	1836
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	25		35			35
Link Distance (ft)	528		491			501
Travel Time (s)	14.4		9.6			9.8
Confl. Peds. (#/hr)	28	1				
Peak Hour Factor	0.58	0.58	0.90	0.50	0.50	0.84
Heavy Vehicles (%)	3%	2%	3%	6%	8%	4%
Adj. Flow (vph)	298	90	367	684	204	224
Shared Lane Traffic (%)						
Lane Group Flow (vph)	298	90	367	684	204	224
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	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	1.00	1.00	1.01	1.01	0.99	0.99
Turning Speed (mph)	15	9		9	15	
Turn Type	Prot	pm+ov	NA	pm+ov	pm+pt	NA
Protected Phases	4	1	2	4	1	6
Permitted Phases		4		2	6	
Detector Phase	4	1	2	4	1	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	12.0	7.0	7.0	12.0
Minimum Split (s)	24.0	13.0	18.0	24.0	13.0	18.0
Total Split (s)	37.0	17.0	36.0	37.0	17.0	53.0
Total Split (%)	41.1%	18.9%	40.0%	41.1%	18.9%	58.9%
Maximum Green (s)	31.7	11.7	30.6	31.7	11.7	47.5
Yellow Time (s)	3.0	3.0	4.2	3.0	3.0	4.5
All-Red Time (s)	2.3	2.3	1.2	2.3	2.3	1.0
Lost Time Adjust (s)	-0.3	-0.3	-0.4	-0.3	-0.3	-0.5
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lead	Lag		Lead	

Lanes, Volumes, Timings
 1: Homestead Road & High School Road

11/03/2017

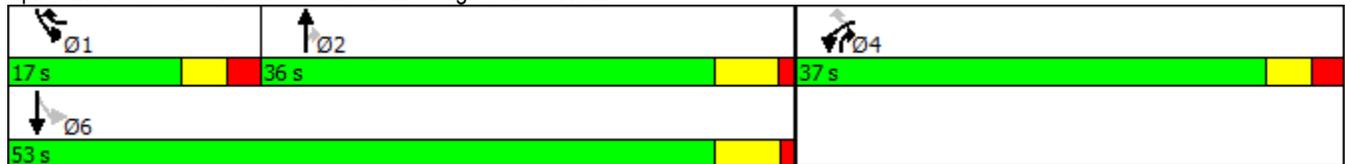


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Min	None	None	Min
Walk Time (s)	4.0			4.0		
Flash Dont Walk (s)	11.0			11.0		
Pedestrian Calls (#/hr)	0			0		
Act Effct Green (s)	17.8	27.7	19.1	42.2	34.4	34.4
Actuated g/C Ratio	0.28	0.44	0.30	0.67	0.55	0.55
v/c Ratio	0.60	0.13	0.66	0.67	0.43	0.22
Control Delay	25.9	9.1	26.4	9.6	11.3	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.9	9.1	26.4	9.6	11.3	8.9
LOS	C	A	C	A	B	A
Approach Delay	22.0		15.5			10.0
Approach LOS	C		B			B
Queue Length 50th (ft)	92	15	114	119	34	37
Queue Length 95th (ft)	118	29	248	78	46	90
Internal Link Dist (ft)	448		411			421
Turn Bay Length (ft)		200		150	175	
Base Capacity (vph)	943	758	957	1372	521	1453
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.12	0.38	0.50	0.39	0.15

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 62.7
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.67
 Intersection Signal Delay: 15.6
 Intersection LOS: B
 Intersection Capacity Utilization 45.4%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 1: Homestead Road & High School Road



Lanes, Volumes, Timings
8: Seawell School Road & Middle School Driveway

11/03/2017



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	248	136	132	355	231	262
Future Volume (vph)	248	136	132	355	231	262
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	2%			-2%	1%	
Storage Length (ft)	0	0	225			250
Storage Lanes	1	1	1			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			1.00			0.99
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1702	1523	1704	1863	1872	1545
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1702	1523	1702	1863	1872	1526
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	15			35	35	
Link Distance (ft)	114			648	931	
Travel Time (s)	5.2			12.6	18.1	
Confl. Peds. (#/hr)			1			1
Peak Hour Factor	0.50	0.50	0.50	0.93	0.78	0.50
Heavy Vehicles (%)	5%	5%	7%	3%	1%	4%
Adj. Flow (vph)	496	272	264	382	296	524
Shared Lane Traffic (%)						
Lane Group Flow (vph)	496	272	264	382	296	524
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
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	0.99	0.99	1.01	1.01
Turning Speed (mph)	15	9	15			9
Turn Type	Prot	pm+ov	Prot	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4				6
Detector Phase	4	5	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	12.0	12.0	7.0
Minimum Split (s)	14.0	14.0	14.0	19.0	19.0	14.0
Total Split (s)	39.0	25.0	25.0	51.0	26.0	39.0
Total Split (%)	43.3%	27.8%	27.8%	56.7%	28.9%	43.3%
Maximum Green (s)	32.0	18.0	18.0	44.0	19.0	32.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lead	Lead		Lag	

Lanes, Volumes, Timings
 8: Seawell School Road & Middle School Driveway

11/03/2017

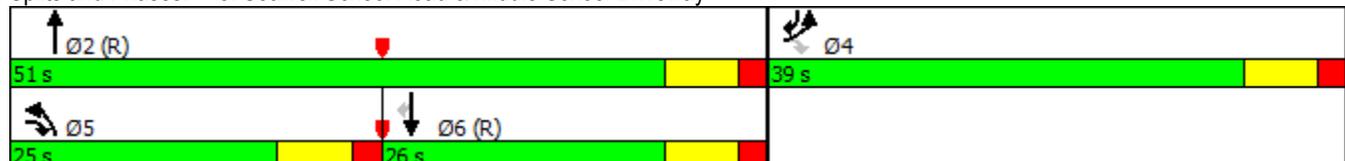


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	C-Min	C-Min	None
Act Effct Green (s)	31.6	55.2	18.6	48.4	24.8	56.4
Actuated g/C Ratio	0.35	0.61	0.21	0.54	0.28	0.63
v/c Ratio	0.83	0.29	0.75	0.38	0.57	0.54
Control Delay	39.8	8.5	47.7	14.2	34.9	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.8	8.5	47.7	14.2	34.9	10.2
LOS	D	A	D	B	C	B
Approach Delay	28.7			27.9	19.1	
Approach LOS	C			C	B	
Queue Length 50th (ft)	243	58	139	127	154	132
Queue Length 95th (ft)	161	45	111	194	202	85
Internal Link Dist (ft)	34			568	851	
Turn Bay Length (ft)			225			250
Base Capacity (vph)	642	957	378	1002	516	1004
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.28	0.70	0.38	0.57	0.52

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 13 (14%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.83
 Intersection Signal Delay: 24.9
 Intersection Capacity Utilization 45.7%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service A

Splits and Phases: 8: Seawell School Road & Middle School Driveway



Lanes, Volumes, Timings
1: Homestead Road & High School Road

11/03/2017

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	256	92	252	116	28	399
Future Volume (vph)	256	92	252	116	28	399
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%		1%			-1%
Storage Length (ft)	0	200		150	175	
Storage Lanes	1	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.86					
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1719	1495	1853	1286	1577	1854
Flt Permitted	0.950				0.341	
Satd. Flow (perm)	1487	1495	1853	1286	566	1854
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	25		35			35
Link Distance (ft)	529		491			501
Travel Time (s)	14.4		9.6			9.8
Confl. Peds. (#/hr)	45					
Peak Hour Factor	0.50	0.50	0.89	0.50	0.50	0.92
Heavy Vehicles (%)	5%	8%	2%	25%	15%	3%
Adj. Flow (vph)	512	184	283	232	56	434
Shared Lane Traffic (%)						
Lane Group Flow (vph)	512	184	283	232	56	434
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	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	1.00	1.00	1.01	1.01	0.99	0.99
Turning Speed (mph)	15	9		9	15	
Turn Type	Prot	pm+ov	NA	pm+ov	pm+pt	NA
Protected Phases	4	1	2	4	1	6
Permitted Phases		4		2	6	
Detector Phase	4	1	2	4	1	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	12.0	7.0	7.0	12.0
Minimum Split (s)	24.0	13.0	18.0	24.0	13.0	18.0
Total Split (s)	47.0	13.0	30.0	47.0	13.0	43.0
Total Split (%)	52.2%	14.4%	33.3%	52.2%	14.4%	47.8%
Maximum Green (s)	41.7	7.7	24.6	41.7	7.7	37.5
Yellow Time (s)	3.0	3.0	4.2	3.0	3.0	4.5
All-Red Time (s)	2.3	2.3	1.2	2.3	2.3	1.0
Lost Time Adjust (s)	-0.3	-0.3	-0.4	-0.3	-0.3	-0.5
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lead	Lag		Lead	

Lanes, Volumes, Timings
 1: Homestead Road & High School Road

11/03/2017

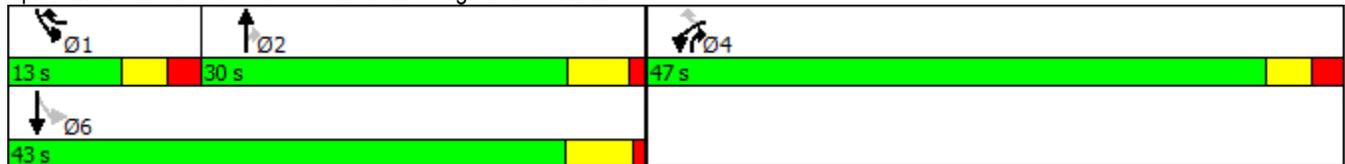


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Min	None	None	Min
Walk Time (s)	4.0			4.0		
Flash Dont Walk (s)	11.0			11.0		
Pedestrian Calls (#/hr)	0			0		
Act Effct Green (s)	25.7	38.8	16.8	47.7	29.9	29.9
Actuated g/C Ratio	0.39	0.59	0.25	0.72	0.45	0.45
v/c Ratio	0.77	0.21	0.60	0.25	0.15	0.52
Control Delay	26.0	7.4	29.5	3.4	13.9	17.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.0	7.4	29.5	3.4	13.9	17.5
LOS	C	A	C	A	B	B
Approach Delay	21.1		17.8			17.1
Approach LOS	C		B			B
Queue Length 50th (ft)	162	29	96	22	12	115
Queue Length 95th (ft)	139	37	214	19	22	274
Internal Link Dist (ft)	449		411			421
Turn Bay Length (ft)		200		150	175	
Base Capacity (vph)	1145	889	734	1207	384	1117
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.21	0.39	0.19	0.15	0.39

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 66
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.77
 Intersection Signal Delay: 18.9
 Intersection LOS: B
 Intersection Capacity Utilization 45.8%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 1: Homestead Road & High School Road



Lanes, Volumes, Timings
8: Seawell School Road & Parent Unload/Load Access

11/03/2017



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	105	54	53	191	198	103
Future Volume (vph)	105	54	53	191	198	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	2%			-2%	1%	
Storage Length (ft)	0	0	225			250
Storage Lanes	1	1	1			1
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			1.00			0.99
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1702	1508	1753	1845	1853	1410
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1702	1508	1751	1845	1853	1392
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	15			35	35	
Link Distance (ft)	110			648	931	
Travel Time (s)	5.0			12.6	18.1	
Confl. Peds. (#/hr)			1			1
Peak Hour Factor	0.50	0.50	0.50	0.66	0.63	0.50
Heavy Vehicles (%)	5%	6%	4%	4%	2%	14%
Adj. Flow (vph)	210	108	106	289	314	206
Shared Lane Traffic (%)						
Lane Group Flow (vph)	210	108	106	289	314	206
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
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	0.99	0.99	1.01	1.01
Turning Speed (mph)	15	9	15			9
Turn Type	Prot	pm+ov	Prot	NA	NA	pm+ov
Protected Phases	4	5	5	2	6	4
Permitted Phases		4				6
Detector Phase	4	5	5	2	6	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	12.0	12.0	7.0
Minimum Split (s)	14.0	14.0	14.0	19.0	19.0	14.0
Total Split (s)	30.0	21.0	21.0	60.0	39.0	30.0
Total Split (%)	33.3%	23.3%	23.3%	66.7%	43.3%	33.3%
Maximum Green (s)	23.0	14.0	14.0	53.0	32.0	23.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lead	Lead		Lag	

Lanes, Volumes, Timings
 8: Seawell School Road & Parent Unload/Load Access

11/03/2017



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	C-Min	C-Min	None
Act Effct Green (s)	18.4	36.2	12.8	61.6	43.8	62.2
Actuated g/C Ratio	0.20	0.40	0.14	0.68	0.49	0.69
v/c Ratio	0.60	0.18	0.43	0.23	0.35	0.21
Control Delay	39.2	16.1	39.8	6.6	17.7	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.2	16.1	39.8	6.6	17.7	4.6
LOS	D	B	D	A	B	A
Approach Delay	31.3			15.5	12.5	
Approach LOS	C			B	B	
Queue Length 50th (ft)	109	39	56	53	105	28
Queue Length 95th (ft)	83	30	53	75	133	29
Internal Link Dist (ft)	30			568	851	
Turn Bay Length (ft)			225			250
Base Capacity (vph)	472	663	314	1262	905	1069
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.16	0.34	0.23	0.35	0.19

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 21 (23%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 50
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.60
 Intersection Signal Delay: 18.3
 Intersection LOS: B
 Intersection Capacity Utilization 34.6%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 8: Seawell School Road & Parent Unload/Load Access



**Appendix F – Synchro HCM 2010 Unsignalized
Intersection Analysis Output**

2017 Existing

Intersection

Int Delay, s/veh 2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	397	62	27	250	1	7	1	29	2	1	3
Future Vol, veh/h	2	397	62	27	250	1	7	1	29	2	1	3
Conflicting Peds, #/hr	3	0	17	17	0	3	1	0	7	7	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	50	50	62	62	50	50	50	63	63	63
Heavy Vehicles, %	0	4	25	33	3	0	0	0	86	0	0	0
Mvmt Flow	3	559	124	54	403	2	14	2	58	3	2	5

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	408	0	0	700
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.1	-	-	4.43
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.2	-	-	2.497
Pot Cap-1 Maneuver	1162	-	-	769
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	1161	-	-	764
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1.2	22.9	21.6
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	274	1161	-	-	764	-	-	227
HCM Lane V/C Ratio	0.27	0.002	-	-	0.071	-	-	0.042
HCM Control Delay (s)	22.9	8.1	0	-	10.1	0	-	21.6
HCM Lane LOS	C	A	A	-	B	A	-	C
HCM 95th %tile Q(veh)	1.1	0	-	-	0.2	-	-	0.1

Intersection						
Int Delay, s/veh	38.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↓	↓
Traffic Vol, veh/h	238	0	0	216	161	115
Future Vol, veh/h	238	0	0	216	161	115
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	73	92	92	66	50	50
Heavy Vehicles, %	16	0	0	7	0	0
Mvmt Flow	326	0	0	327	322	230

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	-	-	-	653 326
Stage 1	-	-	-	-	326 -
Stage 2	-	-	-	-	327 -
Critical Hdwy	-	-	-	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	-	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	-	0	0	-	435 720
Stage 1	-	0	0	-	736 -
Stage 2	-	0	0	-	735 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	435 720
Mov Cap-2 Maneuver	-	-	-	-	435 -
Stage 1	-	-	-	-	736 -
Stage 2	-	-	-	-	735 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	84.2
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	521	-	-
HCM Lane V/C Ratio	1.06	-	-
HCM Control Delay (s)	84.2	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	16.5	-	-

HCM 2010 TWSC
5: Staff Driveway & High School Road

11/03/2017

Intersection

Int Delay, s/veh 3.7

Movement EBT EBR WBL WBT NBL NBR

Lane Configurations						
Traffic Vol, veh/h	327	26	61	187	30	33
Future Vol, veh/h	327	26	61	187	30	33
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	72	50	50	61	50	50
Heavy Vehicles, %	12	0	0	9	0	0
Mvmt Flow	454	52	122	307	60	66

Major/Minor Major1 Major2 Minor1

Conflicting Flow All	0	0	507	0	1032	481
Stage 1	-	-	-	-	481	-
Stage 2	-	-	-	-	551	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1068	-	260	589
Stage 1	-	-	-	-	626	-
Stage 2	-	-	-	-	581	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1068	-	224	588
Mov Cap-2 Maneuver	-	-	-	-	224	-
Stage 1	-	-	-	-	625	-
Stage 2	-	-	-	-	501	-

Approach EB WB NB

HCM Control Delay, s	0	2.5	22.4
HCM LOS			C

Minor Lane/Major Mvmt NBLn1 EBT EBR WBL WBT

Capacity (veh/h)	331	-	-	1068	-
HCM Lane V/C Ratio	0.381	-	-	0.114	-
HCM Control Delay (s)	22.4	-	-	8.8	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.7	-	-	0.4	-

Intersection												
Int Delay, s/veh	5.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↖	↗		↕	
Traffic Vol, veh/h	34	207	119	155	229	35	10	1	21	12	1	9
Future Vol, veh/h	34	207	119	155	229	35	10	1	21	12	1	9
Conflicting Peds, #/hr	0	0	14	14	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	200	-	-	150	-	-	-	-	100	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	2	-	-	-8	-
Peak Hour Factor	69	69	50	50	51	51	50	50	50	64	64	64
Heavy Vehicles, %	97	3	0	0	6	77	0	0	0	17	0	11
Mvmt Flow	49	300	238	310	449	69	20	2	42	19	2	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	518	0	0	552	0	0	1643	1670	433	1622	1754	483
Stage 1	-	-	-	-	-	-	532	532	-	1103	1103	-
Stage 2	-	-	-	-	-	-	1111	1138	-	519	651	-
Critical Hdwy	5.07	-	-	4.1	-	-	7.5	6.9	6.4	5.67	4.9	5.51
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.9	-	4.67	3.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.9	-	4.67	3.9	-
Follow-up Hdwy	3.073	-	-	2.2	-	-	3.5	4	3.3	3.653	4	3.399
Pot Cap-1 Maneuver	699	-	-	1028	-	-	67	81	612	156	188	630
Stage 1	-	-	-	-	-	-	504	498	-	392	473	-
Stage 2	-	-	-	-	-	-	226	246	-	647	625	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	699	-	-	1028	-	-	47	52	604	103	120	630
Mov Cap-2 Maneuver	-	-	-	-	-	-	47	52	-	103	120	-
Stage 1	-	-	-	-	-	-	462	457	-	365	330	-
Stage 2	-	-	-	-	-	-	154	172	-	557	573	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.9			3.7			54.4			34		
HCM LOS							F			D		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	47	604	699	-	-	1028	-	-	158
HCM Lane V/C Ratio	0.468	0.07	0.07	-	-	0.302	-	-	0.218
HCM Control Delay (s)	136.4	11.4	10.5	-	-	10	-	-	34
HCM Lane LOS	F	B	B	-	-	B	-	-	D
HCM 95th %tile Q(veh)	1.7	0.2	0.2	-	-	1.3	-	-	0.8

HCM 2010 TWSC
7: Seawell School Road & High School Road

11/03/2017

Intersection												
Int Delay, s/veh	183.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↖		↗	↖	↗
Traffic Vol, veh/h	76	3	161	6	5	5	231	183	13	13	185	183
Future Vol, veh/h	76	3	161	6	5	5	231	183	13	13	185	183
Conflicting Peds, #/hr	0	0	17	17	0	0	2	0	8	8	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	100	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	5	-	-	2	-	-	-2	-
Peak Hour Factor	50	61	50	64	64	64	50	91	91	81	81	50
Heavy Vehicles, %	4	0	5	0	0	0	9	3	0	0	5	10
Mvmt Flow	152	5	322	9	8	8	462	201	14	16	228	366

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1402	1409	247	1581	1402	216	230	0	0	223	0	0
Stage 1	262	262	-	1140	1140	-	-	-	-	-	-	-
Stage 2	1140	1147	-	441	262	-	-	-	-	-	-	-
Critical Hdwy	6.94	6.3	6.15	8.1	7.5	6.7	4.19	-	-	4.1	-	-
Critical Hdwy Stg 1	5.94	5.3	-	7.1	6.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.94	5.3	-	7.1	6.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4	3.345	3.5	4	3.3	2.281	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 126	151	790	57	96	804	1298	-	-	1358	-	-
Stage 1	749	705	-	180	203	-	-	-	-	-	-	-
Stage 2	258	294	-	530	646	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 80	94	776	22	60	798	1277	-	-	1358	-	-
Mov Cap-2 Maneuver	~ 80	94	-	22	60	-	-	-	-	-	-	-
Stage 1	477	695	-	114	129	-	-	-	-	-	-	-
Stage 2	153	186	-	299	637	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	669.1		163.9		6.4		0.2	
HCM LOS	F		F					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1277	-	-	202	44	1358	-
HCM Lane V/C Ratio	0.362	-	-	2.371	0.568	0.012	-
HCM Control Delay (s)	9.4	-	-	\$ 669.1	163.9	7.7	-
HCM Lane LOS	A	-	-	F	F	A	-
HCM 95th %tile Q(veh)	1.7	-	-	39.2	2.1	0	-

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

HCM 2010 TWSC
 8: Seawell School Road & Middle School Driveway

11/03/2017

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↘↗		↘	↑	↑	↘
Traffic Vol, veh/h	10	8	5	414	331	23
Future Vol, veh/h	10	8	5	414	331	23
Conflicting Peds, #/hr	0	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	225	-	-	125
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	2	-	-	-2	1	-
Peak Hour Factor	50	50	50	93	78	50
Heavy Vehicles, %	100	100	50	3	1	42
Mvmt Flow	20	16	10	445	424	46

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	890	425	425	0	-
Stage 1	425	-	-	-	-
Stage 2	465	-	-	-	-
Critical Hdwy	7.8	7.4	4.6	-	-
Critical Hdwy Stg 1	6.8	-	-	-	-
Critical Hdwy Stg 2	6.8	-	-	-	-
Follow-up Hdwy	4.4	4.2	2.65	-	-
Pot Cap-1 Maneuver	195	454	919	-	-
Stage 1	470	-	-	-	-
Stage 2	446	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	193	454	919	-	-
Mov Cap-2 Maneuver	193	-	-	-	-
Stage 1	470	-	-	-	-
Stage 2	441	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	21.1	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	919	-	259	-	-
HCM Lane V/C Ratio	0.011	-	0.139	-	-
HCM Control Delay (s)	9	-	21.1	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.5	-	-

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	5	133	9	5	253	3	43	1	18	1	1	7
Future Vol, veh/h	5	133	9	5	253	3	43	1	18	1	1	7
Conflicting Peds, #/hr	1	0	70	70	0	1	0	0	11	11	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	67	67	50	50	54	54	50	50	50	46	46	46
Heavy Vehicles, %	0	20	33	40	2	0	30	0	17	0	0	0
Mvmt Flow	7	199	18	10	469	6	86	2	36	2	2	15

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	475	0	0	287
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.1	-	-	4.5
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.2	-	-	2.56
Pot Cap-1 Maneuver	1098	-	-	1086
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	1098	-	-	1075
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.2	25	12.7
HCM LOS			D	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	302	1098	-	-	1075	-	-	488
HCM Lane V/C Ratio	0.411	0.007	-	-	0.009	-	-	0.04
HCM Control Delay (s)	25	8.3	0	-	8.4	0	-	12.7
HCM Lane LOS	D	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	1.9	0	-	-	0	-	-	0.1

Intersection

Int Delay, s/veh 4.7

Movement EBT EBR WBL WBT NBL NBR

Lane Configurations	↑			↑	↘	
Traffic Vol, veh/h	102	0	0	224	61	70
Future Vol, veh/h	102	0	0	224	61	70
Conflicting Peds, #/hr	0	0	0	0	3	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	76	92	92	64	50	50
Heavy Vehicles, %	27	2	2	3	0	0
Mvmt Flow	134	0	0	350	122	140

Major/Minor Major1 Major2 Minor1

Conflicting Flow All	0	-	-	-	487	134
Stage 1	-	-	-	-	134	-
Stage 2	-	-	-	-	353	-
Critical Hdwy	-	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	-	0	0	-	543	920
Stage 1	-	0	0	-	897	-
Stage 2	-	0	0	-	716	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	541	920
Mov Cap-2 Maneuver	-	-	-	-	541	-
Stage 1	-	-	-	-	897	-
Stage 2	-	-	-	-	714	-

Approach EB WB NB

HCM Control Delay, s	0	0	13.3
HCM LOS			B

Minor Lane/Major Mvmt NBLn1 EBT WBT

Capacity (veh/h)	694	-	-
HCM Lane V/C Ratio	0.378	-	-
HCM Control Delay (s)	13.3	-	-
HCM Lane LOS	B	-	-
HCM 95th %tile Q(veh)	1.8	-	-

HCM 2010 TWSC
5: Staff Driveway & High School Road

11/03/2017

Intersection						
Int Delay, s/veh	1.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	168	6	17	208	13	27
Future Vol, veh/h	168	6	17	208	13	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	60	50	50	63	50	50
Heavy Vehicles, %	16	0	0	3	0	0
Mvmt Flow	280	12	34	330	26	54

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	292	0	684 286
Stage 1	-	-	-	-	286 -
Stage 2	-	-	-	-	398 -
Critical Hdwy	-	-	4.1	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	-	-	2.2	-	3.5 3.3
Pot Cap-1 Maneuver	-	-	1281	-	417 758
Stage 1	-	-	-	-	767 -
Stage 2	-	-	-	-	683 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1281	-	403 758
Mov Cap-2 Maneuver	-	-	-	-	403 -
Stage 1	-	-	-	-	767 -
Stage 2	-	-	-	-	660 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	12.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	589	-	-	1281	-
HCM Lane V/C Ratio	0.136	-	-	0.027	-
HCM Control Delay (s)	12.1	-	-	7.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0.1	-

Intersection												
Int Delay, s/veh	9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	162	5	10	111	43	93	1	107	20	1	20
Future Vol, veh/h	25	162	5	10	111	43	93	1	107	20	1	20
Conflicting Peds, #/hr	0	0	22	22	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	200	-	-	150	-	-	-	-	100	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	2	-	-	-8	-
Peak Hour Factor	60	60	50	50	82	82	50	50	50	56	56	56
Heavy Vehicles, %	92	4	0	0	5	95	0	0	0	0	0	5
Mvmt Flow	42	270	10	20	135	52	186	2	214	36	2	36

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	188	0	0	302	0	0	600	608	297	561	587	162
Stage 1	-	-	-	-	-	-	380	380	-	202	202	-
Stage 2	-	-	-	-	-	-	220	228	-	359	385	-
Critical Hdwy	5.02	-	-	4.1	-	-	7.5	6.9	6.4	5.5	4.9	5.45
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.9	-	4.5	3.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.9	-	4.5	3.9	-
Follow-up Hdwy	3.028	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.345
Pot Cap-1 Maneuver	989	-	-	1270	-	-	389	386	735	566	551	907
Stage 1	-	-	-	-	-	-	619	592	-	880	807	-
Stage 2	-	-	-	-	-	-	768	701	-	778	729	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	989	-	-	1270	-	-	349	356	720	379	508	907
Mov Cap-2 Maneuver	-	-	-	-	-	-	349	356	-	379	508	-
Stage 1	-	-	-	-	-	-	580	555	-	843	794	-
Stage 2	-	-	-	-	-	-	725	690	-	522	683	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	1.1		0.8		18.9		12.8	
HCM LOS					C		B	

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	349	720	989	-	-	1270	-	-	534
HCM Lane V/C Ratio	0.539	0.297	0.042	-	-	0.016	-	-	0.137
HCM Control Delay (s)	26.7	12.1	8.8	-	-	7.9	-	-	12.8
HCM Lane LOS	D	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	3	1.2	0.1	-	-	0	-	-	0.5

Intersection												
Int Delay, s/veh	87											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	↕
Traffic Vol, veh/h	121	3	167	3	1	7	118	103	5	6	80	47
Future Vol, veh/h	121	3	167	3	1	7	118	103	5	6	80	47
Conflicting Peds, #/hr	0	0	25	25	0	0	12	0	14	14	0	12
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	150	-	-	100	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	5	-	-	2	-	-	-2	-
Peak Hour Factor	50	48	50	46	46	46	50	72	72	69	69	50
Heavy Vehicles, %	5	0	5	0	0	0	7	6	0	0	4	13
Mvmt Flow	242	6	334	7	2	15	236	143	7	9	116	94

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	772	781	153	961	778	161	128	0	0	164	0	0
Stage 1	145	145	-	633	633	-	-	-	-	-	-	-
Stage 2	627	636	-	328	145	-	-	-	-	-	-	-
Critical Hdwy	6.95	6.3	6.15	8.1	7.5	6.7	4.17	-	-	4.1	-	-
Critical Hdwy Stg 1	5.95	5.3	-	7.1	6.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.95	5.3	-	7.1	6.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.545	4	3.345	3.5	4	3.3	2.263	-	-	2.2	-	-
Pot Cap-1 Maneuver	327	343	889	182	266	870	1428	-	-	1427	-	-
Stage 1	858	787	-	395	400	-	-	-	-	-	-	-
Stage 2	483	492	-	629	750	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	273	276	858	91	214	858	1394	-	-	1427	-	-
Mov Cap-2 Maneuver	273	276	-	91	214	-	-	-	-	-	-	-
Stage 1	705	773	-	324	328	-	-	-	-	-	-	-
Stage 2	392	403	-	370	737	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	176.6		21.7		5		0.3	
HCM LOS	F		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1394	-	-	448	240	1427	-
HCM Lane V/C Ratio	0.169	-	-	1.3	0.1	0.006	-
HCM Control Delay (s)	8.1	-	-	176.6	21.7	7.5	-
HCM Lane LOS	A	-	-	F	C	A	-
HCM 95th %tile Q(veh)	0.6	-	-	25.4	0.3	0	-

HCM 2010 TWSC
 8: Seawell School Road & Middle School Driveway

11/03/2017

Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	22	9	8	205	230	20
Future Vol, veh/h	22	9	8	205	230	20
Conflicting Peds, #/hr	0	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	225	-	-	125
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	2	-	-	-2	1	-
Peak Hour Factor	50	50	50	66	63	50
Heavy Vehicles, %	23	33	17	4	2	62
Mvmt Flow	44	18	16	311	365	40

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	709	366	366	0	-	0
Stage 1	366	-	-	-	-	-
Stage 2	343	-	-	-	-	-
Critical Hdwy	7.03	6.73	4.27	-	-	-
Critical Hdwy Stg 1	6.03	-	-	-	-	-
Critical Hdwy Stg 2	6.03	-	-	-	-	-
Follow-up Hdwy	3.707	3.597	2.353	-	-	-
Pot Cap-1 Maneuver	343	603	1114	-	-	-
Stage 1	631	-	-	-	-	-
Stage 2	649	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	337	602	1114	-	-	-
Mov Cap-2 Maneuver	337	-	-	-	-	-
Stage 1	630	-	-	-	-	-
Stage 2	639	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.1	0.4	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1114	-	386	-	-
HCM Lane V/C Ratio	0.014	-	0.161	-	-
HCM Control Delay (s)	8.3	-	16.1	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.6	-	-

2021 Without Site

Intersection

Int Delay, s/veh 2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	429	67	29	270	1	8	1	31	2	1	3
Future Vol, veh/h	2	429	67	29	270	1	8	1	31	2	1	3
Conflicting Peds, #/hr	3	0	17	17	0	3	1	0	7	7	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	50	50	62	62	50	50	50	63	63	63
Heavy Vehicles, %	0	4	25	33	3	0	0	0	86	0	0	0
Mvmt Flow	3	604	134	58	435	2	16	2	62	3	2	5

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	440	0	0	755
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.1	-	-	4.43
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.2	-	-	2.497
Pot Cap-1 Maneuver	1131	-	-	731
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	1130	-	-	726
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1.2	26.7	24.5
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	245	1130	-	-	726	-	-	194
HCM Lane V/C Ratio	0.327	0.002	-	-	0.08	-	-	0.049
HCM Control Delay (s)	26.7	8.2	0	-	10.4	0	-	24.5
HCM Lane LOS	D	A	A	-	B	A	-	C
HCM 95th %tile Q(veh)	1.4	0	-	-	0.3	-	-	0.2

Intersection						
Int Delay, s/veh	64.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	↑
Traffic Vol, veh/h	257	0	0	233	174	124
Future Vol, veh/h	257	0	0	233	174	124
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	73	92	92	66	50	50
Heavy Vehicles, %	16	0	0	7	0	0
Mvmt Flow	352	0	0	353	348	248

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	-	-	-	705 352
Stage 1	-	-	-	-	352 -
Stage 2	-	-	-	-	353 -
Critical Hdwy	-	-	-	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	-	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	-	0	0	-	406 696
Stage 1	-	0	0	-	716 -
Stage 2	-	0	0	-	716 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	406 696
Mov Cap-2 Maneuver	-	-	-	-	406 -
Stage 1	-	-	-	-	716 -
Stage 2	-	-	-	-	716 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	139.9
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	491	-	-
HCM Lane V/C Ratio	1.214	-	-
HCM Control Delay (s)	139.9	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	22.9	-	-

HCM 2010 TWSC
5: Staff Driveway & High School Road

11/03/2017

Intersection

Int Delay, s/veh 4.3

Movement EBT EBR WBL WBT NBL NBR

Lane Configurations						
Traffic Vol, veh/h	363	28	66	202	32	36
Future Vol, veh/h	363	28	66	202	32	36
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	72	50	50	61	50	50
Heavy Vehicles, %	12	0	0	9	0	0
Mvmt Flow	504	56	132	331	64	72

Major/Minor Major1 Major2 Minor1

Conflicting Flow All	0	0	561	0	1128	533
Stage 1	-	-	-	-	533	-
Stage 2	-	-	-	-	595	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1020	-	228	551
Stage 1	-	-	-	-	593	-
Stage 2	-	-	-	-	555	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1020	-	192	550
Mov Cap-2 Maneuver	-	-	-	-	192	-
Stage 1	-	-	-	-	592	-
Stage 2	-	-	-	-	467	-

Approach EB WB NB

HCM Control Delay, s	0	2.6	27.5
HCM LOS			D

Minor Lane/Major Mvmt NBLn1 EBT EBR WBL WBT

Capacity (veh/h)	293	-	-	1020	-
HCM Lane V/C Ratio	0.464	-	-	0.129	-
HCM Control Delay (s)	27.5	-	-	9.1	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	2.3	-	-	0.4	-

Intersection

Int Delay, s/veh 7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↖	↗		↕	
Traffic Vol, veh/h	37	224	129	167	247	38	11	1	23	13	1	10
Future Vol, veh/h	37	224	129	167	247	38	11	1	23	13	1	10
Conflicting Peds, #/hr	0	0	14	14	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	200	-	-	150	-	-	-	-	100	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	2	-	-	-8	-
Peak Hour Factor	69	69	50	50	51	51	50	50	50	64	64	64
Heavy Vehicles, %	97	3	0	0	6	77	0	0	0	17	0	11
Mvmt Flow	54	325	258	334	484	75	22	2	46	20	2	16

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	559	0	0	597
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	5.07	-	-	4.1
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.073	-	-	2.2
Pot Cap-1 Maneuver	670	-	-	989
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	670	-	-	989
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	3.9	82.7	43.1
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	36	576	670	-	-	989	-	-	131
HCM Lane V/C Ratio	0.667	0.08	0.08	-	-	0.338	-	-	0.286
HCM Control Delay (s)	218.7	11.8	10.8	-	-	10.5	-	-	43.1
HCM Lane LOS	F	B	B	-	-	B	-	-	E
HCM 95th %tile Q(veh)	2.3	0.3	0.3	-	-	1.5	-	-	1.1

Intersection												
Int Delay, s/veh	278											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘		↗	↘	↗
Traffic Vol, veh/h	82	3	174	6	5	5	249	198	14	14	200	198
Future Vol, veh/h	82	3	174	6	5	5	249	198	14	14	200	198
Conflicting Peds, #/hr	0	0	17	17	0	0	2	0	8	8	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	150	-	-	100	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	5	-	-	2	-	-	-2	-
Peak Hour Factor	50	61	50	64	64	64	50	91	91	81	81	50
Heavy Vehicles, %	4	0	5	0	0	0	9	3	0	0	5	10
Mvmt Flow	164	5	348	9	8	8	498	218	15	17	247	396

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	1512	1520	266	1704	1512	233	249	0	0	241	0	0
Stage 1	283	283	-	1229	1229	-	-	-	-	-	-	-
Stage 2	1229	1237	-	475	283	-	-	-	-	-	-	-
Critical Hdwy	6.94	6.3	6.15	8.1	7.5	6.7	4.19	-	-	4.1	-	-
Critical Hdwy Stg 1	5.94	5.3	-	7.1	6.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.94	5.3	-	7.1	6.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4	3.345	3.5	4	3.3	2.281	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 106	130	771	46	80	785	1277	-	-	1337	-	-
Stage 1	731	691	-	156	179	-	-	-	-	-	-	-
Stage 2	231	268	-	503	629	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 63	77	757	16	47	779	1256	-	-	1337	-	-
Mov Cap-2 Maneuver	~ 63	77	-	16	47	-	-	-	-	-	-	-
Stage 1	440	681	-	93	107	-	-	-	-	-	-	-
Stage 2	~ 128	161	-	262	620	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, \$	1017.6	260	6.6	0.2
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1256	-	-	165	33	1337	-
HCM Lane V/C Ratio	0.396	-	-	3.133	0.758	0.013	-
HCM Control Delay (s)	9.7	-	-	\$ 1017.6	260	7.7	-
HCM Lane LOS	A	-	-	F	F	A	-
HCM 95th %tile Q(veh)	1.9	-	-	48	2.6	0	-

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

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	11	9	5	447	357	25
Future Vol, veh/h	11	9	5	447	357	25
Conflicting Peds, #/hr	0	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	225	-	-	125
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	2	-	-	-2	1	-
Peak Hour Factor	50	50	50	93	78	50
Heavy Vehicles, %	100	100	50	3	1	42
Mvmt Flow	22	18	10	481	458	50

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	960	459	459	0	-	0
Stage 1	459	-	-	-	-	-
Stage 2	501	-	-	-	-	-
Critical Hdwy	7.8	7.4	4.6	-	-	-
Critical Hdwy Stg 1	6.8	-	-	-	-	-
Critical Hdwy Stg 2	6.8	-	-	-	-	-
Follow-up Hdwy	4.4	4.2	2.65	-	-	-
Pot Cap-1 Maneuver	174	431	891	-	-	-
Stage 1	449	-	-	-	-	-
Stage 2	425	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	172	431	891	-	-	-
Mov Cap-2 Maneuver	172	-	-	-	-	-
Stage 1	449	-	-	-	-	-
Stage 2	420	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	23.3	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	891	-	236	-	-
HCM Lane V/C Ratio	0.011	-	0.169	-	-
HCM Control Delay (s)	9.1	-	23.3	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.6	-	-

Intersection

Int Delay, s/veh 4.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	144	10	5	273	3	46	1	19	1	1	8
Future Vol, veh/h	5	144	10	5	273	3	46	1	19	1	1	8
Conflicting Peds, #/hr	1	0	70	70	0	1	0	0	11	11	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	67	67	50	50	54	54	50	50	50	46	46	46
Heavy Vehicles, %	0	20	33	40	2	0	30	0	17	0	0	0
Mvmt Flow	7	215	20	10	506	6	92	2	38	2	2	17

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	512	0	0	305
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.1	-	-	4.5
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.2	-	-	2.56
Pot Cap-1 Maneuver	1064	-	-	1068
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	1064	-	-	1057
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.2	29.4	13
HCM LOS			D	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	276	1064	-	-	1057	-	-	469
HCM Lane V/C Ratio	0.478	0.007	-	-	0.009	-	-	0.046
HCM Control Delay (s)	29.4	8.4	0	-	8.4	0	-	13
HCM Lane LOS	D	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	2.4	0	-	-	0	-	-	0.1

Intersection						
Int Delay, s/veh	5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Traffic Vol, veh/h	110	0	0	242	66	76
Future Vol, veh/h	110	0	0	242	66	76
Conflicting Peds, #/hr	0	0	0	0	3	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	76	92	92	64	50	50
Heavy Vehicles, %	27	2	2	3	0	0
Mvmt Flow	145	0	0	378	132	152

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	-	-	-	526 145
Stage 1	-	-	-	-	145 -
Stage 2	-	-	-	-	381 -
Critical Hdwy	-	-	-	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	-	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	-	0	0	-	516 908
Stage 1	-	0	0	-	887 -
Stage 2	-	0	0	-	695 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	515 908
Mov Cap-2 Maneuver	-	-	-	-	515 -
Stage 1	-	-	-	-	887 -
Stage 2	-	-	-	-	693 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	14.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	670	-	-
HCM Lane V/C Ratio	0.424	-	-
HCM Control Delay (s)	14.3	-	-
HCM Lane LOS	B	-	-
HCM 95th %tile Q(veh)	2.1	-	-

HCM 2010 TWSC
5: Staff Driveway & High School Road

11/03/2017

Intersection

Int Delay, s/veh 1.7

Movement EBT EBR WBL WBT NBL NBR

Lane Configurations						
Traffic Vol, veh/h	181	6	18	225	14	29
Future Vol, veh/h	181	6	18	225	14	29
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	60	50	50	63	50	50
Heavy Vehicles, %	16	0	0	3	0	0
Mvmt Flow	302	12	36	357	28	58

Major/Minor Major1 Major2 Minor1

Conflicting Flow All	0	0	314	0	737	308
Stage 1	-	-	-	-	308	-
Stage 2	-	-	-	-	429	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1258	-	389	737
Stage 1	-	-	-	-	750	-
Stage 2	-	-	-	-	661	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1258	-	375	737
Mov Cap-2 Maneuver	-	-	-	-	375	-
Stage 1	-	-	-	-	750	-
Stage 2	-	-	-	-	637	-

Approach EB WB NB

HCM Control Delay, s	0	0.7	12.6
HCM LOS			B

Minor Lane/Major Mvmt NBLn1 EBT EBR WBL WBT

Capacity (veh/h)	561	-	-	1258	-
HCM Lane V/C Ratio	0.153	-	-	0.029	-
HCM Control Delay (s)	12.6	-	-	7.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0.1	-

Intersection												
Int Delay, s/veh	10.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	27	175	5	11	120	46	100	1	116	22	1	22
Future Vol, veh/h	27	175	5	11	120	46	100	1	116	22	1	22
Conflicting Peds, #/hr	0	0	22	22	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	200	-	-	150	-	-	-	-	100	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	2	-	-	-8	-
Peak Hour Factor	60	60	50	50	82	82	50	50	50	56	56	56
Heavy Vehicles, %	92	4	0	0	5	95	0	0	0	0	0	5
Mvmt Flow	45	292	10	22	146	56	200	2	232	39	2	39

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	202	0	0	324	0	0	648	655	319	606	632	174
Stage 1	-	-	-	-	-	-	409	409	-	218	218	-
Stage 2	-	-	-	-	-	-	239	246	-	388	414	-
Critical Hdwy	5.02	-	-	4.1	-	-	7.5	6.9	6.4	5.5	4.9	5.45
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.9	-	4.5	3.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.9	-	4.5	3.9	-
Follow-up Hdwy	3.028	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.345
Pot Cap-1 Maneuver	975	-	-	1247	-	-	359	361	714	539	530	896
Stage 1	-	-	-	-	-	-	596	573	-	869	800	-
Stage 2	-	-	-	-	-	-	749	687	-	760	717	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	975	-	-	1247	-	-	319	331	699	341	486	896
Mov Cap-2 Maneuver	-	-	-	-	-	-	319	331	-	341	486	-
Stage 1	-	-	-	-	-	-	557	535	-	829	786	-
Stage 2	-	-	-	-	-	-	702	675	-	483	670	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.2			0.8			22.6			13.7		
HCM LOS							C			B		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	319	699	975	-	-	1247	-	-	494
HCM Lane V/C Ratio	0.633	0.332	0.046	-	-	0.018	-	-	0.163
HCM Control Delay (s)	33.9	12.7	8.9	-	-	7.9	-	-	13.7
HCM Lane LOS	D	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	4.1	1.5	0.1	-	-	0.1	-	-	0.6

Intersection

Int Delay, s/veh 131.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	↕
Traffic Vol, veh/h	131	3	180	3	1	8	127	111	5	6	86	51
Future Vol, veh/h	131	3	180	3	1	8	127	111	5	6	86	51
Conflicting Peds, #/hr	0	0	25	25	0	0	12	0	14	14	0	12
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	150	-	-	100	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	5	-	-	2	-	-	-2	-
Peak Hour Factor	50	48	50	46	46	46	50	72	72	69	69	50
Heavy Vehicles, %	5	0	5	0	0	0	7	6	0	0	4	13
Mvmt Flow	262	6	360	7	2	17	254	154	7	9	125	102

Major/Minor	Minor2	Minor1	Major1	Major2
Conflicting Flow All	829	837	162	1030
Stage 1	154	154	-	680
Stage 2	675	683	-	350
Critical Hdwy	6.95	6.3	6.15	8.1
Critical Hdwy Stg 1	5.95	5.3	-	7.1
Critical Hdwy Stg 2	5.95	5.3	-	7.1
Follow-up Hdwy	3.545	4	3.345	3.5
Pot Cap-1 Maneuver	300	320	879	160
Stage 1	849	781	-	368
Stage 2	456	470	-	608
Platoon blocked, %				
Mov Cap-1 Maneuver	~ 246	253	848	74
Mov Cap-2 Maneuver	~ 246	253	-	74
Stage 1	685	767	-	296
Stage 2	362	379	-	337

Approach	EB	WB	NB	SB
HCM Control Delay, s	268.1	23.8	5	0.3
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1383	-	-	415	217	1414	-
HCM Lane V/C Ratio	0.184	-	-	1.514	0.12	0.006	-
HCM Control Delay (s)	8.2	-	-	268.1	23.8	7.6	-
HCM Lane LOS	A	-	-	F	C	A	-
HCM 95th %tile Q(veh)	0.7	-	-	33.7	0.4	0	-

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

Intersection						
Int Delay, s/veh	1.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	RT		LT	LT	LT	RT
Traffic Vol, veh/h	24	10	9	221	248	22
Future Vol, veh/h	24	10	9	221	248	22
Conflicting Peds, #/hr	0	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	225	-	-	125
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	2	-	-	-2	1	-
Peak Hour Factor	50	50	50	66	63	50
Heavy Vehicles, %	23	33	17	4	2	62
Mvmt Flow	48	20	18	335	394	44

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	766	395	395	0	-	0
Stage 1	395	-	-	-	-	-
Stage 2	371	-	-	-	-	-
Critical Hdwy	7.03	6.73	4.27	-	-	-
Critical Hdwy Stg 1	6.03	-	-	-	-	-
Critical Hdwy Stg 2	6.03	-	-	-	-	-
Follow-up Hdwy	3.707	3.597	2.353	-	-	-
Pot Cap-1 Maneuver	315	579	1087	-	-	-
Stage 1	610	-	-	-	-	-
Stage 2	628	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	309	578	1087	-	-	-
Mov Cap-2 Maneuver	309	-	-	-	-	-
Stage 1	609	-	-	-	-	-
Stage 2	617	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.4	0.4	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1087	-	358	-	-
HCM Lane V/C Ratio	0.017	-	0.19	-	-
HCM Control Delay (s)	8.4	-	17.4	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.7	-	-

2021 With Site

Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	396	46	35	196	1	26	1	20	2	1	3
Future Vol, veh/h	2	396	46	35	196	1	26	1	20	2	1	3
Conflicting Peds, #/hr	3	0	17	17	0	3	1	0	7	7	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	50	50	62	62	50	50	50	63	63	63
Heavy Vehicles, %	0	4	25	33	3	0	0	0	86	0	0	0
Mvmt Flow	3	558	92	70	316	2	52	2	40	3	2	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	321	0	0	667	0	0	1087	1087	628	1097	1132	321
Stage 1	-	-	-	-	-	-	626	626	-	460	460	-
Stage 2	-	-	-	-	-	-	461	461	-	637	672	-
Critical Hdwy	4.1	-	-	4.43	-	-	7.1	6.5	7.06	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.497	-	-	3.5	4	4.074	3.5	4	3.3
Pot Cap-1 Maneuver	1250	-	-	793	-	-	195	218	360	192	205	724
Stage 1	-	-	-	-	-	-	475	480	-	585	569	-
Stage 2	-	-	-	-	-	-	584	569	-	469	458	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1249	-	-	788	-	-	173	190	352	153	179	721
Mov Cap-2 Maneuver	-	-	-	-	-	-	173	190	-	153	179	-
Stage 1	-	-	-	-	-	-	465	470	-	581	506	-
Stage 2	-	-	-	-	-	-	515	506	-	410	449	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1.8	32.8	19.2
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	221	1249	-	-	788	-	-	263
HCM Lane V/C Ratio	0.425	0.002	-	-	0.089	-	-	0.036
HCM Control Delay (s)	32.8	7.9	0	-	10	0	-	19.2
HCM Lane LOS	D	A	A	-	B	A	-	C
HCM 95th %tile Q(veh)	2	0	-	-	0.3	-	-	0.1

HCM 2010 TWSC
3: Student Exit & High School Road

11/03/2017

Intersection						
Int Delay, s/veh	2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	270	148	121	232	1	1
Future Vol, veh/h	270	148	121	232	1	1
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	68	50	50	59	50	50
Heavy Vehicles, %	16	0	0	6	0	0
Mvmt Flow	397	296	242	393	2	2

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	694	0	1423
Stage 1	-	-	-	-	546
Stage 2	-	-	-	-	877
Critical Hdwy	-	-	4.1	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	911	-	151
Stage 1	-	-	-	-	584
Stage 2	-	-	-	-	410
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	911	-	100
Mov Cap-2 Maneuver	-	-	-	-	100
Stage 1	-	-	-	-	583
Stage 2	-	-	-	-	271

Approach	EB	WB	NB
HCM Control Delay, s	0	4	26.8
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	169	-	-	911	-
HCM Lane V/C Ratio	0.024	-	-	0.266	-
HCM Control Delay (s)	26.8	-	-	10.4	0
HCM Lane LOS	D	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	1.1	-

Intersection						
Int Delay, s/veh	0.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	262	8	8	350	3	3
Future Vol, veh/h	262	8	8	350	3	3
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	72	50	50	61	50	50
Heavy Vehicles, %	12	0	0	9	0	0
Mvmt Flow	364	16	16	574	6	6

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	381	0	979
Stage 1	-	-	-	-	373
Stage 2	-	-	-	-	606
Critical Hdwy	-	-	4.1	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	1189	-	280
Stage 1	-	-	-	-	701
Stage 2	-	-	-	-	548
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1189	-	274
Mov Cap-2 Maneuver	-	-	-	-	274
Stage 1	-	-	-	-	700
Stage 2	-	-	-	-	537

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	14.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	390	-	-	1189	-
HCM Lane V/C Ratio	0.031	-	-	0.013	-
HCM Control Delay (s)	14.5	-	-	8.1	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	37	180	48	40	330	38	18	1	15	13	1	10
Future Vol, veh/h	37	180	48	40	330	38	18	1	15	13	1	10
Conflicting Peds, #/hr	0	0	14	14	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	200	-	-	150	-	-	-	-	100	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	2	-	-	-8	-
Peak Hour Factor	69	69	50	50	51	51	50	50	50	64	64	64
Heavy Vehicles, %	97	3	0	0	6	77	0	0	0	17	0	11
Mvmt Flow	54	261	96	80	647	75	36	2	30	20	2	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	722	0	0	371	0	0	1283	1312	323	1261	1322	684
Stage 1	-	-	-	-	-	-	430	430	-	844	844	-
Stage 2	-	-	-	-	-	-	853	882	-	417	478	-
Critical Hdwy	5.07	-	-	4.1	-	-	7.5	6.9	6.4	5.67	4.9	5.51
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.9	-	4.67	3.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.9	-	4.67	3.9	-
Follow-up Hdwy	3.073	-	-	2.2	-	-	3.5	4	3.3	3.653	4	3.399
Pot Cap-1 Maneuver	568	-	-	1199	-	-	124	138	710	240	284	505
Stage 1	-	-	-	-	-	-	579	560	-	491	556	-
Stage 2	-	-	-	-	-	-	324	333	-	704	691	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	568	-	-	1199	-	-	104	115	701	200	237	505
Mov Cap-2 Maneuver	-	-	-	-	-	-	104	115	-	200	237	-
Stage 1	-	-	-	-	-	-	517	500	-	444	519	-
Stage 2	-	-	-	-	-	-	292	311	-	607	617	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.6			0.8			36.8			20.5		
HCM LOS							E			C		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	105	701	568	-	-	1199	-	-	270
HCM Lane V/C Ratio	0.362	0.043	0.094	-	-	0.067	-	-	0.139
HCM Control Delay (s)	57.6	10.4	12	-	-	8.2	-	-	20.5
HCM Lane LOS	F	B	B	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.4	0.1	0.3	-	-	0.2	-	-	0.5

Intersection

Int Delay, s/veh 216.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘		↗	↘	↗
Traffic Vol, veh/h	30	1	177	6	5	5	281	307	14	14	309	122
Future Vol, veh/h	30	1	177	6	5	5	281	307	14	14	309	122
Conflicting Peds, #/hr	0	0	17	17	0	0	2	0	8	8	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	150	-	-	100	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	5	-	-	2	-	-	-2	-
Peak Hour Factor	50	61	50	64	64	64	50	91	91	81	81	50
Heavy Vehicles, %	4	0	5	0	0	0	9	3	0	0	5	10
Mvmt Flow	60	2	354	9	8	8	562	337	15	17	381	244

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	1895	1903	400	2088	1895	353	383	0	0	361	0	0
Stage 1	418	418	-	1477	1477	-	-	-	-	-	-	-
Stage 2	1477	1485	-	611	418	-	-	-	-	-	-	-
Critical Hdwy	6.94	6.3	6.15	8.1	7.5	6.7	4.19	-	-	4.1	-	-
Critical Hdwy Stg 1	5.94	5.3	-	7.1	6.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.94	5.3	-	7.1	6.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4	3.345	3.5	4	3.3	2.281	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 58	77	651	22	42	662	1138	-	-	1209	-	-
Stage 1	623	608	-	105	127	-	-	-	-	-	-	-
Stage 2	169	206	-	409	529	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 25	37	639	~ 6	20	657	1120	-	-	1209	-	-
Mov Cap-2 Maneuver	~ 25	37	-	~ 6	20	-	-	-	-	-	-	-
Stage 1	310	598	-	52	63	-	-	-	-	-	-	-
Stage 2	73	102	-	176	521	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	\$ 963.8	\$ 1021.4	7	0.2
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1120	-	-	139	13	1209	-
HCM Lane V/C Ratio	0.502	-	-	2.99	1.923	0.014	-
HCM Control Delay (s)	11.4	-	-	\$ 963.8	\$ 1021.4	8	-
HCM Lane LOS	B	-	-	F	F	A	-
HCM 95th %tile Q(veh)	2.9	-	-	38.6	3.9	0	-

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

Intersection

Int Delay, s/veh 279.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↘	↗	↘	↗	↗	↘
Traffic Vol, veh/h	248	136	132	355	231	262
Future Vol, veh/h	248	136	132	355	231	262
Conflicting Peds, #/hr	0	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	225	-	-	125
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	2	-	-	-2	1	-
Peak Hour Factor	50	50	50	93	78	50
Heavy Vehicles, %	5	5	7	3	1	4
Mvmt Flow	496	272	264	382	296	524

Major/Minor

	Minor2	Major1	Major2		
Conflicting Flow All	1207	297	297	0	0
Stage 1	297	-	-	-	-
Stage 2	910	-	-	-	-
Critical Hdwy	6.85	6.45	4.17	-	-
Critical Hdwy Stg 1	5.85	-	-	-	-
Critical Hdwy Stg 2	5.85	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.263	-	-
Pot Cap-1 Maneuver	~ 175	723	1236	-	-
Stage 1	723	-	-	-	-
Stage 2	~ 350	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	~ 137	722	1236	-	-
Mov Cap-2 Maneuver	~ 137	-	-	-	-
Stage 1	722	-	-	-	-
Stage 2	~ 275	-	-	-	-

Approach

	EB	NB	SB
HCM Control Delay, s	809.1	3.6	0
HCM LOS	F		

Minor Lane/Major Mvmt

	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1236	-	137	722	-	-
HCM Lane V/C Ratio	0.214	-	3.62	0.377	-	-
HCM Control Delay (s)	8.7	\$	1245.7	13	-	-
HCM Lane LOS	A	-	F	B	-	-
HCM 95th %tile Q(veh)	0.8	-	48.7	1.8	-	-

Notes

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

Intersection

Int Delay, s/veh 3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	132	6	5	308	3	33	1	25	1	1	8
Future Vol, veh/h	5	132	6	5	308	3	33	1	25	1	1	8
Conflicting Peds, #/hr	1	0	70	70	0	1	0	0	11	11	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	67	67	50	50	54	54	50	50	50	46	46	46
Heavy Vehicles, %	0	20	33	40	2	0	30	0	17	0	0	0
Mvmt Flow	7	197	12	10	570	6	66	2	50	2	2	17

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	577	0	0	279
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.1	-	-	4.5
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.2	-	-	2.56
Pot Cap-1 Maneuver	1006	-	-	1094
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	1006	-	-	1083
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.1	25.2	13.8
HCM LOS			D	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	294	1006	-	-	1083	-	-	432
HCM Lane V/C Ratio	0.401	0.007	-	-	0.009	-	-	0.05
HCM Control Delay (s)	25.2	8.6	0	-	8.4	0	-	13.8
HCM Lane LOS	D	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	1.9	0	-	-	0	-	-	0.2

HCM 2010 TWSC
 3: Student Exit & High School Road

11/03/2017

Intersection						
Int Delay, s/veh	12.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	158	1	1	194	122	99
Future Vol, veh/h	158	1	1	194	122	99
Conflicting Peds, #/hr	0	4	4	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	66	50	50	57	50	50
Heavy Vehicles, %	27	0	0	3	0	0
Mvmt Flow	239	2	2	340	244	198

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	245	0	588
Stage 1	-	-	-	-	244
Stage 2	-	-	-	-	344
Critical Hdwy	-	-	4.1	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	1333	-	475
Stage 1	-	-	-	-	801
Stage 2	-	-	-	-	722
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1333	-	472
Mov Cap-2 Maneuver	-	-	-	-	472
Stage 1	-	-	-	-	798
Stage 2	-	-	-	-	721

Approach	EB	WB	NB
HCM Control Delay, s	0	0	28.8
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	577	-	-	1333	-
HCM Lane V/C Ratio	0.766	-	-	0.002	-
HCM Control Delay (s)	28.8	-	-	7.7	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	7	-	-	0	-

Intersection

Int Delay, s/veh 0.4

Movement EBT EBR WBL WBT NBL NBR

Lane Configurations						
Traffic Vol, veh/h	256	2	2	187	6	6
Future Vol, veh/h	256	2	2	187	6	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	60	50	50	63	50	50
Heavy Vehicles, %	16	0	0	3	0	0
Mvmt Flow	427	4	4	297	12	12

Major/Minor Major1 Major2 Minor1

Conflicting Flow All	0	0	431	0	734	429
Stage 1	-	-	-	-	429	-
Stage 2	-	-	-	-	305	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1139	-	390	630
Stage 1	-	-	-	-	661	-
Stage 2	-	-	-	-	752	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1139	-	388	630
Mov Cap-2 Maneuver	-	-	-	-	388	-
Stage 1	-	-	-	-	661	-
Stage 2	-	-	-	-	749	-

Approach EB WB NB

HCM Control Delay, s	0	0.1	12.9
HCM LOS			B

Minor Lane/Major Mvmt NBLn1 EBT EBR WBL WBT

Capacity (veh/h)	480	-	-	1139	-
HCM Lane V/C Ratio	0.05	-	-	0.004	-
HCM Control Delay (s)	12.9	-	-	8.2	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

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	27	225	10	8	133	46	34	1	29	22	1	22
Future Vol, veh/h	27	225	10	8	133	46	34	1	29	22	1	22
Conflicting Peds, #/hr	0	0	22	22	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	200	-	-	150	-	-	-	-	100	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	2	-	-	-8	-
Peak Hour Factor	60	60	50	50	82	82	50	50	50	56	56	56
Heavy Vehicles, %	92	4	0	0	5	95	0	0	0	0	0	5
Mvmt Flow	45	375	20	16	162	56	68	2	58	39	2	39

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	218	0	0	417	0	0	740	747	407	698	729	190
Stage 1	-	-	-	-	-	-	497	497	-	222	222	-
Stage 2	-	-	-	-	-	-	243	250	-	476	507	-
Critical Hdwy	5.02	-	-	4.1	-	-	7.5	6.9	6.4	5.5	4.9	5.45
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.9	-	4.5	3.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.9	-	4.5	3.9	-
Follow-up Hdwy	3.028	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.345
Pot Cap-1 Maneuver	960	-	-	1153	-	-	309	316	634	488	487	881
Stage 1	-	-	-	-	-	-	529	519	-	866	798	-
Stage 2	-	-	-	-	-	-	745	684	-	709	680	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	960	-	-	1153	-	-	275	291	621	420	448	881
Mov Cap-2 Maneuver	-	-	-	-	-	-	275	291	-	420	448	-
Stage 1	-	-	-	-	-	-	494	484	-	825	787	-
Stage 2	-	-	-	-	-	-	700	675	-	610	635	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.9			0.6			17.5			12.4		
HCM LOS							C			B		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	275	621	960	-	-	1153	-	-	565
HCM Lane V/C Ratio	0.255	0.093	0.047	-	-	0.014	-	-	0.142
HCM Control Delay (s)	22.5	11.4	8.9	-	-	8.2	-	-	12.4
HCM Lane LOS	C	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	1	0.3	0.1	-	-	0	-	-	0.5

HCM 2010 TWSC
7: Seawell School Road & High School Road

11/03/2017

Intersection

Int Delay, s/veh 120.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	↕
Traffic Vol, veh/h	102	1	174	3	1	8	142	149	5	6	124	44
Future Vol, veh/h	102	1	174	3	1	8	142	149	5	6	124	44
Conflicting Peds, #/hr	0	0	25	25	0	0	12	0	14	14	0	12
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	150	-	-	100	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	5	-	-	2	-	-	-2	-
Peak Hour Factor	50	48	50	46	46	46	50	72	72	69	69	50
Heavy Vehicles, %	5	0	5	0	0	0	7	6	0	0	4	13
Mvmt Flow	204	2	348	7	2	17	284	207	7	9	180	88

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	997	1005	217	1189	1001	224	192	0	0	228	0	0
Stage 1	209	209	-	792	792	-	-	-	-	-	-	-
Stage 2	788	796	-	397	209	-	-	-	-	-	-	-
Critical Hdwy	6.95	6.3	6.15	8.1	7.5	6.7	4.17	-	-	4.1	-	-
Critical Hdwy Stg 1	5.95	5.3	-	7.1	6.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.95	5.3	-	7.1	6.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.545	4	3.345	3.5	4	3.3	2.263	-	-	2.2	-	-
Pot Cap-1 Maneuver	233	257	820	120	185	795	1352	-	-	1352	-	-
Stage 1	795	741	-	309	324	-	-	-	-	-	-	-
Stage 2	397	420	-	567	692	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 185	195	791	53	141	784	1320	-	-	1352	-	-
Mov Cap-2 Maneuver	~ 185	195	-	53	141	-	-	-	-	-	-	-
Stage 1	617	728	-	239	251	-	-	-	-	-	-	-
Stage 2	302	325	-	307	680	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	289.2		31.4		4.8		0.2	
HCM LOS	F		D					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1320	-	-	357	162	1352	-
HCM Lane V/C Ratio	0.215	-	-	1.552	0.161	0.006	-
HCM Control Delay (s)	8.5	-	-	289.2	31.4	7.7	-
HCM Lane LOS	A	-	-	F	D	A	-
HCM 95th %tile Q(veh)	0.8	-	-	31.3	0.6	0	-

Notes

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

Intersection						
Int Delay, s/veh	9.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↙	↗	↙	↗	↗	↗
Traffic Vol, veh/h	105	54	53	191	198	103
Future Vol, veh/h	105	54	53	191	198	103
Conflicting Peds, #/hr	0	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	225	-	-	125
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	2	-	-	-2	1	-
Peak Hour Factor	50	50	50	66	63	50
Heavy Vehicles, %	5	6	4	4	2	14
Mvmt Flow	210	108	106	289	314	206

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	816	315	315	0	-	0
Stage 1	315	-	-	-	-	-
Stage 2	501	-	-	-	-	-
Critical Hdwy	6.85	6.46	4.14	-	-	-
Critical Hdwy Stg 1	5.85	-	-	-	-	-
Critical Hdwy Stg 2	5.85	-	-	-	-	-
Follow-up Hdwy	3.545	3.354	2.236	-	-	-
Pot Cap-1 Maneuver	313	704	1234	-	-	-
Stage 1	708	-	-	-	-	-
Stage 2	570	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	286	703	1234	-	-	-
Mov Cap-2 Maneuver	286	-	-	-	-	-
Stage 1	707	-	-	-	-	-
Stage 2	521	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	33.9	2.2	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1234	-	286	703	-	-
HCM Lane V/C Ratio	0.086	-	0.734	0.154	-	-
HCM Control Delay (s)	8.2	-	45.7	11	-	-
HCM Lane LOS	A	-	E	B	-	-
HCM 95th %tile Q(veh)	0.3	-	5.3	0.5	-	-

2021 Mitigated

HCM 2010 TWSC
3: Student Exit & High School Road

11/03/2017

Intersection						
Int Delay, s/veh	2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	270	148	121	232	1	1
Future Vol, veh/h	270	148	121	232	1	1
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	100	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	68	50	50	59	50	50
Heavy Vehicles, %	16	0	0	6	0	0
Mvmt Flow	397	296	242	393	2	2

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	694	0	1423
Stage 1	-	-	-	-	546
Stage 2	-	-	-	-	877
Critical Hdwy	-	-	4.1	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	911	-	151
Stage 1	-	-	-	-	584
Stage 2	-	-	-	-	410
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	911	-	100
Mov Cap-2 Maneuver	-	-	-	-	100
Stage 1	-	-	-	-	583
Stage 2	-	-	-	-	271

Approach	EB	WB	NB
HCM Control Delay, s	0	4	26.7
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	100	540	-	-	911	-
HCM Lane V/C Ratio	0.02	0.004	-	-	0.266	-
HCM Control Delay (s)	41.7	11.7	-	-	10.4	0
HCM Lane LOS	E	B	-	-	B	A
HCM 95th %tile Q(veh)	0.1	0	-	-	1.1	-

Intersection												
Int Delay, s/veh	48.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗			↕		↖	↗		↖	↗	↖
Traffic Vol, veh/h	30	1	177	6	5	5	281	307	14	14	309	122
Future Vol, veh/h	30	1	177	6	5	5	281	307	14	14	309	122
Conflicting Peds, #/hr	0	0	17	17	0	0	2	0	8	8	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	100	-	-	-	-	-	150	-	-	100	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	5	-	-	2	-	-	-2	-
Peak Hour Factor	50	61	50	64	64	64	50	91	91	81	81	50
Heavy Vehicles, %	4	0	5	0	0	0	9	3	0	0	5	10
Mvmt Flow	60	2	354	9	8	8	562	337	15	17	381	244

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	1895	1903	400	2088	1895	353	383	0	0	361	0	0
Stage 1	418	418	-	1477	1477	-	-	-	-	-	-	-
Stage 2	1477	1485	-	611	418	-	-	-	-	-	-	-
Critical Hdwy	6.94	6.3	6.15	8.1	7.5	6.7	4.19	-	-	4.1	-	-
Critical Hdwy Stg 1	5.94	5.3	-	7.1	6.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.94	5.3	-	7.1	6.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4	3.345	3.5	4	3.3	2.281	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 58	77	651	22	42	662	1138	-	-	1209	-	-
Stage 1	623	608	-	105	127	-	-	-	-	-	-	-
Stage 2	169	206	-	409	529	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 25	37	639	~ 6	20	657	1120	-	-	1209	-	-
Mov Cap-2 Maneuver	~ 25	37	-	~ 6	20	-	-	-	-	-	-	-
Stage 1	310	598	-	52	63	-	-	-	-	-	-	-
Stage 2	73	102	-	176	521	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	156.7	\$ 1021.4	7	0.2
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1120	-	-	25	594	13	1209	-	-
HCM Lane V/C Ratio	0.502	-	-	2.4	0.599	1.923	0.014	-	-
HCM Control Delay (s)	11.4	-	-	\$ 968.7	19.	\$ 1021.4	8	-	-
HCM Lane LOS	B	-	-	F	C	F	A	-	-
HCM 95th %tile Q(veh)	2.9	-	-	7.4	4	3.9	0	-	-

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

HCM 2010 TWSC
 3: Student Exit & High School Road

11/03/2017

Intersection

Int Delay, s/veh 7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	↔
Traffic Vol, veh/h	158	1	1	194	122	99
Future Vol, veh/h	158	1	1	194	122	99
Conflicting Peds, #/hr	0	4	4	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	100	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	66	50	50	57	50	50
Heavy Vehicles, %	27	0	0	3	0	0
Mvmt Flow	239	2	2	340	244	198

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	245	0	588
Stage 1	-	-	-	-	244
Stage 2	-	-	-	-	344
Critical Hdwy	-	-	4.1	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	1333	-	475
Stage 1	-	-	-	-	801
Stage 2	-	-	-	-	722
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1333	-	472
Mov Cap-2 Maneuver	-	-	-	-	472
Stage 1	-	-	-	-	798
Stage 2	-	-	-	-	721

Approach	EB	WB	NB
HCM Control Delay, s	0	0	16.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	472	797	-	-	1333	-
HCM Lane V/C Ratio	0.517	0.248	-	-	0.002	-
HCM Control Delay (s)	20.5	11	-	-	7.7	0
HCM Lane LOS	C	B	-	-	A	A
HCM 95th %tile Q(veh)	2.9	1	-	-	0	-

Intersection												
Int Delay, s/veh	28.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗			↕		↖	↗		↖	↗	↖
Traffic Vol, veh/h	102	1	174	3	1	8	142	149	5	6	124	44
Future Vol, veh/h	102	1	174	3	1	8	142	149	5	6	124	44
Conflicting Peds, #/hr	0	0	25	25	0	0	12	0	14	14	0	12
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	100	-	-	-	-	-	150	-	-	100	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	5	-	-	2	-	-	-2	-
Peak Hour Factor	50	48	50	46	46	46	50	72	72	69	69	50
Heavy Vehicles, %	5	0	5	0	0	0	7	6	0	0	4	13
Mvmt Flow	204	2	348	7	2	17	284	207	7	9	180	88

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	997	1005	217	1189	1001	224	192	0	0	228	0	0
Stage 1	209	209	-	792	792	-	-	-	-	-	-	-
Stage 2	788	796	-	397	209	-	-	-	-	-	-	-
Critical Hdwy	6.95	6.3	6.15	8.1	7.5	6.7	4.17	-	-	4.1	-	-
Critical Hdwy Stg 1	5.95	5.3	-	7.1	6.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.95	5.3	-	7.1	6.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.545	4	3.345	3.5	4	3.3	2.263	-	-	2.2	-	-
Pot Cap-1 Maneuver	233	257	820	120	185	795	1352	-	-	1352	-	-
Stage 1	795	741	-	309	324	-	-	-	-	-	-	-
Stage 2	397	420	-	567	692	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 185	195	791	53	141	784	1320	-	-	1352	-	-
Mov Cap-2 Maneuver	~ 185	195	-	53	141	-	-	-	-	-	-	-
Stage 1	617	728	-	239	251	-	-	-	-	-	-	-
Stage 2	302	325	-	307	680	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	63.1		31.4		4.8		0.2	
HCM LOS	F		D					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1320	-	-	185	777	162	1352	-	-
HCM Lane V/C Ratio	0.215	-	-	1.103	0.451	0.161	0.006	-	-
HCM Control Delay (s)	8.5	-	-	148.5	13.4	31.4	7.7	-	-
HCM Lane LOS	A	-	-	F	B	D	A	-	-
HCM 95th %tile Q(veh)	0.8	-	-	10	2.4	0.6	0	-	-

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

Appendix G – SIDRA Roundabout Analysis Output

LANE LEVEL OF SERVICE

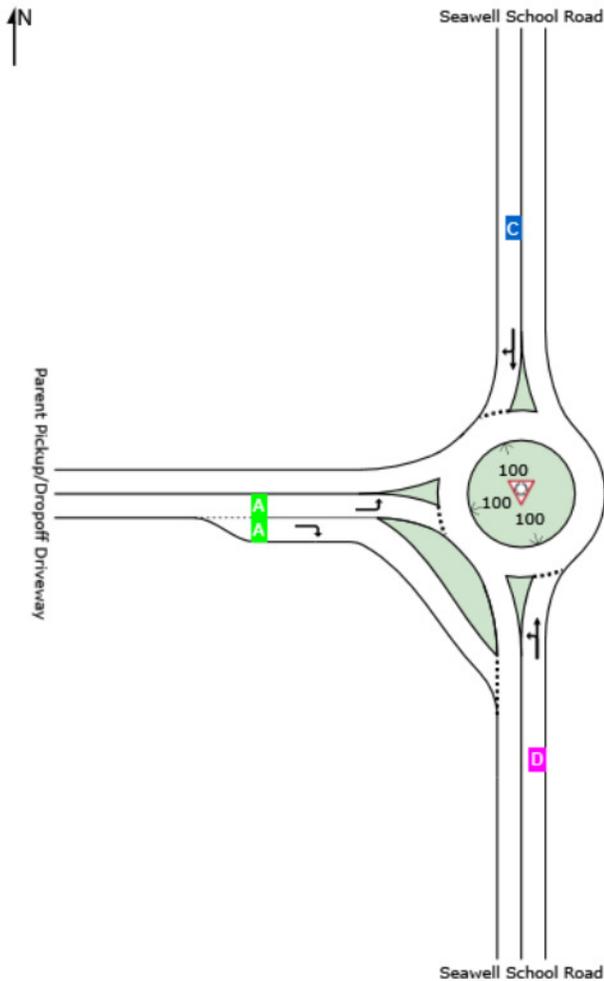
Lane Level of Service

 Site: 101 [AM_Laneage A]

Seawell School Road
Roundabout

All Movement Classes

	South	North	West	Intersection
LOS	D	C	A	C



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 [AM_Laneage A]

Seawell School Road
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: Seawell School Road											
3	L2	264	7.0	0.833	27.4	LOS D	10.0	259.7	0.96	1.53	12.7
8	T1	382	3.0	0.833	27.4	LOS D	10.0	259.7	0.96	1.53	12.7
Approach		646	4.6	0.833	27.4	LOS D	10.0	259.7	0.96	1.53	12.7
North: Seawell School Road											
4	T1	296	1.0	0.816	21.3	LOS C	11.8	302.5	0.94	1.12	13.1
14	R2	524	4.0	0.816	21.3	LOS C	11.8	302.5	0.94	1.12	13.1
Approach		820	2.9	0.816	21.3	LOS C	11.8	302.5	0.94	1.12	13.1
West: Parent Pickup/Dropoff Driveway											
5	L2	496	5.0	0.481	9.1	LOS A	2.6	68.3	0.55	0.46	14.2
12	R2	272	5.0	0.264	6.1	LOS A	1.2	30.2	0.45	0.35	14.4
Approach		768	5.0	0.481	8.0	LOS A	2.6	68.3	0.52	0.42	14.3
All Vehicles		2234	4.1	0.833	18.5	LOS C	11.8	302.5	0.80	0.99	13.4

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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Project: C:\Users\mquesenberry\Desktop\HNTB_Seawell School Road Roundabout Analysis\Seawell School Road Roundabout Analysis\Seawell School Road Roundabout.sip7

LANE LEVEL OF SERVICE

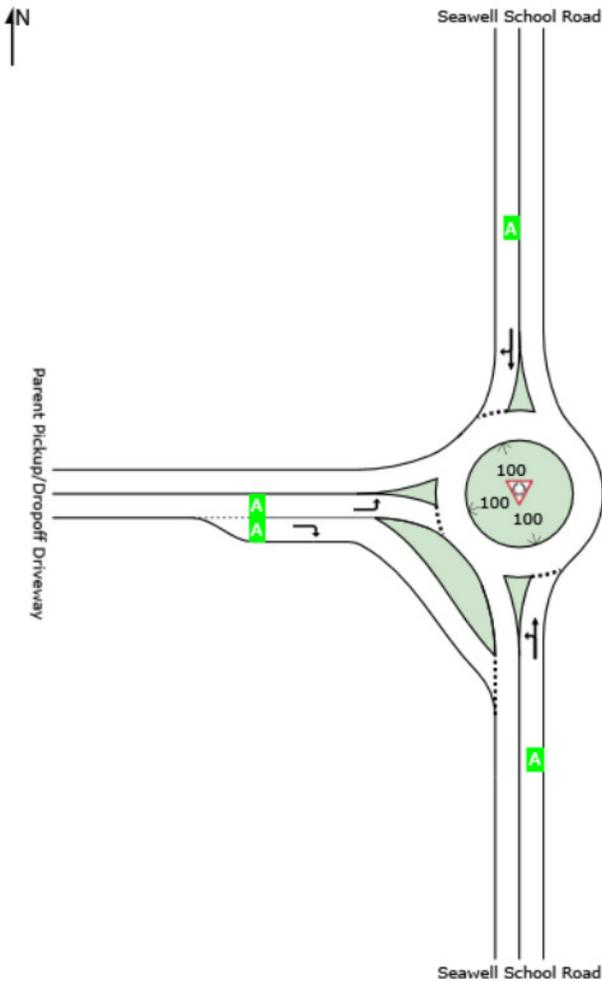
Lane Level of Service

 Site: 101 [PM_Laneage A]

Seawell School Road
Roundabout

All Movement Classes

	South	North	West	Intersection
LOS	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 [PM_Laneage A]

Seawell School Road
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	Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Seawell School Road											
3	L2	106	4.0	0.373	7.3	LOS A	2.0	52.7	0.47	0.34	14.3
8	T1	289	4.0	0.373	7.3	LOS A	2.0	52.7	0.47	0.34	14.3
Approach		395	4.0	0.373	7.3	LOS A	2.0	52.7	0.47	0.34	14.3
North: Seawell School Road											
4	T1	314	2.0	0.450	7.9	LOS A	2.8	73.7	0.37	0.21	14.3
14	R2	206	14.0	0.450	7.9	LOS A	2.8	73.7	0.37	0.21	14.3
Approach		520	6.8	0.450	7.9	LOS A	2.8	73.7	0.37	0.21	14.3
West: Parent Pickup/Dropoff Driveway											
5	L2	210	5.0	0.208	5.5	LOS A	0.9	22.5	0.44	0.34	14.5
12	R2	108	6.0	0.108	4.6	LOS A	0.4	10.7	0.40	0.29	14.6
Approach		318	5.3	0.208	5.2	LOS A	0.9	22.5	0.43	0.32	14.5
All Vehicles		1234	5.5	0.450	7.0	LOS A	2.8	73.7	0.42	0.28	14.3

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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Organisation: HNTB CORPORATION | Processed: Tuesday, June 20, 2017 5:37:14 PM

Project: C:\Users\mquesenberry\Desktop\HNTB_Seawell School Road Roundabout Analysis\Seawell School Road Roundabout Analysis\Seawell School Road Roundabout.sip7

Appendix H – Traffic Signal Warrant Analysis Output

Warrants Summary												
Information												
Analyst	CRS	Intersection	High School Rd & Seawell Schl									
Agency/Co	HNTB North Carolina, PC	Jurisdiction	Chapel Hill, NC									
Date Performed	6/21/2017	Units	U.S. Customary									
Project ID	CHHS Expansion TIS	Time Period Analyzed	2021 With Site AM Peak Hour									
East/West Street	High School Road	North/South Street	Seawell School Road									
File Name	2021 W Site HS Rd&SS Rd.xhy	Major Street	North-South									
Project Description <i>CHHS Expansion TIS</i>												
General						Roadway Network						
Major Street Speed (mph)	35	<input type="checkbox"/>	Population < 10,000				Two Major Routes			<input type="checkbox"/>		
Nearest Signal (ft)	0	<input type="checkbox"/>	Coordinated Signal System				Weekend Count			<input type="checkbox"/>		
Crashes (per year)	0	<input type="checkbox"/>	Adequate Trials of Alternatives				5-yr Growth Factor			0		
Geometry and Traffic	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N	0	1	0	0	1	0	1	1	0	1	1	1
Lane usage	LTR			LTR			L	TR		L	T	R
Vehicle Volume Averages (vph)	11	0	29	0	0	1	35	38	1	1	36	13
Peds (ped/h) / Gaps (gaps/h)	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--
Delay (s/veh) / (veh-hr)	--	104.4 / 6.5	--	--	85.9 / 0.4	--	--	1.0 / 0.1	--	--	0.0 / 0	--
Warrant 1: Eight-Hour Vehicular Volume												<input type="checkbox"/>
1 A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--												<input type="checkbox"/>
1 B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--												<input type="checkbox"/>
1 (80%) Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)												<input type="checkbox"/>
Warrant 2: Four-Hour Vehicular Volume												<input type="checkbox"/>
2 A. Four-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)												<input type="checkbox"/>
Warrant 3: Peak Hour												<input checked="" type="checkbox"/>
3 A. Peak-Hour Conditions (Minor delay --and-- minor volume --and-- total volume) --or--												<input checked="" type="checkbox"/>
3 B. Peak- Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)												<input type="checkbox"/>
Warrant 4: Pedestrian Volume												<input type="checkbox"/>
4 A. Four Hour Volumes --or--												<input type="checkbox"/>
4 B. One-Hour Volumes												<input type="checkbox"/>
Warrant 5: School Crossing												<input type="checkbox"/>
5. Student Volumes --and--												<input type="checkbox"/>
5. Gaps Same Period												<input type="checkbox"/>
Warrant 6: Coordinated Signal System												<input type="checkbox"/>
6. Degree of Platooning (Predominant direction or both directions)												<input type="checkbox"/>
Warrant 7: Crash Experience												<input type="checkbox"/>
7 A. Adequate trials of alternatives, observance and enforcement failed --and--												<input type="checkbox"/>
7 B. Reported crashes susceptible to correction by signal (12-month period) --and--												<input type="checkbox"/>

7 C. (80%) Volumes for Warrants 1A, 1B --or-- 4 are satisfied	<input type="checkbox"/>
Warrant 8: Roadway Network	<input type="checkbox"/>
8 A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2 or 3) --or--	<input type="checkbox"/>
8 B. Weekend Volume (Five hours total)	<input type="checkbox"/>
Warrant 9: Grade Crossing	<input type="checkbox"/>
9 A. Grade Crossing within 140 ft --and--	<input type="checkbox"/>
9 B. Peak-Hour Vehicular Volumes	<input type="checkbox"/>

Warrants Volume

Information

Analyst: CRS
 Agency/Co: HNTB North Carolina, PC
 Date Performed: 6/21/2017
 Project ID: CHHS Expansion TIS
 East/West Street: High School Road
 File Name: 2021 W Site HS Rd&SS Rd.xhy

Intersection: High School Rd & Seawell Schl
 Jurisdiction: Chapel Hill, NC
 Units: U.S. Customary
 Time Period Analyzed: 2021 With Site AM Peak Hour
 North/South Street: Seawell School Road
 Major Street: North-South

Project Description *CHHS Expansion TIS*

Warrant 1

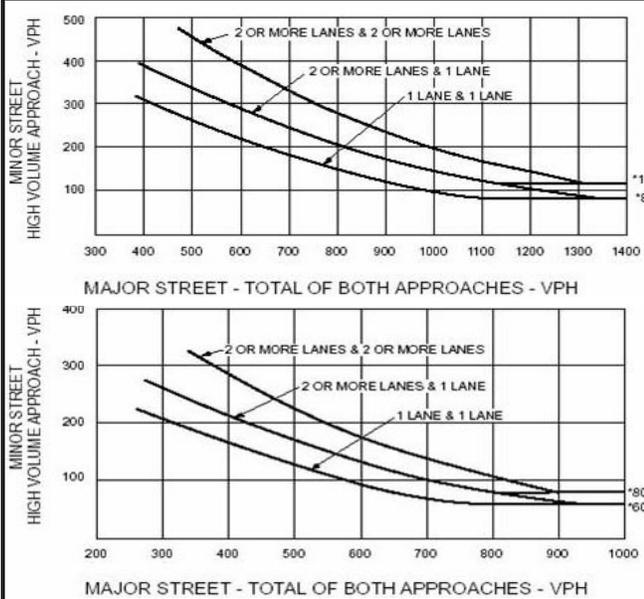
Condition A—Minimum Vehicular Volume

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100%	80%	70%	56%	100%	80%	70%	56%
1	1	500	400	350	280	150	120	105	84
2 or more	1	600	480	420	336	150	120	105	84
2 or more	2 or more	600	480	420	336	200	160	140	112
1	2 or more	500	400	350	280	200	160	140	112

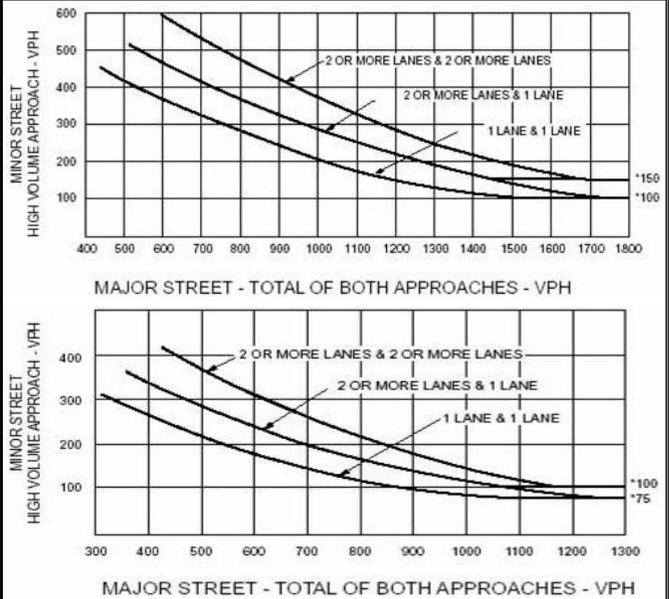
Condition B—Interruption of Continuous Traffic

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100%	80%	70%	56%	100%	80%	70%	56%
1	1	750	600	525	420	75	60	53	42
2 or more	1	900	720	630	504	75	60	53	42
2 or more	2 or more	900	720	630	504	100	80	70	56
1	2 or more	750	600	525	420	100	80	70	56

Warrant 2



Warrant 3



Volume Summary

Major Street Lanes 2+			Minor Street Lanes 1		Speed		35		Population		10000+
Hours	Major Volume	Minor Volume	Total Volume	1A (100%)	1A (80%)	1B (100%)	1B (80%)	2 (100%)	3A (100%)	3B (100%)	
07-08	1047	208	1271	Yes	Yes	Yes	Yes	Yes	Yes	No	
08-09	0	0	0	No	No	No	No	No	No	No	
09-10	0	0	0	No	No	No	No	No	No	No	
10-11	0	0	0	No	No	No	No	No	No	No	
11-12	0	0	0	No	No	No	No	No	No	No	
12-13	0	0	0	No	No	No	No	No	No	No	
13-14	0	0	0	No	No	No	No	No	No	No	
14-15	0	0	0	No	No	No	No	No	No	No	
15-16	0	0	0	No	No	No	No	No	No	No	
16-17	470	277	759	No	No	No	No	No	No	No	
17-18	0	0	0	No	No	No	No	No	No	No	
18-19	0	0	0	No	No	No	No	No	No	No	
Totals	1517	485	2030	1	1	1	1	1	1	0	

Warrants Summary												
Information												
Analyst	CRS					Intersection	Middle School Dr& Seawell Schl					
Agency/Co	HNTB North Carolina, PC					Jurisdiction	Chapel Hill, NC					
Date Performed	6/21/2017					Units	U.S. Customary					
Project ID	CHHS Expansion TIS					Time Period Analyzed	2021 With Site AM Peak Hour					
East/West Street	Middle School Dr/HS Parent Dr					North/South Street	Seawell School Road					
File Name	2021 W Site Middle Sch Dr&SS Rd.xhy					Major Street	North-South					
Project Description <i>CHHS Expansion TIS</i>												
General						Roadway Network						
Major Street Speed (mph)	35	<input type="checkbox"/>	Population < 10,000				Two Major Routes		<input type="checkbox"/>			
Nearest Signal (ft)	0	<input type="checkbox"/>	Coordinated Signal System				Weekend Count		<input type="checkbox"/>			
Crashes (per year)	0	<input type="checkbox"/>	Adequate Trials of Alternatives				5-yr Growth Factor		0			
Geometry and Traffic	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N	1	0	1	0	0	0	1	1	0	0	1	1
Lane usage	L		R				L		T		R	
Vehicle Volume Averages (vph)	29	0	15	0	0	0	15	45	0	0	38	27
Peds (ped/h) / Gaps (gaps/h)	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--
Delay (s/veh) / (veh-hr)	--	70.2 / 7.3	--	--	0 / 0	--	--	0.5 / 0.0	--	--	0.0 / 0	--
Warrant 1: Eight-Hour Vehicular Volume												<input type="checkbox"/>
1 A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--												<input type="checkbox"/>
1 B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--												<input type="checkbox"/>
1 (80%) Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)												<input type="checkbox"/>
Warrant 2: Four-Hour Vehicular Volume												<input type="checkbox"/>
2 A. Four-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)												<input type="checkbox"/>
Warrant 3: Peak Hour												<input checked="" type="checkbox"/>
3 A. Peak-Hour Conditions (Minor delay --and-- minor volume --and-- total volume) --or--												<input checked="" type="checkbox"/>
3 B. Peak- Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)												<input type="checkbox"/>
Warrant 4: Pedestrian Volume												<input type="checkbox"/>
4 A. Four Hour Volumes --or--												<input type="checkbox"/>
4 B. One-Hour Volumes												<input type="checkbox"/>
Warrant 5: School Crossing												<input type="checkbox"/>
5. Student Volumes --and--												<input type="checkbox"/>
5. Gaps Same Period												<input type="checkbox"/>
Warrant 6: Coordinated Signal System												<input type="checkbox"/>
6. Degree of Platooning (Predominant direction or both directions)												<input type="checkbox"/>
Warrant 7: Crash Experience												<input type="checkbox"/>
7 A. Adequate trials of alternatives, observance and enforcement failed --and--												<input type="checkbox"/>
7 B. Reported crashes susceptible to correction by signal (12-month period) --and--												<input type="checkbox"/>

7 C. (80%) Volumes for Warrants 1A, 1B --or-- 4 are satisfied	<input type="checkbox"/>
Warrant 8: Roadway Network	<input type="checkbox"/>
8 A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2 or 3) --or--	<input type="checkbox"/>
8 B. Weekend Volume (Five hours total)	<input type="checkbox"/>
Warrant 9: Grade Crossing	<input type="checkbox"/>
9 A. Grade Crossing within 140 ft --and--	<input type="checkbox"/>
9 B. Peak-Hour Vehicular Volumes	<input type="checkbox"/>

Warrants Volume

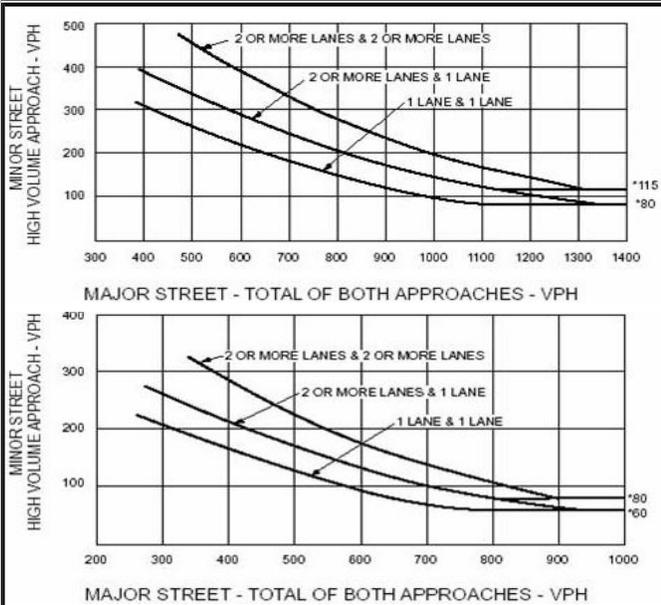
Information			
Analyst Agency/Co Date Performed Project ID East/West Street File Name	CRS HNTB North Carolina, PC 6/21/2017 CHHS Expansion TIS Middle School Dr/HS Parent Dr 2021 W Site Middle Sch Dr&SS Rd.xhy	Intersection Jurisdiction Units Time Period Analyzed North/South Street Major Street	Middle School Dr& Seawell Schl Chapel Hill, NC U.S. Customary 2021 With Site AM Peak Hour Seawell School Road North-South

Project Description *CHHS Expansion TIS*

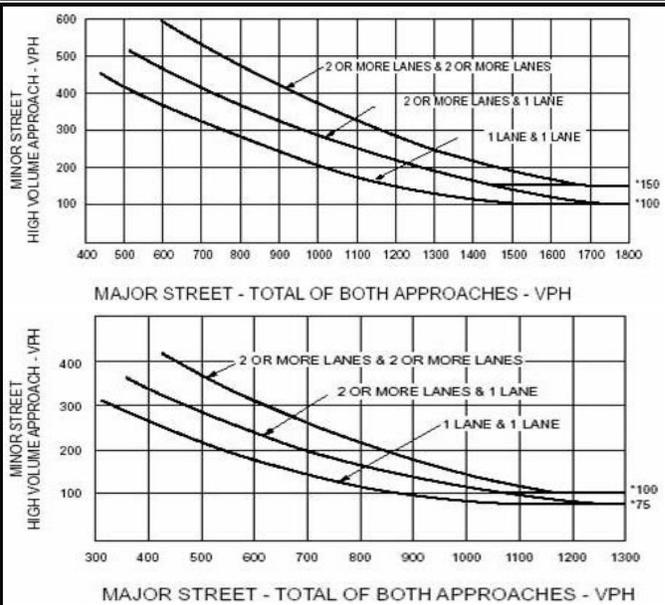
Warrant 1

Condition A—Minimum Vehicular Volume										Condition B—Interruption of Continuous Traffic									
Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)				Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100%	80%	70%	56%	100%	80%	70%	56%	Major Street	Minor Street	100%	80%	70%	56%	100%	80%	70%	56%
1	1	500	400	350	280	150	120	105	84	1	1	750	600	525	420	75	60	53	42
2 or more	1	600	480	420	336	150	120	105	84	2 or more	1	900	720	630	504	75	60	53	42
2 or more	2 or more	600	480	420	336	200	160	140	112	2 or more	2 or more	900	720	630	504	100	80	70	56
1	2 or more	500	400	350	280	200	160	140	112	1	2 or more	750	600	525	420	100	80	70	56

Warrant 2



Warrant 3



Volume Summary

Major Street Lanes 2+			Minor Street Lanes 2+			Speed		Population		10000+	
Hours	Major Volume	Minor Volume	Total Volume	1A (100%)	1A (80%)	1B (100%)	1B (80%)	2 (100%)	3A (100%)	3B (100%)	
07-08	980	384	1364	Yes	Yes	Yes	Yes	Yes	Yes	No	
08-09	0	0	0	No	No	No	No	No	No	No	
09-10	0	0	0	No	No	No	No	No	No	No	
10-11	0	0	0	No	No	No	No	No	No	No	
11-12	0	0	0	No	No	No	No	No	No	No	
12-13	0	0	0	No	No	No	No	No	No	No	
13-14	0	0	0	No	No	No	No	No	No	No	
14-15	0	0	0	No	No	No	No	No	No	No	
15-16	0	0	0	No	No	No	No	No	No	No	
16-17	545	159	704	No	No	No	No	No	No	No	
17-18	0	0	0	No	No	No	No	No	No	No	
18-19	0	0	0	No	No	No	No	No	No	No	
Totals	1525	543	2068	1	1	1	1	1	1	0	

APPENDIX I – Crash Data

**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	6	100.00
Fatal Crashes	0	0.00
Non-Fatal Injury Crashes	2	33.33
Total Injury Crashes	2	33.33
Property Damage Only Crashes	4	66.67
Night Crashes	1	16.67
Wet Crashes	1	16.67
Alcohol/Drugs Involvement Crashes	0	0.00

Crash Severity Summary

Crash Type	Number of Crashes	Percent of Total
Total Crashes	6	100.00
Fatal Crashes	0	0.00
Class A Crashes	0	0.00
Class B Crashes	1	16.67
Class C Crashes	1	16.67
Property Damage Only Crashes	4	66.67

Vehicle Exposure Statistics

Annual ADT = 3400

Total Length = 0.43 (Miles)

0.692 (Kilometers)

Total Vehicle Exposure = 2.67 (MVMT)

4.3 (MVKMT)

Crash Rate	Crashes Per 100 Million Vehicle Miles	Crashes Per 100 Million Vehicle Kilometers
Total Crash Rate	224.75	139.65
Fatal Crash Rate	0.00	0.00
Non Fatal Crash Rate	74.92	46.55
Night Crash Rate	37.46	23.28
Wet Crash Rate	37.46	23.28
EPDO Rate	779.14	484.13

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

Miscellaneous Statistics

Severity Index =	3.47
EPDO Crash Index =	20.80
Estimated Property Damage Total = \$	35000.00

Accident Type Summary

Accident Type	Number of Crashes	Percent of Total
ANGLE	1	16.67
LEFT TURN, DIFFERENT ROADWAYS	1	16.67
RAN OFF ROAD - RIGHT	2	33.33
REAR END, SLOW OR STOP	2	33.33

Injury Summary

Injury Type	Number of Injuries	Percent of Total
Fatal Injuries	0	0.00
Class A Injuries	0	0.00
Class B Injuries	1	50.00
Class C Injuries	1	50.00
Total Non-Fatal Injuries	2	100.00
Total Injuries	2	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	0	0.00
Feb	0	0.00
Mar	1	16.67
Apr	1	16.67
May	0	0.00
Jun	0	0.00
Jul	0	0.00
Aug	1	16.67
Sep	0	0.00
Oct	0	0.00
Nov	1	16.67
Dec	2	33.33

Daily Summary

Day	Number of Crashes	Percent of Total
Mon	1	16.67
Tue	2	33.33
Wed	1	16.67
Thu	1	16.67
Fri	0	0.00
Sat	1	16.67
Sun	0	0.00

**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	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	0	0.00
0800-0859	0	0.00
0900-0959	1	16.67
1000-1059	0	0.00
1100-1159	0	0.00
1200-1259	1	16.67
1300-1359	0	0.00
1400-1459	1	16.67
1500-1559	0	0.00
1600-1659	2	33.33
1700-1759	0	0.00
1800-1859	0	0.00
1900-1959	0	0.00
2000-2059	0	0.00
2100-2159	1	16.67
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	5	0	0	5
Dark	0	1	0	1
Other	0	0	0	0
Total	5	1	0	6

Object Struck Summary

Object Type	Times Struck	Percent of Total
TREE	1	100.00

Vehicle Type Summary

Vehicle Type	Number Involved	Percent of Total
PASSENGER CAR	7	63.64
SINGLE UNIT TRUCK (2-AXLE, 6-TIRE)	1	9.09
SPORT UTILITY	3	27.27

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	1	0	0	1
2013	0	0	0	0
2014	2	0	0	2
2015	3	0	2	1
2016	0	0	0	0
2017	0	0	0	0
Total	6	0	2	4

Injury Totals

Year	Fatal Injuries	Class A, B, or C Injuries
2012	0	0
2013	0	0
2014	0	0
2015	0	2
2016	0	0
2017	0	0
Total	0	2

Miscellaneous Totals

Year	Property Damage	EPDO Index
2012	\$ 1800	1.00
2013	\$ 0	0.00
2014	\$ 9700	2.00
2015	\$ 23500	17.80
2016	\$ 0	0.00
2017	\$ 0	0.00
Total	\$ 35000	20.80

Type of Accident Totals

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

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

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

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

Strip Diagram

Features	Milepost	Crash IDs
SR 1843 SEWELL SCHOOL	0.38	104262205 104355904
	0.39	
	0.40	
	0.41	
	0.42	
	0.43	
	0.44	
	0.45	
	0.46	104232394
	0.47	
	0.48	
	0.49	
	0.50	
	0.51	
	0.52	
	0.53	
	0.54	
	0.55	
	0.56	
	0.57	
	0.58	
	0.59	
	0.60	
	0.61	
	0.62	
	0.63	
	0.64	
	0.65	
	0.66	
	0.67	
	0.68	
	0.69	
	0.70	
	0.71	
	0.72	
	0.73	
	0.74	
	0.75	
	0.76	
	0.77	
	0.78	
	0.79	
	0.80	104471808
SR 1777 HOMESTEAD ML-CHAPEL HILL	0.81	103633457 104362449

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

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

Study Criteria

Study Name	Log No.	PH No.	TIP No.	K/A Cf.	B/C Cf.	ADT	ADT Route
CHHSTIACRASHANALYSIS				76.8	8.4	3400	40001834

Request Date	Courier Service	Phone No.	Ext.	Fax No.

County			Municipality			Name	Code	Div.	Name	Code	Y-Line Ft.	Begin Date	End Date	Years
ORANGE			All and Rural				68	7			0	5/1/2012	4/30/2017	5.00

Location Text	Requestor
SR 1834 (High School Rd) from SR 1843 (Seawell School Rd) to SR 1777 (Homestead Rd)	

Included Accidents	Old MP	New MP	Type
104232394	0.38	0.456	R
104262205		0.38	I

Fiche Roads

Name	Code
SR 1834	40001834
CHAPEL HILL HS	50005635
HIGH SCHOOL RD	50013961
SEWELL SCHOOL RD	50027635

Strip Road

Name	Code	Begin MP	End MP	Miles	Kilometers
SR 1834	40001834	0.380	0.810	0.430	0.692