LAFAYETTE
ENGINEERING COMPANY

Department of Civil and Environmental Engineering
Lafayette College
-
CE473 – Senior Capstone Design II
Spring 2015

TRAFFIC STUDY REPORT

Due Date: Monday, May 4th, 2014

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Group: Transportation Team

Title: Spring 2015 Traffic Study Report

Executive Summary:

This report examines the transportation impacts that will result from the installation of an inclined elevator connection between College Hill and Downtown Easton. In order to conduct this analysis, traffic counts were taken on College Avenue, North 3rd Street, and Bushkill Drive (the roads surrounding the site of interest). In addition to traffic counts (both vehicular and pedestrian), traffic calming recommendations and relevant AutoCAD profiles were developed. The goal of these tasks was to develop new ways (or enhance old ways) to increase accessibility and safety of any connection between Lafayette and the city of Easton.

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1. Introduction

1.1 Current Transportation Issues

The current connection between Lafayette College and downtown Easton is failing in terms of safety and efficiency. This disconnect is related to topographic constraints on the transportation system. Associated safety concerns result from high vehicular speeds in conjunction with increasing pedestrian traffic. This synthesis makes the transportation system both unsafe and inconvenient.

1.1.1 Downtown Easton and Campus Disconnect

In its current state, there are three main pathways students can take down the hill to downtown Easton. Depending on a student's location on campus, they take one of these three routes – Sullivan Road, the stairs leading down from between Ruef and Keefe, and College Ave. These routes are shown further in Appendix A. Each of these connections presents its own problems; for the stairs, there is a lack of lighting at night and it can be slippery in poor weather conditions. Sullivan Road and College Ave share the same problem of a steep road with a sharp curve, in addition, Sullivan Road currently has no sidewalk for pedestrians. The shortcomings of these three connections are the basis for the proposed construction of an inclined elevator – connecting Lafayette College Main campus and College Hill with it to Williams Arts Campus at the intersection of North 3rd Street, College Ave, and Bushkill Drive.

1.1.2 Importance of improving Current Connection

According to the Lafayette College Master Plan, the College is intensely developing its Williams Arts Campus (Denoted by Red Star in Appendix B). The Williams Arts Campus is strategically located at the entrance to Easton's historic district. Unfortunately, due to the local topography and

the limited number of students that are allowed to have cars on campus, there is no easy way for students to reach the Williams Arts Campus .

As discussed in the previous section, Appendix A shows what method students use to reach downtown but most of the routes chosen are longer than they should be. The Lafayette Engineering Company completed a feasibility study of the Williams Arts Campus to identify a direct transportation route for student and faculty from the main campus to Downtown Easton that will be available year-round.

1.1.3 Vehicular speeds

Vehicular speeds have proven to be a major issue on College Avenue. Due to the steep slope of College Avenue in conjunction with the sharp curve into North 3rd Street, cars tend to gain significant speed as they navigate this section of road. According to traffic count data obtained in fall of 2014, the average vehicular speed on College Avenue was 27 mph entering a curve with a printed warning speed of 15 mph. Due to inadequate sight distance related to the horizontal curve, these increased vehicular speeds are a safety concern not only for pedestrians, but also for the drivers themselves under hazardous weather conditions.

1.1.4 Pedestrian Safety

Each of the three connections offers many safety concerns for pedestrians creating the need to develop the new connection. The staircase, Sullivan Road, and Bushkill Drive are all poorly lit at night making them unpopular and unsafe for pedestrian use. Additionally, the stairs are not as well-maintained in the winter and can become slippery for pedestrians that use them to get downtown. The three roadway connections – College Ave, Sullivan Road, and Bushkill Drive do not have a safe place for pedestrians to walk and/or cross the road. Sullivan Road and Bushkill Drive do not

have sidewalks or a shoulder to walk on. College Ave has a sidewalk on the south side which can be accessed by students walking from McCartney Street if they are willing to cross at an area with limited site distance and high vehicular speeds.

1.1.5 Lack of convenience

As discussed in section 1.1.1, the connections from College hill to Downtown Easton are generally inefficient in their current states. One route, Sullivan Road, has no sidewalk, a 10% slope, and a sharp curved bend, making this route very dangerous. A second route is the staircase connecting Lafayette's campus to intersection of the North 3rd Street and College Avenue. These stairs are steep, slippery, and extremely long. The third route is by College Avenue. There is currently one sidewalk on the south side of the street, requiring anyone who wants to use this path to cross College Avenue at a point of inadequate sight distance and typically high vehicular speeds. No matter which route is taken, pedestrian accessibility and safety is not optimized. This problem is of increasing concern as Lafayette College expands its Williams Arts Campus.

1.2 Proposed Project Overview

Due to the concerns heretofore discussed, several potential solutions have been explored. The proposed inclined elevator project most efficiently completes the goals of enhancing connectivity between Lafayette College and downtown Easton while improving safety and convenience for all travelers. The elevator will extend from behind Marquis Hall (at the top of the hill on Lafayette College Main Campus) to behind the Spot (Bushkill Drive), as pictured in Appendix C. The elevator will operate on a two-rail system, with two cars operating simultaneously. Each car will be six feet by 8 feet with a capacity of 20 people per car. The elevator system has a maximum velocity of 4 mph but will likely operate at approximately half that speed. The total travel time

including loading and unloading will be approximately 5 minutes. The structure will feature 9 precast concrete supporting piers and a COR-TEN steel superstructure.

1.3 Site Description

The inclined elevator will have a stop at the top of the hill in the space between Ruef Hall and Easton Hall. The elevator will extend downward to a landing located in a new Lafayette College Intermodal Transportation & Welcome Center behind The Spot. Our project limits from a transportation perspective encompass all of this plus on North 3rd Street up to Route 22, Bushkill Drive East, Bushkill Drive West, and up College Ave to its intersection with McCartney Street (Appendix D). When considering alternate routes around the project site during the construction phase, our project limits extend as needed to adequately detour the displaced traffic.

1.4 Summary of Potential Traffic Impacts

The construction of an inclined elevator will have several impacts on traffic in the surrounding areas. If the inclined elevator is successful in its goal of enhancing the connectivity between College Hill and downtown Easton, there will be a significant increase in pedestrian activity around both ends of the elevator. Because of the increased pedestrian activity, new problems may arise at the lower portion of the inclined elevator near "The Spot".

The goal of constructing an inclined elevator is to increase pedestrian activity between Lafayette College and downtown Easton. While increased pedestrian activity is the goal, it may also bring about new traffic issues in the area. Students who take the elevator down the hill are at risk when crossing at North 3rd Street as vehicles coming down the hill are moving too fast and do not have adequate sight distance due to the sharp curve at the bottom of College Ave. Traffic calming

measures will need to be implemented on College Ave to protect this group of pedestrians who are crossing on North 3rd Street.

At the bottom of the inclined elevator, there will be a cluster of pedestrians outside the base of the structure. This as problematic as cars are often speeding down Bushkill Drive West and there is no sidewalk for pedestrians to walk on. This is especially challenging because by solving our initial problem we have created a new problem that is much more dangerous. Due to the valid concerns, section 4 discusses turning Bushkill Drive into a limited access road as a potential solution.

1.4.1 Increased Efficiency of New Transportation System

The proposed project will increase efficiency of the transportation system as a whole. Currently, the average trip time for a student who takes the LCAT from college hill to downtown is about 15 minutes (including waiting time and walking to the pickup location). In the proposed system, this trip will take 5 minutes including loading and unloading time. Waiting will be limited in the proposed system so the average trip time will take less than 10 minutes including waiting time. With the two systems working simultaneously, Lafayette College can significantly cut into the number of students driving their own cars and create a more sustainable transportation system (Appendix E). The new site design will improve transportation efficiency for other travelers as well. The limited access road, for example, will provide a more efficient experience for those who choose to walk or bicycle from college hill to downtown and vice versa, as they no longer have to share this passageway with vehicles.

1.4.2 Increased Pedestrian Safety

Increased pedestrian safety is a major goal of the proposed design. Currently, many safety issues exist for pedestrians and cyclists, as outlined in preceding sections. With the inevitable influx of pedestrians on site following the opening of the elevator system, these problems would only magnified if not addressed appropriately. Through traffic calming measures included in the proposed design (and further discussed in proceeding sections), pedestrian safety will actually be improved on the site of interest. In this way, the proposed plan not only offers a new method of transportation, but helps to maintain other options and better protect those travelers as well.

1.4.3 Increased Vehicular Safety

While the influx of traffic (both pedestrian and vehicular) following the introduction of the elevator could have harmful traffic implications, these implications will be reversed by the proposed traffic calming methods. The introduction of a center island median, for example, will encourage cars to slow down, thus protecting not only pedestrians, but also the vehicles themselves.

1.4.4 Improve Overall Transportation Experience

The goal of this project is to analyze the connection between Lafayette and Easton and provide recommendations to enhance pedestrian safety and accessibility. In order to do so, it was crucial to get data for all different user groups such as pedestrians, vehicles, bicyclists, etc. Traffic counts were found using pneumatic tubes for the streets connecting the hill to the downtown area. Manual counts have also been taken for pedestrian usage around our site. Another project objective involved providing traffic calming recommendations (rumble strips, raised median island, etc.). In addition, the site and surrounding area was illustrated in AutoCAD. These illustrations included the streets and all signage, a profile of the potential connection routes, and

pedestrian pathways. Overall, the connection between the college and the city must be revamped and made more efficient for the users.

2. Vehicular Traffic Analysis

2.1 Overview

A main focus for the Transportation Team was to acquire traffic counts at our project site using pneumatic tubes to measure speed, volume, and gap for the traffic. After doing a test run on High Street with the help of Professor Ruggles, we moved down the hill to obtain traffic counts for Bushkill Drive East and West, College Ave, and North 3rd Street. The data was then analyzed using the TraxPro Software and we were able to view useful information from the pneumatic tubes data.

2.2 Traffic Counts Procedure

To obtain traffic counts, a straight section of the roadway near signage was selected so that the collector could be locked to the signage. Then, using a team to stop traffic and a second team to lay out the tubes, we laid down the first tube straight across the roadway and secured it using pk nails and fasteners. Then, depending on the particular data we wanted to collect, we would select the proper layout and measure from the first tube to offset the second tube the appropriate distance. We would secure the second tube the same way and at this point the first team would allow traffic through. The open end of the tubes would then be attached to the collector on the side of the road and we would set up the collector to begin collecting data. A few cars would be allowed to pass through before leaving to ensure that the collector and tubes were working properly, then, we would close the collector and secure it to the nearby signage using a metal chain and lock (see Appendix F). Data was usually collected over a 24 hour period after which

we would remove the tubes using a hammer and pry bar while traffic was again temporarily stopped.

After taking the measurements and removing the pneumatic tubes, we would bring all the materials back to Acopian where we would connect the collector to the computer using a JAMAR universal download cable. Using TRAXPro software allowed us to download data from the collector and get readings for speed, gap, and volume. From the software we were able to produce reports and figures which we then interpreted on our own.

2.2.1 Collector and Software

The collector used in conjunction with the pneumatic tubes to get traffic readings is the TRAX Plus HS (shown in Appendix G). The TRAX Plus HS is an automatic traffic recorder designed and built by JAMAR Technologies Inc. The TRAX Plus HS can be downloaded via cable and analyzed using TRAXPro software also by JAMAR. We collected data using the collector's Basic mode because of its flexibility – it can be processed into any form including volume, class, speed, gap, length, and following distance. From this data we were able to produce reports that list volume, speed, gap, and class for each of the roadways in our project limits. Traffic reports for College Ave, Bushkill Drive East, and Bushkill Drive West can be found in Appendix H.

2.3 College Avenue

Traffic was monitored using the TRAX Plus HS collector from November 9, 2014 to November 12, 2014 using the procedure outlined in section 2.2

2.3.1 Data & Analysis

Due to limitations in the data, we believe the only relevant data from our test to be the data from Monday November 10, 2014. For that day, there was an Average Daily Traffic (ADT) of 3,453 vehicles with an average speed of 27 mph and a gap that was most often 2, 4, or 28+ seconds.

These 3 values for gap account for 50.1% of the total gap statistics. Upon removal of the pneumatic tubes from College Ave, it was discovered that one of the end caps was missing. This can be seen in the report as the traffic drops from 2,425 vehicles on Sunday and 3,453 vehicles on Monday to just 958 vehicles on Tuesday and 143 vehicles on Wednesday. The most accurate data (Monday data) was used in transportation designs as the intense winter of 2015 prevented us from getting more accurate data in the spring of 2015.

2.4 Bushkill Drive

Traffic was monitored using the TRAX Plus HS collector on Bushkill Drive East from November 6, 2014 to November 7, 2014 using the procedure outlined in section 2.2. Traffic was also monitored on Bushkill Drive West from October 26, 2014 to October 27, 2014. More sufficient data was needed for Bushkill Drive West to further plan out the limited access road so it was monitored a second time from April 19, 2015 to April 28, 2015

2.4.1 Data & Analysis

For Bushkill Drive East, we found an ADT of 1,069 vehicles with 67.9% of the vehicles going between 21 and 30 mph (only 15.2% going over 30 mph) and an average speed of 26 mph. The gap between vehicles was mostly greater than 28 seconds although a gap of 2, 4, and 6 seconds was also present. The first site data collected for Bushkill Drive West showed an ADT of 77 vehicles with an average speed of 23 mph (2.6% of vehicles going over 30 mph). From personal experience as students, we believed this was too low considering Bushkill Drive East had an ADT of 1,069 cars. A second test was performed on Bushkill Drive East from April 29, 2015 to April 28, 2015 which showed us an average ADT over the testing period of 327 vehicles with a Gap greater than 28 seconds for 81% of vehicles. Despite this data, we were unsuccessful as the collector was not working properly and failed to give us speed statistics for the data. In addition,

the pulses from the tubes were not grouped properly by the collector and it affected the final report printout from the TraxPro software.

3. Pedestrian Traffic Analysis

3.1 Routes

The major routes that pedestrians travel to go between Downtown Easton and College Hill are College Avenue, the stairs behind South College and Sullivan Road. The approximate cut off points for each of these routes can be seen in Appendix D. There are some overlaps in the paths that some people choose to take for a variety of reasons. An example of such is the effect of inclement weather conditions on the stairs. People will avoid the stairs because of its hazardous conditions in inclement weather. College Avenue is often utilized when traveling from Watson Courts, Farinon, and anywhere east of McCartney Street. The Stairs are utilized by those traveling in the area encompassing Conway House, the tennis courts, Pardee Hall, and Markle Hall. This route of pedestrian travel seems most popular to student because of its accessibility and direct pathway to Downtown Easton. Sullivan Road is utilized when traveling from Kamine, Rubin, Fisher East and West. Trips from the North side of campus are generally split between College Avenue and the stairs. This data was gathered by senior civil engineering students in an interview process that involved asking students about their preferred route and mode of transportation between Downtown Easton and College Hill.

3.1.1 Pedestrian Origins and Choices

Pedestrians impacted by the proposed project will originate from several areas relative to both the alpha (Marquis Landing at top of structure) and beta (landing point behind The Spot) locations. Firstly, Lafayette College faculty and students will originate from dormitories and

academic buildings located on campus. Currently, students choose their route based on several factors including location, weather, and preference. Secondly, Easton residents may originate from areas on college hill or downtown Easton. Their current choices are government by factors similarly to members of the Lafayette community.

3.2 Counts

A pedestrian traffic count was performed on Wednesday, November 19, 2014. The data was collected at the peak hours of 11:00 am to 12:00 pm and from 5:00 pm to 6:00 pm.

3.2.1 Data

The morning peak hour had a total of 8 people (5 students) who used the stairs. In the afternoon peak hour, 10 people (2 students) used the stairs.

3.2.2 Analysis

While the data may be partially skewed due to the cold weather at the time of the count, the data is quite revealing of the minimal pedestrian activity in the area. Considering the classes held by Lafayette College downtown in conjunction with the recreational opportunities, the lack of pedestrian activity is concerning, and reinforces the need for a better transportation option.

4. Bushkill Drive as a Limited Access Road

4.1 Objectives

As discussed previously, for students on the southwest area of campus, the preferred way of getting to downtown is to take Sullivan Road and Bushkill Drive West. Both streets are problematic as neither has a sidewalk for pedestrians to walk on and the sharp curves on both roads limits the sight distance for drivers and pedestrians. An option to mitigate this problem is

to build a pedestrian pathway to connect this part of campus to Downtown. However, since we decided to pursue an inclined elevator design, this proposed pathway would no longer have a clear path for connection. Because a pathway is no longer a possibility, pedestrian safety may be improved by instead turning Bushkill Drive West into a limited access pedestrian and bikeway road similar to what is shown in Appendix I. The road would have appropriate signage on North 3rd Street and College Ave to alert drivers that it is a closed road. The road would be used only for emergency vehicles, Lafayette College vehicles, and the residents who live on the road.

4.2 Impacts and Effects

Converting Bushkill Drive to a limited access road could have both safety and aesthetic implications, both of which could promote safe and enjoyable pedestrian activity. Because vehicle activity would be largely eliminated on the road, pedestrians travelling between the given portion of campus and downtown Easton would have a safer passageway. Closing Bushkill Drive to most vehicles would also make traffic calming at the base of the inclined elevator structure much easier as Bushkill Drive West would see little to no vehicular traffic.

4.3 Alternate Routes

Bushkill Drive being converted to a limited access road will lead to vehicular traffic being directed to an alternative route. The most probable route to replace Bushkill Drive is shown in Appendix J. Vehicles that would normally take Bushkill Drive to Sullivan Avenue will then take College Avenue to access campus. The time differential is fairly negligible.

While the volume will be increased along College Avenue eastbound, this may not have a negative effect on traffic. As evident in the traffic data, vehicular traffic on Bushkill Drive West is minimal in comparison to that of College Avenue. Additionally, the elimination of the turn

onto Bushkill Drive West from College Avenue will allow traffic to flow more smoothly, as vehicles will no longer build up at the intersection when a car is attempting to turn.

5. LCAT Shuttle

5.1 Overview

The LCAT (Lafayette College Area Transportation) shuttle is a primary mode of transportation between Lafayette College's campus and surrounding areas, including downtown Easton. Because of this, the function and efficiency of the shuttle system is of great importance in understanding the connectivity between Lafayette and downtown Easton. In order to gain a better understanding of the LCAT's current strengths and weaknesses, research has been conducted and data has been acquired and analyzed.

5.1.1 Description

The LCAT is a free shuttle service for Lafayette students to various areas of interest, including stores, airports, movie theatres, and athletic fields. The routes can be separated into three major categories: Metzger fields, arts campus, and miscellaneous. Because the focus of this project is enhancing the connectivity between College Hill and downtown Easton, the arts campus shuttle route serves as the focus of this research.

5.1.2 Current Schedule

Appendix K Table 1 provides ridership information broken down by date, day, and pickup location. Appendix K Figure 1 provides a graph of the information provided in the preceding table. While the graph shows peaks that may be helpful in reconfiguring the LCAT schedule, the main analysis of this data is that an average of only approximately 24 students used the LCAT shuttle per day per pickup location. This low average is cause for concern, as the LCAT (which is free and runs continuously) should be a primary connection between Lafayette College and

downtown Easton. Recently, a new LCAT schedule has been adopted for the arts campus. Once this new schedule is adopted, more ridership information will be acquired and further analyzed.

In addition to data analysis, an interview was conducted with an LCAT driver in order to better understand the system. During this interview, several observations were noted. The driver interviewed noted that ridership spiked significantly when classes ended. Outside of class schedules, there was little to no ridership. When asked about recommendations for improving the system, the driver suggested adding an additional stop on the other end of campus. From certain points on campus, it is easier to walk down Sullivan Road than to walk to Pardee Circle (which is currently the only pickup location). He also suggested that the system be advertised more, as many students were often unaware that the shuttle runs continuously.

5.2 Weaknesses

Based on ridership data and LCAT driver interviews, several clear weaknesses were revealed. Firstly, the schedule is under-advertised and largely unknown. Secondly, lack of convenient stops throughout campus lead to decreased ridership. Lastly, the LCAT system has become stigmatized and inefficient and undesirable. By combating these known weaknesses, the LCAT could become an efficient complimentary transportation system to the inclined elevator.

5.2.1 Schedule

The current schedule for the LCAT shuttle is given as Appendix L. To generalize the schedule, the Arts/Downtown shuttle runs continuously from around 8:30 am to 10:00 pm. Wait time between shuttles at a particular stop range from 10 minutes to around 25 minutes.

5.2.2 Stops

The LCAT shuttle makes several stops on Lafayette's campus and in downtown Easton. On Lafayette's campus, the shuttle stops on McCartney Street and Sullivan Road. These points are on opposite ends of campus, and so all students have fairly easy access to a shuttle stop. In downtown Easton, the shuttle stops at the Snyder Street Lot and the Easton Bus Terminal. The Snyder Street Lot stop allows for students to exit the shuttle near the visual arts campus, and the Easton Bus Terminal stop takes students into the downtown area.

5.2.3 Stigma

Several stigmas are attached to the LCAT shuttle system that dissuade students from taking advantage of the resource. The shuttle system is known to be unreliable in terms of scheduling. This is a serious concern for students, as the LCAT would be typically used to get to class, and so timeliness is an important factor. Students have also expressed that the LCAT schedules are too complex and difficult to find.

5.3 Recommendations

While the LCAT shuttle is a valuable resource, it is certainly not being used to its full potential. In order to improve ridership, several improvements can be made to the system.

While the schedule was recently adjusted to better suit student needs, this change was poorly communicated to students. By better advertising the system and its schedule, students may be more likely to use the resource.

The stigma concerning the unreliability of the system also acts as a deterrent keeping students from using the LCAT shuttle. Be improving the accuracy of the schedule and ensuring that riders will make it to class at the scheduled time, ridership will likely improve.

6. Traffic Calming

6.1 Overview

The proposed project will see a profound increase in pedestrian traffic on the site of interest. While this increase in pedestrian activity is desirable, it could lead to potential dangers for both pedestrians and vehicles. These potential dangers will be reversed by the traffic calming methods included in the design.

6.1.1 Description

The measures detailed in the proceeding sections have been designed to slow vehicular traffic, improve visibility and awareness, and promote safe travel for both pedestrians and drivers throughout and beyond our site limits. Each option has specific safety implications, and the overall recommendation combines several traffic calming features to maximize safety at the site of interest.

6.2 Options

Several options for traffic calming measures have been analyzed and are presented in the proceeding sections. These descriptions are followed by the conclusions and final recommendations for traffic calming measures to be incorporated into the final design.

6.2.1 Sidewalk on North College Avenue

To alleviate the problem of pedestrians crossing College Avenue at McCartney Street, a sidewalk was designed on the north edge of College Avenue (see class AutoCAD files – Preliminary Land Development Plan). Crossing the street at this intersection is particularly difficult because vehicles travelling south around the Cattell St. corner have roughly 120’ feet of stopping sight distance. This is insufficient because pedestrians cannot see oncoming traffic from a sufficient distance away. Furthermore, there is not an approved crosswalk at this location.

The north edge sidewalk is 4’ wide for its entire length along College Ave. and terminates where the stairs reach college Avenue.

6.2.2 Sculpture

Typical traffic calming tools include rumble strips, chicanes, and speed humps. However, more innovative tools, including art, have become a more popular choice among transportation engineers in recent years.

Sculpture is among the most popular mediums of art incorporated into transportation systems. Installing sculptural components cannot only fulfill the goals of traffic calming, but can also serve to improve the aesthetics of the surrounding areas.

For this project, sculpture could be used as a traffic calming tool to alter pedestrian traffic routes. By placing sculpture in the entranceway to the elevator pavilion, pedestrians will be encouraged to enter. The presence of sculpture will also create the feeling of a pedestrian-heavy environment for drivers, thus encouraging them to slow down.

6.2.3 Lights

A Belisha Beacon is a traffic calming implement aimed at creating awareness of the presence of pedestrians and decreasing vehicle speed in their vicinity. Belisha Beacons (shown in Appendix M) are striped poles with spherical lights that flash at the crosswalk when activated by pedestrians. This system draws the attention of the drivers to pedestrian presence because it only flashes when they are crossing the street. In addition to alerting drivers of the crosswalk, the vertical structure of the Belisha Beacon will give the appearance of the road narrowing. To be legally compliant, every crossing must be equipped with two Belisha Beacons. Please see Attachment I for a picture of a Belisha Beacon system in use in Hong Kong.

6.2.4 Rumble Strips

Rumble strips alter the road surface (with either shallow grooves or small bumps) in order to cause noise and vibrations heard and felt by drivers. Transverse rumble strips are rumble strips

that span the width of a lane. These are commonly used in traffic calming to alert drivers of upcoming obstacles (toll plazas, significant curves, etc.) and reduce vehicular speeds. This may be a viable design component at the College Avenue/North 3rd Street site. Installation of rumble strips could serve to alert drivers of pedestrian crossings while simultaneously reducing vehicular speeds. This would improve safety not only for pedestrians, but also for the drivers themselves. Several issues may arise if rumble strips are chosen as a method of traffic calming. A major concern of installing rumble strips is the noise generated as traffic drives over the strips. Adjacent buildings may be affected by this noise. However, rumble strip sequences can be designed such that noise is minimized as much as possible. Another potential issue associated with the installation of rumble strips is the loss of traction. Due to the grade and radius of the road at this site, loss of traction could be a concern depending on the placement and design of the sequences. If these issues remain a serious concern after more careful consideration, the use of textured pavement may be a viable alternative.

6.2.5 Raised Median Island

A raised median island refers to a raised or otherwise delineated median that divides lanes of traffic. Because installation of a raised median island narrows and delineates opposing lanes of traffic, it is a common traffic calming tool used to improve pedestrian safety and reduce vehicular speeds. At the College Avenue/North 3rd Street site, installation of a raised median island could narrow the lanes around the main curve in an attempt to reduce vehicular speeds (see class AutoCAD files – Preliminary Land Development Plan). This design could also include a pedestrian refuge, which would allow pedestrians to cross only one lane at a time.

The three major types of raised median islands use paint, delineators, and concrete. Because delineators are used mostly for construction or temporary installations, paint and concrete should be the main alternatives analyzed.

7. Recommendations and Implications

Several traffic calming methods have been selected from those presented in the preceding sections. It is recommended that the raised center median, Belisha Beacon, and north College Avenue sidewalk be implemented in conjunction with Bushkill Drive being converted to a limited access road.

In order to safely implement this design, some additional signage is necessary. A "Limited Access Road" sign should be posted on the corner of Bushkill Drive West and College Avenue. Because Bushkill Drive is no longer accessible to vehicular traffic, a sign indicating restricted left turns will be present for northbound traffic on North 3rd Street. Additionally, raised median signs would be required at both ends of the proposed median. Pedestrian signs will be used at several locations to warn drivers of the upcoming crosswalk.

The combination of these elements will simultaneously protect drivers and pedestrians, lowering vehicular speeds and alerting drivers of pedestrian presence. The inclined elevator will undoubtedly increase pedestrian activity. Through these design recommendations, the increase in pedestrian traffic will be protected, and the overall transportation experience will be improved.

8. References

Appendix I photo taken from: Wikipedia, n.d. Web.

http://commons.wikimedia.org/wiki/File:ParisPedestrianStreetCul-de-sac.jpg

Appendix M photo taken from: "Belisha Beacons (Zebra Crossing Signals)." SABRE. N.p., n.d. Web. <http://www.sabre-roads.org.uk/forum/viewtopic.php?f=1&t=12862&start=20>.

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9. Appendices

Appendix A:

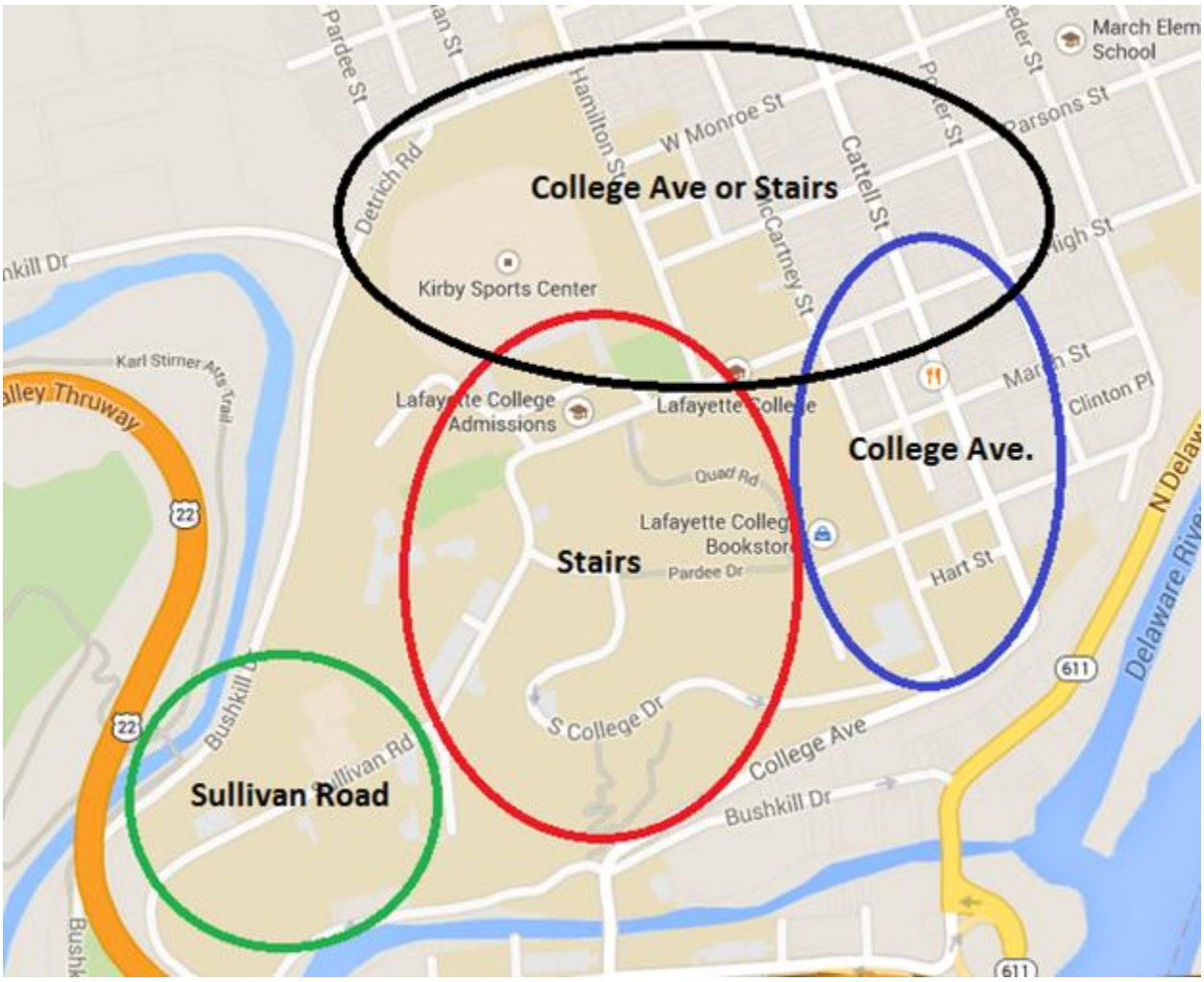

Figure A1: Campus Origin Venn Diagram showing routes students take to get down the hill subject to their initial location on campus.
[Photo taken from Interview Project]

Appendix B:

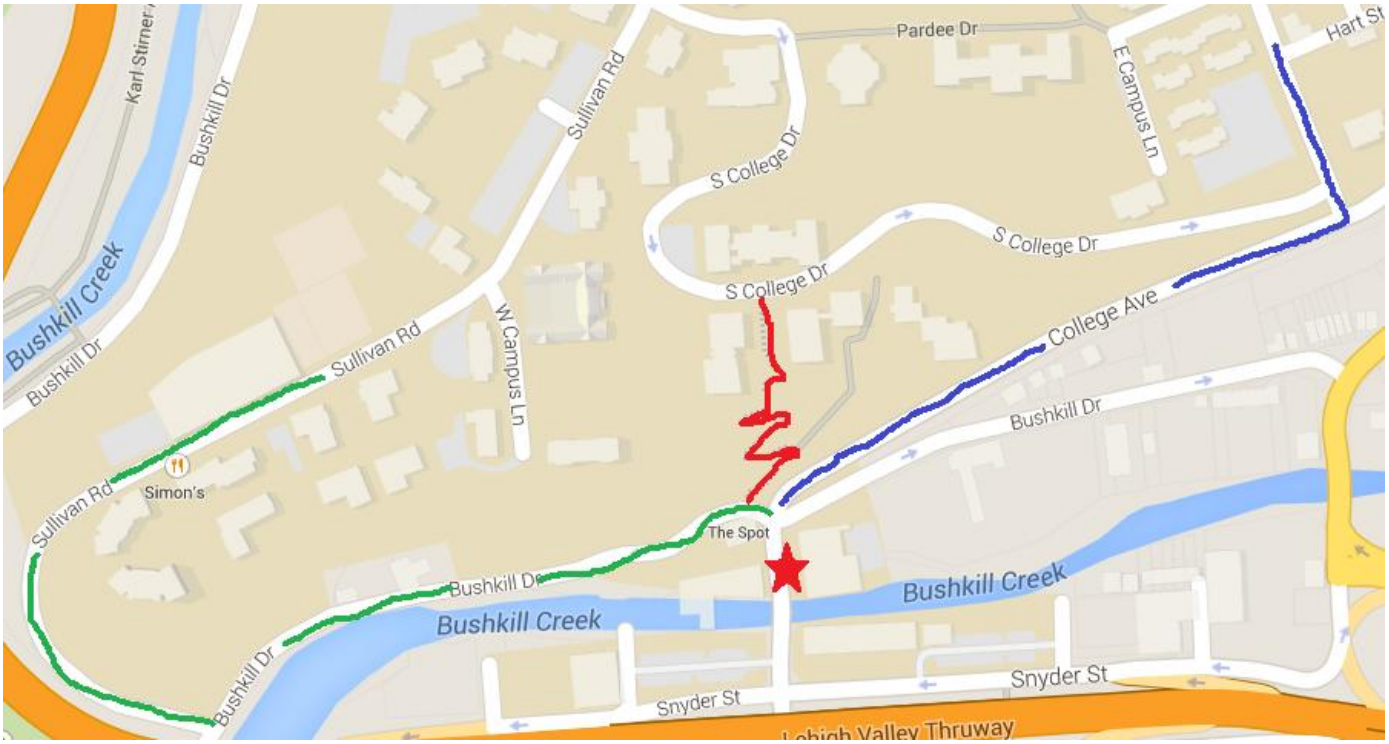

Figure B1: The new Williams Arts Campus is denoted by the red star. The 3 main pathways down are shown (Sullivan Road (green), Stairs (red.) and College Ave(blue)). [Photo taken from Google Maps]

Appendix C:

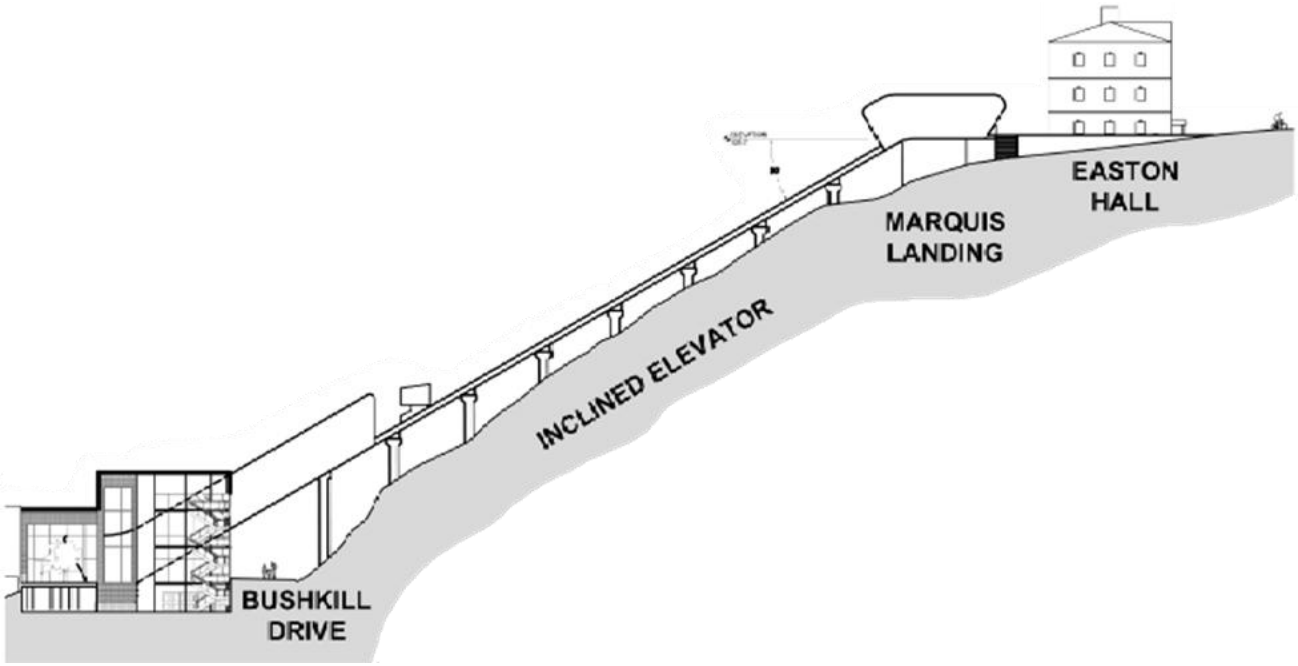

Figure C1: Cross-section view of the proposed elevator project extending from The Spot "Bushkill Drive" to the Marquis Landing.
[Photo taken from Capstone Final Presentation Slides]

Appendix D:

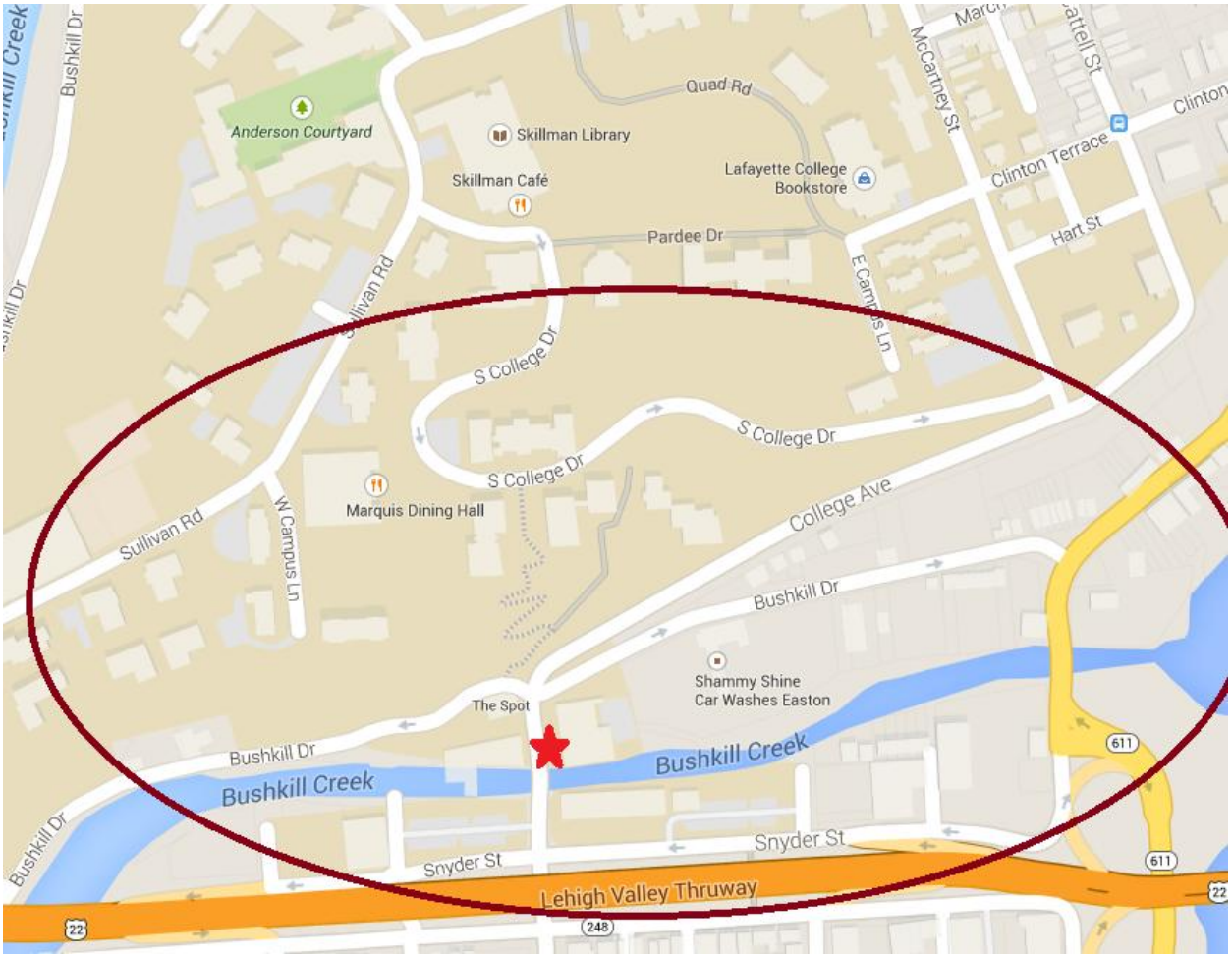

Figure D1: General Project Site Limits from a Transportation perspective. Includes Bushkill Dive (East and West), North 3rd Street (up to Rt. 22), and College Ave (up to intersection with McCartney Street).
[Photo taken from google maps]

Appendix E:

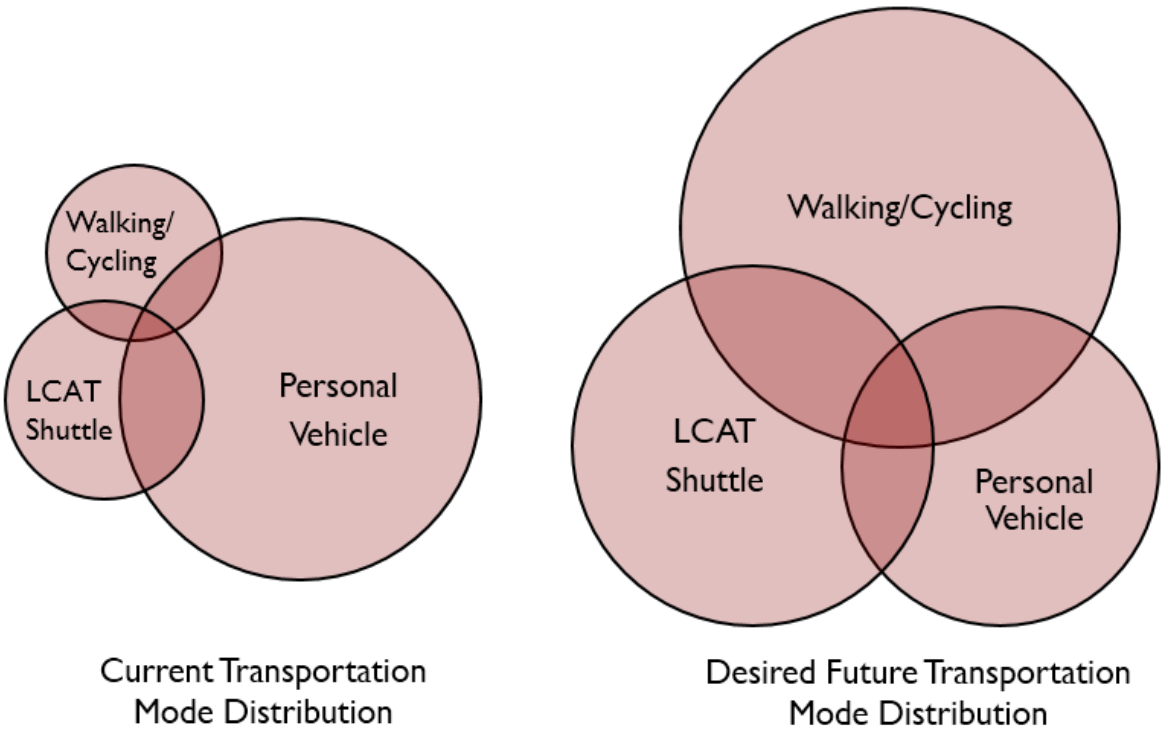

Figure E1: Currently students driving their personal vehicles down the hill is the preferred transportation option. In the future, Lafayette College would like the LCAT shuttle and the inclined elevator (represented as Walking/Cycling option) option will become the preferred transportation method for students.
[Photo taken from Capstone Final Presentation Slides]

Appendix F:

Figure F1: Pneumatic tubes and collector test setup on High Street
[Photo taken by Josh Koerber]

Appendix G:

Figure G1: The TRAX Plus HS counter used to collect traffic data.
[Photo taken from TRAX Plus HS User's Manual]

Appendix H:
Below are Traffic Reports for the various locations described in Section 2: Vehicular Traffic

Fall 2014 Transportation Team

College Ave
Easton, PA 18042

FIRST SITE DATA

COMBINED

Report for 11/9/2014 3:38:00 PM to Midnight

Vehicles	Peak Periods			
	AM		PM	
	Time	-	Time	04:15
2,425	Count	-	Count	739
	PHF	-	PHF	0.928

CLASS STATISTICS - Modified Scheme F

Class	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	No Class
Count	14	1672	586	3	121	3	0	7	2	0	0	0	0	17
Percent	0.6	68.9	24.2	0.1	5.0	0.1	0.0	0.3	0.1	0.0	0.0	0.0	0.0	0.7

COMBINED GAP STATISTICS - 2 To 26+ by 2 Seconds

Seconds	2	4	6	8	10	12	14	16	18	20	22	24	26	28
Count	672	467	252	167	124	109	83	63	48	51	39	34	33	283
Percent	27.7	19.3	10.4	6.9	5.1	4.5	3.4	2.6	2.0	2.1	1.6	1.4	1.4	11.7

SPEED STATISTICS - 15 to 70+ by 5 MPH

Speed in MPH	1 - 15	16 - 20	21 - 25	26 - 30	31 - 35	36 - 40	41 - 45	46 - 50	51 - 55	56 - 60	61 - 65	66 - 70	71 - 75	76 - 999
Count	2	64	741	929	314	260	89	20	3	2	0	1	0	0
Percent	0.1	2.6	30.6	38.3	12.9	10.7	3.7	0.8	0.1	0.1	0.0	0.0	0.0	0.0

Over Speed	15	20	25	30	35	40	45	50	55	60	65	70	75	999
Count	2423	2359	1618	689	375	115	26	6	3	1	1	0	0	0
Percent	99.9	97.3	66.7	28.4	15.5	4.7	1.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0

Percentile	5%	10%	15%	45%	50%	55%	85%	90%	95%
Speed	21	23	24	27	27	28	36	38	40

Average (Mean) 29

Pace Speed 22-31
Number in Pace 1687
Percent in Pace 69.6

Fall 2014 Transportation Team

College Ave
Easton, PA 18042

FIRST SITE DATA

COMBINED

Speed	Volume
3	1
4	0
5	0
6	0
7	0
8	0
9	0
10	0
11	0
12	0
13	0
14	0
15	1
16	0
17	5
18	10
19	10
20	39
21	65
22	84
23	136
24	192
25	264
26	246
27	231
28	226
29	141
30	85
31	82
32	75
33	52
34	71
35	34
36	49
37	64
38	52
39	43
40	52
41	28
42	23
43	16
44	13
45	9
46	11
47	2
48	3
49	2
50	2
51	1
52	1
53	1
54	0
55	0
56	1
57	1
58	0
59	0
60	0
61	0
62	0
63	0
64	0
65	0
66	0
67	0
68	0
69	1

Fall 2014 Transportation Team

College Ave
Easton, PA 18042
FIRST SITE DATA

COMBINED
Report for Monday, November 10, 2014

Vehicles	Peak Periods			
	AM		PM	
	Time	08:45	Time	01:00
3,453	Count	281	Count	326
	PHF	0.889	PHF	0.876

CLASS STATISTICS - Modified Scheme F

Class	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	No Class
Count	7	3119	202	3	91	10	2	8	10	1	0	0	0	0
Percent	0.2	90.3	5.8	0.1	2.6	0.3	0.1	0.2	0.3	0.0	0.0	0.0	0.0	0.0

COMBINED GAP STATISTICS - 2 To 26+ by 2 Seconds

Seconds	2	4	6	8	10	12	14	16	18	20	22	24	26	28
Count	469	454	328	241	251	197	125	122	116	100	99	84	59	805
Percent	13.6	13.2	9.5	7.0	7.3	5.7	3.6	3.5	3.4	2.9	2.9	2.4	1.7	23.3

SPEED STATISTICS - 15 to 70+ by 5 MPH

Speed in MPH	1 - 15	16 - 20	21 - 25	26 - 30	31 - 35	36 - 40	41 - 45	46 - 50	51 - 55	56 - 60	61 - 65	66 - 70	71 - 75	76 - 999
Count	42	105	913	2038	342	13	0	0	0	0	0	0	0	0
Percent	1.2	3.0	26.4	59.0	9.9	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Over Speed	15	20	25	30	35	40	45	50	55	60	65	70	75	999
Count	3411	3306	2393	355	13	0	0	0	0	0	0	0	0	0
Percent	98.8	95.7	69.3	10.3	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Percentile	5%	10%	15%	45%	50%	55%	85%	90%	95%
Speed	21	23	24	27	27	27	30	31	32

Average (Mean) 27

Pace Speed 22-31
Number in Pace 3059
Percent in Pace 88.6

Fall 2014 Transportation Team

College Ave
Easton, PA 18042

FIRST SITE DATA

COMBINED

Speed	Volume
6	1
7	0
8	0
9	0
10	2
11	3
12	7
13	10
14	8
15	11
16	12
17	22
18	18
19	10
20	43
21	54
22	101
23	150
24	245
25	363
26	422
27	509
28	458
29	378
30	271
31	162
32	90
33	49
34	25
35	16
36	5
37	5
38	2
39	0
40	1

Fall 2014 Transportation Team

College Ave
Easton, PA 18042
FIRST SITE DATA

COMBINED

Report for Tuesday, November 11, 2014

Vehicles	Peak Periods			
	AM		PM	
	Time	08:00	Time	04:15
958	Count	151	Count	60
	PHF	0.899	PHF	0.882

CLASS STATISTICS - Modified Scheme F

Class	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	No Class
Count	4	711	147	12	76	5	1	1	1	0	0	0	0	0
Percent	0.4	74.2	15.3	1.3	7.9	0.5	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0

COMBINED GAP STATISTICS - 2 To 26+ by 2 Seconds

Seconds	2	4	6	8	10	12	14	16	18	20	22	24	26	28
Count	43	59	38	39	39	34	32	14	13	20	21	28	18	552
Percent	4.5	6.2	4.0	4.1	4.1	3.6	3.4	1.5	1.4	2.1	2.2	2.9	1.9	58.1

SPEED STATISTICS - 15 to 70+ by 5 MPH

Speed in MPH	1 - 15	16 - 20	21 - 25	26 - 30	31 - 35	36 - 40	41 - 45	46 - 50	51 - 55	56 - 60	61 - 65	66 - 70	71 - 75	76 - 999
Count	11	18	148	508	156	75	37	5	0	0	0	0	0	0
Percent	1.1	1.9	15.4	53.0	16.3	7.8	3.9	0.5	0.0	0.0	0.0	0.0	0.0	0.0

Over Speed	15	20	25	30	35	40	45	50	55	60	65	70	75	999
Count	947	929	781	273	117	42	5	0	0	0	0	0	0	0
Percent	98.9	97.0	81.5	28.5	12.2	4.4	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Percentile	5%	10%	15%	45%	50%	55%	85%	90%	95%
Speed	22	24	25	28	28	29	33	37	40

Average (Mean) 29

Pace Speed 23-32
Number in Pace 741
Percent in Pace 77.3

Fall 2014 Transportation Team

College Ave
Easton, PA 18042

FIRST SITE DATA

COMBINED

Speed	Volume
7	1
8	0
9	2
10	1
11	3
12	0
13	2
14	1
15	1
16	1
17	2
18	3
19	2
20	10
21	10
22	9
23	28
24	33
25	68
26	86
27	119
28	119
29	104
30	80
31	64
32	40
33	26
34	12
35	14
36	13
37	18
38	16
39	9
40	19
41	9
42	13
43	7
44	4
45	4
46	2
47	0
48	3

Fall 2014 Transportation Team

College Ave
Easton, PA 18042
FIRST SITE DATA

COMBINED

Report for Wednesday, November 12, 2014, Midnight to 05:48 PM

Vehicles	Peak Periods			
	AM		PM	
	Time	07:15	Time	01:15
143	Count	23	Count	14
	PHF	0.821	PHF	0.700

CLASS STATISTICS - Modified Scheme F

Class	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	No Class
Count	0	95	32	1	15	0	0	0	0	0	0	0	0	0
Percent	0.0	66.4	22.4	0.7	10.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

COMBINED GAP STATISTICS - 2 To 26+ by 2 Seconds

Seconds	2	4	6	8	10	12	14	16	18	20	22	24	26	28
Count	2	1	1	1	1	1	2	0	1	2	1	0	0	121
Percent	1.5	0.7	0.7	0.7	0.7	0.7	1.5	0.0	0.7	1.5	0.7	0.0	0.0	90.3

SPEED STATISTICS - 15 to 70+ by 5 MPH

Speed in MPH	1 - 15	16 - 20	21 - 25	26 - 30	31 - 35	36 - 40	41 - 45	46 - 50	51 - 55	56 - 60	61 - 65	66 - 70	71 - 75	76 - 999
Count	0	0	3	39	56	27	7	7	3	0	1	0	0	0
Percent	0.0	0.0	2.1	27.3	39.2	18.9	4.9	4.9	2.1	0.0	0.7	0.0	0.0	0.0

Over Speed	15	20	25	30	35	40	45	50	55	60	65	70	75	999
Count	143	143	140	101	45	18	11	4	1	1	0	0	0	0
Percent	100.0	100.0	97.9	70.6	31.5	12.6	7.7	2.8	0.7	0.7	0.0	0.0	0.0	0.0

Percentile	5%	10%	15%	45%	50%	55%	85%	90%	95%
Speed	27	29	29	32	33	33	39	43	47

Average (Mean) 34

Pace Speed 29-38
Number in Pace 103
Percent in Pace 72.0

Fall 2014 Transportation Team

College Ave
Easton, PA 18042

FIRST SITE DATA

COMBINED

Speed	Volume
23	1
24	0
25	2
26	2
27	4
28	3
29	9
30	21
31	19
32	10
33	13
34	7
35	7
36	4
37	7
38	6
39	9
40	1
41	1
42	1
43	3
44	1
45	1
46	1
47	3
48	0
49	1
50	2
51	2
52	0
53	0
54	1
55	0
56	0
57	0
58	0
59	0
60	0
61	1

Fall 2014 Transportation Team

College Ave
Easton, PA 18042

FIRST SITE DATA

COMBINED

Report for 11/9/2014 3:38:00 PM to 11/12/2014 5:48:40 PM

CLASS STATISTICS - Modified Scheme F

Class	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	No Class
Count	25	5597	967	19	303	18	3	16	13	1	0	0	0	17
Percent	0.4	80.2	13.9	0.3	4.3	0.3	0.0	0.2	0.2	0.0	0.0	0.0	0.0	0.2

COMBINED GAP STATISTICS - 2 To 26+ by 2 Seconds

Seconds	2	4	6	8	10	12	14	16	18	20	22	24	26	28
Count	1186	981	619	448	415	341	242	199	178	173	160	146	110	1761
Percent	17.0	14.1	8.9	6.4	6.0	4.9	3.5	2.9	2.6	2.5	2.3	2.1	1.6	25.3

SPEED STATISTICS - 15 to 70+ by 5 MPH

Speed in MPH	1 - 15	16 - 20	21 - 25	26 - 30	31 - 35	36 - 40	41 - 45	46 - 50	51 - 55	56 - 60	61 - 65	66 - 70	71 - 75	76 - 999
Count	55	187	1805	3514	868	375	133	32	6	2	1	1	0	0
Percent	0.8	2.7	25.9	50.4	12.4	5.4	1.9	0.5	0.1	0.0	0.0	0.0	0.0	0.0

Over Speed	15	20	25	30	35	40	45	50	55	60	65	70	75	999
Count	6924	6737	4932	1418	550	175	42	10	4	2	1	0	0	0
Percent	99.2	96.5	70.7	20.3	7.9	2.5	0.6	0.1	0.1	0.0	0.0	0.0	0.0	0.0

Percentile	5%	10%	15%	45%	50%	55%	85%	90%	95%
Speed	21	23	24	27	27	28	32	34	38

Average (Mean) 28

Pace Speed 23-32
Number in Pace 5538
Percent in Pace 79.4

Fall 2014 Transportation Team

College Ave
Easton, PA 18042

FIRST SITE DATA

COMBINED

Speed	Volume
3	1
4	0
5	0
6	1
7	1
8	0
9	2
10	3
11	6
12	7
13	12
14	9
15	13
16	13
17	29
18	31
19	22
20	92
21	129
22	194
23	315
24	470
25	697
26	756
27	863
28	806
29	632
30	457
31	327
32	215
33	140
34	115
35	71
36	71
37	94
38	76
39	61
40	73
41	38
42	37
43	26
44	18
45	14
46	14
47	5
48	6
49	3
50	4
51	3
52	1
53	1
54	1
55	0
56	1
57	1
58	0
59	0
60	0
61	1
62	0
63	0
64	0
65	0
66	0
67	0
68	0
69	1

Fall 2014 Transportation Team

Bushkill Drive East
Easton, PA 18042

FIRST SITE DATA

COMBINED

Report for 11/6/2014 5:28:00 PM to Midnight

Vehicles	Peak Periods			
	AM		PM	
	Time	-	Time	05:30
349	Count	-	Count	74
	PHF	-	PHF	0.925

CLASS STATISTICS - Modified Scheme F

Class	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	No Class
Count	4	284	43	0	13	3	0	0	2	0	0	0	0	0
Percent	1.1	81.4	12.3	0.0	3.7	0.9	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0

COMBINED GAP STATISTICS - 2 To 26+ by 2 Seconds

Seconds	2	4	6	8	10	12	14	16	18	20	22	24	26	28
Count	30	26	17	8	9	10	5	4	6	4	5	6	3	216
Percent	8.6	7.4	4.9	2.3	2.6	2.9	1.4	1.1	1.7	1.1	1.4	1.7	0.9	61.9

SPEED STATISTICS - 15 to 70+ by 5 MPH

Speed in MPH	1 - 15	16 - 20	21 - 25	26 - 30	31 - 35	36 - 40	41 - 45	46 - 50	51 - 55	56 - 60	61 - 65	66 - 70	71 - 75	76 - 999
Count	3	27	99	161	52	7	0	0	0	0	0	0	0	0
Percent	0.9	7.7	28.4	46.1	14.9	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Over Speed	15	20	25	30	35	40	45	50	55	60	65	70	75	999
Count	346	319	220	59	7	0	0	0	0	0	0	0	0	0
Percent	99.1	91.4	63.0	16.9	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Percentile	5%	10%	15%	45%	50%	55%	85%	90%	95%
Speed	18	21	22	26	27	28	31	32	34

Average (Mean) 27

Pace Speed 22-31
Number in Pace 265
Percent in Pace 75.9

Fall 2014 Transportation Team

Bushkill Drive East
Easton, PA 18042

FIRST SITE DATA

COMBINED

Speed	Volume
14	1
15	2
16	5
17	7
18	3
19	6
20	6
21	13
22	10
23	13
24	32
25	31
26	28
27	29
28	37
29	35
30	32
31	18
32	10
33	10
34	9
35	5
36	3
37	2
38	1
39	0
40	1

Fall 2014 Transportation Team

Bushkill Drive East
Easton, PA 18042

FIRST SITE DATA

COMBINED

Report for Friday, November 07, 2014, Midnight to 06:13 PM

Vehicles	Peak Periods			
	AM		PM	
	Time	08:15	Time	04:15
720	Count	53	Count	110
	PHF	0.828	PHF	0.859

CLASS STATISTICS - Modified Scheme F

Class	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	No Class
Count	8	414	138	16	47	61	5	5	25	0	0	0	0	1
Percent	1.1	57.5	19.2	2.2	6.5	8.5	0.7	0.7	3.5	0.0	0.0	0.0	0.0	0.1

COMBINED GAP STATISTICS - 2 To 26+ by 2 Seconds

Seconds	2	4	6	8	10	12	14	16	18	20	22	24	26	28
Count	25	52	38	30	20	19	13	16	10	15	10	11	15	440
Percent	3.5	7.3	5.3	4.2	2.8	2.7	1.8	2.2	1.4	2.1	1.4	1.5	2.1	61.6

SPEED STATISTICS - 15 to 70+ by 5 MPH

Speed in MPH	1 - 15	16 - 20	21 - 25	26 - 30	31 - 35	36 - 40	41 - 45	46 - 50	51 - 55	56 - 60	61 - 65	66 - 70	71 - 75	76 - 999
Count	21	129	230	236	90	11	2	1	0	0	0	0	0	0
Percent	2.9	17.9	31.9	32.8	12.5	1.5	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0

Over Speed	15	20	25	30	35	40	45	50	55	60	65	70	75	999
Count	699	570	340	104	14	3	1	0	0	0	0	0	0	0
Percent	97.1	79.2	47.2	14.4	1.9	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Percentile	5%	10%	15%	45%	50%	55%	85%	90%	95%
Speed	16	18	20	25	25	26	30	32	34

Average (Mean) 25

Pace Speed 20-29
Number in Pace 470
Percent in Pace 65.3

Fall 2014 Transportation Team

Bushkill Drive East
Easton, PA 18042

FIRST SITE DATA

COMBINED

Speed	Volume
11	1
12	1
13	2
14	11
15	6
16	21
17	17
18	22
19	26
20	43
21	47
22	53
23	28
24	44
25	58
26	62
27	47
28	41
29	47
30	39
31	26
32	21
33	13
34	16
35	14
36	2
37	7
38	2
39	0
40	0
41	1
42	1
43	0
44	0
45	0
46	1

Fall 2014 Transportation Team

Bushkill Drive East
Easton, PA 18042

FIRST SITE DATA

COMBINED

Report for 11/6/2014 5:28:00 PM to 11/7/2014 6:13:12 PM

CLASS STATISTICS - Modified Scheme F

Class	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	No Class
Count	12	698	181	16	60	64	5	5	27	0	0	0	0	1
Percent	1.1	65.3	16.9	1.5	5.6	6.0	0.5	0.5	2.5	0.0	0.0	0.0	0.0	0.1

COMBINED GAP STATISTICS - 2 To 26+ by 2 Seconds

Seconds	2	4	6	8	10	12	14	16	18	20	22	24	26	28
Count	55	78	55	38	29	29	18	20	16	19	15	17	18	656
Percent	5.2	7.3	5.2	3.6	2.7	2.7	1.7	1.9	1.5	1.8	1.4	1.6	1.7	61.7

SPEED STATISTICS - 15 to 70+ by 5 MPH

Speed in MPH	1 - 15	16 - 20	21 - 25	26 - 30	31 - 35	36 - 40	41 - 45	46 - 50	51 - 55	56 - 60	61 - 65	66 - 70	71 - 75	76 - 999
Count	24	156	329	397	142	18	2	1	0	0	0	0	0	0
Percent	2.2	14.6	30.8	37.1	13.3	1.7	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0

Over Speed	15	20	25	30	35	40	45	50	55	60	65	70	75	999
Count	1045	889	560	163	21	3	1	0	0	0	0	0	0	0
Percent	97.8	83.2	52.4	15.2	2.0	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Percentile	5%	10%	15%	45%	50%	55%	85%	90%	95%
Speed	17	19	20	25	26	26	31	32	34

Average (Mean) 26

Pace Speed 21-30
Number in Pace 726
Percent in Pace 67.9

Fall 2014 Transportation Team

Bushkill Drive East
Easton, PA 18042

FIRST SITE DATA

COMBINED

Speed	Volume
11	1
12	1
13	2
14	12
15	8
16	26
17	24
18	25
19	32
20	49
21	60
22	63
23	41
24	76
25	89
26	90
27	76
28	78
29	82
30	71
31	44
32	31
33	23
34	25
35	19
36	5
37	9
38	3
39	0
40	1
41	1
42	1
43	0
44	0
45	0
46	1

Fall 2014 Transportation Team

Bushkill Drive West
Easton, PA 18042

FIRST SITE DATA

COMBINED

Report for 10/26/2014 2:30:00 PM to Midnight

Vehicles	Peak Periods			
	AM		PM	
	Time	-	Time	09:30
13	Count	-	Count	4
	PHF	-	PHF	0.500

CLASS STATISTICS - Modified Scheme F

Class	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	No Class
Count	1	11	1	0	0	0	0	0	0	0	0	0	0	0
Percent	7.7	84.6	7.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

COMBINED GAP STATISTICS - 4 to 28+ by 2 Seconds

Seconds	2	4	6	8	10	12	14	16	18	20	22	24	26	28
Count	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Percent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0

SPEED STATISTICS - 15 to 70+ by 5 MPH

Speed in MPH	1 - 15	16 - 20	21 - 25	26 - 30	31 - 35	36 - 40	41 - 45	46 - 50	51 - 55	56 - 60	61 - 65	66 - 70	71 - 75	76 - 999
Count	0	0	5	6	1	1	0	0	0	0	0	0	0	0
Percent	0.0	0.0	38.5	46.2	7.7	7.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Over Speed	15	20	25	30	35	40	45	50	55	60	65	70	75	999
Count	13	13	8	2	1	0	0	0	0	0	0	0	0	0
Percent	100.0	100.0	61.5	15.4	7.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Percentile	5%	10%	15%	45%	50%	55%	85%	90%	95%
Speed	21	21	22	26	26	27	29	32	32

Average (Mean) 27

Pace Speed 20-29
Number in Pace 11
Percent in Pace 84.6

Fall 2014 Transportation Team

Bushkill Drive West
Easton, PA 18042

FIRST SITE DATA

COMBINED

Speed	Volume
21	1
22	3
23	0
24	0
25	1
26	1
27	1
28	1
29	3
30	0
31	0
32	1
33	0
34	0
35	0
36	0
37	1

Fall 2014 Transportation Team

Bushkill Drive West
Easton, PA 18042
FIRST SITE DATA

COMBINED

Report for Monday, October 27, 2014, Midnight to 04:50 PM

Vehicles	Peak Periods			
	AM		PM	
	Time	08:00	Time	01:15
64	Count	7	Count	13
	PHF	0.875	PHF	0.650

CLASS STATISTICS - Modified Scheme F

Class	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	No Class
Count	0	52	6	0	3	1	0	2	0	0	0	0	0	0
Percent	0.0	81.3	9.4	0.0	4.7	1.6	0.0	3.1	0.0	0.0	0.0	0.0	0.0	0.0

COMBINED GAP STATISTICS - 4 to 28+ by 2 Seconds

Seconds	2	4	6	8	10	12	14	16	18	20	22	24	26	28
Count	3	1	0	0	0	0	0	0	0	0	0	0	0	49
Percent	5.7	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	92.5

SPEED STATISTICS - 15 to 70+ by 5 MPH

Speed in MPH	1 - 15	16 - 20	21 - 25	26 - 30	31 - 35	36 - 40	41 - 45	46 - 50	51 - 55	56 - 60	61 - 65	66 - 70	71 - 75	76 - 999
Count	2	12	33	17	0	0	0	0	0	0	0	0	0	0
Percent	3.1	18.8	51.6	26.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Over Speed	15	20	25	30	35	40	45	50	55	60	65	70	75	999
Count	62	50	17	0	0	0	0	0	0	0	0	0	0	0
Percent	96.9	78.1	26.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Percentile	5%	10%	15%	45%	50%	55%	85%	90%	95%
Speed	16	18	19	23	23	23	26	27	28

Average (Mean) 23

Pace Speed 19-28
Number in Pace 55
Percent in Pace 85.9

Fall 2014 Transportation Team

Bushkill Drive West
Easton, PA 18042

FIRST SITE DATA

COMBINED

Speed	Volume
7	1
8	0
9	0
10	0
11	0
12	0
13	1
14	0
15	0
16	2
17	1
18	3
19	2
20	4
21	7
22	6
23	8
24	6
25	6
26	7
27	4
28	5
29	0
30	1

Fall 2014 Transportation Team

Bushkill Drive West
Easton, PA 18042

FIRST SITE DATA

COMBINED

Report for 10/26/2014 2:30:00 PM to 10/27/2014 4:50:40 PM

CLASS STATISTICS - Modified Scheme F

Class	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	No Class
Count	1	63	7	0	3	1	0	2	0	0	0	0	0	0
Percent	1.3	81.8	9.1	0.0	3.9	1.3	0.0	2.6	0.0	0.0	0.0	0.0	0.0	0.0

COMBINED GAP STATISTICS - 4 to 28+ by 2 Seconds

Seconds	2	4	6	8	10	12	14	16	18	20	22	24	26	28
Count	3	1	0	0	0	0	0	0	0	0	0	0	0	53
Percent	5.3	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	93.0

SPEED STATISTICS - 15 to 70+ by 5 MPH

Speed in MPH	1 - 15	16 - 20	21 - 25	26 - 30	31 - 35	36 - 40	41 - 45	46 - 50	51 - 55	56 - 60	61 - 65	66 - 70	71 - 75	76 - 999
Count	2	12	38	23	1	1	0	0	0	0	0	0	0	0
Percent	2.6	15.6	49.4	29.9	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Over Speed	15	20	25	30	35	40	45	50	55	60	65	70	75	999
Count	75	63	25	2	1	0	0	0	0	0	0	0	0	0
Percent	97.4	81.8	32.5	2.6	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Percentile	5%	10%	15%	45%	50%	55%	85%	90%	95%
Speed	16	18	20	23	23	24	27	28	29

Average (Mean) 23

Pace Speed 20-29
Number in Pace 64
Percent in Pace 83.1

Fall 2014 Transportation Team

Bushkill Drive West
Easton, PA 18042

FIRST SITE DATA

COMBINED

Speed	Volume
7	1
8	0
9	0
10	0
11	0
12	0
13	1
14	0
15	0
16	2
17	1
18	3
19	2
20	4
21	8
22	9
23	8
24	6
25	7
26	8
27	5
28	6
29	3
30	1
31	0
32	1
33	0
34	0
35	0
36	0
37	1

Spring 2015 Transportation Team

Bushkill Drive West
Easton, PA 18042
SECOND SITE DATA

COMBINED

Report for 4/19/2015 5:54:00 PM to Midnight

Vehicles	Peak Periods	
	AM	PM
	Time -	Time 06:00
0	Count -	Count 40
	PHF -	PHF 0.714

CLASS STATISTICS - Modified Scheme F

Class	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	No Class
Count	0	138	0	0	0	0	0	0	0	0	0	0	0	0
Percent	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

COMBINED GAP STATISTICS - 4 to 28+ by 2 Seconds

Seconds	2	4	6	8	10	12	14	16	18	20	22	24	26	28
Count	8	4	4	2	2	2	3	1	3	1	2	1	1	104
Percent	5.8	2.9	2.9	1.4	1.4	1.4	2.2	0.7	2.2	0.7	1.4	0.7	0.7	75.4

MISC. STATISTICS

Number of Axles	2	3	4	5	6	7	8	9	10	11	12
Avg. Wheelbase	95.0	0	0	0	0	0	0	0	0	0	0

Axles Per Vehicle 2.00

Spring 2015 Transportation Team

Bushkill Drive West
Easton, PA 18042
SECOND SITE DATA

COMBINED

Report for Monday, April 20, 2015

Vehicles	Peak Periods			
	AM		PM	
	Time	04:30	Time	04:30
0	Count	6	Count	33
	PHF	0.500	PHF	0.635

CLASS STATISTICS - Modified Scheme F

Class	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	No Class
Count	0	198	0	0	0	0	0	0	0	0	0	0	0	0
Percent	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

COMBINED GAP STATISTICS - 4 to 28+ by 2 Seconds

Seconds	2	4	6	8	10	12	14	16	18	20	22	24	26	28
Count	10	2	2	0	1	1	3	3	1	1	3	2	3	149
Percent	5.5	1.1	1.1	0.0	0.6	0.6	1.7	1.7	0.6	0.6	1.7	1.1	1.7	82.3

MISC. STATISTICS

Number of Axles	2	3	4	5	6	7	8	9	10	11	12
Avg. Wheelbase	95.0	0	0	0	0	0	0	0	0	0	0

Axles Per Vehicle 2.19

Spring 2015 Transportation Team

Bushkill Drive West
Easton, PA 18042
SECOND SITE DATA

COMBINED

Report for Tuesday, April 21, 2015

Vehicles	Peak Periods			
	AM		PM	
	Time	11:30	Time	04:00
0	Count	23	Count	35
	PHF	0.523	PHF	0.795

CLASS STATISTICS - Modified Scheme F

Class	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	No Class
Count	0	298	0	0	0	0	0	0	0	0	0	0	0	0
Percent	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

COMBINED GAP STATISTICS - 4 to 28+ by 2 Seconds

Seconds	2	4	6	8	10	12	14	16	18	20	22	24	26	28
Count	10	4	6	5	9	3	3	7	1	3	0	4	2	233
Percent	3.4	1.4	2.1	1.7	3.1	1.0	1.0	2.4	0.3	1.0	0.0	1.4	0.7	80.3

MISC. STATISTICS

Number of Axles	2	3	4	5	6	7	8	9	10	11	12
Avg. Wheelbase	95.0	0	0	0	0	0	0	0	0	0	0

Axles Per Vehicle 2.06

Spring 2015 Transportation Team

Bushkill Drive West
Easton, PA 18042
SECOND SITE DATA

COMBINED

Report for Wednesday, April 22, 2015

Vehicles	Peak Periods			
	AM		PM	
	Time	11:30	Time	01:45
0	Count	28	Count	46
	PHF	0.778	PHF	0.821

CLASS STATISTICS - Modified Scheme F

Class	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	No Class
Count	0	313	0	0	0	0	0	0	0	0	0	0	0	0
Percent	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

COMBINED GAP STATISTICS - 4 to 28+ by 2 Seconds

Seconds	2	4	6	8	10	12	14	16	18	20	22	24	26	28
Count	17	3	3	3	4	1	5	2	4	4	3	6	1	242
Percent	5.7	1.0	1.0	1.0	1.3	0.3	1.7	0.7	1.3	1.3	1.0	2.0	0.3	81.2

MISC. STATISTICS

Number of Axles	2	3	4	5	6	7	8	9	10	11	12
Avg. Wheelbase	95.0	0	0	0	0	0	0	0	0	0	0

Axles Per Vehicle 2.10

Spring 2015 Transportation Team

Bushkill Drive West
Easton, PA 18042
SECOND SITE DATA

COMBINED

Report for Thursday, April 23, 2015

Vehicles	Peak Periods			
	AM		PM	
	Time	08:30	Time	08:15
0	Count	27	Count	38
	PHF	0.750	PHF	0.679

CLASS STATISTICS - Modified Scheme F

Class	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	No Class
Count	0	400	0	0	0	0	0	0	0	0	0	0	0	0
Percent	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

COMBINED GAP STATISTICS - 4 to 28+ by 2 Seconds

Seconds	2	4	6	8	10	12	14	16	18	20	22	24	26	28
Count	17	8	4	9	5	6	3	3	5	4	2	6	2	316
Percent	4.4	2.1	1.0	2.3	1.3	1.5	0.8	0.8	1.3	1.0	0.5	1.5	0.5	81.0

MISC. STATISTICS

Number of Axles	2	3	4	5	6	7	8	9	10	11	12
Avg. Wheelbase	95.0	0	0	0	0	0	0	0	0	0	0

Axles Per Vehicle 2.05

Spring 2015 Transportation Team

Bushkill Drive West
Easton, PA 18042
SECOND SITE DATA

COMBINED

Report for Friday, April 24, 2015

Vehicles	Peak Periods			
	AM		PM	
	Time	09:00	Time	09:15
0	Count	23	Count	42
	PHF	0.575	PHF	0.875

CLASS STATISTICS - Modified Scheme F

Class	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	No Class
Count	0	374	0	0	0	0	0	0	0	0	0	0	0	0
Percent	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

COMBINED GAP STATISTICS - 4 to 28+ by 2 Seconds

Seconds	2	4	6	8	10	12	14	16	18	20	22	24	26	28
Count	18	6	2	3	7	3	6	3	4	3	3	3	1	304
Percent	4.9	1.6	0.5	0.8	1.9	0.8	1.6	0.8	1.1	0.8	0.8	0.8	0.3	83.1

MISC. STATISTICS

Number of Axles	2	3	4	5	6	7	8	9	10	11	12
Avg. Wheelbase	95.0	0	0	0	0	0	0	0	0	0	0

Axles Per Vehicle 2.04

Spring 2015 Transportation Team

Bushkill Drive West
Easton, PA 18042
SECOND SITE DATA

COMBINED

Report for Saturday, April 25, 2015

Vehicles	Peak Periods			
	AM		PM	
	Time	11:30	Time	04:45
0	Count	28	Count	36
	PHF	0.700	PHF	0.750

CLASS STATISTICS - Modified Scheme F

Class	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	No Class
Count	0	374	0	0	0	0	0	0	0	0	0	0	0	0
Percent	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

COMBINED GAP STATISTICS - 4 to 28+ by 2 Seconds

Seconds	2	4	6	8	10	12	14	16	18	20	22	24	26	28
Count	27	8	4	6	5	8	2	6	6	2	3	3	3	278
Percent	7.5	2.2	1.1	1.7	1.4	2.2	0.6	1.7	1.7	0.6	0.8	0.8	0.8	77.0

MISC. STATISTICS

Number of Axles	2	3	4	5	6	7	8	9	10	11	12
Avg. Wheelbase	95.0	0	0	0	0	0	0	0	0	0	0

Axles Per Vehicle 2.07

Spring 2015 Transportation Team

Bushkill Drive West
Easton, PA 18042
SECOND SITE DATA

COMBINED

Report for Sunday, April 26, 2015

Vehicles	Peak Periods			
	AM		PM	
	Time	11:30	Time	01:00
0	Count	21	Count	42
	PHF	0.750	PHF	0.808

CLASS STATISTICS - Modified Scheme F

Class	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	No Class
Count	0	352	0	0	0	0	0	0	0	0	0	0	0	0
Percent	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

COMBINED GAP STATISTICS - 4 to 28+ by 2 Seconds

Seconds	2	4	6	8	10	12	14	16	18	20	22	24	26	28
Count	29	4	0	4	8	2	1	2	2	3	5	4	3	271
Percent	8.6	1.2	0.0	1.2	2.4	0.6	0.3	0.6	0.6	0.9	1.5	1.2	0.9	80.2

MISC. STATISTICS

Number of Axles	2	3	4	5	6	7	8	9	10	11	12
Avg. Wheelbase	95.0	0	0	0	0	0	0	0	0	0	0

Axles Per Vehicle 2.08

Spring 2015 Transportation Team

Bushkill Drive West
Easton, PA 18042
SECOND SITE DATA

COMBINED

Report for Monday, April 27, 2015

Vehicles	Peak Periods			
	AM		PM	
	Time	08:30	Time	04:00
0	Count	27	Count	31
	PHF	0.675	PHF	0.861

CLASS STATISTICS - Modified Scheme F

Class	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	No Class
Count	0	303	0	0	0	0	0	0	0	0	0	0	0	0
Percent	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

COMBINED GAP STATISTICS - 4 to 28+ by 2 Seconds

Seconds	2	4	6	8	10	12	14	16	18	20	22	24	26	28
Count	15	1	3	1	3	3	0	5	1	4	3	1	3	248
Percent	5.2	0.3	1.0	0.3	1.0	1.0	0.0	1.7	0.3	1.4	1.0	0.3	1.0	85.2

MISC. STATISTICS

Number of Axles	2	3	4	5	6	7	8	9	10	11	12
Avg. Wheelbase	95.0	0	0	0	0	0	0	0	0	0	0

Axles Per Vehicle 2.08

Spring 2015 Transportation Team

Bushkill Drive West
Easton, PA 18042
SECOND SITE DATA

COMBINED

Report for Tuesday, April 28, 2015, Midnight to 04:03 PM

Vehicles	Peak Periods			
	AM		PM	
	Time	11:30	Time	01:00
0	Count	27	Count	28
	PHF	0.614	PHF	0.875

CLASS STATISTICS - Modified Scheme F

Class	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	No Class
Count	0	196	0	0	0	0	0	0	0	0	0	0	0	0
Percent	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

COMBINED GAP STATISTICS - 4 to 28+ by 2 Seconds

Seconds	2	4	6	8	10	12	14	16	18	20	22	24	26	28
Count	8	4	1	6	3	2	1	0	1	2	1	2	1	156
Percent	4.3	2.1	0.5	3.2	1.6	1.1	0.5	0.0	0.5	1.1	0.5	1.1	0.5	83.0

MISC. STATISTICS

Number of Axles	2	3	4	5	6	7	8	9	10	11	12
Avg. Wheelbase	95.0	0	0	0	0	0	0	0	0	0	0

Axles Per Vehicle 2.09

Spring 2015 Transportation Team

Bushkill Drive West
Easton, PA 18042
SECOND SITE DATA

COMBINED

Report for 4/19/2015 5:54:00 PM to 4/28/2015 4:03:44 PM

CLASS STATISTICS - Modified Scheme F

Class	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	No Class
Count	0	2946	0	0	0	0	0	0	0	0	0	0	0	0
Percent	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

COMBINED GAP STATISTICS - 4 to 28+ by 2 Seconds

Seconds	2	4	6	8	10	12	14	16	18	20	22	24	26	28
Count	159	44	29	39	47	31	27	32	28	27	25	32	20	2301
Percent	5.6	1.5	1.0	1.4	1.7	1.1	1.0	1.1	1.0	1.0	0.9	1.1	0.7	81.0

MISC. STATISTICS

Number of Axles	2	3	4	5	6	7	8	9	10	11	12
Avg. Wheelbase	95.0	0	0	0	0	0	0	0	0	0	0

Axles Per Vehicle 2.07

Appendix I:

Figure I1: A controlled access cul de sac in Paris, France. [Wikipedia]

Appendix J:

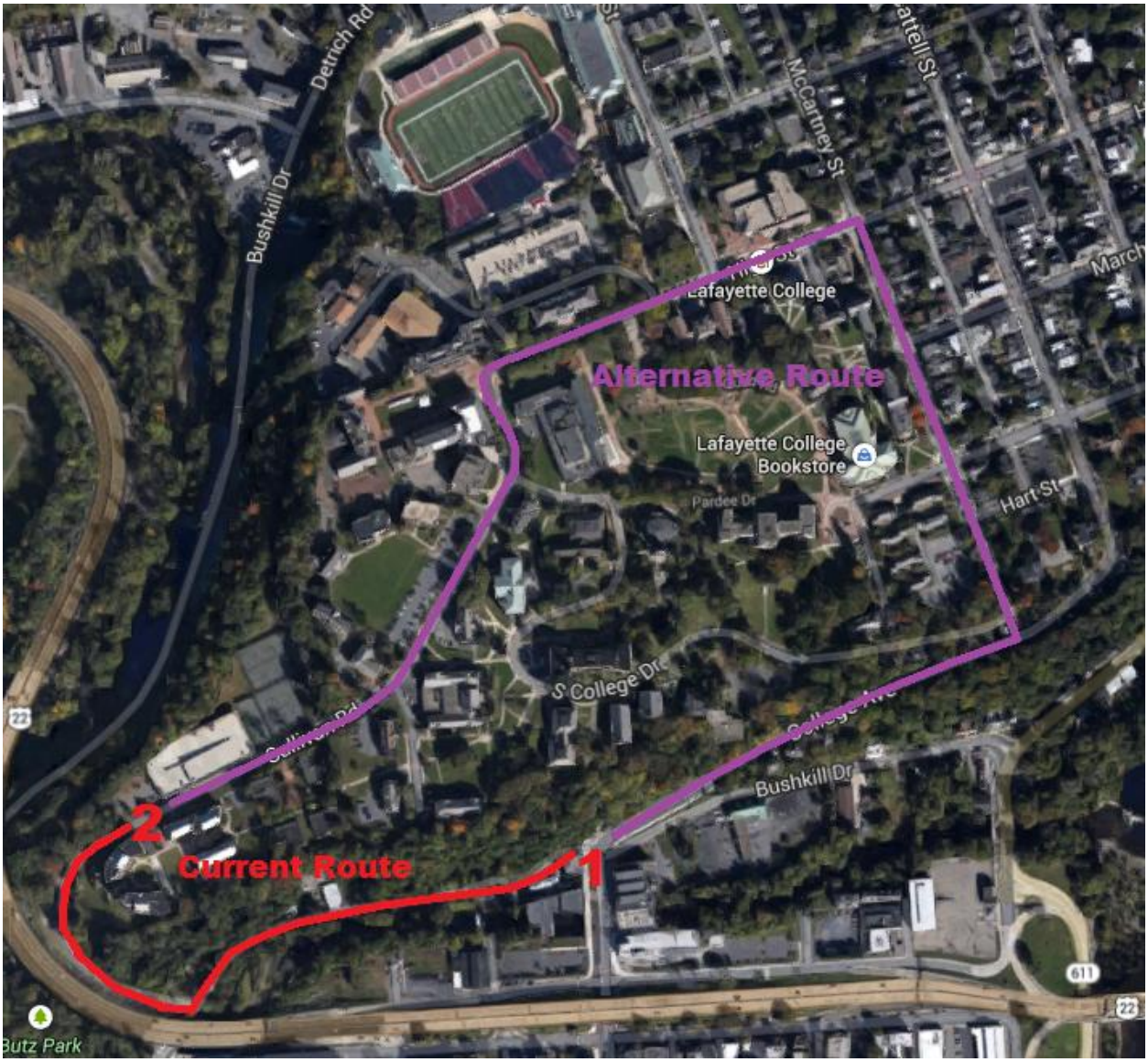

Figure J1: Alternate route should Bushkill Drive West become a limited access road.

Appendix K:

Table K1: Arts Shuttle Ridership Information

Arts Shuttle				
Date	Day	Pick-Up Location		Time Breakdown
		Pardee	Snyder	
8/26/2014	T	34	42	NO
8/27/2014	W	20	26	NO
8/28/2014	Th	25	47	YES
9/1/2014	M	14	18	NO
9/2/2014	T	27	18	NO
9/3/2014	W	28	35	NO
9/4/2014	Th	14	21	NO
9/8/2014	M	38	28	YES
9/9/2014	T	26	33	YES
9/10/2014	W	32	25	YES
9/11/2014	Th	30	25	YES
9/12/2014	F	12	32	YES
9/15/2014	M	22	25	YES
9/16/2014	T	22	27	YES
9/17/2014	W	28	30	YES
9/18/2014	Th	28	44	YES
9/19/2014	F	30	19	YES
9/22/2014	M	7	7	YES
9/23/2014	T	30	31	YES
9/24/2014	W	25	38	YES
9/25/2014	Th	0	0	YES
9/26/2014	F	6	0	YES
9/29/2014	M	12	23	YES
9/30/2014	T	30	25	YES

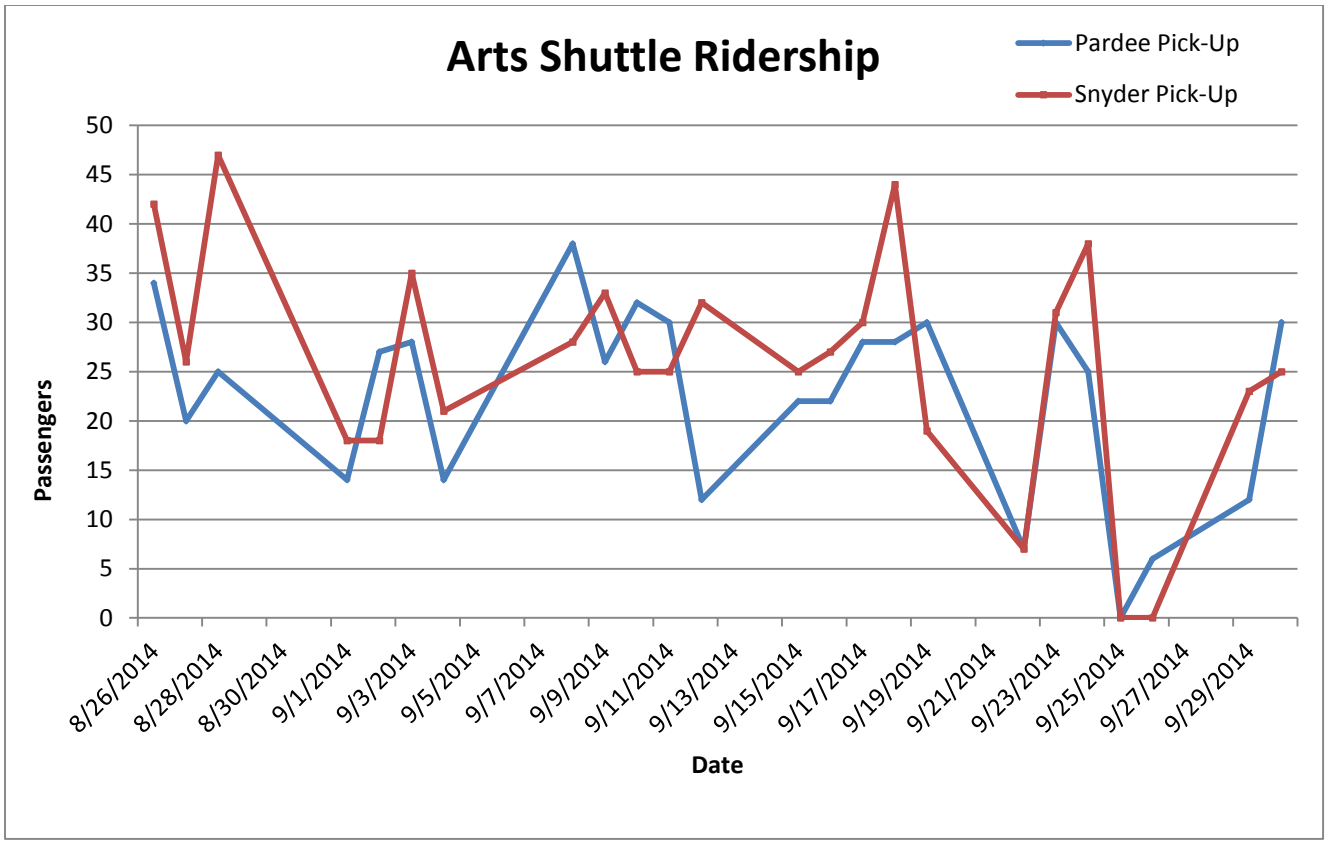

Figure K1: Arts Shuttle Ridership Graph

Appendix L:

Effective:
Monday 3/30/15

Lafayette College Area Transportation LCAT

Arts/Downtown - *morning and afternoon*

Monday - Friday

McCartney and Clinton	Snyder Street Lot	Sullivan Rd (near Kamine)	Easton Bus Terminal
8:30 am	8:33	8:36	-
8:40	8:43	8:46	-
8:50	8:53	-	9:03
-	-	9:13	-
9:17	9:20	9:23	-
continues every 10 min until			-
9:47	9:50	9:53	-
continues every 10 min until			-
10:17	10:20	-	10:35
-	-	10:42	-
10:46	10:50	10:53	-
continues every 10 min until			-
11:47	11:50	11:53	-
11:57	driver change		-
12:07	12:10	12:13	-
continues every 10 min until			-
1:38	1:41	-	1:55
-	-	2:02	-
2:06	2:09	2:12	-
2:16	2:19	2:22	-
2:26	2:30	2:33	-
2:37	2:40	-	2:55
-	-	3:02	-
3:06	3:09	3:12	-
continues every 10 min until			-
3:56	4:00	-	4:10
-	-	4:17	-
4:21	4:24	4:27	-
4:30 pm			

Arts/Downtown - *evening*

Monday				Tuesday and Wednesday			
McCartney and Clinton	Snyder Street Lot	Sullivan Rd (near Kamine)	Easton Bus Terminal	McCartney and Clinton	Snyder Street Lot	Sullivan Rd (near Kamine)	Easton Bus Terminal
6:30 pm	6:33	6:36	-	6:30 pm	6:33	6:36	-
continues every 10 min until			-	***continues every 10 min until***			-
7:00	7:03	-	7:15	7:00	7:03	-	7:15
-	-	7:22	-	-	-	7:22	-
7:26	7:29	7:33	-	7:26	7:29	7:33	-
7:47	7:50	7:54	-	7:47	7:50	7:54	-
7:58	8:01	-	8:11	7:58	8:01	-	8:11
-	-	8:18	-	-	-	8:18	-
8:22	8:25	-	8:35	8:22	8:25	-	8:35
-	-	8:42	-	-	-	8:42	-
8:46	8:56	8:59	-	8:46	8:56	8:59	-
9:03	9:06	9:09	-	9:03	9:06	9:09	-
9:12	9:15	9:18	-	9:12	9:15	9:18	-
9:22	9:25	-	9:35	9:22	9:25	-	9:35
-	-	9:42	-	-	-	9:42	-
9:45	9:50	9:53	-	9:45	9:50	9:53	-
9:57	10:00	10:03	-	9:57	10:00 pm		
10:07	10:10	-	10:20				
-	-	10:27	-				
10:31	10:34	10:37	-				
10:41	10:50	10:53	-				
10:57	11:00	11:03	-				
11:07	11:10	11:15 pm					

LAFAYETTE COLLEGE

Spring 2014 - 2015

January 26, 2014 through May 15, 2015

Arts/Downtown (M-F)
August 25 - October 9
October 15 - November 24
December 1 - December 12
January 26 - March 12
March 23 - May 15

Comments and Questions

(610) 330-5851 or
transportation@lafayette.edu

Emergencies Call

(610) 330-4444

LCAT website: http://publicsafety.lafayette.edu/lcat

Figure L1: Current LCAT schedule

Appendix M:

Figure M1: A Belisha Beacon in use.