Traffic, Transportation, and Development

Technology Clinic Final Report on North 3rd Street and Cattell Street

May 10, 2004

Lafayette College, Easton, PA
Technology Clinic Final Report:

North 3\textsuperscript{rd} Street and Cattell

This report addresses traffic, transportation, and business development
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Part I – Introduction

The Technology Clinic is a Lafayette-based program in which students and faculty with diverse interdisciplinary backgrounds work with an organizational sponsor to solve a specific problem. The sponsors have included local businesses, local and regional governments, non-profit organizations, and the College itself. The problems tackled by Technology Clinic teams have taken many forms, including the preservation of historic sites, the development of an industrial park, and the fabrication of industrial devices. The solutions developed by Technology Clinic teams are arrived at over a period of two semesters of study and reflect the fresh and multifaceted perspectives of the College’s diverse student body.

Students are nominated by the College’s faculty and are then interviewed before being selected. The four divisions represented by this Technology Clinic team are the sciences, humanities, social sciences, and engineering. The students on this team are: Abigail Frueh, a double major in Psychology and Music; Dina Guirguis, a double major in International Affairs and Economics & Business; Hart Feuer, a double major in Economics & Business and German; John Veltri, a double major in Economics & Business and Sociology & Anthropology; and Michael Nilson, a Civil and Environmental Engineering major. The faculty mentors for the team are Professor Dan Bauer (Sociology & Anthropology) and Professor James DeVault (Economics & Business).

The sponsors of this project are the city of Easton and Lafayette College. Both sponsors have requested help with the problems they are facing in the development of Easton’s North 3rd Street corridor. The North 3rd Street corridor is a heavily trafficked thoroughfare that lies at the intersection of downtown Easton and the Bushkill Creek, a prominent waterway in the Lehigh
Valley. It now serves as a gateway between the City and the College and there are currently plans to upgrade the area through streetscape improvements. The goal of this Technology Clinic team is to design a solution that will not only offer a more attractive entrance to Lafayette College but also a more viable corridor for the people of both the City of Easton and Forks Township. The primary focus of the team is resolving a number of traffic issues in the area as well as the development concerns associated with these issues.

Problem Redefined

The problem that the Technology Clinic dealt with during the first semester focused on an exploration of the current state of North 3rd Street and proposed possibilities for its modification and revitalization. The group looked specifically at the development of the area in addition to traffic concerns involving the corridor. Additionally, the group explored possible ways to incorporate the Bushkill Creek into the development of 3rd Street. At the group's mid-year presentation, City and College officials identified the areas they felt were most important and encouraged the Technology Clinic to focus on them. The analysis of the Bushkill Creek was taken on by another on-campus group while a Civil Engineering senior design team has explored the potential for the Mohican building. Since construction has already begun on 3rd Street, the Technology Clinic has discontinued analysis of this project. As a result, the group has come to focus on three specific areas in the second semester.

1. Automotive Traffic and Pedestrian Safety on Cattell Street

The first area of concern to the group was a continuation from our first semester's look at automotive traffic behavior through North 3rd Street. During the first semester, an examination of blueprints for the reconstruction of the street and a study of the traffic flow resulted in a few modifications that were made to the plans for 3rd Street. The primary changes that have been
made to the original blueprints were aimed at reducing the cost of the project to an affordable level. The group has redirected its attention to traffic issues with Cattell Street and on College Hill in general. Now that North 3rd Street is under development, it is necessary to more critically analyze the College Hill traffic issue as a whole. Most of the debate has centered around the role of Cattell Street, which is seen as a safety and quality of life issue for College Hill residents and Lafayette students and faculty. Changes may be required to ensure that the flow of traffic does not continue to hurt College Hill and risk the success of the College's 3rd Street development initiatives. Using methods such as traffic studies, surveying, and plans for traffic calming, the group has developed several options for dealing with current and future traffic issues.

2. Pedestrian Transportation up and down the Hill

The second area of focus this semester includes the problem of transportation of pedestrians and students from the top of College Hill to 3rd Street. Developments on North 3rd Street is less likely to be successful if the student body cannot conveniently access the area. The Technology Clinic developed several solutions for encouraging more effective student transport up and down College Hill.

3. Private Sector Development

The third area of focus is the development of 3rd Street. To that end, the group has selected several buildings to focus on and has devised possibilities for their development. The group has looked at a number of companies as possible candidates for location at 3rd Street. We believe these best suit the vision of the City and the College for the development of 3rd Street. Although the efforts of the group were primarily focused on outside development, some college-based possibilities have been explored. The development of the Bushkill for a bike path or other recreational uses is currently being addressed by a Civil Engineering senior design team, whose
material and proposals should also be looked at within the context of the development of North 3rd Street.

Part II - Traffic on North 3rd Street

The changes on North 3rd Street that were discussed in our mid-year presentation are currently being implemented. The new street design will increase safety for both pedestrians and vehicles alike. A narrower street and the use of textured concrete are visual identifiers for the new mid-block pedestrian crossing and will serve to warn the driver to slow down for pedestrians. The addition of signage on the approach to the crossing will further assist in warning traffic of the potential for pedestrians.

Additional changes on North 3rd Street that will be appearing in the coming future include: "No Right on Red" from East Snyder Street, one-way west traffic only on Bushkill Drive and a change to the traffic pattern between College Avenue and Snyder Street. The proposed traffic pattern change, a right only lane and a straight / left lane seems like it will create an immense amount of backups at the intersection. Most of the traffic on North 3rd Street going south is from vehicles turning left onto Bushkill Street, just south of the US Route 22 overpass. The current arrangement of one left turn lane and a shared right / straight lane seems best suited for the intersection given the existing conditions.

1. Traffic Calming on Cattell Street

One of the most important concerns raised at our midterm presentation involved traffic calming on Cattell Street. Several people in attendance at this presentation, including the current Mayor of Easton, expressed concern about the volume and speed of traffic on Cattell Street. As a result of these concerns, we decided to analyze the flow of traffic along Cattell Street and to determine what, if any, traffic-calming measures might be appropriate.
In order to get a better grasp of the issue, we met with District Engineer Walter E. Bortree of the Pennsylvania Department of Transportation (PennDOT) and with District Traffic Signals /ITS Manager Thomas Walter, also of PennDOT. In addition, we also consulted Patrolman Alan Legath of the Easton Police Department’s Traffic Division and Barbara Kowitz, Easton’s Chief Planner. We also attended several meetings of the College Hill Neighborhood Association. At one of these meetings, we presented some of the options we developed over the course of the semester in order to obtain feedback from members of the neighborhood.

The information we gathered from these meetings has helped us to refine our proposals. In the meetings with Walter Bortree and Tom Walter of PennDOT, we discussed some of the options we were considering and obtained their views. Most significantly, they both expressed the opinion that a traffic light at the intersection of High Street and Cattell Street was unlikely to be approved because of the small volume of traffic on High Street. Officer Legath was particularly helpful, providing us with several traffic studies conducted on Cattell Street and with a great deal of information about related traffic issues. Barbara Kowitz also provided a great deal of useful information and helped us to understand how to best proceed with our recommendations. Finally, our meetings with the College Hill Neighborhood Association helped us to better understand the concerns of local residents.

In what follows, we briefly describe the traffic analysis we undertook and we also present a number of options for calming traffic on Cattell Street.

Rationale for Additional Traffic-Calming Measures on Cattell Street
During the last semester, we studied both the flow of traffic and its speed along Cattell Street and we also examined traffic patterns in the area. Our analysis indicates a need for additional traffic-calming measures, not only to deal with existing traffic problems but also in anticipation of even greater traffic problems in the near future. In this section, we present the data and analysis that support this conclusion.

We began by analyzing the volume of traffic along Cattell Street. According to PennDOT, the most recent measurements of the daily volume of traffic along Cattell Street was 15,816. To determine the sources of this traffic, we obtained additional data from PennDOT and from the measurements of Officer Legath. According to a recent PennDOT study, the volume of traffic southbound at Cattell and High Street between 6AM and 6PM was 5,125. According to recent measurements made by Officer Legath, the volume of traffic southbound on Knox Avenue during the same time period was 4,933. This suggests that a substantial majority of the traffic on Cattell Street has its origins not on College Hill but rather to the north of College Hill.

To pinpoint the source more precisely, we measured the flow of traffic from 6:30 AM to 8:30 AM moving southbound from Knox Avenue onto Cattell Street and then from Cattell Street to either Lafayette Street or College Avenue. We chose this time period because we felt that most of the traffic headed south during this period was commuter traffic. We recorded an average volume of about 800 vehicles per hour at Knox Avenue; of these 800 vehicles per hour, approximately 200 ultimately found their way onto Lafayette Street either east or westbound. We recorded an average volume of approximately 750 vehicles per hour at the intersection of McCartney Street and College Avenue. If we assume that none of the 600 vehicles continuing on Cattell Street beyond Lafayette Street exited before College Avenue, this implies that 600 of the 750 vehicles recorded at College Avenue and McCartney originated north of College Hill, or
about 80 percent of the average hourly volume. This excludes that portion of the commuting traffic that exited earlier at Lafayette Street.

Given that the majority of the traffic recorded at this time period appears to originate north of College Hill, it is worth asking what is likely to happen to the volume of this traffic in the foreseeable future. According to U.S. census data, the population of the College Hill neighborhood fell from 5,444 in 1990 to 5,348 in 2000, or by about 1.8 percent. In contrast, the population of Forks Township grew from 5,923 in 1990 to 8,419 in 2000, or by 42 percent. If these trends continue, it appears that substantial increases in commuter traffic along Cattell Street are likely in the near future. Given the already heavy volume of traffic using this corridor and the projected increase just mentioned, we believe additional traffic-calming measures are likely to increase both pedestrian and driver safety.

Our argument for additional traffic-calming measures also rests on an analysis of traffic speed on Cattell Street. We measured the speed of one hundred vehicles both southbound and northbound on Cattell Street on Thursday, February 26, starting at 1:30 PM. We found that moving southbound, the 50th percentile speed was 32 mph and the 85th percentile speed was 37 mph, implying that half the drivers went faster than 32 mph and 15 percent were moving faster than 37 mph. Given a posted speed limit of 25 mph, we found that more than 90 percent of the southbound drivers exceeded the speed limit. Moving northbound, we found that the 50th percentile speed was 28 mph and the 85th percentile speed was 33 mph. Roughly 70 percent of the northbound drivers exceeded the speed limit. These results demonstrate that average traffic speeds in both directions on Cattell Street significantly exceed posted speed limits. This is a clear indication that additional traffic-calming measures are necessary.
In an unrelated study, Officer Alan Legath measured speeds for southbound vehicles on Knox Ave (just to the north of Cattell Street). He found the 50th percentile speed was 30.6 mph while the 85th percentile speed was 35.7 mph. He also found that 84 percent of the measured speeds exceeded the posted speed limit of 25 mph. This evidence reinforces the conclusion that speeds in the Cattell Street corridor are too great and that additional traffic-calming measures are necessary to promote pedestrian and driver safety.

Cattell Street is dangerous not only because of the volume and speed of traffic, but also because of poor visibility from the sidestreets. Limited visibility makes it hazardous for cars entering Cattell Street to merge onto or cross leading to more frequent and/or more severe accidents. Over the last year, a number of parking spaces have been eliminated in order to improve visibility at intersections, and this has helped reduce the problem. Nonetheless, visibility is still limited, so some measures to slow traffic on Cattell Street will probably help to reduce the number or severity of traffic accidents in this area.

2. Methods for Traffic Calming

Given our speed and volume measurements, it is clear that there is a need to calm traffic on Cattell Street for the safety of both pedestrian and vehicular traffic. The stretch of Cattell Street between High and March Streets was taken as a case study for our proposed traffic calming measures. Building off of Pennsylvania's Traffic Calming Handbook

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and meetings with transportation and city officials, a number of potential solutions to the speed problem were produced. While none of these proposals were specifically designed to influence the volume of traffic on Cattell Street, it is almost guaranteed that if cars are slowed down, some traffic will be diverted to alternate routes. This will also contribute to improving safety on the currently overcrowded street. The solutions considered for traffic calming on Cattell Street include:

- Traffic signals
- Median islands
- Bulb-outs on corners
- Raised intersections
- Raised crosswalks / speed tables
- Textured pavement

Sample drawings for all of the above can be found in appendix A.

Traffic Signals

A traffic signal may be the answer to the safety problems at the intersection at Cattell and High Streets. The installation of a traffic signal would allow for the safe crossing of pedestrians and vehicular traffic from High Street when necessary by use of any of a variety of modern sensors. At all other times, the traffic flow on Cattell Street would be uninterrupted, and no physical changes to the intersection would be made.

A previous study conducted by PennDOT for the City of Easton revealed that the corner did not meet the warrants necessary for the installation of a traffic signal. However, it has become apparent that the study was conducted during a part of January when very few students
were on the Lafayette campus, therefore decreasing the flow rates normally experienced most of the year. We recommend that the City request a new study at this troublesome corner. The increased vehicular traffic on High Street coupled with a guaranteed increase in pedestrian activity, especially in the late evening / early morning hours may in fact be strong enough to meet a warrant for a traffic signal.

According to Thomas Walter of District 5 PennDOT, a traffic signal would cost between $40,000 and $70,000. In order for PennDOT to perform the study required for a traffic light, a bond must be posted by the City to cover the costs of the light installation if it is found to be warranted.

**Median Islands**

Median islands provide a simple, creative solution to the problem of pedestrians crossing Cattell Street. The installation of an island just south of High Street on Cattell Street would allow for a pedestrian refuge, so only one lane of traffic need be traversed at a given time. Once on the island, the pedestrian may evaluate the condition of traffic on the other lane and decide when is safest to cross. This alternative would result in the narrowing of lanes and a small degree of horizontal deflection towards the curbs. A narrower road and the need for a deflection should also serve to slow traffic down.

Appropriate signage would be necessary on the approaches to the island from all directions in order to warn motorists of the oncoming change in traffic pattern. As opposed to traditional signs which may not be visible along Cattell, or that drivers may choose to ignore, another option is to install a flashing yellow light on each end of the median island to show drivers where the island is located.
The design of the median island may be either all concrete to reduce visual obstructions, or it may contain some low-growing flowers to add some beauty to the street. This change would also be accompanied by the planting of colorful flowers along the existing sidewalk or in any other new traffic calming measures that may be implemented.

A simple, all concrete medial island may cost as little as $5,000\(^1\). Reduction in concrete area for plantings will help to decrease the cost. Additional features, including lighting, are additional.

_Bulb-outs_

Bulb-outs on the corners of Cattell and High Streets would serve to reduce the width of Cattell Street without adding a barrier between the two lanes of traffic. Abiding to the constraints of emergency service vehicles, the road may be reduced down to 24-feet total for the two lanes of traffic. This would allow for approximately 7-foot bulb-outs that can be stretched as far back onto either Cattell Street or High Street as may be desired. In addition to narrowing the road, bulb-outs would guarantee that no one is parked in illegal spots too close to the corner, protect end-parked cars from most rear-end collisions, provide pedestrians an extra 7-feet to see oncoming traffic without stepping out into the street and make pedestrians more visible to oncoming traffic. As with any solution, appropriate signage must be installed on the approaches. Lighting may also be installed to illuminate the intersection (perhaps from a bollard installed on each bulb-out).

The size of the bulb-outs on Cattell Street, south of High Street, would need to be reduced to accommodate the current curb cuts for Wawa and the autobody shop. Barring these conflicts, all other bulb-outs may be at least 20-feet in length from the center of the curb curve.
Bulb-outs are reasonable in price, with an estimated cost of between $7,000 and $10,000 per pair\(^1\). A complete intersection may cost as little as $14,000, depending on the size of the island and what kind of texture, if any, is desired.

*Raised crosswalks / speed tables on College Hill and in Lafayette College*

Raised crosswalks are an ideal way to slow traffic down on a large scale on Cattell Street. Instead of having an effect at only one location, speed tables (which may function as raised crosswalks) are typically installed at a certain spacing to have the most desired effect on speeds. A combination of the tables and associated pavement markings on their approaches may slow down vehicles up to 6-mph\(^1\). However, these speed tables may delay emergency vehicles by 4 to 6 seconds.

A goal of Lafayette College in recent years has been to create more of a College town feel on College Hill. Additionally, it has been desired to create a clear location at which one enters the College campus. Some of the traffic calming devices discussed in this section may be used in conjunction with various locations on campus where traffic calming may be necessary. One such example is in front of Markle Hall Administration Building. Although flanked by two speed bumps, High Street in front of Markle Hall is often traveled at high speeds, creating unsafe conditions for the students and visitors that cross continually during the day. The degree to which the speed bumps have deteriorated and the current crosswalk paints are worn off provide no assistance to crossing pedestrians, as oncoming drivers can avoid the speed bumps and cannot see the painted markings. One proposal is to construct a raised mid-block raised crosswalk from the center of the Markle Administration Building to the location at which the new sidewalk will be poured across the front Skillman Library. This would effectively link the admissions building...
with the rest of the heart of campus and it would provide for a very attractive and safe way for pedestrians to cross High Street. These raised crosswalks, if constructed with bricks, may cost up to $11,000 each depending on their size\(^1\).

*Raised Intersections*  

Raised intersections are very commonly used in Europe but are only beginning to be used in the United States. The concept of a raised intersection is to in fact raise the entire intersection of two roads by between 3- and 6-inches. This vertical deflection would force drivers to slow down in order to maintain a comfortable ride. The approach to a raised intersection is typically a 6-foot ramp at a grade no steeper than 8%. In addition to the vertical deflection, the use of colored concrete or any type of pavers will give drivers another visual means by which to identify the raised intersection and adjust their speed accordingly. Pavement lighting is also sometimes used in Europe, but this method has not been approved by the USDOT yet. As opposed to the standalone use of textured or colored concrete, even if the area is worn out, the bump will remain at its height, so its effectiveness should not decrease with time. According to *Pennsylvania’s Traffic Calming Handbook*, raised intersections, like speed tables, may delay emergency vehicles by 4 to 6 seconds.

The cost for raising an intersection is typically between $15,000 and $60,000\(^1\) depending on the specifics of the intersection and what type of work will be done. For example, brick paving the raised intersection will cost approximately $30,000 plus the cost of concrete approach ramps\(^2\).
Textured / Colored Pavement

The use of textured or colored pavement is a least-invasive method for creating visual warnings to slow down drivers. Textured or colored pavement may be used in crosswalks or entire intersections to alert drivers of a pedestrian crossing. This method will not have as great an effect on traffic speeds as would many of the other control measures mentioned because of the act that with time, the texture or color may begin to wear away. Once this happens, the process will have to be repeated if the effects felt the first time through were substantial enough. In addition, the change would require no new actions on behalf of drivers, so they may soon return to old habits of speeding down Cattell.

Textured pavement is estimated to cost between $55 and $165 per square yard \(^1\) bringing the total for 4 crosswalks at the corner of Cattell and High Streets to between $1,500 and $5,000. Costs increase with more intricate concrete stamping and coloring options.

Part III - Getting Students To and From 3rd Street: The Problem

One of the main problems with the development of North 3rd Street, as it relates to Lafayette College, is the difficulty involved in traveling up and down the hill. There is currently little incentive for students to frequent the area due to the lack of useful commercial establishments. These incentives are further decreased by other difficulties presented to the students, which include the physical exertion, psychological inhibition, and weather difficulties involved with transit on the hill.

1. Physical Difficulties

The path from the College to 3rd street is physically demanding for both students and faculty. The steps, though recently repaved, remain very steep and require a great deal of physical stamina. Although the majority of the student body is physically active and able, the steps still
prove to be a daunting trek. Unless it is absolutely necessary, most students will avoid the steps. The alternative to the steps is the uneven sidewalk path down College Avenue. Although this route does not have steps and is not as steep, it is longer, more out of the way, and therefore even more inconvenient to use.

The steps and the sidewalk paths are even more daunting for persons with physical handicaps or for senior citizens. It is impossible to bring a wheelchair down the steps and probably equally as difficult and dangerous to attempt to take one down College Avenue. For individuals who choose to wear high-heeled shoes or boots, it becomes especially difficult to ascend or descend the stairs. Not only does this present the risk of injury, but also discourages these individuals from using the pedestrian routes to reach 3rd Street. As a result these groups are hindered from making full use of the 3rd Street corridor and the downtown area of Easton.

2. Psychological Difficulties

In addition to the physical aspects of the hill, there are psychological difficulties that deter students from traveling down the steps to 3rd Street. Students have concerns regarding their safety when venturing onto 3rd Street. Rumors of students or Easton residents being attacked or "jumped" often circulate around campus leading to the misconception that it is very dangerous. In an effort to protect themselves, some students avoid pedestrian usage of the area.

Unfortunately, many students have misconceptions about the actual distance from the top of the steps to the archway at 3rd Street. Most students overestimate the amount of time it takes to walk from the top of the steps down to the 3rd Street corridor or to the Circle and as a result avoid the corridor all together. For an average student, the walk down requires 2 minutes, 45 seconds, while the walk up requires 3 minutes, 15 seconds. Casual polling will relate that this distance is sometimes thought to require upwards of 10 minutes.
3. Weather Difficulties

The staircase from 3rd Street to the College is a combination of uneven steps and inclined ramps. In the case of mild inclement weather, such as rain, the steps and ramps become treacherously slick and discourage pedestrians from making use of them. In its current state, the staircase lacks hand rails for approximately 60% of the descent, which further exacerbates the danger of utilizing the steps. Depending upon whether one resides at Lafayette over the winter interim, the entire staircase is closed for 30-90 days due to severe snow and ice conditions. Around the winter months, even mild snow and ice conditions are sufficient to completely discourage pedestrian traffic on the staircase.

During the warm months, students are persuaded against using the staircase for a different, although still significant reason. Climbing the staircase requires a significant expenditure of energy, which, in warm temperatures, amounts to an uncomfortable ascent. Assumedly, descent of the staircase is not uncomfortable—in fact it may even be enjoyable. However, knowing that one will eventually be required to climb the staircase, students opt for a different means of transportation.

4. Lack of Incentive

Currently, there exist only two abiding reasons for venturing down to 3rd Street. One of these reasons applies only to students enrolled in classes at the Williams Visual Arts Center or those students who have an interest in the studio and gallery space of the building. The other incentive for going down the hill is for commercial purposes. The City of Easton provides many establishments of interest to the students, including restaurants, transportation services, banking, city offices, and entertainment. Given the relative difficulty (or perceived difficulty) of reaching these establishments, many students choose to travel a larger distance via car to Forks Township,
Phillipsburg, or Nazareth for their commercial needs. Combined, the Visual Arts Center and the City of Easton draw only a small percentage of students from the College.

With renewed development on 3rd Street, students would gain more college-oriented establishments, making it more convenient and attractive to go to the area. Increased student presence on 3rd Street would invariably bring about new interest in the Easton commercial area, as the difficulty of reaching the area would be reduced. Exposure of students to downtown Easton may bring about renewed student interest in the area and potentially renewed incentives to cater to the students. See the Development Section of this report for additional information.

**Potential Solutions**

1. **Shuttle Bus**

   The most basic option for overcoming the problems described above is to provide a shuttle bus to transport students from the College to 3rd Street and the Circle. The bus could be funded and maintained by the College and could have stops throughout the College (e.g., Williams Center for the Arts, Farinon Center, March Field) and throughout the city (e.g., The Circle, 3rd Street, Wawa, and Cattel Street). The shuttle could vary in size depending on the time of year and the number of anticipated riders.

   The main advantage of the shuttle bus is that no initial investment is required. The College could use buses they already have or could acquire others especially for this use. No external changes or modifications would be required, with the exception of possibly creating specific bus shelters. In comparison to other solutions, which will shortly be described, a shuttle bus would be more inexpensive and easier to maintain. The costs would include gas and general maintenance of the van as well as the cost of drivers. And if there was a small fee
charged for riding the bus, or for an annual pass, some money required for gas and maintenance could be recovered. The shuttle would be easily understandable to students and citizens alike. Being that students and athletes are regularly transported from the College to Metzger Fields, the College is already aware of the provisions required for this sort of solution. As mentioned before, the system could easily be modified or discontinued with the change in season (e.g., summer/interim vs. fall/spring semester) when the flow of students to the downtown is significantly decreased. It would be similarly trouble-free to add additional shuttle buses for Family Weekend, Alumni Weekend, or other key times of the year.

A shuttle bus is not without its disadvantages. From an environmental standpoint, a shuttle bus is not ideal. The round-trip time for the shuttle would be longer the more stops were added on. This would decrease the flexibility of the service if there were an extensive, rigid schedule to be followed. The more stops there are, the longer students have to wait at the stops between pick-ups, especially if there is only one shuttle bus running. Should the system be unable to rapidly transport students, one could choose to walk. In general, students would be unlikely to wait for the shuttle since a strong precedent has already been set for students to drive their cars down to 3rd Street or the Circle. The shuttle would not have any additional appeal to those who already drive, and if forced to wait for an extensive period of time, it would carry even less appeal. If the shuttle was only a daytime service it would not be satisfying the needs of those students who go to the Circle to frequent the restaurants or bars in the evening. Overall, the shuttle would likely not be an appealing means of transportation for the students, faculty, and visitors of the College.
2. Elevator

An additional option for transporting students up and down the hill is to install an elevator in the place of the steps. There are two ways this could be done. An elevator shaft could be excavated into the hill, resulting in a subterranean elevator system. Another option is to run a walkway/bridge across to the open air above the archway and install an open-air elevator from there.

The immediate advantages of an elevator are that it is a much faster mode of transportation. Since it only has two points, there are no extensive wait times between stops unlike the case with a shuttle. An elevator would be more environmentally friendly than the shuttle bus and would not require a continual operator like the shuttle bus. This method of transportation would be more appealing to students because it would take them directly to 3rd Street without intervening stops and would do so in a more interesting medium than a shuttle. It would also eliminate much of the coordination hassles that a shuttle would require. An elevator is much more flexible to the immediate needs of the rider and can be immediately called when needed. If a security system were added (checkpoint-based, for instance), usage of the elevator could be limited to those intended. Since elevators already exist in the insurance plan of the college, liability issues have already been addressed. An elevator has three main disadvantages. The first is that it requires a very high initial investment. There would be a great deal of construction and excavation required. As the hill is not very conducive to an elevator, it would pose a significant challenge to contractors, assuming a permit could be
secured for such an extensive project. Furthermore, the hill has been shown to have structural voids, a problem which jeopardized the Keefe Hall project. If there were a walkway/bridge built out to a freestanding elevator shaft, the result would be an eyesore. It would ruin the clear view that visitors and students have up the hill to the statue. Beyond the initial cost of excavation and construction, such an elevator would require a great deal of maintenance to ensure that it continues to operate properly.

3. **Funicular**
A funicular is an overland rail-bound transport mechanism used to ascend and descend steep hillsides. They are likened to a miniature train, the track of which is a short and steep segment. Passengers are loaded into cars that are built so that the floor is a flat plane as opposed to an incline. This affords the passengers a ride similar to an elevator, except that the car proceeds up and down at an angle.

Funiculars are more prevalent in western European countries, such as Switzerland, Sweden, Austria, and Italy, where a solution to traversing remote steep inclines is needed. Conditions under which funiculars have been installed in these countries are similar to those present on College Hill. In the United States, funiculars have not been made mainstream, but their prevalence is growing. They have become indispensable at locations such as golf courses, alpine resorts, senior citizen communities, and even private homes.

In many cases, funiculars have come to replace elevators as a superior mechanism for conquering steep outdoor terrain. Typically, far less excavation or bridge-building is required for a funicular. In order to build an elevator to ascend and descend College Hill, either a significant bridge must be built spanning the distance between the landing and the airspace above 3rd Street or a very significant shaft must be bored into the hill with a subterranean pathway of a similar scope. Funiculars are especially designed for hillsides such as College Hill. Furthermore, modern funiculars are packaged with the same security and safety features of current outdoor elevators.

Feasibility of a Funicular

The advantages of a funicular could benefit the school from an efficiency standpoint and a desirability standpoint. Foremost, funiculars are fast, allowing students and faculty reliable and unrestricted access to 3rd Street. In terms of per-student cost, operation of the funicular would be
less than that of a shuttle bus, and would eliminate the additional emissions and noise of the
buses. Funiculars are also very visually appealing, and bring with them an element of prestige.
Particularly for an engineering school, the funicular would be looked upon favorably by visitors
to the college, the community, and the students. Since they are uncommon, the campus and
community interest that would be generated by a funicular would be great. The funicular could
be used to enhance the quality of life for residents on College Hill, recreational users in the area,
and could become an additional visitor attraction for the City of Easton. If managed correctly, a
funicular would not only serve the campus as a means for intra-college transport, but as a civic
attraction (See Appendix B for Funicular Route).

A funicular also comes with a few disadvantages, some of which are endemic to elevators
and other mechanical transport mechanisms, and some that are unique to funiculars. Being that
funiculars are uncommon, fewer firms are present in the market, and specialists from out-of-state
and even out-of-country may be required to construct the funicular. The initial investment
required for the installation would be significant. One firm, operating out of Orono, Wisconsin,
estimates the project could cost between $380,000 and $450,000 depending on unaccounted for
variations in the terrain. Once completed, maintenance of the funicular would become a
continual expense for the College. Furthermore, an outdoor transport mechanism would require
a reassessment of the College’s insurance policy, and may entail an increase to cover the
additional liability of a funicular.
Business Concepts for the Mohican Village at the Bushkill Creek

Basic Vision
As we envision the North 3rd Street area, it would be a mix of College facilities and business enterprises. In addition, it would be a tourist attraction visited by the trolley carrying tourists between the Crayola Factory, the Bachmann Publick House, the Canal Ride and other area attractions. The Campus with its view from the “Lafayette Funicular” would be one of the features. The overall feel of the area would be guided by the idea of “art.” Its anchors have been the William Center for the Visual Arts and Jac & Company, an art themed restaurants. And, the New Easton has been positioning itself as a center for the arts.

The buildings
The Williams Visual Arts Center is already established as a destination for members of both the College and City communities.

The Jac & Company building was until recently a successful restaurant and wine bar. We expect that it will return to that function and continue to provide life to that end of the street.

The building that formerly held the Club Mohican is the most ambitious feature of the proposed plan. We envision it being the home of a commercial, Barnes-and-Noble-style bookstore, the College Bookstore, a café, and a small multifunctional theater (art films, 1st run films, “smart” business conferencing, and student entertainment). Some of the wall space would hold art representing existing Easton galleries.

The Cases Tire building might use the creek-side location as a feature in making it a small luxury hotel capable of meeting the demand that exceeds that of the Lafayette Inn, as well as the needs of business travelers. An alternate use of the Case’s site might be that of business condominiums with retail space on the 3rd Street side of the building. A local
architect/developer has proposed this use. It might be worth considering in place of the hotel, which might be better housed in the Hubcap Store, if it does not become an apartment complex.

This Document:
In this document we will outline the basic principles we believe apply to the successful development of:
- a multifunction bookstore (including the College Bookstore)
- a café
- a theater
- a small luxury hotel/bed and breakfast/business condominiums.

We assess:
- target markets
- competition
- basic business concepts
- business partnerships
- risks.

The theater and bookstore are described in greater detail in the last two sections of the plan.
Some Architectural Considerations

The properties in the North 3rd Street corridor, which we are calling “Mohican Village on the Bushkill”, offer some opportunities and some restrictions. Two of the properties have views of the creek, and all are on flood plains. Hotel rooms must be placed above flood level. This would recommend Cases or the Hubcap store as hotel space and the Mohican as the bookstore, café, theater complex.

Several steps can be taken to open up and improve the views of the creek.

- Masonry railings along the bridge should be replaced with more visually open railing, perhaps wrought iron.
- The Mohican Club building has a portion over the creek which obscures the view of the from up and from down stream. This portion of the building might bed replaced with an open-air seating area.
- The Pondulak building and the portion of the Cases building which bridges the creek can be removed in order to open the view in the direction of the Delaware River.
- The southern wall of Williams Visual Arts Center for should be kept in a light color in order to reflect light into the creek side of the Cases building.
- A low wall could screen the view to obscure the car wash. A Sculpture garden could be placed in the area created between the creek and this wall.
- Direct access to the creek with walks from the street on the south side of the creek.
Risks

The risk involved in this development is the same as any other private business opening. Questions arise such as will there be enough traffic to sustain these businesses. We believe that with an improved streetscape and the College’s support you will see immediate economic support coming from the college’s students. Placing the bookstore down the hill and providing a means of transportation along with ample parking the students will have no choice creating some guaranteed traffic. This should be enough to sustain the businesses on College Hill or in the circle. The bookstore will not be forced to rely solely on business from Easton residents.
Business Concept

Our concept for the sustainable development of the 3rd Street corridor is to develop a complex of facilities that take advantage of three existing features: Lafayette College, the Bushkill Creek, and the emerging “New Easton.” Parents and alumni are already attracted to the area in numbers that exceed the capacity of the nearest facility. The college environment is attractive to those who wish to participate in an intellectual setting (books, art, independent film, and just sitting and soaking up culture). The 3rd Street-Bushkill complex addresses the interests of these college related markets.

The creek itself is an attraction which seems destined to re-emerge in a form that will generate customers for cafés, restaurants, and to a lesser degree, hotels.

Finally, Easton is re-emerging as a community which has greater wealth and a greater sense of its importance and potential. The average income has risen leading to a successful grouping of restaurants. The Crayola Factory and Bachmann Publick House have added to tourism.

The New Easton lead to the opening of the Cinema Paradiso. It can be argued that its short life can be traced to its over capacity and lack of intimacy.

In our conception, the 3rd Street-Bushkill Community brings together nature, culture, and tourism in a synergistic manner. Each feature supports the other. Visitors to the College, the funicular and the creek support the café and restaurant. Patrons of the small box movie theater are the kind of people who also patronize bookstores and cafés. Note that the theater is part of a complex and not dependent upon large ticket sales to support its existence (unlike the Cinema Pardiso). During daylight hours the theater space also acts as a smart conferencing facility for the business people using the Mohican Inn.

We feel that a small, upscale hotel will be successful and add to a sense of the area being alive with people through the evening hours.
Competition

Competition varies with each facet of the market. No multifunction bookstores are presently found in the Easton area. Though one is proposed for the Freemansburg shopping Center. The bookstore will be distinct from that store in two respects, it will have an associated college component, guaranteeing a floor of sales, and it will be associated with an academic atmosphere. The latter factor seems to account for much of the success of bookstores around academic institutions (Princeton, Berkeley, etc.). The Quadrant Bookstore near Center Square is devoted to the used book market and therefore does not compete in the same market.

The café and theater are physically part of the bookstore. At this point there is little competition for the café or theater. The coffee shop off of Center Square is too far away to constitute competition and Tracy’s Coffee Cup across from the Lafayette Inn caters to a different clientele. The Cinema Paradiso served the needs of film enthusiasts in the past. Now, filmies drive to East Stroudsburg, to the 19th Street Theater in Allentown, or to Doylestown.

The Mohican Inn on the Bushkill Creek would address a similar market to that of the Lafayette Inn. We do not envision a facility that exceeds the overflow of the Lafayette Inn at the times of college events. It would also address two other markets for which there is little competition. The high end tourist and business hotel market is not currently served by any of the facilities in this end of the valley. No facilities currently provide the smart-conferencing we envision being available through the Mohican Inn and the Mohican Café. In this respect there is no competition from the Holiday Inn Express at the 25th Street Off-ramp.
Target Markets

**Bookstore Users: Those seeking books, college books, music, and art supplies.**

Of course, those already using the College bookstore are a guaranteed customer base. In addition, we hope to attract those people who would like to shop at a Barnes and Noble or Borders type of store, but do not find one at this end of the valley. After a period of economic decline, the “New Easton”, as we have chosen to call it, has an increasingly high income level. Easton has also been establishing itself as an “art community.” This growing area art community finds it necessary to travel to Bethlehem (*Art and Drifting Connection*) or Emmaus (*Dick Blick*) to find supplies.

**Café Users.**

We see a café as an integral part of the upscale bookstore experience. The demand for cafés is part of the modern American urban life especially when it is associated with an academic environment. Several coffee houses have been opened in Easton in recent years, one on the square and one across from the Cinema Paradiso.¹ We feel that there is a growing demand for these Starbucks-style establishments in the area.

**Independent Film and Mainstream Film Audiences and Business Conferees**

We envision an intimate, small-box theater which could show “indi” films, act as a smart-conferencing center for business people using the proposed luxury hotel, host small performances (as with Gilberts), and show first run films, much as is done currently in the Limberg Theater on Campus. The theater would be the home of the “Lafayette Film Festival.”

The Cinema Paradiso attracted a significant audience, but not enough to sustain a stand-alone, multiplex house. The overlarge theaters gave the audiences the feeling that they were in a failing enterprise. These facts suggest that a smaller theater attached to another business could tap this audience. It should also find an audience among our more intellectual students, such as those attracted to McKelvey House. Faculty colleagues drive as far as Stroudsburg to view films that do find a showing in the Easton area.

¹Coffee and Tea Time closed after the Cinema Paradiso’s closing ended foot traffic in the area.
The operation of the theater would bring traffic to the bookstore and café and have the added benefit of bringing elements of town and gown together in a productive environment.

**Luxury Hotel/Bed and Breakfast Seekers at the Mohican Inn at Bushkill Creek**

We have identified three primary markets for the proposed inn: 1) college visitors, 2) valley business visitors, and 3) tourists. The Lafayette Inn is the only inn in the immediate area with the charm associated with a typical college town's bed and breakfast style. After the Lafayette Inn, the nearest college town style inn in the region is the Scyler Mansion near the Lehigh campus. Two hotels which have recently moved into the Easton area are clean enough to be recommended to College visitors (Hampton Inn and the Holiday Inn Express), but have none of ambiance associated with a college hotel.

College visitors often find it impossible to book a room in the Lafayette Inn until years after the date of the children's graduation. Homecomings are booked decades ahead. There would seem to a market, at least for key days in the calendar that far exceeds the capacity of the Lafayette Inn.

Business executives looking for pleasant surroundings with high end communications do not find a home in this end of the valley. When the Hotel Easton put its business plan together it planned to attract business clients who wanted luxury with high-speed Internet access and teleconferencing capacity. Parking issues have changed the plan for that facility to that of office spaces. In our plan “smart conferencing” capacities would be part of the Mohican Café-Bookstore complex across the street from the Mohican Inn.

We believe that the three target markets of college visitors, tourist, and business people will use much of the capacity of the proposed inn. Off-ramp traffic from Route 22 should assure profitability throughout the calendar.

**Restaurant Goers**

We are assuming that since Jackie and Robert Schultz successfully operated a fairly high end restaurant in the Jac & Company building that it may return to that use. The market has been demonstrated to exist. Such a restaurant is a vital part of the complex of businesses and services we envision in the North 3rd Street corridor.

**Tourists**

Should the College opt for a funicular as means of moving students and faculty between 3rd Street and the Campus, we envision it becoming a tourist attraction. Funiculars seem to have this effect in European resort areas and even in some parts of Pennsylvania (Johnstown, Duquesne, etc.). The trolley currently connecting the Crayola Factory, the Canal Boat Ride, and the Bachmann Publick House could include Mohican Village on the Bushkill Creek in its circuit.

**A Package of Complementary Markets**
We recommend that the businesses be organized in a manner that will attract a variety of complementary populations, bringing elements of town, gown, tourists, and business travelers together.
Business Partnerships

Lafayette College’s core competency is not that of running businesses, even if academic institutions must be businesslike to survive and prosper. Nevertheless, businesses often operate on campus properties. For example, Hewlett-Packard’s headquarters and the Stanford Shopping Center both lease from Stanford University. The College already rents houses and apartments to faculty and students. The College is also a host for some for-profit enterprises, such as the Wood Company, which provides services on Campus. The college bookstore is a bottom line organization within the college’s non-profit umbrella.

We suggest that each activity within the Mohican-Bushkill zone be managed according to its compatibility with the College’s competencies. The Mohican Inn on the Bushkill would seem outside the realm of college skills, despite the fact that we provide beds for students. Such a business would probably best be developed independently under a long term lease, or built and rented to hoteliers, perhaps the people already running the Lafayette Inn.

The bookstore might be College run or part college bookstore and part independent, Borders with a college run section.

The competencies needed to select appropriate offerings for independent film series parallel those needed for the Campus cultural program, run by Ellis Finger. To be successful it would seem to need a strong interest from a person devoted to the subject, such an Andy Smith in the English department. Such an individual might be found either inside or outside the college community. The expertise needed for newer releases is possessed by campus people, such as Amy Ahart.
Theater and Café

Café and Theater Development In the Mohican

In an attempt to encourage development on North 3rd Street, the group finds it as both a necessary and a beneficial component to place both a café and a theater in the building that used to hold Club Mohican. Both the café and theater will be in accordance with a Barnes & Noble affiliated College bookstore. These components will be situated at the back of the Mohican.

With respects to the café, the group hopes that it will be run by a popular franchise chain such as Cosí or Panera Bread, although, the options remain open for it to be run by either the College or privately by Woods Dining Services. However, the group feels that the café will fair better if it was managed by a popular franchise that would cater to needs of the students and the general public by possibly accepting regular means of payment and flex. The café will be situated at the back of the Mohican on an elevated platform so that it may be seen from every position within the building. In order to make the café a focal point within the store, some changes will have to be made to the existing building. In order for individuals to better see the café, a platform will have to be constructed for it to be situated upon. The area surrounding the café will also have to be adequately lit and decorated in order to draw people to it. Ceiling spotlights, colorful paintings, signage, lounge chairs and tables will further emphasize the presence and attractiveness of the café.

In making the café a focal point in the store, individuals will be encouraged to walk through the store in order to get to it. Consequently, as the shoppers walk to the back of the bookstore to get to the café, they will hopefully be persuaded to view the merchandise on their way to a light delight. The café will provide a wide variety of food and drinks to choose from. Delights that will be available to consumers include sweets (cookies, cakes, pastries, etc), sandwiches (hot and cold), soups, and salad. With respect to drinks, all sorts of hot and cold drinks will be served, ranging from the vast variety of coffees and teas available on the markets, to juices, soft drinks, and other specialty drinks. The inviting aromas from the café will hopefully persuade the customers to sit and enjoy the environment of the bookstore, in hopes that they will find something of interest.

Accordingly, in order for the patrons of the bookstore to further enjoy their shopping experience by either listening to music or reading a book at their leisure, the café will have surrounding and sporadic seating areas throughout the bookstore/café.
The group believes that the random seating areas should consist of large comfortable lounge chairs alongside of a coffee table, in order to encourage people to sit and relax while either enjoying a snack or a book. The other seating areas, probably the one's surrounding the café will be more like that of a bar/restaurant style seating. At the counter, individuals may either make an order and take it to a table or have their food/drink right at the counter on stools.

Either way, these types of seating arrangements will hopefully encourage individuals to stay and enjoy what the bookstore/café has to offer. In addition, both the café and the seating areas will be in accordance with the rest of the motif of the bookstore, by having a warm artsy feel to them. As a result of this set up, the group believes that shoppers will be encouraged not only to enter and enjoy the bookstore, but also to spend some time in it and hopefully return to the bookstore.

In the very back of the Mohican, a multifunctional room will serve the purposes of both the school and the city of Easton. With a retractable screen, removable podium, and comfortable stadium seating with retractable desks, the room can be used either as a theater, a conference room, or a classroom in order to serve the different target groups that the multifunctional bookstore will attract. In keeping with the motif, a warm artsy feel, of the entire building, the group feels that by predominantly using this multifunctional room as a theater to show movies, this will further enhance the attractiveness and prosperity of the is business.

The interior of the room will be decorated in accordance to the rest of the bookstore/café. Scattered paintings should adorn the walls of this room in order to provide a more intimate warm feeling. The group feels that in order to maintain the intimate feeling needed to make theaters of this kind successful, the seating capacity of this room should not exceed seventy-five individuals. On the other hand, this room will be adequately sized and furnished to hold conferences/meetings as well as classes within this room.

The theater aspect of this room can be managed in several ways. The first and most effective way of running the theater would be to have it managed by the College, and more specifically the same individuals that operate the Williams Arts buildings. Another option would be to have the theater privately managed. However considering the rather small size and target audience of this theater, it would be in the best interest of the College to manage the theater. In doing so, Lafayette will have more control over the theater and its functions. Other motives for the school to run the theater would be the incorporation of screening popular movies as well as independent artsy movies within the theater. For instance, by showcasing popular movies during the weekend and independent movies during the week, the theater will encourage a wider variety of individuals to use the theater as well as to visit the bookstore and café. Consequently, this will eliminate the showcasing use of popular movies in Limburg Theater, located in downstairs Farinon Center. Alternatively, the College may get rid of Limburg Theater or find other uses for the space that will be available due to the void that will be left by the bookstore and the theater. With the extra space in the Farinon Center basement, the College will want to possibly look into turning the space into something that will benefit the Lafayette community, such as a convenient store.

Thus, by developing the Mohican into an all encompassing bookstore that includes a café and a theater/multifunctional room that maintains a warm artsy motif,
the group believes that the buildings will be tied together to possibly form the corridor of the arts, especially since Lafayette’s Williams Visual Art Center is situated directly across the street from the Mohican. Consequently, this will encourage students, the citizens of Easton, and visitors to the North 3rd Street corridor and thus further encourage business development and prosperity within the area.
Bookstore Concept in Detail

We as a group believe that the proper development for what use to be known as club Mohican would be a school owned bookstore, functioning on multiple levels to serve both the college and its students, along with the community of Easton. A bookstore would provide both the college and the city a much needed space which would help the college expand its influence to the entrance of the campus and improve its existing facilities, it would also provide the city of Easton a large scale bookstore similar to the national chains such as Borders or Barnes & Noble. The prospect of one of these chains actually coming in a running the bookstore is very possible, especially since a name brand, well known not only throughout the reading community but for those who just so happen to read their signs on their routine trips to the mall, would attract many more consumers, which is our goals.

The space in the Mohican is extremely deceiving and large. With 27 foot ceilings and rooms upon rooms atop of the Bushkill, there is room not only for an elegant space, but possibly multiple floors, highlighting the functionality of this building. We believe as a group that the Mohican can be used in this manner, as a multipurpose facility in the following context. The bookstore would house not only books and periodicals for both the recreational reader, but the text books which are currently sold in the basement of the Farinon Student Center. The bookstore would present these books in the first room of the Mohican, directly adjacent to the street, possibly with multiple floors. If the space were to be divided into multiple floors, the first floor, which would be the main attraction, would serve the recreational reader, dividing space as desired for books, periodicals, sitting areas for causal reading, cash registers and even possibly art work. This could be showcased to the city by opening the front walls of the Mohican with large glass windows, showing the activity taking place within the bookstore. If divided, the second floor would be the perfect space for all textbooks and college materials such as notebooks and toiletries, functioning as downstairs Farinon does today. The upstairs
space up front where the screen would hang, classes could be conducted who need the larger space if it is unavailable on campus.

The Mohican is a space which does have the capabilities of becoming a successful bookstore with everything both Lafayette and Easton need. However, it would need many improvement to give it the overall feel of a comfortable, inviting store.
Williams Visual Arts Center and Cases Building Today

Williams Visual Arts Center and Cases Building Visualization
Funicular Concept
PROPOSED SPEED TABLES ON COLLEGE HILL (LEFT) AND ON LAFAYETTE'S CAMPUS (RIGHT)

According to Pennsylvania Traffic Handbook (2001), speed humps can cost up to $18,000 each.