

3rd Street Campus Connection

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EGRS 451
Lafayette College
December 2014

Chapter 1: Introduction

How can we connect the Arts Campus on Third St. with the rest of the Lafayette community at the top of the hill?

As a small liberal arts campus in the Lehigh Valley, the Lafayette community has made great strides towards staying green and becoming a walking campus. However, being located in a hilly region, the school and its surrounding community sometimes face problems with smoothly accessing certain areas of the campus. In the recent years, the Lafayette campus has been expanding down the hill onto the area on Third St. near the Route 22 overpass in order to create a state of the art Visual Arts campus. As of now, there are three different ways of accessing the arts campus: the main stairs on the side of the hill that start by the back of Reuf and Keefe Halls to the bottom of the hill, the LCAT student bus shuttle, and by student's personal vehicles. We believe that by working with the Lafayette community we can come up with a safer and more realistic way of accessing the campus at the bottom of the hill.



Future Plans for Third St. Arts campus

The current physical access from the main campus to the arts campus is dilapidated, dangerous, and inconvenient. There are 90 steps from the back of Reuf Hall to the bottom of the hill. The stairs are in poor condition and become dangerous with inclement weather conditions. In addition to the poor condition of the stairway, it also egresses directly into a busy intersection. These issues make it difficult for students to move between the two campuses and thus creates a divide between the main campus and the arts campus. As the school continues to develop the arts campus, the area from the base of the hill to the Rt. 22 overpass, and more classes and offices are moved down to that area, a better solution to this transition needs to be developed. Also with the emphasis being put on Lafayette being a walking campus, it's contradictory to have a major segment of campus that the majority of students drive to. The main problem that we are trying to tackle is to overcome the divide in the arts division from the rest of the campus by extending the college's community beyond the hilltop. In efforts to fix this problem, we want to create a seamless access from the main campus to the arts campus that is easily available and safe. Access should also be tailored with student convenience in mind. Student involvement is

essential for a successful solution. Surveys and public forums will be important tools in tailoring a solution that is most likely to be used by the maximum amount of students within a reasonable budget and feasibility parameters. Instead of simply viewing the solution as a connection of the arts campus to the main campus, we want to emphasize that this problem goes farther than a physical issue, but includes the division of our small community. We want to be able to come up with a way to get all parts of Lafayette's campus to work together in binding one strong community.



Lafayette archway at the bottom of the stairs

In addition to accessing the arts campus by the main stairs, the school has hired shuttle buses to run on a continuous loop to and from the bottom of the campus to the top of the hill where the main campus is located. This is a short-term solution implemented by the school that is not efficient and according to a student survey, is hardly used by the Lafayette community.



Lafayette LCAT shuttle

As of now, the school has no large scale plans set to address the problem. We find that it is important to resurface this issue with our community due to the fact that this problem that has been brought up several times over the past years with no long term solution. Our main goal that we, as Engineering Studies students are trying to achieve, is to raise awareness of the hazards that are posted by the school's current methods of travel to and from the Third St. campus. By sending out surveys to collect information, and by creatively constructing a video with the help of the Lafayette student body, we believe that we can attract the attention of the school's administration in order to take the first steps to properly addressing the problem.

There are several steps that need to be taken in order to begin this project. With the help of several different departments including the Civil Engineering department, Art department, Plant Operations, Facilities Planning and Construction, and Public Safety, we believe that a proper analysis can be carried out in order to create a lasting solution for the issues. This project is split up into four main analytical steps: Social Context Analysis, Policy Analysis, Economic Analysis, and Technical Analysis. To begin this project and bring what we found to be a big problem back into the spotlight, our group had to perform thorough research and investigate the current conditions of the third street campus. We began by looking into the social context of the stairs and the Lafayette community. In the past, there have been several accounts of student theses, research projects, and capstone projects that have highlighted this same issue over the conditions. In addition to researching past work, we also conducted our own surveys that were sent out to Lafayette students, along with interviewing some of our contacts. After collecting initial data, our next two steps that we worked on simultaneously were policy and economic analyses. This is where we evaluated other alternatives based off of several criteria and looked into the economic side of our three alternatives so that we would be able to work towards a reasonable solution. Our last step before coming to a conclusion was the technical analysis. This part of the process looked into the technology relevant to the three alternatives that were evaluated, along with a technological analysis of how we were constructing the project. The Engineering Studies program emphasizes the importance of social context in engineering systems, and that is something that we are striving to highlight with this project.

Chapter 2: Social Context

Lafayette College is in the process of expanding the Third Street Campus. The Third Street Campus is currently composed of two buildings, Williams Visual Arts Center and the 248 North Third Street building. Lafayette has recently broken ground on a third building, located at 219 North Third Street, which is scheduled to be completed December 2015 (Lafayette College, 2014). With the additional buildings comes additional students frequenting the Third Street Campus. It is essentially that the school provides a safe, accessible and sustainable passageway for these students.

There have been several inquiries into the Third Street Connection prior to this year's Engineering Studies Capstone Project. There was a Technology Clinic report, written in 2004 that addressed the traffic, transportation, and development of the North Third Street Campus. The Technology Clinic framed the problem as "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" (Technology Clinic, 2004). Half of this statement is no longer true; students do have an incentive to frequent Third Street. Most film and medias studies classes as well as all studio art classes are held on the Third Street Campus. In addition to this, there have been many events held on Third Street. The Technology Clinic came up with three solutions for the Third Street Connection.

The first solution was a **shuttle bus**, which is now known as the Arts Campus LCAT. The technology clinic discussed how the shuttle bus would not be appealing to students who already drive and that "overall, the shuttle would likely not be an appealing means of transportation for the students faculty and visitors of the college" (Technology Clinic, 2004). The second solution they came up with was an **elevator**. The elevator would be a fast means of transportation to the Third Street Campus, as well as a more flexible means of transportation for the rider (Technology Clinic, 2004). The Technology Clinic concluded, "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" (Technology Clinic, 2004). The third solution that the Technology Clinic proposed was a **funicular**, which is an overland rail-bound transport (Technology Clinic, 2004). "Funiculars are fast, allowing students and faculty reliable and unrestricted access to Third Street... Funiculars are also very visually appealing, and bring with them an element of prestige" (Technology Clinic, 2004).

This report provided a lot of information on the different alternatives for the Third Street Connection, however very little was done after the report was released. One of the recommendations that the report did make, which Lafayette followed, was that the Third Street Campus be built up slowly so that the school could determine what the demand for the connection was (Technology Clinic, 2004).

In addition to the Technology Clinic Report, in 2006, Michelle Oswald did an independent study titled, "The Accessibility of Third Street from College Hill". Oswald addressed the route length, lighting, landscape, and sidewalk conditions. Oswald came up with both short term and long term goals. Some of her recommendations, such as increasing the number of lamp posts along

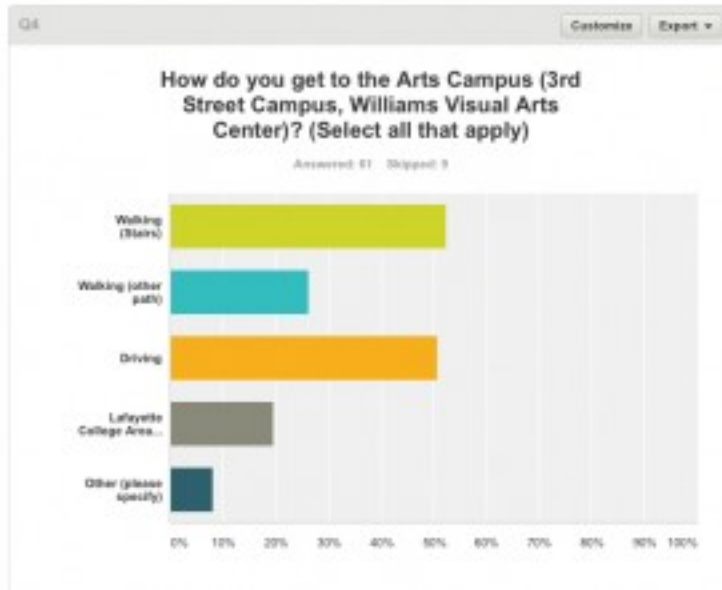
the stairs were implemented by the college. However, some of Oswald's long term recommendations such as "[Reducing] the ramp length and slope along the steps" were not met (Oswald, 2006). Unfortunately when both of these reports were done, there was less of a demand for the connection between the Third Street Campus and the Main Campus because of the lack of development along Third Street.

However, the current Third Street Campus *is* being built up and developed. The current arts campus is being expanded to include the 219 N. Third street property. This property will include a black box theater, a box office, a cinema and classrooms. This project is projected to be completed December of 2015. This additional building creates a higher demand for a safe and efficient way to reach the arts campus.



Photo Credit: Lafayette College

In a survey of 70 students, 45% of the students said they have never been to the Third Street Campus. In that same survey when asked why students have never taken a class at the Third Street Campus, 32% of respondents said it was too far. Only 20% of the respondents said they have taken the LCAT to get to the Third Street Campus. 78% of the respondents said they walk to the Third Street Campus, either by the steps or an alternative path. The LCAT is clearly not the preferred way to access the Third Street Campus. It is encouraging to see that students prefer walking. Lafayette should be working to become a more sustainable campus.



Results from survey of 70 students that was conducted by the Engineering Studies Third Street Connection Capstone Group

This is a historical moment for the college and an opportunity for us to make a long-term impact on Lafayette’s campus. The college should be invested in providing sustainable solutions in order to keep up with other college’s trends. On our own campus there have been significant development projects to turn Lafayette into a walking campus. Although an elevator or a funicular is the “easiest” way up the hill, it is not a good solution in terms of sustainability. Being able to redo the stairs at a normal grade and tread with handrails could be both a simple and sustainable solution, which students will accept.

The school is currently going through a lawsuit following the tragic accident involving Aubrey Baumbach. Aubrey was hit by a vehicle while walking along Easton Road (Cassi, 2014). The suit claims the school did not provide transportation to the boathouse, a safe passageway to get there, or enough parking for students who drove there (Cassi, 2014). Similar claims could be made against the current connection to the Third Street Campus. Although Lafayette does provide transportation via the LCAT, the current steps under certain weather conditions, could be considered an unsafe passageway. It is essential that the school does everything it can to provide a safe pathway to the Third Street Campus. After a phone call with Plant Operations, it became apparent that the current stairs to the Third Street Campus get covered with leave in the fall. When it rains, the stairs are very difficult to safely walk down. In addition to this, Plant Operations said that one of the steps is loose. With the deteriorating circumstances of the steps, the impending lawsuit, and the increased traffic to the Third Street Camps, it is clear that there needs to be a better connection.

In terms of the image the college would like to portray, the connection to the Third Street campus is also important. A vibrant arts campus would help Lafayette’s reputation in the Easton community as well. Lafayette seems to physically look down on the city, and students rarely support the businesses downtown. A seamless transition would help change that and would promote the patronizing of Easton downtown business by Lafayette students.

Easton is currently revitalizing itself and bringing many events and festivals to downtown. These events are great ways bring people to Easton, and help support the local community. Lafayette should be invested in helping link Easton and Lafayette. If Easton becomes a more attractive place to live, Lafayette will become a more attractive college to attend. Investment in the stairs is an investment Easton and the future of Lafayette.

Easton is currently building a new Easton City Hall and Transportation Center. Salvatore Panto Jr., the mayor of Easton, said “This garage is the latest in the series of urban development projects that are making our city safer, more beautiful, and more successful. We are looking forward to the economic opportunities a new City Hall complex will bring to Easton, We are also excited to have Spillman Farmer on board, as they have designed many successful urban development projects in Easton, such as the Sigal Museum and the Lafayette College Arts Plaza”(Spillman Farmer Architects, 2014). The design for the new city hall is inline with the style of the Third Street Campus, and is actually located on the other end of Third Street. This new city hall will lend a visual connection between the City of Easton and Lafayette College.



Photo Credit: Spillman Farmer Architects

Lafayette recently launched a new development campaign called “Live Connected Lead Change” (Lafayette College Office of Development, 2014). The campaigns goal is to raise **400 million dollars** for the Lafayette campus and community. The introduction for the campaign states, “In a world increasingly shaped by connections between people, across disciplines, and among nations, those capable of fostering and leveraging such connectivity will be positioned to succeed – and to lead. At Lafayette, we live connected. And because we live connected, we are prepared to lead change”(Lafayette College Office of Development, 2014). The campaign is clearly advocating for connections on campus. This is an optimal time to discuss what the Third Street Connection should look like. Of the 400 million dollars, **20 million** is being allocated to the “Williams Arts Campus” (the Third Street Campus). It is imperative that the college invests in not only the campus, but also invests in the Campus connection.

The issue of the hill is not going to change; this is a permanent issue that the school is going to face. We need to come up with a sustainable solution that students will use. Students seem to use the current stairs regardless of their current state. We need to make improvements to the stairs so

that they are safe and accessible. Lafayette has invested tens of millions of dollars in the Third Street Campus. Its time to invest in the Stairs. With the current development campaign, the school is in a great position to undertake this project. It does not make sense to call our campus a connected community when the campus is not physically connected to Third Street.

Chapter 3: Policy Analysis

The Problems

The current physical access available from the main campus to the arts campus and vice versa is unacceptable. The steps currently in place are old and dilapidated and become dangerous to walk on in inclement weather, conditions that are frequent in Easton, Pennsylvania during the school year. In addition to being dangerous, the traversing of the steps is an unpleasant experience due to their incorrect rise to tread ratio for outdoor steps and lack of landings. With the development and expansion of the Arts Campus in progress, which in turn will result in an increase in traffic to the area, the way in which students travel back and forth between the campuses is a problem that needs to be addressed.

There are several root causes to this problem. The most obvious is the location of the college. Built on a large hill, there aren't many other ways to connect the Main campus to the lower elevation Arts campus besides steps. Also because of the steepness of the hill, any steps constructed would present a fairly strenuous challenge to anyone traversing them. Another cause of the problem is the expansion of the arts campus. With the recent completion of two buildings with more currently in construction, more classes and offices are being moved to the Arts Campus, which forces more students to either make the trip down the steps, catch the shuttle or drive (Lafayette College Office of Development, 2014). The age of the school is also an issue. When the steps were initially constructed, the typical rise to tread ratio used today for outdoor steps may not have been established yet.

A survey we conducted shows that 52% of students traveling between the campuses use the steps, which is higher than any other method of travel. Lafayette has put a bus in place that runs a continuous loop from the arts campus to the main campus but only 20% of students use this method. Also because of the emphasis Lafayette has put on being a walking campus and a green campus, utilizing a bus that gets 12 mpg as a solution to this problem contradicts an ideal which has been a driving force behind most of the recent renovation projects on campus. The fact that driving is the second most popular mode of transportation at 50% (Students could choose more than one response) is also a contradiction to these ideals the school has abided by the last 5 years.

Though unrelated to the transition between campuses, the school is currently in the midst of a lawsuit because it allegedly failed to provide proper transportation to students traveling to and from the crew team facilities along the Lehigh River across town, resulting in the serious injury of a student. Considering the increasing traffic to the arts campus and the dangerous conditions on the steps, the school is exposing itself to potential similar situations. Being an institution which prides itself on providing top notch facilities and amenities to its students another lawsuit challenging that would not be good for the school's reputation.

The Alternatives

We have three alternatives to the problem of transportation between the main campus and arts campus. One is renovating the steps. Though the walk would still be somewhat unpleasant, shallower steps, more landings and better railings would help in both the rigor and safety of the

trip. Another alternative is one that has already been implemented by Lafayette which is the LCAT shuttle running on a continuous loop. This alternative could be pretty effective, but is not furthering the sustainable agenda the school has otherwise pushed. Also according to the survey only 20% of students use this method, which means there needs to be more promotion done by the school. A final alternative is the installation of an inclined lift at the point of the hill that would be most feasible. This alternative would require a significant investment from the school, but would be popular among students and the picturesque the ride down the hill with the view of Easton could be an experience that becomes a defining characteristic of Lafayette, turning a negative into a positive.

The Criteria

We assessed the three alternatives in terms of six evaluative criteria; Feasibility, Economic, Effectiveness, Ethics, Safety and Experience.

The feasibility of an alternative measures how easy it will be to implement. The LCAT alternative has the highest feasibility since it is already in place and only required the expansion of a contract already in place. The step renovation alternative is less feasible and would require more planning and labor than the LCAT option but not as much as the inclined elevator option which would take a great deal of planning and labor to install due to the terrain. Also the feasibility of selling the decision makers at this school on the inclined elevator option is less likely.

The economic aspect of an alternative is how much it will cost, both in the short and long term. The economic criteria rating of the LCAT alternative is middling thanks to the expensive recurring cost associated with it, including paying the driver and the fuel costs of an inefficient vehicle running in a continuous loop throughout the day. The stair renovation alternative scores somewhat higher in this category. Though the initial renovation would be expensive, it needs to happen anyway, and it would cut down on the frequent repairs that are occurring now. The inclined elevator alternative scores the lowest in this category. This alternative would require a significant initial investment from Lafayette and would require routine maintenance which would most likely need to be performed by an outside contractor.

The effectiveness of an alternative is how effectively it addresses the problem of transportation between the two campuses. The LCAT alternative ranks high in this category because if implemented effectively and used by more students it can address all the transportation issues between the campuses. The stair renovation alternative is less effective because though the stairs will be safer and less strenuous, the journey still won't be a pleasant one and will still result in a significant number of students driving instead. The inclined elevator option is also very effective and would encourage students to forego driving to instead experience the lift. This alternative addresses the problem while also embracing the idea of a walking and sustainable campus.

The ethics criteria assess the alternatives in terms of how they fit the philosophy and morals of Lafayette. The LCAT alternative scores the lowest in this criterion due to its contradictory nature to the sustainable ideals of the school mentioned earlier. The steps score higher in the sense that they fit the walking campus aspirations of the school. The inclined elevator scores the highest in

this category because in addition to reinforcing the ideals of a sustainable, walking campus, it also fits the image Lafayette is trying to put forth in regards to providing top notch facilities and amenities for its students.

The safety of an alternative assesses how safe it is for the students, especially in light of the schools current lawsuit. The LCAT alternative ranks high in this category all though it increases the traffic in an area at the bottom of the hill that already can be congested and dangerous. The step renovation alternative ranks lower because in incimate weather, the renovated steps will still be somewhat dangerous. The inclined elevator option ranks high, because if the lift in constructed with drunk college students in mind the whole system will be designed to be pretty safe.

The experience aspect of an alternative rates the overall experience of traveling between the campuses. This is the first thing people see when they enter the campus and the experience of that transition up the hill is not one that should be overlooked. The LCAT rating for this category is middling. Though students would travel between campuses in a comfortable climate controlled vehicle, the experience is neither noteworthy nor aesthetically pleasing. The renovation of the steps ranks lower in this criteria because though the walk can be aesthetically pleasing, due to the steepness of the hill, even with the renovations it still not an experience students would enjoy. The inclined elevator ranks the highest in this criteria. The experience of riding a lift between campuses would be one of the defining characteristics of the campus and would be both aesthetically pleasing and convenient for students. A lift would also be an impressive first impression for visitors to the campus.

	Feasibility	Economic	Safety	Ethics	Experience	Effectiveness	Total
Step Renovation	2	2	2	1	3	1	11
LCAT Shuttle	1	1	3	3	2	2	12
Inclined Elevator	3	3	1	2	1	3	13

The considerations mentioned previously resulted in the ranking system above, in which the three alternatives are ranked from 1 (the best) to 3 (the worst). With the method, the lowest scoring alternative overall is the best option according to the analysis and in this case it is the step renovation alternative.

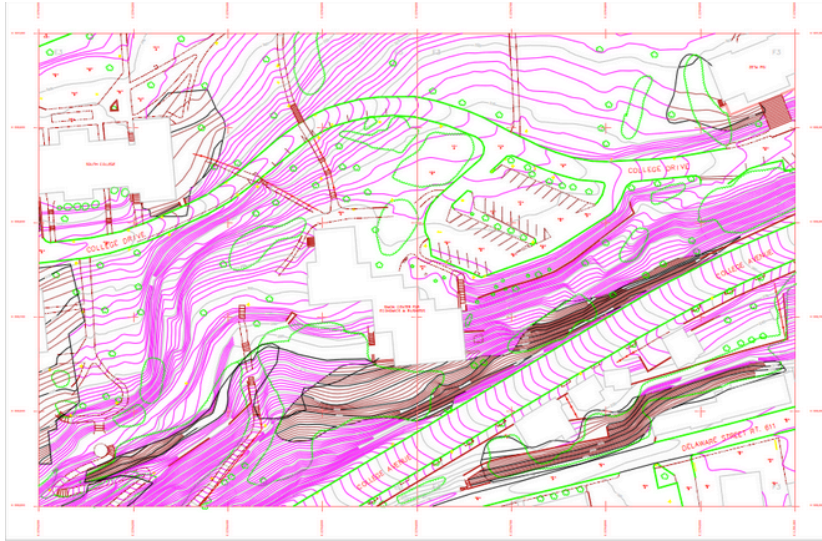
One concern for this alternative is the potential for the need for modern ADA requirements to be met. These concerns and their potential economic implications are touched on in the economic analysis.

Chapter 4: Technical Analysis

In order to raise awareness for the restoration and renovation of travel methods to and from the Third St. Arts campus, a technical analysis must be utilized. Creating a better route for accessing hard to reach areas is usually a difficult task, therefore many factors were taken into consideration. Our first step in approaching the problem was to analyze the existing conditions of the current travel methods. The main stairwell from the back of Reuf and Keefe Halls to the bottom of the hill at the intersection of College Ave, Bushkill Dr. and Third St. has 90 steps. The total distance of this stairwell measured out to about 847 ft or roughly $\frac{1}{8}$ of a mile (Oswald). However, since the stairwell is debatably a historical site, not much maintenance has been done over the years to keep the stairs in safe condition for students and faculty to travel on. With help from the Facilities and Planning Department we were able to locate a topographic map of college hill in order to analyze the slope of the hill.



Google elevation map of College Hill



Topographic Map of College Hill (obtained from Lafayette Facilities and Planning Dept.)

Because of the significant slope of the hill (shown in maroon in the topographic image above), the steps have slanted at an undesirable grade over time. This deep slant of the steps pose as a high safety risk, especially during inclement weather. In addition to the slant of the stairs, the condition of the concrete and stone around the stairwell is in very poor condition. The steps are currently in a crumbling state with cracks, weeds, debris, and trash surrounding the area. Surrounded by poisonous weeds such as poison ivy poses a health threat for travelers on the stairs and is an alarming concern that needs to be paid attention to. The state of the steps and railings on the stair path is also another factor that needed to be taken into consideration as well. the railings have been rusted over, and many steps are cracked and loosely fit into the ground.





There were several technical factors for the three alternatives that we looked into.

Shuttle Bus:

The current busses that shuttle on continuous intervals to and from the Third St. campus are leased through the Palmeri Bus company. According to representatives from Palmeri, the busses drive about 76 loops a day on a 1.2 mile loop around campus. Although the busses are less economically demanding with initial costs, they do require constant funding for fuel and for renting the actual busses. A negative factor about the bus shuttle alternative is its inefficiency. Lafayette has been working over the years to become an eco-friendly and sustainable campus, and utilizing bus shuttles on constant loops throughout the day is not an ideal “green” solution.

Funicular:

Another alternative that we looked into was the implementation of a funicular on the side of the hill. “A funicular is an overload rail-bound transport mechanism used to ascend and descend steep hillsides” (tech clinic). This option provides the fastest travel between the two campuses but would require difficult implementation along with regular maintenance. “Beyond the initial cost of excavation and construction, such an elevator would require a great deal of maintenance to ensure that it continues properly” (Tech Clinic) One of the biggest difficulties of the implementation of a funicular would be accessing the hill to construct on. The terrain is rocky, wooded, and rough on a very steep slope; this creates a difficult canvas for construction and would likely raise construction costs for such a technology.

Stairs:

Our third and most popular alternative for accessing the Third St. campus is the renovation of the steps. Because of the poor condition of the current steps, we feel that the total reconstruction of the steps would be effective. Since the current steps on the hill are at such a steep grade, a total

reconstruction of the area would most likely have to occur rather than smaller scale reparations. This alternative would ultimately provide a clean solution with low maintenance costs and would encourage the Lafayette community to walk from campus to campus. However, with the renovation or construction of new stairs would require strict compliance to the ADA (Americans with Disabilities Act) guidelines. Although the guidelines do not directly address pathways between buildings, Mary Wilford-Hunt, Director of Facilities Planning and Construction at Lafayette, stated that the school would still consider accessibility factors if the steps were to be repaired.

Informational Video:

In order for this project to be successful, our group has decided that an informational video will be created with the purpose of further informing the Lafayette community of the hazards that surround the main stairs and the economic dilemmas with the Palmeri bus shuttle solution. Our hopes are that by our informing the Lafayette community of this issue, we will be able to jump start the improvement of the steps that lead to the bottom of the hill. In the constructing of the video, we decided that random student interviews along with anonymous student surveys would be helpful

One of our efforts in obtaining more information about the technical process for our project was interviewing Mary Wilford-Hunt from the Facilities planning and Construction Department here at Lafayette. In the interview, Mrs. Wilford-Hunt was asked a series of questions about the technical and economic components to the connection of the Third St. campus. the transcript to the interview can be found below.

Interview Transcript

Conducted by: Mazi Chiles

Interviewee: Mary Wilford-Hunt, Director of Facilities Planning and Construction

Chiles: Has the school considered addressing the steps leading from the main campus to the arts campus?

Wilford-Hunt: We have. We realized the increase of importance about the pedestrian length between the main campus and North 3rd st. especially because we are building and developing down at the base of the hill. So with the increased population will cause increased demands. So it is something that we discussed. The college has added some lighting and has done some minor improvements that you may or may not have noticed, but certainly there is always room for our continued improvement.

Chiles: We've heard of the school being concerned over some ADA requirements that would need to be considered if the school was to renovate the steps. Can you expand on those?

Wilford-Hunt: Yes, so we are in the midst of doing a campus wide ADA study. We take accessibility very seriously and want to make sure that we are in compliance wherever it is technically possible. And as a part of that study we have asked our consultants about what we call travel ways, which is getting from building to building and point to point on campus in addition to making the interior of each building accessible. So what is required by the mother of the law and the American Disabilities Act is that buildings

have an accessible route from handicapped parking into the main areas of each building. So it does not address the paths in between buildings but that isn't to say that we should not be looking into that as well.

Chiles: What is the process for a major project to be funded and approved? For example, a funicular option or a step renovation,

Wilford-Hunt: Right, so there are a couple of ways that that happens. One is through the Capital Request process and I think you heard a little bit about that from some of your classmates. So with the assistance of professor Cohen they filled out the Capital Project Request form, which you can find online, and its just a one page form but it starts the process rolling. It's a way to get proposed projects on the list for consideration. So I would recommend you take a look at that form, I am very happy to help you out with that form and I would encourage you to do that immediately.

Chiles: Is that form for any type of project? For example would it be used by a member of the school, if you decided that we really need to address the steps. Would you go through the same process?

Wilford-Hunt: I would, because it's a way to request funding for a project.

Chiles: Okay

Wilford-Hunt: So I've filled out quite a few of them for consideration for funding.

Chiles: And what is the alternate process that you suggested?

Wilford-Hunt: So another way would be if our president or a board member would propose something at a trustee meeting for consideration. So that's kind of a top-down approach rather than a down up approach. But I think that for this project the Capital Request form would be appropriate. And like I said, I would be more than happy to help with that.

Chiles: Has the school gotten any estimates on how much a step renovation would cost?

Wilford-Hunt: We have not. And one of the reasons that we have not is obviously that those estimates would depend on the scope of work.

Chiles: Right

Wilford-Hunt: So it can be a simple pair of advisors for the treads to be placed or it could be a whole scale replacement instance of the path or anything in between. So we don't have any numbers but we could easily get up to a million dollars on these steps.

Chiles: You believe it could be a million dollar project?

Wilford-Hunt: It could be, yeah.

Chiles: and that would be more if you were to take them out and re-build them.

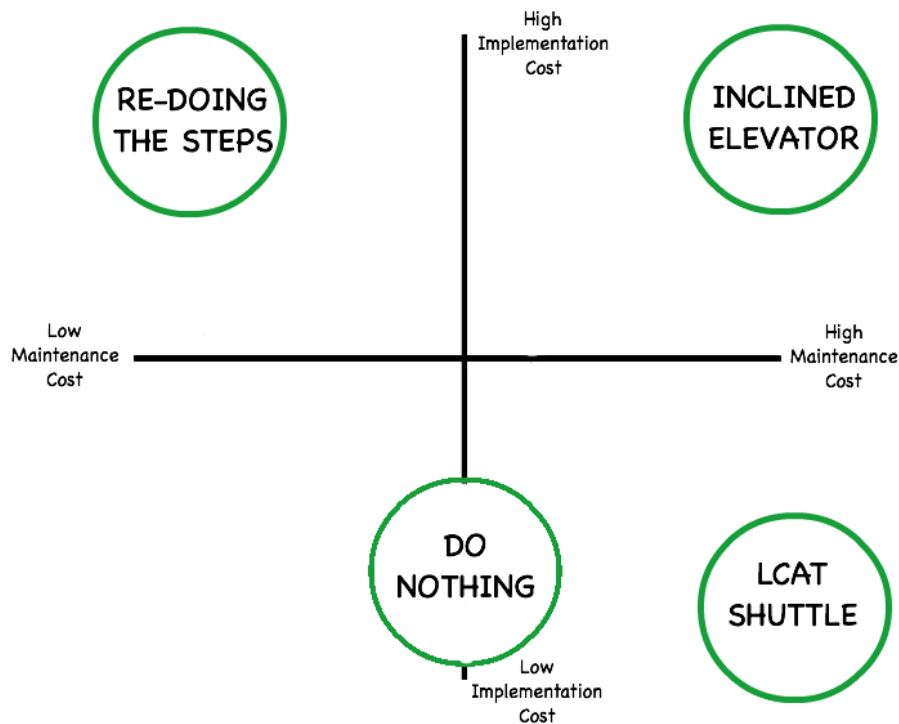
Wilford-Hunt: Right. The handrails, additional lighting, new steps... and one of the reasons it can be so expensive is because it is so tricky to access the site. You cant get a truck anywhere near there.

Chiles: Well you already answered one of my questions, which was: As the art campus expands, do you think that the pressure to address the transition would increase, but how likely do you think the school would be to approve a costly solution such as a funicular or bridge in the near future?

Wilford-Hunt: I think that's hard to answer. I think it depends on what other projects are proposed and what funds are available.

Chiles: Okay, well that actually concludes my set of questions. Thank you Professor.

Chapter 5: Economic Analysis



A major aspect of this issue are the economics. The dollars and cents associated with whichever alternative is considered play an integral part in whether that alternative ultimately will be chosen. There are two ways in which a project proposed to Lafayette can secure funding. One, the bottom up, approach is through the process of completing a capital project request form. This gets the process rolling, and gets the proposed project on the list for consideration. The other method is more of a top down approach, and is if the president of Lafayette, or a board member proposes the project at a board meeting (Wilford-Hunt, 2014). According to Mary Wilford-Hunt, Lafayette's Director of Facilities Planning & Construction, the most effective and common way for a project to receive funding is the through the capital request process, the deadline for which has already passed (Wilford-Hunt, 2014).

It is clear Lafayette is not afraid to spend money on improvements to its campus. As mentioned throughout this project, the school is currently in the midst of a multi-million dollar expansion of the arts campus (Third Street Campus). This is part of the aforementioned 400 million dollar "Live Connected Lead Change" fundraising initiative launched by the school for improvements to the Lafayette Campus and Community. Of this 400 million, 20 million is slated to go to the expansion of the arts campus (Lafayette College Office of Development, 2014). The most recently completed project of this expansion is the new Film and Media Studies building on Third Street, and the department is anticipating another addition to its facilities with the construction of the 219 Third Street property, which will include among other things a box office and black box theater. With all this development taking place and the increase in volume of

visitors to this area of campus, it seems to only make sense that the access to and from this expanding part of campus be invested in as well.

This aspect of the project was somewhat difficult because of lack of transparency regarding Lafayette's contract with Palmeri and the fact that step renovation and inclined elevator costs were both rough estimates that are difficult to ascertain due to the access challenges presented by the hillside. The alternative which is already in place, the LCAT shuttle service, has the smallest initial investment, the value of the contract with Palmeri Transportation, which they would not disclose to us. Though the periodic costs associated with this alternative would occur more frequently than the other alternatives, from a purely economic standpoint, the LCAT alternative makes the most sense. However this isn't a purely economic situation and though this is the alternative the school already has in place, considering the sustainable agenda the school is pursuing, this isn't a viable long term option. The vehicles used by Palmeri are not efficient getting 12-14 mpg, and maybe less considering the terrain. On a continuous loop at that mpg, taking 76 trips a day on a 1.2 mile loop assuming \$3.00 per gallon for gas the rough cost in gas per day is \$21, \$105 per week (weekdays), \$420 per month and \$1,600 per semester. Assuming a multiplier typical to this type of contract used by Palmeri for overhead and profit, this is still a reasonable price to pay, especially considering the anticipated costs of the other alternatives and has been a good "bridge solution". In the long term, however, the conflicting messages the school is sending by continuing this contract, along with the negative externalities associated with low-efficiency fossil fuel burning vehicles, are things the school should not want to be associated with.

The inclined elevator alternative is one that ultimately becomes unlikely after the economic considerations. Because it is so uncommon in this country, usually limited to ski and golf resorts, reputable vendors are hard to find and would likely come from out of state. Considering talks with Lafayette's Project Manager Nadda Pavlinsky and Mary Wilford-Hunt, the school is currently not even considering any major action regarding the transition between the two campuses (Pavilinsky, 2014). Knowing this, we deem it highly unlikely the school would approve any project that would require the capital needed to undertake an alternative of this magnitude. Past groups looking into this issue have all deemed the inclined elevator (funicular) as unfeasible given the costs associated with overcoming the terrain and grade of the hillside. The Tech Clinic group of 2004 collaborated with Hill Hiker Inc. out of Minnesota and were told a project of this magnitude would cost in the range of \$380,000 to \$450,000 initially with expensive maintenance required periodically. When we described the site to a representative from a funicular vendor out of Ontario, he scoffed at those estimates, stating a project with this kind of change in elevation, rocky terrain and access challenges would require an initial investment of at least \$950,000, in addition to periodic maintenance. Maintenance costs from similar projects range from \$2500 to \$5000 a year and considering the reasonably harsh climate the elevator will be exposed to, one would expect for those costs to be on the higher end. Though some of the benefits of this alternative can't be measured in a monetary sense, money from the school is what would ultimately get the inclined elevator built and that kind of investment is unrealistic at this time.

The step renovation option wouldn't necessarily be cheap, but would be far less expensive than the elevator option in the long run. We've discovered that one of the reasons the school hasn't

dealt with the steps already is because they are afraid any work done will mean having to bring them up to the appropriate modern standards. The steps were built in the early 1900's at the latest, and a lot of work would need to be done to give them the correct rise to tread ratio, to add more landings as well as any ADA concessions that may be necessary. However according to the ADA website "Alterations to buildings or facilities that are eligible for listing in the National Register of Historic Places under the National Historic Preservation Act (16 U.S.C. 470 et seq.) or are designated as historic under State or local law, shall comply to the maximum extent feasible with this part." Though the steps are not on that list, these guidelines still give us a good idea of how the ADA would treat this situation. The ADA determined that feasibility is constituted as being a cost that is within 20% of the overall cost of the alteration (Americans With Disabilities Act). We assumed the addition of a ramp would be at least 20% of the overall renovation cost and noted that the sidewalk on the side of College Avenue closest to downtown Easton is Handicap accessible. In addition, the school is currently having a campus wide ADA study done by a 3rd party consultant. Their interpretation of the act is that though it required handicap accessibility between handicap parking and a building, it does not have requirements for the pathways between buildings (Wilford-Hunt, 2014). Also the practicality of a ramp traversing that kind of dramatic change in elevation is unfeasible. Based on this information we have operated under the assumption that ADA disability requirements would not need to be included in the scope of the renovation of these steps.

At this time Lafayette has not gotten an estimate on how much the renovation of the steps would cost. This is mainly due to the potential scope for this project being widely varied. At one end of the spectrum the school could seek to just replace the risers and tread that are damaged, something that they have already been doing. However this is more like putting a Band-Aid on the problem, and similar to the LCAT alternative, this is a "bridge solution" and a continuation of the recurring costs that are already associated with the steps. In fact in just the couple months since we initially reached out to Lafayette's Plant Operations, one step was repaired and at least two more have disintegrated to the point where they will soon require repairs as well. The harsh weather of the upcoming months only accelerate that process, as water seeps into the numerous cracks and crevices on the steps and expands as it freezes. Though it would be much cheaper for the school to continue to just repair the steps on a as needed basis, as the steps continue to erode, the costs associated with those repairs will continue to increase. In addition, in the midst of the lawsuit the school is currently involved in, it's not in Lafayette or it's students best interest to continue to let this erosion take place. At the other end of the spectrum would be a complete replacement of the stairs which Mary Wilford-Hunt predicted would cost close to a million dollars (Wilford-Hunt, 2014). However, the recurring maintenance costs associated with this alternative would be almost nonexistent for a long time. That being the case, out of the two viable long term options, this alternative is the better one economically, especially considering the steps are already the most popular method of transportation.

Chapter 6: Conclusion

The purpose of this project was to analyze the transition from the arts campus to the main campus here at Lafayette. The system that is currently in place is inadequate and whether it is the stairs which are in terrible condition and are at the inappropriate grade; or the LCAT shuttle service, which contradicts the sustainable agenda the school is actively pursuing; the alternatives currently in place aren't long term solutions. We decided to consider several alternatives to this problem; the continuation of the LCAT shuttle service, the renovation of the steps currently in place and the construction of an inclined elevator. Another main objective of our project was to introduce this problem to the Lafayette community's consciousness. We felt like to do this as well as produce a tangible product of our efforts, a video would be the best option. The Lafayette College administration has been hesitant in addressing the problem and recognizing its potential dangers to the student body and staff and we believe this is a mistake, especially considering the expansion of the Arts Campus that is underway. A video could be an effective way to bring this issue to light and to get a conversation going. At this point that is the most effective agent for change and hopefully our video will help do just that. We feel that by clearly laying out the problem and the hazards of the situation we can get the ball rolling and set the groundwork for further pushes towards a solution in the future.

We believe one of the primary reasons Lafayette hasn't addressed the transition between campuses is that not enough students regularly travel to the Arts Campus. In order to get a better idea of the traffic we developed a survey in which 70 students of a diverse background took part. Of that sampling of 70 students, 45% hadn't even been to the Arts campus. Only 20% said they have used the LCAT shuttle service and 50% said they have used the stairs with the same percentage saying they have driven. This data corroborated the need for change. When half the students are using the run down steps that are in place and the other half are typically driving this directly contradicts the emphasis the school has put on both sustainability and safety.

In order to better compare the different alternatives to one another we evaluated them in terms of six evaluative criteria and found that each alternative had its strengths and weaknesses. The inclined elevator for example while being a memorable experience and an effective solution to the problem, the feasibility in terms of the terrain of the area as well as the potential costs made it an unlikely option for the school to consider. The LCAT shuttle service would be the easiest alternative to implement, given that it is already in place and is therefore very feasible as well as being cost effective, but from an ethical standpoint its continuation contradicts every decision the school has made over the past few years in regards to sustainability and creating a "walking campus". We decided the step renovation alternative was ultimately the best option from a policy analysis standpoint. Though being somewhat costly, it would not be as costly as an inclined elevator and would be an effective option while also being in line with the sustainable mantra of the school.

From a technical standpoint, the renovation of the steps could present unique challenges. The stairs in place already do not have the appropriate rise to tread ratio and # of landings for outdoor steps. Considering the extreme change in elevation they are traversing, this makes for an exhausting climb up and a treacherous climb down. One of the unique challenges of renovation would be how ADA regulations would be handled. In interviews with decision makers on

campus, we found one of the primary reasons the steps hadn't been renovated already was because of the fear that any renovations would cause these steps to have to be brought up to modern disability access standards, dramatically increasing costs. From a technical standpoint the inclined elevator would also run into its share of issues, namely the terrain of the area. The rocky hillside would cause issues in terms of the connections between the elevator and the hillside and the labor resulting from which would also dramatically increase costs.

From a purely economic standpoint the LCAT shuttle would be the cheapest solution. Though neither Palmeri nor the school would release the amount of the contract, it's still safe to assume that it is substantially less than the investment required for the elevator and step renovation options. However, the maintenance costs would be high, as would the maintenance costs for the inclined elevator option, which would also require a multi-million dollar initial investment. Though the steps would require a substantial initial investment, not only would the maintenance costs be low, but this alternative eliminates the existing maintenance costs associated with the current stairs.

Throughout the course of our work and research for this project we consulted with many different divisions from the school, as well as outside sources to get an understanding of the situation and who the decision makers are. We consulted with the Palmeri Transportation Company with regards to the shuttle; Inclined Solutions with regards to the inclined elevator and at Lafayette we spoke with the Lafayette Civil Engineering Department, the Office of Planning Services, Plant Operations, and the Art Department.

We are very thankful for the resources that were provided in order for our group to be able to properly assess the issue and work towards coming up with a reasonable solution. Our finish product is the video which will help to raise awareness about this issue and get the conversation started, building the framework for individuals to build on what we've accomplished in the future.

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