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Date: November 5, 2019

To: The Board of Directors for Innovative Student Facilities INC
Chris Barr, Chairman
Dr. Jean Hall, Vice Chairman
Dr. James King, Director
Dickie Crawford, Director
Dan Hollingsworth, Director
Russell Nolan, Director
Connie Howard, SEC/Treasurer

From: Matthew Smart, Lead Project Developer

Subject: Recommendation Report for Louisiana Tech's Parking Problem Solution

Attached you will find the product of my research titled "Selecting a Solution to the Louisiana Tech University Parking Problem: A Recommendation Report." This report was created by completing tasks in my proposal, which was granted approval to allow me to email a small number of universities about their transit systems, create a list of questions then interview a school official, and finally email another school official for more information.

To complete these tasks, primary research was exclusively used. Emailing other universities and interviewing and emailing school officials to develop a solution that would fit the needs of Louisiana Tech University and its students. This information was then used to create a report which details a solution tailored to Louisiana Tech's unique needs.

Research resulted in eliminating certain solutions such as increasing parking by developing land into parking lots or parking garages and creating a transit system to transport students back and forth between other parking lots. Other solutions we deemed feasible through the research which resulted in an educated recommendation that would fit the budget given.

The resulting recommendation is further research of both how to optimize the times classes take place during the day to lessen the number of students on campus at one time, and the cost of constructing

crosswalks and the locations they would be built on so students can safely travel from Joe Alliet Stadium's parking lot where additional parking could be utilized.

I appreciate the time you have granted me out of your busy day to read this report. It is my hope that this research will provide a solution that will allow Louisiana Tech University to continue to grow and that more students will have the opportunity to attend this institution. If you have any comments or questions, please contact Matthew Smart at mrs055@latech.edu.

Selecting a Solution to the Louisiana Tech University Parking Problem: A Recommendation Report

Prepared for: The Board of Directors for Innovative Student Facilities INC
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Abstract

“Selecting a Solution to the Louisiana Tech University Parking Problem: A Recommendation Report”

On October 22, 2019 Alice Meryl, Chief Executive Officer of Bach Creative approved a proposal by Matthew Smart, Lead Project Developer to carry out research on possible solutions to the limited availability of parking on Louisiana Tech University’s campus along with the feasibility of each solution. The author began research by emailing a small number of universities to gain information about the transit systems that are currently on their campus. Questions were then constructed for an interview with Dr. Dickie Crawford, Vice President of Student Advancement at Louisiana Tech University, this interview was then performed on October 30, 2019. During this time Bill Davis, the Assistant Police Chief for Louisiana Tech University was contacted regarding the amount of parking spots in each parking lot on the University’s campus. From this research it was determined to best fit our budget in most circumstances the use of already present parking locations would need to be used, as construction would be too expensive. The process of transporting students from the stadium to campus then became the focus of the report and then determining a recommendation based on the cost in relation to the budget given. From these conclusions I recommend further research into optimizing scheduling of classes to lower the number of students on campus at a time to increase the available amount of parking places on campus in conjunction with researching the cost and potential locations of crosswalks that would form a path from Joe Alliet Stadium to campus to grant additional parking.

Keywords: parking, budget, availability, schedule, feasibility, parking spots, parking garage, crosswalks

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Executive Summary

To achieve the vision of making Ruston a more sustainable place, Alice Meryl, CEO of Bach Creative invited me to be a member of the Sustainable Ruston Task Force, which is used to develop in-house projects with a budget of \$100,000. This vision is defined by 12 sustainability principles, my project intends to contribute to at least three: Resource Management, Community Design and Reasonable Mobility. The project that I chose to take on was to find a solution to the lack of parking on Louisiana Tech University's campus.

Every weekday morning Louisiana Tech University's parking lots are filled to capacity causing a lack of available parking. This lack of parking frustrates students and leads to some arriving late to class as they search for an available parking spot. As the University's student body continues to grow, so does this problem, having the potential to limit the University's growth if not solved. In order to find a solution to this problem, I began researching possible options to increase the available parking on campus, seeking the best solution.

To begin research emails were sent to a small number of universities with a list of questions about the transit systems on their campuses. An interview with Dickie Crawford was then performed and an email was sent to Bill Davis to gain information about the topic relevant to Louisiana Tech's specific needs and limitations as well as other possible solutions to the problem.

Through my research it was determined that Louisiana Tech's situation was unlike that of the universities that replied to the emails sent out, and that a transit system like their own would be impractical because of a difference unlike the cities that these universities are located in, Ruston does not have an already functioning bus system that runs through it. In the interview with Dickie Crawford, he estimated the costs of development for additional parking structures which far exceeded the budget that was given to us. Due to these factors it was determined optimization and use of resources already available at Louisiana Tech would be the most feasible solution in order to stay within the given budget.

My recommendation to increase available parking on Louisiana Tech's campus is further research of both how to optimize the times classes take place during the day to lessen the number of students on campus at one time, and the cost of building crosswalks and the locations they would be built on so students can safely travel from Joe Alliet Stadium's parking lot where additional parking could be utilized. I believe further researching these topics will provide the best solution given the project's needs and budget.

Introduction

Alice Meryl, CEO of Bach Creative invited me to be a member of the Sustainable Ruston Task Force. This task force has the is used to create in house projects that would have a budget of \$100,000 while making Ruston a more sustainable place. These projects hope to achieve this by using the criteria of 12 sustainability principles. The project I will be undertaking is to find a solution to the lack of parking on Louisiana Tech's campus hoping to satisfy three of the three sustainability principles Resource Management, Community Design, and Mobility.

Currently Louisiana Tech University is suffering from a lack of parking on campus for student. With most students that attend Louisiana Tech commuting from off campus to campus for classes, this situation causes frustration and leads to students being late to class as they search for a place to park their vehicles.

The implications and nature of this problem are why I have determined it a suitable candidate for the Sustainable Ruston Task Force's attention. To begin finding a solution five tasks were formed to created:

- Question other universities about their transit systems. This was done by emailing a selected number of universities, sending them a list of questions.
- Create a set of questions to ask to Dickie Crawford. These questions were based around possible solutions connected directly to Louisiana Tech and the University's present situation.
- Interview Dickie Crawford. An interview was done with Dr. Crawford using the questions created.
- Email Bill Davis about the number of Parking Spots on Campus.
- Contact Mark Coleman for access to graphics associated with the parking structure. This task was not completed as it was deemed irrelevant.

Through this research it was determined that increasing parking by developing land into parking lots or parking garages would not be possible as it would far exceed the budget that was given. Due to this impossibility it was determined that additional parking be obtained through optimization class schedules and utilization of the previously unused Joe Alliet Stadium's parking lot would be the most feasible possible solution.

It is my recommendation is further research of both how to optimize the times classes take place during the day to lessen the number of students on campus at one time, and the cost of building crosswalks and the locations they would be built on so students can safely travel from Joe Alliet Stadium's parking lot where additional parking could be utilized. With this information, progress can be achieved in solving this problem.

In the remainder of this report I provide further details on the research methods used, the results of that research, the conclusions from these results and a recommendation based on those conclusions.

Research Methods

Primary research was used throughout my project, choosing to speak firsthand with those that had conducted similar projects as well as the employees of Louisiana Tech University. I reached out to seven universities and received replies from three of them, first being The University of Alabama, Wellesley College then Stanford University. Research then continued with correspondence at Louisiana Tech to Brian Davis and Dickie Crawford.

To begin research I spoke with several people at the Louisiana Tech Police Department, using that information I decided upon five different tasks, one not being used as it became apparent that it was not needed or relevant to this project.

1. Question other universities on aspects of their transit systems.
2. Create a set of questions to ask to Dickie Crawford.
3. Interview Dickie Crawford.
4. Email Bill Davis about the number of Parking Spots on Campus.
5. Contact Mark Coleman for access to graphics associated with the parking structure.

Task 1: Question other universities on aspects of their transit systems.

Primary research was started by finding what universities currently have their own transit system in place, a list was found on Wikipedia. I tried to find a diverse range of universities that had different qualities in common with Louisiana Tech. Some universities were chosen because they are in the same climate as Louisiana Tech such as Louisiana State University, the University of Arkansas, and the University of Alabama. Other universities were chosen because the city or town they are located was comparable to Ruston, such as the University of Georgia and Stanford. Others still were chosen because they shared a similar number of students with Louisiana Tech, these being Wellesley and Clackamas.

Through the emails that were sent, three universities responded. Those three universities were The University of Alabama, Wellesley College and Stanford University. The University of Alabama and Wellesley College both sent answers to the questions that were asked, and a phone interview was scheduled with Brian Jackson from Stanford University, but due to Brian Jackson's absence, I spoke with David Devito.

Task 2: Create a set of questions to ask Dickie Crawford.

Questions to ask Dickie Crawford were determined by relevance to his position as Vice President of Student Advancement at Louisiana Tech University. These questions were based around the feasibility of hiring a company to establish a route between the football stadium and central Tech campus and the logistics around using the stadium parking for student parking.

Task 3: Interview Dickie Crawford.

On October 30th an interview was performed with Dr. Dickie Crawford. Upon arrival at 11 AM in his office we proceeded to have an hour interview which was recorded with his permission. Dickie Crawford was chosen for this interview because he is the Vice President of Student Advancement for Louisiana Tech University. These questions were based on possible solutions to the lack of parking on Louisiana Tech's campus and were directed toward the cost and feasibility to make the solutions possible.

Task 4: Email Bill Davis about the number of Parking Spots on Campus.

While waiting to do the interview with Dickie Crawford, responses were gathered from the emails received from Task 1. With these responses I reached out to Brian Davis through email. When emailing him, I only had one question to ask which was "What are the parking spot break downs for the university." Bill Davis was chosen because he is the Assistant Police Chief for Louisiana Tech University and the police department handles parking on campus.

Task 5: Contact Mark Coleman for access to graphics associated with parking structure.

It was determined during this project this step was not needed.

Results

Task 1: Question other universities on aspects of their transit systems.

The three universities that responded to my emails all bared one thing in common: their bus systems were run by a third-party company, not through the actual universities. More so, when these universities began their systems, they did not fabricate them from scratch, instead they were added to a current system that was already being run. Below I will share further details of each universities transit program.

- The University of Alabama: According to James Knickrehm, the system was designed to complement the parking system at UA, much like a system at Louisiana Tech would. Where Louisiana Tech's system would differ is The University of Alabama uses a total of 44 buses to service over 38,000 students on the campus. Another difference between their system and Louisiana Tech's needs would be that their system has multiple stops, different routes being run throughout the campus whereas this system would have two different pick up and drop off points and only one route being run through the day. When asked how the system was funded, James replied with "UA is centrally funded."
- Wellesley College: My point of contact with Wellesley was Peter Eastment of the Wellesley College Senate Bus System. Their system was created to service students that attend both MIT and Wellesley. Like the University of Alabama, their system was contracted through a third-party vendor. Unlike the University of Alabama, their system is integrated into a private, city bus system that does not only service the colleges, but the entire city as well.
- Stanford University: A phone interview was planned with Brian Jackson, but due to his absence was done by David Devito of Marguerite Shuttle. Like the other two universities Stanford University uses a third-party company to handle their transit system. Unlike the other universities, Stanford University leases their buses from the companies, with the option of purchasing the buses after a certain period. The benefits of leasing the buses include that all maintenance is performed by the vendor instead of the university. The cost for their buses can go as high as \$750,000 per bus. This is caused by the buses being electric, instead of running on gas. One of Stanford's cornerstones of their system is the way to reduce traffic on the campus while also applying a heavy emphasis on clean energy which is why they chose to use electric buses. Since Stanford is a private institution, they also can use the buses they have bought to create capital for the university through shuttling people to and from events at the university that are not students, such as during football games or graduation.

Task 2: Create a set of questions to ask Dickie Crawford.

Instead of creating a list of creating a list of questions for Dickie Crawford, the interview commenced with talking points instead of outright questions. These points were chosen in the mind of using one bus to service one route back and forth between the football stadium and central campus on Louisiana Tech, how much a bus would cost the university and other options that would be possible on Louisiana Tech campus.

Task 3: Interview Dickie Crawford.

Dr. Crawford was a wealth of knowledge on providing possible solutions to parking problem on Louisiana Tech's campus along with the actions that could be taken to solve the lack of parking on campus. These options are:

1) Restricting Parking on Campus

Freshman not being able to bring their car. Dr. Crawford said he would not suggest this option as it would be giving the university a recruiting disadvantage and said it was not favored by him or many others.

2) Class Schedule Optimization

According to Dr. Crawford, most of the congestion on campus occurs during the early hours of the school day. This option would offer more classes throughout the day instead of concentrating them in the morning. This would allow for a disbursement of students coming onto campus and parking throughout the day, using the parking that currently exists but using it more effectively by controlling when students come onto campus. This option would also see more classes being offered on Tuesday and Thursday to alleviate parking on Monday, Wednesday and Friday.

This option is highly favored because of the funding and optimization. According to Dr. Crawford, the budget for universities used to be paid 70 percent by the state, and 30 percent by grants and students and their families, but recently this has reversed with the state providing 30 percent of the budget and grants and students and their families being responsible providing the remaining 70 percent. With this shift optimization becomes more important. According to Dr. Crawford Louisiana Tech is not using its facilities the best it can, most of the classrooms are left empty after noon due to classes not being scheduled. This option would utilize the structures that we currently have in place theoretically solving the parking problem.

3) Using the Joe Alliet Parking Lot

This option can be broken down into two parts, the first being only using the Joe Alliet Stadium parking to add more parking places for campus, the second would include using a transit or shuttle system to bus student back and forth from the Stadium parking lot and central Tech campus. Dr. Crawford offers the option of maybe having a much lower cost parking pass for the students that would parking at the stadium to incentivize parking in that location. With this option the problem of safely transporting students to and from this parking area to campus is an obstacle that must be overcome, Dr. Crawford offered multiple solutions:

a) A series of crosswalks to aid students in walking from the Stadium to campus.

Creating a series of well-lit, stripped, safe crossways for students to walk across on their way to campus from the stadium parking lot. Dr. Crawford estimated each crosswalk could cost between \$30,000 to \$50,000 each. When asked how Dr. Crawford would approach the parking problem with the limited budget of \$100,000, he suggested this as the best use of the money and suggested using the money for research.

b) A large sidewalk that runs from the football field to campus.

This plan would create a large sidewalk that would run along the train rails that divide campus. This sidewalk would be around ten feet wide to allow a safe route for to ride bikes, scooters or walk to campus. This solution would be dependent on buying land from the rail company or the city to develop into the sidewalk as the University does not currently own it.

c) A transit system to bring students to campus.

When creating a transit system, Dr. Crawford points out that many other variables are added. Unlike the universities that responded to my emails, Ruston does not have a public or private

bus system that runs through the city. As such, Louisiana Tech would be responsible for purchasing the bus, hiring, paying, and training a driver. Liability issues would have to be handled through the university. Since university would be limited to the amount of buses they would own the cost would increase in order to add more efficiency.

- d) **An autonomous tram system that would have multiple stops between the football field and campus.**

The fifth and final solution offered by Dr. Crawford was a Smart Campus Grant that would be granted to both the University and the city by the state. Part of the proposal would include the research and development of an “autonomous vehicle system” like the rides at Disney Land. This would be a driverless, electric powered system that could run up and down the train tracks that run alongside the University and could have multiple stops to bring students to different destinations starting at the football stadium and going as far as downtown Ruston. This solution would be dependent on the purchasing of the land, and the acquirement of the grant, but if granted Dr. Crawford stated it would be of little to no cost to the University. This option is currently in “positive talks” with the state according to Dr. Crawford.

4) **Increasing parking by construction**

Dr. Crawford broke down the cost of purchasing and developing land into gravel lots, paved parking lots and parking garages. His responses are shown in **Figure 1**.

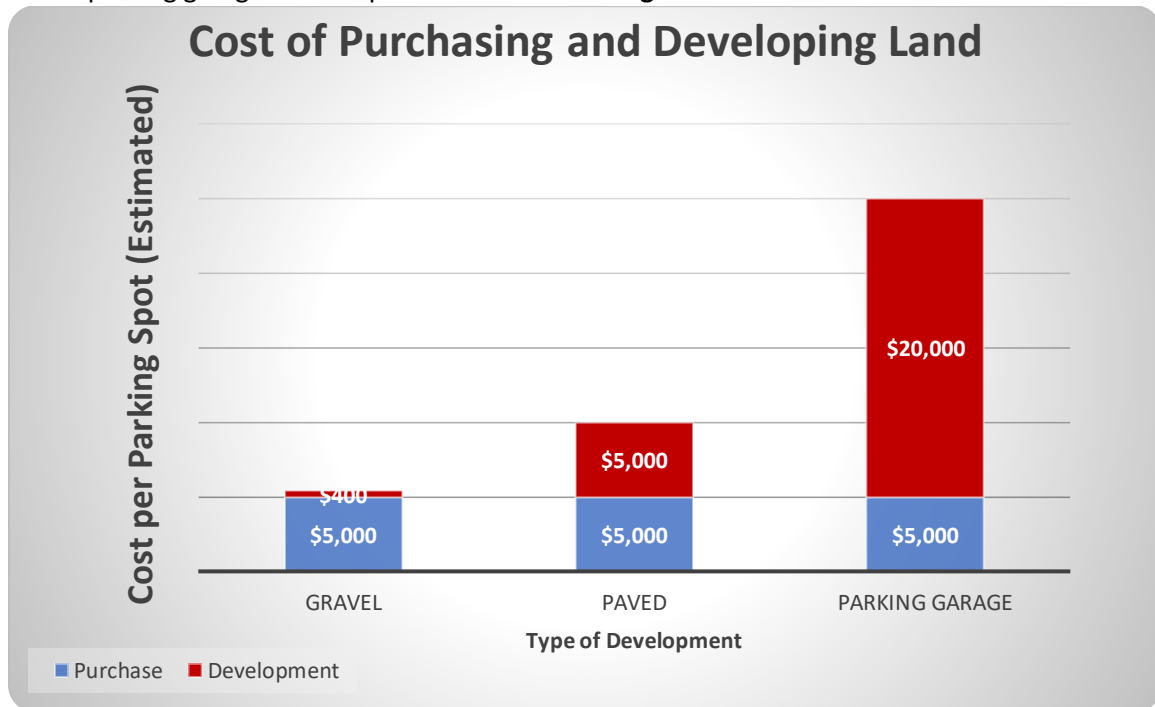


Figure 1

As show, the cost of developing land into parking places increases dramatically depending on the quality of the structure that is built on the land.

Task 4: Email Bill Davis about the number of Parking Spots on Campus.

Bill was asked “What are the parking spot breakdowns for the university.” Bill responded within a day and the information that he shared assisted in determining impact using the stadium parking would provide. Assistant Chief Davis’ response has been translated into **Figure 2**.

Parking Spots Per Lot

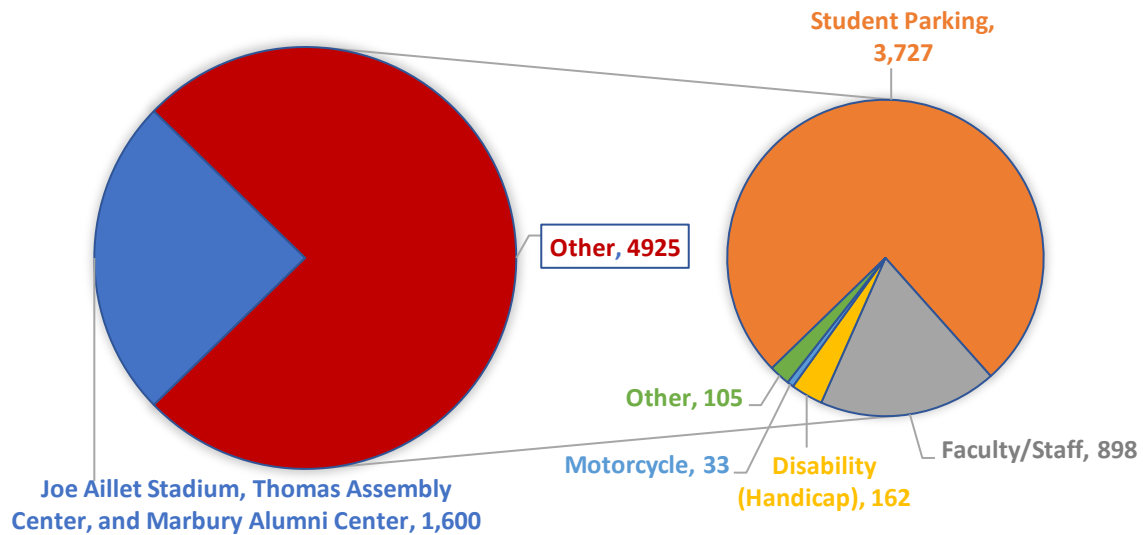


Figure 2

According to Bill’s response, utilizing the Stadium’s parking lots along with the surrounding areas would increase available parking by 32%.

Task 5: Contact Mark Coleman for access to graphics associated with parking structure.

It was determined during this project this step was not needed.

Conclusions

Below a condensed version of my results as well as my conclusions can be found.

What do other universities do?

Other universities use a third-party vendor service to run their transit services. By contacting out the service, the University does not have to provide training, licensing, permits, vehicles or routes. This also places liability on the vendor instead of the University.

Would the following solutions be feasible for Louisiana Tech? Yes/No, why?

Creating a transit system to bus students.

No. Due to Ruston not having a private or public transit system already available to be contracted out. This would leave Louisiana Tech to create their own transit system, but the costs of which would almost undoubtedly exceed the budget of \$100,000 many times over just by purchasing a bus such as how Stanford does, which can cost up to \$750,000, because of this a transit system that would mirror other universities would be impractical without a limited budget, and impossible with the budget of \$100,000.

Restricting parking on campus.

Yes. If Freshmen were unable to park on campus, parking spots would become more available. This solution is not favorable however as it could deter potential students from attending Louisiana Tech, decreasing student enrollment and money flow into the University, stifling the Universities growth.

Optimizing the class schedules.

Yes. This solution would disperse the times that classes would be offered, using the Universities parking more effectively allowing more students to use the same parking spot throughout the day. Optimization of class schedules is extremely favorable because it could be done for little, to no cost. Further research would have to be done on how to best optimize the times classes are being offered.

Using Joe Alliet parking lots.

Yes. Using the parking lots at the Stadium would increase parking for students, increasing total parking available to the University by 32%. The drawback to this solution would be that a way to get to campus would have to be developed and implemented. Several solutions were suggested to and their feasibility is detailed below.

- a. **A series of crosswalks to aid students in walking from the Stadium to campus.** **Yes.** This would be the most favorable solution out of the set, having the possibility to remain within the budget of \$100,000. Possibly three crosswalks could be constructed, further research would have to be performed to detail cost and placement of the crosswalks.
- b. **A large sidewalk that would run from the stadium to campus.** **No.** Purchase and development of land to create a large sidewalk would exceed the budget of \$100,000.
- c. **A transit system to bring students to campus.** **No.** The feasibility of this solution has been detailed above under "Creating a transit system to bus students".
- d. **An autonomous tram system that would have multiple stops between the football field and campus.** **Possible.** The feasibility of this solution is largely dependent on the allocation of the grant from the state. If granted, this solution would completely transform the way that parking and movement through campus would be handled and could be done for minimum cost as it is funded by the state. If a grant is not given the costs would undoubtedly far exceed the budget given. Much further research would have to be done to determine the feasibility of this solution.

Building more parking structures on campus.

No. Just purchasing enough land for two hundred more parking spots could cost up to \$1,000,000. Any building of parking structures or developing gravel lots that are already present would far exceed the \$100,000 budget.

Recommendation

Recommendation 1: Research Optimizing Class Schedules and Cost and Development of Crosswalks to Campus.

An emphasis on the two most feasible solutions working together to make the most different in Louisiana Tech's parking structure while providing the highest number of parking spots. Optimizing the class schedule system would help to use the parking that we already have, freeing up more parking spots on campus. Research would need to be done on how to best optimize the schedules so that the most students would be positively affected. Secondly, development and implementation of a crosswalk system so that students can safely travel to and from the Stadium parking area would increase the amount of parking spots students can use in case of overflow and prepare for the growth of the University so that its needs are met in the future.

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