FALL 2015

BIKE PLAN

CITY OF AUBURN, AL

CPLN 5060 & 6060 | SUSTAINABLE TRANSPORTATION PLANNING

INSTRUCTOR DR. SWETA BYAHUT

AUBURN

UNIVERSITY

FALL 2015

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Chapter 1
Introduction

The current Bike Master Plan of the City of Auburn was originally created in 1998 and has not been formally updated since its initial acceptance. The current plan predates Federal Highway Administration (FHWA) directive that all future transportation projects shall include bicycle and pedestrian facilities. Additionally, this plan predates updated cycling facility guidelines established by the American Association of State Highway and Transportation Officials (AASHTO) and the National Association of City Transportation Officials (NACTO). Therefore, it can be said that there is a pressing need to update Auburn's Bike Master Plan.

The League of American Bicyclists designated the City of Auburn as a Bronze level community in 2005, consequently making Auburn the only bicycle friendly community in the state of Alabama. The City of Auburn aims to earn a higher status, possibly as a silver or gold level bicycle friendly community. In order to achieve this goal, the existing bike facility network in Auburn must be revamped and updated so that it shall adhere to all the relevant federal and state guidelines.

Considering these circumstances, the City of Auburn have recently expressed interest in updating their Bike Master Plan. The new plan shall seek to incorporate modern policies and designs with regards to construction of bicycle facilities, effectively creating bicycle friendly infrastructure within the city. The goal of the plan is the adoption and implementation of a new bicycle network for the City of Auburn 2040 Plan.

The students of Sustainable Transportation Planning class at Auburn University have worked together to create a bike plan update for the city of Auburn. This bike plan update shall complement the efforts that are being put in by the city to create a full-fledged bike master plan. Students of this class have worked in teams over the course of Fall-2015 semester to prepare a bike plan update for Auburn. A brief description of the methodology adopted by this class for preparing the bike plan update is presented in the following section.

1.1 Methodology

The students of Sustainable Transportation Planning class have prepared this bike plan update for the City of Auburn while working separately in different teams and together as a class simultaneously. The entire work was divided into three distinct phases, each with a specific purpose.

1.1.1 Preliminary Phase

In the preliminary phase, the class was divided into ten two-member teams. Each team was tasked with conducting a case study on bicycle facilities present in any city within the United States. The goal of this task is to familiarize students with various aspects that are involved in creating a good bike network. This phase has helped students to learn about strategies adopted by various cities with respect to improving bicycling conditions in those cities. Equipped with this knowledge, students could then come up with strategies and proposals for creating an efficient bike facility network in Auburn.

1.1.2 Intermediary Phase

During the intermediary phase, which followed the preliminary phase, the entire class has concentrated on evaluating the existing conditions of the current bike network in Auburn. There were five teams in this phase. Each team had a very specific agenda.

The engineering team evaluated the Bicycle Level of Service of all the bicycle facilities in Auburn, while the GIS team explored a myriad things including the current demographic characteristics of different parts of Auburn, spatial distribution of different land use zones within Auburn and also the location of current bike facilities in Auburn. Another group have gone on field trips to develop a data inventory consisting of photographs of bike facilities and roadway characteristics in Auburn. One other group studied and provided the critique of the current Auburn bike plan in order to identify its strengths and shortcomings. Finally, one group had looked into the marketing and education strategies related to promotion of bicycling in Auburn. By the end of this phase, students have acquired a thorough understanding of the strengths and weaknesses of the existing bike network in Auburn and knew what needs to be done for improving the network.

1.1.3 Final Phase

Subsequently, in the final phase, three tasks were identified to accomplish, they are as follows.

- Proposing an updated bike facility network that is capable of catering to the needs of bicyclists living in various parts of the city.
- Proposing new designs for different kinds of bike facilities in the proposed network, which promote safe and efficient bicycling conditions.
- Propose policies for education and encouragement of bicycling in Auburn.

Three different teams have worked on these three tasks. The final report mainly consists of work done during the final phase, however, it should be noted the final phase work builds off of the work completed in the first two phases.

1.2 Outline of the report

The final report comprises of four chapters, including the introduction. This section presents a brief description of the contents of each one of those four chapters.

The first chapter serves as the introduction to the entire report. The rationale for updating the city of Auburn's current bike master plan is provided in this section. In addition to that, the methodology adopted by the students of Sustainable Transportation Planning class is also discussed in this chapter.

The second chapter consists of the proposals for modifying the current bike facility network of Auburn in order to enhance its efficiency. Each proposal is justified in a sense that the reasons for making a proposal are also included in this chapter.

Design guidelines for Auburn bike plan pertinent to intersection design and street design are discussed in detail in the third chapter. The proposals are accompanied by detailed graphics which portray the existing conditions and proposed changes on different street sections as well as at a few intersections.

The fourth and final chapter discusses the policy formulation. Policy related to the encouragement of bicycling, enforcing bicycle safety rules and educating the public about bicycling is discussed in this chapter.

It should be noted that this report is a product of efforts put in by students but not professional designers. Therefore, this report shall only be used as an inventory of ideas for improving the City of Auburn's bike facility network, but not as a final and rigid set of guidelines. More vigorous work is required to create a comprehensive bike master plan for Auburn.

CHAPTER 2

Bike Network Plan and Proposals

The city of Auburn, AL has recently expressed interest in updating their Bike Master Plan. The previous plan. The current plan was originally created in 1998 and has not been formally updated since its initial acceptance. The current plan predates Federal Highway Administration (FHWA) directives that all future transportation projects include bicycle and pedestrian facilities. Additionally, this plan predates updated cycling facility guidelines established by the American Association of State Highway and Transportation Officials (AASHTO) and the National Association of City Transportation Officials (NACTO). The new plan seeks to incorporate modern policies and designs.

As stated earlier, the goal of improving Auburn's bike network is to encourage new cyclists and make cycling a viable alternative travel mode, by increasing connectivity of the biking network and improving access to key locations for a variety of users. The following objectives were identified to meet this goal:

- Improve network connectivity by filling in gaps in the current system to provide seamless cycling routes throughout the city.
- Provide access to key locations including public schools, Auburn University, and commercial districts.
- Plan for a variety of user types including new users, commuters, and recreational cyclists.

This chapter is organized to show how the proposed plan meets each of these objectives and how decisions were made based on guidance from design guides and case studies of bike plans from cities similar to Auburn. The chapter also presents a map of the proposed improvements and describes how connectivity can be improved. Section 3 explains how these proposed improvements provide access to key locations and why certain facilities were chosen. Then there is a discussion on how the plan satisfies the needs for a variety of users. The following section considers the feasibility of proposed changes and limitations of this plan. Finally, the bicycle level of service (BLOS) map was updated to show how the proposed changes improve cycling across Auburn.

2.1 Improving Network Connectivity: Strategies and Proposals

Improving the city bike network by filling in the gaps was the main priority. Other bike plans, such as the Missoula Active Transportation Plan also recognize that a connected network without gaps is a high priority. Many routes that currently bring cyclists into the city stop short of their destinations or are unconnected. It was attempted to fill in these gaps with bike lanes, multi-use paths and sharrows, wherever possible. Some major connections include the trail along Parkerson Mill Creek connecting Longleaf to Auburn University's campus, the multi-use path south of Town Creek Park connections across the interstate divide, and a multi-use path on Glenn Avenue. Additional connections were made to MLK Drive and Pumphrey Avenue, Donahue Drive, Wire Road, Samford Avenue, Dean Road, and more.

Figure 1 on the following page shows the proposed bicycle facility improvements map. In order to easily identify different types of facilities, all current facilities are labeled blue.

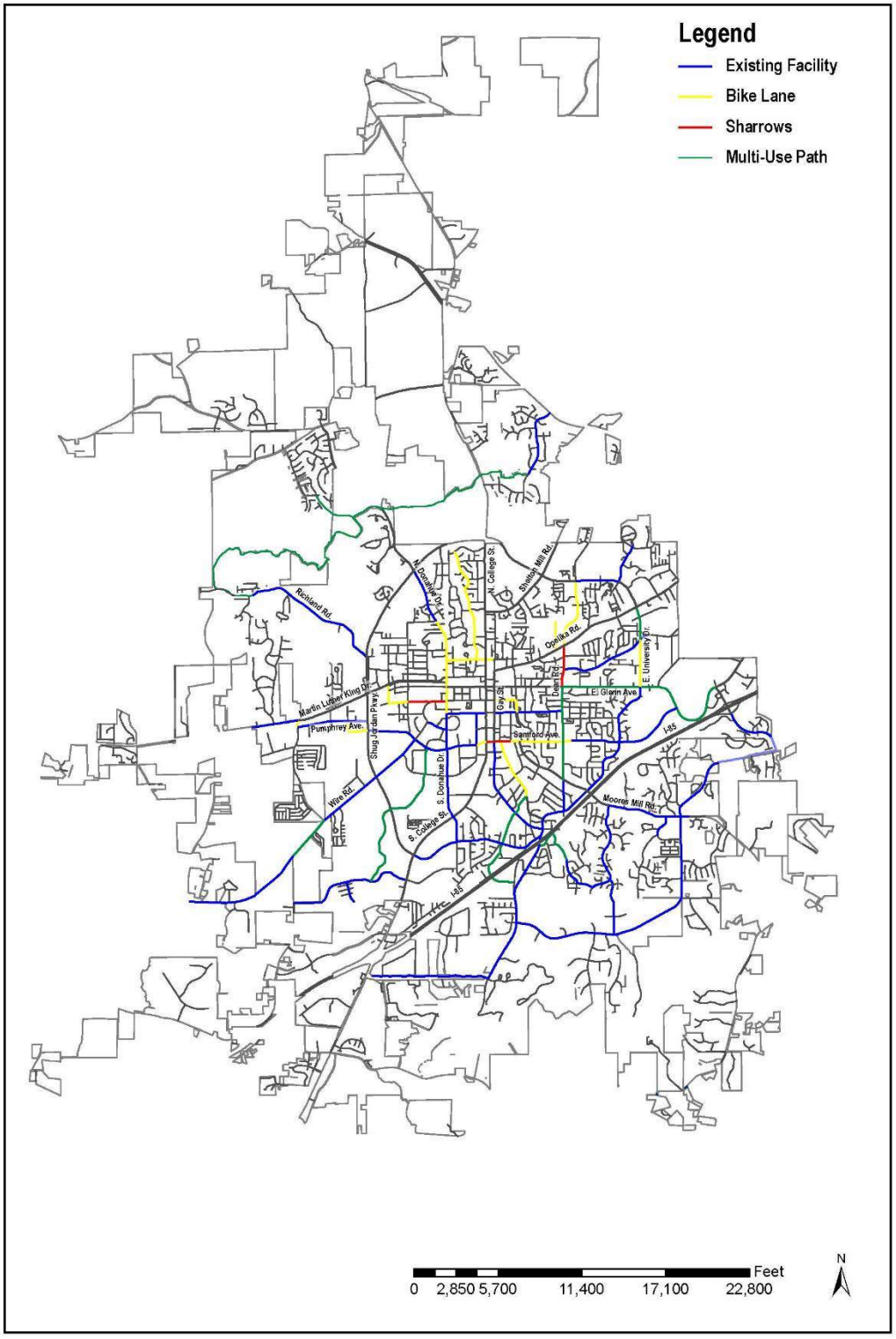


FIGURE 2.1: Proposed facility improvements

2.1.1 Providing Access to Key Locations

Most of the cyclists choose to bike in order to reach a destination, rather than for recreational use. Several key locations were targeted to provide cycling access. Among these were connecting schools to neighborhoods, student-dominated apartment complexes to Auburn University, and everyone to commercial districts.

2.1.1.1 Providing Access to Schools

The current bike facilities have large gaps in important areas near Auburn City Schools, throughout surrounding neighborhoods, and into Auburn University campus. The plan in use does not meet the needs of getting cyclist from neighborhoods to schools, or into the town. Three areas on the map revised for getting children safely to and from school are: Samford Avenue in front of Auburn Jr. High School, Dean Road from Auburn High School to Dean Road Elementary, and along E. Glenn Avenue from Dean Road to Bent Creek Road. (See Appendices A1, A2 and A3) This proposed plan fills in those gaps. In certain areas along these routes cyclists are removed from the road, improving cycling for all ages, safety, and comfort levels. These proposed paths can also be utilized by students and commuters trying to reach Auburn University. We looked at common student housing areas and connected those areas together and to the university. There were few bike facilities north of Thach Avenue, in this plan we've connected those areas to downtown Auburn. Filling in these gaps between communities, schools, and central Auburn creates a system that allows cyclist to safely get from place to place.

2.1.1.2 Providing Access to Commercial Districts

The proposals in this report will also allow cyclists to get to commercial districts that were previously unsafe to bike to or unreachable entirely. Multi-use paths on Dean Road, for example, will allow residents in the surrounding neighborhoods to get to Kroger and the commercial area around it without driving. (See Appendix A4). As things stand now, very few commuters bike to the area because it is so dominated by cars. There are no facilities for bikes,

and motorists do not like accommodating for bicyclists. With this plan the commercial area would be opened up for people to be able to reach on a bike. A similar case is seen with the proposals for East University Drive that will connect the neighborhoods there to the mall and movie theater. These new bike facilities will enable people to reach destinations they want to spend their free time without driving. Additionally, while giving users direct access to downtown is incredibly difficult due to the current built environment, a new connected bike lane at the end of Magnolia Avenue would bring cyclists to within a block of downtown.

2.1.2 Planning for a Variety of Users

Three important types of cyclists were targeted by this plan: commuters, recreational users, and new cyclists. The first group, commuters, have been discussed extensively in the previous section. However, it is important to serve all cyclists in the bicycle network. This plan targets every type of cyclist.

2.1.2.1 Providing for Recreational Users

In addition to improving connectivity throughout various parts of town, bike paths and lanes for recreational uses help encourage different types of people to start biking. These paths can be used by people of all ages and abilities, and connect some of the more rural parts of town to main roads. The first major recreational path the new plan chooses to implement is located on the north side of town past Richland Road. It follows Saugahatchee Creek and travels past Yarbrough Elementary School and some smaller neighborhoods. It is a perfect path for children to learn how to bike, get in more exercise, and get themselves to school in a safe and secure way. Another important recreational path that connects Longleaf to Samford along Parkerson Mill Creek would provide adequate access for college students living in the many apartment complexes on Longleaf to campus, without having to travel along South College Street which can be dangerous. The path winds its way through the woods and would be great as a walking or biking trail. The last recreational path in the new plan is located below I-85 just to the west of Wrights Mill Road and connects to Town Creek Park. It combines the usage of a culvert pipe

that goes under the interstate and a multi-use path in order to provide safe travel for bikers adjacent to Wrights Mill Road. (See Appendix A5) It provides more direct access for bikers trying to get to the center of town, rather than journey along dangerous roads with small bike lanes.

2.1.3 Road Diet Implementation on Dean Road

A 1.4 mile long segment of Dean Road between Opelika Road and Moore's Mill road is being considered for a road diet. Currently, this segment of Dean Road has 4 travel lanes with a speed limit of 35 mph. Dean road has no raised median but only a center line marking to divide opposing lanes of travel. A traffic volume varying between 6000-16000 vehicles per day (vpd) occurs on this segment of Dean Road.

Dean Road runs through a commercial zone between Opelika Road and Glenn Avenue. Going further south from Glenn Avenue, Dean Road enters into a mixed land use zone which comprises of both commercial and residential lots. Progressing southwards to meet Samford Avenue, Dean Road passes by two schools, a library and a park. Overall, Dean Road caters to a variety of land use zones including residential, commercial and recreational land use types.

Such being the case, it is proposed that the aforementioned segment of Dean Road be subjected to a road diet. As a result of the implementation of road diet on Dean Road, it shall be converted to a 3 lane road, of which one lane is a dedicated two way left turn lane (TWLTL). In addition to that, bike lanes shall be added on both sides of the road.

Highway Capacity Software (HCS) could not be used for predicting the LOS of Dean Road after the road diet since the HCS has no provision for inclusion of TWLTL into the LOS analysis. Therefore, certain case studies were referred to for identifying roads and neighborhoods with characteristics similar to that of the Dean Road and its environs. Some of the case studies considered are briefly described below.

A case study was conducted in Grand Rapids, Michigan on Burton Street, which is a 2 mile stretch running through a mix of residential and commercial land use zones. This street serves a few schools and a public park. It carried a traffic volume of 15000vpd which consisted of a good number of school buses and transit vehicles. When a road diet was implemented on Burton

Street, it resulted in decrement of speeds, reduction in congestion and also in the improvement of conditions for bicyclists.

Another case study was about the 1.1 mile long Ocean Park Boulevard in the city of Santa Monica, California. The boulevard carried 23000vpd with a speed of 35 mi/h. There are two schools and a recreational facility situated alongside this road. Ocean Park Boulevard was subjected to road diet wherein it turned into a 3 lane road from its previously 4 lane state, just like Dean Road. Consequently, it has experienced a decrease of crashes by 65% and reduction in vehicle speeds, making it safer for bicyclists.

One more analysis was done on Lawyers Road in Reston, Virginia. This road carried a low traffic of 10000vpd, had no curbs or sidewalks present in the 2 mile stretch and had a speed limit of 45 mi/h. After a road diet was implemented on this road, more than 50-55% road users have stated that even though the speeds have dropped, their travel times have not increased. Also, a 50% growth in bicycle traffic was observed subsequent to the road diet, indicating a betterment in modal split.

After evaluating these studies, it can be concluded that executing a road diet on the Dean Road section between Opelika Road and Moore's Mill Road might result in reduction of vehicular speeds, congestion, crash rates and ultimately in enhanced safety for bicyclists. Therefore it is perfectly justifiable to recommend a road diet for Dean Road.

2.1.4 Shared Bike Lane

South College Street is an important segment in the bike network since it stretches across some strategically important parts of the city which consist of the Auburn University campus, Downtown Auburn and also connects the city to the Interstate system. For apparent reasons South College Street carries significantly high traffic volumes, consequently making bicycling difficult on that road. Owing to this reason it was deemed necessary to establish a bike facility along South College Street.

However, South College Street has varying features across its length. For instance, it assumes the role of a busy downtown street as it crosses Thach Avenue but before that it has more of a

suburban arterial nature. Therefore, different types of bicycle facilities are proposed for different sections of the South College Street.

Due to space constrain in the Downtown, reconfiguration of street space is proposed to accommodate bike lanes. On the other hand, before South College Street crosses Thach Avenue, Sharrows are proposed to create shared bike lanes.

2.2 Bicycle Level of Service Update

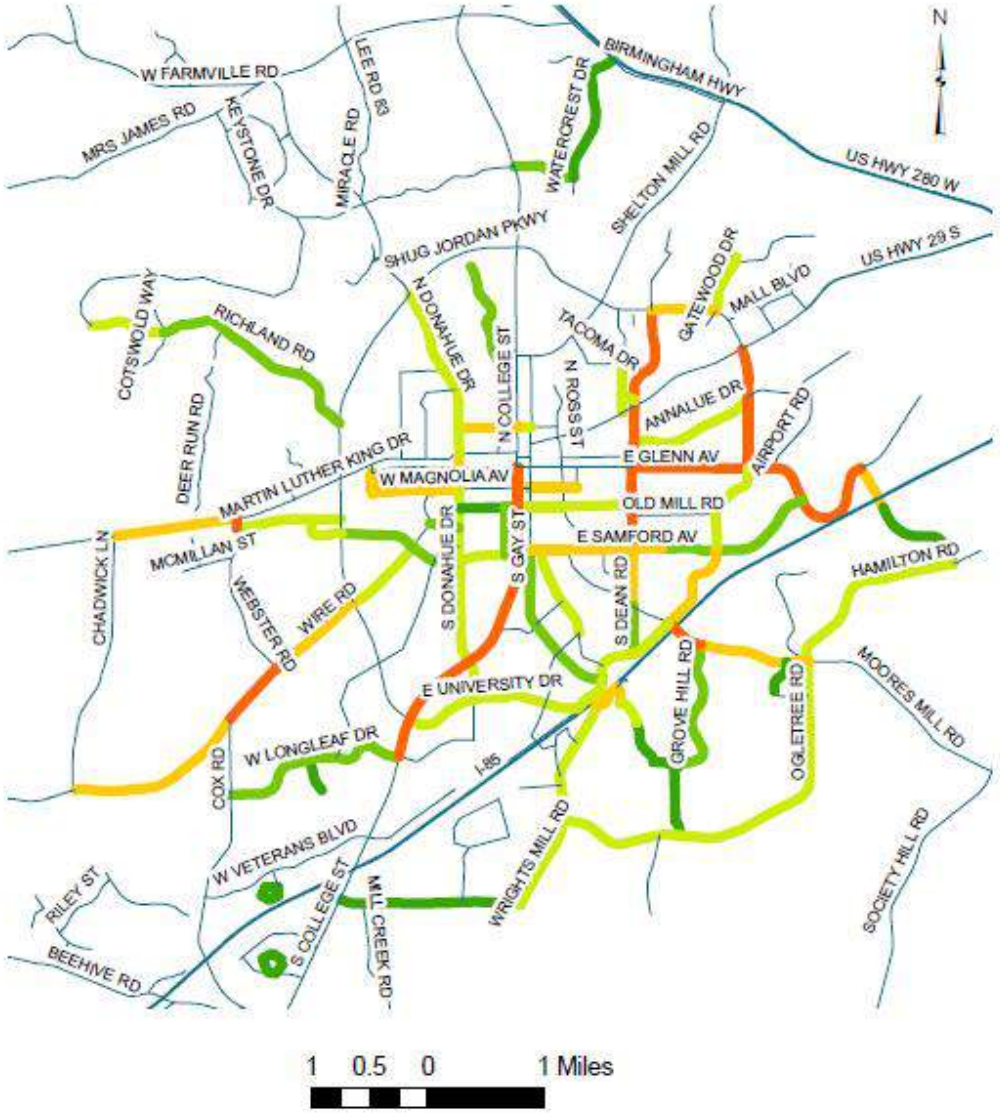
In a previous submittal to this final class project, the civil engineers determined bicycle level of service (BLOS) for the existing bicycle network by utilizing the bicycle compatibility index (BCI). That same process was repeated here to determine how the BLOS would change if proposed improvements were implemented today. A limitation of the BCI is that it does not factor off-road paths. Therefore, where multi-use paths were proposed, these were input into the BCI formula as if they were bike lanes. The LOS grade that was assigned to these sections was improved after-the-fact by one letter grade. This was done in order to account for the added safety that cyclists feel when separated from the roadway, an important factor for a town with relatively few experienced cyclists.

By viewing the existing bicycle level of service map and the proposed level of service map (Figures 2 and 3 on the following pages), it can be seen that bicycle infrastructure improvements will increase the level of service around Auburn. For example, the addition of concrete multi-use paths along main corridors such as E Glenn Avenue, Wire Road, and S Dean Road increase their level of service by one letter grade. Also, the addition of six-foot bike lanes on N Dean Road from Opelika Road to E University Dr increase its bicycle level of service from E to D. Although roadways such as N Donahue Dr and Sanders St do not have an increase in bike level of service when six-foot bike lanes are installed, these bike lanes will make cyclists feel more comfortable. Three new off-road bike trails have been proposed to be installed in Auburn. First, a trail from Old Wrights Mill Road to Wrights Mill Road is proposed by using a culvert under I-85 as a tunnel for cyclists. This gives quick and easy access from residential neighborhoods to downtown Auburn. Second, an off-road trail from Richland Road to the intersection of N College St and Asheton Ln connects several neighborhoods while promoting

Auburn Existing Bike LOS

Data Source: City of Auburn GIS

Date: 12/2/2015



Major Roadways

Road

LOS

- A
- B
- C
- D
- E
- F

Auburn Proposed Bike LOS

Data Source: City of Auburn GIS

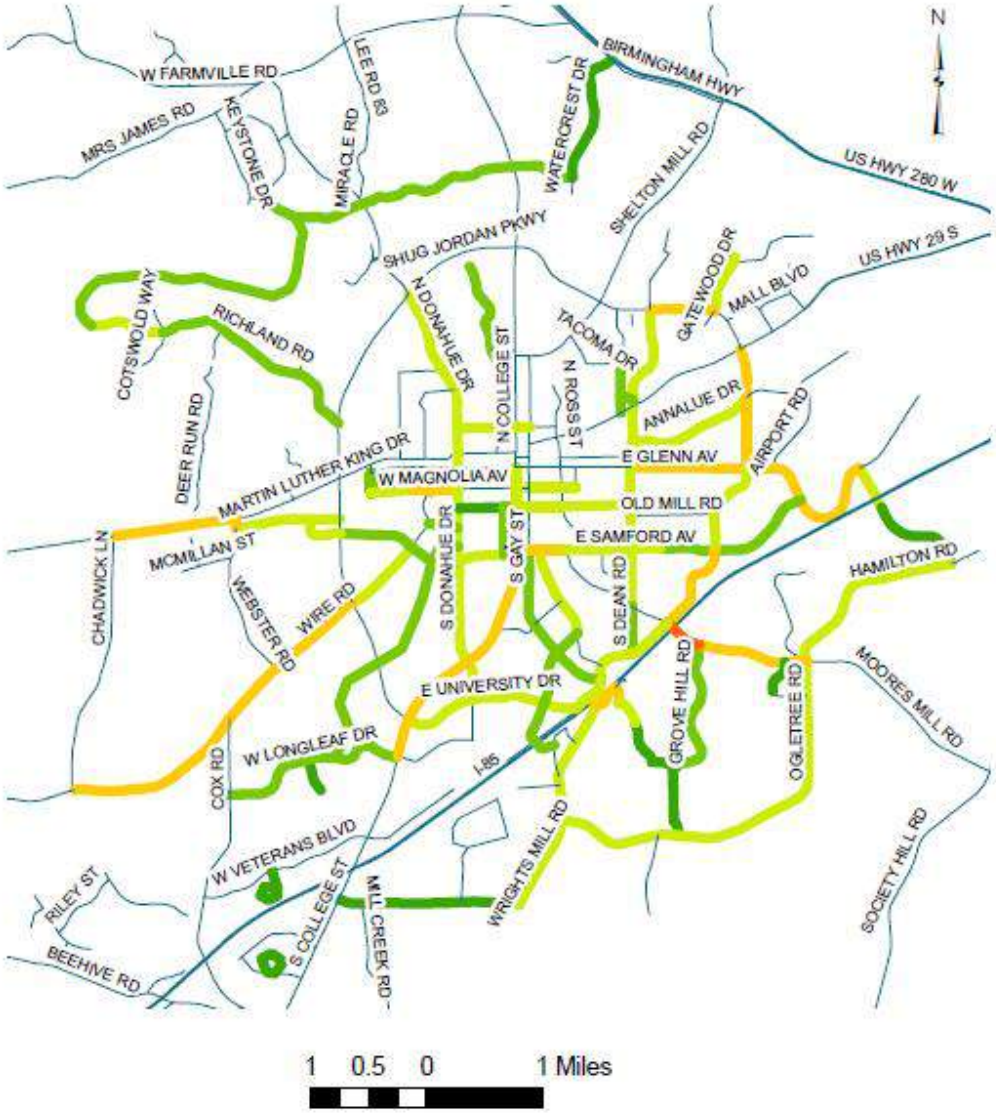
Date: 12/2/2015

Major Roadways

Road

Proposed LOS

1
2
3
4
5
6



bicycle use and physical activity. Finally, a trail from W Longleaf Dr to Samford Avenue will connect many apartment buildings to Auburn University campus.

Chapter 3
Design Guidelines and Interventions

This chapter is divided into two parts where the first section deals with design guidelines and the latter describes specific design interventions to the existing streets and intersections in the Proposed Bike Plan for the City of Auburn. We believe that the Auburn Bike Plan has the potential to become one of the best in the bike infrastructure planning in state. It will help gain an identity to the city as the most bike friendly college town in the state of Alabama.

3.1 Methodology

The Design Process started with the study and analysis of right of way (ROW) calculations at various parts of the streets that are the part of The Bike Plan. ROW were measured using City of Auburn's GIS data, cross referencing it with the present day existing situation using tools such as Google earth and Google maps. (Refer the ROW analysis in the Annexure.) This study was helpful to provide firm existing conditions and details at various streets lanes and intersections. It provided the design team with concerns and issues that needed to be addressed and which latter became an integral part of design interventions at the drawing board. The latter section provides the drawing details that were meticulously dealt with these specific concerns and design strategies from the design guidelines section of this chapter.

3.2 Design Guidelines

NACTCO and ASHTO guidelines have common design elements and strategies that should help become Bike Plan a success for the City of Auburn. In this section we discuss the possible Bike Plan strategies with their requirements, benefits, features and principles of usage.

3.2.1 Bicycle Lanes

Bike lanes are one of the more common street treatments. Below is a detailed description of specifications as well as intersection treatments.

A bike lane has been defined as “a portion of a highway or street identified by signs and pavement markings as reserved for bicycle use.” The following dimensions will serve as a guide for establishment of bike lanes understanding that road widths and right of ways will vary.

Standard Road Striping for streets with parallel parking on both sides include:

- (44’ ROW)
- 7 ½’ on street parking
- 5 ½’ bike lane
- 11’ vehicle travel lanes

Bike lane on 2-way Street with no parking on both sides:

- 5 ½’ bike lanes preferred.
- Must maintain at least 2 ½’ of space available to bicyclists.

Lines/ Markings:

- Continuous 6’’ white stripe should to signify bike lane
- If bike lane is positioned between traffic and on street parking, a 4’’ continuous white stripe should also be present
- All markings should be reflective for bicyclists safety
- A stenciled bike symbol and/or arrow should appear every 500 feet

The biggest concerns with bike lane design are intersections. “Nationally, the majority of collisions between motorists and bicyclists occur at intersections. There are several engineering treatments to significantly reduce conflicts at intersections.”

Fig 3.1: Bike Lane design

The following is required according to NACTO:

- The desired width of a dotted bike transition lane and through bike lane is 6 feet with a minimum width of 4 feet.
- Bicycle lane word and/or symbol and arrow markings shall be used to define the bike lane and designate that portion of the street for preferential use by bicyclists.
- The through bike lane shall be placed to the left of the right-turn only lane.
- Dotted lines signifying the merge area shall begin a minimum of 50 feet before the intersection. Dotted lines should begin 100 feet before the intersection if along a high speed/volume roadway.
- Dotted lane line transition areas to through bike lanes shall not be used on streets with double right turn lanes. Double right turn lanes are extremely difficult for bicyclists to negotiate. Shared lane markings may be used in the center of the inside turn lane to designate the preferred path of through bicycle travel.

3.2.2 Shared use Path/ Multi Use

Shared use/ multi use paths are a more common street treatment where there is no room for interventions in the street plan and which has certain minimum rigid lane widths. Below are a few important points about the Shared Use Paths and their function(s).

- Some zoning ordinances and subdivision regulations inhibit bicycle use and may need to be amended to support shared use paths.

- The potential for criminal acts against bicyclists, especially along isolated shared use paths, and the possibility of theft or vandalism at parking locations, should be considered.
- The distance between the edge of the shoulder and the shared use path is less than 1.5 m (5 feet), a suitable physical barrier is recommended.
- Under most conditions, a recommended paved width for a two-directional shared use path is 3.0 m (10 feet).
- Under certain conditions it may be necessary or desirable to increase the width of a shared use path to 3.6 m (12 feet), or even 4.2 m (14 feet), due to substantial use by bicycles, joggers, skaters and pedestrians, use by large maintenance vehicles, and/or steep grades.
- A minimum 0.6-m (2-foot) wide graded area with a maximum 1:6 slope should be maintained adjacent to both sides of the path; however, 0.9 m (3 feet) or more is desirable to provide clearance.
- Where the path is adjacent to canals, ditches or slopes down steeper than 1:3, a wider separation should be considered. A minimum 1.5 m (5-foot) separation.
- The vertical clearance to obstructions should be a minimum of 2.5 m (8 feet).
- In general, a minimum design speed of 30 km/h (20 mph) should be used.
- ADA guidelines require that cross slopes not exceed 2-3 percent to avoid the severe difficulties that greater cross slopes can create for people using wheelchairs.
- When transitioning a 3 percent super elevation, a minimum 7.5-m (25-foot) transition distance should be provided.
- Grades greater than 5 percent are undesirable.
- Grades steeper than 3 percent may not be practical for shared use paths with crushed stone or other unpaved surfaces for both handling and drainage erosion reasons.
- Adequate signing and marking are essential on shared use paths, especially to alert bicyclists to potential conflicts and to convey regulatory messages to both bicyclists and motorists at highway intersections.
- The recommended minimum pavement cross slope of 2 percent adequately provides for drainage.

- Lighting for shared use paths is important and should be considered where night usage is expected, such as paths serving college students or commuters, and at highway intersections.
- Shared use paths may need some form of physical barrier at highway intersections to prevent unauthorized motor vehicles from using the facilities.

For shared use paths, attention should be given to maintaining the full paved width and not allowing the edges to ravel. Trees, shrubs and other vegetation should be controlled to provide adequate clearances and sight distances. Regular sweeping is also desirable.

3.2.3 Sharrows

Sharrows can be defined as a coalition within vehicle driver and the bikes to share a same street lane where both can safely and conveniently exist. Sharrows are ultimate options where we do not have dedicated widths to accommodate the bike lanes.

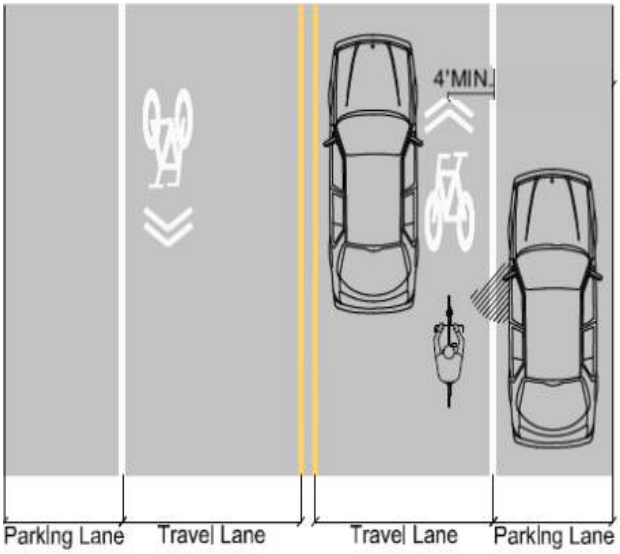


Fig 3.2: Sharrows

Standard street specifications for Sharrows:

- Parking Lane: 7-8ft, 8ft standard
- Bike Lane: 4ft (next to curb) or 5-6ft next to parking, 5ft standard
- Motor vehicle travel lane: 10-12ft, 11ft standard

Placement:

- A minimum of 4 ft. from the edge of the parking edge line to the center of the Sharrow marking OR a minimum of 4 ft. from the face of curb or roadway edge line to the center of the Sharrow marking.

Guidance:

- Shared Lane Marking should not be placed on roadways that have a speed limit above 35 mph.

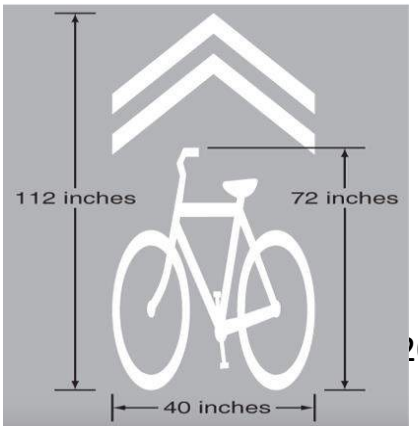


Fig 3.3: Sharrow marking

- Shared Lane Markings shall not be used on shoulders or in designated bicycle lanes.
- If used in a shared lane with on-street parallel parking, Shared Lane Markings should be placed so that the centers of the markings are at least 11 feet from the face of the curb, or from the edge of the pavement where there is no curb.
- If used on a street without on-street parking that has an outside travel lane that is less than 14 feet wide, the centers of the Shared Lane Markings should be at least 4 feet from the face of the curb, or from the edge of the pavement where there is no curb.
- If used, the Shared Lane Marking should be placed immediately after an intersection and spaced at intervals not greater than 250 feet thereafter.

Applications of Sharrows:

- Speed Limit 35 MPH or Less - Guidance in the MUTCD indicates that Sharrows are appropriate for streets with speed limits that do not exceed 35 mph. This differs from the 2005 CalTrans approval, which provided guidance that Sharrows are appropriate for streets with speed limits that do not exceed 40 mph. The reason for the change is unclear.
- Bicycle Lane Preference - Because of the preference of many riders for bike lanes, jurisdiction may consider adopting a policy that Sharrows will not be implemented on a street that already has another bicycle facility, such as a bike lane, or will only implement Sharrows on streets that are incompatible with bicycle lanes, such as those without sufficient lane width to give 4-5 feet for AASHTO standard bicycle lanes.
- Adjacent Parking - Sharrows are most often cited as a solution to the problem of dooring, and thus, may be considered primarily for streets with adjacent parking (both parallel and diagonal).
- Create Network Connections - Where several nearby bicycle facilities that provide greater segregation for bicycle riders exist, Sharrows can be a low cost and easy method to facilitate connections between these facilities, thus enhancing the network.

3.2.4 Bike Box

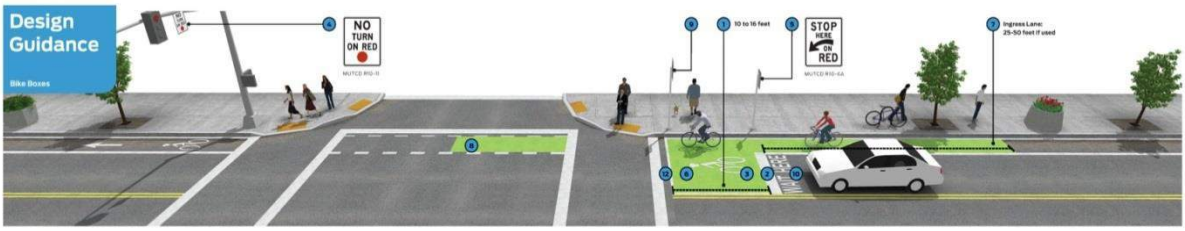


Fig 3.4: Bike Box

Bike boxes, though somewhat of a new intersection treatment, would be an innovative safety precaution for cyclists. Most people may have never experienced this street treatment. We feel that there is no place better than a college town to introduce a better and safer procedure for both cyclists and motorists.

Below is a list of guidelines as well as recommended features.

A) Required features:

- A box formed by transverse lines shall be used to hold queuing bicyclists, typically 10 to 16 feet deep. Deeper boxes show less encroachment by motor vehicles.
- Stop lines shall be used to indicate the point behind which motor vehicles are required to stop in compliance with traffic control signals.
- Pavement markings shall be used and centered between the crosswalk line and the stop line to designate the space as a bike box. The marking may be a Bike Symbol or Helmeted Bicyclists Symbol.
- In cities that permit right turns on red signal indications, a “No Turn on Red” sign shall be installed overhead to prevent vehicles from entering the Bike Box.

B) Recommended features:

- A “Stop Here on Red” sign should be post-mounted at the stop line to reinforce observance of the stop line. Additional signs may be used to clarify signal control. Among the legends that may be used for this purpose are “Bikes Stop Here on Red” or a supplemental “Except Bicycles” plaque in conjunction with R10-6 to indicate the bicyclist stop line.

- Motorists should use colored pavement as a background color within the bike box to encourage compliance.
- An ingress lane should be used to define bicycle space. Colored pavement may be used. When color is used, length shall be 25 to 50 feet to guarantee bicycle access to the box.
- An egress lane should be used to clearly define the potential area of conflict between motorists and bicyclists in the intersection when intersection is operating on a green signal indication. Refer to intersection crossing markings in NACTO Bike Box guide. Colored pavement or other markings may be used to define the potential area of conflict. An egress lane should not be used when there is no complimentary bicycle facility or lane on the far side of the intersection.
- A "Yield to Bikes" sign should be post mounted in advance of and in conjunction with an egress lane to reinforce that bicyclists have the right of way going through the intersection.

C) Optional Features:

- A "Wait Here" legend marking may be used to supplement the stop line and "Stop Here on Red" sign at a bike box.
- Stop lines may be placed up to 7 feet in advance of the bike box space to limit encroachment by motor vehicles.
- The box may be set back from the pedestrian crossing to minimize encroachment by cyclists into the pedestrian crossing.
- Bike boxes may extend across multiple travel lanes to facilitate bicyclist left turn positioning. A two-stage turn queue box may be an alternative approach to facilitating left turns where there are multiple vehicle through lanes.
- Bike boxes may be combined with an exclusive bicycle signal phase or leading bicycle interval through the use of bicycle signal heads to allow clearance of the bicycle queue prior to the green indication of motorists.
- At areas with high volumes of right turning vehicles, an active display sign may be used to further alert drivers to the potential of conflict movements with bicyclists. This sign should use signal detection and actuation to activate only in the presence of bicyclists. At areas with high volumes of right turning volumes vehicles, or low levels of motorists yielding

compliance, an active display sign may be used to further alert drivers to the potential of conflict movements with bicyclists. This sign should use signal detection and actuation to activate only in the presence of bicyclists.

3.3 Design Interventions

In this section we discuss the possible design interventions within the existing conditions of the street infrastructure and design. Bike Plan focuses on making the City of Auburn, the most bike friendly college town in the state of Alabama. In order to achieve these goals and match the vision we start with analyzing the land use pattern and development in the past few years.

The City growth has witnessed number of residential communities and commercial activities in areas under city's annexed jurisdiction. The land use pattern map in annexures shows how and where the potential commercial development has developed in the past decades such as individual business developments on Opelika Street and College street corridors and PUD's like Tiger Town which is strategically located within the city of Auburn and Opelika. Growth of the city of Auburn in the north majorly is known for residential communities that have developed in the last decade. In this accordance land use have various activities such as schools and colleges in the different part of the city. Above all, the Auburn University, home to the City of Auburn in the core land use has huge number of students those live on campus and in the vicinities of the campus. Thereby, all these bring a sense of ideal needs for better bike plan and bike infrastructure for the city of Auburn. Our Bike plan for the city of Auburn is response to these needs. In this section we highlight few important streets and intersections critical to land uses that need details of improvements.

3.3.1 North Donahue Road and Wire Road

The N Donahue and Wire road intersection is critically important as it virtually connects the northern part of the cities residential neighborhoods and the on campus student housing for the Auburn University to the downtown and academic halls of the university via W. Magnolia Avenue. As per the Bike Plan the City of Auburn includes existing bike facility on N Donahue Road but with a broken link in center stretch. The proposal includes connecting this bike lane through and making it in adjunction to the existing bike facility on the Wire Road. The

improvisation of this missing linkage shall help incorporate bike culture for the students living on campus as well as for users of the Donahue road.

Design Specifics:

The proposed design is to add bike lanes on Donahue Road & Wire Road going in one direction. As we expect majority of users here as students from on campus housings and dormitories, it is also proposed to provide a bike box on the Donahue Road and Wire Road which would help bicyclists to use the infrastructure in a better way. The said intersection is critical as it connects major user oriented activities such as the college academic halls, AU recreation- wellness center, and the downtown area via W. Magnolia Avenue. (Refer design details for Donahue and Wire (Magnolia Avenue) Road).

3.3.2 East Samford Avenue and East Glenn Avenue

The East Samford Avenue has existing bike lanes on a stretch near intersection I-85. These streets are both high speed and higher vehicle volume streets. They are also located near the I-85 and hence they tend to possess higher potential for scope of developing the larger regional Bike connectivity to the City of Auburn with the nearby areas.

Design Specifics:

The Bike Plan proposes to develop addition of the Shared Use Paths along both sides of the East Glenn Avenue. It is proposed that these shared use paths to be connected to the bike lanes on the East Samford Avenue. It is also proposed to improve safety of the pedestrians and bicyclists by improvisation of new crosswalks across the turn lanes on Glenn and Samford. The design details also implies proposal to have crosswalks on atleast three of the four sides of the above said intersection. (Refer E Samford Ave and E Glenn Ave design details.)

3.3.3 East Samford Avenue and Dean Road

The Samford Avenue has existing bike facilities at farther ends. The Bike Plan proposes to improve this missing link by improvisation of bike of facilities on the Samford Avenue. While Dean road intersects Samford and proves to be an important connectivity ground to the important areas in the city as it connects to Opelika road in the north, The Bike Plan also

proposed to incorporate bike facilities on the Dean Road. There are major activities that are served via Dean road that witness as major potential for bike culture. The activities on Dean road with potential of bike culture would include Julie Hal Moore Center for Excellence, the Auburn High school, Dean Road elementary school, Auburn City Public Library, commercial centers like Kroger, CVS stores, Walgreens store and so on.

Design Specifics:

The Bike Plan proposes road diet on the dean road. The dean road consist of two drive lanes on either sides with a left turn lane in the center as existing condition. The proposes to have road diet that shall include lowering of drive lane from two drive lanes to one drive lane on either side. It is also proposed to have a center median that should have incorporated two-way left turns opportunities at intervals to allow access to properties on the road. With such a design The Bike Plan proposes to have dedicated bike lanes on the Dean road on either sides of the drive lanes to promote bike culture for people involved in all activities such as schooling, shopping, recreation and mobility. (Refer the Dean road and Samford Avenue design details.)

3.3.4 Thach Avenue / S College Street

Speaking about connectivity to the City of Auburn, College Street becomes an important fringe with the north and south of the whole city. College Street passes north – south providing direct connection to Interstates and highways on the either side of the city. The Bike Plan considers College Street as an important path that is considered by majority of users via various modes of transportation. Thus, The Bike Plan promotes bike culture on this important street in all possible forms. The intersection of Thach Avenue and College Street is iconic as it stands as an entrance gateway to the Auburn University.

Design Specifics:

The Bike Plan proposes Sharrows on the north side of the intersection of the Thach Avenue and S College Street, where lowering and reconfiguration of street widths provide opportunity for Sharrows as the bike facility for the users on the College Street.

The stretch from Thach Avenue and S College Street Intersection to Miller Avenue and S College Street Intersection is a sloping terrain with wide street width. General overview is over speeding of vehicles on this stretch owing to no botheration of ay obstacles. The Bike Plan proposes narrowing down street widths along with reconfiguration to incorporate the dedicated bike lanes in this stretch. The Miller – S. College Street is served by Roosevelt Drive from Auburn University. Thereby promoting student population who might be the major users of this stretch. The Bike Plan also promotes traffic calming measures such as speed lumps on this stretch, which will help control traffic towards Miller S College Intersection due to sloping terrain. (Refer Thach Avenue and S College Street design detail.)

3.3.5 Magnolia Avenue / S College Street

(Downtown for the City of Auburn)

Adjacent to Auburn University's campus, Downtown Auburn has been an anchor for the City and the University for decades. In recent years, Auburn's booming population growth has outpaced Downtown's ability to meet the needs of Auburn citizens while still maintaining a walkable urban environment. Auburn's Downtown Master Plan aims to expand the current urban core southward and westward and develop a unified vision that serves all Auburn residents. As city of Auburn aspires for the vision of the "Loveliest Village on the Plains" downtown has its own deemed position in the city's street infrastructure.

But unfortunately even after the recent redevelopment project for the downtown revitalization for the existing downtown of the city of Auburn, it lacks the access to bike facilities in the downtown core. Thereby the ideal of complete streets is not achieved. As The Bike Plan proposes College Street as bike friendly Street with provisions of various sorts of bike facilities, it becomes important to continue promoting bike facilities in the downtown core area. At the same time, we understand the importance of sense of identity that the iconic downtown has within its community and therefore The Bike Plan puts forth a proposal which not only caters to the need of bike facility in the downtown, but also thinks in the larger constraints to care for community development and engagement.

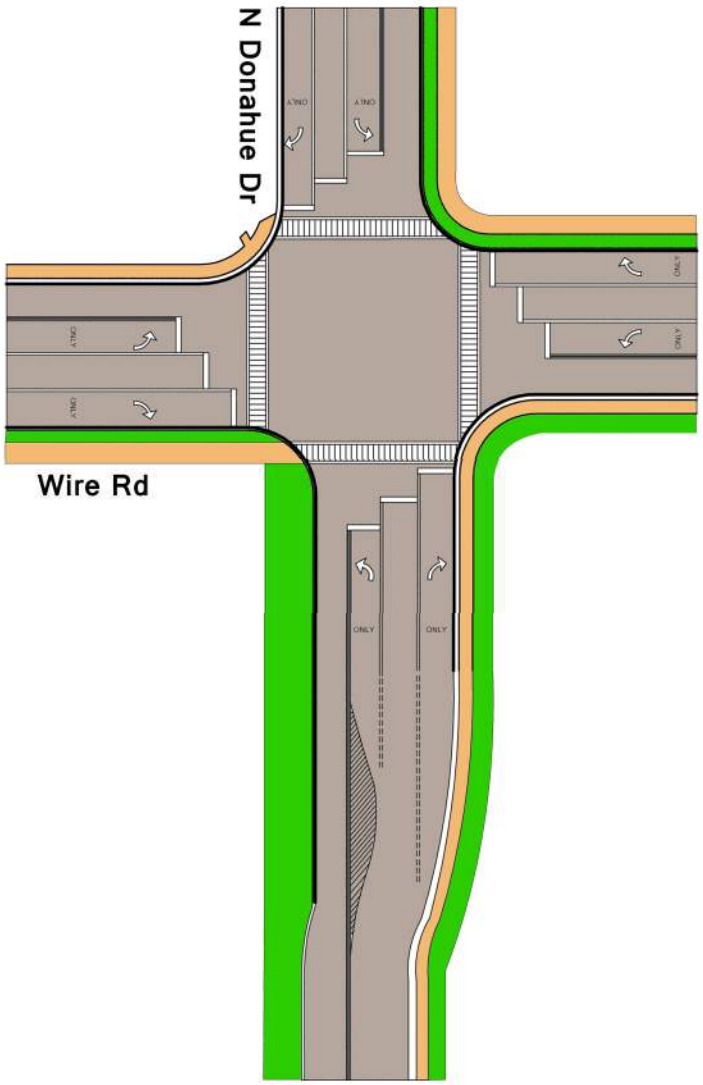
The proposal for downtown reorganization can be referred to practical situation found in the Broad Street, South Philadelphia, where residents park their cars in the median center of the street. Though their reasons being non-availability of space for parking on the Broad Street and now a legacy since 1961 which has become an identity of the neighborhood. The laws in Philadelphia do not promote neither resist such activity in a two-way neighborhood highway. In the design details for this stretch we try to incorporate the goods from this practice and try to generate some innovative thinking.

Fig 3.5: Mid Street Parking in South Philadelphia. Photograph by Claudia Gavin

It is important to note that the proposed downtown street retrofit is not a typical street section or suggestion so more rigorous analysis needs to be done to explore the implementation success of this idea. It's only an idea from the student perspective as students are termed to be a considerable percentage of population from the City of Auburn's demographic statistics. Very Likely, the other design alternatives are possible if they stand to fulfill the basic goals of promoting walkability, bike friendly urban infrastructure promoting the ideal of Complete Streets helping promote a sense of character to the city core.

Design Specifics:

The Bike Plan proposes reconfiguration of the downtown street stretch. It proposes to promote the center median that should allow mid street angular parking in multidirectional approach. The proposal includes a paved pathway leading to mid-street refuge islands and to crosswalks over to sidewalks and businesses in the downtown. The proposal includes one drive lane and bike lane should be located to either side of this center median with mid street parking. Such design is beneficial in threefold ways. First it allows incorporating bike lanes next to sidewalks and drive lanes adjacent to it. This in turn helps drivers slow down in slow paced street stretch where they would be more cautious about bikes on the sides and parking on the other. Thereby, secondly it helps securing safety for the bicyclists. Thirdly flow of activities such as businesses in the downtown and frontage zones of the properties, pedestrians on the sidewalks, bicyclists in the bike lanes, and passing drivers in the drive lanes provide scope for healthy interaction it the downtown. This in turn also helps promote a unique identity to the downtown for the City of Auburn. (Refer Magnolia Avenue and S College Street - Downtown design details.)



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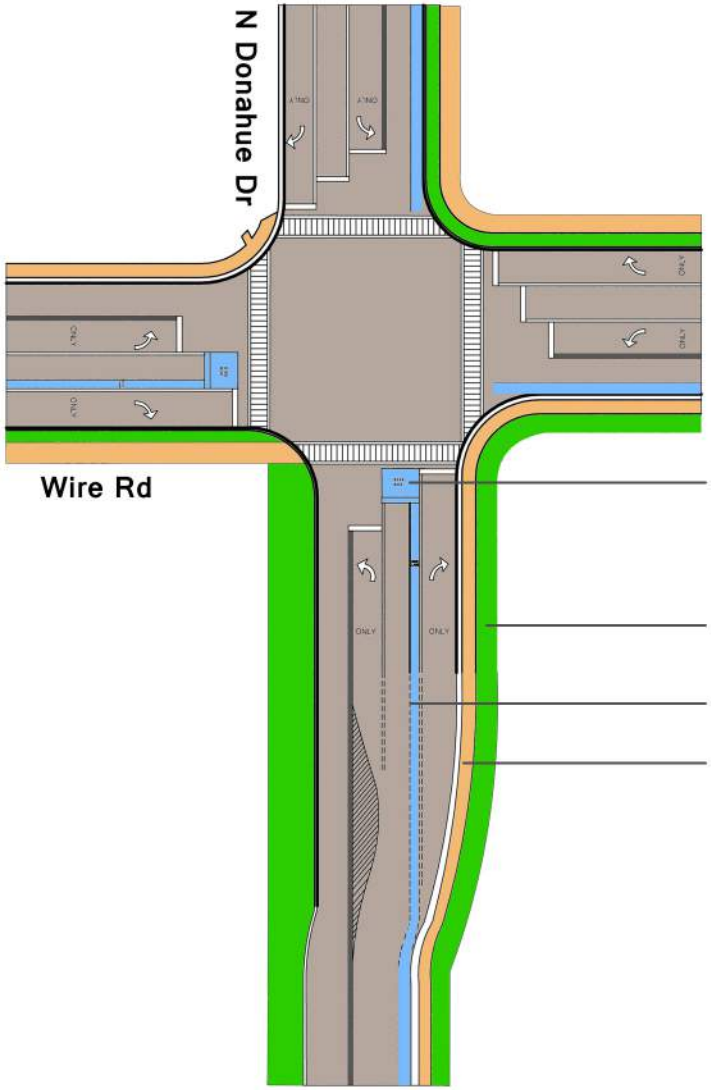

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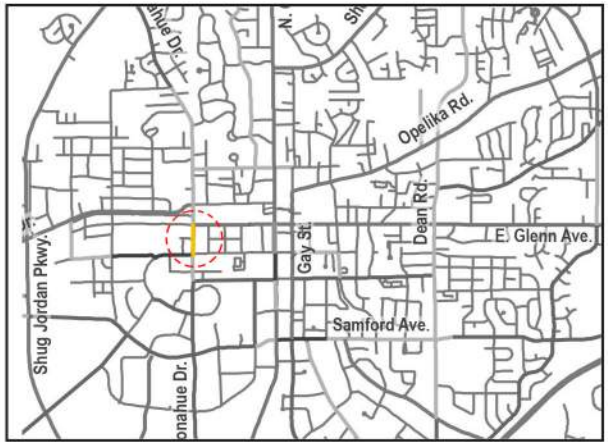

KEY PLAN

ROW:

WIRE RD. - 60 Ft.

DONAHUE DR- 65 Ft.

STREET TYPE:

WIRE RD.-ARTERIAL

DONAHUE DR - ARTERIAL

WIRE RD & DONAHUE DR.

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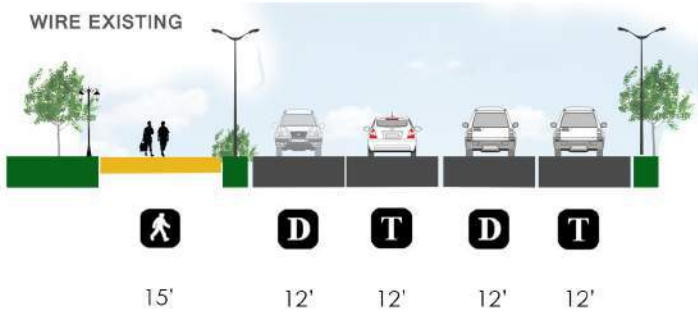

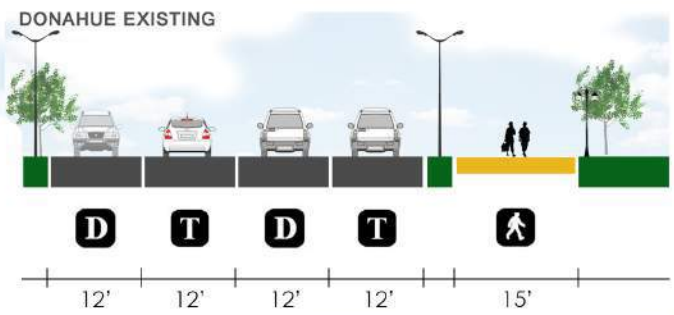

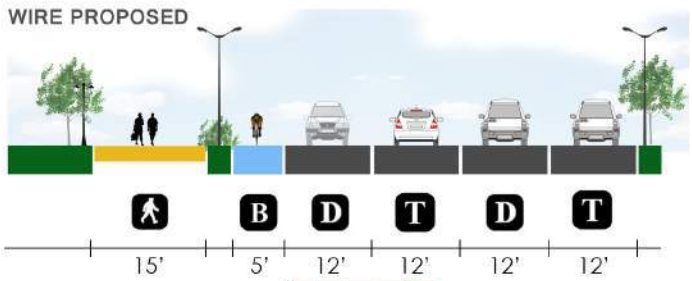

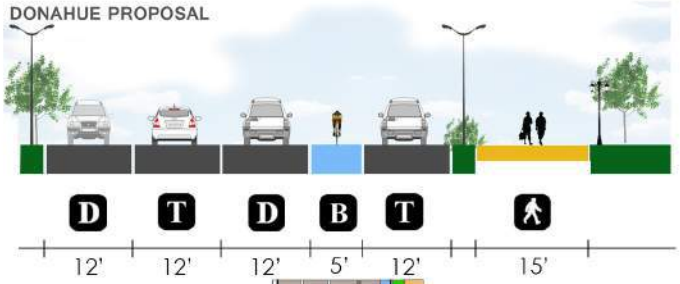

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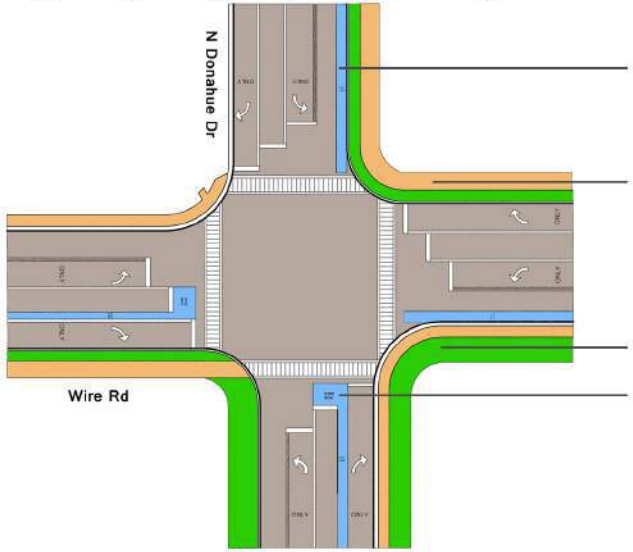

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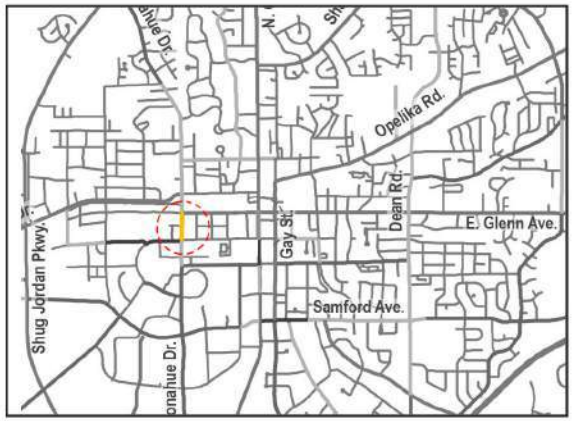

KEY PLAN

ROW:

WIRE RD. - 60 Ft.

DONAHUE DR- 65 Ft.

STREET TYPE:

WIRE RD.-ARTERIAL

DONAHUE DR - ARTERIAL

WIRE RD & DONAHUE DR.

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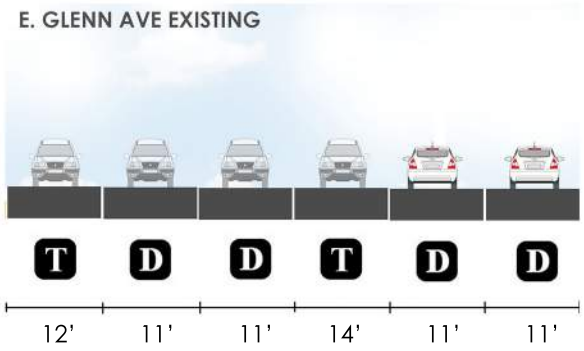

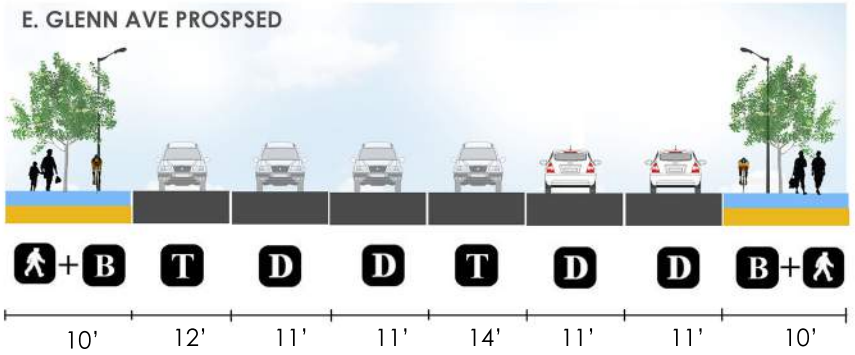

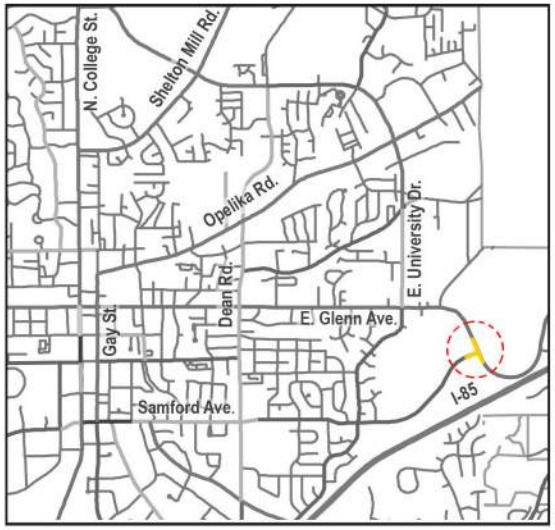

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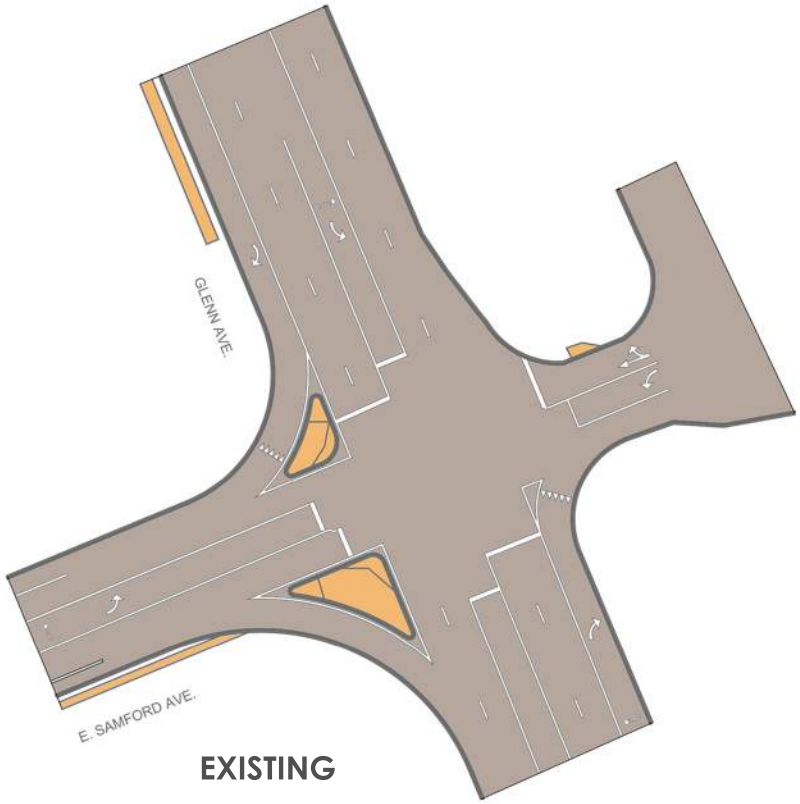

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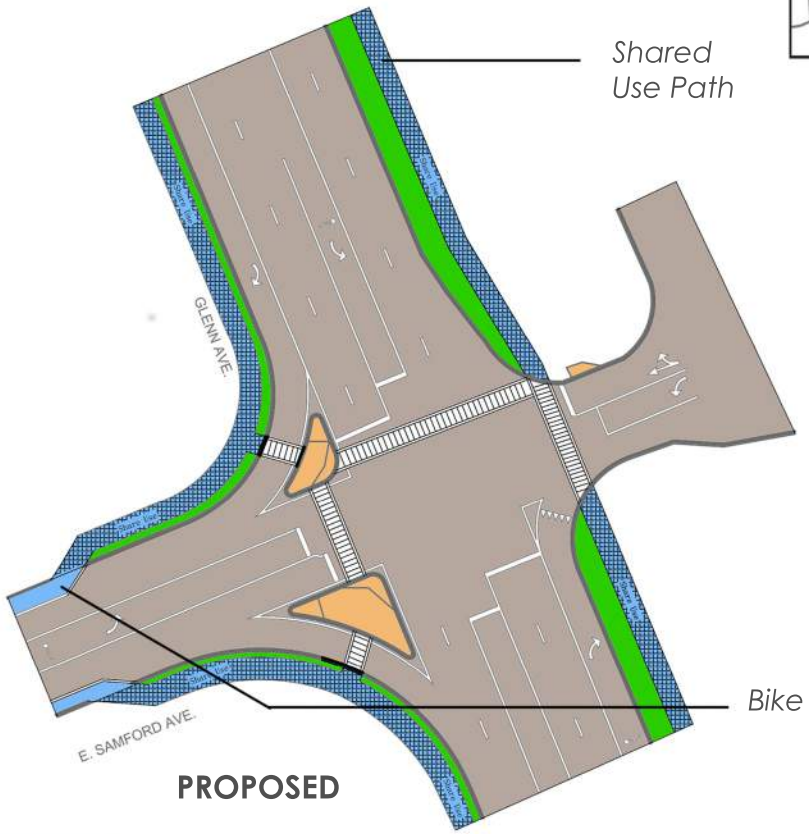

PROPOSED

ROW:

E GLENN AVE
EXISTING - 70 Ft.
PROPOSED -90 Ft.

STREET TYPE:

E GLENN AVE
MAJOR ARTERIAL

E SAMFORD AVE & E GLENN AVE

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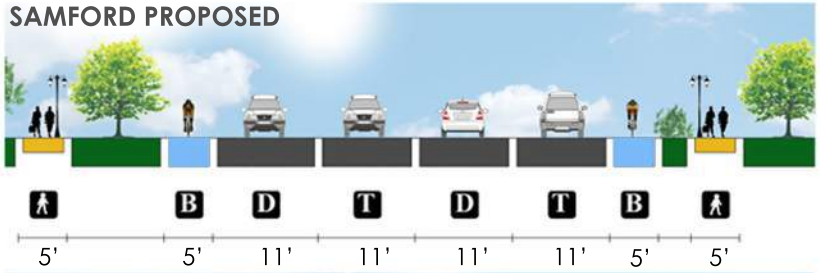
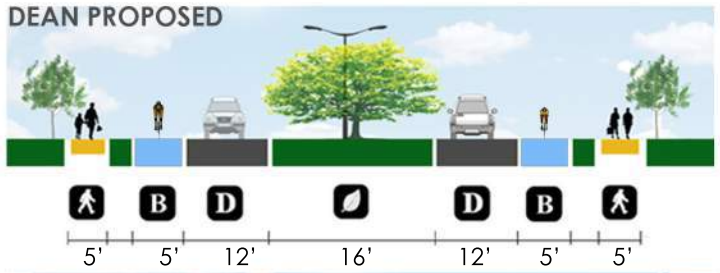
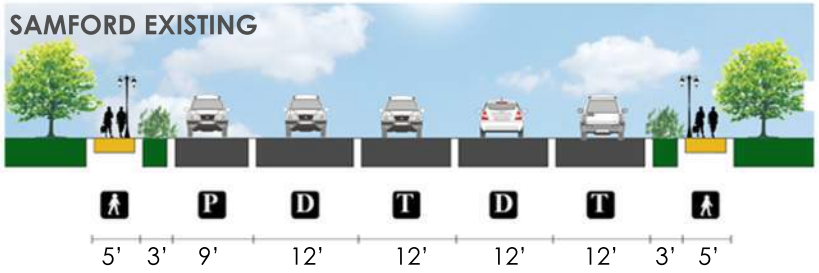
SAMFORD PROPOSED



DEAN PROPOSED



SAMFORD EXISTING



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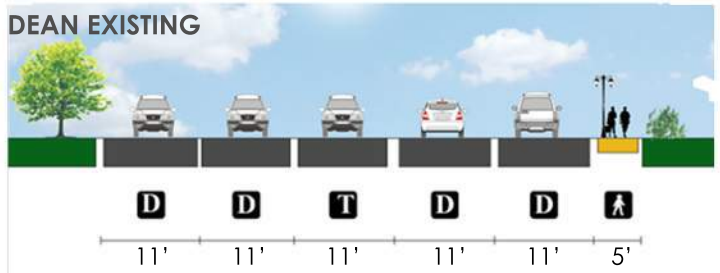

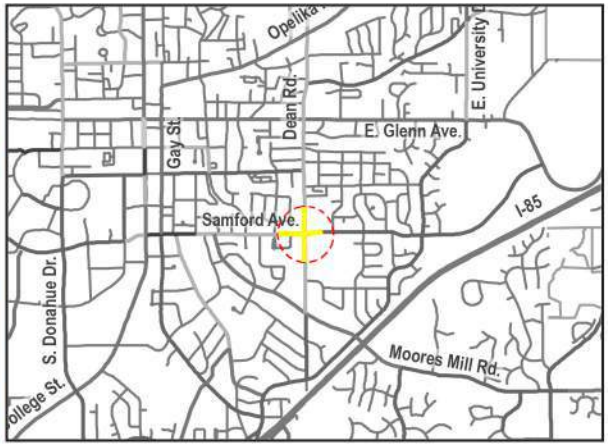

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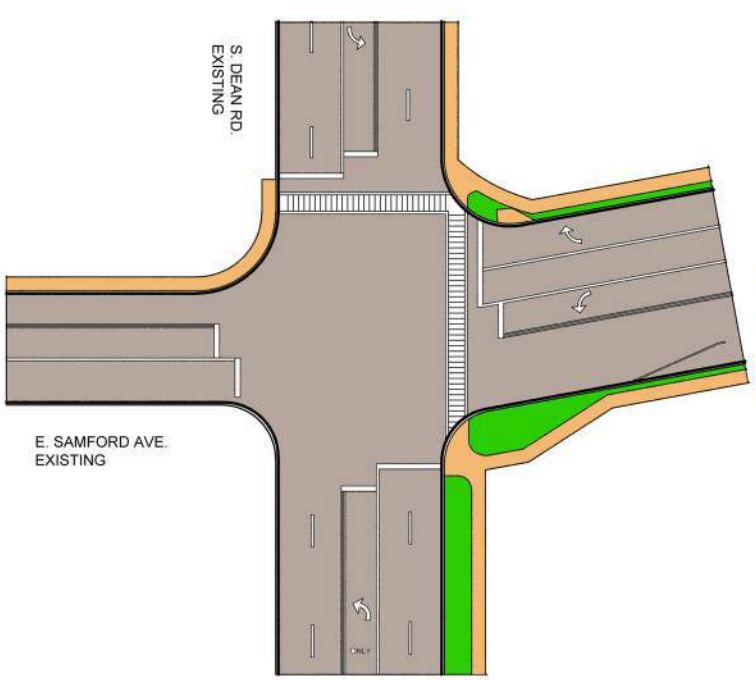

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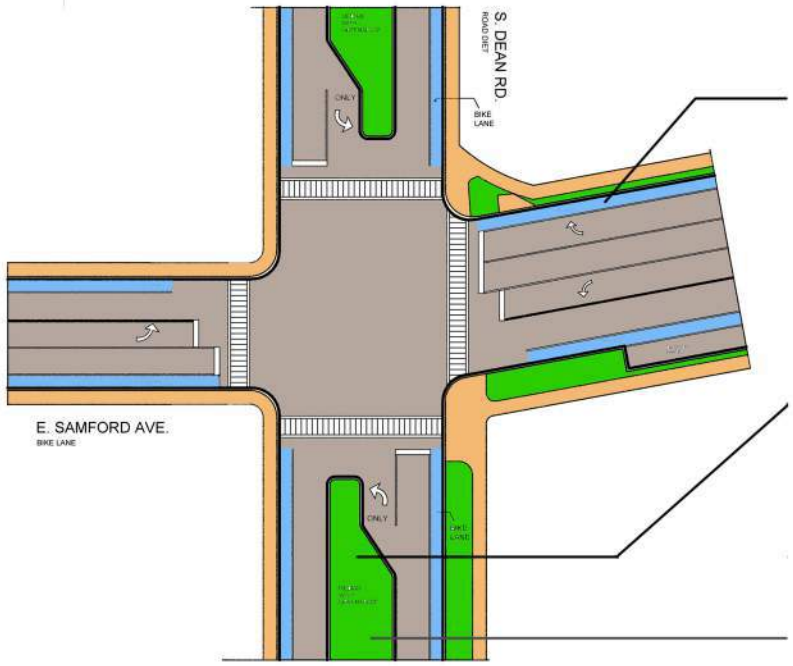

Bike Lane

Center raised Median with options for left turns at intervals.

Landscaping

PROPOSED

ROW:

DEAN RD. - 50 Ft.
SAMFORD AVE - 80 Ft

STREET TYPE:

DEAN RD. - COLLECTOR
SAMFORD AVE - ARTERIAL

DEAN RD. & E SAMFORD AVE

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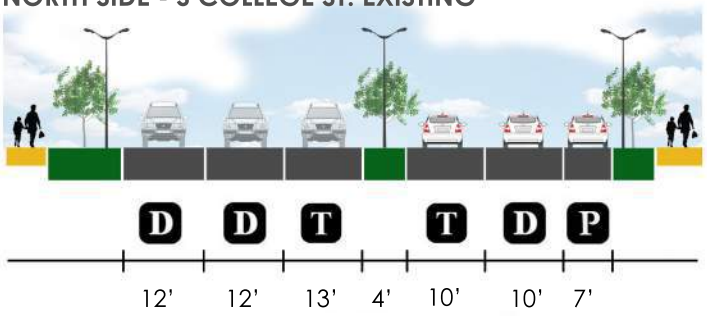
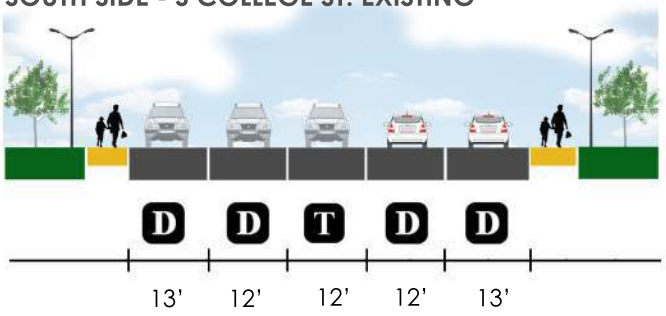
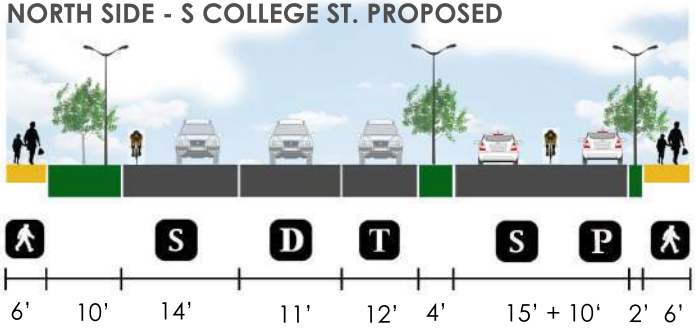
NORTH SIDE - S COLLEGE ST. EXISTING



SOUTH SIDE - S COLLEGE ST. EXISTING



NORTH SIDE - S COLLEGE ST. PROPOSED



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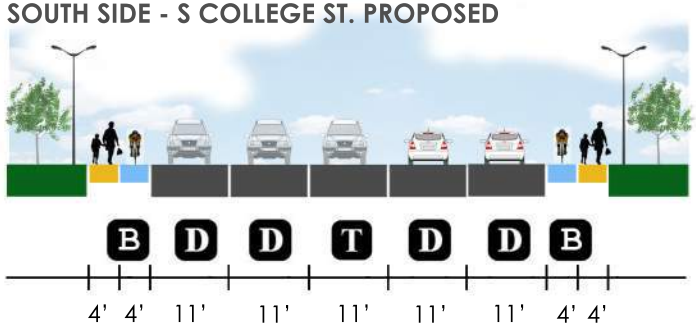

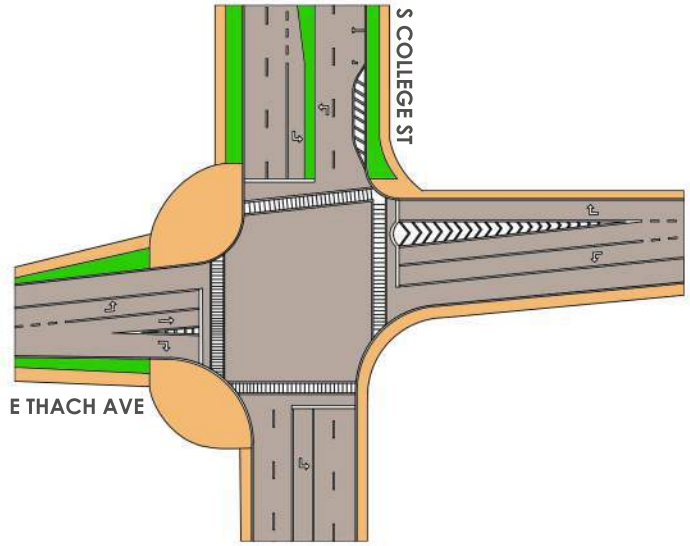

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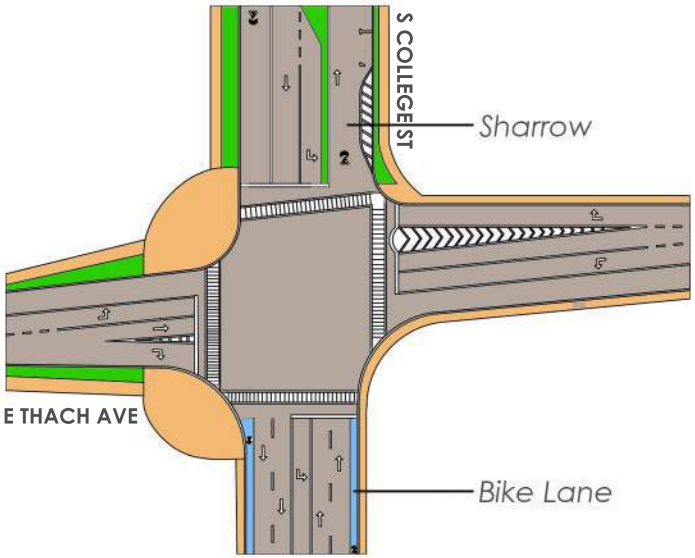

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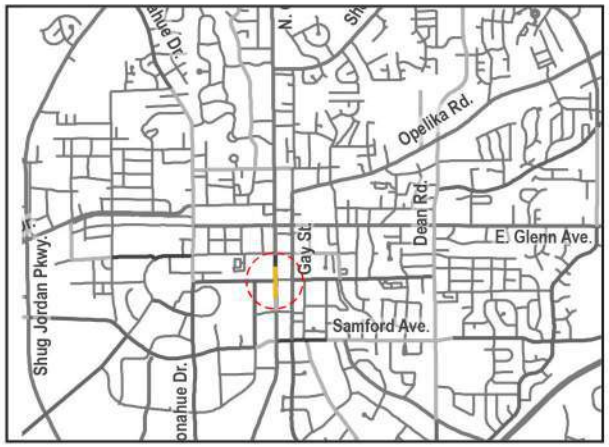

KEY PLAN

ROW:

NORTH SIDE -
S. COLLEGE ST. - 75' Ft.

SOUTH SIDE -
S. COLLEGE ST. - 70'Ft.

STREET TYPE:

S. COLLEGE ST. -
ARTERIAL

E. THACH AVE -
COLLECTOR

E THACH AVE & S COLLEGE ST

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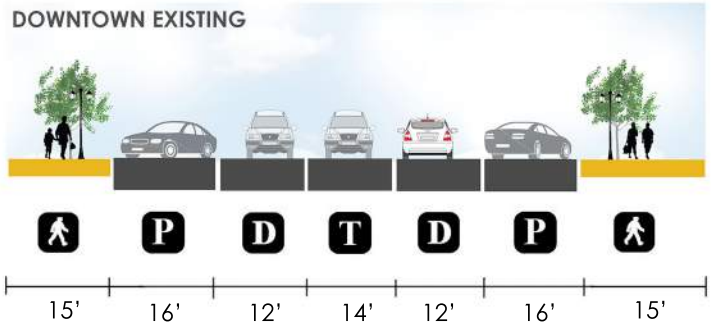

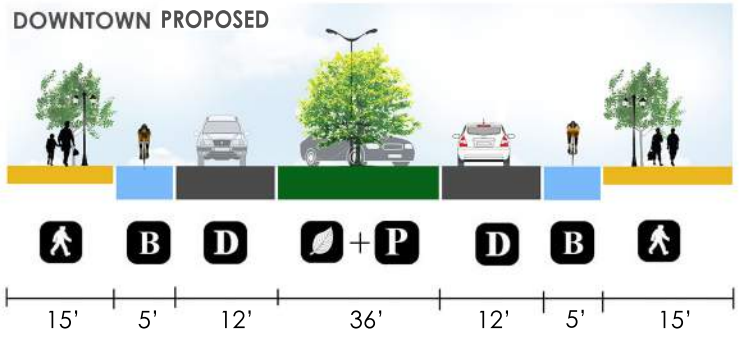

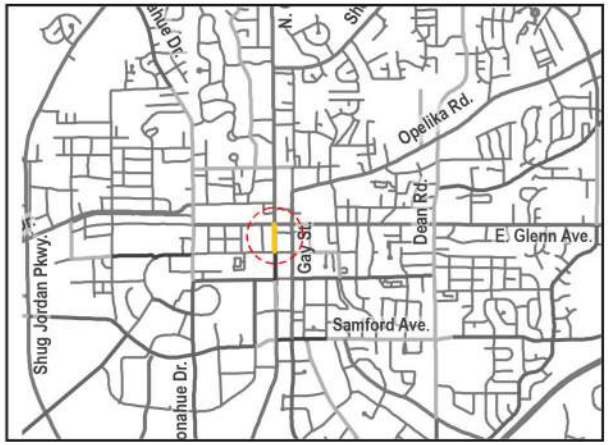

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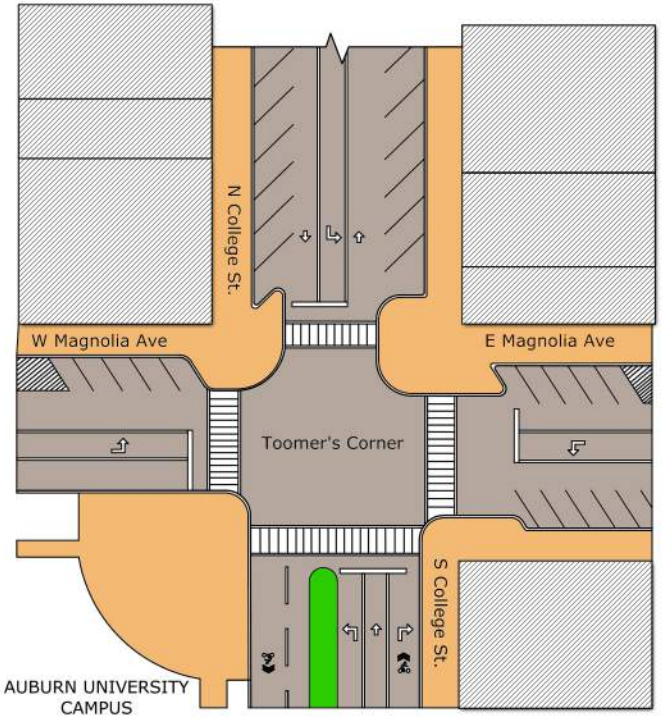

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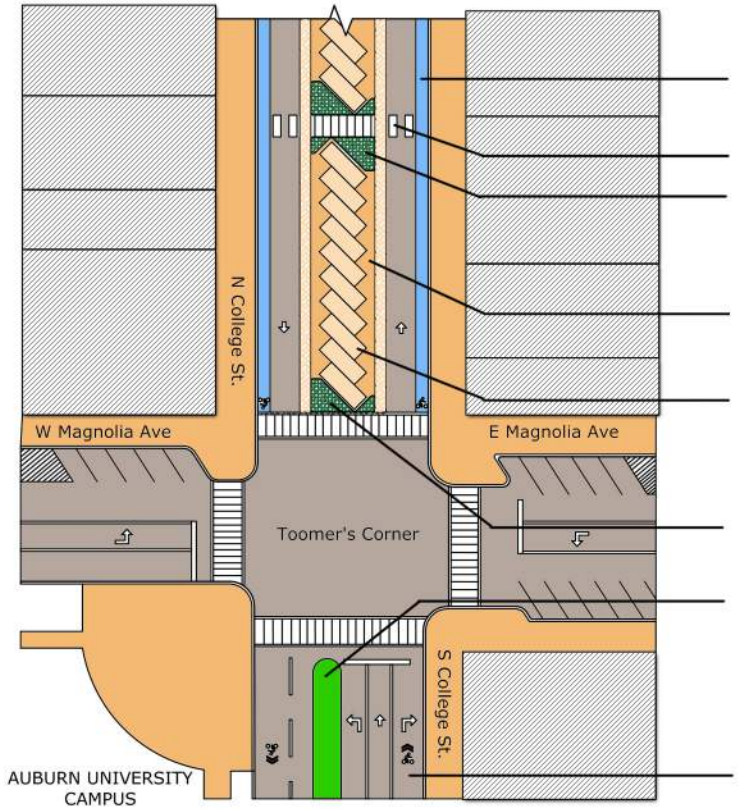

PROPOSED

ROW:

COLLEGE ST. - 100 Ft.

MAGNOLIA- 75 Ft.

STREET TYPE:

COLLEGE ST. - MAJOR ARTERIAL

MAGNOLIA AVE - ARTERIAL

MAGNOLIA AVE & COLLEGE ST.

Bike Planning for the City of Auburn, AL

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Chapter 4

Education, Enforcement and Encouragement

This chapter aims to explain the bike policies that are currently in place in Auburn, Alabama. It will explore current marketing and educational strategies, enforcement and Auburn initiatives. We will also establish proposals for new policy procedures. We believe that the Auburn Bike Plan has the potential to be one of the best in the state and even the US.

Existing Conditions

This section will include research information of current marketing, encouragement, enforcement and events that take place in Auburn. The information that was collected is important because it will aide in the knowledge of what is already established and how those policies may be improved if necessary.

Enforcement

An online search provided links to the city of Auburn's webpage, there a document can be found that list rules and regulations regarding bicycle law enforcement.

According to the document, laws are punishable by up to $100.00 and possible impoundment of the bicycle. However, *Travel With Care Auburn* has state and city ordinances listed and the laws and fines are different. This is important information and the inconsistency between the documents can be confusing. Travel With Care, the city's bike collaborative safety program is only promoted for one week a year. They have radio and television commercials, but they are not currently being run. Some people may have heard of Travel With Care, but do not know what they offer.

Table 4.1 Laws and city ordinances as listed on Travelwithcareauburn.com

Fine	Section	City Ordinance
$271.00	22-11	No one shall ride a bike on the sidewalks of Downtown Auburn.
$164.00	22-11	No one shall park their bicycle in Downtown Auburn, except in bicycle parking racks.
$256.00	13-11	All bicycles must have an operating headlight on the front of their bicycle and reflectors on the front and rear spokes of the wheels and pedals.
		State Laws
$164.00	*32-5A-260*	Every person riding a bicycle upon a roadway shall be granted all of the rights and shall be subject to all of the duties applicable to the driver of a vehicle.
$164.00	*32-5A-263*	(a)Every person operating a bicycle upon a roadway shall ride as near to the right side of the roadway as practicable. (b) Persons riding bicycles upon a roadway shall not ride more than two abreast except on paths or parts of roadways set aside for the exclusive use of bicycles. (c) Wherever a usable path for bicycles has been provided adjacent to a roadway, bicycle riders shall use such path and not use the roadway.
$164.00	*32-5A-265*	Every bicycle when in use at nighttime shall be equipped with a lamp on the front which shall emit a white light visible from a distance of at least 500 feet to the front and with a red reflector on the rear which shall be visible from all distances from 100 feet to 600 feet to the rear. A lamp emitting a red light visible from a distance of 500 feet to the rear may be used in addition to the rear reflector.
$164.00	*32-5A-261*	No bicycle shall be used to carry more persons at one time than the number for which it was designed.
$164.00	*32-5A-262*	No person riding a bicycle shall attach themselves or the bicycle to any vehicle upon a roadway.
$164.00	*32-5A-264*	No person operating a bicycle shall carry anything which prevents the driver from keeping at least one hand on the handlebars.

Marketing & Encouragement

Bicycle Marketing & Encouragement definitions:

- Bicycle Encouragement - incentives, promotions and opportunities that inspire and enable people to ride. E.g.: Mileage clubs
- Bicycle Marketing - providing display signs, street banners, newspaper & television ads, as well as other visuals to create bicycle-riding demand. E.g. Signage on buses

Why Encourage Biking?

Firstly, bike encouragement is the very first step in obtaining a bike friendly community. People must have the desire to ride bicycles in the community or a city's bike plan will become useless because there will be no one to utilize the plan. Biking boasts nothing but positivity on a wide spectrum as long is it done safely.

Some of the benefits to biking include:

- Transportation benefits, e.g. Reduced travel congestion, reduced noise pollution
- Economic benefits, e.g. increased bike retailer, revenue/ job generator
- Public health benefits, e.g. increased physical activity, reduced obesity
- Environmental benefits, e.g. reduce exhaust CO2 emissions, reduced fuel consumption

In order to encourage ridership, it is important to establish events that will make people want to use their bikes as not only a mode of transportation but for recreation as well. Below is an overview of some of the current events that take place in Auburn, Alabama today.

National Bike Month- Every May

The League of American Bicyclists declared May to be National Bike Month. In celebration, the city of Auburn has multiple events throughout town. Bike-to-Work Week encourages adults to exchange their cars for bikes, with a big emphasis on that Friday when they have Bike-to-Work Day. For the younger crowd they have Bike-to-School Day, which is a competition between the homeroom classes grade 1-5 at all Auburn City schools. The winners get an ice cream social courtesy of the Auburn Bicycle Committee.

Bike Loaner Program

Offers the use of bicycles and helmets for all citizens and visitors to Auburn who are 19 years or older for FREE! Launched in May 2008. Anyone can show up to 365 B, N Donahue Dr. with their ID, fill out a waiver, and borrow a bike for a two-week period. You can even extend the duration of your rental if you make a request before the end of the first rental period.

Free Bike Rack Program

By filling out a form found on the City of Auburn's website, anyone can suggest a local establishment that needs a bike rack. The Auburn Bicycle committee will then contact the business to get approval for installing a bike rack free of charge. So far they have placed new racks in three locations based on requests received as of Jan 2011.

City of Auburn Annual Bike Bash

The city of Auburn only has one citywide bicycle event and it is called the annual Bike Bash. According to the League of American Bicyclist website "The annual Bike Bash is our feature event which is geared toward families, recreation and safety. Bike Bash encourages and promotes bicycle activities, endorses bicycle safety, promotes the health benefits of bicycling and emphasizes local bicycle friendly trails and areas. Multiple routes range from 3 miles to 30 miles to accommodate riders with various skill levels. This event is supported by community businesses with monetary and in-kind donations. For example, this year's Grand Prizes were two free bicycles given as door prizes by the local Bike Shops."

Friend of the Bicycle Committee Award

This is an award given each year to someone in the Auburn community who supports the Auburn Bicycle Committee by volunteering their time and/or helping fund various programs.

Bo Bikes Bama

This last May, the City of Auburn hosted the annual *Bo Bikes Bama* ride where riders choose from either a 63-mile or 20-mile ride. Participants must provide their own bicycle and gear. Helmets are required. This event is not put on by the city; it started in 2011 as a way to raise money to recover from a devastating tornado. It became an annual event in April 2013. The money goes to support the Governor's Emergency Relief Fund.

To date they have raised over $780k, biked over 38k miles, and had representatives from 28 states.

Education

Education is arguably one of the most important topics in regards to the Auburn Bike Plan. In order to ensure safety you have to establish a strong educational background. The city of Auburn has educational program for its elementary school children, who are the most important when it comes to knowing about bicycle safety.

Fourth Grade Education Program

The city of Auburn, Auburn City Schools, Auburn Bicycle Committee, and Auburn Civitan Club have put in place a fourth grade education program in all of the Auburn schools. This program ensures that every child in the city school system is taught how to safely ride a bicycle. The program began in 1999 with 18 bicycles and helmets. The curriculum teaches the kids the rules of road and supplies them with lesson books courtesy of the Alabama Department of Transportation. Each school keeps the equipment for five weeks and then passes them on to the next school. In 2003 a grant allowed the program to purchase a storage trailer and 10 more bicycles.

Overall, Auburn has many established marketing and educational strategies. There is a variety of ways to get involved in the bicycle community. Because it is a college town, there is the potential for even more advancements in events, marketing and even education.

4.2 Policy and Program Recommendations

In this section, we aim to establish clear policy and program recommendations for the City of Auburn Bicycle Plan. The methodology of this research is distributed into two main sections, policy and non- policy. The policy information will include information about bike lanes, bike paths, sharrows and more. The research is supported by various previously established guidelines found at sites such as. nacto.org. The policy information will stress the overall importance of clear guidelines on the road such as specific markings and intersection treatments.

The non-policy information will focus on events and encouragement as well as enforcement. Here you will find information about ways to enhance the marketing an educational strategies that are already established in Auburn, Alabama today.

Education

One of the most important things in cycling education is to have children become aware of bike safety. While many parents provide this service, it may be recommended that schools also teach bike safety to the students. In elementary school, this can be done by having guest

speakers come to the school and teach the student these things or have the kids be taught bike safety through video, in the same manner that fire safety is taught.

- Another part of education is teaching motorists about what they should do around cyclists. Perhaps through putting more emphasis on this in driver education programs for teenagers and making this part of a required DMV test for adults.
- Have city-funded organizations that allow people to learn how to ride bikes if they don't already know how.

Unfortunately, too many bicyclists in the United States lack the basic skills or knowledge to safely ride a bicycle in traffic. Many people are, quite simply, afraid of bicycling on streets. Bicycle education programs are designed to increase bicycle safety by improving the ability to ride with traffic as well as heighten motorist awareness, especially younger students, continues to be a leading cause of collisions. The greatest concentration of collisions is directly adjacent to elementary, middle, and high schools. The difficulties faced in helping people develop this skill and knowledge stems from the wide range of age groups that require this training and the necessity to tailor the programs to each one.

Additional challenges to developing education programs are the different languages spoken and the different cultural backgrounds found in Auburn. Bicycle education programs should be directed at the following groups:

- Child Bicyclists
- Adult Bicyclists
- Motorists

The "Walk and Wheels Traffic Safety Program" is directed primarily at adults and includes the following strategies:

- Low cost helmet program and bicycle safety education with community groups and at events;
- Thirteen-minute bike safety video, "Beyond the Bike Lane," which is used for workshops and has been broadcast on Channel 25, Berkeley's public access television station;

- Bike and traffic safety banners to be placed in high collision areas reading "Slow Down," "Wear a Helmet," "Ride with the flow of traffic," "Obey Traffic Laws," "Watch for Cyclists," and "Be Alert;"
- Media campaign.

Helmet Distribution Programs - The Health and Human Services Department has developed two programs to increase helmet usage among children.

- The Citation Alternative Program, in conjunction with the Berkeley Police Department, allows children who have been cited for not wearing a helmet the opportunity to attend a one-hour cyclist traffic school. At the end of the session they receive a free, fitted helmet.
- A monthly bike safety workshop is targeted at low-income families. At the end of the one-hour program, the children receive a free, fitted helmet.

4.3 Programs for Child Bicyclists

Analysis

Most bicycle safety efforts target elementary school-aged children and their parents. Programs for parents of beginning bicyclists, between the ages of five and eight, focus on the role the parent plays in selecting the proper size and type of equipment, in supervising their child's use of that equipment, and in teaching the basic mechanical skills needed to start, balance, steer, and stop a bicycle. Parents may be reached through parent-teacher associations and children through programs sponsored by the schools, day care centers, summer camps and boys and girls clubs.

Recommendations

Middle School and High School - Can cover commuting as well as recreational uses, touring, racing; conducted by volunteer cycling advocates. High School - include bicycle education as part of driver’s training courses.

In addition, the following selection of education strategies are intended as a representative cross-section of the programs that have been developed in communities around the country to target the special needs of various age groups. Some are more suitable for the younger

bicyclists (K-6) and others are more effective for junior high, high school and university students.

- Develop programs with local bike shops to distribute bicycle helmet safety information and reduced price coupons for helmet purchase and other safety gear, such as lights.
- Incorporate bicycle education programs into day camp and day care programs.
- Conduct "bicycle rodeos."
- Develop a program of free bicycle safety checks at schools, fairs, community events, or other events where bicyclists congregate. Sometimes a local business can be persuaded to sponsor an event.

Youth Bicycle Programs - There are many programs available for linking our youth with bicycles. These programs, usually organized by non-profit organizations, or sometimes Police Departments, have been very successful in involving teenagers and giving them something constructive to do with their time. While teaching bicycle safety and proper riding practices, these programs have had favorable results in keeping kids away from drugs, gangs and crime while instilling in them a sense of purpose and worth. Some of the highlights of these programs are:

- After school bicycle maintenance and repair.
- Recycle a bike program - kids fix up bikes and keep them.
- Earn-a-bike program through community service.
- Drop-In repair classes-also good for adult bicyclists.
- Bicycle trips for kids programs.

4.4 Programs for Adult Bicyclists

Analysis

There are few materials and programs that focus on the adult rider. Most adult bicyclists have not had any formal bicycle education in childhood outside of learning the basic mechanical skills. At the same time, there are misconceptions, myths and outdated advice that further

challenge adult bicyclists' safety. For instance, some believe a bicyclist should ride facing traffic, and it is still common to see a bicyclist at night not using the required lights and reflectors. Bicycle education programs developed for the adult cyclist need to educate cyclists about bicyclists' rights and responsibilities on the road, about techniques for sharing the road with motorists and about secure bike locking techniques. Adults should also be educated about pedestrian rights and the need to be aware of people with mobility, hearing, and/or vision impairments.

Recommendations

- Conduct a public awareness campaign focused on responsible road behavior and directed to bicyclists and motorists alike. Make use of public service space from newspapers, television, radio, bus advertising, posters and flyers mailed in utility bills.
- Promotional events such as Bike to Work Day enhance bicycle education.
- Community events such as charity bike rides, costume rides, bike fairs and bicycle rodeos are useful in attracting adults and families in more recreational surroundings. Include bicycle safety checks and helmet giveaways as part of these rides.
- Bicycle commuting programs sponsored by employers, such as those suggested in Chapter 6, can be successful in educating adult bicyclists and creating new bicycle commuters.
- Educate parent groups and adult groups that supervise children, like PTAs, day care centers, and youth camp operators, on safe bicycling practices.
- Conduct a public awareness campaign emphasizing the individual and community benefits of using a bicycle for daily trips. As part of this campaign have a city-wide contest for number of miles bicycled, oldest bicyclist, farthest commuter, etc.
- Since most adult cyclists are also motorists, they can also be reached through programs discussed in the next section.

- Work with bicycle shops to provide incentives for adults to purchase helmets and safety gear, such as lights.

4.5 Programs for Motorists

Analysis

Motorists are probably the most difficult group to reach with bicycle education. Existing motorist-oriented programs typically reach their intended audience only at specific points. Some amount of bicycle education is distributed during driver education courses, driver licensing exams and traffic schools for violators. While these methods can be improved upon, for most motorists, these events will only occur once every several years. Additionally, programs targeted to children can benefit motorists as children bring home information to their families.

Recommendations

- Public awareness campaigns are most useful for educating the motorist on how to safely share the road with bicyclists and overall awareness of bicyclists' rights and responsibilities. Media campaigns including bumper stickers and banners, could be developed. Community events and family activities can be useful in raising awareness of bicycle/motorist safety. Parents who attend bicycle education events with their children may learn something themselves about bicycle/motorist safety.

- Make use of public service space from newspapers, television, radio, bus advertising, posters and flyers mailed in utility bills. The City should consider including an educational flyer in its mailings to residents, particularly for parking permits.

- Incorporate "sharing the road" training into driver's education programs.

- Signage on roadways, such as "Share the road" signs and bicycle stencils on the street, both of which are proposed for Class 2.5 bikeways, are also an educational tool which alert motorists to the presence of bicyclists.

4.6 Public Service Announcements

Motorist education on the rights of bicyclists is limited. Many motorists mistakenly believe, for example, that bicyclists do not have a right to ride in general purpose travel lanes, or do not understand how to share the road with bicyclists. The City should consider investing in Public Safety Announcements (PSA) to reach a larger audience on road safety and usage. PSA campaigns can target motorist, bicyclist and pedestrian behavior and educate the public on safe roadway behavior.

4.7 Dedicated City Webpage on Bicycle Education

Offering quick access to bicycle education and etiquette can easily be done by dedicating a webpage on the City's website. Having a webpage on bicycle education and etiquette will allow residents to easily find bicycle education material. A dedicated webpage also signifies that the City is taking a proactive approach toward education of all road users.

Traffic safety education should be included in school curricula for all ages. Elementary students need to learn basic bicycle and pedestrian safety while middle school students can cover more advanced bicycling skills in courses marketed as "Pre-Driver's Education." Lessons learned in elementary and middle school would be revisited during regular Driver's Education classes in high school. Students would graduate from the City school system with a holistic knowledge of traffic safety related to all travel modes.

Traffic safety media campaigns increase awareness and frequently remind road users of their rights and responsibilities. The best campaigns take advantage of the wide array of media outlets available today – print, outdoor advertising, radio, television, online and social media – to reach all demographics. Simple taglines and memorable graphics, such as Arlington, VA's "Be a PAL" or Metropolitan Washington's "Tired Faces" campaign grab the viewer's attention and are easily recognizable.

Set a goal to host at least one teen and adult **bicycling workshop** per quarter. Workshop topics should include how to ride a bike, the rules of the road and city riding strategies, but could also be expanded to include introductions to different types of recreational biking, safe bicycling in winter weather, and basic bicycle mechanics.

Enforcement

- The primary method of enforcement that I can recommend based on my research is to educate police officers on the laws regarding cycling and that all cyclists must abide to.
- Other methods include laying out what a cyclist must have on their bike, such as headlights and reflectors, as well as behavior (i.e. always signal, how to turn at intersections, etc.)

4.8 Voluntarily Register Bicycles

The City should require that bicycles in Auburn be registered and that operators be licensed. Auburn should encourage residents to voluntarily register their bicycles on the official Bike Registry.

4.9 Security Cameras

The risk of theft or violent confrontation makes many potential bicycle riders uneasy and less willing to ride a bicycle. It is recommended that the City invest in security cameras to increase both perceived and actual community safety and to target these initiatives on existing shared use paths. These cameras should be monitored by the Lee County and should be accompanied by enhanced enforcement efforts around camera locations.

4.10 Increase enforcement of bicyclist and motorist behavior

The Department of Transportation will work with the Police Department to enforce laws that reduce bicycle/motor vehicle crashes and increase mutual respect between all roadway users. This enforcement program will take a balanced approach to improving behaviors of both bicyclists and motorists. Motorist behaviors that will be targeted include:

• Turning left and right in front of bicyclists.

• Passing too close to bicyclists.

• Parking in bicycle lanes.

• Opening doors of parked vehicles in front of bicyclists.

• Rolling through stop signs or disobeying traffic signals.

• Harassment or assault of bicyclists.

Bicyclist behaviors that will be targeted include:

• Ignoring traffic control (particularly traffic signals).

• Riding the wrong way on a street.

• Riding with no lights at night.

• Riding without helmets.

• Riding recklessly near pedestrians on sidewalks.

Bicyclist safety is a shared responsibility between all roadway users. Enforcement priorities should be established through a collaborative process.

Encouragement

Bike Library: Essentially what it seems, this method has a transit center that contain specially marked bicycles that people can "check out" for free on the first day but must pay for every day the bike is held after the first; said price increases by the day. This allows people who may not have bikes or the money to afford bikes to travel by cycling.

- Special Events: Events that are focused on biking. Other than the special celebratory events, there are other things that can be done. These can be things such as "Bike to Work/School Day." Another example of a special event would be a field trip to a local area that students and teachers reach by cycling rather than taking a bus.
- One idea not in the appendixes (at least I didn't see this idea in there) relates to the pages related to biking on the website of the city of Auburn. Here, they list a map of all bike routes. In order to get more people to purchase bikes, I suggest putting another map on that site that has the locations, addresses, and telephone numbers and business hours of local stores that sell bikes and bike-related items, and/or provide maintenance.

4.11 Safe Routes to Schools programs

The city should build on its existing efforts to work with the Public Schools, public health organizations, parent associations, and local walking and bicycling advocacy groups to develop safe bicycle and pedestrian routes to schools. These routes could be identified as a part of local Safe Routes to Schools programs and could be improved in conjunction with the implementation of the City of Auburn Pedestrian Master Plan.

4.12 Develop an online bicycle route way finding program

An online bicycle route way finding program help bicyclists determine preferred routes to destinations. This program would allow bicyclists to enter their origin and destination and generate an optimal route to follow, given their experience level, time sensitivity, willingness to ride on steep hills, or other potential factors. This online program could also include tourist destinations, park amenities, transit access information, school locations, and other information that may be useful to bicyclists as it becomes available to integrate easily into a web-based format. Create and distribute bicycling maps that highlight the level of traffic stress along each route. Show the locations of fix-it stations, bike shops, and other amenities.

4.13 Support efforts to obtain funding

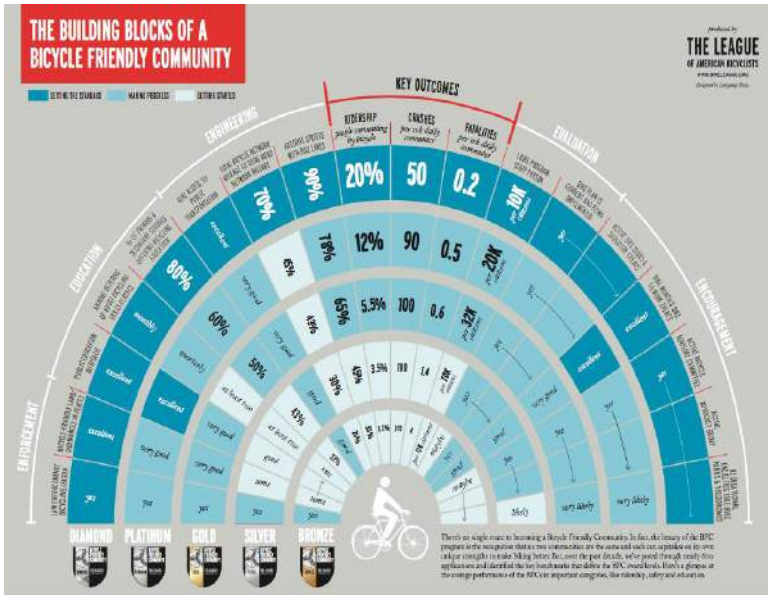
Local organizations to pursue additional funding for bicycle safety education and enforcement programs. By providing support to grants and other funding applications, the city can help organizations that conduct education and enforcement to increase their resources and reach more Seattle residents.

Additionally, there are areas that can use direct improvement. Events such as *Bo Bikes Bama* could be more successful with improved marketing. Although the Bike Bash is Auburn's signature encouragement event, it could benefit form some extensive marketing. Also, events such as *The Bike Bash* are not well known through out the city of Auburn. Leveraging the student body and marketing towards them since Auburn students account or roughly 47% or almost half of the city of Auburn's total population. Marketing recommendations for the Bike Bash could include:

- Placing Bike Bash sign posts in and around the downtown area.
- Advertising on the Auburn University transit buses.
- Mass advertising in local newspaper ads.
- Advertising on the new Jumbotron during the spring football game.

Recommendation to Achieve Silver Ranking:

One of the main goals is to achieve a silver ranking from the League of American Cyclists. This ranking will be an achievement for Auburn, Alabama and it will be a notable to cities around the world. We will have confidence in knowing that our plan meets the high standards explained in the following chart.



According to League of American Bicyclist chart above, to achieve a silver ranking, the Encouragement category must:

- Have “Active Bike Clubs and Signature Events”
- Have a “good” standing in the “Bike Month & Bike to Work Category”
- Have an “Active Bicycle Advisory Committee”
- Have an “Active Advocacy Group”

- Have “Recreational Facilities such as Bike Parks”

The city of Auburn’s encouragement is well on its way to achieving a silver status with in that category. To achieve a silver status in encouragement must implement an “Active Bicycle Advisory Committee” and an “Active Advocacy Group”. Also, depending on how strong the advisory committee and advocacy group is will decide if a “Recreational Facility” is needed. If they are not very strong then it is likely that a “Recreational Facility” will have to be implemented.

Sources

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6. https://youtu.be/yQJ_ozjsigg
7. http://www.auburnalabama.org/cycle/Default.aspx?PageID=519
8. http://www.auburnalabama.org/cycle/Default.aspx?PageID=726
9. https://bobikesbama.com/the-ride/#.Vh3M-FtxO0t
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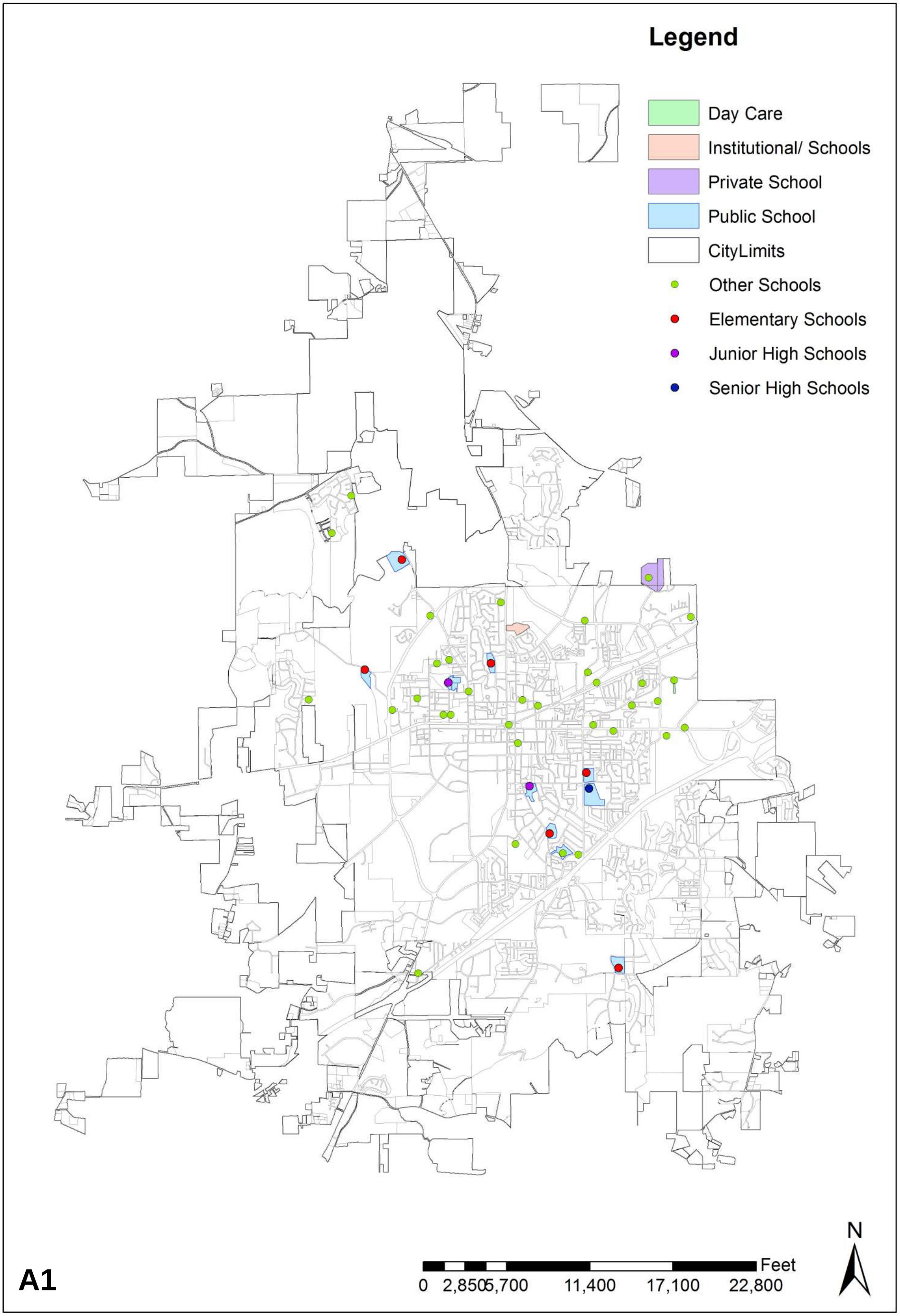
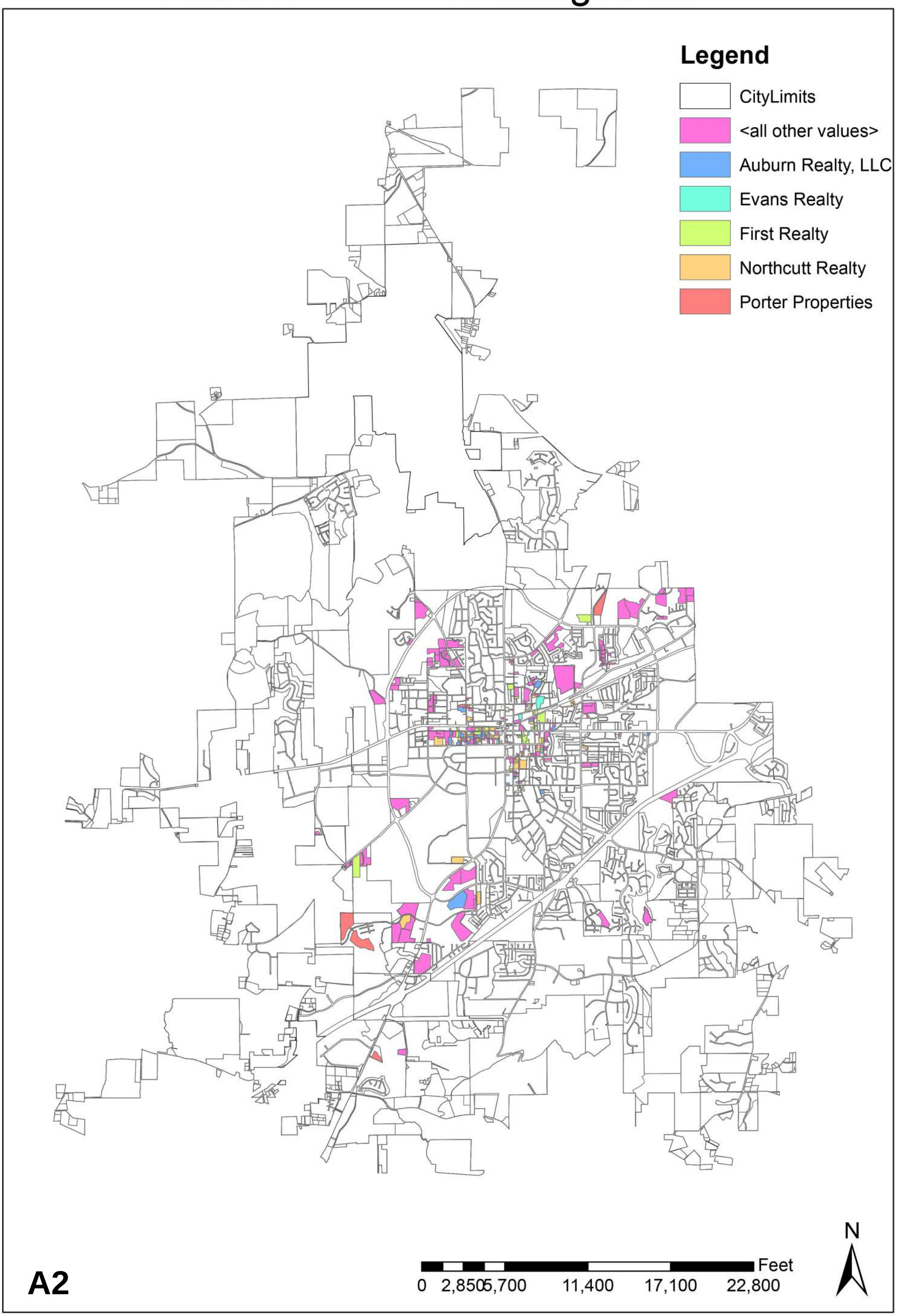
19. http://www.fcgov.com/bicycling/bike-plan.php; Refer to Appendixes B (p. 52-59), and E.
20. http://www.ci.berkeley.ca.us/ContentDisplay

Auburn School Location



A1

Auburn Student Housing Areas

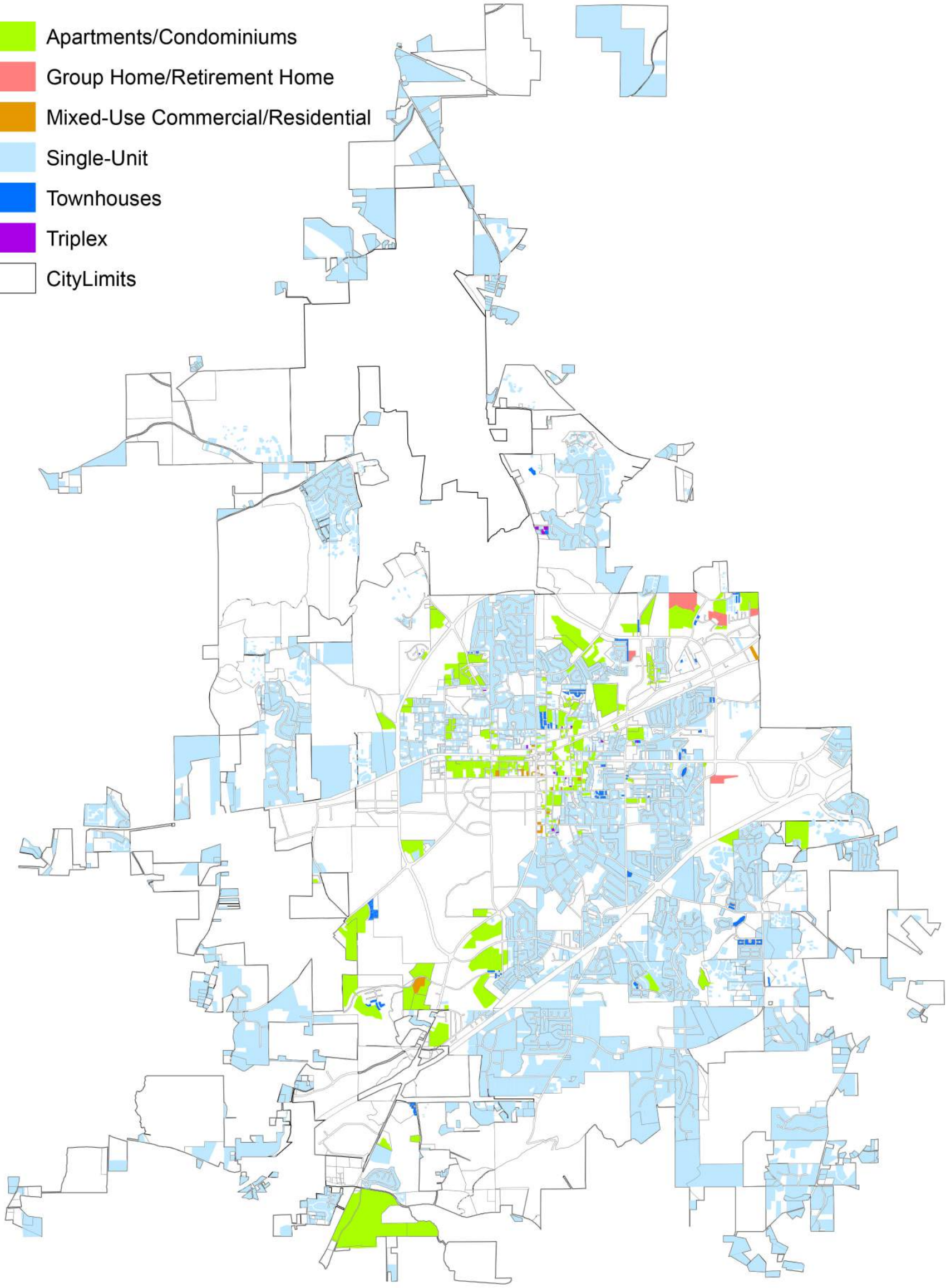


A2

Auburn Housing Situation

Legend

- Apartments/Condominiums
- Group Home/Retirement Home
- Mixed-Use Commercial/Residential
- Single-Unit
- Townhouses
- Triplex
- CityLimits



0 2,850 5,700 11,400 17,100 22,800 Feet

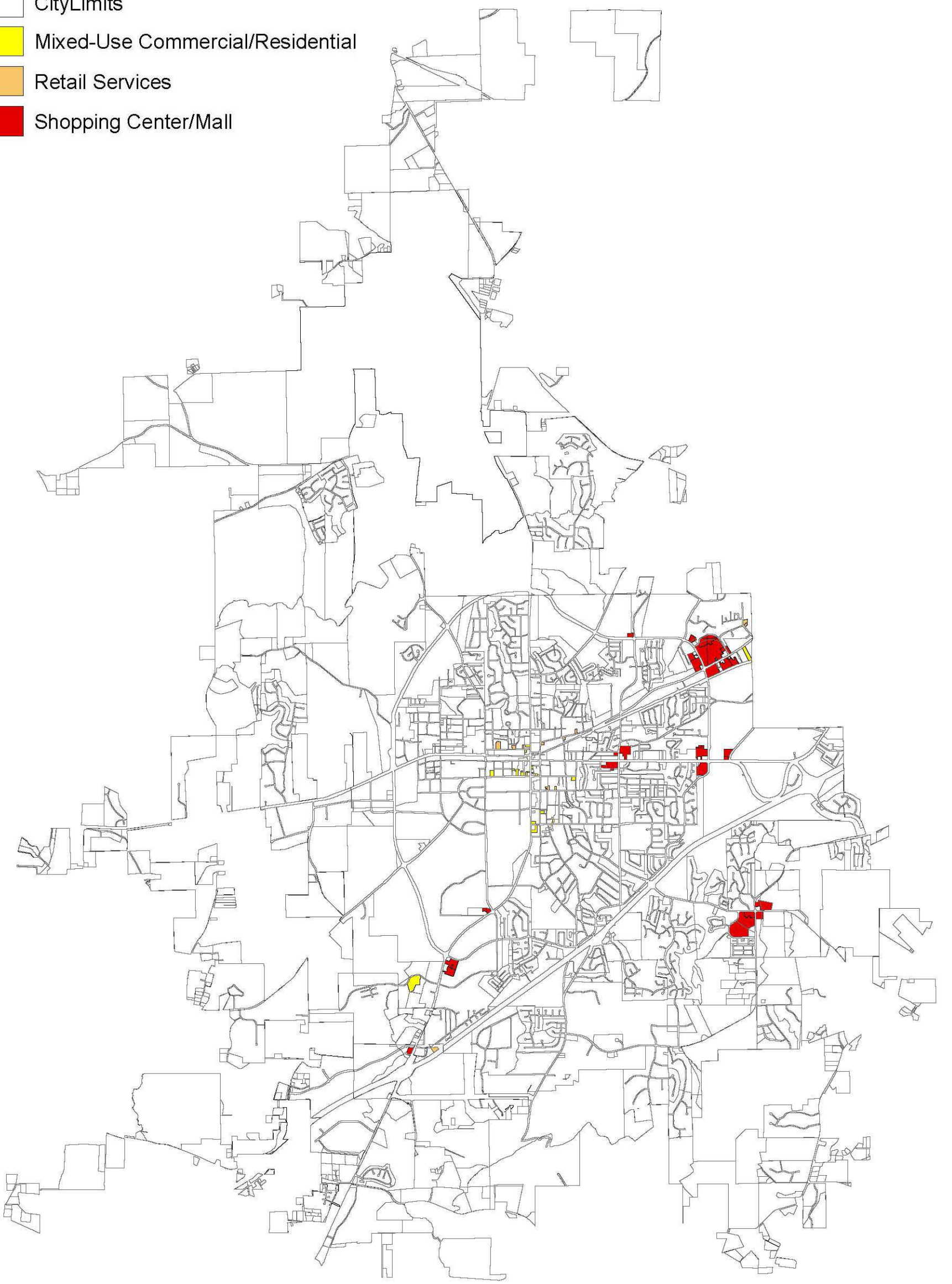
N

A3

Auburn Shopping Layout

Legend

- CityLimits
- Mixed-Use Commercial/Residential
- Retail Services
- Shopping Center/Mall



A4

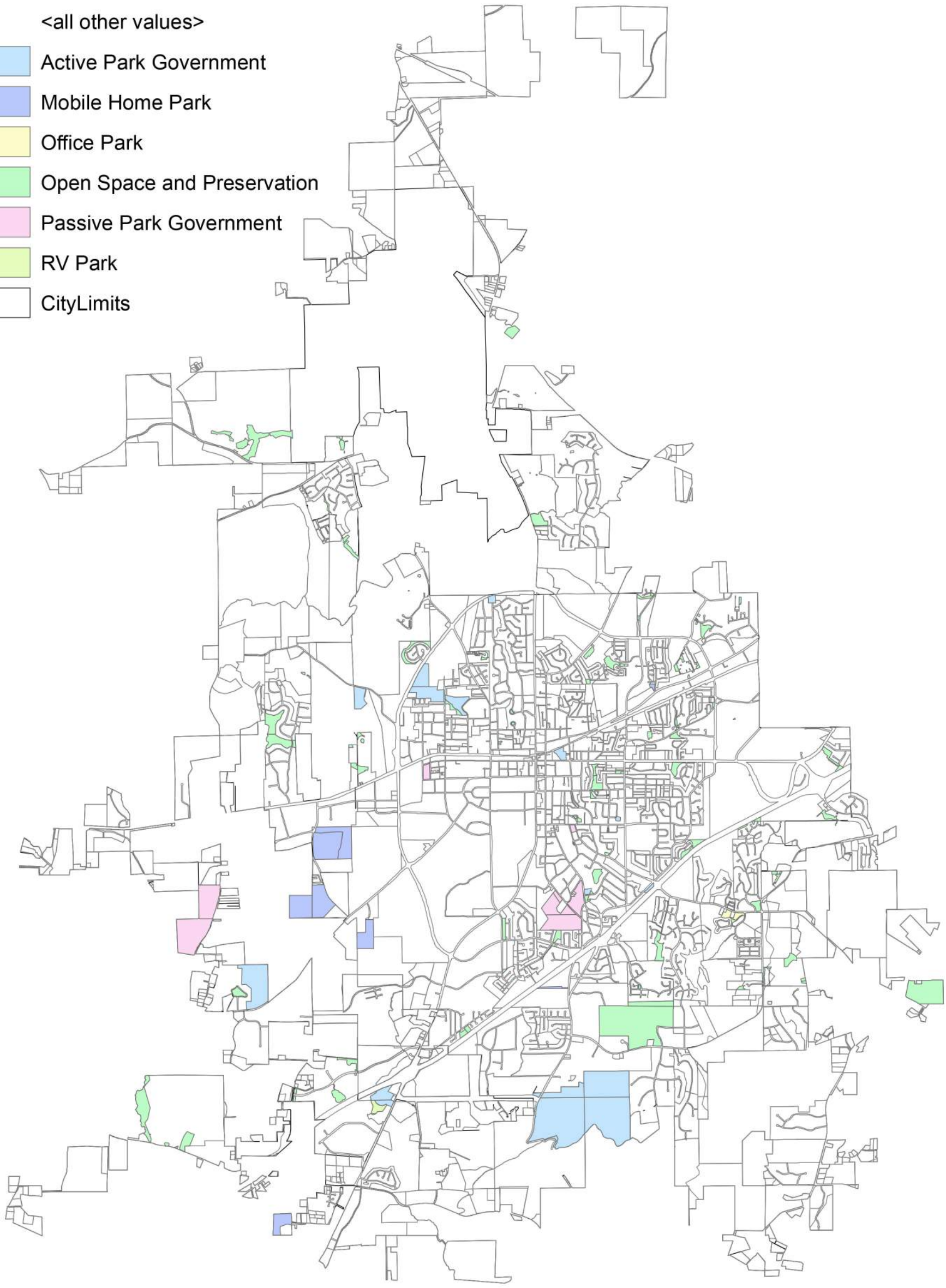
0 2,850 5,700 11,400 17,100 22,800 Feet

N

Auburn Park Layout

Legend

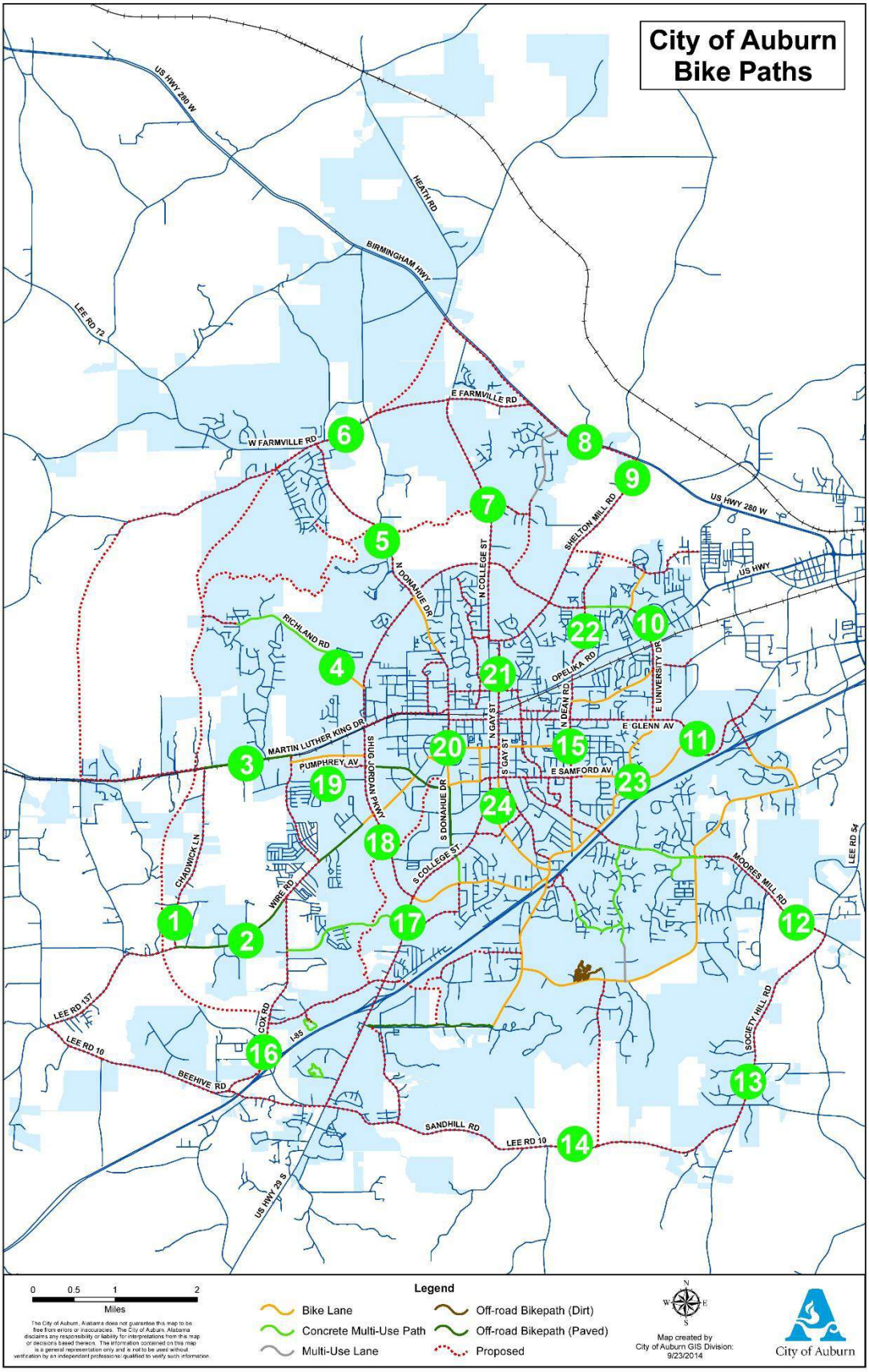
- <all other values>
- Active Park Government
- Mobile Home Park
- Office Park
- Open Space and Preservation
- Passive Park Government
- RV Park
- CityLimits



A5

0 2,850 5,700 11,400 17,100 22,800 Feet

N


City of Auburn
Bike Paths
US HWY 280 W
HEATH RD
BIRMINGHAM HWY
LEE RD 72
E FARMVILLE RD
W FARMVILLE RD
SHELTON MILL RD
US HWY
N DONAHUE DR
N COLLEGE ST
RICHLAND RD
OPELIKA RD
N DEAN RD
E UNIVERSITY DR
N GAY ST
E GLENN AV
MARTIN LUTHER KING DR
PUMPHREY AV
SHUG JORDAN PKWY
S GAY ST
E SAMFORD AV
S DONAHUE DR
S COLLEGE ST
CHADWICK LN
WIRE RD
MOORES MILL RD
LEE RD 54
LEE RD 137
LEE RD 10
COX RD
I-85
BEEHIVE RD
SOCIETY HILL RD
SANDHILL RD
US HWY 29 S
1
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17
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22
23
24
0 0.5 1 2
Miles
The City of Auburn, Alabama does not guarantee this map to be free from errors or inaccuracies. The City of Auburn, Alabama disclaims any responsibility or liability for interpretations from this map or decisions based thereon. The information contained on this map is a general representation only and is not to be used without verification by an independent professional qualified to verify such information.
Legend
Bike Lane
Concrete Multi-Use Path
Multi-Use Lane
Off-road Bikepath (Dirt)
Off-road Bikepath (Paved)
Proposed
N
W
E
S
Map created by
City of Auburn GIS Division:
9/23/2014
City of Auburn

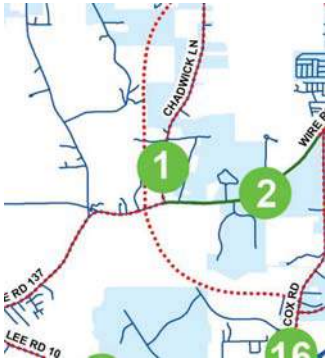
Tabulation:

Road Name	Road Type	Tiger Transit Stop	Sidewalk	Bike Signage (Vrt)	Road Bike Markings	Bike Intersection Design	Land Use	Bike Parking	Driveways	Speed Limit (MPH)
Chadwick Ln.	Proposed	No	No	No	No	None	Residential	No	Few	None
Wire Rd.	Off-road Bikepath (Paved)	Yes	One side	Yes	Yes	Yes	Commercial	No	Few	50
Martin Luther King Dr.	Off-road Bikepath (Paved)	No	One side	Yes	No	None	Residential	No	Excessive	45-55
Richland Rd.	Concrete Multi-Use Path	No	One side	Yes	Yes	None	Residential	No	Few	35
N. Donahue Dr.	Bike Lane	No	Discontinuous	No	Yes	None	Residential	No	Many	No Info
W. Farmville Rd.	Proposed	No	No	No	No	None	Green space	No	Few	45
N. College St.	Off-road Bikepath (Paved)	No	One side	No	No	None	Residential	No	Many	No Info
US HWY 280	Proposed	No	No	No	No	None	Other	No	Few	65
Shelton Mill Rd.	Proposed	Yes	One side	No	No	None	Residential	No	Many	No Info
E. University Dr.	Bike Lane	Yes	One Side	No	No	Yes	Mixed	No	Excessive	35-45
E. Glenn Ave.	Proposed	Yes	Two Sides	No	No	None	Mixed	No	Excessive	No Info
Moores Mill Rd.	Proposed	No	Two Sides	No	No	None	Residential	No	Many	35-45
Society Hill Rd.	Proposed	No	No	No	No	None	Residential	No	Many	45
Lee Rd. 10	Proposed	No	No	No	No	None	Residential	No	Many	45
N. Dean Rd.	Proposed	No	One side	Yes	Yes	None	Mixed	No	Many	35
Cox Rd.	Proposed	No	No	No	No	None	Residential	No	Few	40
S. College St.	Proposed	No	Discontinuous	Yes	No	Yes	Commercial	No	Few	No Info
Shugg Jordan Pkwy	Proposed	No	Discontinuous	Yes	No	None	Mixed	No	Few	No Info
Pumphrey Ave.	Bike Lane	Yes	No	No	Yes	None	Industrial	No	Many	40
S. Donahue Dr.	Mixture	Yes	Discontinuous	No	No	Yes	Residential	Yes	Few	No Info
N. Gay St.	Proposed	No	Discontinuous	No	No	Yes	Mixed	No	Few	No Info
Opelika Rd.	None	Yes	Discontinuous	No	No	Yes	Mixed	No	Excessive	No Info
E. Samford Ave.	Bike Lane	No	One side	No	Yes	None	Mixed	Yes	Many	30
S. Gay St.	Bike Lane	No	One side	No	Yes	None	Mixed	No	Few	No Info

List of Streets in Auburn Bike Path Plan

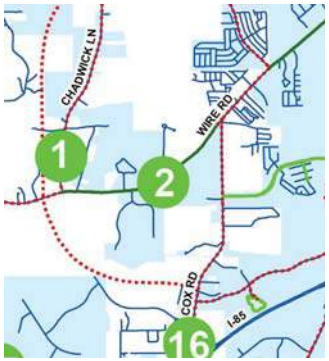
1. Chadwick Ln.

This road has no posted speed limit. There are 2 lanes. According to the map, this is a Proposed Bike Path road. Tiger Transit Stops are not here. There is potential. There are no sidewalks, though there is room in the ROW. There is no vertical signage, nor bike markings on the road. The land use is residential. There are also horse farms. There is no bike parking. Driveways are few. There is no bike infrastructure.



2. Wire Rd.

The speed limit on Wire Rd. is 50 MPH. There are four lanes. The type of road is Off-road Bikepath (Paved) and Proposed. There are multiple Tiger Transit Stops. There are sidewalks on one side of the street with signs 'no motorized vehicles'. There is vertical bike signage, 'alert presence of bikes' and '3 feet'. There are bike markings on the road, indicating bike lanes (right lane bikes only). At intersections, there are 'right lane bike only' markings. The land use is mainly commercial, with some residential. Bike parking is non-existent. Driveways are few. This is a very good street for bikes.



3. Martin Luther King Dr.

This road type is Off-road Bikepath (Paved). This section is between Chadwick and Shug. The bike path starts at China Palace and ends at University Station. There is not a Tiger Transit stop on this road. The sidewalk is on one side of the road and discontinuous. There is vertical bike signage. There are bike markings on this road. There is no major intersection on this stretch. The land use is residential. There are many subdivisions and single family residences. There is no bike parking. The driveways are many to excessive at places. The off road bike path is excellent, but need to be continuous to campus. The speed limit is 45 MPH to 55 MPH.

4. Richland Rd.

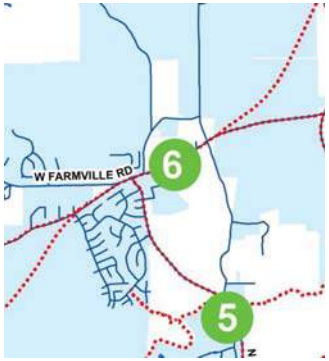
The speed limit is 35 here. According to the map, this road type is Concrete Multi-Use Path. No Tiger Transit stops are here. There are sidewalks on one side of the road. There is vertical signage. Bike lanes are on this road. Bike markings are not at intersections. The land use is institutional with some residential. There is no bike parking. There are few driveways. This street has many curves.

5. N. Donahue Dr.

The type of road is bike lane and off-road bike path (paved). There is no Tiger Transit stop. There are sidewalks but they are discontinuous. There is no vertical bike signage. There are bike markings on the road as one approaches the residential areas. There is no intersection design relevant to biking. The land use is residential. There is no bike parking. The driveways are many. This is a safe street for bike. Connectivity would encourage more bicycle use on this street.

6. W. Farmville Rd.

The speed limit on this street is 45 MPH. This is a 2 lane road. The type is Proposed Bike Path. There are no Tiger Transit Stops. There is no bike signage. On the road there are no bike signs. There are few intersections, but none with bike accommodations. The land use is Green Space. There is no bike partking. Few driveways are here. There is a church and a pond. The road is almost 100 percent rural.



7. N. College St.

This road type is Proposed. There are no Tiger Transit stops on this road. Sidewalks are on one side. There are no bike markings on the road. There is no intersection design relevant to biking. The road is two lane until HWY 280. The land use is residential and industrial. There is no bike parking. Driveways are many. The roadway is very narrow. There are curves and viewpoints that could be dangerous to bikers and drivers.

8. US HWY 280

The speed limit for this road is 65 MPH with 4 lanes. The type of road according to the map is Proposed. There is no Tiger Transit Stop. There is no sidewalk, because this is a major highway. There is no vertical bike signage, nor bike markings on the road. There is no intersection design relevant to biking. The land use is Other; there are a few gas stations. Few driveways are here. There is room in the ROW for bike infrastructure.

9. Shelton Mill Rd.

This type of road is Proposed. There are two lanes here. There is a Tiger Transit Stop. The sidewalk is on one side of the street. There is no vertical bike signage. There are no bike signs on the road. The intersection design is basic. The land use is residential. There is no bike parking on this street. The driveways are many. Visually, there are few cars, with a lack of pedestrians on the sidewalk.

10. E. University Dr.

This road type is bike lane (both sides). There is a Tiger Transit stop here. There are sidewalks one side of the road. At E. Glenn Ave, the bike lanes stop. There is no vertical bike signage. Besides the bike lanes, there are no further bike markings on the road. There are two major intersections on this road, at E. Glenn and at S. College. There is no bike parking. The driveways range from 'many' to 'excessive' at times. The speed limit varies from 35 MPH to 45 MPH (at Glenn Ave).

11. E. Glenn Ave

This is a four lane road. There is a park on this street. This road type is ‘Proposed’. There is a Tiger Transit Stop on this road. There are sidewalks on both sides. There is no vertical bike signage. There are no bike markings on the road. The land use is mixed. There is no bike parking. The driveways are excessive. Compared to Opelika road, there are more sidewalks.

12. Moores Mill Rd.

This road type is Proposed. There are no Tiger Transit Stops. There are mainly few sidewalks. It disappears at Believer's Church. By the Publix, the sidewalk is on two sides. There are no vertical bike signs, nor bike markings on the road. There is no intersection design relevant to biking. The land use is residential. There is no bike parking. The driveways are many. The speed limit is 45 MPH. There is one bridge with a sidewalk.

13. Society Hill Rd.

On this road there are Proposed bike infrastructure design. There is no Tiger Transit Stop. The sidewalks are none. There is no vertical bike signage. There are no bike markings on the road. The intersection design relevant to biking is none. The land use is residential and rural. There is no bike parking. The driveways are many. There is a bridge on this road and no shoulder. The speed limit is 45 MPH.

14. Lee Rd. 10/ Sandhill

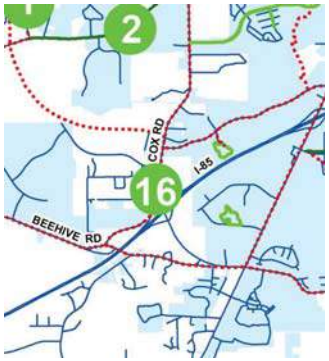
This road type is Proposed. A Tiger Transit stop location was not recognized. There are no sidewalks here. There is no vertical bike signage. There are no bike markings on the road. There is no intersection design relevant to bikes. The land use residential and rural. There is no bike parking. The driveways are many. There are bridges on this road and the speed limit is 45 MPH. There is no shoulder here.

15. N. Dean Rd.

The speed limit is 35 MPH. The type of road is ‘Proposed’. There are no Tiger Transit Stops. On one side, there is a sidewalk. Vertical bike signs are present. The intersections are regular and serve mainly automobiles. Here, it is mostly residential with a mix of other uses. There is no bike partking. There are many driveways. (On S. Dean, there are bike lanes on each side of the street.)

16. Cox Rd.

The speed limit for Cox Rd. is 40 MPH. The type of road is a Proposed Bike Path. Initially, Cox is a 4 lane, but becomes a 2 lane. There is no Tiger Transit Stop. There are no sidewalks; the ROW is for cars. There is no indicated Bike signage vertical. On the road, there are no bike markings. The conditions are dangerous for regular biking. There are no lights for driving assistance, and the terrain is hilly. The land use is residential. There are trailer parks. Initially, from the HWY exit is industry. There is no bike parking. This stretch is not designed for pedestrians. There are few driveways.



17. S. College St.

This road type is Proposed. There are no Tiger Transit stops. The sidewalk is present but discontinuous. There is vertical bike signage. There are no bike markings on the road, but crosswalks are present. The intersection design accommodates bikers. The land use is commercial. There is no bike parking. The driveways are few.

18. Shug Jordan Pkwy

This road type is Proposed. There are no Tiger Transit stops. There is a discontinuous network of sidewalks. There is vertical bike signage. There are bike markings on the road. The intersections are very wide, with four lanes and turn lanes. The land use is mixed. There is no bike parking. The driveways are few. Shug Jordan is a main roadway in Auburn with heavy traffic and high speed motor vehicles. The current design does not appear feasible for bicyclists.

19. Pumphrey Ave.

This type of road is Bike Lane, and they exist on both sides. There is one Tiger Transit stop. There is no vertical bike signage. The bike markings on the road exist. There is no intersection design relevant to biking. The land use industrial. There is no bike parking. The driveways are many. The speed limit is 40 MPH.

20. S. Donahue Dr.

According to the map, the street type is Bike Lane, Proposed, Off-road Bikepath (Paved), and Concrete Multi-use Path. There is a Tiger Transit Stop at the Southern Edge apartment. Side are sidewalks. As this street becomes residential, there are no sidewalks. There is no vertical bike signage. There is intersection design relevant to biking, with pedestrian crosswalks at each intersection. The land use is residential and institutional (apartments and neighborhoods, then Auburn University). There is bike parking on campus. The driveways are few, with a limited number to pose danger to bicyclists.

21. N. Gay St.

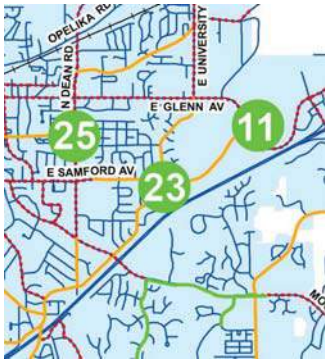
This street type is Proposed. There is no Tiger Transit Stop. There are sidewalks with connectivity. There is no vertical bike signage. On the road, there are no bike markings. There is intersection design relevant to biking; each intersection is designed with accommodations for bicyclists and pedestrians. There is mixed-use development, with commercial and institutional. There is no bike parking. The driveways are few. With the current street design, on-street parking eliminates space in the ROW for bike lanes.

22. Opelika Rd.

This is a two lane road with boulevard and turning lane. According to the map, there is no planned bike infrastructure. The sidewalks are large. There is a Tiger Transit Stop on this street. The sidewalk is discontinuous. There is no vertical bike signage. There are no bike markings on the road. At the intersection, there is a crosswalk. The land use has residential, but is mostly a mixture. There is no bike parking. The driveways are excessive. Visually, there were people biking on the road and the sidewalk.

23. E. Samford Ave.

This is a 2 lane road. The street type is Bike Lane with a Proposed Bike Path. There is no Tiger Transit Stop. On one side there is a sidewalk (at times, there are two). There is no vertical bike signage. On the road, there are bike markings. The intersection design is regular, built for automobiles. There is a mixture of land uses here. There is bike parking at Auburn Junior High. There are many driveways. This is a safe street for bikes. The bike lanes do not go all the way to the Junior High. The speed limit is 30 MPH.



24. S. Gay St.

This is a Bike Lane road type. There are no Tiger Transit Stops. Vertical Bike signs are not here. There are no bike markings on the road. The intersection design is regular. The land use is mostly residential, with mixtures. There are few driveways. There are two bike lanes on most of the road. On this road is not much traffic and the bike lanes end before E. Samford.