

# **Tiger Transit Bus Stops' Impact on Traffic & Pedestrian Safety in Auburn**

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## **Research Summary**

Starting informally at the end of the 2012 AU Spring semester and through Summer terms, multiple qualitative research methods were employed for the first-ever analysis of rider, pedestrian and traffic impacts from the placement of bus stops for the Tiger Transit system. From this assessment of the bus stop placements – based on student perceptions, pedestrian traffic patterns, street crossings safety issues and bus activity – concludes that while many bus stop locations were considered acceptable, a significant number of them are recommended for elimination as being unnecessary and/or unsafe, and several others are recommended to be relocated to enhance traffic and pedestrian safety. A few other stops were noted as a least objectionable alternative if it is desire to serve a particular destination, though that service desire needs administrative review. A general guideline is made for the placement of bus stops that guided these recommendations, a guideline that also should be used as the basis for future bus stop locations as service is expanded or adjusted in future years in service to student housing patterns. In addition, some suggestions are made on other factors of campus pedestrian and motor traffic safety that were revealed in the course of this study.

## Background

Two basic observations presented themselves at the start of this project. First, while there does exist fairly detailed guidelines for placement of bus stops, they are lengthy, complicated and filled with unexplained exceptions and seeming contradictions. Yet, driving through areas serviced by Tiger Transit, the guidelines seem irrelevant to actual placement of the stops. The bus stop locations all appear to have been selected to be in proximity to where the largest number of possible passengers would exit or enter buildings or other destinations, resulting in several patently obvious safety hazards. Second, while Tiger Transit web pages' safety guidelines state that "After exiting the bus, use caution and allow the bus to pull away before you cross the street," this is not what passengers actually do. Despite on-board signs behind drivers for passengers to use crosswalks, drivers are known to encourage passengers to cross the street in front of the bus with assurances the driver will wait, regardless of crosswalk locations. From the project director's past research of mass communications and traffic safety, the signs are probably irrelevant anyway. People cross where they feel like it.



In addition, motorist inclinations are also important. It should be intuitively obvious that excessive traffic-blocking bus stops creates driver frustration. For the young motorists (or even some older ones) who possess the patience of toddlers, this frustration engenders future unsafe actions as they attempt to make up for their perceived "lost time" behind the bus. Bus stop locations should also take into account how motorists perceive or overlook pedestrians in the vicinity of a stopped bus. While the decisions to reduce the quantity bus stops or alter their placement must be mindful of not wanting to discourage bus ridership – reduced ridership could result in increased efforts to drive to campus or drop friends off on the central campus where student vehicles are not supposed to enter – the actual customer-rider inclinations haven't been studied before now.

This study began from some casual observations of bus stop locations that appeared unnecessary as well as encouraging unsafe pedestrian behavior. These observations eventually lead to the elimination of bus stops on Magnolia Ave. along the west side of central campus other than those located at spots where the bus is able to pull off the roadway.

## **Research Methods**

Multiple qualitative methods common for marketing research were employed to assess bus service, automobile traffic, pedestrian patterns and bus usage.

- 1) Extensive observations of passengers and other pedestrians in and around the vicinity of campus
- 2) Observation of bus routes and passengers from following buses by car and riding many routes as a passenger
- 3) Three focus groups with current undergraduates
- 4) Depth interviews with bus drivers
- 5) Depth interviews with passengers
- 6) Interview with a Tiger Transit employee (one of five), who ride segways to keep cars out of bus pull off areas around campus

## **Research Limitations**

Preliminary exploratory observations were during the final weeks of spring semester, but primary time for the study was during the ten week Summer terms, with about 40 percent of the total student enrollment during the regular academic periods (a total of 10,280 students). Only two undergraduate residence halls (Broun Hall and Talon Hall) have any occupants during this period, fewer faculty are employed, with those that work are mostly part time, all resulting in much lower traffic of all types on campus and in the surrounding areas. In addition, major construction projects at several points of campus have blocked streets, rerouted buses and redirected campus activities. Haley West route is not operating this summer and some buses have had to make detours. However, while the general traffic is reduced in quantity, the ongoing presumption is that the general substance and style of that traffic would be consistent with the more crowded semester.

Some of the photographic examples presented in this report are recreations of past observations, parking the researchers' vehicles in legal commonly filled spaces or by one of us walking in the street to best frame the picture. In all cases, these are replications of common normal situations. Nothing herein is presented in an exaggerated or unusual context.

## Results & Recommendations

The source of bus stop identification numbers in the following lists are based on labels and numbers used by the Tiger Transit company, as found at their web site for the bus routes.

### **General finding: recommended guideline for bus stop placement**

The existing guidelines start with a direction that creates an unsafe hazard for pedestrians, that “bus stops should be located on the far side of crosswalks.” The rest of the listed directions appear confusing, illogical and unduly complex. And as noted at the start of this report, they do not appear to have guided many existing stop placements.

Based on the research, all bus stops should be at points where buses could have natural cause to stop moving: the points just *before* traffic lights, stop signs, intersections and crosswalks (see appendix A). If possible, buses should be able to pull off the road. Exceptions to this should be made on a case-by-case basis and only when it is the safest possible location to serve an important passenger need, taking care to never interfere with bicycle lanes, handicap access, and to not require passengers to go around legally parked cars.

### **Bus stops that appear acceptable**

The free parking areas at the museum (200) and post office (114) have been serving as a *de facto* park and ride locations for some student passengers. This may be a concern for the museum and post office since they take up free parking spaces for patrons. The North Donahue line re-directs stops at the top of each hour. These in-bound stops are labeled with ‘IB’ and served in this order: 314, 313, 312, 311, 310. During each hour the bus serves the out-bound ‘OB’ stops in this order: 129, 134, 293, 308, 280.

- |   |  |
|---|--|
| 101. Three-D Arts Center<br>(AKA. Facilities Division)    | 116. The Hotel at Auburn University                        |
| 104. Armstrong Court                                      | 117. Avalon Park   |
| 105. Arrowhead  | 118. B-Zone Parking Lot on N Gay St.                       |
| 108. Auburn Impound Lot                                   | 119. Barron Trailer Park                                   |
| 110. AU Medical Clinic                                    | 122. West Parking Lot (AKA. Auburn<br>Band Practice Field) |
| 111. City of Auburn (AKA. AU Tennis<br>Training Facility) | 123. West Magnolia at Beech                                |
| 113. The Veranda at Auburn                                | 124. Beech at West Thach<br>(AKA. West Parking Lot)        |
| 114. Auburn Post Office                                   | 125. Bellwood  |
| 115. Legacy at Auburn                                     | 128. Biggin Hall<br>(AKA. Ramsay Hall/Harbart Hall)        |

### **Bus stops that appear acceptable (continued)**

129. Brookside Apartments (AKA. The View) - OB
130. Burton House (AKA. Plainsman Apartments)
132. Carolyn Draughn Village Extension
134. Village North - OB
135. College Mobile Home Park (inconsistencies online)
138. Conway Acres
139. Conway Acres Old Park
140. Creekside
141. Creekside
142. Creekside
147. Harper Ave at Cook St. (AKA. Deerfield Condominiums) (inconsistencies online)
148. Deerwood Apartments
149. Delta Chi House
150. Donahue Crossing
151. Donahue Crossing
152. Donahue Crossing
153. Longleaf Crossing
155. Dudley Crum Apartments (AKA. Regency Square Apartments)
157. East Drake Ave at North Ross Street
161. Eagles Landing
167. AU Alumni Center (AKA. Fiji House)
173. Forestry and Wildlife Sciences
175. The Garden District
176. Gazebo Apartments
177. Gentilly #2
178. Gentilly Park
179. Gentilly Station
180. Goodwin Music Hall (AKA. Telfair B. Peet Theatre)
181. Greene Hall
182. Haley Center (AKA. Auburn Student Center)
185. Harmon Duplexes
187. Harmon Duplexes
189. Harmon Duplexes
192. Harper Ave at Summer Hill Rd.
193. Hearthstone
195. South Quad Deck (AKA. AU Parking Services/OIT Building)
199. Intramural Field
200. Jule Collins Smith Art Museum
206. Lakewood Commons
207. Lakewood Commons
215. Leischuck Hall (AKA. Dunn Hall)
216. Logan Square Apartments #1 (AKA. The Grove)
217. Logan Square Apartments #2
218. Lowder Business Building (AKA. Shelby Center for Engineering Technology, Cary Hall)
219. Lowder & Shelby (AKA. 317) (inconsistencies online)
220. Lowder Business Building (AKA. Cary Hall, Wallace Building, Nichols Center, Max Morris Parking Lot, The Village West View Dining )
221. Madison Park
224. Martin Avenue at Center Place
225. Martin Avenue at Gay Street
226. Mary Lane at Harris Avenue
228. McWhorter Women's Athletic Complex (AKA. Softball Complex)
232. Mell Street at West Samford Ave (AKA. Miller Gorrie Center-Building Science, Fisheries & Life Sciences)
233. Mell Street Station
235. Moore's Mill Rd. at Samford Ave
236. East University Dr. at Dean Rd.
239. Gay St. at East Drake Ave
240. North Ross St. at Martin Ave
241. North Ross Street at Mary Lane
246. NorthPointe
248. NorthPointe
249. NorthPointe
253. Peachtree (AKA. University Apartments/Tiger Suites)
259. The Edge (AKA. Auburn Research Park Building 1)
260. Ridgewood Village
263. Donahue Dr. at Woodfield Dr.
266. Saddlebrook

### **Bus stops that appear acceptable (continued)**

- 273. Southern Edge
- 276. Eagles West (AKA. Stadium Edge)
- 278. Savannah Square (AKA. Williamsburg Place)
- 280. Summer Wind (AKA. Habitat) - OB
- 281. Terrell Dining Hall
- 283. The Brookes
- 288. The Exchange
- 290. The Reserve on South College Street
- 291. The Village (AKA. Max Morris Parking Lot)
- 292. The Villas at Longleaf
- 293. Tiger Inn Apartments - OB
- 294. Two21 Armstrong
- 295. University Heights
- 296. University Village
- 297. University Village
- 299. Village West Apartments
- 300. Hemlock at West Magnolia Ave (AKA. The Grove)
- 302. Webster Crossing #1
- 303. Webster Crossing #2
- 308. Woodland Hills Apartments - OB
- 309. Surplus Property (AKA. Auburn Water Works Board)
- 310. Brookside Apartments (AKA. The View) - IB
- 311. Village North - IB
- 312. Tiger Inn Apartments - IB
- 313. Woodland Hills Apartments - IB
- 314. Summer Wind (AKA. Habitat) - IB
- 315. Longleaf Dr. at South Donahue Dr.
- 318. Gentry at Drew Lane
- 535. Auburn Medical Park

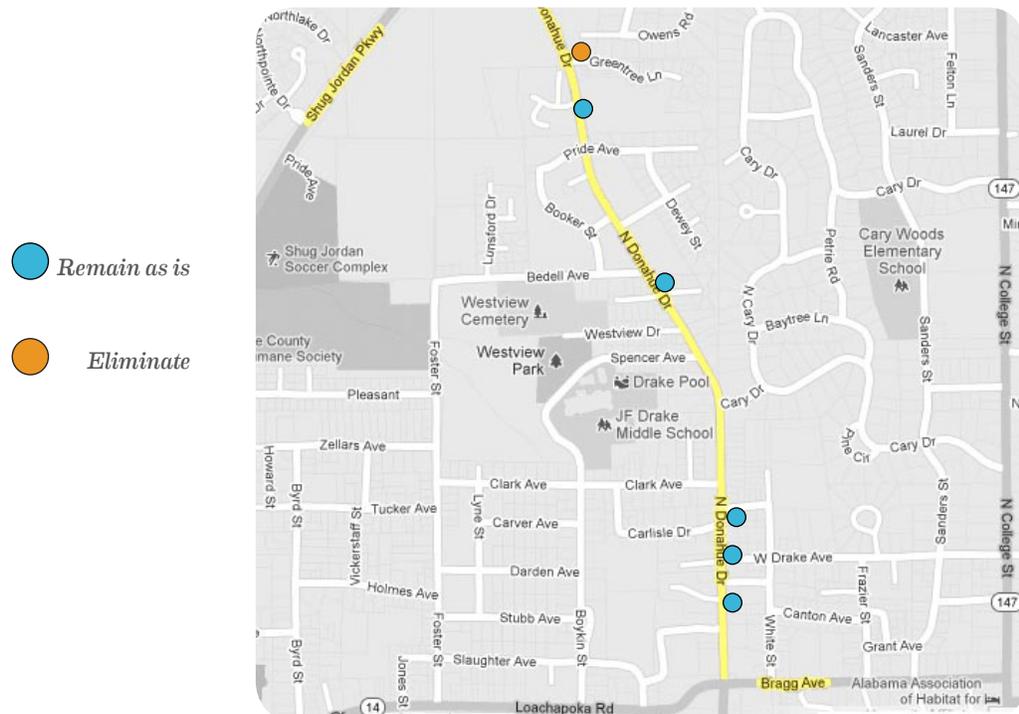
## Bus stops that appear acceptable with an explanation

There are some stops that do not readily fit into the aforementioned placement rules, but do seem acceptable and safe in their context and use.

- 129. Brookside Apartments (AKA. The View) - OB
- 134. Village North - OB
- 293. Tiger Inn Apartments - OB
- 308. Woodland Hills Apartments - OB
- 280. Summer Wind (AKA. Habitat) - OB
- 310. Brookside Apartments (AKA. The View) - IB
- 311. Village North - IB
- 312. Tiger Inn Apartments - IB
- 313. Woodland Hills Apartments - IB
- 314. Summer Wind (AKA. Habitat) - IB

[ 238. North Donahue Dr., at Greentree Ln. while in this general collection, the recommendation is that it be eliminated. (See later section) ]

Almost all of the bus stops on North Donahue between Martin Luther King Drive/ Bragg Avenue and Shug Jordan Parkway are at car entry of six apartment complexes. However, since there are few continuous sidewalks on this stretch of road, to reduce the number of stops or move them elsewhere would require the passengers to walk in the roadway. Each stop seems to get heavy traffic, the stops do not require the typical passenger to cross the street in an unsafe fashion, and traffic is not unduly blocked.

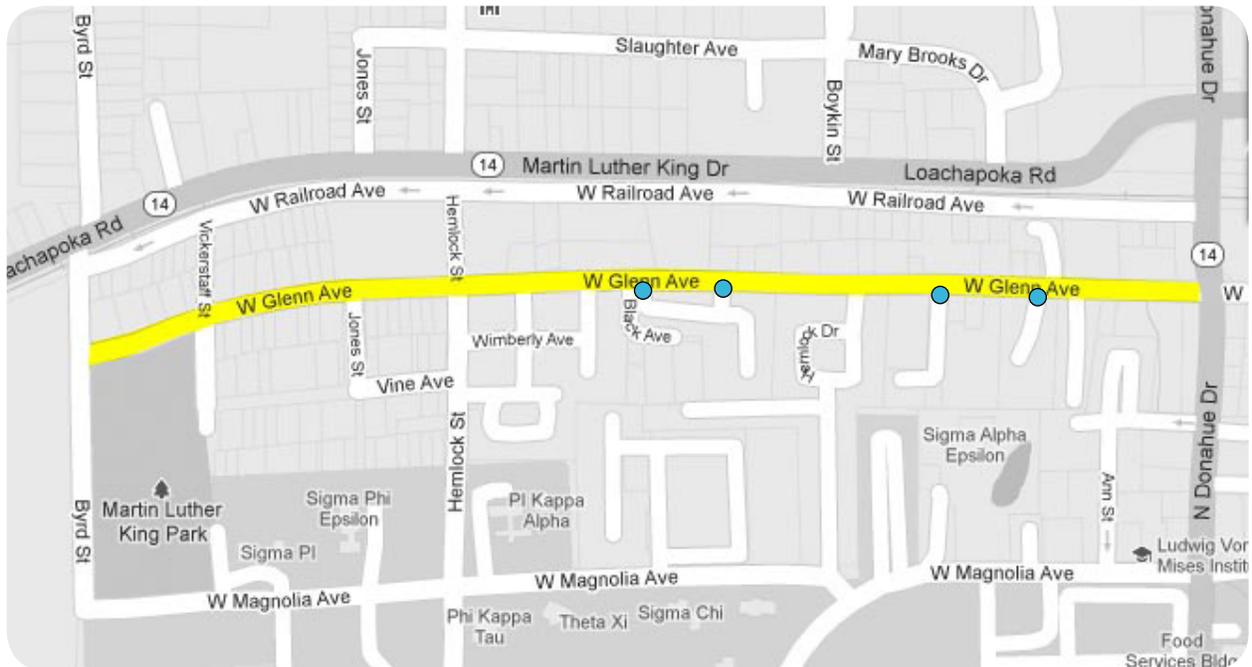


## Bus stops that appear acceptable with an explanation (continued)

- 216. Logan Square Apartments #1  
(AKA. The Grove)
- 217. Logan Square Apartments #2
- 253. Peachtree (AKA. University  
Apartments/Tiger Suites)
- 276. Eagles West (AKA. Stadium Edge)

On the West Campus route, the bus stops on West Glenn Ave. between Byrd and Donahue are numerous and at car entry of four apartment complexes. However, since there are no sidewalks on this stretch of road, to reduce the number of stops or move them elsewhere would require the passengers to walk in the roadway. Each stop seems to get heavy traffic, the stops do not require the typical passenger to cross the street in an unsafe fashion, and traffic is not unduly blocked.

 *Remain as is*

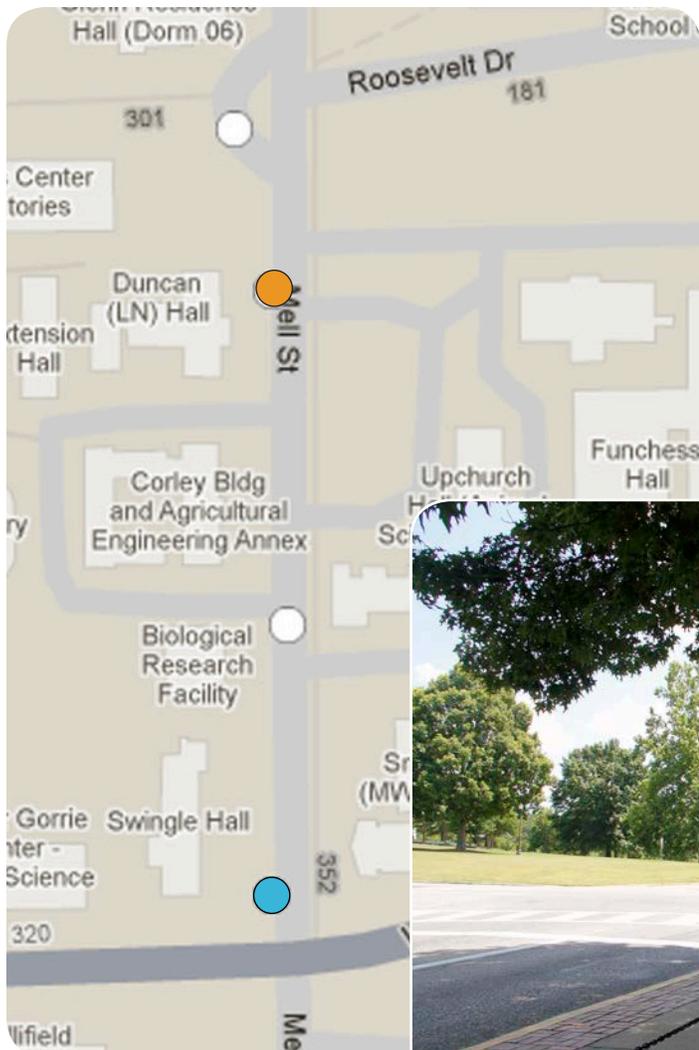


## Bus stops to be eliminated

There are some stops that must be removed in order to protect the safety of passengers and people in the vicinity of the stop. In most cases, the passengers are adequately served by existing nearby stops.

102. Ag Hill (AKA. Corley Hall, Duncan Hall, Upchurch Hall)

Only one stop is necessary along Mell Street between the Mell Street Station and the intersection of Mell and Samford. Stop 232, at the stop sign of Mell and Samford intersection, can serve as a safer location for passengers to load and unload. This stop is in the middle of the street, cuts across a bike path, and encourages unsafe crossing behavior by passengers.



 Remain as is

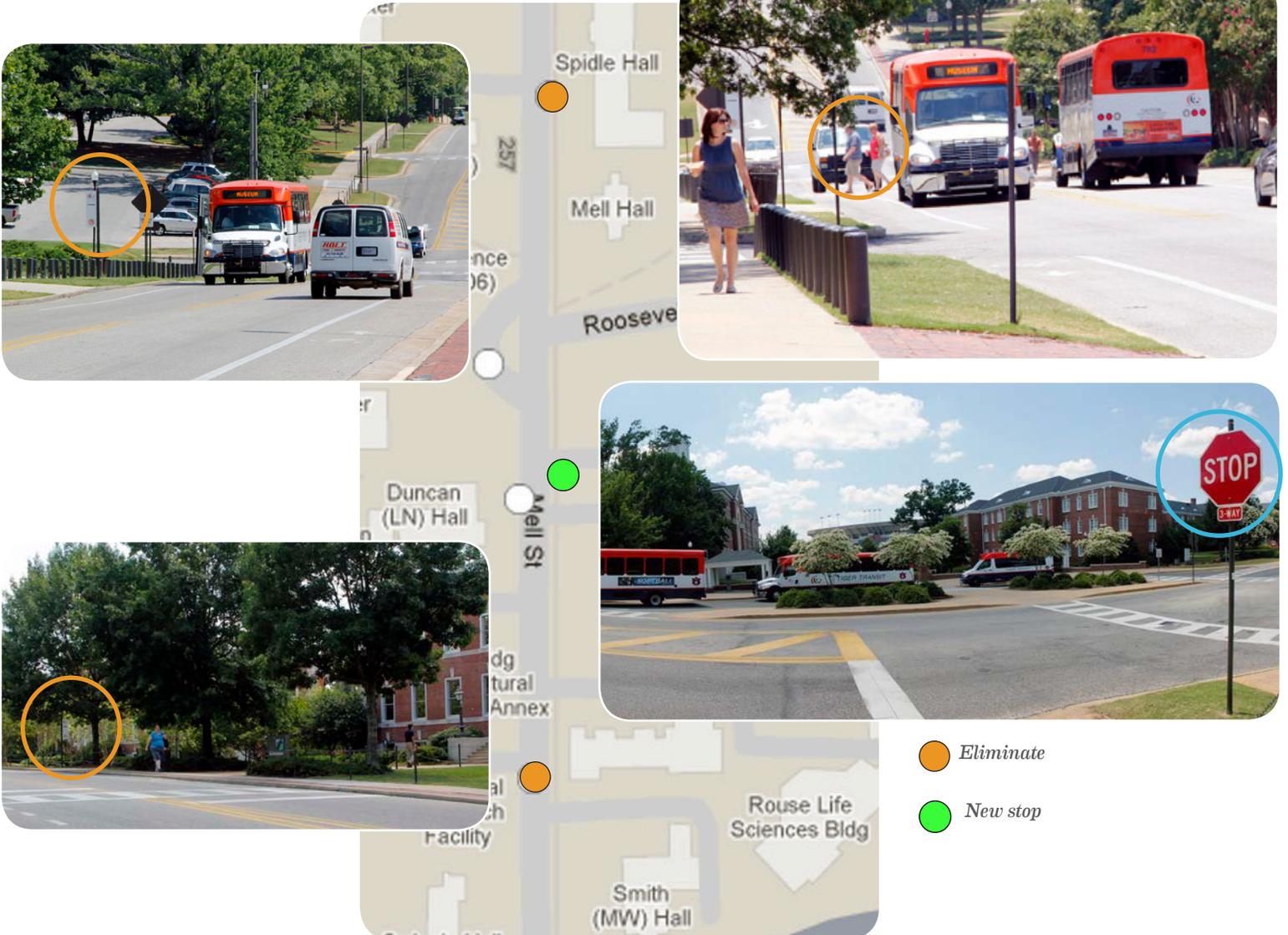
 Eliminate

## Bus stops to be eliminated (continued)

103. Upchurch Hall  
(AKA. Ag Hill)

274. Spidle Hall  
(AKA. Quad Center)

The only safe stops on Mell Street are at stop signs and in the Mell Street Station. Stop 103 and 274 are only used by the Museum Line. This route is north bound on Mell Street, so pulling into the Mell Street Station is not an option. The stop sign between 103 and 274 can serve passengers from both stops safely. In addition, some of the Spidle Hall passengers could use the other stop that will be recommended to move to the north end of Mell Street (see later section of this report on stop 256 RBD Library).



## Bus stops to be eliminated (continued)

### 106. Auburn Federal Credit Union

There are no crosswalks or sidewalks at this location. Faculty would be the only one using this stop if they have an account at the Auburn Federal Credit Union. This bus pulls off into the right turn lane in front of the Auburn Federal Credit Union off University. This stop has become a *de facto* park and ride site.

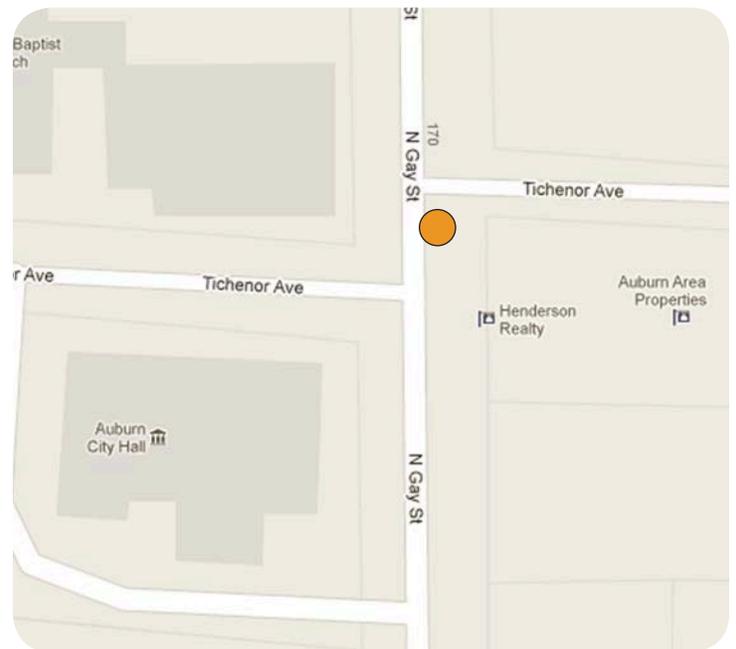
 Eliminate



## Bus stops to be eliminated (continued)

### 112. Auburn City Hall (AKA. HRD Training Facility)

The Auburn City Hall and HRD Training Facility stop located along North Gay Street rarely has any passengers. A bus stop area has been painted on the street, but it is not an effective pull-off location. Due to the light frequency of use and high traffic area along the corner of Gay Street and Glenn, it is recommended that this stop be eliminated.



 *Eliminate*



## Bus stops to be eliminated (continued)

127. Biggin Hall (AKA. Ramsay Hall,  
Textile Engineering Building)

Magnolia Avenue is a high traffic area with several crosswalks that can not afford an additional source of excessive stops that block traffic. In addition, there are many hazards built into the road itself. As one bus driver mentioned, “There are tons of blindspots on this road, especially between crosswalks.” This bus stop location blocks the entrance to a handicap pull-off and the bus blocks the crosswalk if the driver does not pull up far enough. The passengers that currently use this stop would be adequately served by stop 218 (Lowder Business Building, Shelby Center for Engineering Technology, Cary Hall) pull-in on Magnolia Avenue.



*Handicap pull-off area  
and trees that create  
blindspots*



*View from crosswalk*



## Bus stops to be eliminated (continued)

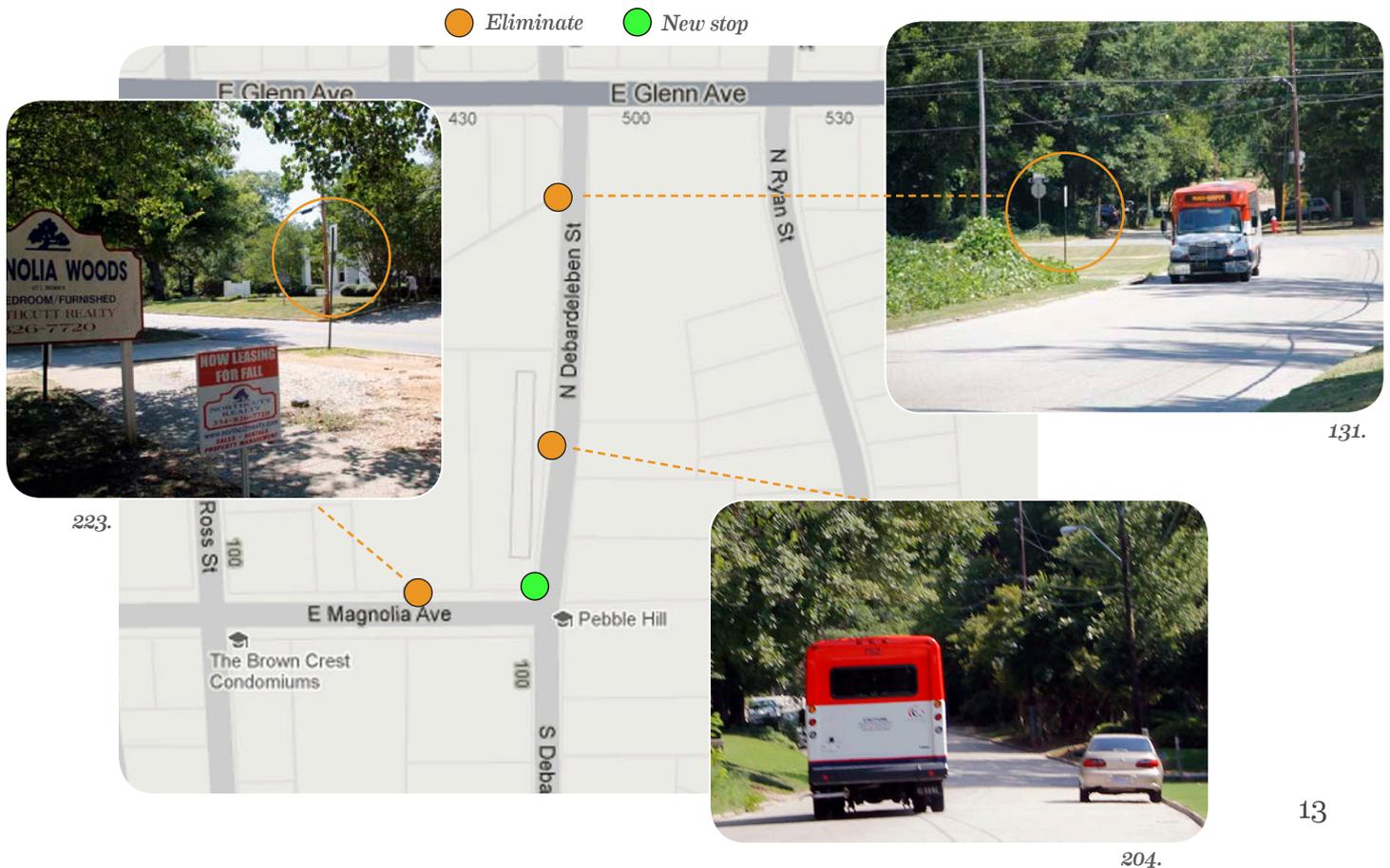
### 131. Cabana Apartments

The first stop on Debardeleben Street is not safe. The street area by the transit sign is a legal parking zone. This zone leads to problems when cars are parked directly in front of the sign and the bus must swerve around cars to pick passengers up. In addition, the only safe place for passengers to stand and wait for the bus is on top of the concrete cover for the sewer entrance at the edge of an undeveloped lot.

### 204. Kingsport Apartments

### 223. Magnolia Woods Apartments (AKA. Draughon Center for Arts & Humanities, Greystone Mansion)

Debardeleben Street poses many threats to current transit stops, parked cars and oncoming traffic. The two stops located directly on Debardeleben, Cabana and Kingsport Apartments, are all adequately served by the safer location which can be done by having a new stop at the stop sign at the intersection of Debardeleben and Magnolia. Magnolia Woods Apartments, Draughon Center for Arts and Humanities and Greystone Mansion could then be combined with the Debardeleben stops at the same intersection. (Illustrations and evidence of this problem are below and continue on the next page.)



## Bus stops to be eliminated (continued)

131. Cabana Apartments (continued from page 13)

204. Kingsport Apartments (continued from page 13)

223. Magnolia Woods Apartments (continued from page 13)



1. Bus pulling into stop
2. Bus pulling around car
3. Bus stopping for passengers
4. Bus swerving to other side of the road to make right turn
5. Hazardous close turn



## Bus stops to be eliminated (continued)

136. Village Mall

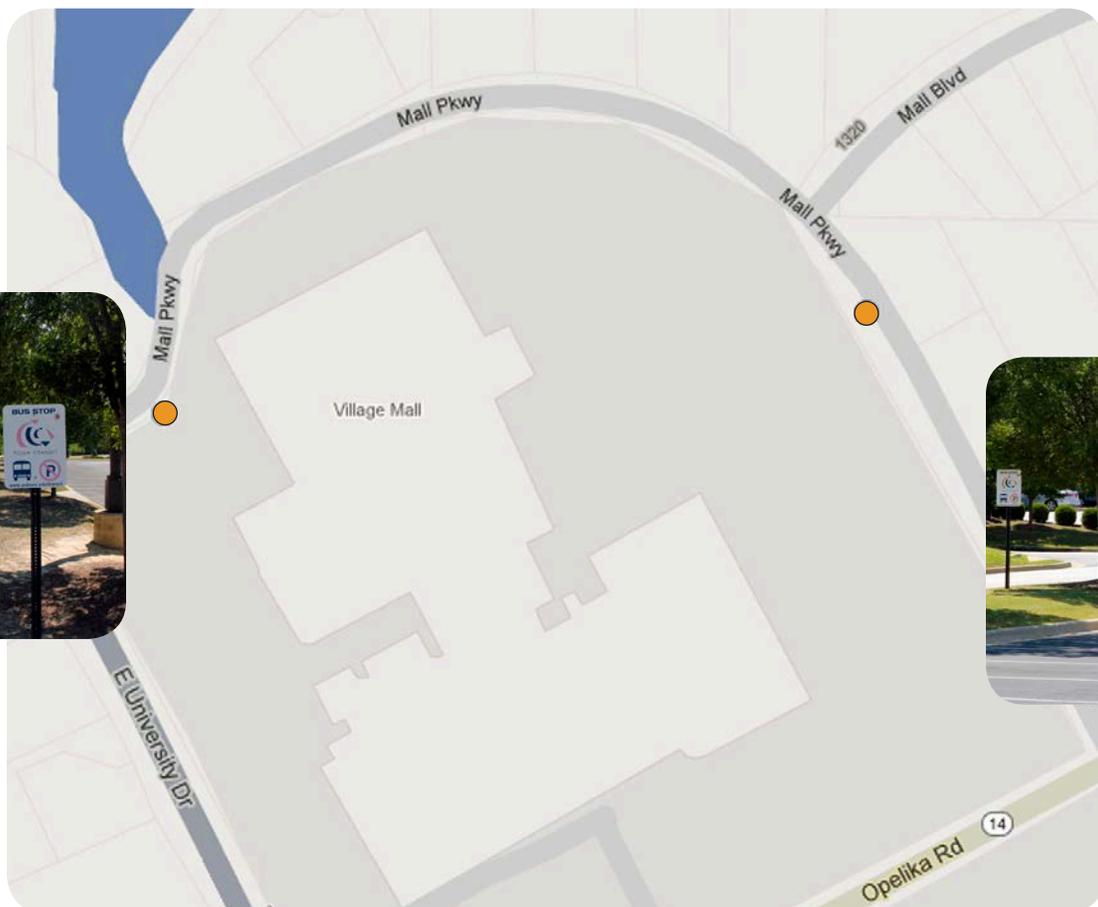
137. Lee County Courthouse Annex

The stops on the Mall Parkway are unsafe. This stretch of road has high traffic, a popular local route for motorists that are bypassing University Drive and Opelika Road traffic, such that they are likely to pass the transit out of frustration (see picture below). There are not safe places for passengers to wait for the bus other than standing in the roadway or in the grass of the very narrow barrier between the parking lot and the street. If passengers for stop 137 are expected to go the Courthouse Annex, they would be crossing in the middle of a busy street, away from any sidewalks, traffic lights or crosswalks. If any transit location is placed at the mall it must be in the mall parking lot such as at the doorway for a mall entrance. According to passengers and observations, these stops also have served as a limited *de facto* park and ride location for some students, though these same past passengers report using it rarely due to concerns for the unsafe bus stop location. (Illustrations and evidence of this problem are below and continue on the next page.)

 *Eliminate*



136.



137.

**Bus stops to be eliminated (continued)**

136. Village Mall (continued from page 15)

137. Lee County Courthouse Annex (continued from page 15)



136.



136.



137.



137.

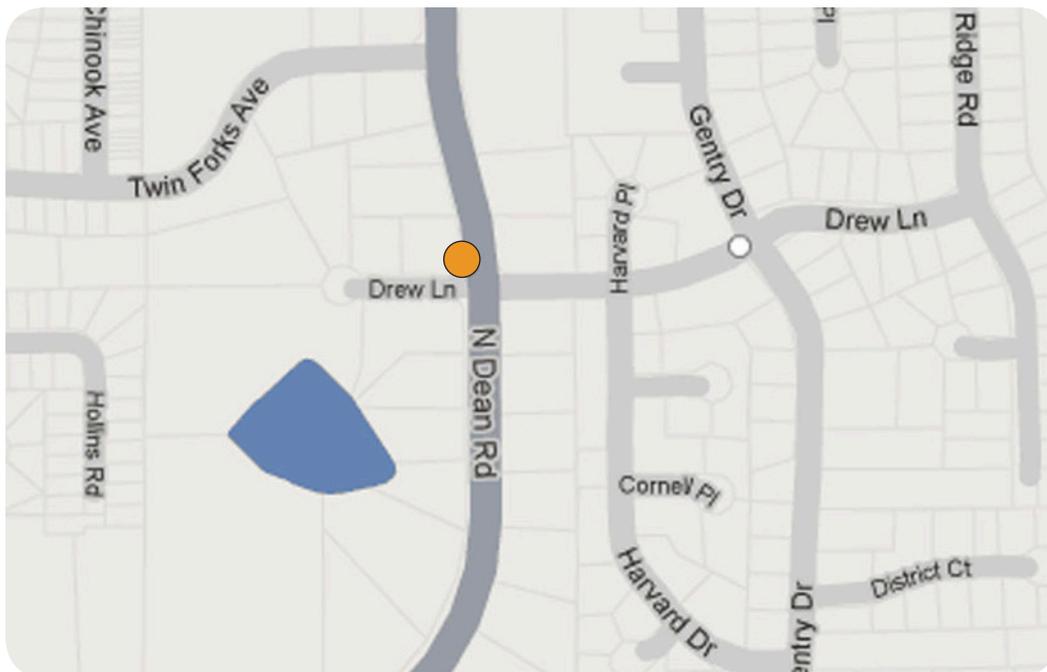
### Bus stops to be eliminated (continued)

154. Drew Lane at North Dean Road

This is an unnecessary stop located outside a pediatric dentist office. The stop is in the middle of the road, away from any crosswalks or safe areas. It should also be noted that this stop does not appear to serve any passenger need from students or faculty, since there do not appear to be any passenger sources or destinations nearby.



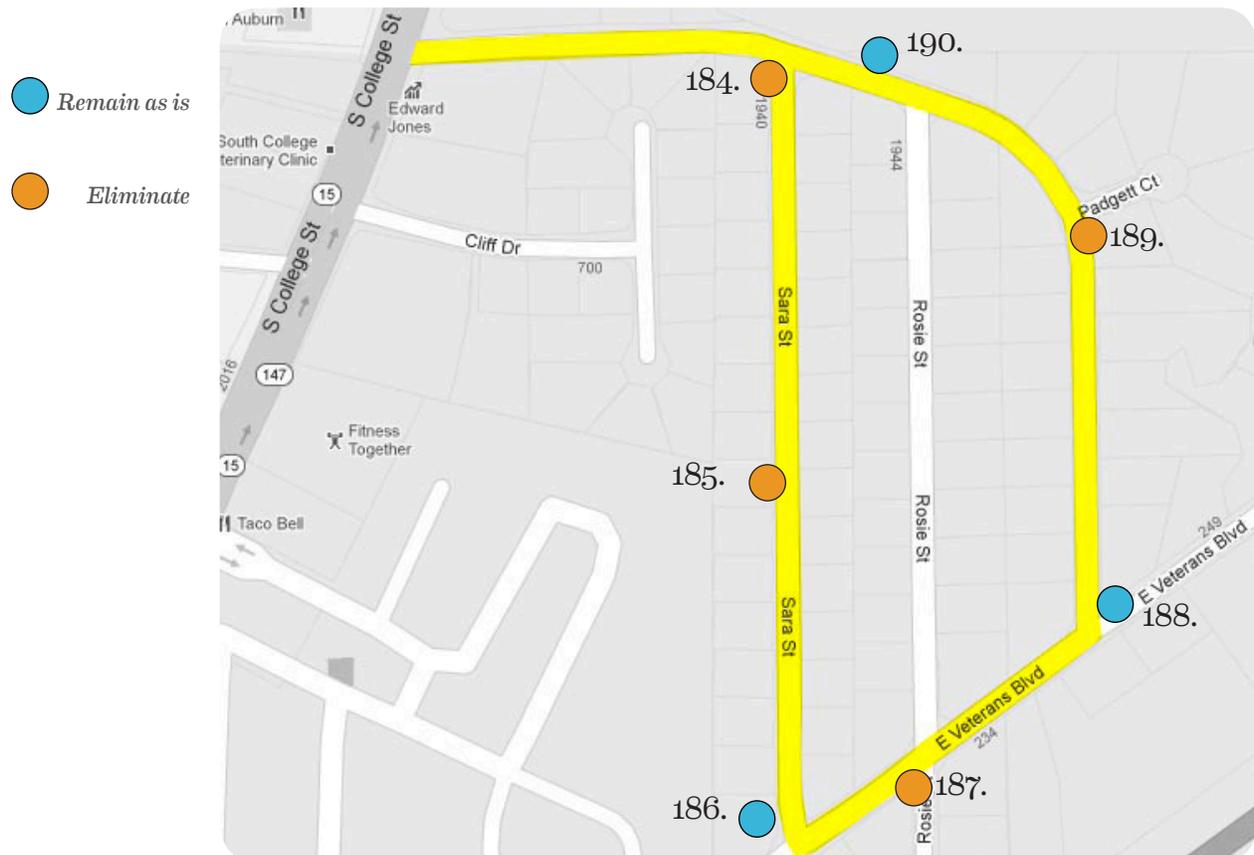
 Eliminate



### Bus stops to be eliminated (continued)

- 184. Harmon Duplexes  
(Harmon & Sara)
- 185. Harmon Duplexes  
(Sign can not be found)
- 187. Harmon Duplexes  
(Rosie & Veterans)
- 189. Harmon Duplexes  
(Harmon & Padgett)

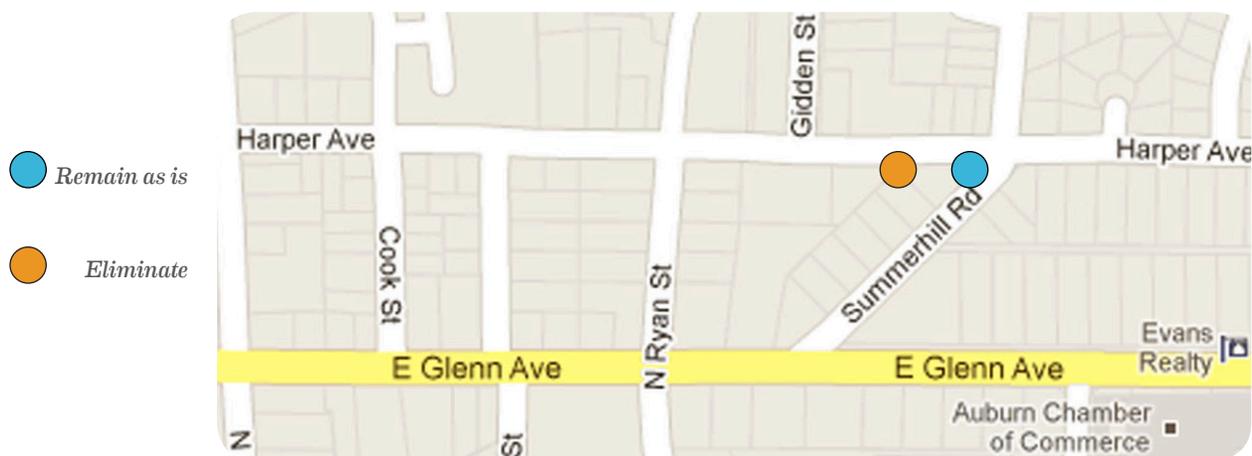
The Harmon duplexes have too many stops for few transit riders. The first stop, 184, is in close proximity of stop 190 and 185. Even though stop 185 transit sign is no where to be seen, the 184 and 185 stops can be served by stops 190 and 186. Stop 187, at the corner of Rosie and Veterans, is less than ten feet from stop 186, at Veterans and Sara, and it is located in the middle of the road. Stop 188, at the corner of Veterans and Harmon, is an exception because it is located in the center of the duplexes on a grassy area for passengers to load and unload. The corner of Harmon and Padgett, stop 189, is less than thirty feet from stop 188 and stop 190 and it is located on a hill which can cause blindspots. Stop 190 has an overhang and a basketball court for the waiting passengers' relative comfort and safety.



## Bus stops to be eliminated (continued)

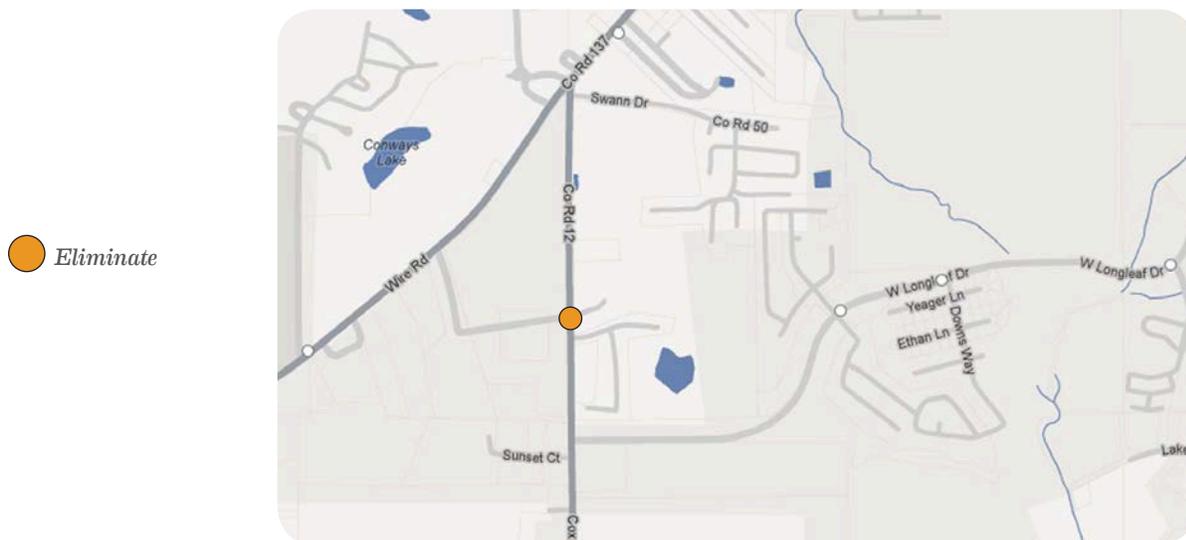
### 194. Highland Condominiums

The Highland Condominiums stop is too close to the 192 Harper Avenue at Summer Hill Road stop. This stop also has a low passenger frequency. This absence of passenger demand is even noted by the drivers, such as the one who pointed out for emphasis, “This stop hardly ever has someone get on or off. This stop really isn’t used and I sometimes drive past it because no one is ever waiting there.” Time would be saved if this stop were marked off the route. Any possible passengers for this stop are better served by the safer alternative located at the corner stop sign, Harper Avenue at Summer Hill Road stop.



### Swann’s Trailer Park II (TBD)

The Swann Trailer Park II stop is not used. One passenger stated, “I have never seen anyone get on or off at this stop, and I’ve been riding this route for two years.” There is one trailer home located across the street from the stop. There are no crosswalks and the stop sits right below a hill, which creates a blind spot for drivers.



## Bus stops to be eliminated (continued)

### 198. Hyatt House

There is no safe place to put a bus stop to serve Hyatt House on Gay Street between Mitcham Ave. and Opelika Rd. By watching the traffic patterns and pedestrian areas around the bus, it was noted that the cars are closely following the transit down the street and after turning in from the intersection of North Gay Street and Mitcham Avenue. Stopping at the apartment building creates problems for the intersection (two banks on the left hand side also create traffic) while the railroad crossing also creates an additional pedestrian safety issue, as well as a hazard for the bus drivers. As one driver puts it, "I look and listen for a train and then stop at the intersection or I might have to run a red light because the bus is too long and would get hit if a train passed by." If the city constructs a sidewalk across the train tracks, then the northbound bus could stop just South of the tracks, which is where the bus also has to stop for the traffic light, before the train tracks. Buses can not stop at the light because the bus is too long to fit between the stop line for the light and the safety point after the tracks and could get hit by a passing train. Because of the traffic patterns on Gay and Mitcham, there is no safe place for a bus to stop on this short stretch of road between the tracks and Opelika Road.



*The railroad tracks prove to be an obstacle for the bus*



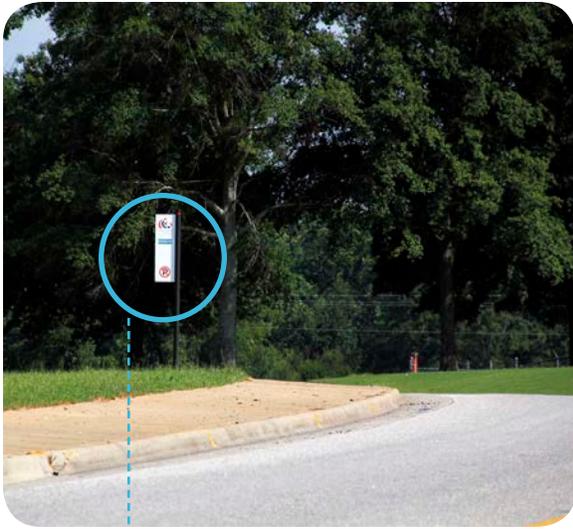
*Traffic can easily get backed up (from L-R)*



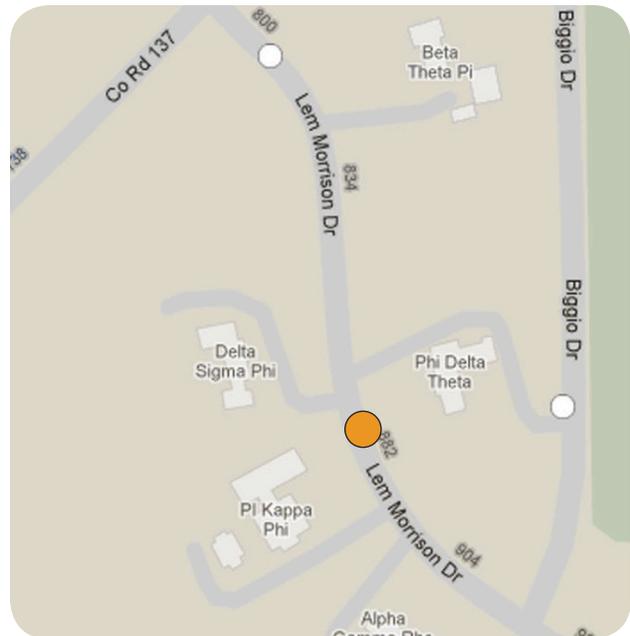
## Bus stops to be eliminated (continued)

### 209. Lem Morrison at Biggio Drive

This is an unsafe stop that has high usage among students living in the fraternity houses. It is located in the middle of Lem Morrison and does not have any crosswalks near it. The eliminated stop could be served by either the intramural field stop 199 or the Lem Morrison at Wire Road stop 213, after it moves to the light at the intersection (see later discussion on moved stops).



*Although there are sidewalks, there are no nearby crosswalks for passengers to safely cross the street*



● Eliminate



## Bus stops to be eliminated (continued)

### 237. AMF Bowl

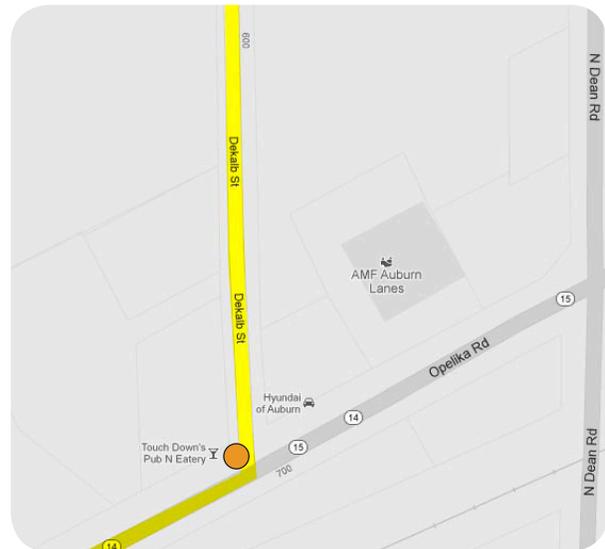
There is no safe way to cross at the intersection of Dekalb and Opelika. A large embankment blocks people from walking uphill to the AMF Bowl. The lack of crosswalks and sidewalks at the AMF Bowl stop is pictured below. In one focus group someone mentioned they only saw “non-students get on at the corner and they obviously worked at Chick-fil-a,” it was also noted that this stop could be a *de facto* park and ride, but not a very safe one.



View of the stop from the top of the hill where AMF Bowl is located



Intersection, no crosswalks, no sidewalks



Eliminate



Large embankment

De facto park and ride lot

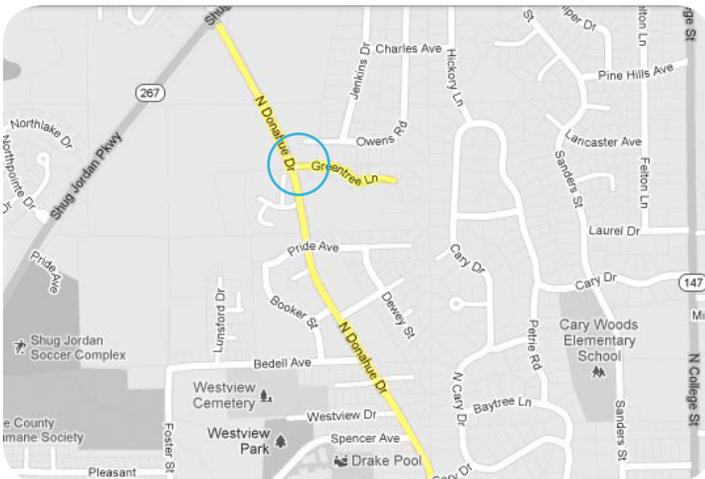
## Bus stops to be eliminated (continued)

238. North Donahue Drive at Greentree Lane

The transit blocks the last stop on North Donahue. This North Donahue Dr. at Greentree Ln. stop prevents other cars from turning into the complex on Greentree Ln. This stop can be served by the Summer Wind (AKA. Habitat) 280/314 stop.



 Eliminate

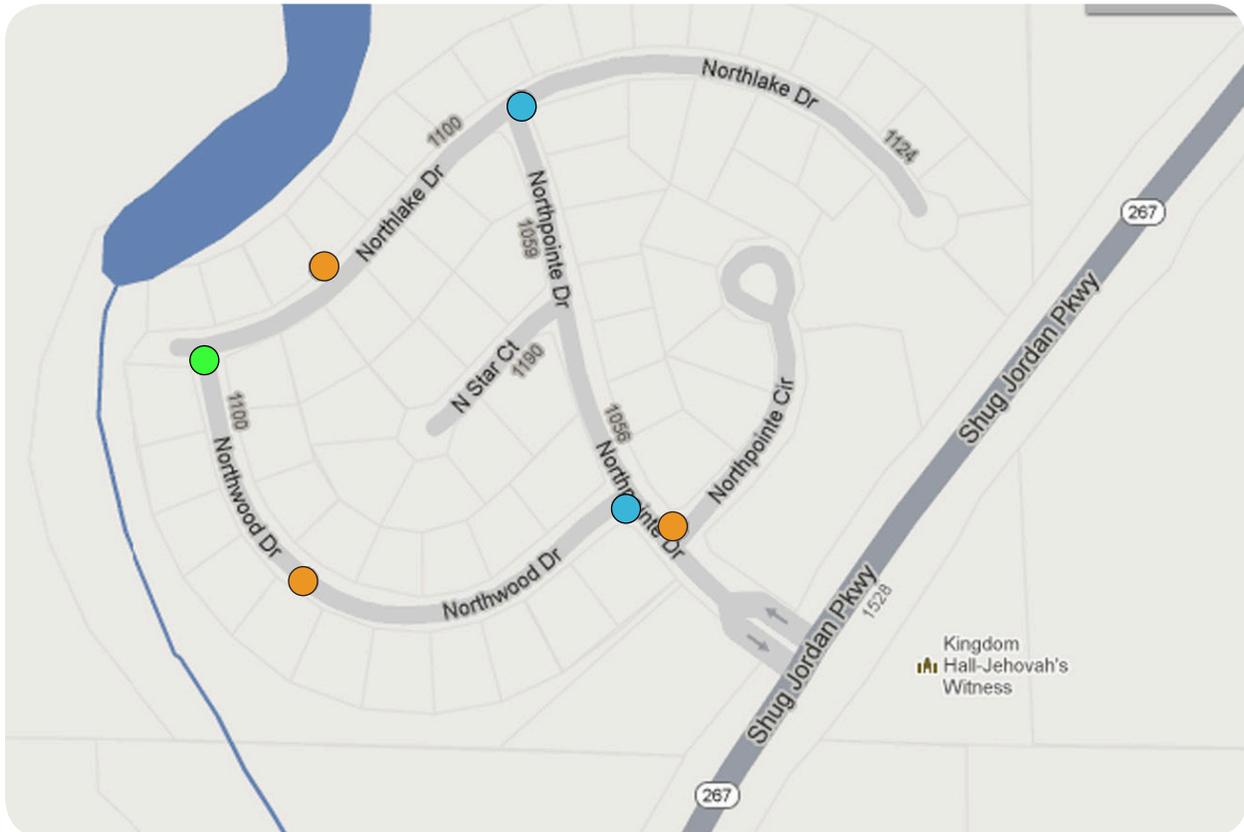


### Bus stops to be eliminated (continued)

- 245. NorthPointe
- 247. NorthPointe
- 248. NorthPointe

There are far too many stops inside the NorthPointe complex. Passengers can be served by three stops in NorthPointe complex, but the stops must be moved to safer locations. Stop 245 will be eliminated and served by 249, which will remain at the stop sign across the street. Stop 246 will remain at the stop sign and become the first stop of the NorthPointe complex. Stop 247 and 248 will be removed and served by a new stop location at the corner of North Lake Dr. and North Wood Dr. This area better serves the two because it is located between the stops to be eliminated and the corner is beside a dead end road. North Lake Dr. comes to a dead end and North Wood Dr. continues to stop 249, which will remain at the stop sign at the top of the hill.

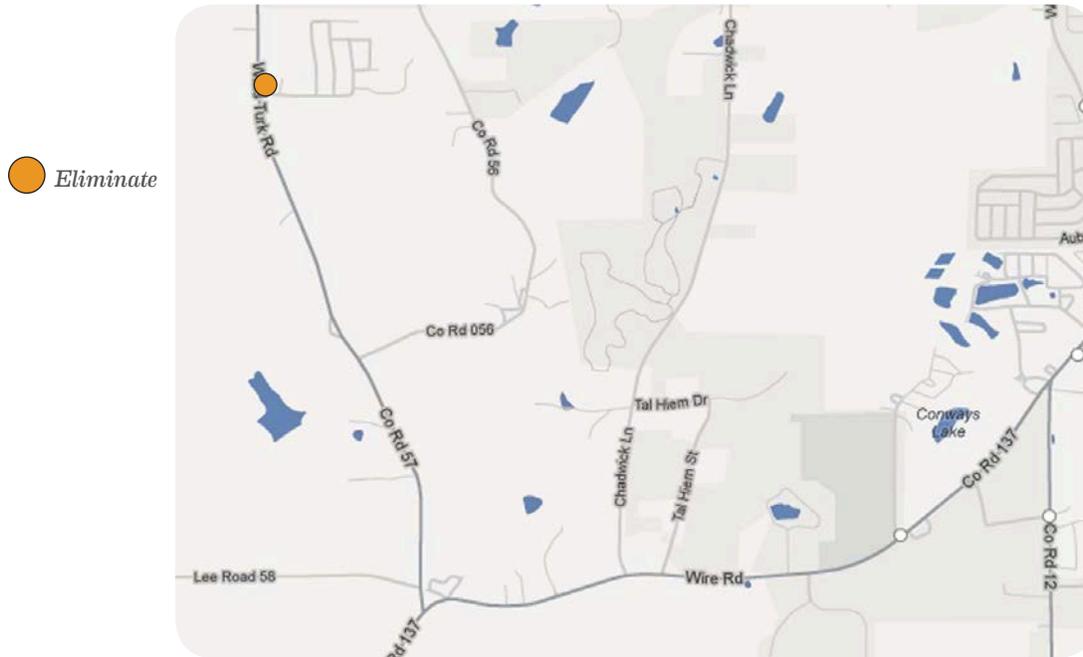
-  Remain as is
-  New stop
-  Eliminate



## Bus stops to be eliminated (continued)

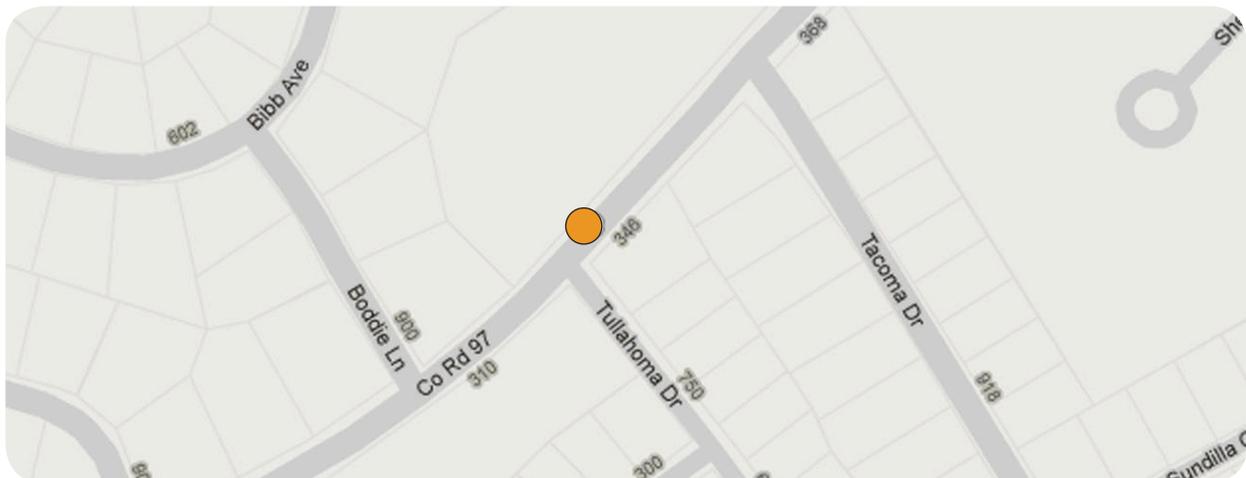
### 257. Orchard Way

This stop wastes time and gas. This particular stop takes eight to ten minutes more to travel to and does not have heavy traffic.



### 270. Tullahoma Dr. at Shelton Mill Rd.

This stop is not used and it blocks the entrance to an apartment complex. The Tullahoma Dr. at Shelton Mill Rd. stop does not serve anyone heading to Auburn's campus.



● Eliminate

## Bus stops to be eliminated (continued)

(No number listed) Sanders at Bragg Ave.

The stops along Bragg Avenue are useless and do not serve people who ride the transit. From just a safety point of view, the stops are in the middle of the road, away from any stop signs, cross streets or crosswalks, so passengers would be jaywalking across a busy roadway. From a passenger service point of view, the stops seem useless. The two locations on this street do not have high traffic among students. For example, one driver said “I don’t even know why these stops are here, no one ever gets on.” There do not appear to be any significant student housing areas nearby except for a few duplexes down Sanders Road. Bragg Avenue is an industrial road with many trucks traveling in and out of the large lumber and construction materials company at the location of these two stops. The street itself has heavy traffic as the primary connecting road from west Auburn to both downtown and, via Mitcham, to Opelika Road and the stops disrupt traffic.



*This stop is beside an industrial park*

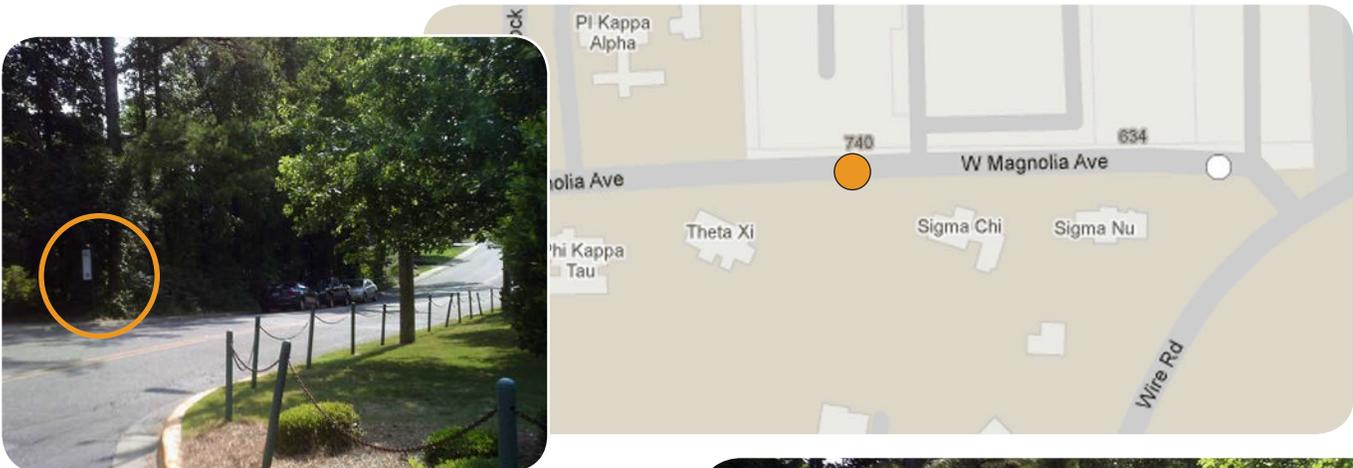
*The two stops on Bragg Avenue circled in blue*

## Bus stops to be eliminated (continued)

### 287. The Edge West

There is no need for a transit stop across the street from The Edge West apartment complex. Passengers wanting to ride the transit can walk less than a block to the 275 stop located at the corner of Magnolia and Sigma Nu. In addition, the bus stop is in a very unsafe position, behind a legal space for parked cars, far from any traffic stops, sidewalks or crosswalks. For passengers to get off the bus at this location, they are seen crossing the middle of the street, walking in the street along the drainage pond until they come to the driveway entrance for the apartment complex. Passengers getting on the bus are either waiting in the street or enter the bus after walking around the parked cars.

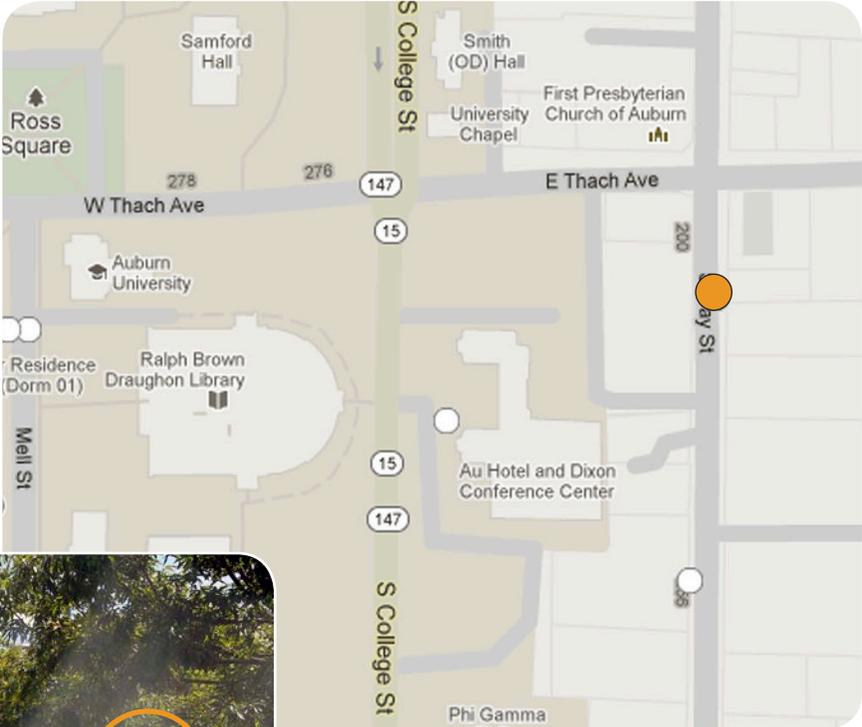
 *Eliminate*



### Bus stops to be eliminated (continued)

#### 307. Wittel Dorm

The only safe loading zone along North Gay Street between Samford and Thach is stop 118, the B-Zone Parking Lot. The Wittel Dorm transit sign is covered by trees, so passengers can not find the sign sometimes. The Wittel Dorm stop is unsafe and disrupts the traffic pattern because of its horrible placement after the intersection of Gay and Thach and removed from any intersections, stop lights or safe crosswalks.



● Eliminate



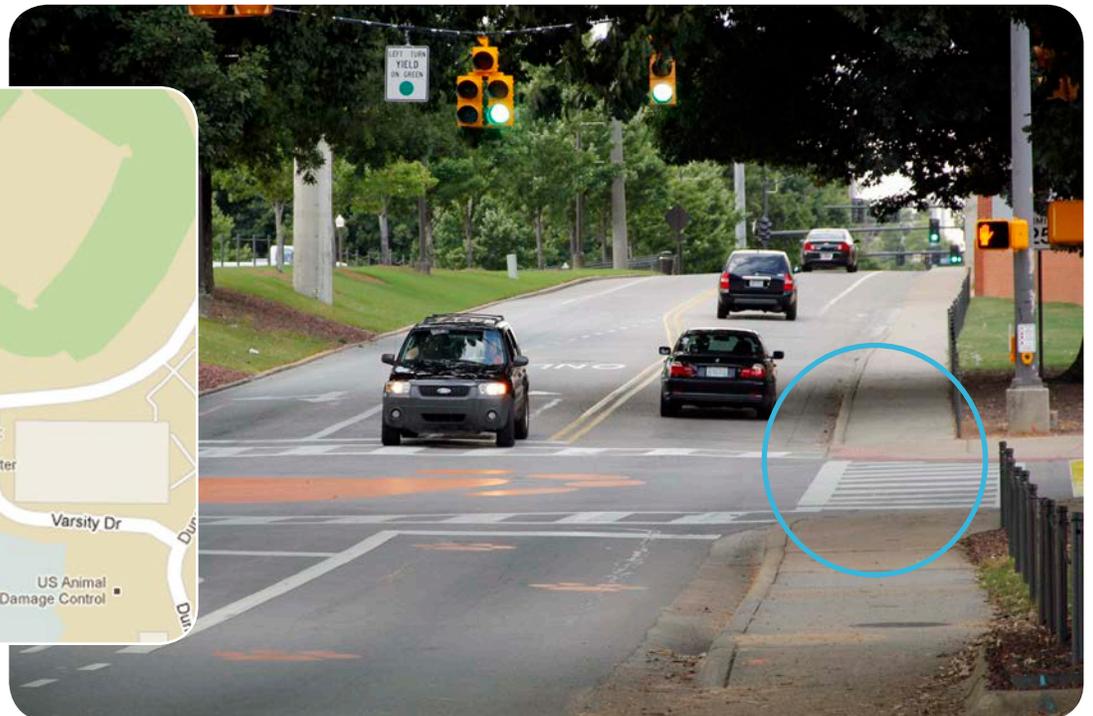
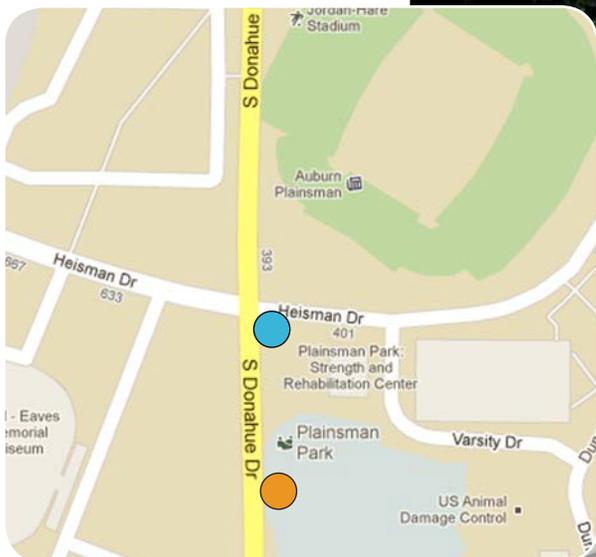
## Bus stops to be moved to a safer location

### 121. Plainsman Park

Abrupt stops along South Donahue create traffic problems. Stop 121 blocks a bike path and is not a safe place for passengers to get on or off the bus, away from any intersections or crosswalks. By moving the 121 stop to the stop light at the intersection of South Donahue and Heisman Drive, the traffic will run in a smoother fashion.



● *New location at intersection*      ● *Eliminate*

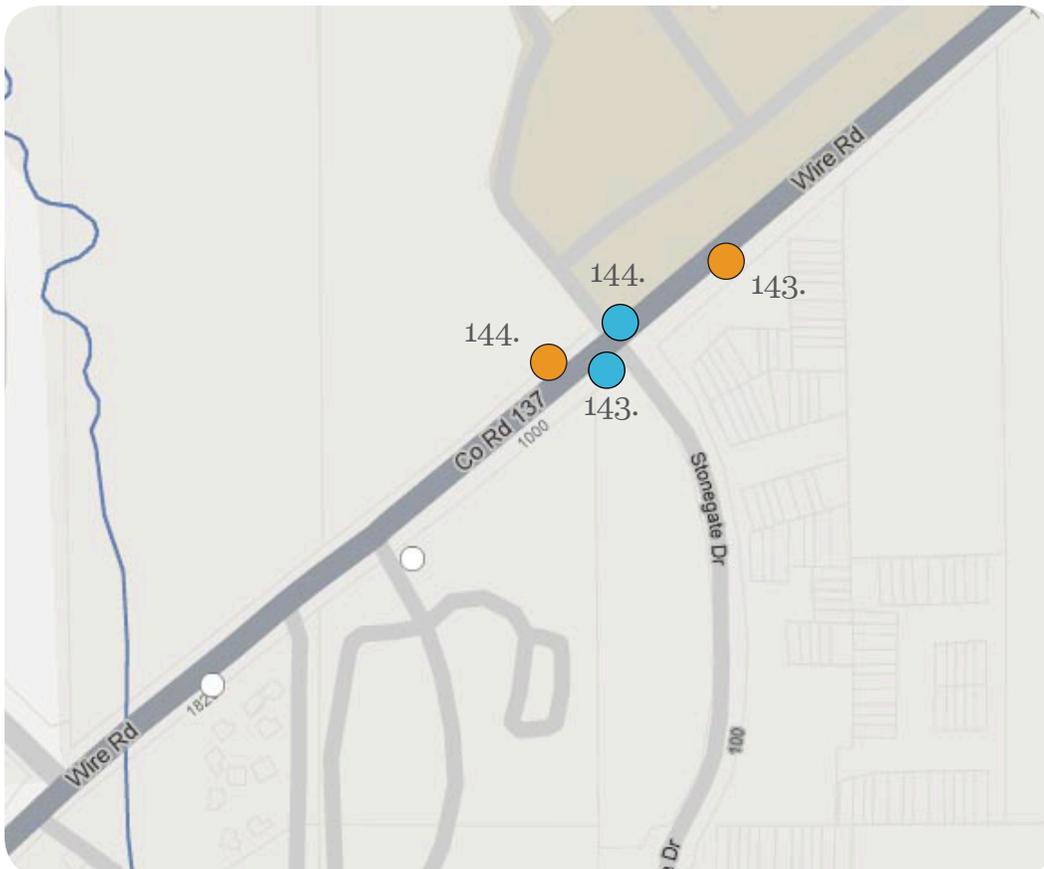


### Bus stops to be moved to a safer location (continued)

- 143. Crossland Downs  
(AKA. Stone Gate)
- 144. Large Animal Clinic  
(AKA. Crossland Downs)

The Large Animal Clinic and Crossland Downs drop-off location on the Wire Road and Webster routes should move to a safer location before the Wire Road and Stonegate Drive intersection (see map). The stop must relocate to the beginning of the Wire Road and Stonegate Drive intersection light. Crosswalks are located at this intersection. For cars driving behind the bus, the abrupt stop after crossing the light and intersection crossing becomes a reason to drive around the transit. For example, one student said in a focus group “Sure, I know it may not be the safest way to pass the bus. Is it illegal?” The student acknowledged the safety issue of the means by passing the transit, but he had no intention of changing his behavior. If the transit stopped at the intersection light, the car drivers would be used to this intersection behavior and therefore might not be as reluctant to swing around and pass the bus.

-  *New location before intersection*
-  *Eliminate*



## Bus stops to be moved to a safer location (continued)

201. KA House

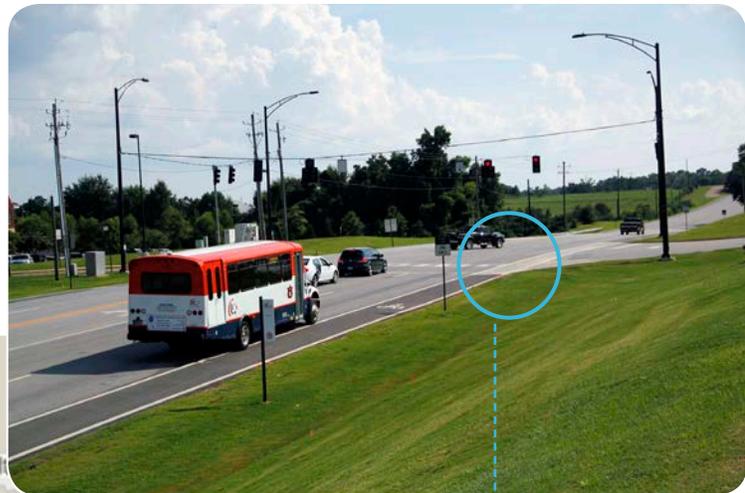
The south bound Wire Road intersection at Lem Morrison, in front of the KA fraternity, is not safe. The stop must move to the light at the intersection so passengers can cross safely at the crosswalk.



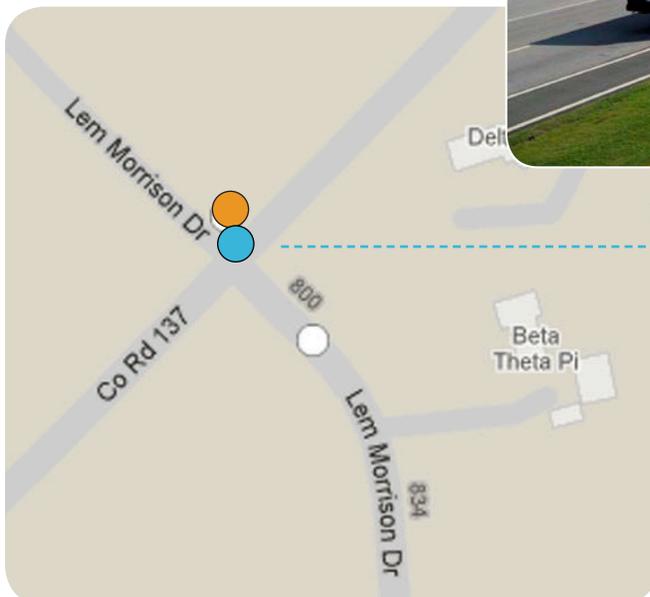
*The bus stop must be eliminated*

 *New location at intersection*

 *Eliminate*



*The bus stop must move to this intersection*



## Bus stops to be moved to a safer location (continued)

### 213. Lem Morrison at Wire Road

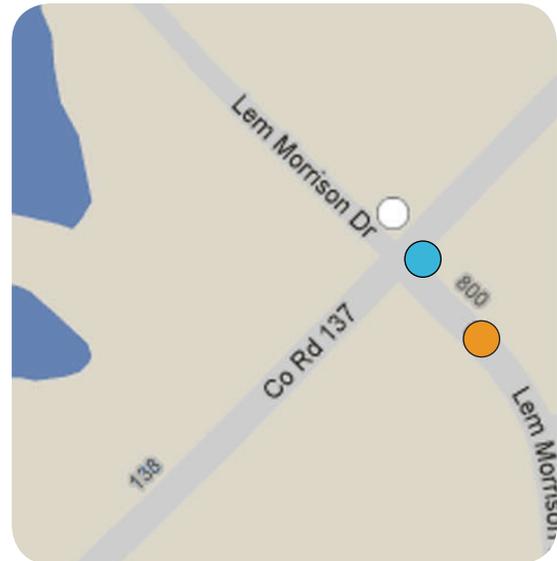
This stop promotes unsafe behaviors. The stop is located less than one hundred feet from a crosswalk at the intersection of Lem Morrison and Wire Road. The stop must move to this intersection so passengers can unload in a safer location with sidewalks and crosswalks that are currently in place.



*Intersection at Lem Morrison and Wire Road*



● New location at intersection      ● Eliminate intersection



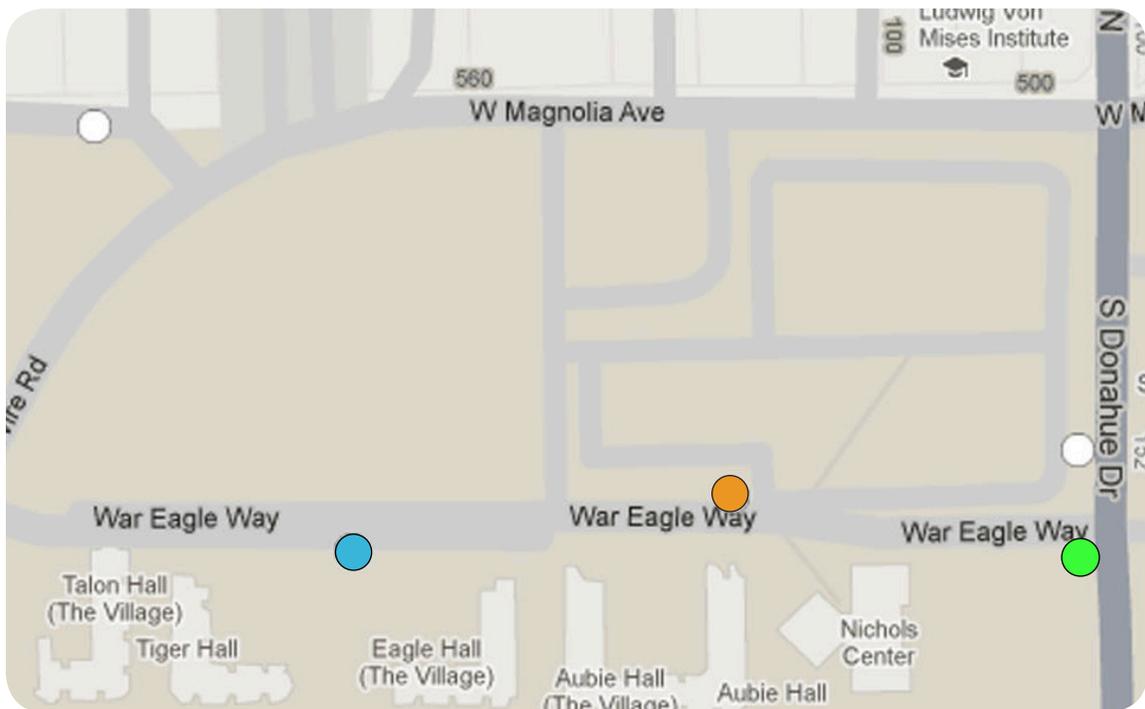
*Changes would prevent passengers from jaywalking*



## Bus stops to be moved to a safer location (continued)

242. Lowder Business Building  
(AKA. Nichols Center, Wallace  
Building, The West View Dining)

Only one stop is needed along WarEagle Way to serve the Village and Max Morris Parking Lot. Stop 291 (The Village, Max Morris Parking Lot) is a large pull in area for the tiger transit; this stop is the safest option for passengers. The 242 stop is ridiculously close to the 291 stop and does not serve any meaningful purpose, while it does disrupt traffic at the edge of a significant parking area.



 *Remain as is*

 *Eliminate*

 *New stop*

## Bus stops to be moved to a safer location (continued)

### 256. RBD Library

The current bus stop location in the middle of the street and after a crosswalk creates a safety hazard for pedestrians and motorists, as well as bicycle riders as it abruptly cuts off the bike path. The stop (possibly renamed as Mary Martin Hall or Thach and Mell) should move to the North end of Mell Street and stop at the stop sign located at the three-way intersection of Mell and Thach. This intersection currently has crosswalks in place, so passengers will not forfeit their safety and transit participation may increase due to the walkable location. This route is only used on the Museum line, so this location provides a much nicer pick up point for people walking from different parts of campus. As discussed earlier in the report, this relocated stop would also serve some of the passengers that use the Spidle Hall stop that is recommended for elimination.



 *New location at intersection*       *Eliminate*



## Bus stops to be moved to a safer location (continued)

### 257. RBD Library

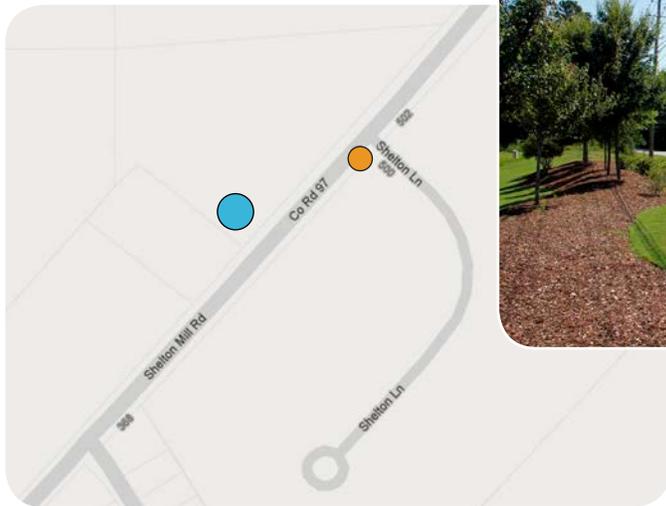
Placed after a crosswalk and cutting off a bike path, this popular stop creates a traffic hazard and safety problems for pedestrians. A very short distance before this stop, the bus makes a left turn from the sole westbound lane on Thach (since all traffic at that point must turn left). The bus stop should be at this stop sign. The small park nearby provides a nice location for waiting passengers -- as opposed to being in the middle of a smaller busy sidewalk at the other location -- with the possibility of the erection of a bench and overhang for passengers in the future. Many passengers seen getting off the buses at the other location were seen heading down the mall toward Haley or other locations, so the move should not alter the value of the stop while greatly increasing the safety.



## Bus stops to be moved to a safer location (continued)

271. Shelton Mill Rd. at Shelton Ln.  
(AKA. Copper Beech)

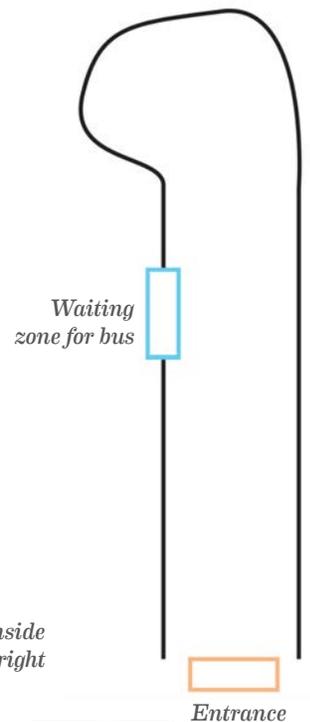
The Copper Beech complex stop on the Opelika Road line should be moved to the Copper Beech entrance on Shelton Mill Road (see map). This stop should move from the street to inside the complex. The passengers that use this current stop as it now exists, cross a three-lane road with no crosswalk. For passengers, the unsafe crossing becomes a reason to drive a car to campus. For example, one student phrased it in a focus group “This stop is unsafe and dangerous,” making a drive to campus a preference due to safety concerns. The only way that the bus could have a safe stop that services this complex would be to have a stop within the complex itself. If the transit turned left into Copper Beech off Shelton Mill Road, the bus could make a loop inside the front of the complex and pick passengers up at the sitting area. This change would be a safer alternative for the passengers. If an off-road stop inside Copper Beech is not possible or prevented by the property owners, the Tiger Transit can't serve this location.



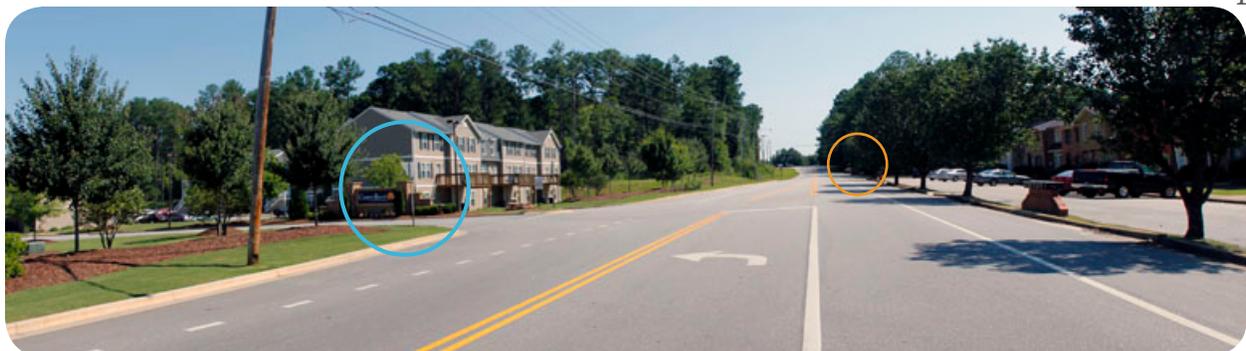
● New location at intersection  
● Eliminate



*View of current stop from the Copper Beech entrance*



*Proposed loading zone inside Copper Beech is pictured right*



## Bus stops to be moved to a safer location (continued)

275. Eagles West  
(AKA. Champions Club)

The right turn lane at the corner of Sigma Nu fraternity house on Magnolia (where West Magnolia meets the start of Wire Rd.) is the safest location for the 275 stop. This new location will also serve the Edge West passengers.



● New location at intersection      ● Eliminate intersection



## Locations to review at completion of construction projects

### 120. Beard-Eaves Coliseum

(AKA. Athletic Complex, Sewell Residence Hall)

**The bus stop needs to be removed right away as a hazard.** There is no other immediate alternative for stop 120 on South Donahue. As part of the construction, a pull-off can be added since space is limited near the Donahue and Samford intersection. The stop is unsafe and so is the crosswalk; given current positions, the stop should be before the crosswalk. No one would be wanting to take the bus to the work zone that is currently there. Due to the current construction on both sides of Donahue, plus the street improvements to Biggio Dr., the value and safety of a bus stop at this location can't be assessed until the work is closer to completion. At that time, traffic and pedestrian patterns could be better understood. At the very least, a new stop should follow the basic guidelines for bus stop placement on page 3 of this report.



 *Highlighted stop*



## Locations to review at completion of construction projects (continued)

### 159. Magnolia Avenue at Gay Street

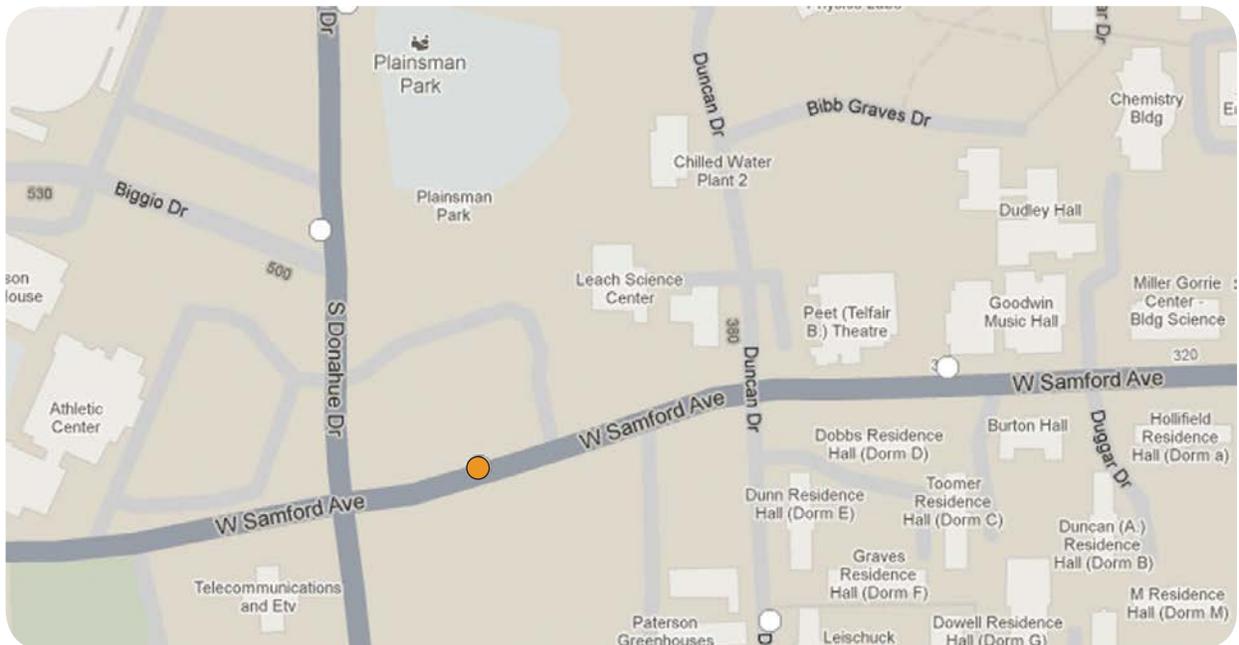
The Magnolia Avenue at Gay Street stop should be moved to the intersection stop light. Although the construction prevents passengers from waiting at the location right now, if it is moved then people can wait in a safer spot.



### 269. Sewell Hall

If this stop is to remain in this location after construction, it should move to the corner of Samford and Donahue.

 Sewell stop

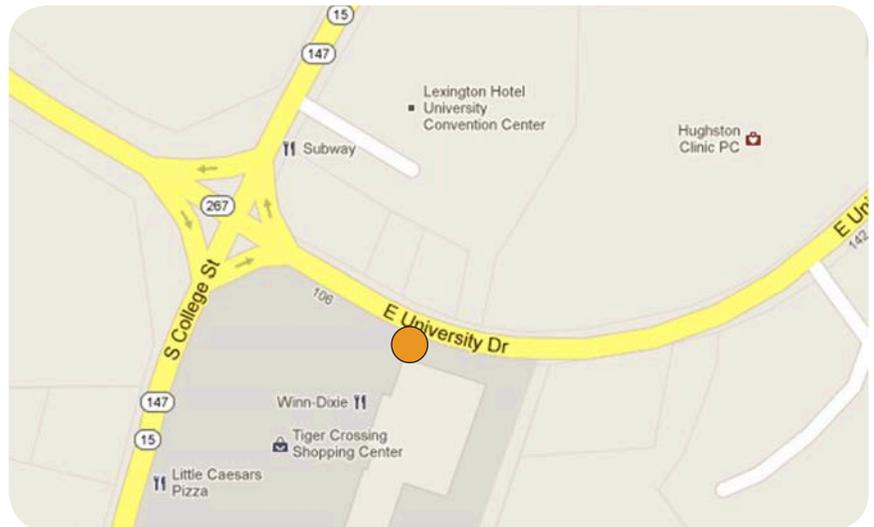


## Stops of uncertain value or administrative concern

Some stops are listed as “uncertain” due to their locations and frequency of use.

### 262. South College Street & East University Drive

If a bus is going to stop at this grocery store and shopping area, there isn't another option, with the bus turning onto University from southbound College. If a passenger is going to the hotel and restaurant across the street, there are no crosswalks or safe ways to get there. From what was viewed during the period of the research, this did not appear to be a shopping destination. Instead, the Winn-Dixie lot's prime use as a stop is as a *de facto* park and ride. This is not a safe place to stop and passengers have no safe place to stand to wait for the transit.



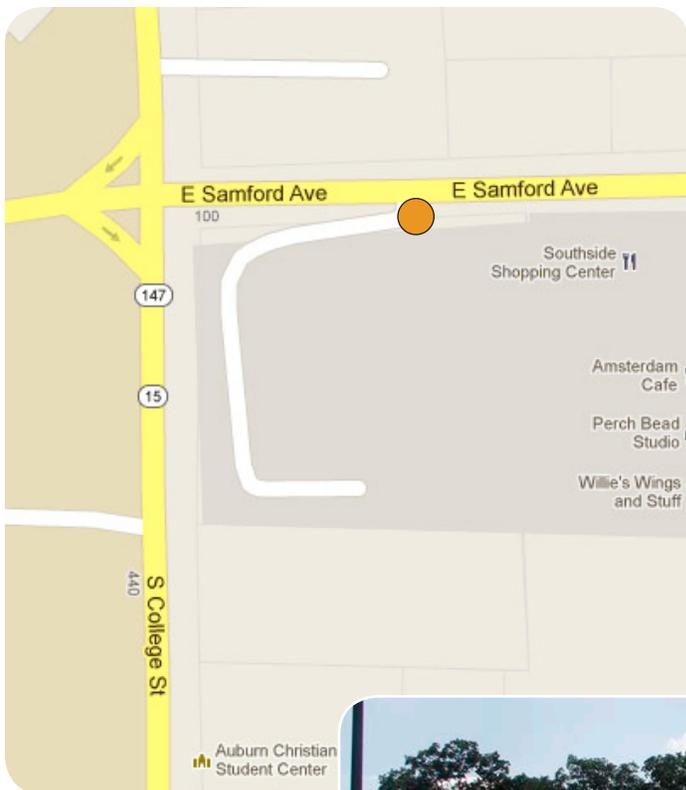
● Eliminate



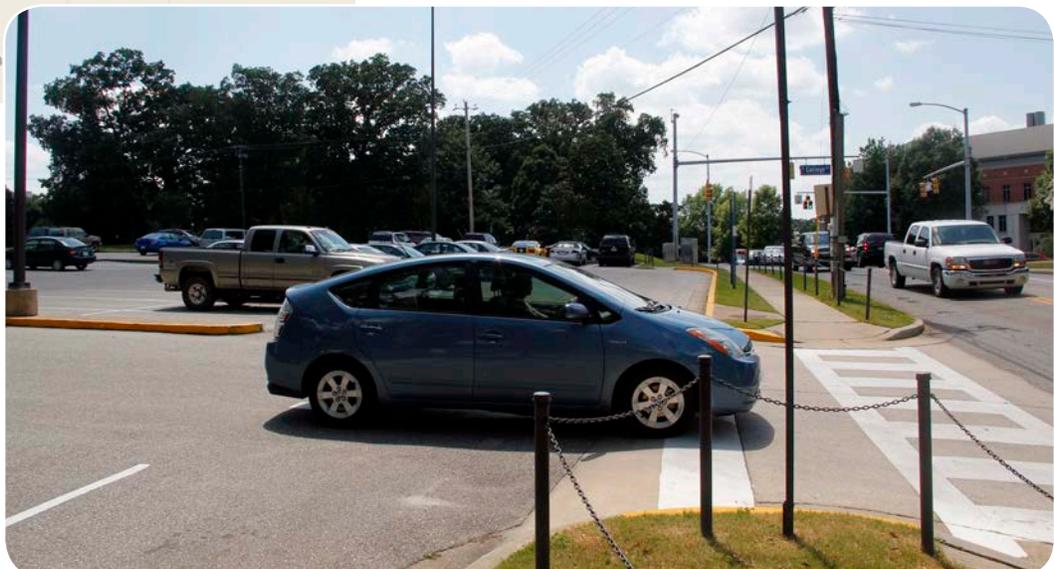
## Stops of uncertain value or administrative concern (continued)

### 250. Old KA Parking Lot

The Samford at College Street intersection is a high traffic area and is an unsafe location to pick up or drop off transit passengers. As one bus driver mentioned, “This stop never has people get on, but sometimes off and that is rare. It’s an A-zone lot, so can’t only faculty park there?” This stop is not rational. Few faculty even use the transit system. If people parking in the A-zone lot are wanting to get to campus quickly, they must go off campus first and then wait for the last two stops on this route to get to campus.



 *Eliminate*



## Additional Observations and Recommendations

The primary charge of this research is the bus stop locations and traffic safety. However, in the process of studying bus stop placement, other observations came to light on other factors of traffic and the bus routes. Admittedly, since this was not the focus of the research, some conclusions are speculative in that our data are more limited. But at the very least, all of these suggestions warrant additional research for service to the students of the bus routes and general safety issues for the Auburn community.

### Secondary Problem of Bus Pull-offs

Tiger Transit seems to have encountered a problem of students, faculty or other campus visitors wish to use the bus pull-off areas as parking spaces or areas for illegal U-turns. On the former, Tiger Transit has hired a small team that patrols the bus stops and keeps them clear of car traffic. On the latter, they create a hazard for pedestrians. At stop 218, the Transportation Tech Center Stop off Magnolia, cars were seen cutting through the island and across the pedestrian walkway. Bollards or some structure should be placed on the island at the sides of the crosswalk to prevent cars driving across into the bus area.



*Bollards can be placed here*



*Placing bollards here will prevent cars, like this one pictured left, from using the pull-off to turn around*

## Route Efficiency

Part of this report mentioned stops of questionable value to passengers. Unmentioned are the passengers who stop using a bus because the route is too long and too difficult. The drivers are very aware of the bus stops that are used rarely or not at all, and their input should be regularly sought to periodically prune stops of minimal utility that lengthen the time of routes to the detriment of overall service.

- 108. Auburn Impound Lot
- 122. West Parking Lot  
(AKA. Auburn Band Practice Field )
- 123. West Magnolia at Beech
- 124. Beech at West Thach  
(AKA. West Parking Lot)

The West Campus Line could eliminate the Auburn Impound Lot (108), West Parking Lot (122), Auburn Band Practice Field (122), Beech at West Thach (124), West Parking Lot (124) and West Magnolia at Beech (123) to develop an express route to apartment complexes along West Glenn. Old-Row West Parking Line would still pick up at these locations.

The Opelika Road Line should split into two routes so an express route can be developed for the Creekside complex. A common complaint on this route is the waiting time between buses and traveling time on the buses, that impels a reduction of superfluous stops and recommends more buses to service it. The Opelika Road route could split into two separate lines to service both Copper Beech, Aspen Heights and Creekside apartments as express routes.

### Opelika Road Line 1

- 182. Haley Center (AKA. Auburn Student Center)
- 271. Shelton Mill Rd. at Shelton Ln.
- 318. Gentry at Drew Ln.
- 535. Auburn Medical Park
- TBD. (Aspen Heights, new development)
- 182. Haley Center (AKA. Auburn Student Center)

### Opelika Road Line 2

- 182. Haley Center (AKA. Auburn Student Center)
- 140. Creekside
- 141. Creekside
- 142. Creekside
- 220. Lowder Business Building (AKA. Cary Hall, Wallace Building, Nichols Center, Max Morris Parking Lot, The Village West View Dining )
- 182. Haley Center (AKA. Auburn Student Center)

## **Bus Equipment Additions**

The buses could use a passenger signal that could notify the driver of a passenger's intent to get off at the next stop. This is commonly found on buses in major cities, and it would solve a current concern. The bus passengers noted a repeated problem of wanting to get off at a stop when a bus driver, not seeing them or not seeing anyone waiting to get on, resume driving too soon. If there was a pull cord or signal button near seats to let drivers know of passengers' desires, this problem would be eliminated.

Also needed are some better ways to notify potential passengers when buses on the same route stop at different collections of stops. The current method seems to be a sign on the drivers' visor or other minor notes. A few passengers reported getting "trapped" on the wrong bus when the driver forgot to drop the visor or other notices were lacking.

Bus drivers expressed a desire for digital maps that they could easily access while on the road. These maps would not distract drivers, but alert them if a route has changed due to a bus breaking down. Drivers could then react quickly and pick up passengers who have been waiting for the buses that have broken down. Apparently not all drivers know every route, so this would prevent time being wasted by drivers who are uncertain about which stops they should cover or which stops they may have forgotten to pick up and drop off at.

A tracking system counting the number of passengers that use the transit should be developed to determine which stops are used most frequently. The current Auburn University Tiger Card could potentially be used to track who gets on and off at each stop. Bus drivers currently manually write down the number of passengers that board on each stop, but they do not track how many get off at each of the stops. The system could be automatic to save time for bus drivers and passengers. Passengers would be required to scan, not swipe, their tiger cards to a tracking system near the door of the bus. Scanning the cards would prevent the tiger cards from becoming too worn out. This system would also determine which routes need more buses to serve the higher passenger frequency.

## Appendix A: Crosswalks, Bus Stops & Pedestrian Safety

“Bus stops should be at points where buses could have natural cause to stop moving: just before . . . crosswalks.”  
- from general guidelines of report

In any major city with a mass transit system, anyone older than six years old knows that after a passenger gets off a bus, a person is to wait till the bus departs and carefully cross the street. To judge by videos on youtube.com, this educational caution is international. However, most adults feel that they can judge when it is safe even when a bus is still present, while most Auburn students have not had much experience with public transportation other than a school bus that requires traffic to stop. Even though people are often invisible to motorists while a large bus masks their view, Tiger Transit passengers cross the street whenever and wherever they feel it is the shortest route.

Given the desire of passengers to quickly cross the street, having the bus stop to the rear follows a certain logic: in theory, by the time the passenger gets to the rear of the bus, the vehicle has driven off and they will be visible for the motorists that have to yield to the pedestrian walkway. However, this requires ignorance of a few realities of pedestrian behavior and traffic safety. First and foremost, non-riders will also be using the crosswalk, while multiple passengers getting off will have the first to exit reaching the crosswalk while the bus is still stopped. As a result of this, pedestrians would be entering the crosswalk behind a stopped bus, coming into traffic from the opposite direction such that drivers will not be able to see them until it might be too late to stop.

In addition, this will create an additional stop to traffic for vehicles behind the bus, with the bus stopping before the crosswalk if it is in use, then again after the walk for passengers. Having a bus stop just beyond an intersection or just after a crosswalk creates a dangerous safety hazard for pedestrians.

There is a hazard of pedestrians crossing the street in front of a stopped bus, as there would be if they cross in front of any large vehicle. If oncoming traffic is coming too fast, the driver might not be able to spot the pedestrian against the backdrop of the vehicle. On a four-lane road, the traffic coming from behind the bus will not see the



## Appendix A: Crosswalks, Bus Stops & Pedestrian Safety (continued)

people in the crosswalk until they are standing in front of the cars in their lane. These are the reasons for an international concern that pedestrians shouldn't enter a crosswalk immediately after getting off a bus, as well as the reason why a bus should stop at intersections instead of at mid-block crosswalks. This is the reason why the report recommends moving several stops away from mid-block crosswalks to nearby intersections, stop signs or stop lights. But if a bus stop must be before free-standing crosswalk (one without any other traffic signal), at least if the bus itself is stopped, it would be a sign to other drivers that there might be a pedestrian in the crosswalk.

