Section 3J:

Samford Avenue Corridor

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INTRODUCTION

This section documents the results of a traffic operations evaluation for the Samford Avenue Corridor from College Street to Glenn Avenue in Auburn, Alabama. The intersections analyzed in this corridor include:

- College Street at Samford Avenue
- Gay Street at Samford Avenue
- Samford Avenue at Armstrong Street
- Samford Avenue at Wrights Mill Road
- Samford Avenue at Payne Street
- Samford Avenue at Moores Mill Road
- Samford Avenue at Dean Road
- Samford Avenue at East University Drive
- Samford Avenue at Glenn Avenue

The locations of the study intersections along the Samford Avenue Corridor are illustrated in **Figure 1**. To accomplish the traffic operations evaluations for the Samford Avenue Corridor, the following tasks were undertaken:

- existing peak hour turning movement counts were conducted for the study intersections;
- drive times were collected for the morning and afternoon commuter peak periods;
- capacity analyses were conducted for the study intersections;
- arterial capacity analyses were conducted for Samford Avenue;
- traffic signal warrant analyses were performed for unsignalized intersections;
- current traffic operational deficiencies were identified;
- projections for ten (10) year growth in traffic through the corridor were developed; and
- geometric and traffic control improvements were developed for the study intersections to address traffic operational and safety deficiencies for existing and projected ten (10) year conditions.

Sources of information used in this section include: The City of Auburn, Alabama; the Institute of Transportation Engineers; American Association of State Highway and Transportation Officials; the Manual on Uniform Traffic Control Devices; the Transportation Research Board; and the files and field reconnaissance efforts of Skipper Consulting, Inc.

Figure 1 – Samford Avenue Corridor and Study Intersections

BACKGROUND INFORMATION

Study Area Roadways

Samford Avenue is a minor arterial roadway from College Street to Glenn Avenue. The functional classification map is shown in **Figure 2**. For the most part, Samford Avenue provides access to single family residential development. Two schools are also located on Samford Avenue. Samford Avenue through the study area is approximately 2.6 miles in length. Characteristics of the roadway are summarized in **Table 1**.

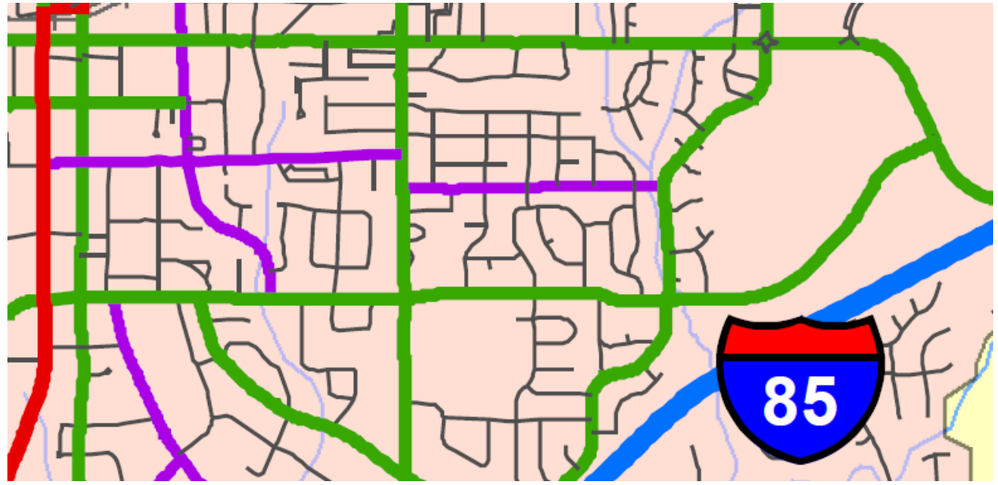


Figure 2 – Functional Classification Map

TABLE 1 – CORRIDOR ROADWAY CHARACTERISTICS

Roadway	# of Lanes	Travel Direction	Travel Speeds (mph)	Classification
Samford Avenue (College Street to Gay Street)	3	East/West	25	Minor Arterial
Samford Avenue (Gay Street to Moores Mill Road)	2	East/West	25	Minor Arterial
Samford Avenue (Moores Mill Road to Dean Road)	2	East/West	30	Minor Arterial
Samford Avenue (Dean Road to E University Dr)	2	East/West	30	Minor Arterial
Samford Avenue (E University Dr to Glenn Ave)	3	East/West	35	Minor Arterial

Peak Hour Traffic Counts

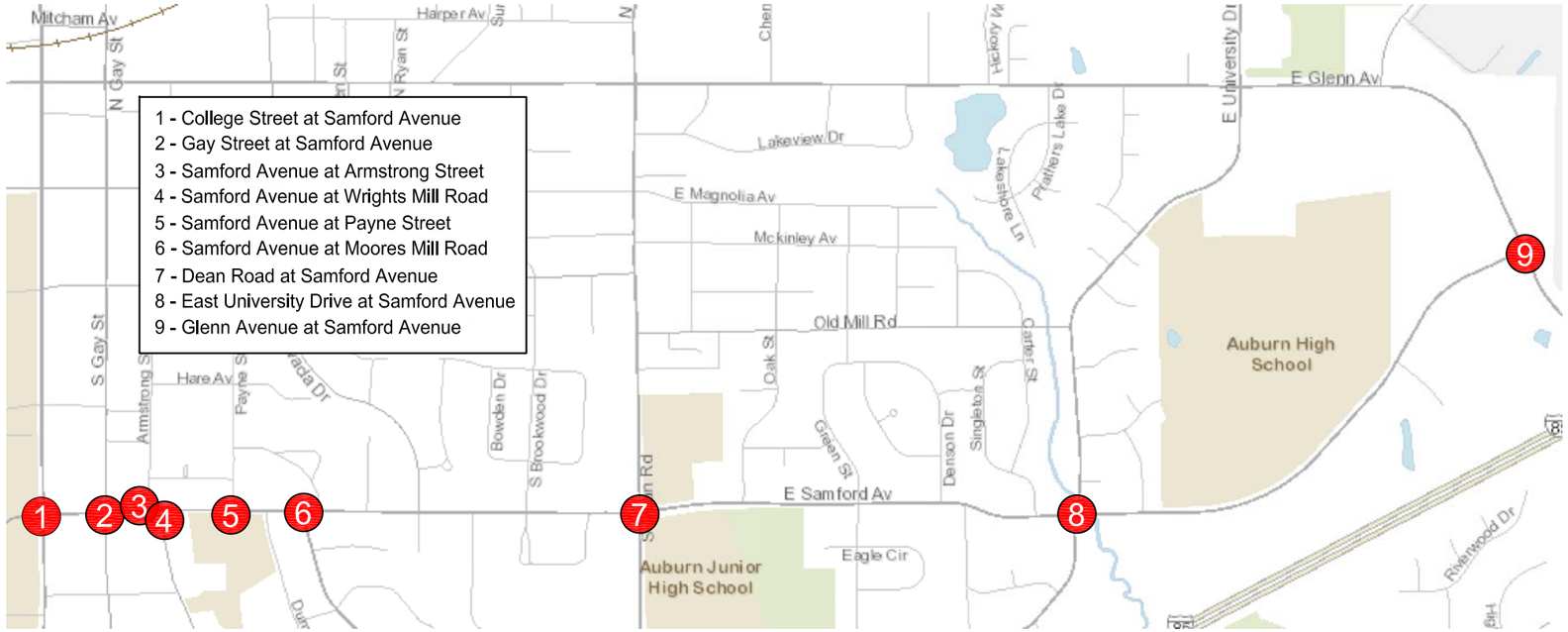
Morning (7:00-9:00 am) and afternoon (4:00-6:00 pm) peak hour turning movement counts were conducted along the Samford Avenue Corridor at study intersections in 2013 and 2018. Traffic count data utilized for the analyses of these intersections is summarized in **Figure 3**.

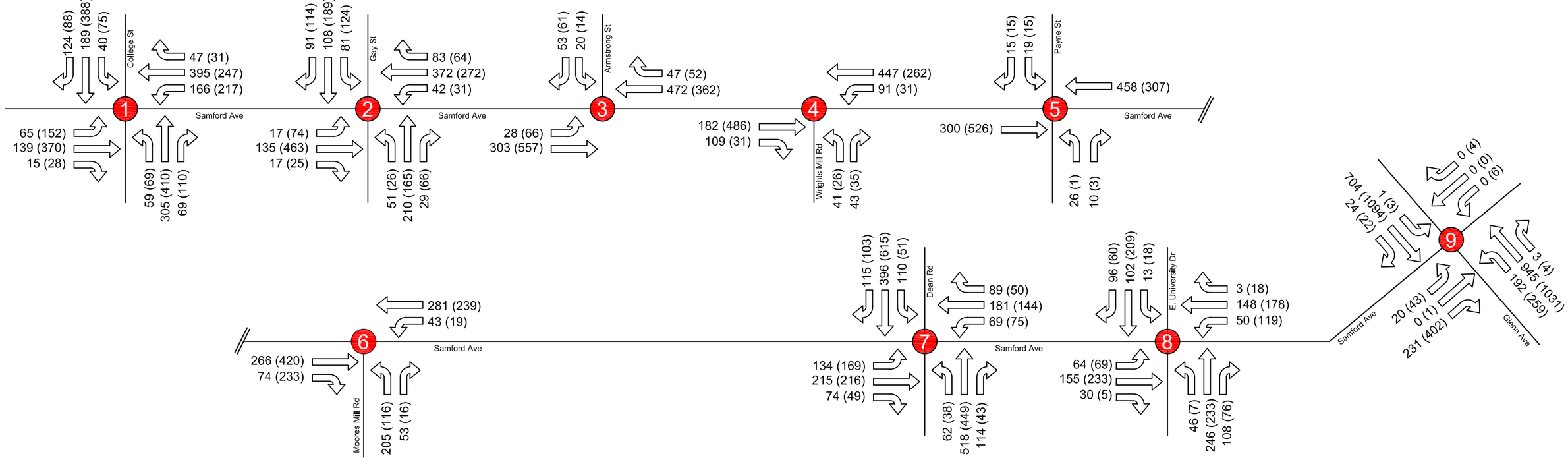
EXISTING CONDITIONS ANALYSES

Existing Intersection Capacity Analysis

Capacity analyses for peak hour conditions at the study intersections along the Samford Avenue Corridor were conducted for the morning and afternoon peak hour periods using methods outlined in the *Highway Capacity Manual, 2010*. According to methods of the *Highway Capacity Manual*, capacity is expressed as levels of service ranging from "A" (best) through "F" (worst). In general, a level of service "C" is considered desirable while a level of service "D" is considered acceptable during peak hour operations. Results of these capacity analyses for existing conditions are summarized in **Table 2**.

As shown in **Table 2**, **all** the study intersections operate will all movements at acceptable levels of service.





SKIPPER CONSULTING INC

Figure 3 - Existing Traffic Volumes
Samford Avenue Corridor
Auburn, Alabama

LEGEND

AM(PM) Peak Hour Volumes

X Study Intersection

Scale: Not to Scale
Date: 10/19/18

TABLE 2 - EXISTING INTERSECTION LEVELS OF SERVICE

Intersection (traffic control)	Approach	Movement/Lane Group	Level of Service A.M. Peak Hour	Level of Service P.M. Peak Hour
College Street at Samford Avenue (traffic signal)	EB Samford Ave.	Left	B	B
		Through/Right	C	D
	WB Samford Ave.	Left	B	C
		Through/Right	C	C
	NB College St.	Left	C	C
		Through/Right	C	C
	SB College St.	Left	C	C
		Through	C	D
		Right	C	C
	Overall LOS		**C**	**C**
Gay Street at Samford Avenue (traffic signal)	EB Samford Avenue	Left	B	C
		Through/Right	B	C
	WB Samford Avenue	Left	A	C
		Through/Right	B	C
	NB Gay Street	Left	B	B
		Through/Right	B	B
	SB Gay Street	Left	B	B
		Through/Right	B	B
	Overall LOS		**B**	**C**
Samford Avenue at Armstrong Street (side street stop)	EB Samford Ave	Left	A	A
		Through	A	A
	SB Armstrong Street	Left/Right	B	C
Samford Avenue at Wrights Mill Road (side Street stop)	WB Samford Ave	Left	A	A
		Through	A	A
	NB Wrights Mill Road	Left/Right	C	C
Samford Avenue at Payne Street (traffic signal)	EB Samford Ave	Through	A	A
	WB Samford Ave	Through	A	A
	NB School Drive	Left	C	C
		Right	C	C
	SB Payne Street	Left	C	C
		Right	C	C
	Overall LOS		**A**	**A**
Samford Avenue at Moores Mill Road (traffic signal)	EB Samford Ave	Through/Right	A	A
	WB Samford Ave	Left/Through	A	A
	NB Moores Mill Rd	Left/Right	C	C
	Overall LOS		**B**	**A**

TABLE 2 (CONTINUED) - EXISTING INTERSECTION LEVELS OF SERVICE

Intersection (traffic control)	Approach	Movement/Lane Group	Level of Service A.M. Peak Hour	Level of Service P.M. Peak Hour
Samford Avenue at Dean Road (traffic signal)	NB Dean Rd	Left	B	B
		Through/Right	C	B
	SB Dean Rd	Left	B	B
		Through/Right	C	C
	EB Samford Ave	Left	B	B
		Through/Right	C	C
	WB Samford Ave	Left	B	B
		Through	C	C
		Right	C	C
	Overall LOS		**C**	**C**
Samford Avenue at East University Drive (traffic signal)	EB Samford Ave	Left	B	B
		Through/Right	B	B
	WB Samford Ave	Left	B	B
		Through/Right	B	B
	NB E University Dr	Left	A	A
		Through	B	B
		Right	A	A
	SB E University Dr	Left	A	A
		Through-Right	B	B
	Overall LOS		**B**	**B**
Samford Avenue at Glenn Avenue (traffic signal)	EB Samford Ave	Left	C	D
		Through/Right	A	D
	WB Bank Drive	Left	A	D
		Through/Right	A	D
	NB Glenn Ave	Left	A	B
		Through	A	A
		Right	A	A
	SB Glenn Ave	Left	A	A
		Through	A	B
		Right	A	A
	Overall LOS		**A**	**B**

Existing Roadway Segment Capacity Analysis

Roadway segment capacity analyses for daily traffic conditions along the Samford Avenue Corridor were performed using the daily capacity and level of service chart obtained from the Alabama Department of Transportation. This chart is included in **Table 3**. Levels of service for the daily roadway segment capacity analyses conducted for Samford Avenue are summarized in **Table 4**.

TABLE 3 – DAILY CAPACITY AND LEVEL OF SERVICE CHART

Functional Classification	Number of Lanes	Maximum Daily Flow Rate Related to Level of Service					
		A	B	C	D	E	F
Freeway	4	23,800	34,000	42,160	51,000	68,000	>68,000
	6	35,700	51,000	63,240	76,500	102,000	>102,000
	8	47,600	68,000	84,320	102,000	136,000	>136,000
	10	59,500	85,000	105,400	127,500	170,000	>170,000
Expressway	4	17,500	25,000	31,000	37,500	50,000	>50,000
	6	26,250	37,500	46,500	56,250	75,000	>75,000
	8	35,000	50,000	62,000	75,000	100,000	>100,000
Arterial (Divided)	2	7,700	11,000	13,640	16,500	22,000	>22,000
	4	11,865	16,950	21,018	25,425	33,900	>33,900
	6	17,500	25,000	31,000	37,500	50,000	>50,000
	8	25,760	36,800	45,632	55,200	73,600	>73,600
Arterial (Undivided)	2	6,230	8,900	11,036	13,350	17,800	>17,800
	4	10,850	15,500	19,220	23,250	31,000	>31,000
	6	16,030	22,900	28,396	34,350	45,800	>45,800
	8	22,085	31,550	39,122	47,325	63,100	>63,100
Collector (Divided)	2	7,280	10,400	12,896	15,600	20,800	>20,800
	4	9,975	14,250	17,670	21,375	28,500	>28,500
	6	14,700	21,000	26,040	31,500	42,000	>42,000
Collector (Undivided)	2	5,810	8,300	10,292	12,450	16,600	>16,600
	4	9,170	13,100	16,244	19,650	26,200	>26,200
	6	13,545	19,350	23,994	29,025	38,700	>38,700

TABLE 4 – EXISTING ROADWAY SEGMENT LEVELS OF SERVICE

Samford Avenue					
From	To	Segment Length (miles)	Cross Section	Daily Volume	Roadway LOS by Segment
Gay Street	Wrights Mill Road	.09	2 Lane	12,007	D
Wrights Mill Road	Moores Mill Road	.23	2 Lane	11,368	D
Dean Road	East University Drive	.72	2 Lane	6,670	B
East University Drive	Glenn Avenue	.91	3 Lane	6,719	A

Exiting Right-Turn Lane Warrant Evaluations

Existing peak hour traffic volumes were compared with the turn lane warrant criteria outlined in the National Cooperative Highway Research Program (NCHRP) Report 457 *Evaluating Intersection Improvements: An Engineering Study Guide*, published by the Transportation Research Board. For evaluation purposes, the posted speed limit was utilized for roadways. The results of the right turn lane warrant analyses are shown in **Table 5**.

It should be noted that the right turn lanes which are warranted for Dean Road northbound and southbound at Samford Avenue are proposed to be provided as part of the road diet project recommended for Dean Road in the Dean Road Corridor report.

TABLE 5 – EXISTING RIGHT TURN LANE WARRANT EVALUATION

Intersection	Approach	Peak Hour Evaluated	Turn Lane Warranted
Samford Avenue at College Street	Northbound	PM	Not Warranted
	Westbound	AM	Not Warranted
Samford Avenue at Gay Street	Northbound	PM	Not Warranted
	Southbound	PM	Not Warranted
	Eastbound	PM	Not Warranted
	Westbound	AM	Not Warranted
Samford Avenue at Armstrong Street	Westbound	AM	Not Warranted
Samford Avenue at Wrights Mil Road	Eastbound	AM	Not Warranted
Samford Avenue at Moores Mill Road	Eastbound	PM	Not Warranted
Samford Avenue at Dean Road	Eastbound	PM	Not Warranted
	Northbound	PM	Warranted
	Southbound	AM	Warranted
Samford Avenue at East University Drive	Eastbound	AM	Not Warranted
	Westbound	PM	Not Warranted
	Southbound	AM	Not Warranted

Intersection Crash Evaluation

Skipper Consulting, Inc. performed a citywide crash study for intersections and roadway segments maintained by the City of Auburn. The results of this crash study have been documented in a separate bound report. The citywide crash study included the study intersections along Samford Avenue. Screening procedures and crash analyses were conducted to determine any locations that are worthy of safety-based roadway improvements. The crash analysis indicated the following:

- Low Priority Intersections - this indicates the crash experience should be considered when completing other roadway improvements at this location. However, the crash experience does not warrant an immediate safety improvement project.
  - Samford Avenue at Gay Street
- Moderate Priority Intersections - this indicates the crash experience should be monitored in the near future and could be worthy of a safety-based roadway improvement if crash experience trends upward. This does not warrant a safety-based improvement at this time, but a safety-based improvement should be incorporated in any roadway improvement at this location.
  - None
- High Priority Intersections – this indicates that improvements are recommended for each location identified based upon the detailed crash evaluation.
  - None

Travel Time

GPS-based Travel time runs were performed on Samford Avenue from College Street to Glenn Avenue on Thursday, April 26, 2018. Travel time runs were performed during the a.m., midday, and p.m. peak periods of traffic flow. Six runs were performed in each direction during each time period. The results of the travel time runs are shown in **Table 6**.

TABLE 6 – EXISTING TRAVEL TIME RUNS

AM Peak				Midday Peak				PM Peak			
Start Time	Dir.	Elapsed Time	Avg. Speed	Start Time	Dir.	Elapsed Time	Avg. Speed	Start Time	Dir.	Elapsed Time	Avg. Speed
7:00	WB	8:14	19.6	11:00	WB	7:09	22.6	4:00	WB	7:11	22.5
7:10	EB	7:34	21.4	11:06	EB	7:11	22.5	4:10	EB	8:13	19.7
7:17	WB	7:11	22.5	11:17	WB	7:07	22.7	4:19	WB	8:57	18.1
7:27	EB	7:55	20.4	11:26	EB	7:41	21.0	4:30	EB	9:56	16.3
7:35	WB	10:27	15.5	11:34	WB	7:29	21.6	4:40	WB	9:15	17.5
7:48	EB	10:03	16.1	11:44	EB	7:20	22.0	4:55	EB	8:24	19.2
7:53	WB	10:04	16.1	11:51	WB	8:26	19.2	5:04	WB	8:32	18.9
8:10	EB	7:41	21.0	12:03	EB	8:32	18.9	5:17	EB	8:16	19.6
8:19	WB	7:03	22.9	12:13	WB	6:58	23.2	5:25	WB	6:57	23.3
8:29	EB	7:55	20.4	12:23	EB	7:33	21.4	5:35	EB	7:40	21.1
8:37	WB	7:15	22.3	12:30	WB	8:19	19.4	5:43	WB	8:08	19.9
8:47	EB	7:02	23.0	12:41	EB	8:33	18.9	5:54	EB	6:24	25.3

TRAFFIC SIGNAL WARRANT ANALYSIS

Samford Avenue at Armstrong Street/Wrights Mill Road

A traffic signal warrant analysis was performed for the offset intersection of Samford Avenue at Armstrong Street/Wrights Mill Road using the methodology included in the 2009 *Manual on Uniform Traffic Control Devices*, published by the Federal Highway Administration. Approach traffic volumes were counted on Tuesday to Wednesday, March 27 to 28, 2018. The approach traffic volumes are summarized in **Table 7**. Existing approach traffic volumes were compared to minimum traffic volumes required to warrant traffic signalization for Warrants 1A, 1B and 2. The results of the analysis showed the following:

- 0 of 8 required hours are met for Warrant 1A
- 3 of 8 required hours are met for Warrant 1B
- 1 of 4 required hours are met for Warrant 2

Therefore, signalization is not currently warranted at the intersection of Samford Avenue at Armstrong Street/Wrights Mill Road.

TABLE 7 – APPROACH TRAFFIC VOLUMES
SAMFORD AVENUE ARMSTRONG STREET/WRIGHTS MILL ROAD

Time	Samford Avenue			Wrights Mill Road	Armstrong Street
	Eastbound	Westbound	Total	Northbound	Southbound
6-7 AM	88	196	284	31	33
7-8 AM	339	483	822	114	77
8-9 AM	219	474	693	48	84
9-10 AM	227	342	569	45	70
10-11 AM	284	288	572	43	57
11-12 Noon	383	373	756	53	76
12-1 PM	455	399	854	67	103
1-2 PM	362	375	737	44	74
2-3 PM	435	328	763	103	110
3-4 PM	466	373	839	68	74
4-5 PM	569	439	1,008	73	61
5-6 PM	617	460	1,077	91	96
6-7 PM	508	341	849	48	89
7-8 PM	399	248	647	31	72
8-9 PM	282	239	521	14	43
9-10 PM	208	151	359	19	41

TRAFFIC SIGNAL REMOVAL ANALYSIS

Samford Avenue at Payne Street

An analysis was performed to determine the potential for the removal of the traffic signal at the intersection of Samford Avenue at Payne Street. Existing traffic volumes (as shown in Figure 3) indicate that this traffic signal is not currently warranted. Peak hour intersection capacity analyses were performed for the intersection for signalized and unsignalized condition. The results are documented in **Table 8**. As shown in Table 8, side street levels of service remain the same or improve without a traffic signal.

TABLE 8 - INTERSECTION LEVEL OF SERVICE COMPARISON
SAMFORD AVENUE AT PAYNE STREET

Intersection (traffic control)	Approach	Movement/Lane Group	Level of Service			
			A.M. Peak Hour		P.M. Peak Hour	
			Signalized	Unsignalized	Signalized	Unsignalized
Samford Avenue at Payne Street	EB Samford Ave	Through	A	--	A	--
	WB Samford Ave	Through	A	--	A	--
	NB School Drive	Left/Right	C	C	C	C
	SB Payne Street	Left	C	C	C	C
		Right	C	B	C	B
	Overall LOS		**A**	**--**	**A**	**--**

The most significant drawback to removal of the traffic signal at the intersection of Samford Avenue at Payne Street is the fact that this signal provides for a signalized pedestrian crossing from Payne Street to East Samford School. Between 7:00 a.m. and 9:00 a.m., 19 pedestrians crossed Samford Avenue at Payne Street. This is of special concern since a number of these pedestrians would be young children. It is therefore recommended that the traffic signal at the intersection of Samford Avenue at Payne Street remain in place.

The impact of the existing traffic signal at the intersection of Samford Avenue at Payne Street on traffic flow on Samford Avenue is minimal, which is seen in the level of service “A” experienced on Samford Avenue during both the a.m. and p.m. peak hours of traffic flow.

OBSERVATIONS

Observations of traffic flow on Samford Avenue were performed. The observations showed that there is an issue on Samford Avenue eastbound between College Street and Gay Street due to the queue of cars which backs up from the traffic signal at the intersection of Samford Avenue at Gay Street. Due to the fact that there is no coordination between the two traffic signals on Samford Avenue at College Street and Gay Street, it was observed that often the queue storage between the two signals would be full and that there would be no room available for either the eastbound through movement coming across from Auburn University or at other times no room for the southbound left turn off of College Street.

RECOMMENDED IMPROVEMENTS FOR EXISTING CONDITIONS

Based on the results of the existing conditions analysis, it is recommended that the traffic signals on Samford Avenue at College Street and Gay Street be coordinated.

The City of Auburn has a proposed project to improve College Street and Samford Avenue. Within the limits of the Samford Avenue corridor, this improvement includes widening of College Street to allow for dual southbound through lanes. The proposed work is shown in **Figure 4** (drawing provided by the City of Auburn).

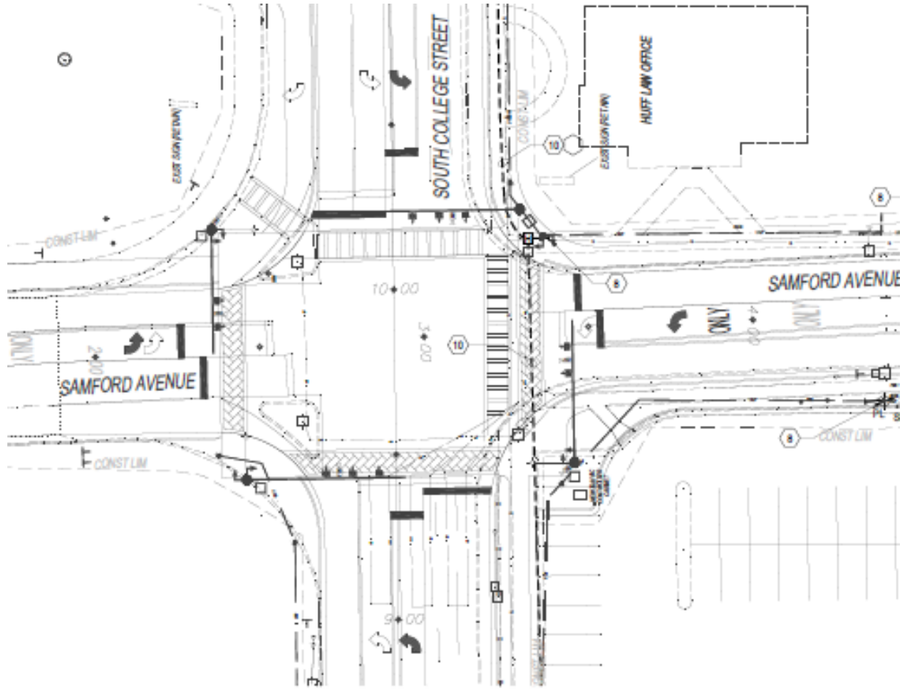


Figure 4 – College Street/Samford Avenue Improvements

Existing Intersection Capacity Analysis with Recommended Improvements

Capacity analyses for peak hour conditions at the study intersections along the Samford Avenue Corridor with the recommended improvements for existing conditions in place were conducted for the morning and afternoon peak hour periods using methods outlined in the *Highway Capacity Manual, 2010*. According to methods of the *Highway Capacity Manual*, capacity is expressed as levels of service ranging from "A" (best) through "F" (worst). In general, a level of service "C" is considered desirable while a level of service "D" is considered acceptable during peak hour operations. Results of these capacity analyses for existing conditions are summarized in **Table 9**.

TABLE 9 - EXISTING INTERSECTION LEVELS OF SERVICE WITH RECOMMENDED IMPROVEMENTS

Intersection (traffic control)	Approach	Movement/Lane Group	Level of Service A.M. Peak Hour	Level of Service P.M. Peak Hour
College Street at Samford Avenue (traffic signal)	EB Samford Ave.	Left	B	B
		Through/Right	C	D
	WB Samford Ave.	Left	B	C
		Through/Right	C	C
	NB College St.	Left	C	C
		Through/Right	D	D
	SB College St.	Left	C	C
		Through	C	C
		Right	C	C
	Overall LOS		**C**	**C**
Gay Street at Samford Avenue (traffic signal)	EB Samford Avenue	Left	B	C
		Through/Right	B	C
	WB Samford Avenue	Left	A	C
		Through/Right	B	C
	NB Gay Street	Left	B	B
		Through/Right	B	B
	SB Gay Street	Left	B	B
		Through/Right	B	B
	Overall LOS		**B**	**C**
Samford Avenue at Armstrong Street (side street stop)	EB Samford Ave	Left	A	A
		Through	A	A
	SB Armstrong Street	Left/Right	B	C
Samford Avenue at Wrights Mill Road (side Street stop)	WB Samford Ave	Left	A	A
		Through	A	A
	NB Wrights Mill Road	Left/Right	C	C
Samford Avenue at Payne Street (traffic signal)	EB Samford Ave	Through	A	A
	WB Samford Ave	Through	A	A
	NB School Drive	Left	C	C
		Right	C	C
	SB Payne Street	Left	C	C
		Right	C	C
	Overall LOS		**A**	**A**
Samford Avenue at Moores Mill Road (traffic signal)	EB Samford Ave	Through/Right	A	A
	WB Samford Ave	Left/Through	A	A
	NB Moores Mill Rd	Left/Right	C	C
	Overall LOS		**B**	**A**

TABLE 9 (CONTINUED) - EXISTING INTERSECTION LEVELS OF SERVICE WITH RECOMMENDED IMPROVEMENTS

Intersection (traffic control)	Approach	Movement/Lane Group	Level of Service A.M. Peak Hour	Level of Service P.M. Peak Hour
Samford Avenue at Dean Road (traffic signal)	NB Dean Rd	Left	B	B
		Through	C	C
		Right	B	B
	SB Dean Rd	Left	B	B
		Through	C	C
		Right	B	B
	EB Samford Ave	Left	C	C
		Through/Right	D	D
	WB Samford Ave	Left	C	C
		Through	C	C
		Right	C	C
	Overall LOS		**C**	**C**
Samford Avenue at East University Drive (traffic signal)	EB Samford Ave	Left	B	B
		Through/Right	B	B
	WB Samford Ave	Left	B	B
		Through/Right	B	B
	NB E University Dr	Left	A	A
		Through	B	B
		Right	A	A
	SB E University Dr	Left	A	A
		Through-Right	B	B
	Overall LOS		**B**	**B**
Samford Avenue at Glenn Avenue (traffic signal)	EB Samford Ave	Left	C	D
		Through/Right	A	D
	WB Bank Drive	Left	A	D
		Through/Right	A	D
	NB Glenn Ave	Left	A	B
		Through	A	A
		Right	A	A
	SB Glenn Ave	Left	A	A
		Through	A	B
		Right	A	A
	Overall LOS		**A**	**B**

PROJECTED TRAFFIC GROWTH

Growth rates were calculated for the study roadways based on historical traffic volumes and growth trends. The historical growth rates calculated for intersections on Samford Avenue were as follows:

- From College Street to Moores Mill Road: +1.4% per year
- From Dean Road to Glenn Avenue: +2.6% per year

The annual growth rate was applied for a ten (10) year period. Future traffic volumes are illustrated in **Figure 5**.

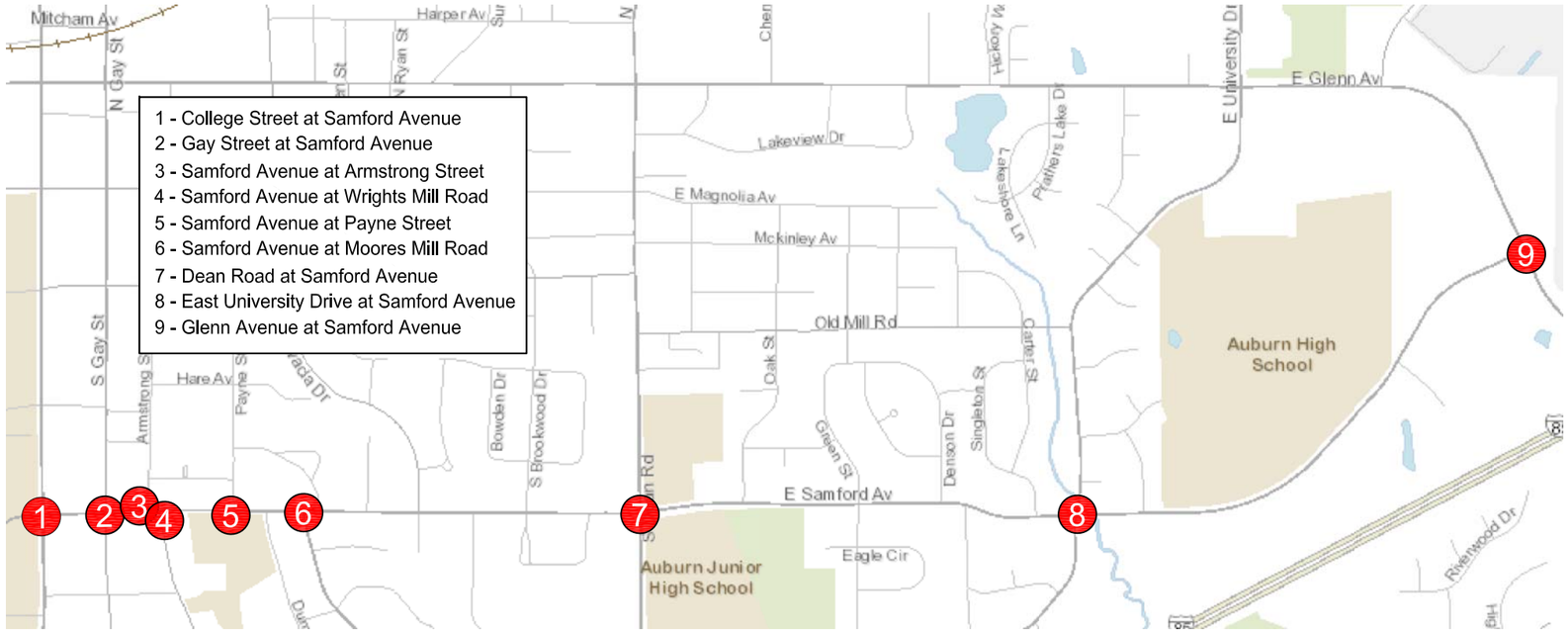
ANALYSES WITH PROJECTED TRAFFIC GROWTH

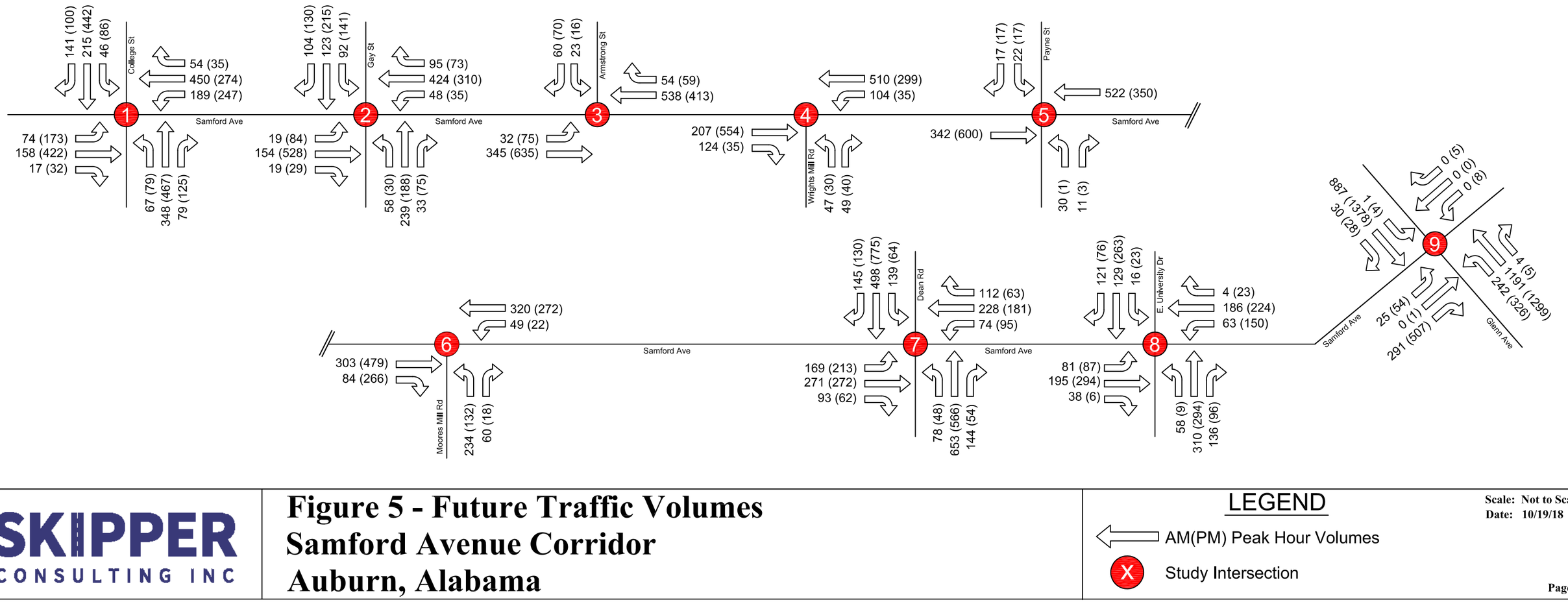
Analyses conducted for this scenario assumes projected traffic volumes for ten (10) years would be in place. Analyses also assume that improvements recommended for existing conditions would be in place. The improvements included in the existing conditions analysis which are assumed in the future conditions analysis are:

- Signal system on Samford Avenue from College Street to Gay Street
- Second southbound through lane on College Street at Samford Avenue
- Road diet project on Dean Avenue, resulting in one through lane northbound and southbound on Dean Road , and right turn lanes northbound and southbound on Dean Road

Intersection Capacity Analysis with Projected Traffic Growth

Capacity analyses for projected ten (10) year peak hour conditions were conducted for the study intersections along the Samford Avenue Corridor using methods outlined in the *Highway Capacity Manual, 2010*. Results of these capacity analyses are summarized in **Table 10**.





SKIPPER CONSULTING INC

Figure 5 - Future Traffic Volumes
Samford Avenue Corridor
Auburn, Alabama

LEGEND

AM(PM) Peak Hour Volumes

X Study Intersection

Scale: Not to Scale
Date: 10/19/18

TABLE 10 - FUTURE INTERSECTION LEVELS OF SERVICE

Intersection (traffic control)	Approach	Movement/Lane Group	Level of Service A.M. Peak Hour	Level of Service P.M. Peak Hour
College Street at Samford Avenue (traffic signal)	EB Samford Ave.	Left	B	B
		Through/Right	C	D
	WB Samford Ave.	Left	B	C
		Through/Right	C	C
	NB College St.	Left	C	C
		Through/Right	D	D
	SB College St.	Left	C	C
		Through	C	C
		Right	C	C
	Overall LOS		**C**	**C**
Gay Street at Samford Avenue (traffic signal)	EB Samford Avenue	Left	C	C
		Through/Right	C	C
	WB Samford Avenue	Left	C	C
		Through/Right	B	C
	NB Gay Street	Left	B	B
		Through/Right	C	B
	SB Gay Street	Left	B	B
		Through/Right	B	B
	Overall LOS		**C**	**C**
Samford Avenue at Armstrong Street (side street stop)	EB Samford Ave	Left	A	A
		Through	A	A
	SB Armstrong Street	Left/Right	C	C
Samford Avenue at Wrights Mill Road (side Street stop)	WB Samford Ave	Left	A	A
		Through	A	A
	NB Wrights Mill Road	Left/Right	D	C
Samford Avenue at Payne Street (traffic signal)	EB Samford Ave	Through	A	A
	WB Samford Ave	Through	A	A
	NB School Drive	Left	C	C
		Right	C	C
	SB Payne Street	Left	C	C
		Right	C	C
	Overall LOS		**A**	**A**
Samford Avenue at Moores Mill Road (traffic signal)	EB Samford Ave	Through/Right	A	A
	WB Samford Ave	Left/Through	A	A
	NB Moores Mill Rd	Left/Right	C	C
	Overall LOS		**B**	**A**

TABLE 10 (CONTINUED) – FUTURE INTERSECTION LEVELS OF SERVICE

Intersection (traffic control)	Approach	Movement/Lane Group	Level of Service A.M. Peak Hour	Level of Service P.M. Peak Hour
Samford Avenue at Dean Road (traffic signal)	NB Dean Rd	Left	B	C
		Through	D	C
		Right	B	B
	SB Dean Rd	Left	C	B
		Through	C	D
		Right	B	B
	EB Samford Ave	Left	C	D
		Through/Right	D	D
	WB Samford Ave	Left	C	C
		Through	D	D
		Right	C	C
	Overall LOS		**C**	**C**
Samford Avenue at East University Drive (traffic signal)	EB Samford Ave	Left	C	B
		Through/Right	B	B
	WB Samford Ave	Left	C	C
		Through/Right	B	B
	NB E University Dr	Left	B	B
		Through	B	C
		Right	B	A
	SB E University Dr	Left	B	B
		Through-Right	B	C
	Overall LOS		**B**	**B**
Samford Avenue at Glenn Avenue (traffic signal)	EB Samford Ave	Left	C	D
		Through/Right	A	D
	WB Bank Drive	Left	A	D
		Through/Right	A	D
	NB Glenn Ave	Left	A	C
		Through	A	A
		Right	A	A
	SB Glenn Ave	Left	A	B
		Through	A	C
		Right	A	A
	Overall LOS		**A**	**B**

Roadway Segment Capacity Analysis with Projected Traffic Growth

Roadway segment capacity analyses for future daily traffic conditions along the Samford Avenue Corridor were performed using the daily capacity and level of service chart obtained from the Alabama Department of Transportation. Levels of service for the daily roadway segment capacity analyses conducted for Samford Avenue are summarized in **Table 11**.

TABLE 11 – FUTURE ROADWAY SEGMENT LEVELS OF SERVICE

Samford Avenue					
From	**To**	**Segment Length (miles)**	**Cross Section**	**Daily Volume**	**Roadway LOS by Segment**
Gay Street	Wrights Mill Road	.09	2 Lane	13,688	E
Wrights Mill Road	Moores Mill Road	.23	2 Lane	12,960	D
Dean Road	East University Drive	.72	2 Lane	8,404	B
East University Drive	Glenn Avenue	.91	3 Lane	8,466	B

Right-Turn Lane Warrant Evaluations with Projected Traffic Growth

Future peak hour traffic volumes were compared with the turn lane warrant criteria outlined in the National Cooperative Highway Research Program (NCHRP) Report 457 *Evaluating Intersection Improvements: An Engineering Study Guide*, published by the Transportation Research Board. For evaluation purposes, the posted speed limit was utilized for roadways. The results of the right turn lane warrant analyses are shown in **Table 12**.

TABLE 12 – FUTURE RIGHT TURN LANE WARRANT EVALUATION

Intersection	Approach	Peak Hour Evaluated	Turn Lane Warranted
Samford Avenue at College Street	Northbound	PM	Not Warranted
	Westbound	AM	Not Warranted
Samford Avenue at Gay Street	Northbound	PM	Not Warranted
	Southbound	PM	Not Warranted
	Eastbound	PM	Not Warranted
	Westbound	AM	Not Warranted
Samford Avenue at Armstrong Street	Westbound	AM	Not Warranted
Samford Avenue at Wrights Mil Road	Eastbound	AM	Not Warranted
Samford Avenue at Moores Mill Road	Eastbound	PM	Not Warranted
Samford Avenue at Dean Road	Eastbound	PM	Not Warranted
	Northbound	PM	Warranted
	Southbound	AM	Warranted
Samford Avenue at East University Drive	Eastbound	AM	Not Warranted
	Westbound	PM	Not Warranted
	Southbound	AM	Not Warranted

FUTURE TRAFFIC SIGNAL WARRANT ANALYSIS

Samford Avenue at Armstrong Street/Wrights Mill Road

A traffic signal warrant analysis was performed for future traffic conditions for the offset intersection of Samford Avenue at Armstrong Street/Wrights Mill Road using the methodology included in the 2009 *Manual on Uniform Traffic Control Devices*, published by the Federal Highway Administration. The future approach traffic volumes are summarized in **Table 13**. Existing approach traffic volumes were compared to minimum traffic volumes required to warrant traffic signalization for Warrants 1A, 1B and 2. The results of the analysis showed the following:

- 0 of 8 required hours are met for Warrant 1A
- 10 hours met, 8 required hours for Warrant 1B
- 5 hours met, 4 required hours for Warrant 2

Therefore, signalization is warranted for future 2028 traffic conditions at the intersection of Samford Avenue at Armstrong Street/Wrights Mill Road.

RECOMMENDED IMPROVEMENTS WITH PROJECTED TRAFFIC GROWTH

Based upon the analyses and evaluations conducted for the Samford Avenue Corridor for projected ten (10) year conditions, the following improvements are recommended:

- Installation of a traffic signal at the offset-T intersection of Samford Avenue at Armstrong Street/ Wrights Mill Road

Intersection Capacity Analysis with Projected Traffic Growth and Improvements

Capacity analyses for projected ten (10) year peak hour conditions were conducted for the study intersections along the Samford Avenue Corridor using methods outlined in the *Highway Capacity Manual, 2010*. Results of these capacity analyses are summarized in **Table 14**.

TABLE 13 – FUTURE APPROACH TRAFFIC VOLUMES
SAMFORD AVENUE ARMSTRONG STREET/WRIGHTS MILL ROAD

Time	Samford Avenue			Wrights Mill Road	Armstrong Street
	Eastbound	Westbound	Total	Northbound	Southbound
6-7 AM	100	223	323	35	38
7-8 AM	386	551	937	130	88
8-9 AM	250	540	790	55	96
9-10 AM	259	390	649	51	80
10-11 AM	324	328	652	49	65
11-12 Noon	437	425	862	60	87
12-1 PM	519	455	974	76	117
1-2 PM	413	428	841	50	84
2-3 PM	496	374	870	117	125
3-4 PM	531	425	956	78	84
4-5 PM	649	500	1149	83	70
5-6 PM	703	524	1227	104	109
6-7 PM	579	389	968	55	101
7-8 PM	455	283	738	35	82
8-9 PM	321	272	593	16	49
9-10 PM	237	172	409	22	47

TABLE 14 - FUTURE INTERSECTION LEVELS OF SERVICE WITH RECOMMENDED IMPROVEMENTS

Intersection (traffic control)	Approach	Movement/Lane Group	Level of Service A.M. Peak Hour	Level of Service P.M. Peak Hour
College Street at Samford Avenue (traffic signal)	EB Samford Ave.	Left	B	B
		Through/Right	C	D
	WB Samford Ave.	Left	B	C
		Through/Right	C	C
	NB College St.	Left	C	C
		Through/Right	D	D
	SB College St.	Left	C	C
		Through	C	C
		Right	C	C
	Overall LOS		**C**	**C**
Gay Street at Samford Avenue (traffic signal)	EB Samford Avenue	Left	C	C
		Through/Right	C	C
	WB Samford Avenue	Left	C	C
		Through/Right	B	C
	NB Gay Street	Left	B	B
		Through/Right	C	B
	SB Gay Street	Left	B	B
		Through/Right	B	B
	Overall LOS		**C**	**C**
Samford Avenue at Armstrong Street (side street stop)	EB Samford Ave	Left/Through/Right	A	B
	WB Samford Avenue	Left/Through/Right	B	A
	NB Wrights Mill Road	Left/Right	B	B
	SB Armstrong Street	Left/Right	A	B
Samford Avenue at Payne Street (traffic signal)	EB Samford Ave	Through	A	A
	WB Samford Ave	Through	A	A
	NB School Drive	Left	C	C
		Right	C	C
	SB Payne Street	Left	C	C
		Right	C	C
	Overall LOS		**A**	**A**
Samford Avenue at Moores Mill Road (traffic signal)	EB Samford Ave	Through/Right	A	A
	WB Samford Ave	Left/Through	A	A
	NB Moores Mill Rd	Left/Right	C	C
	Overall LOS		**B**	**A**

TABLE 14 (CONTINUED) – FUTURE INTERSECTION LEVELS OF SERVICE WITH RECOMMENDED IMPROVEMENTS

Intersection (traffic control)	Approach	Movement/Lane Group	Level of Service A.M. Peak Hour	Level of Service P.M. Peak Hour
Samford Avenue at Dean Road (traffic signal)	NB Dean Rd	Left	B	C
		Through	D	C
		Right	B	B
	SB Dean Rd	Left	C	B
		Through	C	D
		Right	B	B
	EB Samford Ave	Left	C	D
		Through/Right	D	D
	WB Samford Ave	Left	C	C
		Through	D	D
		Right	C	C
	Overall LOS		**C**	**C**
Samford Avenue at East University Drive (traffic signal)	EB Samford Ave	Left	C	B
		Through/Right	B	B
	WB Samford Ave	Left	C	C
		Through/Right	B	B
	NB E University Dr	Left	B	B
		Through	B	C
		Right	B	A
	SB E University Dr	Left	B	B
		Through-Right	B	C
	Overall LOS		**B**	**B**
Samford Avenue at Glenn Avenue (traffic signal)	EB Samford Ave	Left	C	D
		Through/Right	A	D
	WB Bank Drive	Left	A	D
		Through/Right	A	D
	NB Glenn Ave	Left	A	C
		Through	A	A
		Right	A	A
	SB Glenn Ave	Left	A	B
		Through	A	C
		Right	A	A
	Overall LOS		**A**	**B**

PEDESTRIAN AND BICYCLE IMPROVMENTS

ALTA recommendations for priority pedestrian and bicycle improvements on Samford Avenue include the following:

- Bike lanes from College Street to the western edge of Auburn Middle School (Moderate Priority)
- Sidewalk on the south side of Samford Avenue from Moores Mill Road to Dean Road (Highest Priority)
- Sidewalk on e north side of Samford Avenue from the western edge of Auburn Middle School to East University Drive

These projects are illustrated in **Figure 6** (mapping provided by ALTA Planning and Engineering.

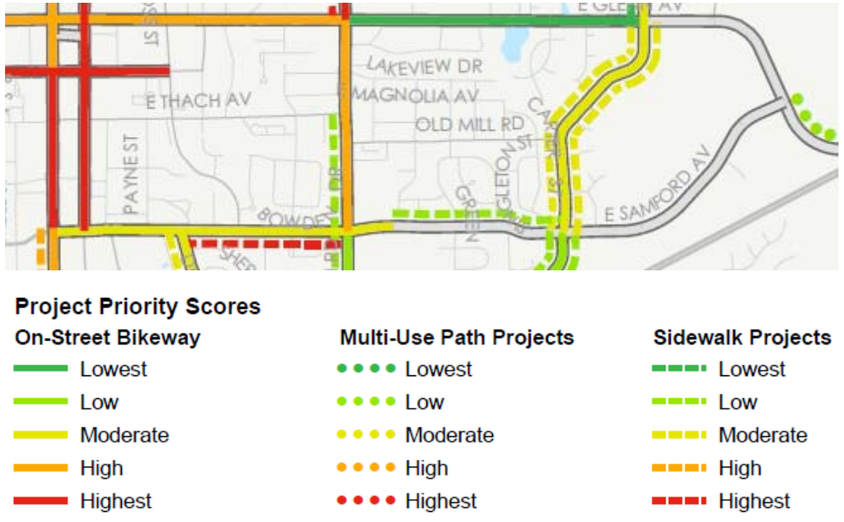


Figure 6 – Pedestrian and Bicycle Improvements (ALTA)

During a consultation meeting between the City of Auburn, Skipper Consulting, and ALTA, it was determined that the only project to advance as a part of this study was to restripe Samford Avenue between Dean Road and the western edge of Auburn Middle School to provide bike lanes. This project is illustrated in **Figure 7**.

SKIPPER CONSULTING INC

Figure 7 - Samford Ave at Auburn Middle School Auburn, Alabama

LEGEND

Scale: Not to Scale
Date: 1/3/19