

Section 3I:

# Opelika Road Corridor



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## INTRODUCTION

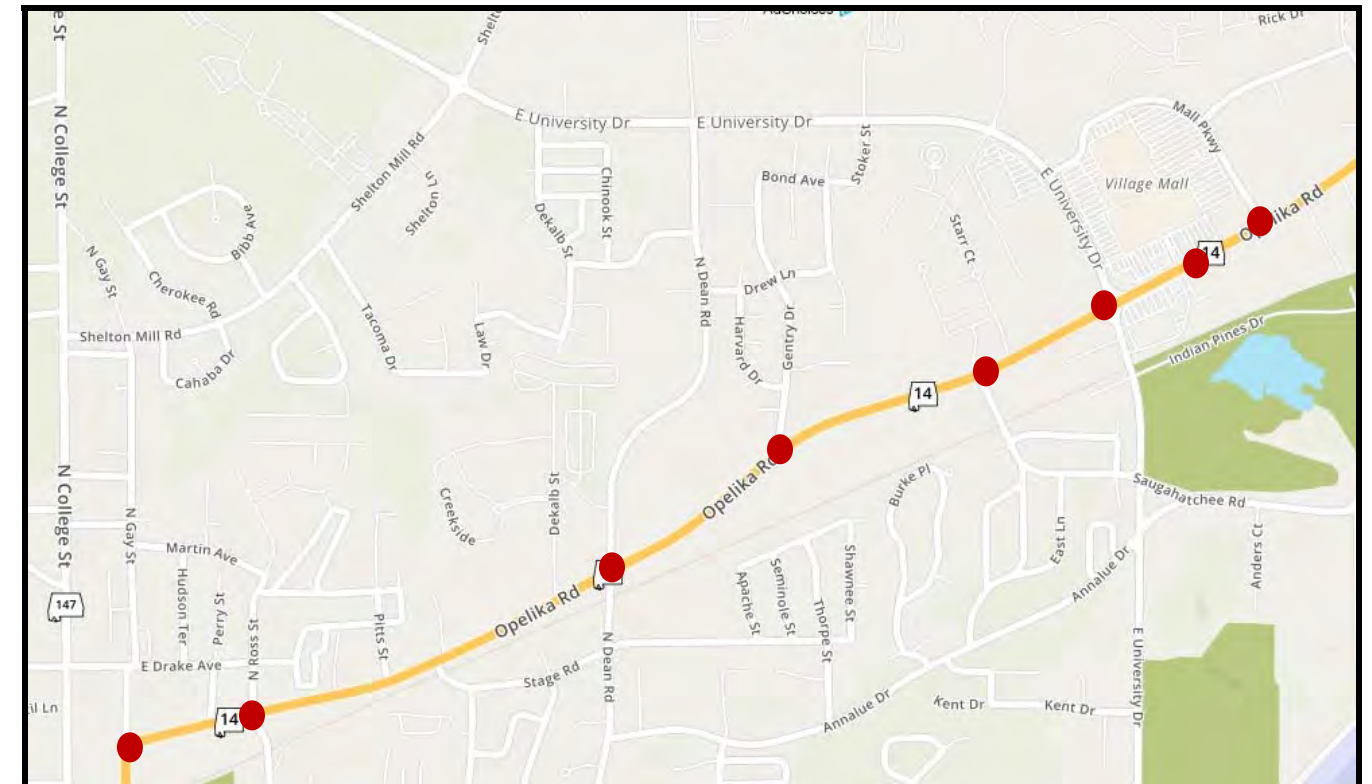
This section documents the results of traffic operations evaluations for the Opelika Road Corridor from N. Gay St. to Mall Parkway in Auburn, Alabama. The intersections analyzed in this corridor include:

- Opelika Road at N. Gay Street
- Opelika Road at N. Ross Street
- Opelika Road at N. Dean Road
- Opelika Road at Gentry Drive
- Opelika Road at Saughatchee Road
- Opelika Road at E. University Drive
- Opelika Road at Ronald Lane
- Opelika Road at Mall Parkway

The locations of the study intersections along the Opelika Road Corridor are illustrated in **Figure 1**. To accomplish the traffic operations evaluations for the Opelika Road 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 Opelika Road;
- 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 – Opelika Road Corridor and Study Intersections**

## BACKGROUND INFORMATION

### Study Area Roadways

Opelika Road is a minor arterial roadway from N. Gay Street to Mall Parkway. Opelika Road operates as a commercial and commuter route from the northeastern portion of Auburn into the central activity center of the city including the Auburn University Campus and vicinity. It serves dense retail and commercial land use for its eastern segments and transitions into less dense commercial land use in its middle segments. Institutional land uses are prevalent for the western segment approaching the central Auburn city activity center.

The Opelika Road study corridor is approximately 2.3 miles in length. Characteristics of the roadways within the Opelika Road Corridor are summarized in **Table 1**.

**Table 1 - Corridor Roadway Characteristics**

Roadway	Parking	# of Lanes	Travel Direction	Travel Speeds (mph)	Classification
Opelika Road (N Gay St. to N Ross St.)	None	2 (plus TWLTL)	East/West	35	Minor Arterial
Opelika Road (N Ross St. to N Dean Rd.)	None	2 (plus TWLTL) then 4 (plus TWLTL)	East/West	35 then 45	Minor Arterial
Opelika Road (N Dean Rd. to Gentry Dr.)	None	4 (plus TWLTL)	East/West	45	Minor Arterial
Opelika Road (Gentry Dr. to Saugahatchee Rd.)	None	4 (plus TWLTL)	East/West	45	Minor Arterial
Opelika Road (Saugahatchee Rd. to East University Dr.)	None	4 (plus TWLTL)	East/West	45	Minor Arterial
Opelika Road (East University Dr. to Ronald Ln.)	None	4 (plus TWLTL)	East/West	45	Minor Arterial
Opelika Road (Ronald Ln. to Mall Pkwy.)	None	4 (plus TWLTL)	East/West	45	Minor Arterial

**Peak Period Observations**

Peak period observations were conducted throughout the corridor to develop an understanding for recurring delay or queueing which adversely affects operations or safety at the intersections or along corridor segments. Key observations in terms of traffic operations and/or safety during peak and non-peak times are outlined in the following items:

*Opelika Road near Auburn Mall* - The segment in the vicinity of the Auburn Mall experiences recurring congestion resulting in the signalized intersection of Opelika Road and E. University Drive having high traffic volumes for the various traffic movements served.



**Opelika Road Recurring Traffic Congestion in Vicinity of Auburn Mall**

*Opelika Road at N. Ross Street* - The signalized intersection of Opelika Road and N. Ross St. is within the downtown area of Auburn near the University. A number of pedestrians were noted crossing each of the four legs of the intersection during peak traffic times. Additionally, queueing of vehicular traffic was noted for the northbound approach to the intersection and extended back toward the at-grade railroad crossing.





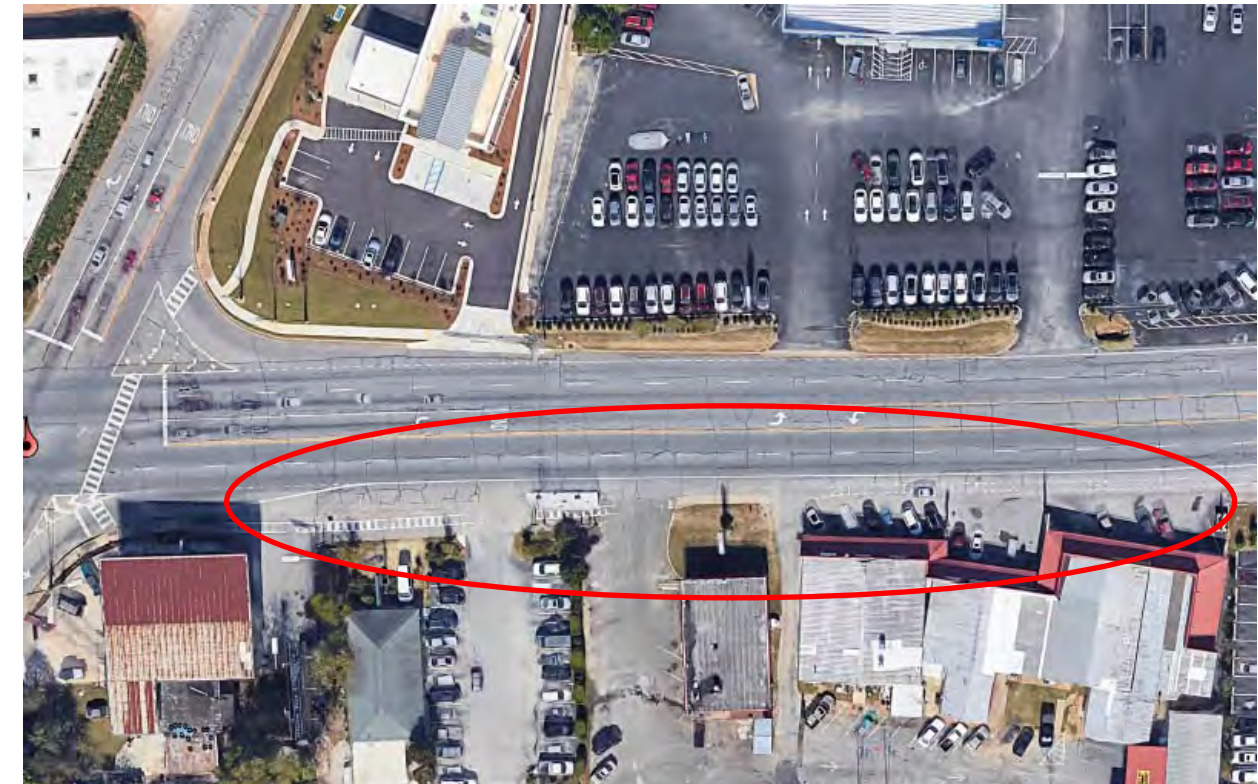
**Intersection of Opelika Road at N. Ross St. High Pedestrian Volumes**

*Opelika Road Corridor Driveways* – Multiple driveway locations were observed with undesirable wide driveway openings or with no separation between parking lots and the travel lanes of Opelika Road.



**Opelika Road Wide Driveway near Gentry Drive**

*Opelika Road near Dean Road* – Undesirable on-street 90 degree parking and nontypical infrastructure for pedestrian activity was noted near the intersection with Dean Road.



**Opelika Road 90 Degree On-Street Parking and Nontypical Pedestrian Infrastructure**

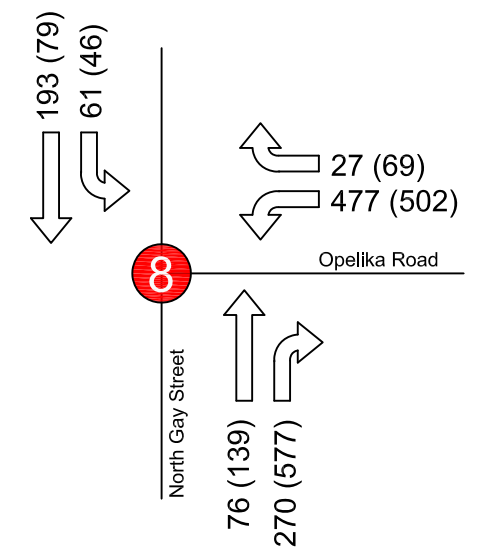
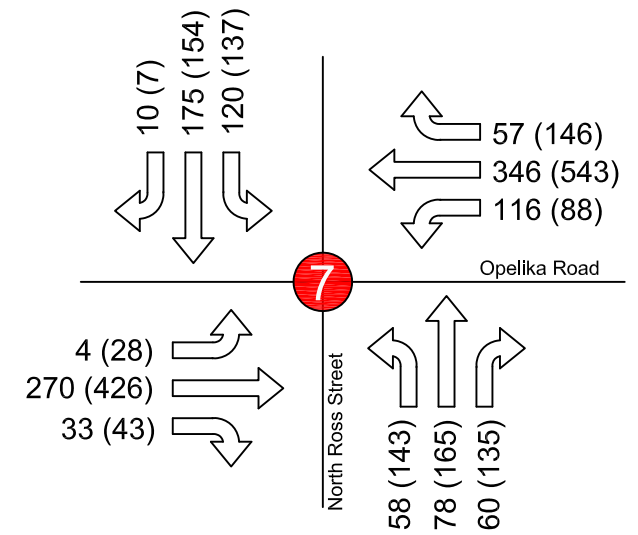
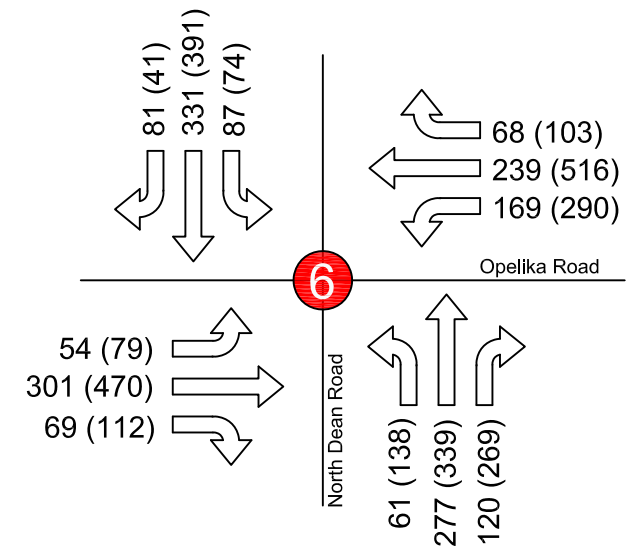
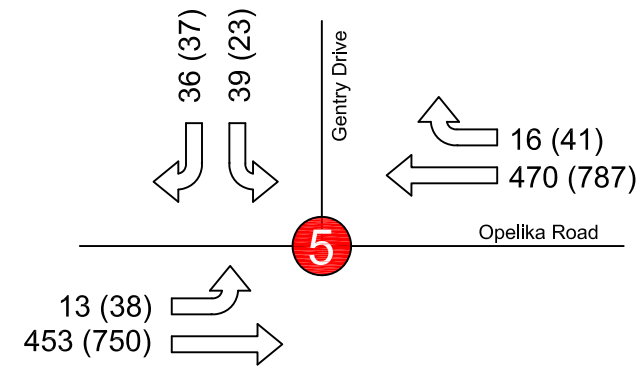
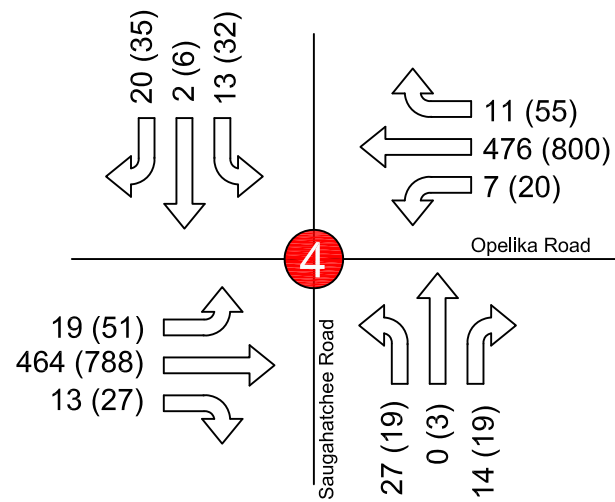
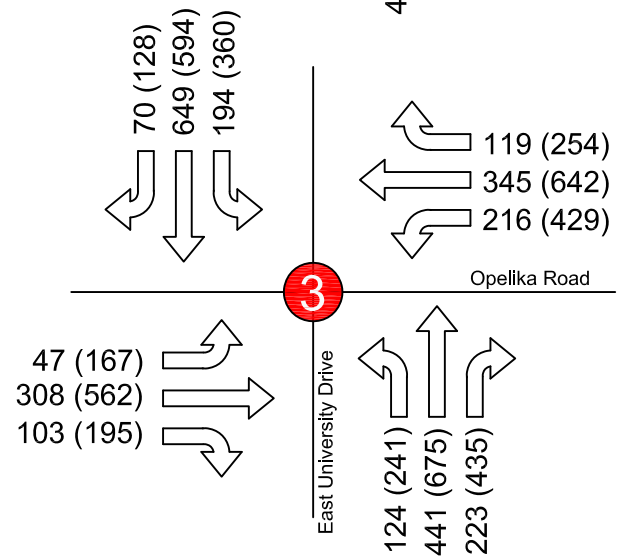
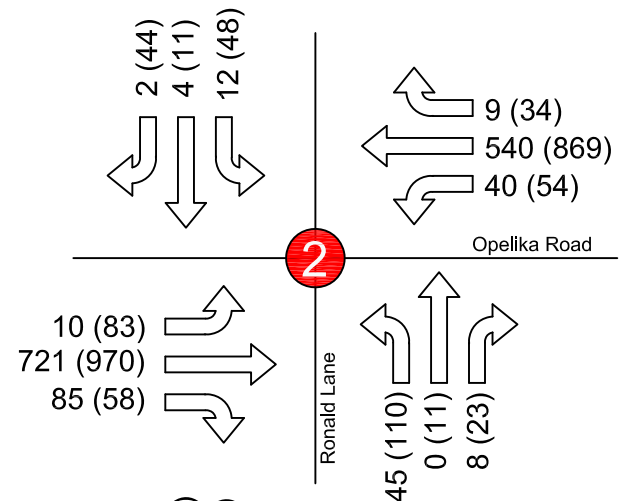
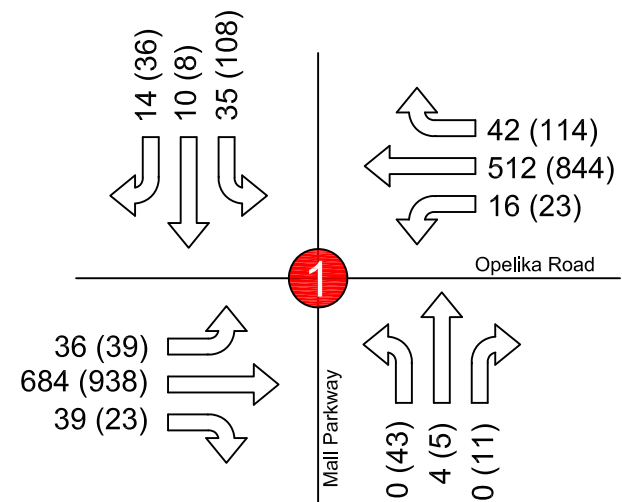
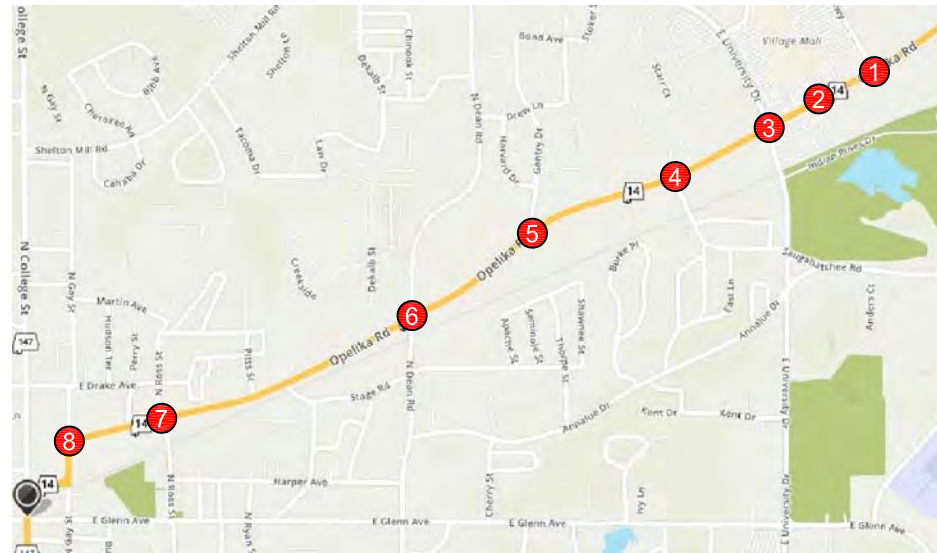
**Peak Hour Traffic Counts**

Morning (7:00-9:00 am) and afternoon (4:00-6:00 pm) peak hour turning movement counts were conducted along the Opelika Road Corridor at study intersections during the months of October 2016 and Spring 2018. Traffic count data utilized for the analyses of these intersections is summarized in **Figure 2**.



**LEGEND**

- Study Intersection
- 1 Opelika Road at Mall Parkway
- 2 Opelika Road at Ronald Lane
- 3 Opelika Road at East University Drive
- 4 Opelika Road at Saughatchee Road
- 5 Opelika Road at Gentry Drive
- 6 Opelika Road at North Dean Road
- 7 Opelika Road at North Ross Street
- 8 Opelika Road at North Gay Street



**Figure 2 - Existing Traffic Volumes  
Opelika Road Corridor  
Auburn, Alabama**

**LEGEND**

- AM(PM) Peak Hour Volumes
- X Study Intersection

**EXISTING CONDITIONS ANALYSES**

**Existing Intersection Capacity Analysis**

Capacity analyses for peak hour conditions at the study intersections along the Opelika Road 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 study intersections evaluated along the Opelika Road Corridor operate at acceptable levels of service for both peak periods tested. The exceptions are the westbound left turns at the intersection of Opelika Road and N Dean Road during the PM peak hour; the northbound shared through-right movement at the intersection of Opelika Road and Ross St during the PM peak hour; and several movements for the intersection of Opelika Road at E. University Drive during the PM peak hour.

**Table 2 - Existing Intersection Levels of Service**

Intersection (traffic control)	Approach	Movement/Lane Group	Level of Service	
			A.M.	P.M.
			Peak Hour	Peak Hour
Opelika Rd at Mall Pkwy (Signalized)	Opelika Rd EB	Left	A	A
		Through/Right	A	B
	Opelika Rd WB	Left	A	A
		Through	A	B
		Right	A	A
	Mall Pkwy NB	Left/Through/Right	C	C
	Mall Pkwy SB	Left	C	C
Through/Right		B	B	
<b>Overall LOS</b>			<b>A</b>	<b>B</b>
Opelika Rd at Ronald Ln (Signalized)	Opelika Rd EB	Left	A	A
		Through	A	B
		Right	A	A
	Opelika Rd WB	Left	A	A
		Through/Right	A	B
	Ronald Ln NB	Left	C	D
		Through/Right	A	B
	Ronald Ln SB	Left/Through	C	C
		Right	A	A
	<b>Overall LOS</b>			<b>A</b>
Opelika Rd at East University Dr (Signalized)	Opelika Rd EB	Left	D	<b>E</b>
		Through	D	<b>E</b>
		Right	B	B
	Opelika Rd WB	Left	D	E
		Through	C	D
		Right	A	B
	East University Dr NB	Left	D	<b>E</b>
		Through	C	D
		Right	B	C
	East University Dr SB	Left	D	<b>E</b>
		Through	C	<b>E</b>
		Right	B	C
<b>Overall LOS</b>			<b>C</b>	<b>D</b>

Table 2 (Continued) - Existing Intersection Levels of Service

Intersection (traffic control)	Approach	Movement/Lane Group	Level of Service	
			A.M.	P.M.
			Peak Hour	Peak Hour
Opelika Rd at Saugahatchee Rd (Signalized)	Opelika Rd EB	Left	A	A
		Through/Right	A	A
	Opelika Rd WB	Left	A	A
		Through	A	A
	Saugahatchee Rd NB	Right	A	A
		Left/Through/Right	A	B
	Saugahatchee Rd SB	Left/Through	B	B
		Right	A	A
<b>Overall LOS</b>			<b>A</b>	<b>A</b>
Opelika Rd at Gentry Dr (Unsignalized)	Opelika Rd EB	Left	A	A
		Through	A	A
	Opelika Rd WB	Through/Right	A	B
		Gentry Dr SB	Left	B
	Right		B	B
<b>Overall LOS</b>			<b>A</b>	<b>A</b>
Opelika Rd at N Dean Rd (Signalized)	Opelika Rd EB	Left	B	C
		Through	C	D
		Right	A	A
	Opelika Rd WB	Left	C	D
		Through	C	C
		Right	A	A
	N Dean Rd NB	Left	B	C
		Through	C	C
		Right	A	A
	N Dean Rd SB	Left	B	B
Through		C	D	
Right		A	A	
<b>Overall LOS</b>			<b>C</b>	<b>C</b>

Table 2 (Continued) - Existing Intersection Levels of Service

Intersection (traffic control)	Approach	Movement/Lane Group	Level of Service	
			A.M.	P.M.
			Peak Hour	Peak Hour
Opelika Rd at N Ross St (Signalized)	Opelika Rd EB	Left	B	B
		Through/Right	C	C
	Opelika Rd WB	Left	B	B
		Through/Right	B	D
	N Ross St NB	Left	B	C
		Through/Right	C	<b>E</b>
	N Ross St SB	Left	B	D
		Through/Right	C	D
<b>Overall LOS</b>			<b>C</b>	<b>D</b>
Opelika Rd at N Gay St (Signalized)	Opelika Rd WB	Left	B	A
		Right	A	A
	N Gay St NB	Through	B	B
		Right	A	A
	N Gay St SB	Left	B	B
		Through	B	B
<b>Overall LOS</b>			<b>A</b>	<b>A</b>



**Existing Arterial Segment Capacity Analysis**

Arterial segment capacity analyses for daily and for peak hour conditions along the Opelika Road Corridor were conducted for the morning and afternoon peak hour periods using methods outlined in the *Highway Capacity Manual, 2010*. To develop levels of service based upon the Daily Capacity as shown in **Table 3** and compared to Level of Service Chart, included in **Table 4**, two-way capacity was divided in half to develop one-way capacity for the segment.

**Table 3 – Existing Roadway Daily Segment Levels of Service**

Segment Description	Two-Way Daily Volume	Travel Direction	Directional Daily Volume	Number of Lanes	Roadway LOS by Segment
East of Gentry Dr. 4-Lane (Divided)	19,730	Eastbound	9,684	2	C
		Westbound	10,046	2	C
East of EUD 4-Lane (Divided)	23,734	Eastbound	12,354	2	D
		Westbound	11,380	2	D

**Table 4 – 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

Levels of service for the arterial analyses conducted for Opelika Road are summarized in **Table 5**.

**Table 5 - Existing Arterial Segment Levels of Service**

Eastbound Opelika Road Arterial Analysis				
From	To	Segment Length	Arterial LOS by Segment	
			AM Peak	PM Peak
Mall Pkwy	Ronald Ln	0.17	A	B
Ronald Ln	East University Dr	0.15	A	B
East University Dr	Saugahatchee Rd	0.28	A	B
Saugahatchee Rd	Gentry Dr	0.4	A	A
Gentry Dr	N Dean Rd	0.39	A	B
N Dean Rd	N Ross St	0.72	C	D
N Ross St	N Gay St	0.24	C	C
Westbound Opelika Road Arterial Analysis				
From	To	Segment Length	Arterial LOS by Segment	
			AM Peak	PM Peak
Mall Pkwy	Ronald Ln	0.17	A	B
Ronald Ln	East University Dr	0.15	A	B
East University Dr	Saugahatchee Rd	0.28	A	B
Saugahatchee Rd	Gentry Dr	0.4	A	A
Gentry Dr	N Dean Rd	0.39	A	A
N Dean Rd	N Ross St	0.72	C	D
N Ross St	N Gay St	0.24	C	C

**Table 5** indicates the overall arterial level of service along Dean Road is a level of service “C”, “D” or better for each direction of travel during both the morning and afternoon peak hours.

**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. A review of existing right turn volumes for intersections throughout the corridor indicated numerous right turning maneuvers occurring for the intersection of Opelika Road at N. Ross St.

As a result, right-turn lane warrant evaluations were conducted for the intersection for each of the following approaches:

- Opelika Road (Eastbound) at N Ross Street
- Opelika Road at N. Ross Street (Northbound Rights)

The results of these comparisons indicate:

- Opelika Road (Eastbound Rights) at N Ross Street – During the afternoon peak hour, existing right turn volumes (146 right turning vehicles) are sufficient to meet the criteria threshold for a right-turn lane installation. As such, a right-turn lane is recommended.
- Opelika Road at N. Ross Street (Northbound Rights) – During the afternoon peak hour, existing right turn volumes (135 right turning vehicles) are sufficient to meet the criteria threshold for a right-turn lane installation. As such, a right-turn lane is recommended.

**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 Opelika Road. Screening procedures and crash analyses were conducted to determine any locations that are worthy of safety-based roadway improvements. A summary of the findings for Opelika Road Corridor is included in the paragraphs below along with recommendations:

Opelika Road at East University Drive

The citywide crash study noted the intersection of Opelika Road at E. University Drive as a “High” priority in terms of addressing crash occurrence. The primary trends noted for the intersection include rear-end crashes for the northbound and southbound approaches; left turn opposing crashes between southbound left turns and northbound through vehicles; and angle crashes between westbound left turns and northbound through crashes.

Opelika Road at Dean Road

The primary trends noted for the intersection include rear-end crashes for the eastbound and westbound approaches. A notable trend for the intersection includes rear-end crashes for northbound right turning vehicles. This is likely attributable to the right turn yielding operation in combination with the available acceleration lane.

**Travel Time**

GPS-based travel time runs were performed on Opelika Road between N. Gay St. and Mall Pkwy. The roadway segment is approximately 2.3 miles. Travel time runs were performed during the AM, Midday, and PM peak periods of traffic flow in early April 2018. The results of the travel time runs are shown in **Table 6**.

**Table 6 – Travel Time Runs**

AM Peak				Midday Peak				PM Peak			
Start Time	Dir.	Elapsed Time	Avg. Speed (mph)	Start Time	Dir.	Elapsed Time	Avg. Speed (mph)	Start Time	Dir.	Elapsed Time	Avg. Speed (mph)
7:09	NB	4:57	29.5	11:06	SB	4:41	30.0	4:07	SB	6:50	21.7
7:16	SB	4:41	30.7	11:22	NB	5:54	25.2	4:19	NB	5:50	25.5
7:30	NB	5:59	24.3	11:31	SB	6:07	24.4	4:28	SB	5:48	24.9
7:41	SB	5:38	25.6	11:44	NB	6:01	24.9	4:45	NB	5:49	25.6
7:51	NB	5:24	27.0	11:59	NB	5:00	29.4	4:57	SB	5:24	26.6
8:02	SB	5:25	26.6	12:10	SB	6:01	24.6	5:06	NB	6:08	24.8
8:10	NB	5:13	27.9	12:22	SB	4:57	29.8	5:21	SB	5:22	26.8
8:20	SB	5:13	28.2	12:36	NB	5:42	26.0	5:32	NB	4:48	31.3
8:34	NB	6:13	23.6	12:45	SB	5:03	28.6	6:35	SB	6:35	22.0
8:51	SB	5:02	28.6	12:55	NB	5:10	28.5	6:46	NB	5:44	26.7
9:05	NB	5:06	28.6	1:06	SB	4:52	29.6	6:57	SB	6:37	21.8
9:14	SB	5:22	28.3	1:27	NB	5:21	27.7	7:06	NB	5:04	29.4

**EXISTING CONDITIONS ANALYSES WITH IMPROVEMENTS**

**Recommended Improvements**

Roadway and traffic control improvements have been developed to help address capacity deficiencies identified in the capacity analyses conducted or traffic operational issues observed during peak periods along the Opelika Road corridor. The following outlines the recommended improvements for existing conditions along Opelika Road.

Opelika Road Signal System

It is recommended that a coordinated traffic signal system be implemented on Opelika Road for two corridor segments (1) N. Gay Street to N. Ross Street and (2) Saugahatchee Road to Mall Parkway. Included in this effort is recalculation of traffic signal clearance times; particularly for the intersection of Opelika Road at E. University Drive.

N. Ross Street and Opelika Road – Add Northbound and Westbound Right Turn Lane

Right turn lanes are recommended for both the northbound approach and the westbound approach to the intersection. The northbound right turn traffic volumes are comparable to the northbound through traffic volumes both using the shared through-right lane. An added dedicated right turn lane improvement will address queueing for the northbound approach lessening the potential for queueing back to the at-grade railroad crossing. For the westbound approach, the high number of right turn volumes warrant a dedicated right turn lane. This improvement will help alleviate delay at the intersection from the residual impact of the travel lane reduction from a 5-lane section to a 3-lane section for the segment of Opelika Road between Dean Road to N. Ross St.

For the added northbound dedicated right turn lane on Ross St., it is recommended to include 100 feet of storage based on modeling data and approximately 50 feet of taper length to avoid existing drainage structures and an existing private driveway conflict. For the added westbound dedicated right turn lane on Opelika Rd., it is recommended to include 100 feet of storage and approximately 50 feet of taper length to avoid an existing private driveway conflict. This improvement will require addressing timber utility pole conflicts on the intersection approach. This improvement is shown as **Figure 3**.

Opelika Road at E. University Drive – Install additional lane for NB Dual Left Turn Operation

Dual NB left turn lanes are recommended for the intersection to help address the added traffic growth to the intersection and help the coordinated signal system adjustments to traffic signal phasing. This improvement can be achieved by restriping with narrower lanes on the northbound approach. This improvement will also require modification to the traffic signal equipment. This improvement is shown as **Figure 4**.

Opelika Road at Dean Road – Modify NB Right Turn Lane Approach Angle

Modifying the NB right turn lane approach to conform to the “Urban Smart Channel” design to improve the visibility of approaching main line vehicles and pedestrians when making the right turn maneuver. Additional pedestrian friendly infrastructure is advisable to aid pedestrians crossing Opelika Road. This improvement is shown as **Figure 5**.

*NOTE: The intersection of Dean Road at Opelika Road is noted to have high traffic volumes for WB left turns from Opelika Road; particularly in the PM peak hour. The volumes are approaching the typical threshold for considering dual left turn lane operation. Operation of dual left turn lanes requires two downstream travel lanes to receive the traffic. The Dean Rd. corridor has been identified for a road diet, which will remove the ability to implement dual left turn lanes for WB Opelika Road at Dean Rd.*

**Corridor Access Management and Bicycle/Pedestrian Infrastructure Improvement Opportunities**North Gay Street to Ross Street

Opportunities for access management at driveways and options for pedestrian improvements were noted along the Opelika Road corridor. The City of Auburn has initiated such improvements along Opelika Road from North Gay Street to Ross Street. The existing cross section constructed by the City of Auburn is as follows (beginning on the north side of Opelika Road):

- 5' sidewalk
- 5' planted buffer
- 14' travel lane (including curb and gutter)
- 12' planted median/two way left turn lane
- 14' travel lane (including curb and gutter)

- 5' sidewalk (no buffer)
- **55' total**

Ross Street to Temple Street

The City of Auburn “Renew Opelika Road” Plan recommends that the same cross section which has been previously constructed from North Gay Street to Ross Street be continued up to Temple Street, with some minor modifications. The recommended cross section from Ross Street to Temple Street in the “Renew Opelika Road” study is:

- 5' sidewalk
- 6' planted buffer
- 13' travel lane
- 12' median and left turn lanes
- 13' travel lane
- 6' planted buffer
- 5' sidewalk
- **60' total**

The recommendations prepared by ALTA for this study recommend that multi-use paths be constructed on both sides of Opelika Road from Ross Street to Temple Street. Therefore, the recommended cross section would be similar to the cross section from North Gay Street to Ross Street, but modified as follows:

- 10' multi-use path
- 5' planted buffer
- 13' travel lane
- 12' planted median/two way left turn lane
- 13' travel lane
- 5' planted buffer
- 10' multi-use path
- **68' total**

The existing right of way along Opelika Road from Ross Street to Temple Street varies, but is typically 70 feet or less. The cross section proposed by ALTA would require acquisition of right of way through most of this section of roadway.

The recommendation of this study is to construct the proposed cross section as recommended by ALTA. This cross section is schematically depicted in **Figure 6**. Should the City of Auburn elect to undertake the project without acquiring significant right of way, then the cross section which was constructed from North Gay Street to Ross Street could be repeated in this section.

#### Temple Street to Dean Road

From Temple Street to the Auburn City Limits, the “Renew Opelika Road” plan recommends the following cross section:

- 5’ sidewalk
- 7’ planted buffer
- 13’ travel lane
- 11’ travel lane
- 15’ median and left turn lanes
- 11’ travel lane
- 13’ travel lane
- 6’ planted buffer
- 10’ multi-use path
- **91’ total**

The recommendations prepared by ALTA for this study recommend that multi-use paths be constructed on both sides of Opelika Road from Temple Street to Dean Road. Therefore, the recommended cross section would be as follows

- 10’ multi-use path
- 5’ planted buffer
- 13’ travel lane
- 11’ travel lane
- 15’ median and left turn lanes
- 11’ travel lane
- 13’ travel lane
- 5’ planted buffer
- 10’ multi-use path
- **93’ total**

The recommendation of this study is to construct the proposed cross section as recommended by ALTA. This cross section is schematically depicted in **Figure 7**.

#### Dean Road to Auburn City Limits

Further efforts for access management and pedestrian/bicycle improvements are currently being pursued for the segment of Opelika Road between Gentry Drive and Saugahatchee Road with the proposed “Twin City” private development. This improvement is shown as **Figure 8**. The proposed cross section differs significantly from the “Renew Opelika Road” Plan and is as follows:

- 5’ sidewalk
- 5’ planted buffer
- 7’ buffered bike lane
- two – 11’ travel lanes
- 15’ median
- two – 11’ travel lanes
- 7’ buffered bike lane
- 5’ planted buffer
- 6’ sidewalk
- **94’ total**

This cross section, hereinafter referred to as the “Twin City” cross section, has been recommended as the basic cross section which should be applied to Opelika Road from Dean Road to the Auburn City Limits line. A conceptual schematic of this proposal is shown in **Figure 9** (Dean Road to Gentry Drive) and **Figure 10** (Saugahatchee Road to the Auburn City Limits).





OPELIKA ROAD AT ROSS ST. (NB)  
 • CONSTRUCT RIGHT-TURN LANE

OPELIKA ROAD (WB) AT ROSS STREET  
 • CONSTRUCT SIDEWALK

OPELIKA ROAD (WB) AT ROSS STREET  
 • CONSTRUCT RIGHT-TURN LANE

OPELIKA ROAD AT ROSS STREET (NB)  
 • CONSTRUCT SIDEWALK

**SKIPPER**  
 CONSULTING INC



**Figure 3**  
**Opelika Road at Ross Street**  
 Existing Improvement  
 Opelika Road Corridor  
 Auburn, Alabama

October 2018

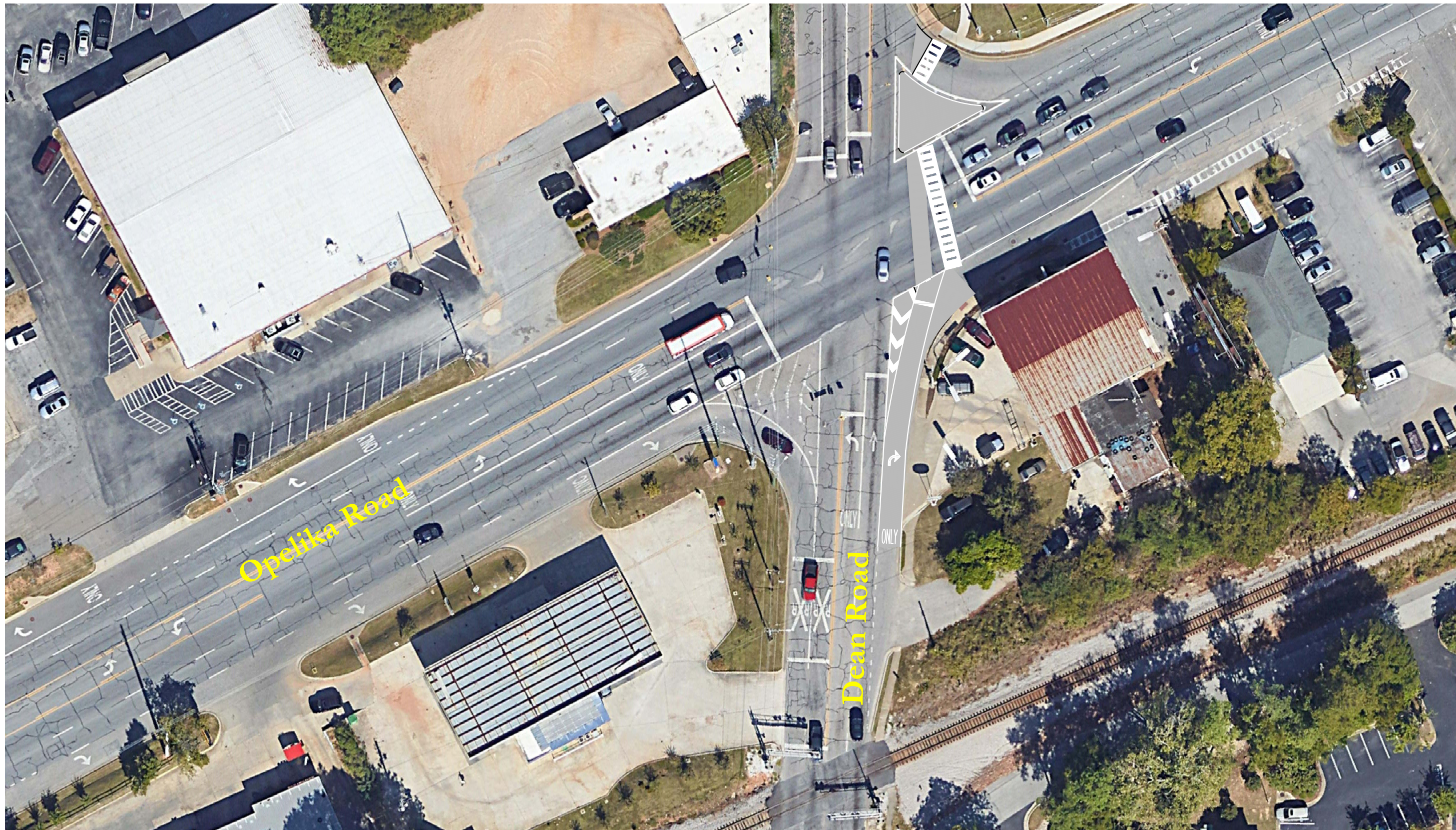




**OPELIKA ROAD AT EAST UNIVERSITY DRIVE. (NB)**

- CONSTRUCT LEFT-TURN LANE TO ALLOW FOR NB DUAL LEFTS





**SKIPPER**  
CONSULTING INC



North

Graphic  
Scale: 1"=50'

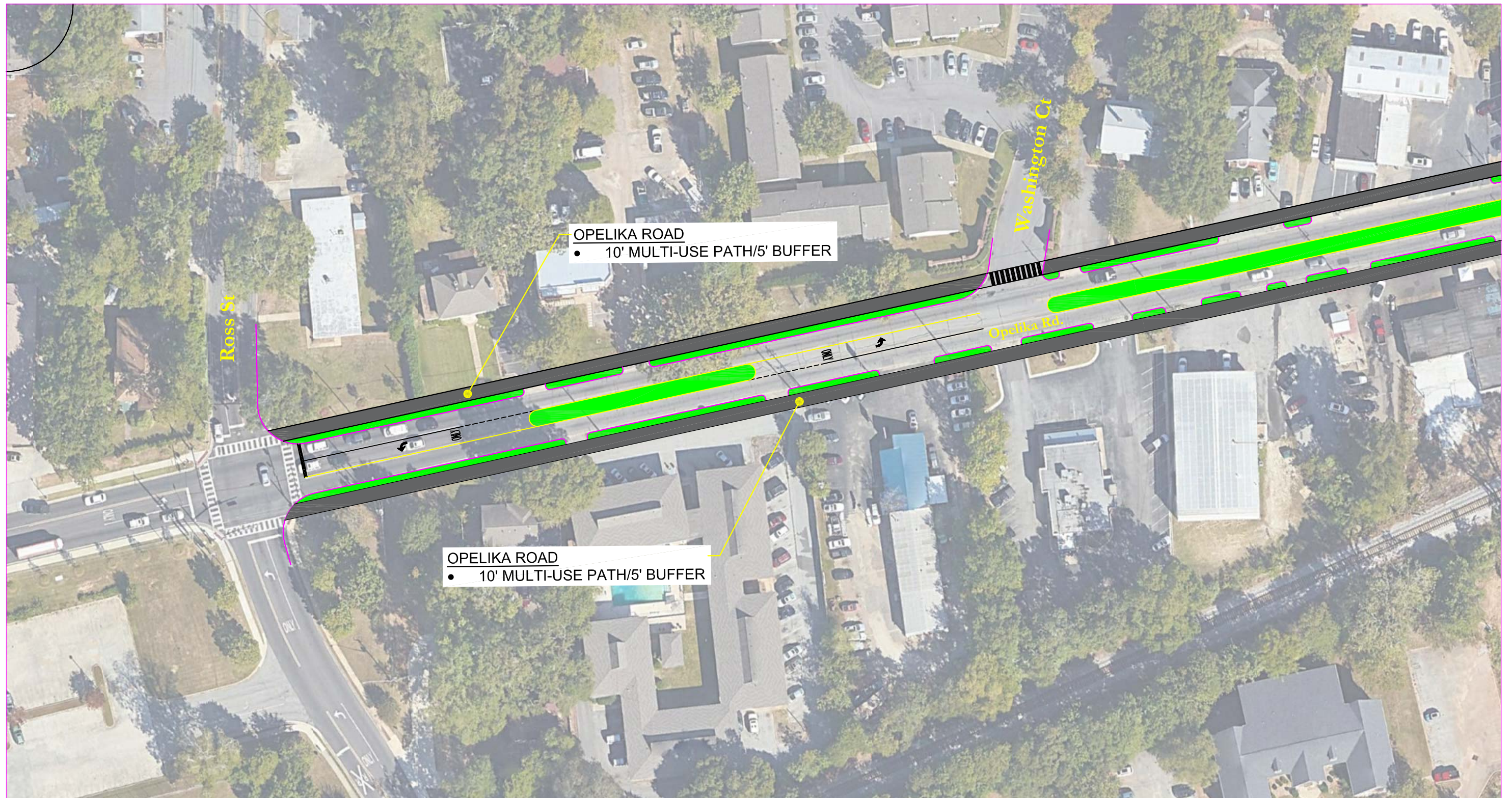
**Figure 5**  
**Opelika Road At Dean Road**  
**Existing Improvement**

Opelika Road  
Auburn, Alabama

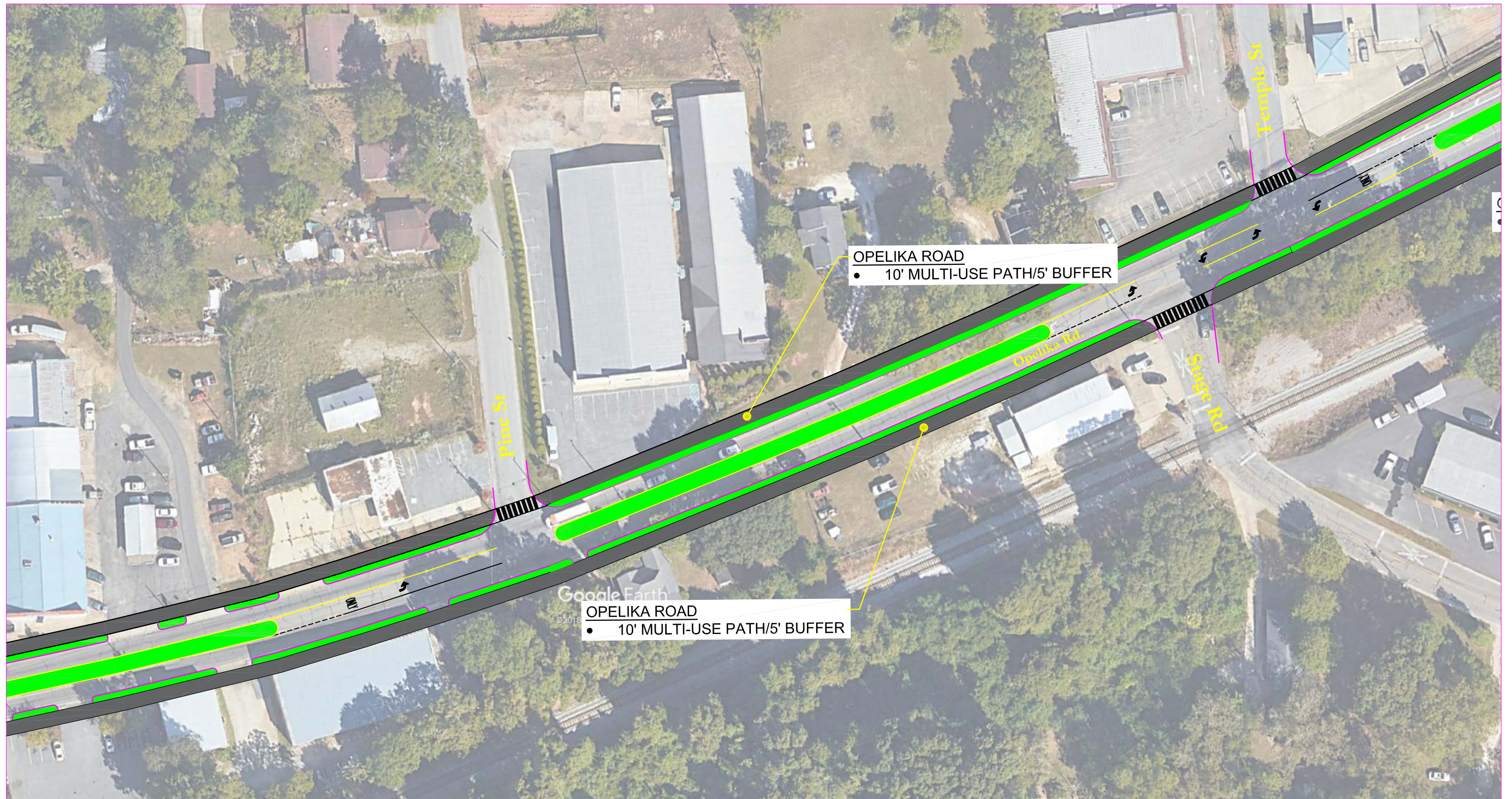
October 2018

Page 14





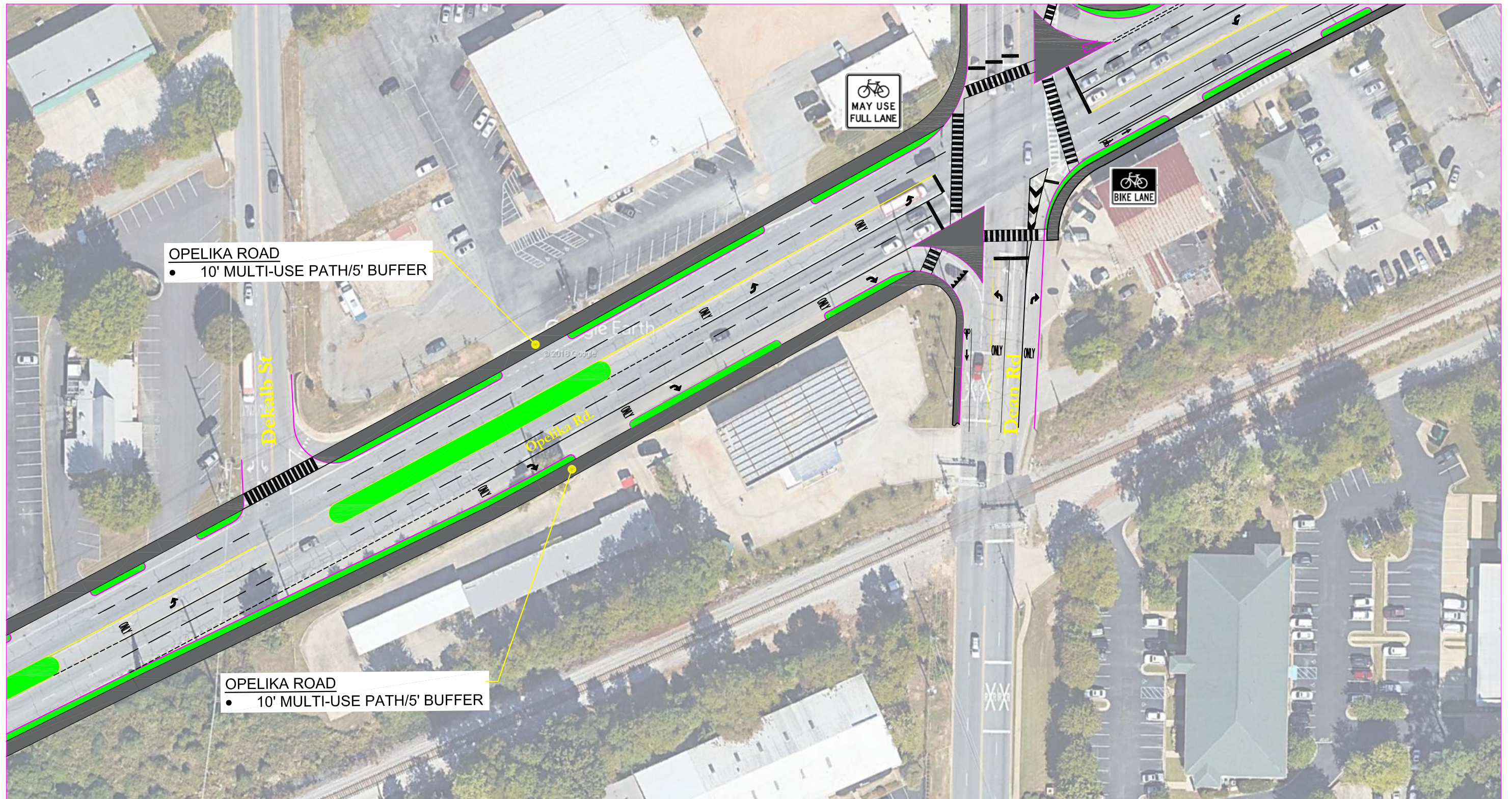












OPELIKA ROAD  
 • 10' MULTI-USE PATH/5' BUFFER

OPELIKA ROAD  
 • 10' MULTI-USE PATH/5' BUFFER





Figure 8 – Opelika Road Improvements – Gentry Drive to Saughatchee Road (“Twin City”)

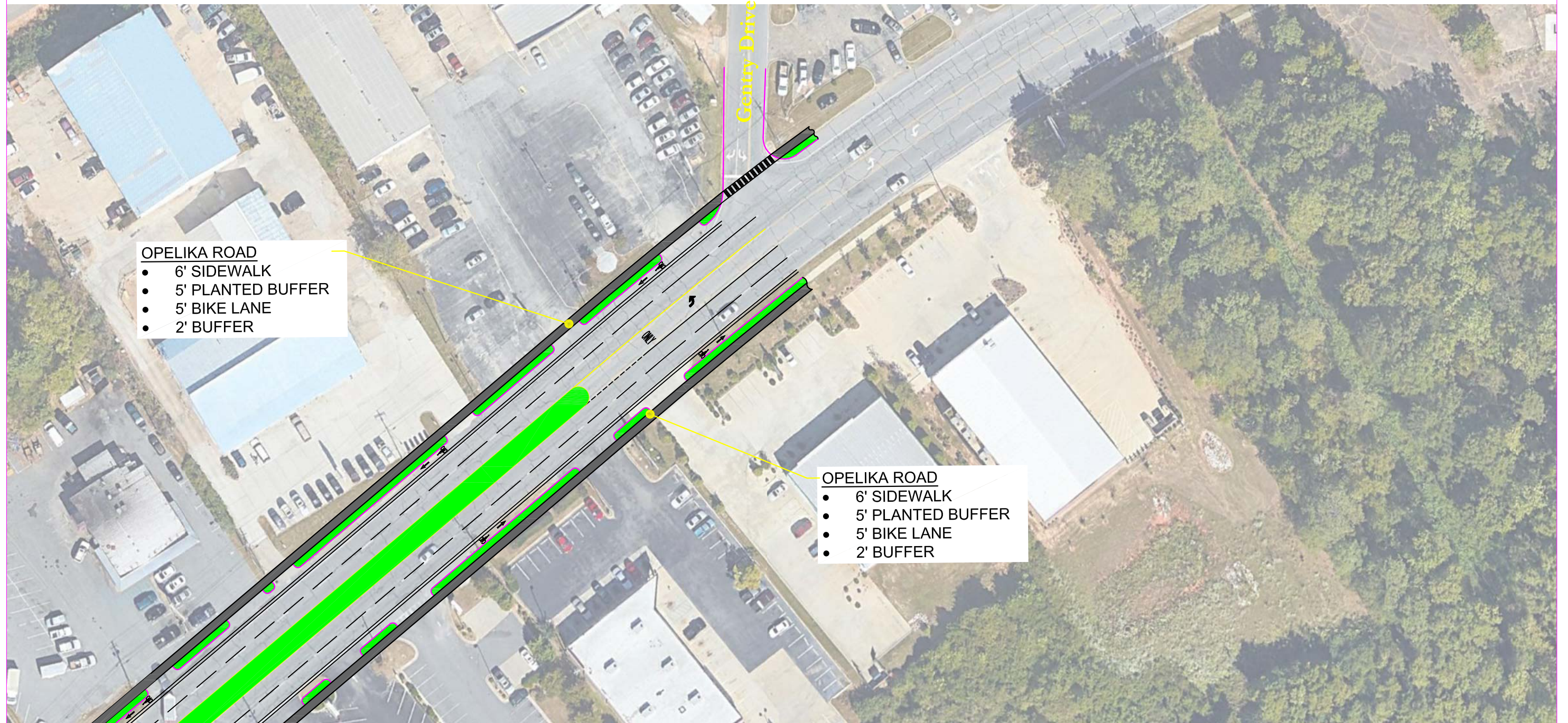












- OPELIKA ROAD**
- 6' SIDEWALK
  - 5' PLANTED BUFFER
  - 5' BIKE LANE
  - 2' BUFFER

- OPELIKA ROAD**
- 6' SIDEWALK
  - 5' PLANTED BUFFER
  - 5' BIKE LANE
  - 2' BUFFER

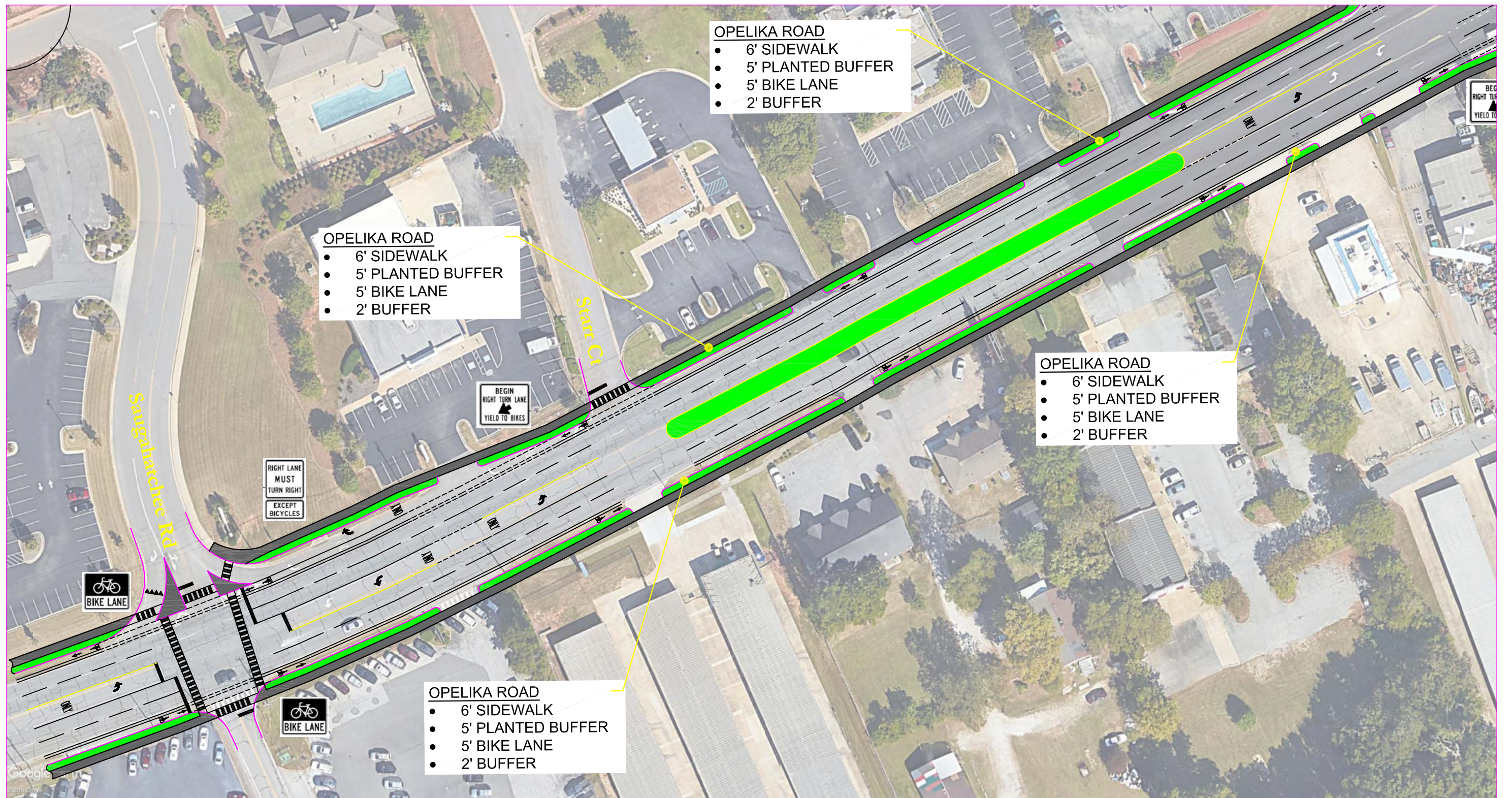


North

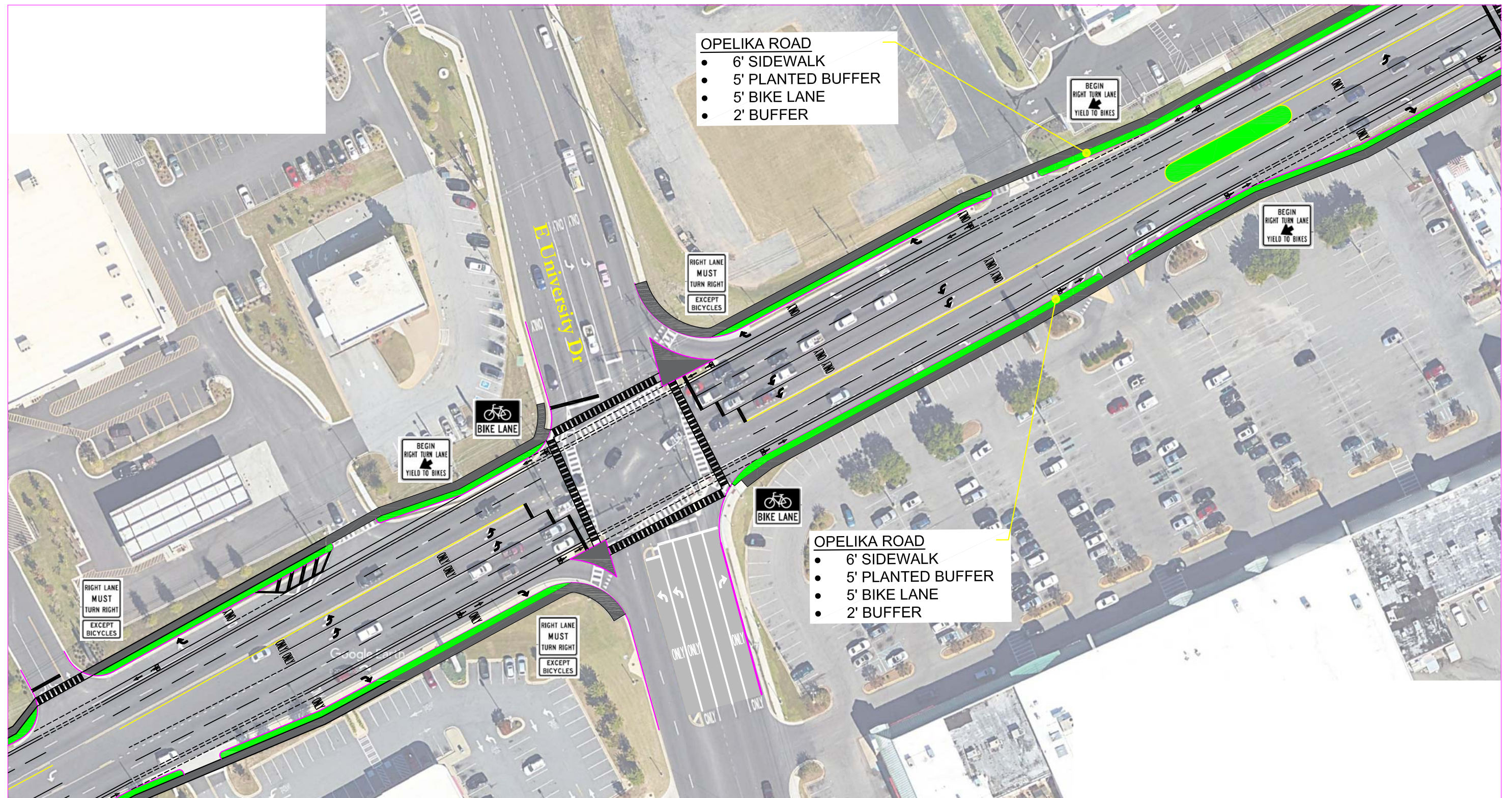
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July 2019

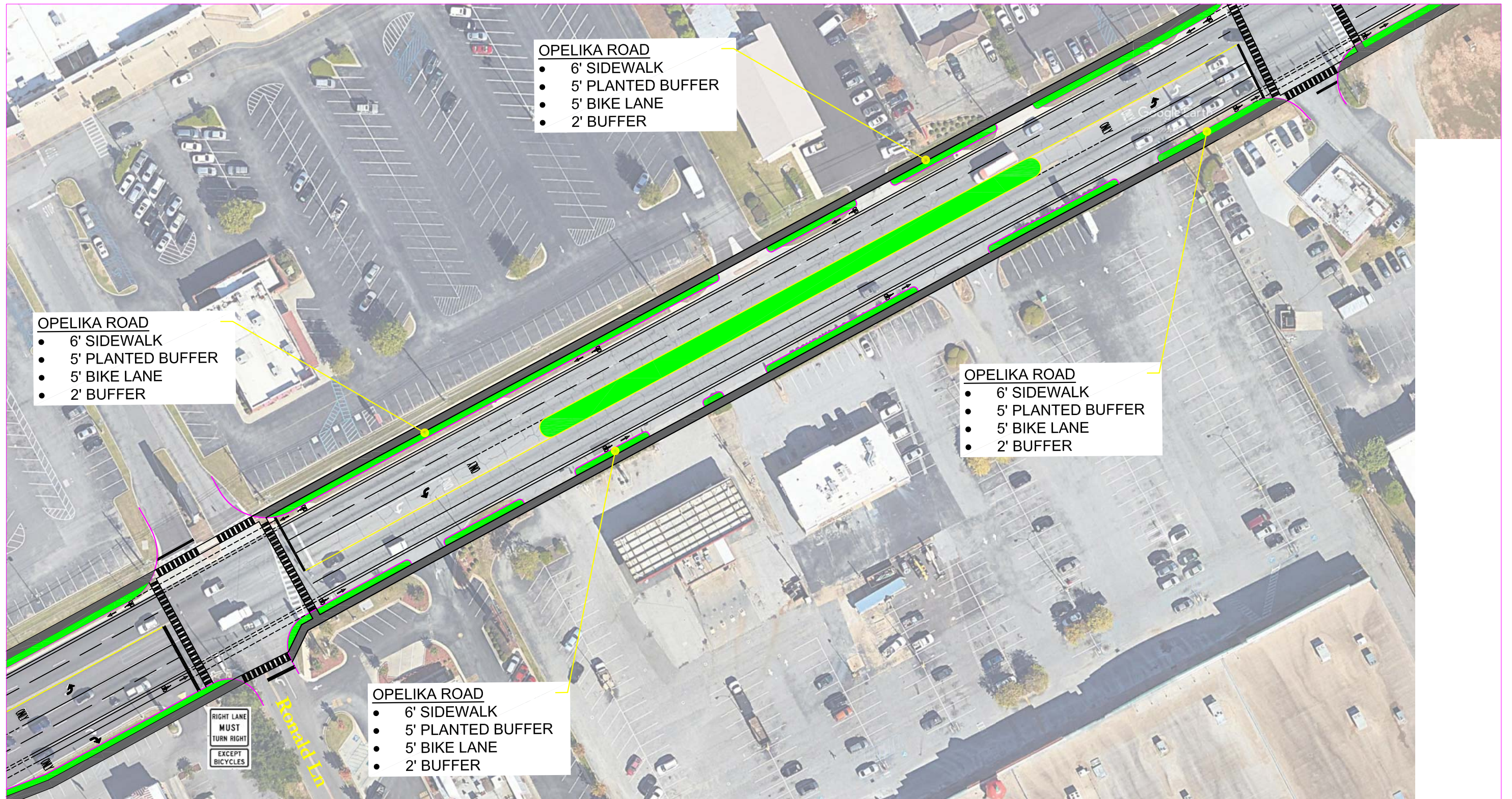




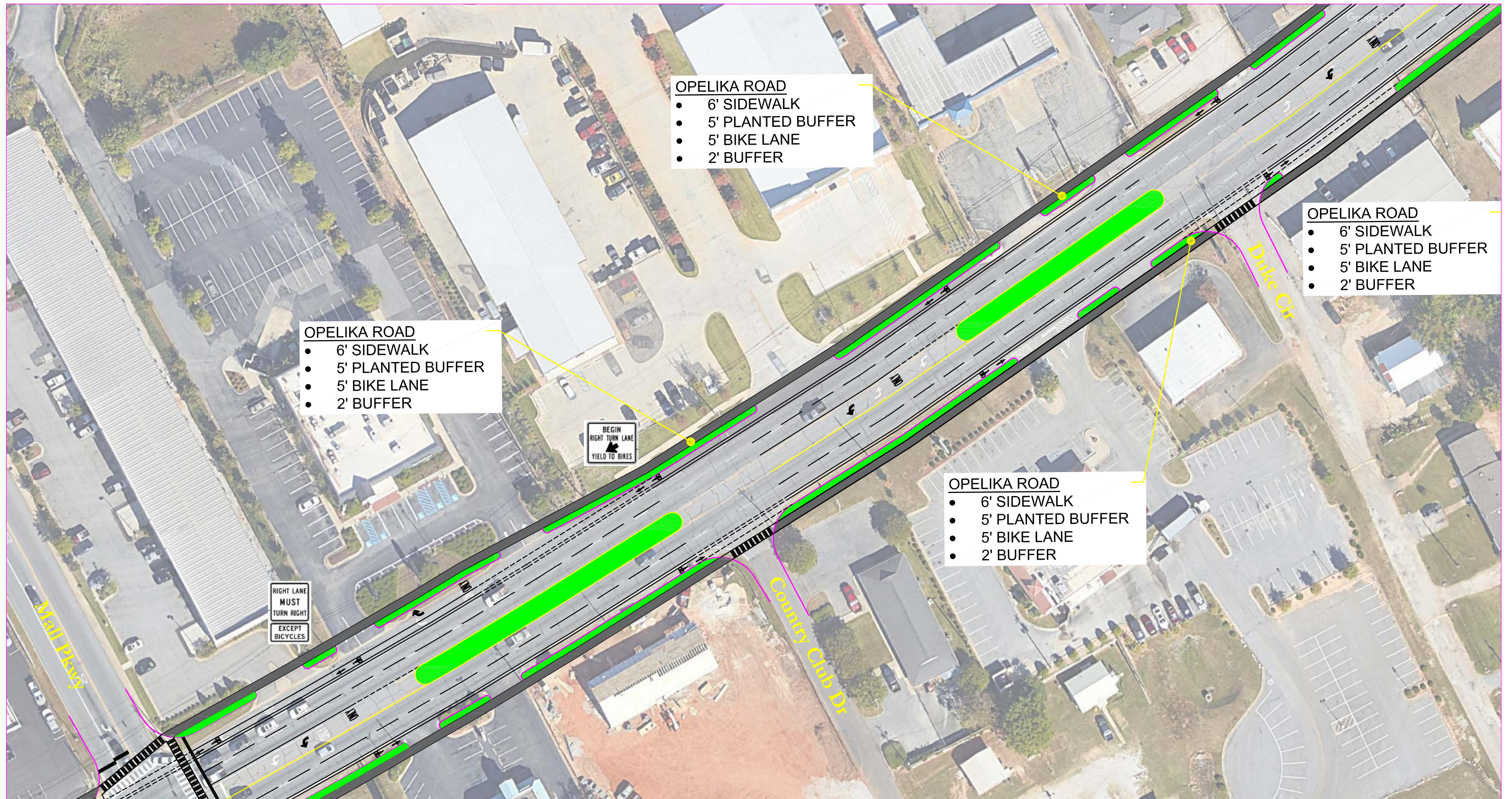




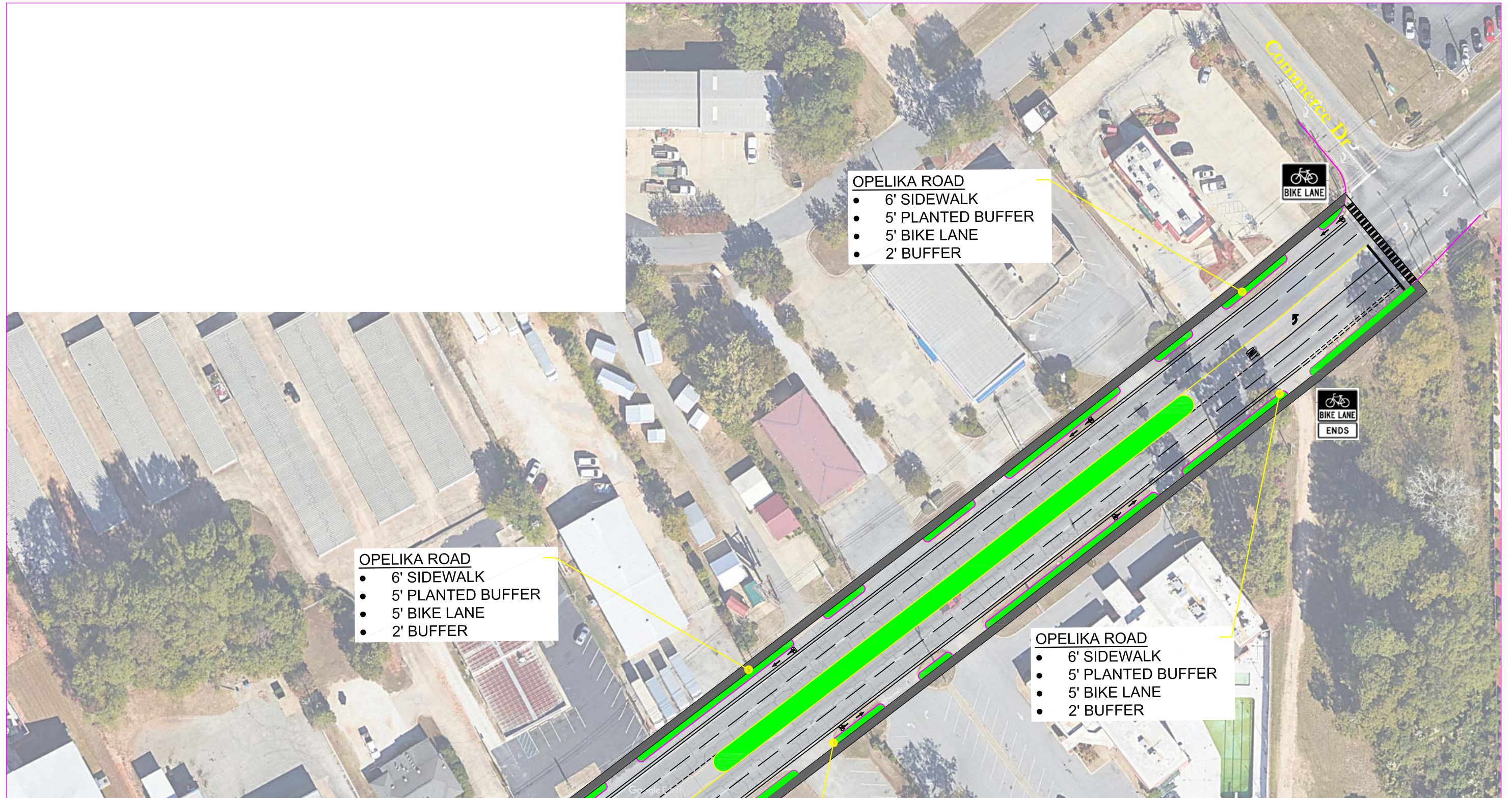














**Existing Intersection Capacity Analysis with Improvements**

Capacity analyses for peak hour conditions at the study intersections along Opelika Road Corridor were conducted assuming improvements for existing traffic volumes would be in place. Capacity analyses were conducted using methods outlined in the *Highway Capacity Manual, 2010*. Results of these capacity analyses are summarized in **Table 7**.

The primary improvements for the corridor include implementing a coordinated signal system and constructing dedicate right turn lanes for both the northbound and westbound approaches to the intersection of Opelika Road and Ross Street. Also, implementation of dual northbound left turn lanes was analyzed for the intersection of Opelika Road and E. University drive.

It should be noted, coordinated signal systems often have higher delay on the side street approaches to intersection as part of promoting signal timing progression along the primary corridor. **Table 7** shows the resulting Level of Service information along the Opelika Road Corridor utilizing existing traffic volumes after implementing improvements.

**Table 7 - Existing Intersection Levels of Service with Improvement**

Intersection (traffic control)	Approach	Movement/Lane Group	Level of Service	
			A.M.	P.M.
			Peak Hour	Peak Hour
Opelika Rd at Mall Pkwy (Signalized)	Opelika Rd EB	Left	A	A
		Through/Right	A	A
	Opelika Rd WB	Left	A	A
		Through	A	B
		Right	A	A
	Mall Pkwy NB	Left/Through/Right	D	D
	Mall Pkwy SB	Left	D	E
Through/Right		C	B	
<b>Overall LOS</b>			<b>A</b>	<b>B</b>
Opelika Rd at Ronald Ln (Signalized)	Opelika Rd EB	Left	A	A
		Through	A	A
		Right	A	A
	Opelika Rd WB	Left	A	A
		Through/Right	A	A
	Ronald Ln NB	Left	D	E
		Through/Right	A	C
	Ronald Ln SB	Left/Through	D	D
Right		A	A	
<b>Overall LOS</b>			<b>A</b>	<b>B</b>
Opelika Rd at East University Dr (Signalized)	Opelika Rd EB	Left	D	D
		Through	C	D
		Right	A	B
	Opelika Rd WB	Left	D	E
		Through	C	C
		Right	B	A
	East University Dr NB	Left	D	E
		Through	C	D
		Right	A	A
	East University Dr SB	Left	D	E
Through		D	D	
Right		A	A	
<b>Overall LOS</b>			<b>D</b>	<b>D</b>



Table 7 (Continued) - Existing Intersection Levels of Service with Improvement

Intersection (traffic control)	Approach	Movement/Lane Group	Level of Service	
			A.M.	P.M.
			Peak Hour	Peak Hour
Opelika Rd at Saugahatchee Rd (Signalized)	Opelika Rd EB	Left	A	A
		Through/Right	A	A
	Opelika Rd WB	Left	A	A
		Through	A	A
		Right	A	A
	Saugahatchee Rd NB	Left/Through/Right	B	B
	Saugahatchee Rd SB	Left/Through	D	C
Right		A	A	
Overall LOS			A	A
Opelika Rd at Gentry Dr (Unsignalized)	Opelika Rd EB	Left	A	B
		Through	A	A
	Opelika Rd WB	Through/Right	A	A
		Left	B	C
	Gentry Dr SB	Right	B	A
Overall LOS			A	A
Opelika Rd at N Dean Rd (Signalized)	Opelika Rd EB	Left	B	C
		Through	C	D
		Right	A	A
	Opelika Rd WB	Left	A	C
		Through	B	B
		Right	A	A
	N Dean Rd NB	Left	C	C
		Through	D	D
	N Dean Rd SB	Right	A	A
		Left	C	C
		Through	D	E
Overall LOS			C	C

Table 7 (Continued) - Existing Intersection Levels of Service with Improvement

Intersection (traffic control)	Approach	Movement/Lane Group	Level of Service	
			A.M.	P.M.
			Peak Hour	Peak Hour
Opelika Rd at N Ross St (Signalized)	Opelika Rd EB	Left	A	B
		Through/Right	B	C
	Opelika Rd WB	Left	A	A
		Through	A	B
		Right	A	A
	N Ross St NB	Left	C	D
		Through	D	E
		Right	B	B
	N Ross St SB	Left	C	D
		Through/Right	D	D
	Overall LOS			C
Opelika Rd at N Gay St (Signalized)	-	-	-	-
	Opelika Rd WB	Left	A	A
		Right	A	A
	N Gay St NB	Through	B	C
		Right	A	A
	N Gay St SB	Left	B	C
		Through	C	C
Overall LOS			B	A



**Existing Arterial Segment Capacity Analysis with Improvements**

Arterial segment capacity analyses for the Opelika Road corridor peak hour conditions were conducted for the morning and afternoon peak hour periods using methods outlined in the *Highway Capacity Manual, 2010*. Levels of service for the arterial analyses conducted for Opelika Road are summarized in **Table 8**.

**Table 8 - Existing Arterial Segment Levels of Service with Improvements**

Eastbound Opelika Road Arterial Analysis				
From	To	Segment Length	Arterial LOS by Segment	
			AM Peak	PM Peak
Mall Pkwy	Ronald Ln	0.17	A	B
Ronald Ln	East University Dr	0.15	A	B
East University Dr	Saugahatchee Rd	0.28	A	B
Saugahatchee Rd	Gentry Dr	0.4	A	A
Gentry Dr	N Dean Rd	0.39	A	B
N Dean Rd	N Ross St	0.72	C	D
N Ross St	N Gay St	0.24	C	C
Westbound Opelika Road Arterial Analysis				
From	To	Segment Length	Arterial LOS by Segment	
			AM Peak	PM Peak
Mall Pkwy	Ronald Ln	0.17	A	B
Ronald Ln	East University Dr	0.15	A	B
East University Dr	Saugahatchee Rd	0.28	A	B
Saugahatchee Rd	Gentry Dr	0.4	A	A
Gentry Dr	N Dean Rd	0.39	A	A
N Dean Rd	N Ross St	0.72	C	D
N Ross St	N Gay St	0.24	C	C

**Table 8** indicates the overall arterial level of service along Opelika Road is a level of service “C”, “D” or better for each direction of travel during both the morning and afternoon peak hours.

**PROJECTED TRAFFIC GROWTH**

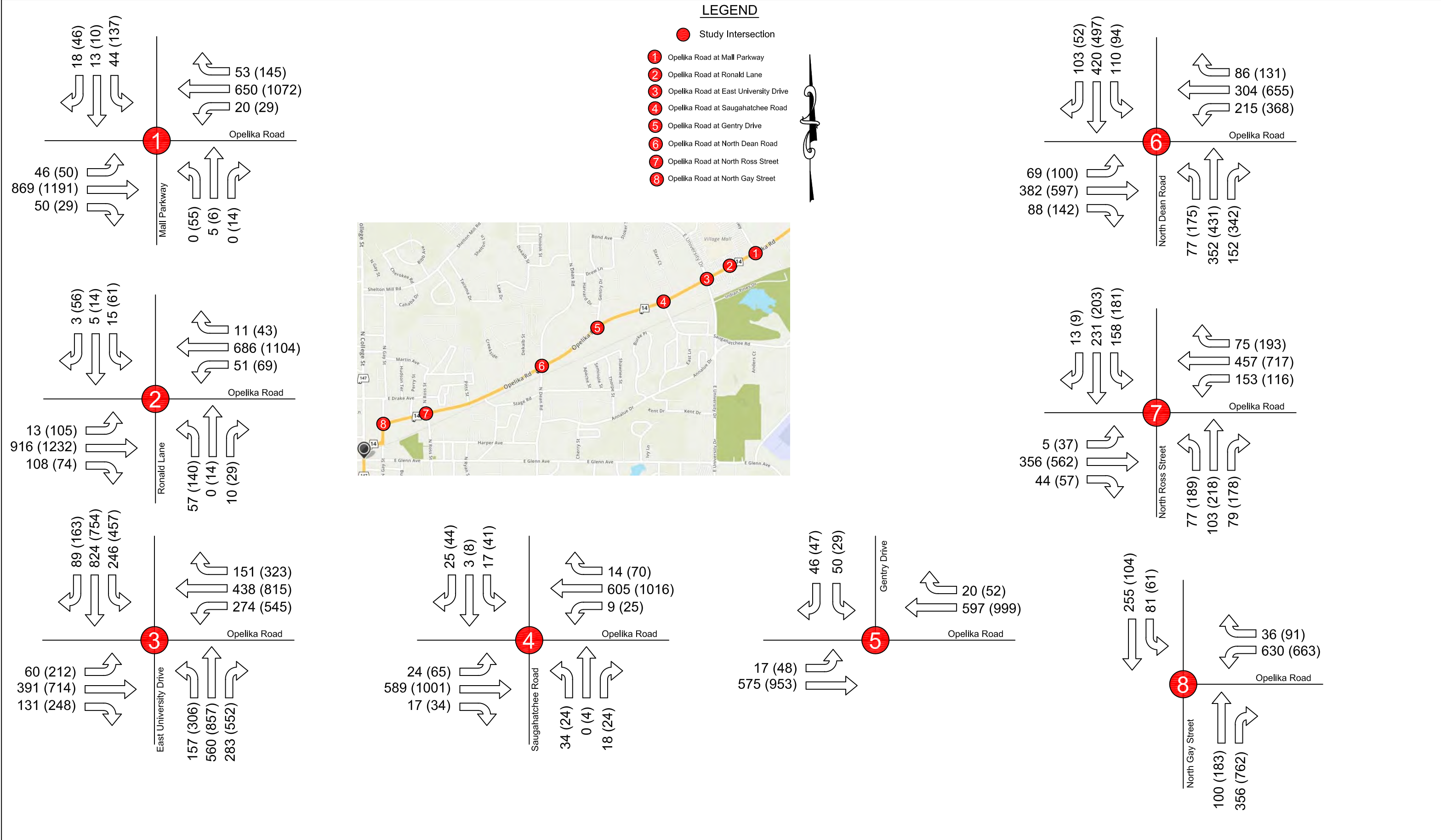
Growth rates were calculated for the study roadways based on historical traffic volumes and growth trends. The historical growth rate calculated for roadways in the vicinity the Opelika Road corridor is 3.2% near downtown and the city’s central core and 2.6% for the eastern segments of the corridor. The annual growth rate was applied for a ten (10) year period to result in future study area forecasted traffic volumes. Future traffic volumes for the corridor are shown as **Figure 11**.

Analyses were conducted utilizing projected peak hour traffic volumes for the study area roadways and intersection to assess traffic operations within the corridor. Capacity deficiencies were identified for projected conditions to aid in development of potential roadway and traffic control improvements within the corridor to address capacity and traffic operations.

**ANALYSES WITH PROJECTED TRAFFIC GROWTH**

Analyses conducted for this scenario assumes projected traffic volumes for ten (10) years would be in place with existing corridor characteristics unchanged. This is then followed with analysis results for the corridor with projected traffic volumes and corridor improvements implemented as previously described.





**Figure 11 - Future Traffic Volumes  
Opelika Road Corridor  
Auburn, Alabama**



**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 Opelika Road Corridor using methods outlined in the *Highway Capacity Manual, 2010*. Results of these capacity analyses are summarized in **Table 9**.

As shown in **Table 9**, all study intersections evaluated along Opelika Road Corridor operate with overall acceptable levels of service for both peak periods evaluated. The exceptions are the westbound left turns and northbound left turn at the intersection of Opelika Road and N Dean Road during the PM peak hour; the northbound shared thru-right movement and the westbound thru-right at the intersection of Opelika Road and Ross Street during the PM peak hour; and several movements for the intersection of Opelika Road at E. University Drive during both the AM and PM peak hours.

**Table 9 - Intersection Levels of Service with Projected Traffic Growth**

Intersection (traffic control)	Approach	Movement/Lane Group	Level of Service	
			A.M.	P.M.
			Peak Hour	Peak Hour
Opelika Rd at Mall Pkwy (Signalized)	Opelika Rd EB	Left	A	A
		Through/Right	A	B
	Opelika Rd WB	Left	A	A
		Through	A	B
		Right	A	A
	Mall Pkwy NB	Left/Through/Right	C	C
	Mall Pkwy SB	Left	C	D
Through/Right		B	B	
<b>Overall LOS</b>			<b>A</b>	<b>B</b>
Opelika Rd at Ronald Ln (Signalized)	Opelika Rd EB	Left	A	B
		Through	B	B
		Right	A	A
	Opelika Rd WB	Left	A	B
		Through/Right	A	B
	Ronald Ln NB	Left	C	D
		Through/Right	A	B
	Ronald Ln SB	Left/Through	C	D
Right		A	A	
<b>Overall LOS</b>			<b>B</b>	<b>B</b>
Opelika Rd at East University Dr (Signalized)	Opelika Rd EB	Left	E	F
		Through	D	E
		Right	B	C
	Opelika Rd WB	Left	E	F
		Through	D	E
		Right	A	C
	East University Dr NB	Left	E	F
		Through	C	E
		Right	C	D
	East University Dr SB	Left	E	F
		Through	D	E
Right		B	C	
<b>Overall LOS</b>			<b>D</b>	<b>E</b>



Table 9 (Continued) - Intersection Levels of Service with Projected Traffic Growth

Intersection (traffic control)	Approach	Movement/Lane Group	Level of Service	
			A.M.	P.M.
			Peak Hour	Peak Hour
Opelika Rd at Saugahatchee Rd (Signalized)	Opelika Rd EB	Left	A	A
		Through/Right	A	A
	Opelika Rd WB	Left	A	A
		Through	A	A
		Right	A	A
	Saugahatchee Rd NB	Left/Through/Right	A	B
	Saugahatchee Rd SB	Left/Through	B	B
Right		A	A	
<b>Overall LOS</b>			<b>A</b>	<b>A</b>
Opelika Rd at Gentry Dr (Unsignalized)	Opelika Rd EB	Left	A	B
		Through	A	A
	Opelika Rd WB	Through/Right	A	A
	Gentry Dr SB	Left	B	C
		Right	B	B
<b>Overall LOS</b>			<b>A</b>	<b>A</b>
Opelika Rd at N Dean Rd (Signalized)	Opelika Rd EB	Left	B	C
		Through	C	C
		Right	A	A
	Opelika Rd WB	Left	D	F
		Through	C	D
		Right	A	A
	N Dean Rd NB	Left	B	E
		Through	C	C
		Right	A	B
	N Dean Rd SB	Left	B	B
		Through	C	D
Right		A	A	
<b>Overall LOS</b>			<b>C</b>	<b>E</b>

Table 9 (Continued) - Intersection Levels of Service with Projected Traffic Growth

Intersection (traffic control)	Approach	Movement/Lane Group	Level of Service	
			A.M.	P.M.
			Peak Hour	Peak Hour
Opelika Rd at N Ross St (Signalized)	Opelika Rd EB	Left	B	B
		Through/Right	C	C
	Opelika Rd WB	Left	B	B
		Through/Right	C	F
	N Ross St NB	Left	C	D
		Through/Right	D	F
	N Ross St SB	Left	C	D
Through/Right		D	D	
<b>Overall LOS</b>			<b>C</b>	<b>E</b>
Opelika Rd at N Gay St (Signalized)	Opelika Rd WB	-	-	-
		Left	B	B
	N Gay St NB	Right	A	A
		Through	B	C
	N Gay St SB	Right	A	A
		Left	B	B
	Through	C	B	
<b>Overall LOS</b>			<b>B</b>	<b>A</b>



**Arterial Segment Capacity Analysis with Projected Traffic Growth**

Arterial segment capacity analyses for peak hour conditions along the Opelika Road Corridor were conducted for the morning and afternoon peak hour periods using methods outlined in the *Highway Capacity Manual, 2010*. Levels of service for the arterial analyses conducted for Opelika Road are summarized in **Table 10**.

**Table 10 - Arterial Segment Levels of Service with Projected Traffic Growth**

Eastbound Opelika Road Arterial Analysis				
From	To	Segment Length	Arterial LOS by Segment	
			AM Peak	PM Peak
Mall Pkwy	Ronald Ln	0.17	B	B
Ronald Ln	East University Dr	0.15	B	B
East University Dr	Saugahatchee Rd	0.28	A	B
Saugahatchee Rd	Gentry Dr	0.4	A	B
Gentry Dr	N Dean Rd	0.39	A	B
N Dean Rd	N Ross St	0.72	D	E
N Ross St	N Gay St	0.24	C	D
Westbound Opelika Road Arterial Analysis				
From	To	Segment Length	Arterial LOS by Segment	
			AM Peak	PM Peak
Mall Pkwy	Ronald Ln	0.17	A	B
Ronald Ln	East University Dr	0.15	A	C
East University Dr	Saugahatchee Rd	0.28	A	B
Saugahatchee Rd	Gentry Dr	0.4	A	B
Gentry Dr	N Dean Rd	0.39	A	B
N Dean Rd	N Ross St	0.72	D	E
N Ross St	N Gay St	0.24	C	D

**RECOMMENDED IMPROVEMENTS WITH PROJECTED TRAFFIC GROWTH**

Based upon the analyses and evaluations conducted for the Opelika Road Corridor for existing conditions and projected ten (10) year conditions, recommendations are made to help improve traffic operations along the corridor at study intersections and to address any capacity or safety deficiencies identified. These improvements are in addition to the improvements recommended for existing conditions where applicable.

Opelika Road Signal System Updates and Phasing Change for E. University Drive Intersection

It is recommended that a coordinated traffic signal system be updated to reflect the ten (10) years of traffic growth on Opelika Road for two corridor segments (1) N. Gay Street to N. Ross Street and (2) Saugahatchee Road to Mall Parkway. Additionally, the traffic signal phasing should be adjusted for lead-lag left turn operation. To maintain at least capacity (i.e., LOS “E”) operation for many of the movements for the Opelika Road at E. University Drive intersection, the SB Left Turns should “Lead” with the NB Left Turns “Lagging”. Also, the WB Left Turns should “Lead” with the EB Left Turns “Lagging”.

**Intersection Capacity Analysis with Improvements and Projected Traffic Growth**

Capacity analyses were conducted for the study intersections assuming recommended improvements (outlined previously and illustrated in **Figures 3** and **Figure 10**) and projected ten (10) traffic volumes would be in place. **Table 11** provides a summary of the levels of service for study intersections with recommended improvements and projected ten (10) traffic volumes in place. For the 10-year horizon year, several of the intersections will operate with movements at LOS “E” (i.e., Capacity) with appropriate coordinated signal timings and the intersection improvements as previously discussed.

**Added Lanes to Address Corridor Capacity Limitations**

In order to improve levels of service along the Opelika Road corridor to provide levels of service “D” or better in the long term, substantial roadway improvements would be needed; particularly in the vicinity of the intersection with E. University Dr. and the segment along side Auburn Mall. Improvements potentially can include additional laneage on Opelika Road; thereby providing enough receiving lanes for triple left turns for the Opelika Road at E. University Drive intersection as one example of long-term corridor improvement opportunities.



Table 11 – Intersection LOS with Projected Traffic Growth and Improvements

Intersection (traffic control)	Approach	Movement/Lane Group	Level of Service	
			A.M.	P.M.
			Peak Hour	Peak Hour
Opelika Rd at Mall Pkwy (Signalized)	Opelika Rd EB	Left	A	A
		Through/Right	B	B
	Opelika Rd WB	Left	A	A
		Through	A	B
		Right	A	A
	Mall Pkwy NB	Left/Through/Right	E	D
	Mall Pkwy SB	Left	E	E
		Through/Right	D	B
<b>Overall LOS</b>			<b>B</b>	<b>B</b>
Opelika Rd at Ronald Ln (Signalized)	Opelika Rd EB	Left	A	A
		Through	A	B
		Right	A	A
	Opelika Rd WB	Left	A	B
		Through/Right	A	B
	Ronald Ln NB	Left	E	E
		Through/Right	A	C
	Ronald Ln SB	Left/Through	E	E
Right		A	A	
<b>Overall LOS</b>			<b>A</b>	<b>B</b>
Opelika Rd at East University Dr (Signalized)	Opelika Rd EB	Left	D	E
		Through	C	E
		Right	A	C
	Opelika Rd WB	Left	E	E
		Through	D	D
		Right	B	B
	East University Dr NB	Left	E	E
		Through	D	E
		Right	A	C
	East University Dr SB	Left	E	E
		Through	D	E
Right		A	B	
<b>Overall LOS</b>			<b>D</b>	<b>E</b>

Table 11 (Continued) – Intersection LOS w/Projected Traffic Growth and Improvements

Intersection (traffic control)	Approach	Movement/Lane Group	Level of Service	
			A.M.	P.M.
			Peak Hour	Peak Hour
Opelika Rd at Saugahatchee Rd (Signalized)	Opelika Rd EB	Left	A	A
		Through/Right	A	A
	Opelika Rd WB	Left	A	A
		Through	A	A
		Right	A	A
	Saugahatchee Rd NB	Left/Through/Right	A	C
	Saugahatchee Rd SB	Left/Through	C	C
		Right	A	A
<b>Overall LOS</b>			<b>A</b>	<b>A</b>
Opelika Rd at Gentry Dr (Unsignalized)	Opelika Rd EB	Left	A	B
		Through	A	A
	Opelika Rd WB	Through/Right	A	A
	Gentry Dr SB	Left	B	C
		Right	B	B
<b>Overall LOS</b>			<b>A</b>	<b>A</b>
Opelika Rd at N Dean Rd (Signalized)	Opelika Rd EB	Left	B	C
		Through	C	E
		Right	A	A
	Opelika Rd WB	Left	B	E
		Through	B	C
		Right	A	A
	N Dean Rd NB	Left	C	E
		Through	D	D
		Right	A	B
	N Dean Rd SB	Left	C	C
		Through	E	E
Right		A	A	
<b>Overall LOS</b>			<b>C</b>	<b>D</b>



Table 11 (Cont'd) - Intersection LOS with Projected Traffic Growth and Improvements

Intersection (traffic control)	Approach	Movement/Lane Group	Level of Service	
			A.M.	P.M.
			Peak Hour	Peak Hour
Opelika Rd at N Ross St  (Signalized)	Opelika Rd EB	Left	B	B
		Through/Right	C	C
	Opelika Rd WB	Left	B	A
		Through	B	C
		Right	A	A
	N Ross St NB	Left	D	E
		Through	E	E
		Right	B	C
	N Ross St SB	Left	D	E
		Through/Right	E	E
<b>Overall LOS</b>			<b>C</b>	<b>C</b>
Opelika Rd at N Gay St (Signalized)		-	-	-
	Opelika Rd WB	Left	B	B
		Right	A	A
	N Gay St NB	Through	C	C
		Right	A	A
	N Gay St SB	Left	C	C
		Through	C	C
	<b>Overall LOS</b>			<b>B</b>