

A4. Transportation Memorandum

Phase II West End Victory Drive Focus Area Report

Victory Drive Corridor Study

December 30, 2015



Introduction

Context Sensitive Solutions Approach

The study team for Phase II of the Victory Drive Corridor Study, or West Victory, has assessed the performance of the corridor and developed preliminary strategies for evaluation to achieve the community's vision of a "great street". In order to balance the interests of maximizing through traffic and the community's needs, the study team is applying context sensitive solutions. Specifically, in addition to applying the *Highway Capacity Manual* [1], we will make use of the Recommended Practice in the Institute of Transportation Engineer's *Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities*.

Context Sensitive Solutions (CSS) emphasizes flexible application of design guidance in order to provide for safe and efficient travel for all road users, including motor vehicles, walkers, people on bicycles, and public transportation users. Conventional design is frequently driven by travel demand and level of service objectives. CSS considers all community objectives including the urban form and land use, as well as transportation performance. Application of CSS is consistent with the goals of the corridor study and several previous plans, including the *Tricentennial Plan* Community Agenda, which includes a specific goal to "Develop a road system that maintains and preserves unique characteristics of neighborhoods and of the coastal area."

Community Input

Community concerns specific to transportation in the study area include:

- High traffic speed
- Too many trucks
- Dangerous to walk
- Overgrowth and trash on sidewalk
- Curbs that do not provide any protection from traffic
- Crossing, especially to schools in the area
- Flooding/drainage issues

One resident stated "The issue is the traffic."

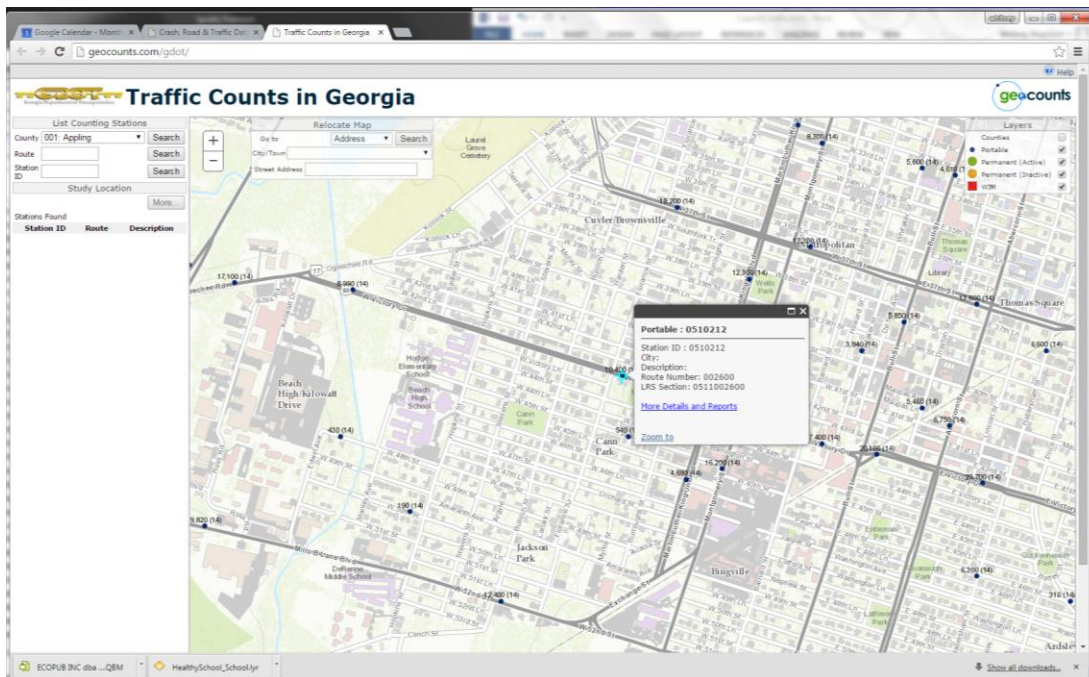
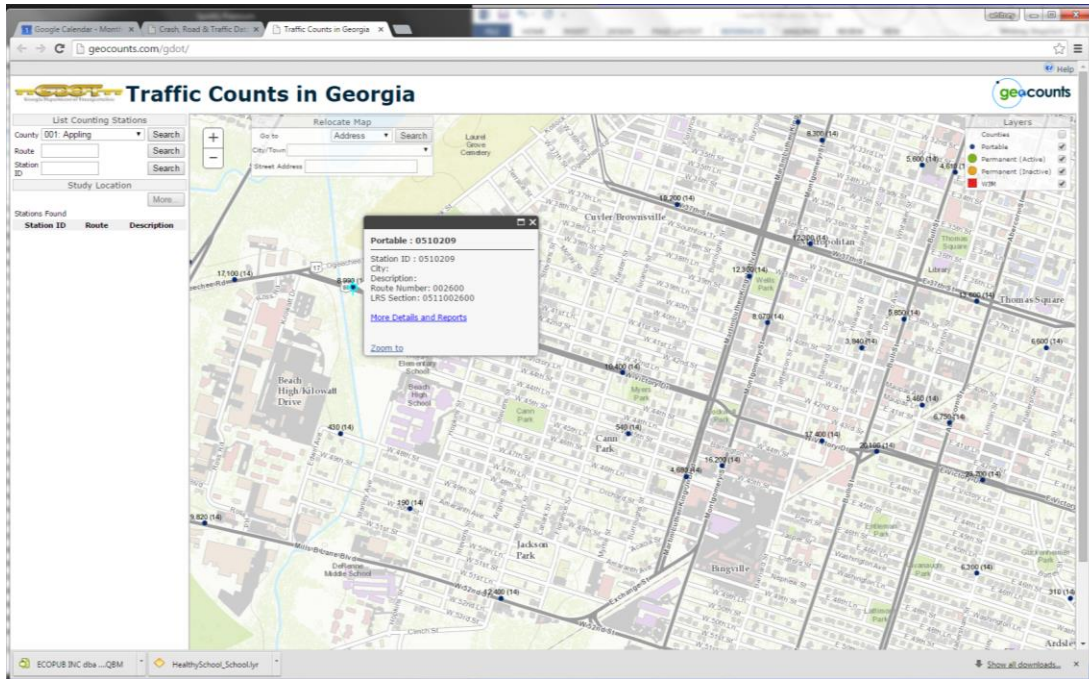
Existing Conditions

Victory Drive from Ogeechee Rd to Martin Luther King Blvd is a four lane divided Urban Principal Arterial Street in west Savannah. The typical cross-section includes nine foot travel lanes (two lanes in each direction), a four foot median, no gutter, minimal curb elevation, and a four to five foot sidewalk. The sidewalk is obstructed by utility poles, fire hydrants, landscaping, and debris in several locations. The posted speed limit is 35 mph. Parking is restricted except for Sundays, when it is permitted in some locations. Victory Drive is on the National Highway System, designated US 80, and is a designated Evacuation Route. There is a school zone from Hopkins Street to midblock between Stevens Street and Bulloch Street.

The segment from Ogeechee Rd to MLK Jr Blvd is 0.8 miles. GDOT has a design project, PI# 521855, that impacts Victory Drive to Sadler Street. Therefore, this study focuses on the segment from Sadler St to MLK Jr Blvd, which is 0.6 miles.

Existing Traffic Counts

There is one traffic count station in the study area east of Florance St. Another is located near the study area just east of Ogeechee Rd. Locations are shown below.



The 2014 AADT reported by GDOT for the corridor ranges from 8,990 at the west end to 10,400 at the east end near Florance Street. The chart below shows that AADT has been relatively stable over the last ten years, increasing 6% from 2005 at the west end, and decreasing 2% at the east end between 2005 and 2014.

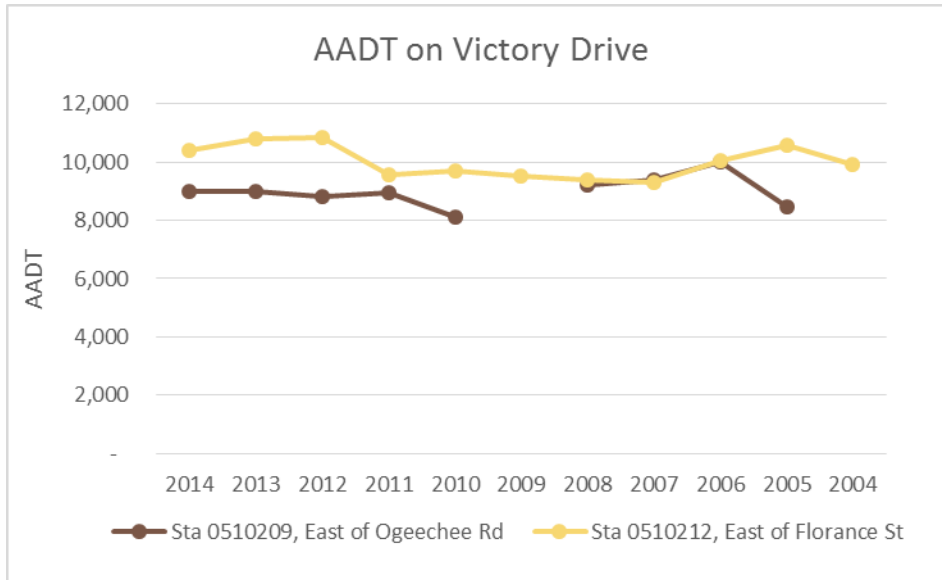
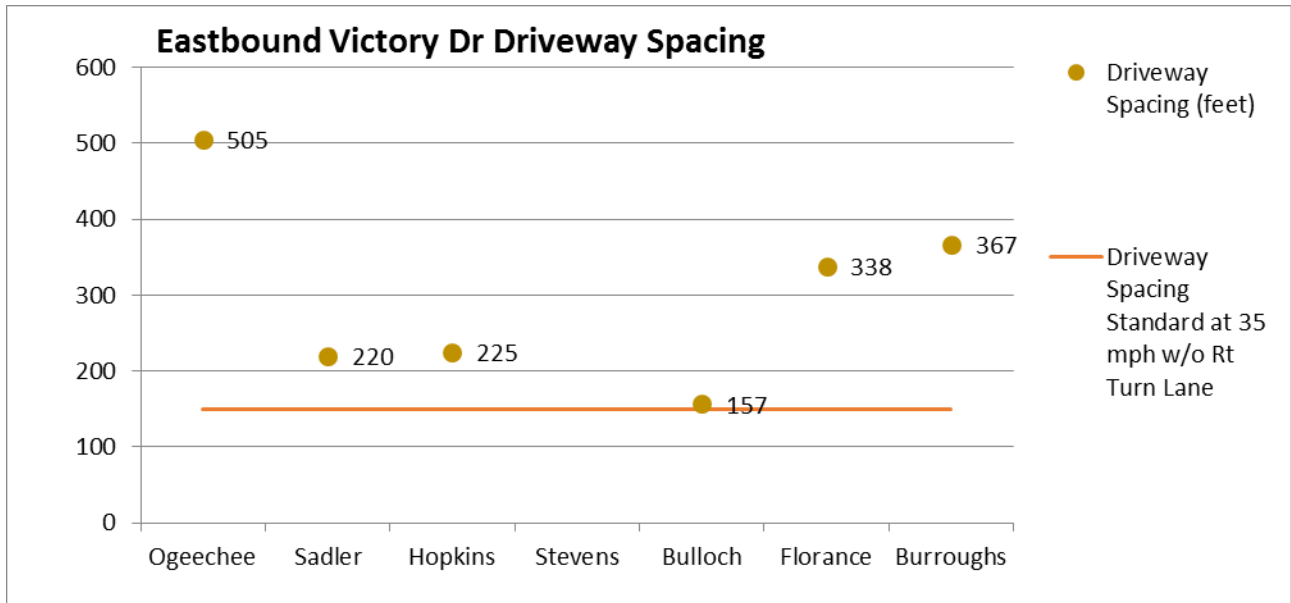


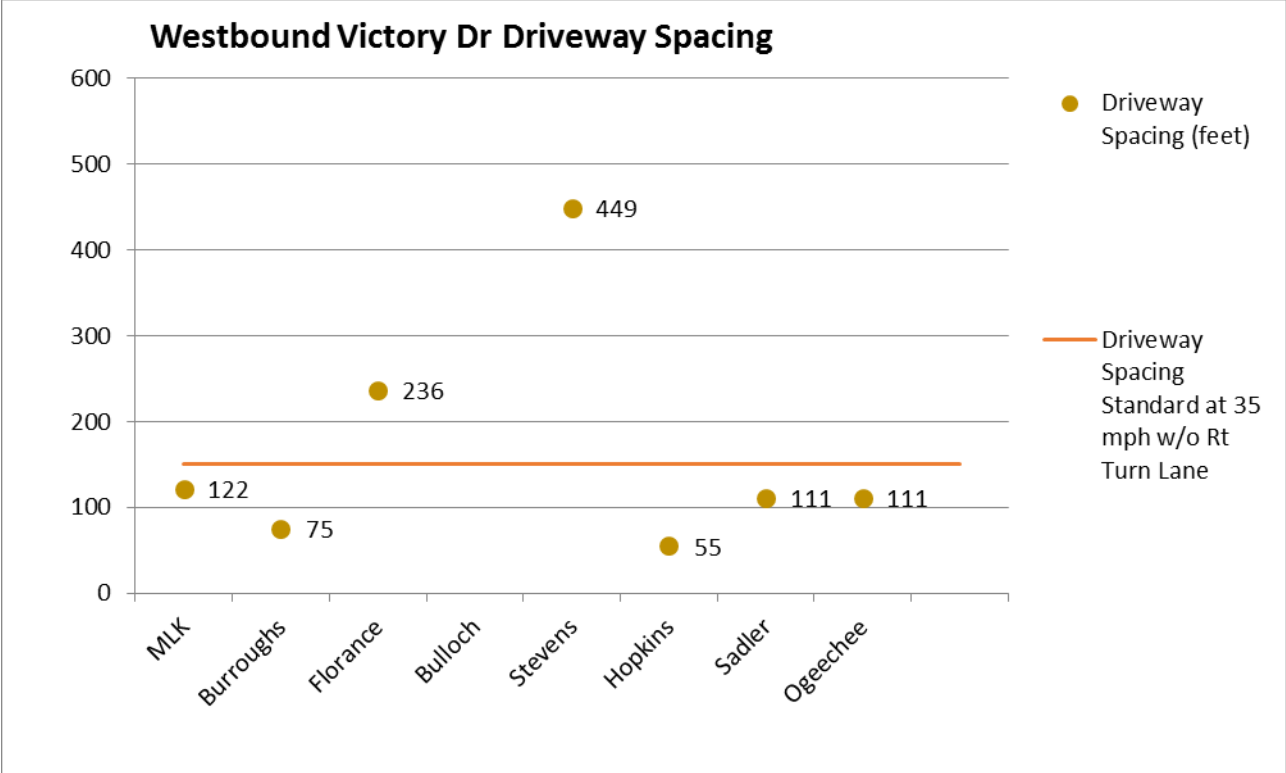
Figure 1 Annual Average Daily Traffic

Access Management

GDOT's *Driveway and Encroachment Control Manual* recommends a median crossover spacing for urban arterials of 2,000 feet, with a 1,000 feet minimum. The study area average median crossover spacing is 480 feet, well below the recommended minimum.

Driveway spacing also impacts the capacity of highways. The GDOT standard is 150 feet for an arterial with a 35 mph posted speed limit without right turn lanes. Eastbound Victory Drive meets this standard. Westbound Victory Drive does not meet this standard for the majority of the study area.





Overview of Urban Arterial Capacity

The Florida Department of Transportation (FDOT) maintains Generalized Service Volume Tables for planning-level analysis of urban streets. As shown below, the existing Victory Drive AADT of 10,400 on a four lane divided arterial performs at better than level of service (LOS) C given the assumed conditions for the tables. In fact, a two-lane urban arterial has a capacity of 15,600 VPD, with the existing AADT falling within the LOS C range.

Table 1 Generalized Service Volumes

Generalized Annual Average Daily Volumes (VPD) (Class II, 35 mph or slower posted speed limits)				
Lanes	Median	LOS		
		C	D	E
2	Undivided	7,300	14,800	15,600
4	Divided	14,500	32,400	33,800

[2012 FDOT QUALITY/LEVEL OF SERVICE HANDBOOK TABLES](#) [2]

General Parameters for Arterial Thoroughfares defined by the ITE *Context Sensitive Solutions* Recommended Practice recommend typical traffic volumes of 10,000-20,000 vpd for residential Avenues in General Urban settings, which characterizes Victory Dr/US 80 in the study area. [3]

Future Year Traffic Conditions

Future traffic volume information was gathered from Georgia Department of Transportation (GDOT) Traffic Studies for the Ogeechee Rd widening concept report. While the GDOT study doesn't include the segment from Hopkins Street to Martin Luther King Blvd, the critical peak hour volume entering the

West Victory study area is a conservative projection for planning purposes. The GDOT Office of Planning projected an ADT of 12,800 in 2039. Based on FDOT’s Generalized LOS table shown above, this volume could be accommodated on a 2 lane road at conditions approaching LOS D. ITE’s Recommended Practice reinforces this finding.

Note that the adjusted volumes traveling through the proposed realigned intersection of Victory Drive and Ogeechee Rd are the critical volumes projected in the Concept Report Traffic Study. The 2039 Build Scenario eastbound (EB) and westbound (WB) movements exceed other future volumes, including those projected for the segment from Stiles Road to Victory Drive. Specifically, the traffic studies indicate a volume for 2039 Build conditions of 1,395 VPH EB for the segment between Stiles Ave and Victory Drive versus an intersection projected volume of 1,440 vph EB. Therefore, intersection analysis volumes are shown below. The 2039 Build Eastbound AM Peak is the critical volume.

Note that the build scenario includes widening Ogeechee Rd and realigning Ogeechee Rd for continuous flow into Victory Drive.

Table 2 Future Traffic Volumes

Summary of Future Volumes Traffic Study from GDOT Concept Report (April 2015)

			Dir 1	Dir 2	Total
16: W. Victory Drive & Ogeechee Intersection Analysis			VPH SB/EB	VPH NB/WB	VPH
2019	No Build	AM peak	1,022	326	1,348
2019	No Build	PM peak	875	440	1,315
2019	Build	AM peak	1,087	342	1,429
2019	Build	PM peak	934	462	1,396
2039	No Build	AM peak	1,348	429	1,777
2039	No Build	PM peak	1,152	581	1,733
2039	Build	AM peak	1,440	451	1,891
2039	Build	PM peak	1,228	614	1,842

Level of Service

Roadway segment analysis was performed using LOS+ Multimodal Level of Service for Urban Streets, which includes HCM 2010 urban street segment analysis. With a potential volume of 1,440 VPH EB, the segment level of service from Hopkins Street to Martin Luther King Jr Blvd is heavily dependent upon the performance of the intersection with Hopkins Street. However, as is shown in the table below, **a two-lane road can accommodate the Build traffic volumes.** Also note that the pedestrian level of service was affected significantly by the traffic projected for the adjacent travel lane. Therefore, both 4 lane alternatives result in a higher pedestrian level of service than any 2 lane alternative. Additional analysis may result in a better performance of these alternatives given the sidewalk width as well as the buffer effect of on-street parking and the landscaping strip.

The intersection of Victory Drive at Hopkins Street is a critical signalized intersection. Hopkins Street is one-half mile from the signalized intersection with Martin Luther King Jr. Blvd, and about 0.3 miles from the proposed signal at the Ogeechee Rd realignment. As noted above, the performance of this intersection largely determines the auto LOS on the analysis segment.

It should also be noted that the *HCM2010* Urban Street Segment analysis is very sensitive for low speed roads. The literature suggests caution when using this method [4]. Therefore, it is useful to perform this analysis using *HCM2000* methods for sensitivity testing purposes. Table 3 shows the results from applying the LOS+ Level of Service software based on HCM2010 while Table 4 shows alternate results from ARTPLAN 2009, software based on HCM2000. As both tables show, the Auto Mode scores at or better than Level of Service C in all scenarios. However, the Pedestrian and Bicycle Mode scores are improved when using the FDOT bicycle and pedestrian Level of Service criteria, which account for additional factors such as separation due to the on-street parking in Concepts 1 and 3, as well as the separation from landscaping provided by all four Build concepts. Bicycle LOS is based on width of the outside thru (auto) lane, vehicle volumes, vehicle speed, heavy vehicle volumes, and pavement condition. Pedestrian LOS is based on existence of a sidewalk, separation of pedestrians from motorized vehicles, vehicle volumes, and vehicle speed. The ARTPLAN 2009 methodology is fully described in the *2009 FDOT QUALITY/LEVEL OF SERVICE HANDBOOK* [5].

Table 3 Future Level of Service Summary, HCM 2010

LOS+ Multimodal Level of Service for Urban Streets	Auto Mode			Pedestrian Mode		Bicycle Mode	
	V/C Ratio	LOS Score	LOS	LOS Score	LOS	LOS Score	LOS
2039 Base AM Peak with no improvements past Sadler St (4 travel lanes)	0.50	2.34	B	4.03	D	5.04	F
2039 Concept 1 Park on Street (2 travel lanes)	1.00	2.14	B	4.99	E	4.38	E
2039 Concept 2 Maximum Enhancement of Ped Zones (2 travel lanes)	1.00	2.14	B	5.19	F	2.95	C
2039 Concept 3 Alternating Street Parking and Bike Lane (2 travel lanes)	1.00	2.14	B	5.03	F	2.85	C
2039 Concept 4 Restoration of Existing Conditions (4 travel lanes)	0.50	2.34	B	3.68	D	4.49	E

Source: *NCHRP Project 3-70 Multimodal Level of Service For Urban Streets and Highway Capacity Manual 2010*, Chapter 17

Table 4 Future Level of Service Summary, HCM 2000

ARTPLAN 2009 Results (HCM 2000 Auto LOS with FDOT LOS for Multimodal LOS)	Auto Mode	Pedestrian Mode	Bicycle Mode
	LOS	LOS	LOS
2039 Base AM Peak with no improvements past Sadler St (4 travel lanes)	B	C	E
2039 Concept 1 Park on Street (2 travel lanes)	C	C	E
2039 Concept 2 Maximum Enhancement of Ped Zones (2 travel lanes)	C	C	C
2039 Concept 3 Alternating Street Parking and Bike Lane (2 travel lanes)	C	C	C
2039 Concept 4 Restoration of Existing Conditions (4 travel lanes)	B	C	D

Source: ARTPLAN Software developed by FDOT to apply the *2000 Highway Capacity Manual*

Summary of Capacity Assessment

Reflecting the community’s desire to calm traffic and provide safer walking conditions in particular, the study team recommends a tradeoff between a corridor design for maximum movement of through traffic and a corridor design that addresses the community concerns. Based on the planning-level analysis, projected traffic volumes do not exceed the capacity of a two lane road. The potential benefits to the safety and comfort of the traveling public from a reduction to a two lane divided cross section with wider sidewalks justify further study.

Intersections, in particular turning movements, will determine the future delay, and therefore level of service, for vehicular traffic on Victory Drive. Turning movement counts and turning movement projections will be needed for additional analysis of traffic conditions.

Regardless of whether the community decides to move forward with a lane reduction on Victory Drive, the intersection at Hopkins St should be evaluated and redesigned. Potential improvements include turn lanes onto southbound Hopkins Street to accommodate school traffic (EB RTL and WB LTL), as well as widened sidewalks on Victory Drive. This is clearly the critical intersection on the corridor for auto LOS. However, additional intersections, especially those used for walking school buses and other crossing movements, should be assessed as noted in earlier memos.

References

- [1] Transportation Research Board, Highway Capacity Manual, Washington DC: National Academy of Sciences, 2010.
- [2] FDOT Systems Planning Office, "FDOT Quality/Level of Service Handbook," Florida Department of Transportation, 2012.
- [3] Institute of Transportation Engineers, "Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities," Washington DC, 2010.
- [4] J. O. Ensley, "Application of Highway Capacity Manual 2010 Level of Service Methodologies for Planning Deficiency Analysis," University of Tennessee, Knoxville, 2012.
- [5] State of Florida Department of Transportation, "2009 Quality/Level of Service Handbook," FDOT Systems Planning Office, Tallahassee, 2009.