



SAINT SIMONS ISLAND

TRAFFIC STUDY



POND
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TRAFFIC STUDY

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Pond Project # 1150372

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EXECUTIVE SUMMARY

This report documents the data collection process, analysis methodology, and resulting recommendations of a comprehensive traffic study conducted for Saint Simons Island in Glynn County.

Vehicle counts were conducted in May and July 2015 to account for the seasonal differences in traffic patterns caused by tourists during peak summer months. Future year scenarios projected both peak summer traffic and typical weekday traffic to a design year of 2035. The estimated 1% annual growth rate was developed after a review of historic traffic data collected by the Georgia Department of Transportation (GDOT) and the Glynn County Metropolitan Planning Organization's (MPO) travel demand model for the region.

Each intersection was analyzed for operational deficiencies using the 2010 Highway Capacity Manual's methodology for intersection level of service, unless otherwise specified. At locations where failing levels of service were seen, recommended improvements were developed and tested. In several cases, a short-term improvement and a mid-term or long-term improvement were analyzed. Short-term recommendations should be completed within 5 years (2015-2020) and consist of either conducting a site-specific study or completing a relatively low-cost modification intended to provide an immediate benefit to existing conditions. Mid-term recommendations are projects that should be completed within the next 5-10 years (2020-2025) and may have higher costs than short-term projects. Long-term recommendations are intended to accommodate long-range volume projections (2025-2035) and are generally expected to have a higher design and construction cost due to the relative scale as compared to short- and mid-term improvements. A list of all recommended projects or initiatives can be found in **Table EC-1** and can be located on the map in **Figure EC-1**.



EXECUTIVE SUMMARY

FIGURE EC-1

Recommendations Map

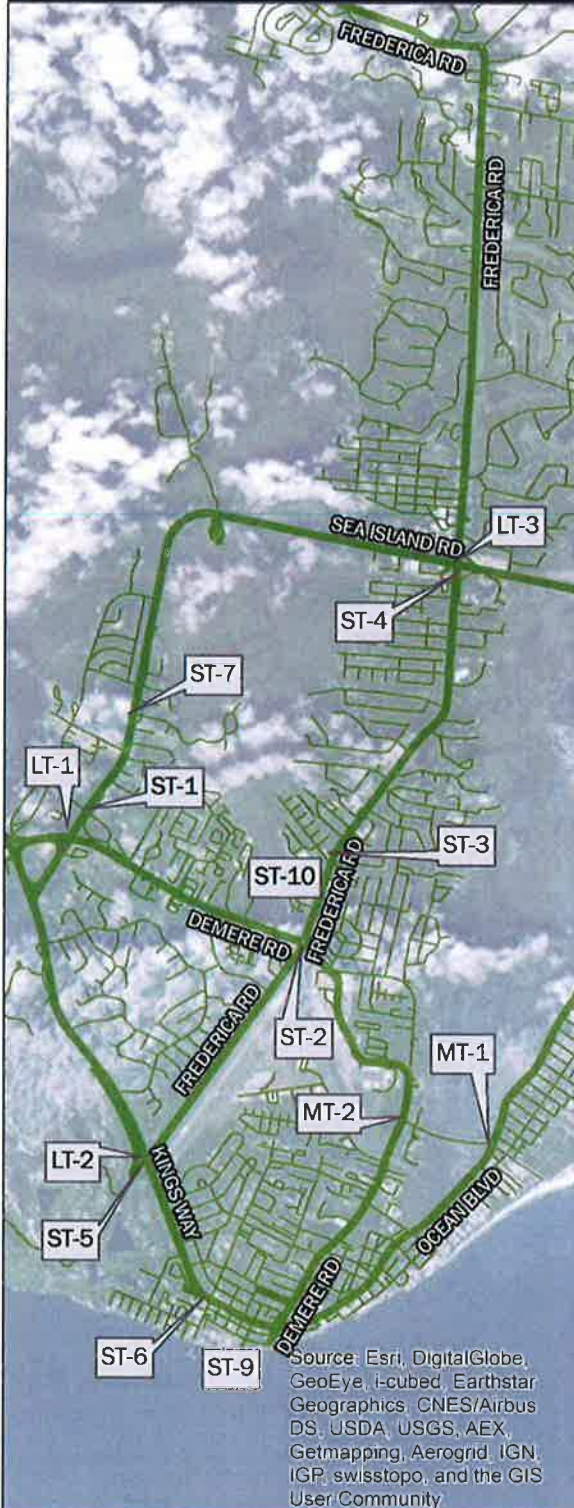


Table EC-1 Recommended Projects & Initiatives

ID #	IMPROVEMENT	COST ⁽¹⁾
SHORT-TERM		
ST-1	(#4) Sea Is. Rd. at Hamilton Dr.-construct EB right turn lane; widen northern leg to include short two-stage LT lane	\$73,200
ST-2	(#18) Frederica Rd. at Demere Rd. (roundabout)-Restripe/re-sign WB leg to remove conflict point; install raised channelizing islands	\$33,200
ST-3	(#23) Frederica Rd. at Riverview Dr.-stripe EBR turn lane	\$31,400
ST-4	(#26) Sea Is. Rd. at Frederica Rd.-restripe and lengthen NBL turn lane	\$136,800
ST-5	(#10) Kings Way at Frederica Rd.-reconstruct SEB leg to include LT lane and TH-RT lane; remove split-phasing	\$107,200
ST-6	(#12) Ocean Blvd. at Mallery St.-install NB and SB flashing yellow arrow signals with leading NB prot. LT phase	\$277,200
ST-7	Sea Is. Rd. at Hamilton Landing Dr.-reconstruct SBL turn lane	\$101,400
ST-8	Conduct a signal timing effort to determine max/min, detector recall settings, and cycle length at existing signals	\$5,000 per signal
ST-9	Conduct a Village parking study to identify utilization, demand/capacity, and alternatives to improve parking and flow	\$150,000
ST-10	Conduct Frederica Rd. access management study to control driveway spacing and plan future development	\$150,000
ST-11	Reconstruct "go-around" lanes on Frederica Rd.	\$76,000
MID-TERM		
MT-1	(#15) E. Beach Cswy at Ocean Blvd.-reconstruct as roundabout	\$1,274,700
MT-2	(#17) E. Beach Cswy at Demere Rd.-reconstruct as roundabout	\$770,500
LONG-TERM		
LT-1	(#5) Sea Is. Rd. at Demere Rd.-remove SBR free-flow; signalize SBR turn lane	\$124,200
LT-2	(#10) Kings Way at Frederica Rd.-reconstruct as roundabout	\$1,087,800
LT-3	(#26) Sea Is. Rd. at Frederica Rd.-reconstruct as roundabout	\$4,040,280

(1) In Year 2015 dollars



INTRODUCTION

Saint Simons Island is located in Glynn County, Georgia and is one of four barrier islands known as the Golden Isles near the city of Brunswick. The island is characterized by a community of year-long residents and recreational visitors who vacation on the island and stay at various hotels, single-family homes and condominium rental properties.

The island is known for its natural beauty and is home to a variety of wildlife and vegetation. Visitors to the island will find that the major corridors of traffic are often lined with large live oak trees and protected marshland. Recommendations that are made in this traffic study are mindful of the desire to preserve these natural resources.

The coastal setting contributes to traffic patterns that vary greatly from month to month. Higher traffic volumes typically occur during the summer months, with the week of July 4th representing the peak of the tourist season. One of the goals of this traffic study is to investigate the effects of peak tourist traffic on the island's road system and to identify solutions to help improve congested locations.

However, accounting for the peak tourist season is not the only goal of this traffic study. The island's mix of permanent residents and seasonal vacationers creates a need to separately investigate the impacts caused by the traffic patterns of each group, which this study has accomplished by collecting data at two separate times of the year. Traffic counts occurred during the week of May 18th to capture traffic attributed to a typical weekday when school is in session and again during the week of June 29th to capture the expected peak island traffic leading up to July 4th.

An aerial image of the island along with the corridors included in this traffic study can be seen in **Figure 1**.

FIGURE 1
Overview of
St. Simons Island





STUDY DATA

Traffic Counts

In order to assess the condition of traffic on the island, traffic volumes were collected from intersections and roadways across the island. In total, turning movement counts (TMCs) were taken during peak periods at thirty-five intersections, and twenty-four hour segment tube counts were performed at eight locations. Of the thirty-five turning movement counts, twenty-one were performed during morning, midday, and afternoon peak periods. Midday counts were taken in the following areas where midday congestion is occurring:

- Ocean Boulevard near Mallery Street
- Demere Road between Sea Island Road and Frederica Road
- Frederica Road between Demere Road and N. Windward Drive/Fendig Road

The remaining fourteen intersections were counted during morning and afternoon peak periods only.

Segment tube counts were used to gather:

- Vehicle classification information
- 24-hour traffic volumes
- Peak hour volumes when traditional turning movement counts could not adequately capture traffic patterns, such as at the free-flowing lanes at the end of the Torras Causeway.

The individual count locations can be found in **Table 1** and are represented on the maps in **Figures 2-9**. Raw traffic count data is provided in Appendix A. The local residential set of turning movement counts was conducted May 19-21 and the summer season set of counts was conducted June 30-July 2.

Vehicle Classification

Vehicle type is defined by a classification system set forth by the Federal Highway Administration (FHWA). The illustration in the column to the right shows representative vehicles within each class.

Class 1 Motorcycles		Class 7 Four or more axle, single unit	
Class 2 Passenger cars			
		Class 8 Four or less axle, single trailer	
Class 3 Four tire, single unit		Class 9 5-Axle tractor semitrailer	
Class 4 Buses		Class 10 Six or more axle, single trailer	
		Class 11 Five or less axle, multi trailer	
Class 5 Two axle, six tire, single unit		Class 12 Six axle, multi-trailer	
		Class 13 Seven or more axle, multi-trailer	
Class 6 Three axle, single unit			

Source: Federal Highway Administration

Vehicle classification is used in estimating peak hour flow rates as part of any operational analysis. It is also important to understand the distribution of vehicles that will use a road system since improvements are often impacted by elements such as heavy truck use.



STUDY DATA

Table 1 Count Locations

INTERSECTION NO.	STREET NAMES	COUNT TYPE
1	Sea Island Road at Author J. Moore Drive	TMC
2	Sea Island Road at Lady Huntington Drive	TMC
3	Sea Island Road at Margaret A. Pitts Drive	TMC
4	Sea Island Road at Hamilton Road	TMC
5	Sea Island Road at Demere Road	TMC
5a*	Ramp from Sea Island Road north to Torras Causeway west	Segment Tube
6	Torras Causeway at Kings Way North	TMC
6a*	Ramp from Demere Road west to Torras Causeway south	Segment Tube
7	Kings Way south of Torras Causeway	Segment Tube
8	Kings Way at St. Andrews Drive/Cuyler Lane	TMC
9	Kings Way at St. Andrews Drive	TMC
10	Kings Way at Frederica Road/Retreat Avenue	TMC
11	Kings Way at Ashantilly Avenue	TMC
12	Kings Way/Ocean Boulevard at Mallery Street	TMC
13	Ocean Boulevard at Demere Road	TMC
14	Ocean Boulevard at Arnold Road	TMC
15	Ocean Boulevard at East Beach Causeway	TMC
16	Demere Road at Arnold Road	TMC
17	Demere Road at East Beach Causeway	TMC
18	Demere Road at Frederica Road	TMC
19	Demere Road at Brockinton Drive	TMC
20	Demere Road at Main Street/Reserve Lane	TMC
21	Frederica Road at Redfern Village	TMC
22	Frederica Road at Edwards Plaza Driveway/Barnes Plantation	TMC
23	Frederica Road at Riverview Drive	TMC
24	Frederica Road at Redfern Drive/Laurel View Drive	TMC
25	Frederica Road at McIntosh Avenue	TMC
26	Sea Island Road at Frederica Road	TMC
27	Frederica Road at Colonial Drive	TMC
28	Frederica Road at Holly Street	TMC
29	Frederica Road at Palm Drive	TMC
30	Frederica Road at St. Clair Parkway	TMC
31	Frederica Road at Major Wright Road	TMC
32	Frederica Road at Windward Drive/Fendig Road	TMC
33	Frederica Road at S. Harrington Road	TMC
34	Frederica Road at N. Harrington Road	TMC
35	Frederica Road at Lawrence Road	TMC
36	Lawrence Road/Hampton Point Drive at Pikes Bluff Drive	TMC
51*	Demere Road east of Quamley Wells Drive	Segment Tube
52*	Frederica Road north of Redfern Village	Segment Tube
53*	Frederica Road north of Plantation Way	Segment Tube
54*	Ocean Boulevard east of 15 th Street	Segment Tube
55*	Sea Island Road east of Harris Teeter Driveway	Segment Tube

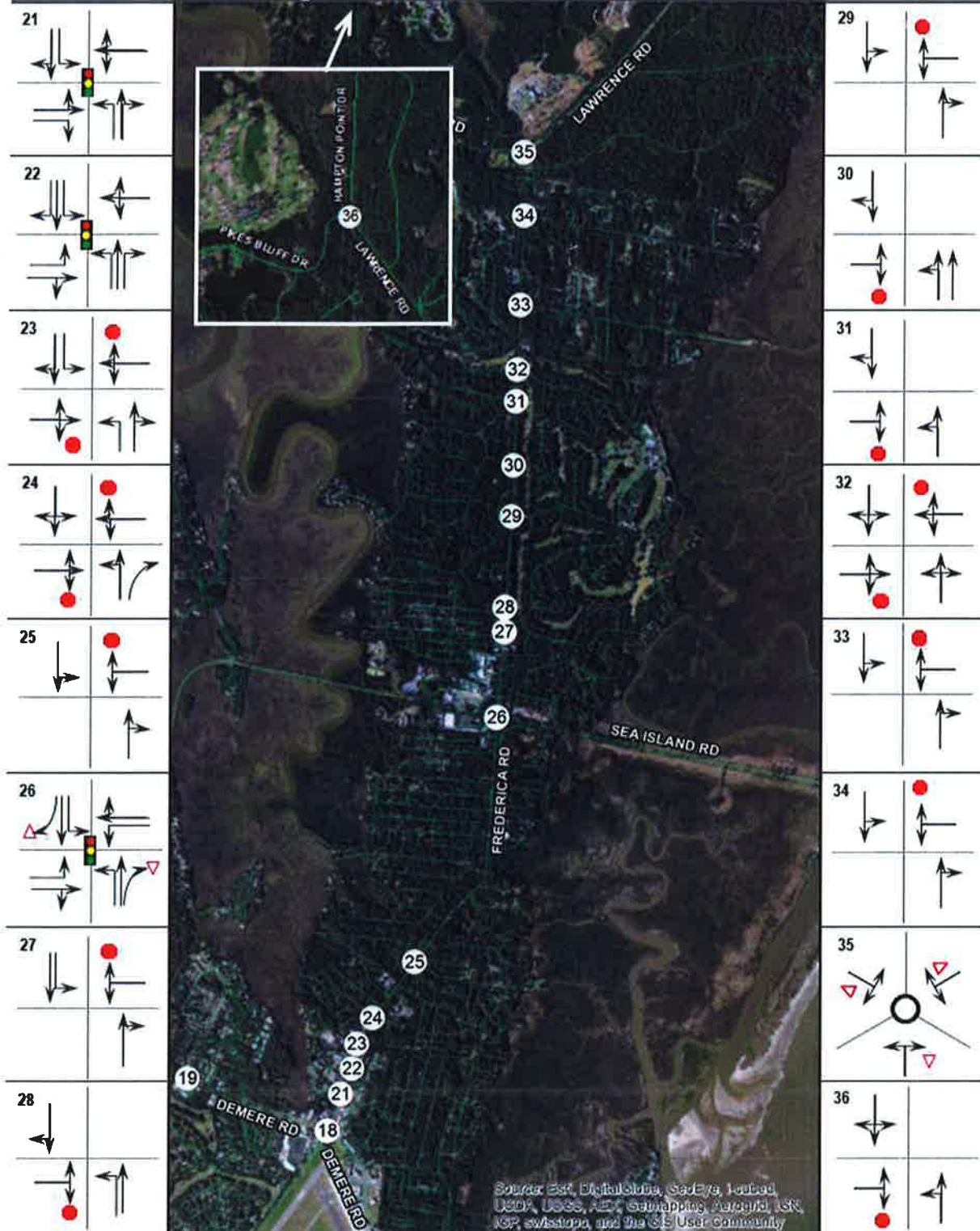
* Not shown in **Figures 2 - 9**





STUDY DATA

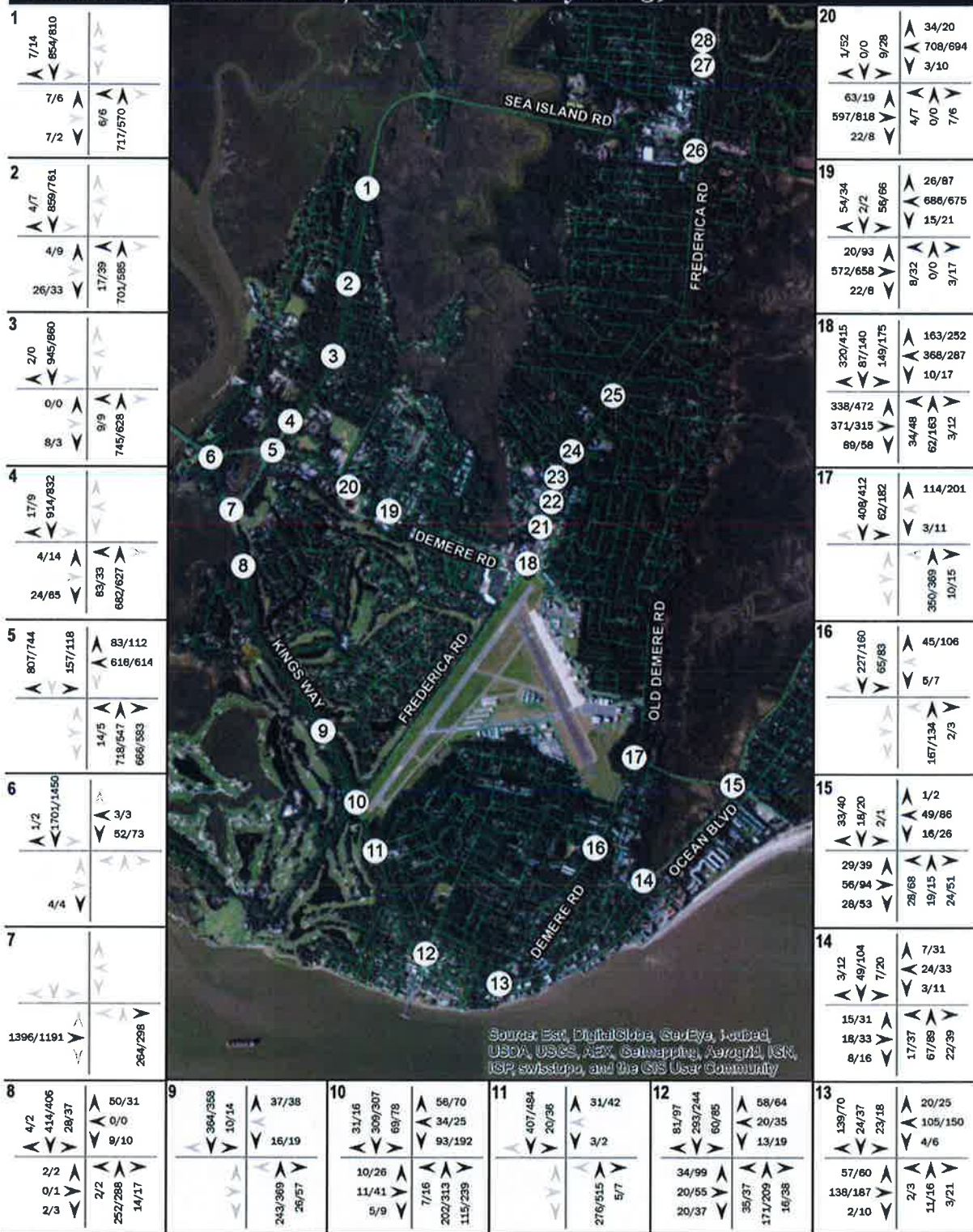
FIGURE 3
Location and Configuration of Observed Intersections



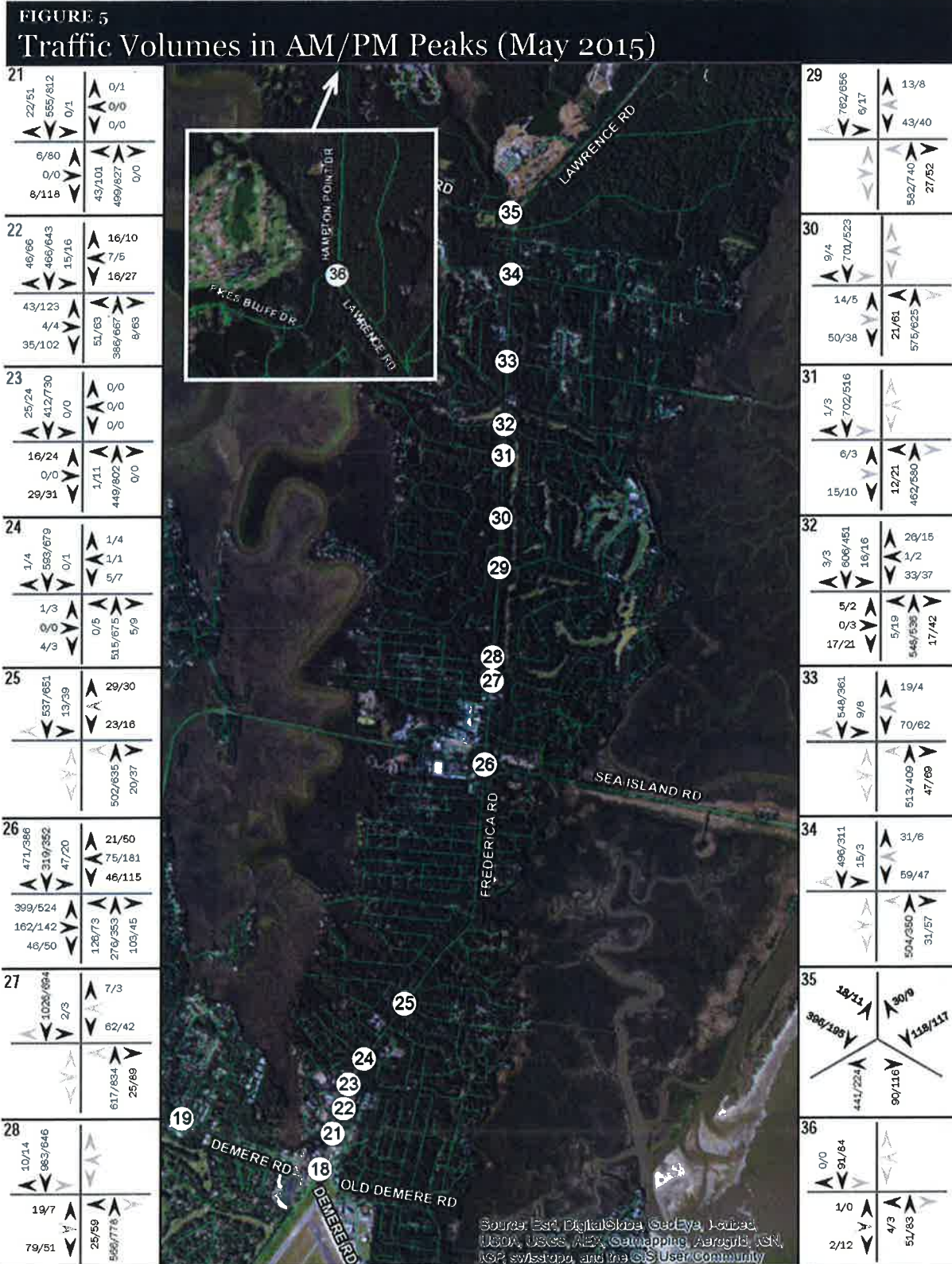


STUDY DATA

FIGURE 4
Traffic Volumes in AM/PM Peaks (May 2015)



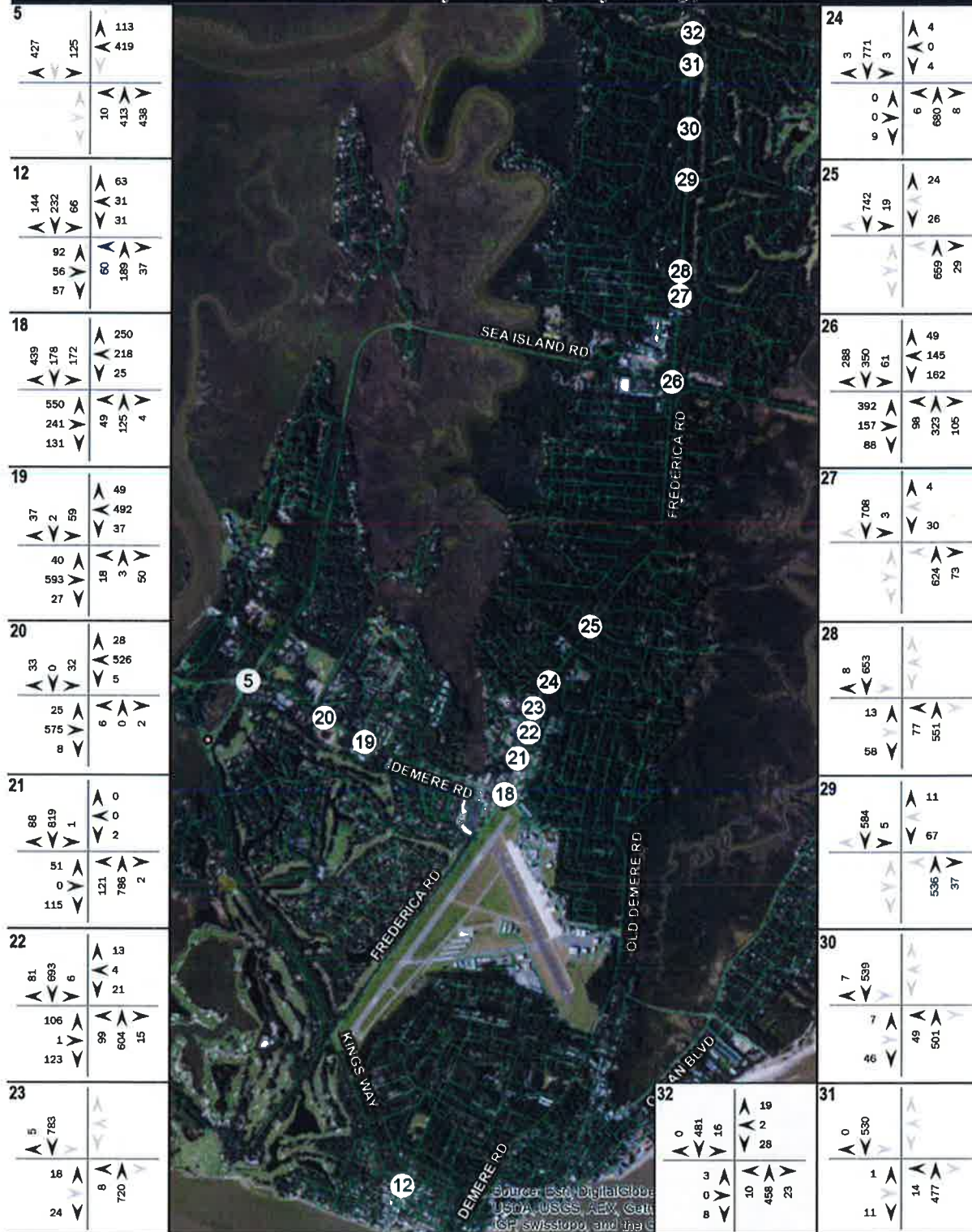
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STUDY DATA

FIGURE 6
Traffic Volumes in the Midday Peak (May 2015)

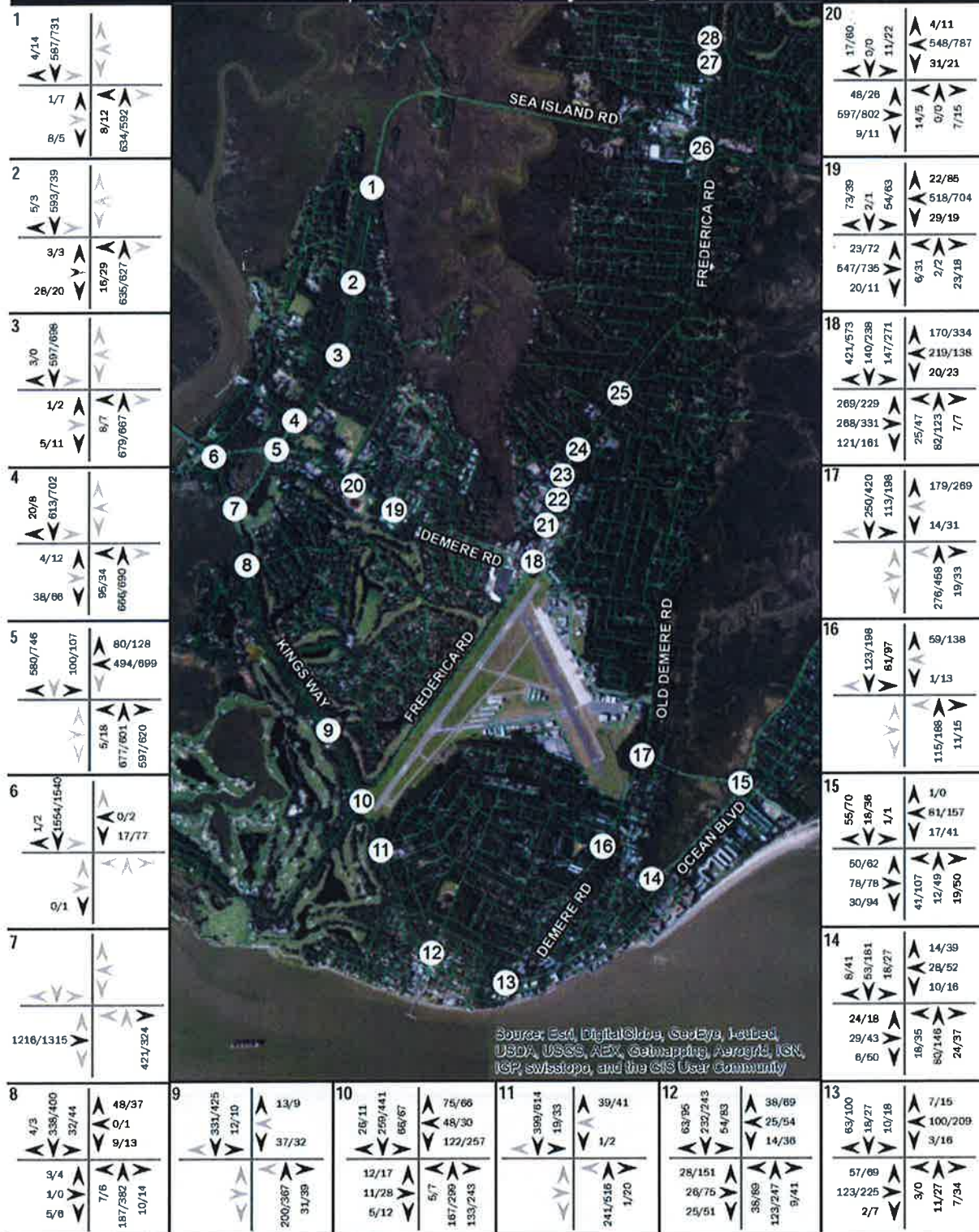


* Midday counts were limited to locations with observations of recurring congestion



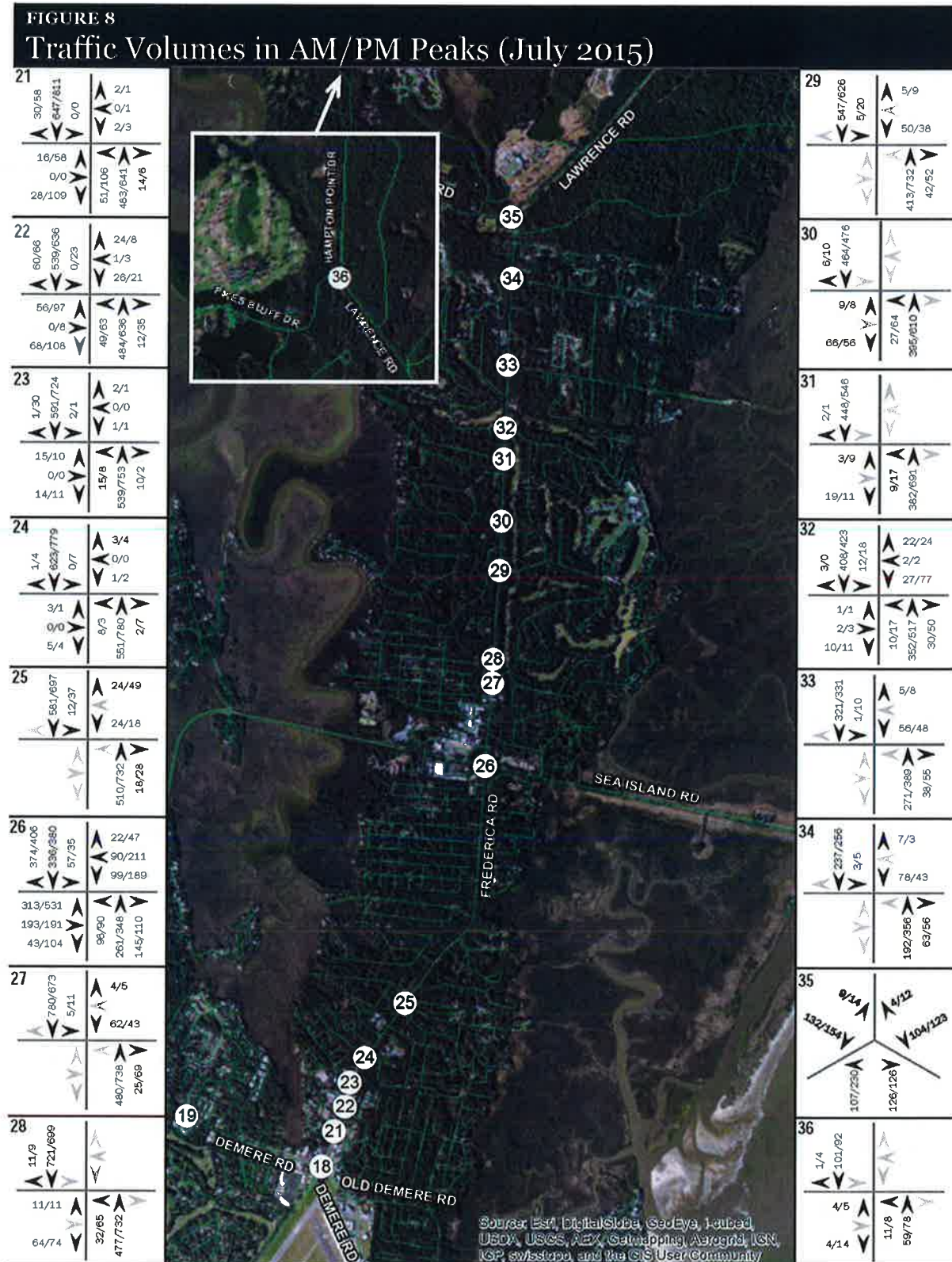
STUDY DATA

FIGURE 7
Traffic Volumes in AM/PM Peaks (July 2015)





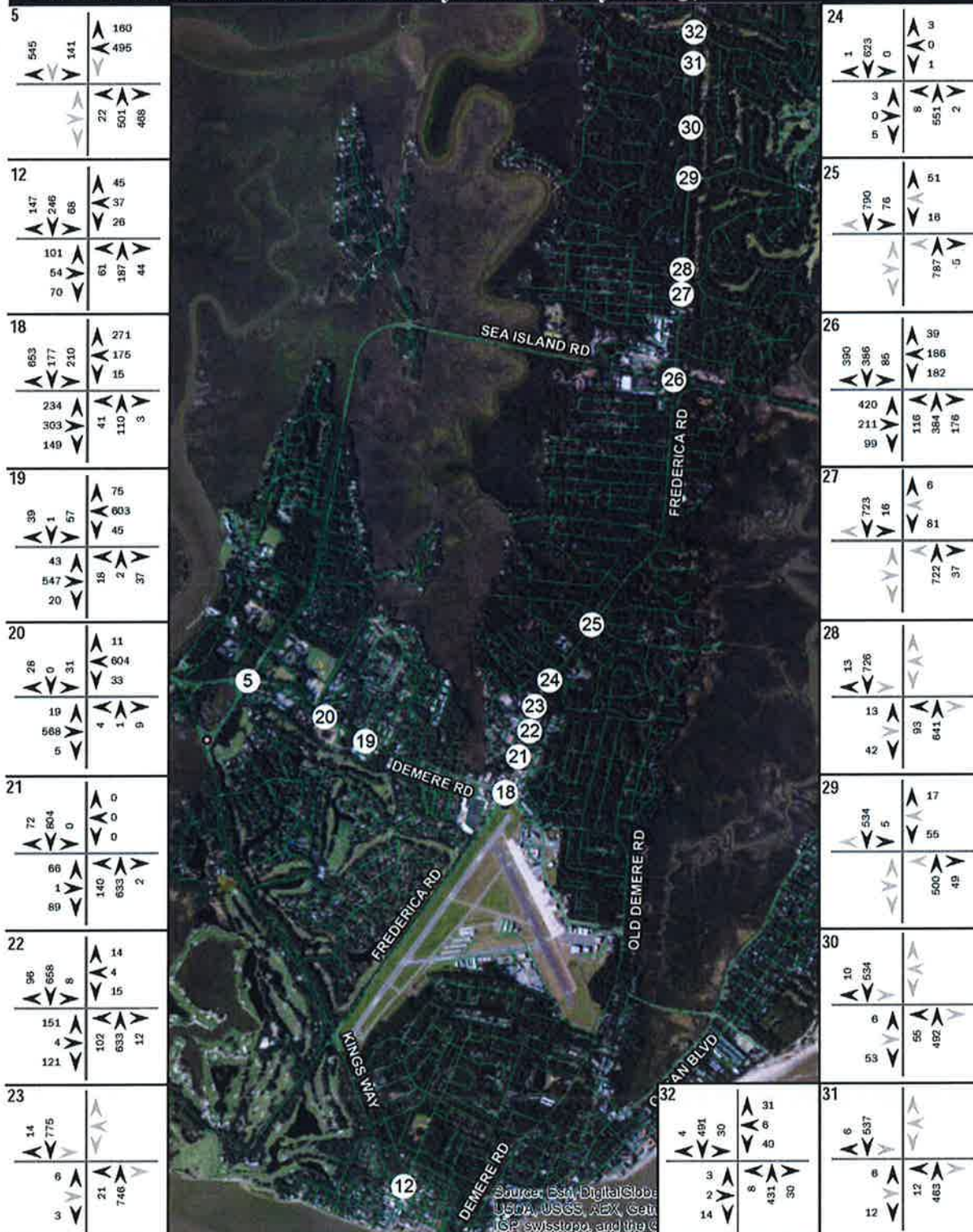
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STUDY DATA

FIGURE 9
Traffic Volumes in the Midday Peak (July 2015)



* Midday counts were limited to locations with observations of recurring congestion



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Historical Daily Volumes

The Georgia Department of Transportation (GDOT) maintains a yearly traffic count location on the F. J. Torras Causeway, which is the only method of accessing St. Simons Island and Sea Island by car. This counter collects Average Daily Traffic (ADT). Historical records from this location date back to 1990 and are shown in **Table 2**. A fitted linear trend line to the data from the count station reveals a linear growth rate of 2.00% per year over a 24 year period with an R^2 correlation coefficient value of 65.0%. Because the Causeway offers the only entry and exit point to the island, this GDOT count location provides a reasonably accurate measure of the total traffic growth on the island over the 24-year period on record. Review of the daily traffic volumes also suggests that between 1990 and 1998 the island experienced strong growth which began to level off after 1998. A short-term trend line fitting of daily traffic for the 10-year period between 2004 and 2014 across the Causeway reveals a relatively flat trend line with 0.04% growth, with a very low R^2 value. While this low R^2 value is not necessarily an indication that the 10-year flat trend line is approximating incorrectly, it does indicate that the 10-year trend line is not as precise as the longer-term line. It is likely that the true future growth for the island lies somewhere between the lower growth rate observed over the last 10 years and the stronger, 24-year growth rate.

Future Growth Trends

The metropolitan planning organization (MPO) for Glynn County maintains a travel demand model (TDM) that is a computer representation of the region, complete with existing and programmed road network links, road characteristics, and existing and planned land uses. This model can estimate daily traffic volume along network links based on the number of trips generated and attracted by each traffic analysis zone (TAZ). This model is also used to estimate future traffic demand as land use and density change over time.

Table 2 Historical GDOT Daily Volumes

Count ID	1270278	1270287	1270347
YEAR	F.J. TORRAS CAUSEWAY	FREDERICA ROAD	SEA ISLAND ROAD
2014	29,904	14,900	12,750
2013	31,480	13,100	12,750
2012	31,590	13,200	12,470
2011	22,740	13,400	13,400
2010	23,070	13,800	13,600
2009	-	12,700	13,770
2008	28,450	13,000	14,050
2007	28,900	13,100	12,580
2006	31,670	15,200	14,190
2005	31,190	12,770	11,730
2004	30,880	14,460	10,920
2003	29,160	13,090	11,770
2002	28,411	13,986	11,278
2001	31,300	15,400	11,700
2000	30,200	14,900	11,300
1999	38,100	19,100	13,800
1998	30,500	15,300	12,300
1997	28,700	12,200	11,300
1996	22,400	12,300	9,900
1995	23,200	11,700	9,900
1994	21,700	10,000	6,900
1993	21,900	11,000	7,700
1992	24,098	11,748	8,671
1991	21,615	11,582	7,958
1990	19,909	11,274	7,724
24-Year Fitted Linear Annual Growth Rate	2.00%	0.90%	2.85%
R^2	65.0%	29.8%	67.3%
Most Recent 10-Year Fitted Linear Annual Growth Rate	0.04%	-0.10%	0.71%
R^2	0.1%	0.2%	8.6%



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This model, therefore, provides a second source of expected growth in traffic. The yearly growth rate for each of the five corridors within the study area, as reported from Glynn County's TDM, are shown in **Table 3**.

Table 3 Yearly Traffic Growth from TDM

Corridor	2010 ADT	2040 ADT	Annual Linear Growth %
Sea Island Rd.	11119	12203	0.32%
Demere Rd.	11574	12435	0.25%
King's Way	6198	6655	0.25%
Frederica Rd. S.	11992	12325	0.09%
Frederica Rd. N.	3930	4342	0.35%

Discussions with county staff indicate that there are specific sites around the island where new development or redevelopment is possible, especially along Lawrence Road at the north end of the island, on the marsh side of Sea Island Road, and on the south side of Kings Way. A check of model calibration with respect to population growth was done by determining the % growth within each TAZ through year 2040. This rate of change in population can be seen in **Figure 10** and suggests that the model is taking these potential redevelopment sites into consideration.

A plot of model volumes from the 2010 Base Year model and the 2040 Existing Network + Committed Projects model can be found in the Appendix B of this report.

FIGURE 10

Population Growth by TAZ





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Traffic Forecasting

The operational analyses that are part of this traffic study require an investigation into future traffic conditions on St. Simons Island to determine the long-term effects of design alternatives. For the purposes of this study, Glynn County established a future analysis year of 2035.

Through consideration of both historical trend data and future growth trends from the TDM, a yearly, linear growth rate of 1% was selected to apply to 2015 base condition turning movement counts. This assumption is based on the historical growth observed on the F. J. Torras Causeway, which is the only means of accessing the island, and modeled growth corresponding to redevelopment and planned roadway projects observed in the TDM. The 2035 future year TMCs can be found in **Figures 11-16** on the following pages.

This growth rate and projection is intended to represent overall changes in demand on the island. Therefore, it should be noted that this report is not intended to be used as, or to preclude the right to request a traffic study of impacts at site driveways and neighboring intersections caused by any specific future development proposals and initiatives.

Crash History

Crash data for each of the five corridors was collected from GDOT via the online GeoTraqs application that is available for public use. The data was collected for the time period between 2011 and 2014.

No fatal crashes were reported within the study area during the data's four-year time period. 75 injuries were reported in this time period, including 2 pedestrians who were injured along Kings Way and Frederica Road. With the exception of Sea Island Road between Demere Road and Frederica Road, rear end collisions are the majority crash type. On Sea Island Road, 24 angled collisions and 23 rear end collisions have

taken place. Individual corridor Crash Summary Tables can be found in the Appendix C.

A 2014 crash rate for each corridor was developed for comparison to GDOT statewide average crash rates. This process helps identify where abnormalities in crash frequency are occurring. Crash rates are reported as the number of crashes per 100 million vehicle-miles traveled (100 MVMT). **Table 4** provides a summary of each of the corridor's individual rates.

Table 4 2014 Corridor Crash Rates

LOCATION	ADT ⁽¹⁾	LENGTH (MI.)	# OF CRASHES	CRASH RATE	GDOT AVG. ⁽²⁾
Sea Island Rd.	12,750	3.0	26	186	610
Demere Rd.	7,560	3.3	44	483	610
King's Way	6,900	3.7	28	300	610
Frederica Rd.	10,750	5.4	67	316	610

(1) Source: Average of ADT from GDOT Count Stations, GeoTraqs

(2) Source: GDOT Statewide Mileage, Travel & Accident Data – 2013 for Minor Arterial, Non-NHS, Urban Classification

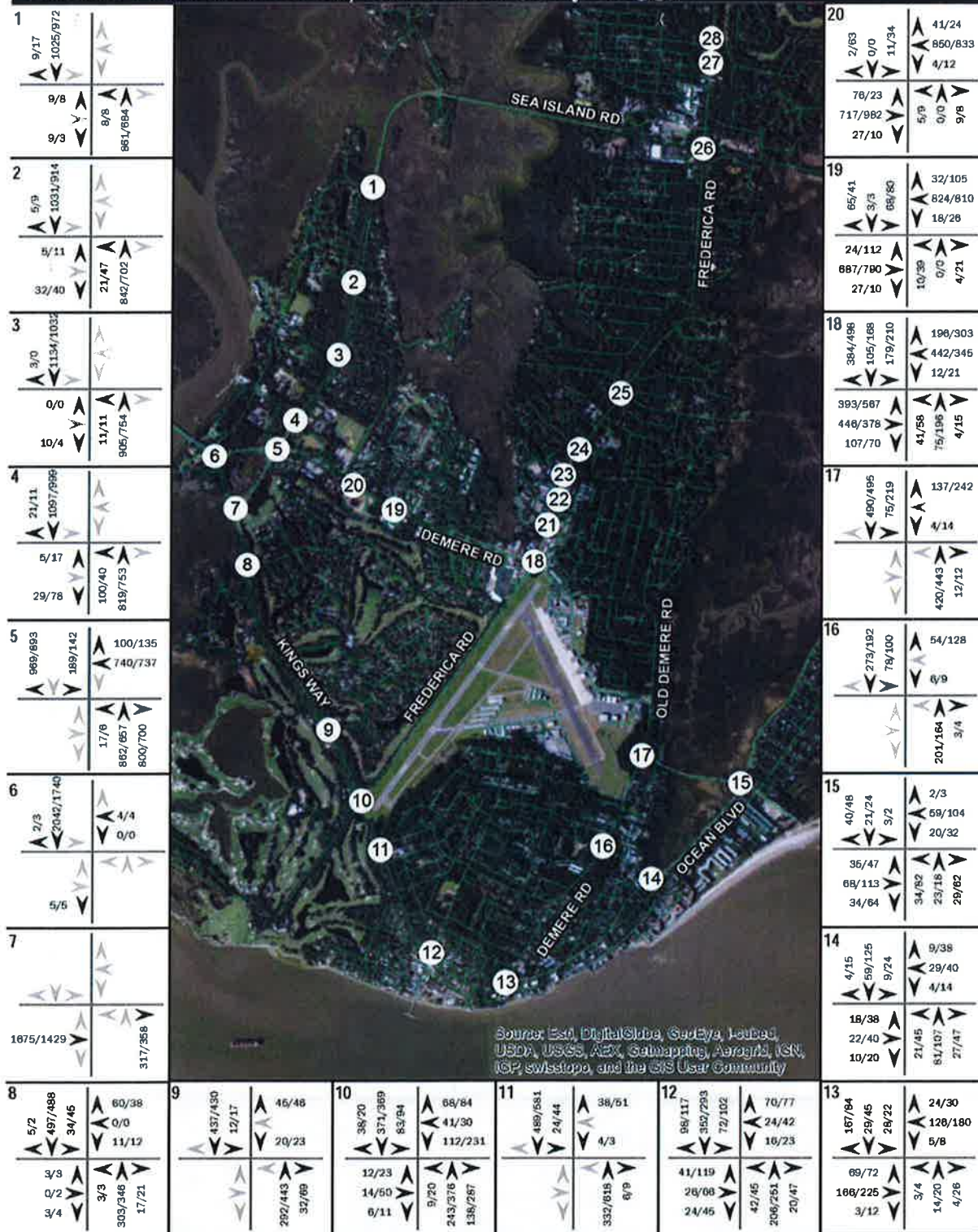
A review of crash rates suggests that the island's corridors experience lower-than-average crashes per volume of traffic. Based on location data provided from GeoTraqs, it can be inferred that crashes are occurring more frequently along the moderately dense commercial areas on Kings Way/Ocean Boulevard, Demere Road and Frederica Road where volumes are higher and frequent driveways create conflict points.



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FIGURE 11

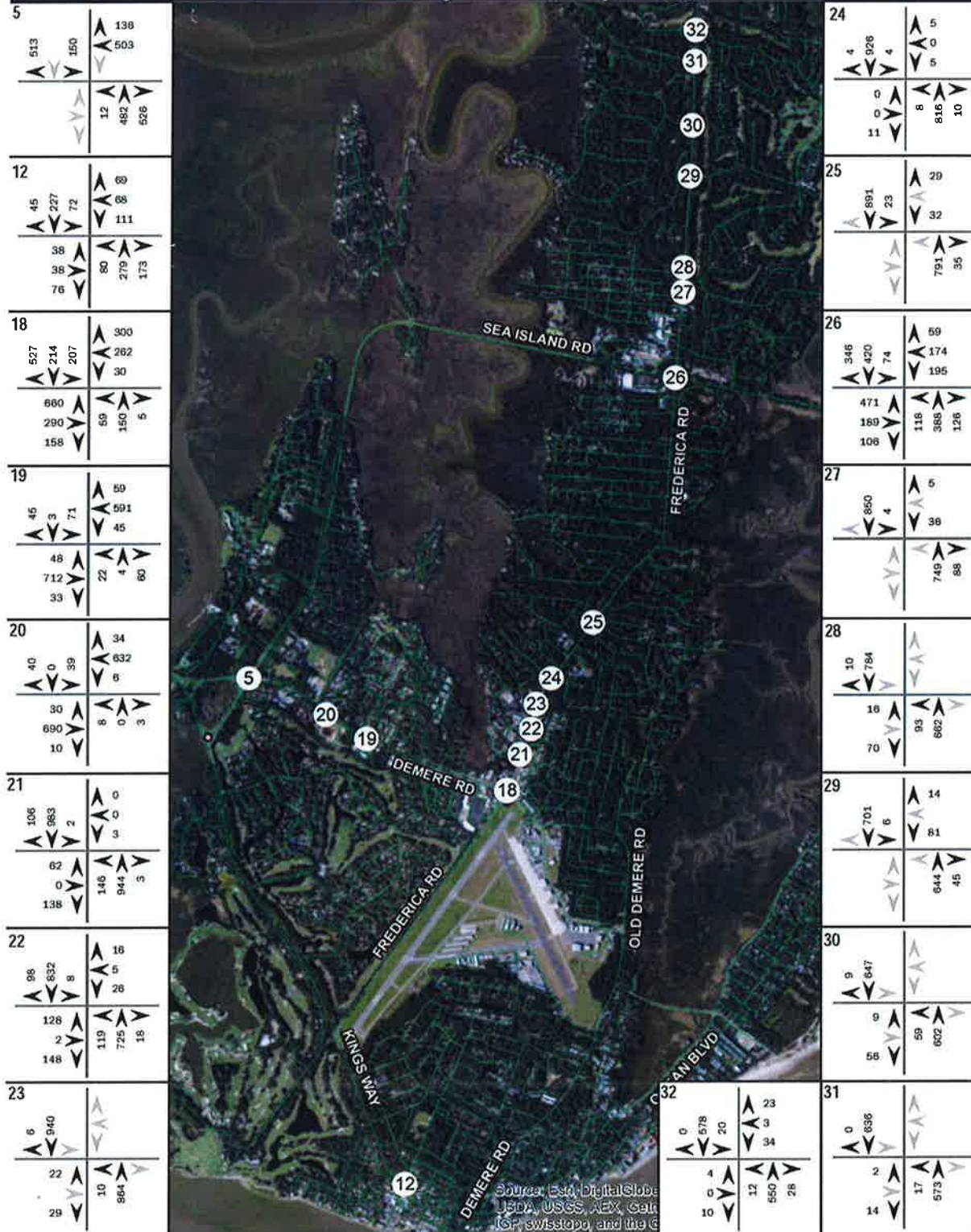
Traffic Volumes in AM/PM Peaks (May 2035)





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FIGURE 13
Traffic Volumes in the Midday Peak (May 2035)





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FIGURE 14
Traffic Volumes in AM/PM Peaks (July 2035)

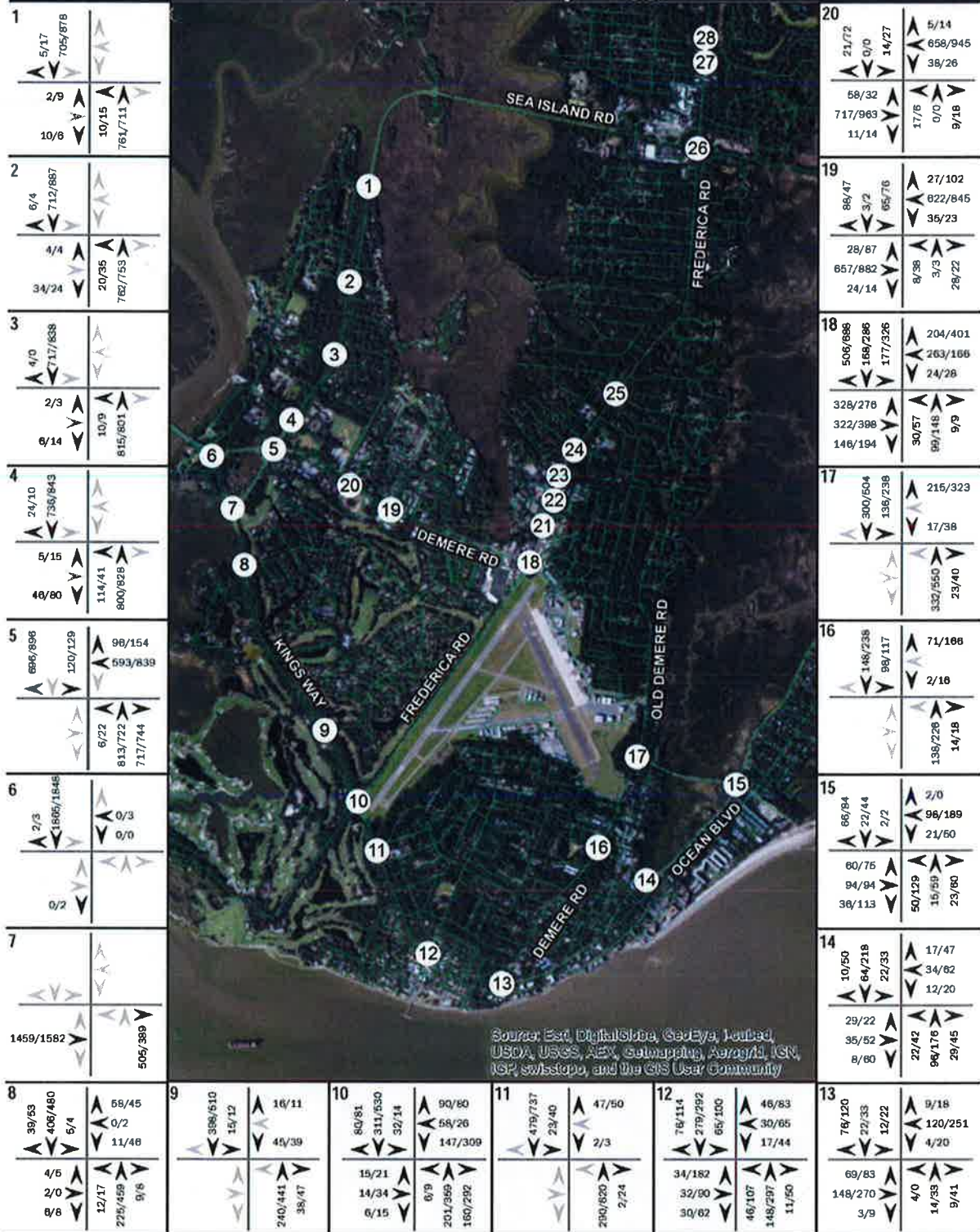
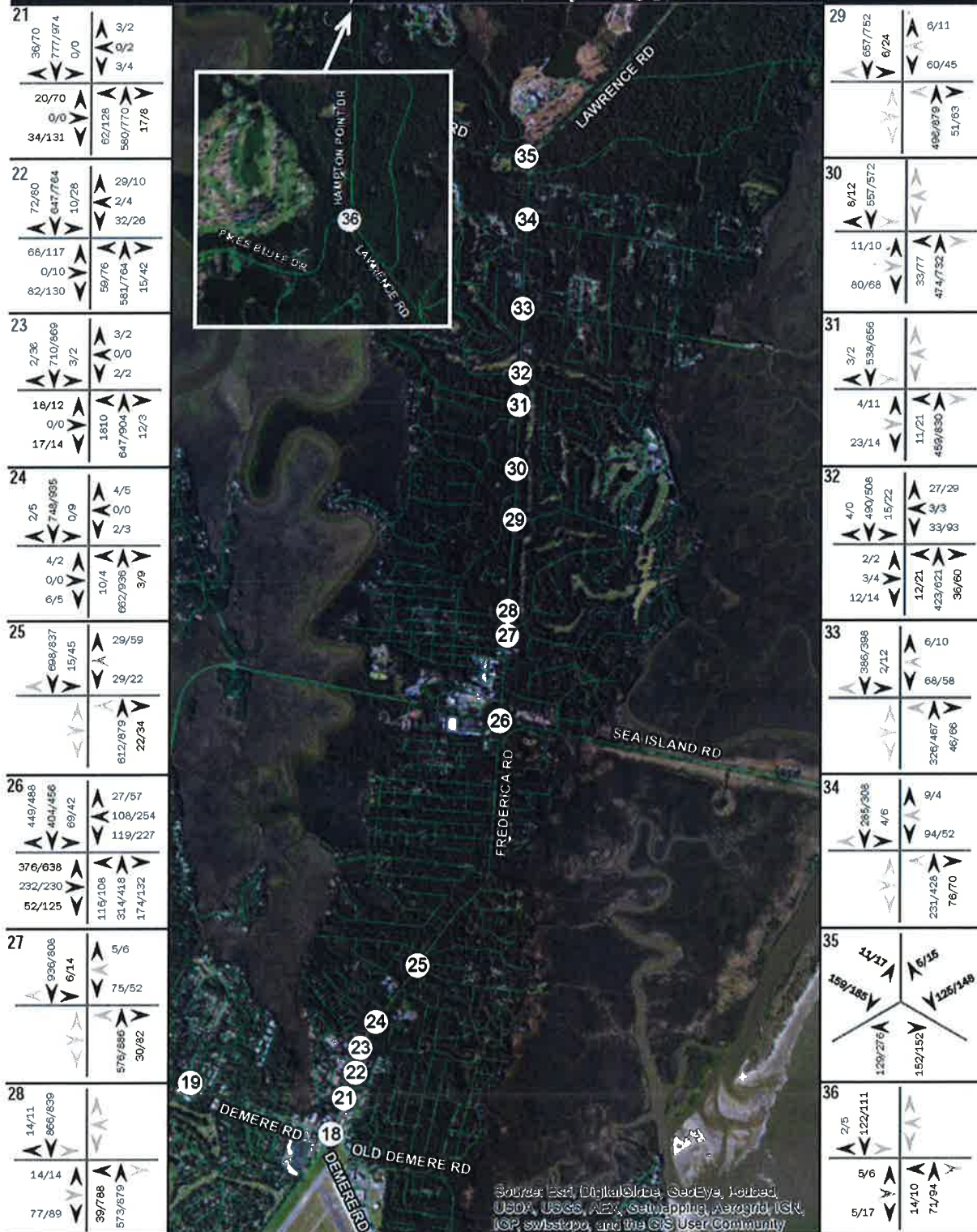


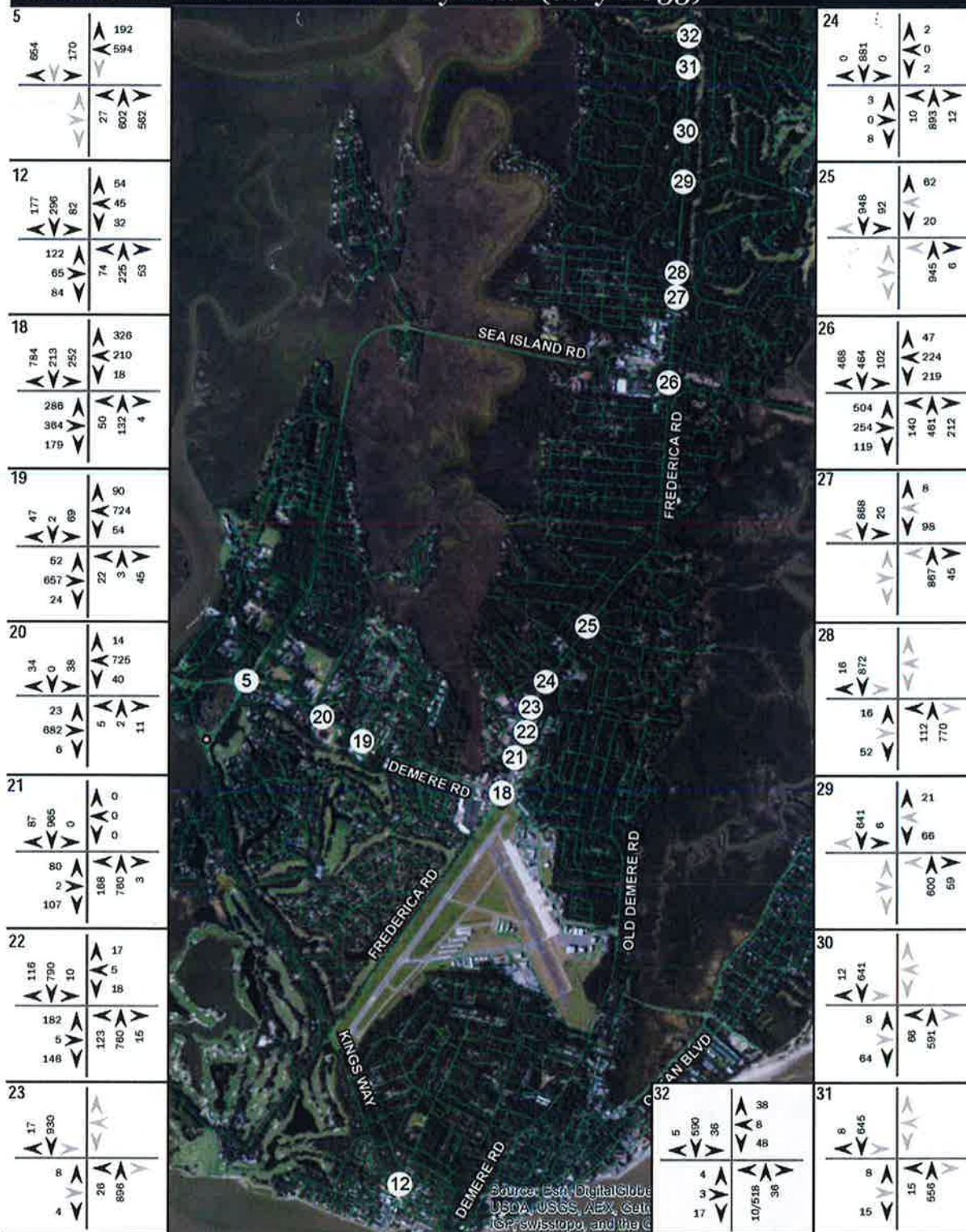
FIGURE 15
Traffic Volumes in AM/PM Peaks (July 2035)





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FIGURE 16
Traffic Volumes in the Midday Peak (July 2035)





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Field Observations

Site visits to the island were conducted in July to conduct speed-delay runs and to observe traffic patterns and other existing conditions.

Speed-Delay Runs

Speed-delay runs are conducted by recording a vehicle's speed at regular intervals along a

corridor and mapping the points to locate delay.

Figure 17 illustrates directional speed-delay runs captured during a PM peak on the week of July 4th. The intent was to capture areas of unacceptable corridor delay during the peak season. Observations reveal that overall delay is minimal, with congestion typically experienced at the major intersections.





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Other Existing Condition Observations

Kings Way at Frederica Road: The signal at this intersection is currently split-phased between the southeast-bound (SEB) and northwest-bound (NWB) directions. Both approaches consists of a through-left turn lane and a dedicated right turn lane, necessitating the split-phase timing. Delay for the SEB approach was observed to be moderately excessive, although the cycle is long enough to clear the queues that formed during the observation period. Removal of the split-phase operation could potentially reduce the overall cycle length and result in more frequent service of each approach.

Several pine trees exist near the western edge of pavement on the SEB approach leg which would likely need to be removed if lane configuration modifications are made to the intersection. In addition to the trees to the west, a new sidewalk section exists on the eastern side of the SEB approach leg, which would most likely limit widening on that side of the road without removing new construction.

Ocean Boulevard at Mallery St: This intersection provides protected-permitted left turns from both directions on Ocean Boulevard and allows for permitted-only left turns in the northbound (NB) and southbound (SB) directions of Mallery St. The NB approach has frequent left turns made by people leaving the restaurants, shops, and parking lots near the pier. This intersection is also heavily traveled by pedestrians across all four legs. Observations made at several times of day, including near the mid-day and PM peak times, reveal that there is a significant conflict between pedestrians crossing the western leg and vehicles making the northbound left (NBL) turn due to the lack of left turn protection. This reduced the throughput of the Mallery Street phase considerably and resulted in queues of 10-20 cars.

A landscaped median on the NB approach prevents the construction of a NBL turn lane. A protected left turn phase would improve the throughput for this approach by removing the

conflict between pedestrians and left turners, however the left turn phase would have to run concurrently with the NB through movement to avoid “starving” the short left turn lane with a queue blockage.

The Saint Simons Pier Village: Parking around the Pier Village is problematic during the tourist season as people travel from all parts of the island to come enjoy the waterfront park, shops/dining, and other attractions. Lots are located at the southern end of Mallery St., the Postell Market, the Lighthouse Museum, a public lot on Ocean Boulevard, and angled spaces located along Beachview Drive and other streets within the Village area. The demand seen for parking on a weekend evening in July suggested a lack of available spaces with overflow occurring in various alleys and localized instances of congestion caused by drivers unable to find parking.

East Beach Causeway: The causeway connecting Demere Road and Ocean Boulevard experiences periods of elevated volumes due to the public beach accesses located at 1st Street and Massengale Park. Some queuing was observed on the SB approach of Demere Road at E. Beach Causeway created by left turning vehicles. There is a strip of asphalt shoulder at this intersection that some cars use as a bypass lane or a “go-around” lane when southbound left (SBL) turns are present.

Neither intersection of E. Beach Causeway will have enough traffic to warrant signalization, however peak hour volumes suggest that these locations could support successful roundabouts.

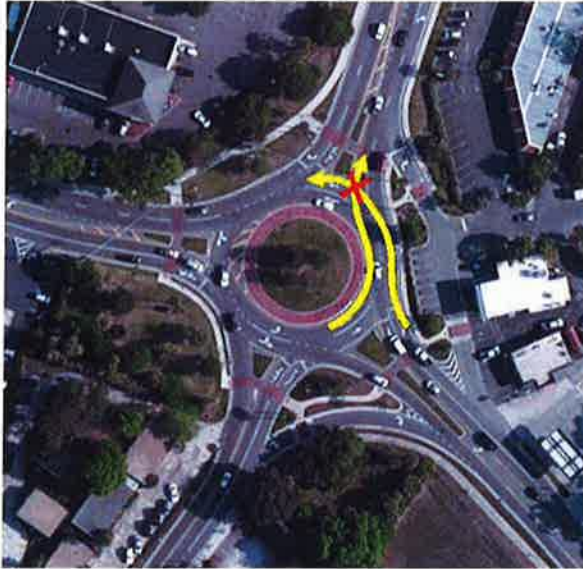
Demere Road at Frederica Road Roundabout: There is a significant conflict point within the roundabout at the NB exit area. Both circulating lanes allow vehicles to exit the roundabout to the north, however the outside circulating lane also allows vehicles to continue around to westbound (WB) Demere Road, which can create a scenario where a vehicle in the inside lane that desires to exit the roundabout onto Frederica Road NB could sideswipe a vehicle in the outside lane that





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is correctly following the provided signs and pavement markings to go through the roundabout to Demere Road WB.



As mentioned, the existing signage and pavement markings are conflicting and are in need of modification. The westbound sign currently indicates to drivers that the right lane can be used for right turns and for going through the roundabout to stay on Demere Road.



Existing WB Signage at Demere Rd. Roundabout

In addition to the conflict point within the roundabout, drivers were observed violating pavement markings by driving over the hatched area on the western half of the circle and were also seen changing lanes within the roundabout.

Overall, the roundabout appears to be operating efficiently and is not likely to be a major bottleneck for traffic in this area of the island.

Frederica Road, North of the Roundabout: The segment of Frederica Road between the roundabout at Demere Road and Riverview Road is characterized as being a commercial corridor with frequent driveway openings to businesses. Several businesses also have parking that is accessed directly from Frederica Road, which leads to instances of vehicles backing up out of parking into traffic on Frederica Road. West of Frederica Road is a network of local roads that connect businesses of Redfern Village with Edwards Plaza shopping center.

Also of note, the NB receiving leg of the roundabout consists of a right turn lane drop into the parking lot of Wells Fargo shopping center. This lane drop occurs after a very short section of road (approximately 200') and traffic in both NB lanes was required to merge down to one lane here without adequate warning.

Between Riverview Road and Sea Island Road, the character changes to residential side streets with no center turn lane to divide traffic. Several bypass lanes exist at these side streets with the intent of providing a paved surface for vehicles to use to go around left turning vehicles. These lanes can provide some relief to delays, but generally, the shifting taper was observed to be inadequate for the posted speed limit here (30 mph). In addition to the inadequate shifting taper, a left turn lane with proper striping would have a greater impact on reducing the rear-end collision potential at these locations.

Sea Island Road at Frederica Road: The signal at this intersection operates with an extended cycle time. The PM peak cycle time approaches 210 seconds. Queues were forming on multiple approaches during the PM observations, including the eastbound left (EBL) turn lane and the WB through lane, as seen in the photos on the following page.





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Sea Island Road WB Queues, July PM Peak



Sea Island Rd EB Queue Spillback, July PM Peak

The heaviest EB movement is the left turn. Queues reach as much as 1,900' which causes some blockage of driveways and turn lanes. The WB direction coming off of Sea Island also forms queues as this movement is in conflict with the opposing EBL turns.

SB queuing was also observed at this signal during the mid-day peak and reached over 1,400' back to Palmetto Street.

Frederica Road, North of Sea Island Road: North of the signal at Sea Island Road, short sections of pavement have been added to the shoulder at certain intersections to provide a traversable area for cars to go around left-turning vehicles. While these paved shoulders do offer a reduction to delay for through vehicles, they are often very short and offer very little forewarning to drivers as to their existence and purpose. Driving through these bypass lanes resulted in a tendency to swerve the vehicle to the right and back to the left because of the abrupt nature of these features.

Sea Island Road at Hamilton Landing Drive: The SB leg of Sea Island Road at this side street is currently striped as a through lane and an auxiliary left turn lane. The shifting taper is not long enough considering the 45 mph speed on Sea Island Road.



Sea Island Rd at Hamilton Landing Dr. Shifting Taper

Additionally, the shift back to center of the receiving leg is striped as a merge point, shown below, which creates an unnecessary conflict point.



Sea Island Rd at Hamilton Landing Dr. Merge Point

Sea Island Road at Demere Road: This signal is located at the convergence point of traffic entering and exiting the island. Traffic exiting the island from Sea Island Road is given a free-flowing southbound right (SBR) turn lane that handles over 700 vehicles per hour at peak times. A merge point is located 300' to the west of the signal where these free-flowing right turns





STUDY DATA

must merge with the through traffic from Demere Road. This merge point was observed to create some congestion and spill-back into the intersection that reduced WB throughput.

The NB movement is heavy as well and was observed to back up and block the left-side ramp to the Torras Causeway. Long queues form on the NB approach but the cycle appears to adequately serve all of the queued cars within one cycle. The photo below illustrates the extent of queuing that was observed on the NB leg of the intersection.



NB Queues, Sea Island Road at Demere Road





ANALYSIS

Analysis Methodology

The standard approach to defining traffic congestion is the use of Level of Service (LOS), a quantifiable measure of congestion that is correlated to the delay experienced by the average vehicle. LOS is measured on a letter grade scale from A to F, with LOS A indicating free-flow conditions and LOS F indicating severe congestion as shown in the graphic below. Typically, LOS D or better is considered satisfactory, with LOS E or F considered failing.



The Highway Capacity Manual (HCM) defines LOS at intersections in terms of average control delay per vehicle, which is composed of initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. **Table 5** presents LOS thresholds for unsignalized and signalized intersections.

The majority of intersections were analyzed according to the HCM 2010 methodology, using Trafficware's software package, Synchro 9. However, intersection #5 (Sea Island Road at Demere Road) contains one-way directional approaches and non-standard signal phasing,

Table 5 Level of Service by Control Delay

LOS	AVERAGE CONTROL DELAY (SEC/VEH)	
	UNSIGNALIZED INTERSECTION	SIGNALIZED INTERSECTION
A	≤10.0	≤10.0
B	10.1 - 15.0	10.1-20.0
C	15.1 - 25.0	20.1-35.0
D	25.1 - 35.0	35.1-55.0
E	35.1 - 49.9	55.1-79.9
F	≥50.0	≥80.0

which is not supported by the HCM 2010 methodology for signalized intersections. Additionally, intersection #6 (Kings Way at Gateway Driveway) includes a one-way directional approach which is not supported by HCM 2010 methodology for two-way stop control. These two intersections were instead analyzed using HCM 2000 methodology.

Intersections #18 (Demere Road at Frederica Road) and #35 (Frederica Road at Lawrence Road) are roundabouts and were analyzed using GDOT's Roundabout Analysis Tool v2.1. This tool provides analysis results based on two methodologies. These methodologies are the HCM 2010 model, which is intended for use in analysis of a roundabout in a base year, and a calibrated HCM 2010 model which is intended for use in future-year analyses. Generally, the HCM 2010 model methodology provides a lower capacity for the roundabout while the calibrated HCM model provides a greater capacity, yielding better LOS. GDOT's calibrated model is similar to the HCM 2010 methodology, but makes adjustments to the entry capacity formula based on empirical data collected from Bend, Oregon and various roundabouts in California. The intent of the calibrated model is to provide a more accurate representation of a roundabout's capacity in future year scenarios, when driver familiarity towards roundabouts is greater.

Roundabouts share similar control delay formulation with two-way and all-way stop-controlled intersections, and as a result they share the same LOS thresholds as unsignalized intersections (see **Table 5**).





ANALYSIS

Capacity Analysis Results

Base year (2015) and future year (2035) no-build scenarios were evaluated using the methods described in the preceding section for a typical weekday traffic and peak tourist season traffic. **Table 6** and **7** present Level of Service and Control Delay (average delay in seconds per vehicle) for 2015 existing and 2035 no-build conditions on a typical weekday in May. **Table 8** and **9** present Level of Service and Control Delay for the same scenarios on a typical weekday during tourist season. Synchro and roundabout analysis reports can be found in Appendix D.

Following the capacity analysis tables, each intersection with poor LOS is examined in detail. Recommendations, are considered with respect to constructability and overall operational benefits. LOS and delay summary tables are typically used to illustrate these operational benefits. In some instances, 95th percentile queue length, in feet, is used as a measure of effectiveness when comparing an alternative to the no-build scenario.

Control delay: This is a measure of the average amount of time, in seconds, that a vehicle can expect to spend at an intersection. The tables in this section report control delay by the approach for stop-controlled side streets and by overall intersection for signals and roundabouts.

Two-way stop controlled intersections do not require the major street to stop, and therefore those approaches incur no delay and are not generally reported. Major street left turn lanes can experience minor delays if gaps in opposing traffic are limited and are reported in the following tables when necessary.

95th Percentile Queue: This is an estimated length of queue that has only a 5% probability of being exceeded during the peak hour time period. This queue length is not an average length, and is not indicative of an everyday experience for a driver, but is useful in determining turn lane lengths and for determining maximum extents of driveway and cross-street blockages.





ANALYSIS

Table 6 May 2015 Existing Conditions, Level of Service & Control Delay (s/veh); AM, MD & PM Peak

NO.	INTERSECTION	TRAFFIC CONTROL	AM PEAK		MD PEAK		PM PEAK	
			LOS	DELAY	LOS	DELAY	LOS	DELAY
1	Sea Is. Rd. at Arthur J. Moore Dr.	EB Stop	D	35	-	-	D	28
2	Sea Is. Rd. at Lady Huntingdon Dr.	EB Stop	C	25	-	-	C	21
3	Sea Is. Rd. at Margaret A. Pitts Rd.	EB Stop	C	20	-	-	C	16
4	Sea Is. Rd. at Hamilton Rd.	EB Stop	D	34	-	-	D	26
		NBL Yield	B	12	-	-	B	10
5	Sea Is. Rd. at Demere Rd.	Signal	F	94	C	21	D	35
6	Kings Way at Gateway/ Driveway	EB Stop	C	20	-	-	C	15
		WB Stop	F	67	-	-	E	36
8	Kings Way at Cuyler Ln./St. Andrews Rd.	EB Stop	C	15	-	-	C	15
		WB Stop	B	12	-	-	B	13
9	Kings Way at St. Andrews Rd.	WB Stop	B	11	-	-	B	13
10	Kings Way at Frederica Rd./Retreat Ave.	Signal	C	23	-	-	C	32
11	Kings Way at Ashantilly Ln.	WB Stop	B	11	-	-	B	13
12	Kings Way at Mallery St.	Signal	B	13	B	14	B	14
13	Ocean Blvd. at Demere Rd.	NB Stop	B	13	-	-	B	12
		SB Stop	B	12	-	-	B	13
14	Ocean Blvd. at Arnold Rd.	EB Stop	B	10	-	-	B	13
		WB Stop	B	10	-	-	B	12
15	Ocean Blvd. at E. Beach Causeway	NB Stop	A	9	-	-	B	11
		SB Stop	B	10	-	-	B	10
16	Demere Rd. at Arnold Rd.	WB Stop	B	10	-	-	B	10
17	Demere Rd. at E. Beach Causeway	WB Stop	B	12	-	-	C	16
18	Frederica Rd. at Demere Rd.	Roundabout	C	16	B	14	B	14
19	Demere Rd. at Brockinton Dr.	Signal	B	11	B	11	B	14
20	Demere Rd. at Reserve Ln./ Main St.	NB Stop	D	32	D	29	F	50
		SB Stop	F	64	D	28	F	58
21	Frederica Rd. at Redfern Village	Signal	A	9	B	12	B	12
22	Frederica Rd. at Edwards Plaza/Barnes Plantation	Signal	B	11	B	14	B	13
23	Frederica Rd. at Riverview Dr.	EB Stop	D	28	E	40	F	54
		NBL Yield	A	9	B	10	B	10
24	Frederica Rd. at Redfern Dr./ Laurel View Dr.	EB Stop	C	15	C	15	D	29
		WB Stop	C	24	D	31	D	34
25	Frederica Rd. at McIntosh Ave.	WB Stop	C	17	D	31	C	22
26	Frederica Rd. at Sea Is. Rd.	Signal	C	31	C	27	D	41
27	Frederica Rd. at Colonial Dr.	WB Stop	E	45	C	19	C	25
28	Frederica Rd. at Holly St.	EB Stop	E	47	C	16	C	17
29	Frederica Rd. at Palm Dr.	WB Stop	E	44	D	28	F	55
30	Frederica Rd. at St. Clair Pkwy.	EB Stop	C	20	B	14	B	14
31	Frederica Rd. at Major Wright Rd.	EB Stop	C	22	B	13	C	15
32	Frederica Rd. at Fendig Rd./Windward Dr.	EB Stop	C	20	C	15	C	15
		WB Stop	E	40	C	22	D	33
33	Frederica Rd. at S. Harrington Dr.	WB Stop	E	42	-	-	C	20
34	Frederica Rd. at N. Harrington Dr.	WB Stop	E	36	-	-	C	16
35	Frederica Rd. at Lawrence Rd.	Roundabout	B	12	-	-	A	6
36	Lawrence Rd. at Pikes Bluff Dr.	EB Stop	A	9	-	-	A	9

- "Not Analyzed"



ANALYSIS

Table 7 May 2035 No Build, Level of Service & Control Delay (s/veh); AM, MD & PM Peak

NO.	INTERSECTION	TRAFFIC CONTROL	AM PEAK		MD PEAK		PM PEAK	
			LOS	DELAY	LOS	DELAY	LOS	DELAY
1	Sea Is. Rd. at Arthur J. Moore Dr.	EB Stop	F	60	-	-	E	40
2	Sea Is. Rd. at Lady Huntingdon Dr.	EB Stop	E	39	-	-	D	30
3	Sea Is. Rd. at Margaret A. Pitts Rd.	EB Stop	D	26	-	-	C	19
4	Sea Is. Rd. at Hamilton Rd.	EB Stop	F	72	-	-	E	46
		NBL Yield	B	14	-	-	B	11
5	Sea Is. Rd. at Demere Rd.	Signal	F	135	C	31	E	58
6	Kings Way at Gateway/ Driveway	EB Stop	D	26	-	-	C	18
		WB Stop	F	128	-	-	F	54
8	Kings Way at Cuyler Ln./St. Andrews Rd.	EB Stop	C	19	-	-	C	19
		WB Stop	B	13	-	-	C	15
9	Kings Way at St. Andrews Rd.	WB Stop	B	13	-	-	C	16
10	Kings Way at Frederica Rd./Retreat Ave.	Signal	C	27	-	-	D	43
11	Kings Way at Ashantilly Ln.	WB Stop	B	12	-	-	C	15
12	Kings Way at Mallery St.	Signal	B	14	B	16	B	15
13	Ocean Blvd. at Demere Rd.	NB Stop	B	14	-	-	B	13
		SB Stop	B	14	-	-	C	15
14	Ocean Blvd. at Arnold Rd.	EB Stop	B	11	-	-	B	14
		WB Stop	B	11	-	-	B	13
15	Ocean Blvd. at E. Beach Causeway	NB Stop	B	10	-	-	B	12
		SB Stop	B	10	-	-	B	11
16	Demere Rd. at Arnold Rd.	WB Stop	B	11	-	-	B	10
17	Demere Rd. at E. Beach Causeway	WB Stop	B	14	-	-	D	25
18	Frederica Rd. at Demere Rd.	Roundabout	B	14	B	13	C	15
19	Demere Rd. at Brockinton Dr.	Signal	B	17	B	12	C	22
20	Demere Rd. at Reserve Ln./ Main St.	NB Stop	F	58	E	44	F	114
		SB Stop	F	146	F	52	F	241
21	Frederica Rd. at Redfern Village	Signal	A	9	B	19	B	17
22	Frederica Rd. at Edwards Plaza/Barnes Plantation	Signal	B	12	B	18	B	17
23	Frederica Rd. at Riverview Dr.	EB Stop	F	56	F	89	F	172
		NBL Yield	B	10	B	10	B	10
24	Frederica Rd. at Redfern Dr./ Laurel View Dr.	EB Stop	C	21	C	18	E	44
		WB Stop	D	32	F	51	F	58
25	Frederica Rd. at McIntosh Ave.	WB Stop	C	22	F	59	D	34
26	Frederica Rd. at Sea Is. Rd.	Signal	C	34	D	39	E	66
27	Frederica Rd. at Colonial Dr.	WB Stop	F	107	C	23	E	35
28	Frederica Rd. at Holly St.	EB Stop	F	142	C	20	C	21
29	Frederica Rd. at Palm Dr.	WB Stop	F	112	F	50	F	157
30	Frederica Rd. at St. Clair Pkwy.	EB Stop	D	30	C	16	C	16
31	Frederica Rd. at Major Wright Rd.	EB Stop	D	32	C	15	C	19
32	Frederica Rd. at Fendig Rd./Windward Dr.	EB Stop	D	29	C	19	C	19
		WB Stop	F	110	D	33	F	68
33	Frederica Rd. at S. Harrington Dr.	WB Stop	F	117	-	-	D	27
34	Frederica Rd. at N. Harrington Dr.	WB Stop	F	94	-	-	C	20
35	Frederica Rd. at Lawrence Rd.	Roundabout	B	11	-	-	A	6
36	Lawrence Rd. at Pikes Bluff Dr.	EB Stop	A	9	-	-	A	9

- "Not Analyzed"





ANALYSIS

Table 8 July 2015 Existing Conditions, Level of Service & Control Delay (s/veh); AM, MD & PM Peak

NO.	INTERSECTION	TRAFFIC CONTROL	AM PEAK		MD PEAK		PM PEAK	
			LOS	DELAY	LOS	DELAY	LOS	DELAY
1	Sea Is. Rd. at Arthur J. Moore Dr.	EB Stop	B	14	-	-	C	24
2	Sea Is. Rd. at Lady Huntingdon Dr.	EB Stop	C	15	-	-	C	18
3	Sea Is. Rd. at Margaret A. Pitts Rd.	EB Stop	C	16	-	-	C	17
4	Sea Is. Rd. at Hamilton Rd.	EB Stop	C	17	-	-	C	20
		NBL Yield	A	9	-	-	A	9
5	Sea Is. Rd. at Demere Rd.	Signal	E	79	C	31	D	49
6	Kings Way at Gateway/ Driveway	EB Stop	-	-	-	-	C	17
		WB Stop	-	-	-	-	E	45
8	Kings Way at Cuyler Ln./St. Andrews Rd.	EB Stop	B	14	-	-	C	15
		WB Stop	B	11	-	-	B	14
9	Kings Way at St. Andrews Rd.	WB Stop	B	14	-	-	C	16
10	Kings Way at Frederica Rd./Retreat Ave.	Signal	C	22	-	-	D	41
11	Kings Way at Ashantilly Ln.	WB Stop	B	10	-	-	B	13
12	Kings Way at Mallery St.	Signal	B	13	B	15	B	17
13	Ocean Blvd. at Demere Rd.	NB Stop	B	12	-	-	B	14
		SB Stop	B	11	-	-	C	15
14	Ocean Blvd. at Arnold Rd.	EB Stop	B	12	-	-	C	16
		WB Stop	B	11	-	-	C	16
15	Ocean Blvd. at E. Beach Causeway	NB Stop	B	12	-	-	C	18
		SB Stop	B	11	-	-	B	12
16	Demere Rd. at Arnold Rd.	WB Stop	A	9	-	-	B	11
17	Demere Rd. at E. Beach Causeway	WB Stop	B	13	-	-	D	32
18	Frederica Rd. at Demere Rd.	Roundabout	B	10	B	14	D	28
19	Demere Rd. at Brockinton Dr.	Signal	B	11	B	12	C	15
20	Demere Rd. at Reserve Ln./ Main St.	NB Stop	E	39	C	22	E	42
		SB Stop	D	27	E	35	F	75
21	Frederica Rd. at Redfern Village	Signal	A	9	B	12	B	12
22	Frederica Rd. at Edwards Plaza/Barnes Plantation	Signal	B	10	B	14	B	12
23	Frederica Rd. at Riverview Dr.	EB Stop	C	24	E	41	D	34
		NBL Yield	A	9	B	14	A	9
24	Frederica Rd. at Redfern Dr./ Laurel View Dr.	EB Stop	C	19	C	23	C	22
		WB Stop	C	16	D	31	D	28
25	Frederica Rd. at McIntosh Ave.	WB Stop	C	21	D	34	D	26
26	Frederica Rd. at Sea Is. Rd.	Signal	C	25	C	34	D	40
27	Frederica Rd. at Colonial Dr.	WB Stop	C	23	D	26	C	21
28	Frederica Rd. at Holly St.	EB Stop	C	19	C	17	C	21
29	Frederica Rd. at Palm Dr.	WB Stop	C	22	C	23	E	42
30	Frederica Rd. at St. Clair Pkwy.	EB Stop	B	13	B	14	B	13
31	Frederica Rd. at Major Wright Rd.	EB Stop	B	12	C	16	D	29
32	Frederica Rd. at Fendig Rd./Windward Dr.	EB Stop	B	13	C	15	C	15
		WB Stop	C	17	C	25	E	42
33	Frederica Rd. at S. Harrington Dr.	WB Stop	C	15	-	-	C	17
34	Frederica Rd. at N. Harrington Dr.	WB Stop	B	14	-	-	C	14
35	Frederica Rd. at Lawrence Rd.	Roundabout	A	5	-	-	A	7
36	Lawrence Rd. at Pikes Bluff Dr.	EB Stop	A	9	-	-	A	9

- "Not Analyzed"



ANALYSIS

Table 9 July 2035 No Build, Level of Service & Control Delay (s/veh); AM, MD & PM Peak

NO.	INTERSECTION	TRAFFIC CONTROL	AM PEAK		MD PEAK		PM PEAK	
			LOS	DELAY	LOS	DELAY	LOS	DELAY
1	Sea Is. Rd. at Arthur J. Moore Dr.	EB Stop	C	18	-	-	C	15
2	Sea Is. Rd. at Lady Huntingdon Dr.	EB Stop	C	18	-	-	D	25
3	Sea Is. Rd. at Margaret A. Pitts Rd.	EB Stop	C	22	-	-	C	23
4	Sea Is. Rd. at Hamilton Rd.	EB Stop	C	22	-	-	D	31
		NBL Yield	B	10	-	-	B	10
5	Sea Is. Rd. at Demere Rd.	Signal	F	117	D	52	E	76
6	Kings Way at Gateway/ Driveway	EB Stop	-	-	-	-	C	20
		WB Stop	-	-	-	-	F	73
8	Kings Way at Cuyler Ln./St. Andrews Rd.	EB Stop	C	16	-	-	C	19
		WB Stop	B	13	-	-	C	18
9	Kings Way at St. Andrews Rd.	WB Stop	C	16	-	-	C	20
10	Kings Way at Frederica Rd./Retreat Ave.	Signal	C	26	-	-	E	75
11	Kings Way at Ashantilly Ln.	WB Stop	B	11	-	-	C	16
12	Kings Way at Mallery St.	Signal	B	14	B	16	B	19
13	Ocean Blvd. at Demere Rd.	NB Stop	B	13	-	-	C	16
		SB Stop	B	12	-	-	C	19
14	Ocean Blvd. at Arnold Rd.	EB Stop	B	13	-	-	C	21
		WB Stop	B	12	-	-	C	21
15	Ocean Blvd. at E. Beach Causeway	NB Stop	B	13	-	-	D	32
		SB Stop	B	11	-	-	B	14
16	Demere Rd. at Arnold Rd.	WB Stop	B	10	-	-	B	12
17	Demere Rd. at E. Beach Causeway	WB Stop	C	16	-	-	F	130
18	Frederica Rd. at Demere Rd.	Roundabout	A	8	B	11	C	18
19	Demere Rd. at Brockinton Dr.	Signal	B	13	B	14	C	28
20	Demere Rd. at Reserve Ln./ Main St.	NB Stop	F	73	D	34	F	105
		SB Stop	D	38	F	83	F	>300
21	Frederica Rd. at Redfern Village	Signal	A	9	B	18	B	17
22	Frederica Rd. at Edwards Plaza/Barnes Plantation	Signal	B	12	B	18	B	15
23	Frederica Rd. at Riverview Dr.	EB Stop	E	35	F	73	F	57
		NBL Yield	A	9	B	10	B	10
24	Frederica Rd. at Redfern Dr./ Laurel View Dr.	EB Stop	D	26	D	35	E	38
		WB Stop	C	23	E	49	E	45
25	Frederica Rd. at McIntosh Ave.	WB Stop	D	29	F	87	E	46
26	Frederica Rd. at Sea Is. Rd.	Signal	C	30	D	48	E	65
27	Frederica Rd. at Colonial Dr.	WB Stop	D	33	E	40	D	28
28	Frederica Rd. at Holly St.	EB Stop	D	27	C	22	D	32
29	Frederica Rd. at Palm Dr.	WB Stop	D	32	E	36	F	100
30	Frederica Rd. at St. Clair Pkwy.	EB Stop	C	15	C	17	C	16
31	Frederica Rd. at Major Wright Rd.	EB Stop	B	13	C	19	E	49
32	Frederica Rd. at Fendig Rd./Windward Dr.	EB Stop	C	15	C	20	C	20
		WB Stop	C	23	E	44	F	132
33	Frederica Rd. at S. Harrington Dr.	WB Stop	C	18	-	-	C	22
34	Frederica Rd. at N. Harrington Dr.	WB Stop	C	17	-	-	C	17
35	Frederica Rd. at Lawrence Rd.	Roundabout	A	5	-	-	A	6
36	Lawrence Rd. at Pikes Bluff Dr.	EB Stop	A	9	-	-	B	10

- "Not Analyzed"





ANALYSIS

Int. #1: Sea Island Rd. at Arthur J. Moore Dr.

Capacity analysis of the side-street EB approach of Arthur J. Moore Drive suggests that the delay experienced by a driver waiting to turn may reach failing levels by 2035 during the morning peak. However, the approach's shoulder is very narrow and an existing light pole, drainage structure, fire hydrant, and wall make the addition of a right turn lane difficult to achieve. Analysis also suggests that adding a right turn lane will only minimally improve side-street delay. Considering the physical impediments to construction, the low daily volume on Arthur J. Moore Drive, and the minimal relief that a turn lane would provide, no improvements to this intersection are recommended.

Int. #2: Sea Is. Rd. at Lady Huntingdon Dr.

The EB approach of the intersection of Sea Island Road and Lady Huntington Drive reaches a 2035 LOS of "E" during the May AM peak. The addition of a right turn lane will improve this LOS to a "D", however, many of the same conditions found at Arthur J. Moore Drive can be found at Lady Huntington Drive as well. A light pole and a brick wall with decorative lighting and landscaping would need to be relocated to accommodate an additional turn lane here. Considering the low daily volume on Lady Huntington Drive and the impacts to existing structures and utilities, no improvements to this intersection are recommended. It should be noted that if development occurs in the vicinity of this intersection, a traffic impact study should be conducted to analyze the specific impacts of new development based on size, land use, and density.

Int. #4: Sea Island Rd. at Hamilton Rd.

Hamilton Road is the site of a proposed development known as Mariner's Landing consisting of 178 residential units. The EB approach is expected to operate at a 2035 LOS of "F" in the morning and "E" in the afternoon under existing lane conditions. The site's volumes are not high enough to warrant the addition of a new traffic signal. However,

improvements to the EB approach and the NB receiving leg can reduce the side-street delay and improve the safety of the intersection.

A short (50') eastbound right (EBR) turn lane with a 50' taper length would allow right turns to operate without being influenced by left turn delays. The shoulder width here is narrow and a drainage ditch exists on the southern side of the road where widening would take place. An existing utility box and hydrant would also require relocation to accommodate the additional pavement.

To improve conditions for EBL turns, a short center median of full width should be striped-out in the NB receiving leg. Currently, striping is present to indicate to drivers of the lane shift that occurs here. It is recommended that this section be widened slightly to allow for a full width (11') section of median that will act as a storage area for left turning vehicles. This creates what is known as a two-stage left turn in which vehicles can make a left turn without need of gaps in both directions of traffic. The full width section should be approximately 50' long to adequately store 2 cars.

The benefit to May and July LOS is illustrated below in **Table 10**.

Table 10 2035 Eastbound LOS and Delay (s/veh):
#4 Sea Island Rd. at Hamilton Rd., Turn Lanes

PEAK PERIOD	NO BUILD		BUILD	
	LOS	DELAY	LOS	DELAY
MAY				
AM Peak	F	72	D	29
PM Peak	E	46	C	24
JULY				
AM Peak	C	22	C	17
PM Peak	D	31	C	19



ANALYSIS

Int. #5: Sea Island Rd. at Demere Rd.

This intersection handles a majority of both incoming and outgoing island traffic and the corresponding LOS reflects the demand on the signal. In both May and July, the 2015 AM peak time resulted in failing LOS and queues of 900'-1,000'. The intersection operations will continue to decline through the year 2035 without improvements.

Short term improvements to signal timing at this intersection could have an effect on the NB throughput and clear up some of the long queues seen in the peak times. This signal should be included in an overall island signal retiming effort that focuses on establishing maximum and minimum green times, improving cycle length, and making more efficient use of existing loop detectors.

A longer-term recommendation for this intersection is to remove the merge point west of the signal that acts as a bottleneck point. Because the signal is split-phased between the north and south legs, an opportunity exists to get rid of this merge point, signalize the SBR turns, and limit the additional delay that can come with signalizing the movement. The SBR turns can be incorporated back into the signal and can be served with a SBR turn arrow during the SB direction's phase. The SBR turns can be further served with an overlapping right turn arrow during the NB direction's phase, thereby improving the movement's effective green-to-cycle ratio significantly. Since a majority of the left turns being made here use the free-flow ramp south of the signal, a protected NBL turn phase is not necessary and as a result, would not conflict with the protected SBR turns. Right turns on red would also be allowed after a yield to WB traffic on Demere Road.

Table 11 provides a LOS and delay comparison between existing timing and lane configuration and the proposed lane configuration. The table also reflects signal retiming to give more green time to the NB approach.

Table 11 2035 Intersection LOS & Delay (s/veh):
#5 Sea Island Rd. at Demere Rd., Retiming and Reconstruction

PEAK PERIOD	NO BUILD		BUILD	
	LOS	DELAY	LOS	DELAY
MAY				
AM Peak	F	135	D	40
PM Peak	E	58	C	23
JULY				
AM Peak	F	117	C	29
PM Peak	E	76	C	27

Int. #10: Kings Way at Frederica Rd.

During the tourist season, Intersection #10 reaches a LOS of "E" by 2035. In addition to this intersection level of service, the SB leg (Kings Way) is expected to have vehicle delays greater than 120 seconds during the PM peak. The intersection is currently split-phased between this SB direction and the opposing NB direction. A NB crosswalk exists along Kings Way which crosses Frederica Road, however there are no pedestrian facilities such as pedestrian signals, countdown timers, or push buttons, so it is recommended that those elements be added and incorporated into the signal control.

To remove the split-phasing, the SB leg should be restriped to consist of an auxiliary left turn lane and a shared through-right turn lane. Advancing and opposing volumes are significant enough on Kings Way that a dedicated SB left turn lane is needed. The turning movements do not satisfy minimum volumes set forth in GDOT's Policy 6782-2 regarding protected left turn phasing, however it is recommended that a SB protected phase be implemented here to minimize queuing within the turn lane, thereby reducing the overall length needed for storage. This will help with tree protection and ROW acquisition. Pedestrian improvements such as countdown timers and push buttons at the crosswalk are recommended as well.

Another option for improving this intersection is to reconfigure it into a roundabout. Volumes through this intersection are relatively low, making it an ideal candidate for a single lane



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roundabout. The footprint of a roundabout is generally larger than a traditional signalized intersection, which can increase construction costs, however maintenance costs with roundabouts are very minor due to the lack of electronic equipment needed for traffic control.

Results from the LOS and delay analysis for each scenario can be found in **Table 12** below.

Table 12 2035 Intersection LOS & Delay (s/veh):
#10 Kings Way at Frederica Rd., Signal or Roundabout (RAB)

PEAK PERIOD	NO BUILD		SIGNAL		RAB	
	LOS	DEL.	LOS	DEL.	LOS	DEL.
MAY						
AM Peak	C	27	B	19	A	7
PM Peak	D	43	C	24	B	12
JULY						
AM Peak	C	26	C	23	A	7
PM Peak	E	75	C	28	B	13

Int. #12: Ocean Blvd. at Mallery St.

This intersection is expected to perform very well through the design year of 2035 according to the Synchro model, however observations of the intersection revealed that the capacity of the left turn movement from Saint Simons Island Village is reduced by the conflicting pedestrian crosswalk across Ocean Boulevard, which sees heavy pedestrian use during the tourist season. The Synchro software is limited in its ability to model complex interactions between vehicles and conflicting pedestrian crossings and as a result, the reported LOS may be slightly more favorable than actual conditions.

An alternative leading protected left turn signal timing plan was tested to determine the impacts to LOS and queues at this location. By offering a leading protected left turn in the NB direction on Mallery Street, the left turns are allowed to move without conflicting with pedestrians across the western leg (Ocean Boulevard). This is because the pedestrian signal across the western leg would not display "walk" until the leading NBL turn phase has finished. The SB approach of Mallery Street retains the through-permissive left turn control. This timing plan will also mitigate

blockage of the NBL turn lane that could be a result of queued NB through vehicles. Landscaping elements such as decorative signs, established trees, and curbing prevent the lengthening of this NBL turn lane.

A comparison of the no-build condition to the NB protected left turn (build) condition can be seen in **Table 13**. The LOS and delay do increase slightly because of the addition of the protected left turn phase, which takes green time away from the SB movement. The signal timing improvement does have a positive effect on NB queuing along Mallery Street and should reduce the length of vehicle backup into the Village shopping district at peak times. Queue length reported in feet for the 95th percentile.

Table 13 2035 Intersection LOS, Delay (s/veh) and Northbound Through Queue (ft):

#12 Ocean Blvd. at Mallery St., Prot. NBL Turn

PEAK PERIOD	NO BUILD			BUILD		
	LOS	DEL.	NBT Q	LOS	DELAY	NBT Q
MAY						
AM Peak	B	14	35	C	23	29
PM Peak	B	15	69	C	21	61
JULY						
AM Peak	B	14	39	C	22	35
PM Peak	B	19	112	C	26	87

Int. #15 & #17: E. Beach Causeway at Ocean Blvd. and Demere Rd.

East Beach Causeway is one primary route to the public beach access on 1st Street and intersects with Demere Road and Ocean Boulevard at two-way stop controlled intersections. Intersection #17 at Demere Road is the intersection with heavier traffic, and this is reflected in the 2035 failing LOS during the PM peak. These two locations make for ideal candidates for single lane roundabouts. The addition of roundabouts at these locations offer an aesthetically pleasing approach and gateway to the public beach while also improving side-street delays.





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The roundabout analysis results and a comparison to no-build conditions at E. Beach Causeway at Ocean Boulevard and at Demere Road can be seen in Table 14 and Table 15, respectively.

Table 14 2035 Northbound, Southbound and Intersection LOS and Delay (s/veh):

#15 E. Beach Cswy. at Ocean Blvd., Roundabout

PEAK PERIOD	NO BUILD		BUILD	
	LOS	DELAY	LOS	DELAY
MAY				
AM Peak				
Intersection	-	-	A	4
Northbound	B	10	A	4
Southbound	B	10	A	4
PM Peak				
Intersection	-	-	A	5
Northbound	B	12	A	5
Southbound	B	11	A	4
JULY				
AM Peak				
Intersection	-	-	A	4
Northbound	B	13	A	4
Southbound	B	11	A	4
PM Peak				
Intersection	-	-	A	6
Northbound	D	32	A	6
Southbound	B	14	A	6

Table 15 2035 WB and Intersection LOS and Delay (s/veh):

#17 E. Beach Cswy. at Demere Rd., Roundabout

PEAK PERIOD	NO BUILD		BUILD	
	LOS	DELAY	LOS	DELAY
MAY				
AM Peak				
Intersection	-	-	A	8
Westbound	B	14	A	6
PM Peak				
Intersection	-	-	B	10
Westbound	D	25	A	8
JULY				
AM Peak				
Intersection	-	-	A	7
Westbound	C	16	A	6
PM Peak				
Intersection	-	-	B	11
Westbound	F	130	B	10

Int. #18: Frederica Rd. at Demere Rd.

The roundabout operates with acceptable levels of service during the AM, mid-day, and PM peak hours however, field observations identified a few elements of the design that should be corrected to reduce potential conflict points. These recommendations are described in detail in the *Other Existing Condition Observations* section.

The proposed improvement for the WB approach leg is to restripe the outside lane into a right-turn only lane. A capacity analysis check to identify the impacts of this movement reduction can be found in **Table 16**. Note that while the recommended improvements at the roundabout slightly reduce the overall LOS, the modification is necessary to remove the conflict point and improve safety.

Table 16 2035 WB and Intersection LOS and Delay (s/veh):

#18 Frederica Rd. at Demere Rd., Roundabout

PEAK PERIOD	NO BUILD		BUILD	
	LOS	DELAY	LOS	DELAY
MAY				
AM Peak				
Intersection	B	14	C	17
Westbound	B	12	C	18
MD Peak				
Intersection	B	13	B	13
Westbound	B	14	B	14
PM Peak				
Intersection	B	15	C	17
Westbound	C	20	C	22
JULY				
AM Peak				
Intersection	A	8	A	9
Westbound	A	6	A	7
MD Peak				
Intersection	B	11	B	14
Westbound	A	7	A	7
PM Peak				
Intersection	C	18	C	21
Westbound	A	9	B	12



ANALYSIS

Int. #20: Demere Rd. at Reserve Ln/Main St.

Capacity analysis of this intersection suggests that side-street delays are within the failing range for nearly every time period that was studied. The HCM 2010 methodology for analyzing two-way stop controlled intersections makes an assumption based on uniform vehicular arrivals which does not account for the fact that traffic on the major street may be influenced by upstream traffic signals. Immediately east and west of intersection #20 are existing signals which create gaps in the major street traffic progression that side-street vehicles can take advantage of. This condition will likely result in better levels of service for side-streets than what is estimated using the HCM 2010 methodology. This is confirmed by field observations that reveal acceptable gaps. No modifications to this intersection are recommended.

Int. #23: Frederica Rd. at Riverview Dr.

The EB side-street, Riverview Drive, will develop failing levels of service by 2035 during both the May and July scenarios. The volume of traffic on Riverview Drive is minimal, although the pavement width at the stop bar is large enough to accommodate an auxiliary right turn lane and a through-left turn lane. It is possible that traffic on Riverview Drive is already using the wide lane as if it were striped as two lanes. A short-term improvement that can be made to the intersection that will have some beneficial impacts to Riverview Drive is to stripe out an auxiliary right turn lane using the existing pavement.

Table 17 shows the estimated benefit to LOS and delay that would be achieved with the addition of a right turn lane.

Table 17 2035 Eastbound LOS and Delay (s/veh):
#23 Frederica Rd. at Riverview Dr., EBR Turn

PEAK PERIOD	NO BUILD		BUILD	
	LOS	DELAY	LOS	DELAY
MAY				
AM Peak	F	56	E	41
MD Peak	F	89	F	70
PM Peak	F	172	F	111
JULY				
AM Peak	E	35	D	33
MD Peak	F	73	F	71
PM Peak	F	57	F	53

Int. #26: Frederica Rd. at Sea Island Road

This intersection is one of the most traveled signals on the island. The EBL turn is a particularly heavy movement and the demand is approaching the capacity limits of a single left turn lane. The SBR turn is also a critical movement, although vehicles making this maneuver have a short free-flow lane to turn into before merging down to one lane.

Congestion from the heavy left turn movement was observed in July during the PM peak to queue up approximately 1,900 feet. Additionally, the cycle length was observed to exceed 3 minutes per cycle during the July PM peak and protected turn phases for minor turning movements such as the NBL were failing to “gap-out” once the demand was served.

A short term recommendation for this intersection is to include it in an overall island signal retiming effort that focuses on establishing maximum and minimum green times, optimizing cycle lengths and making effective use of loop detectors. A retiming of the signal will make operations here smoother and will likely result in more effective use of green time. A shorter cycle length should also help reduce queues from their currently observed lengths.

Capacity analysis of 2035 peak hour volumes reveals that while a retiming of the signal should improve backup lengths it will not have a major impact on long-term overall intersection level of service if traffic continues to grow as expected.





ANALYSIS

Table 18 illustrates the comparative 2035 LOS and delay between existing timing and a plan with a shorter cycle length.

Table 18 2035 Intersection LOS & Delay (s/veh):
#26 Frederica Rd. at Sea Island Rd., Retiming

PEAK PERIOD	NO BUILD		BUILD	
	LOS	DELAY	LOS	DELAY
MAY				
AM Peak	C	34	C	30
MD Peak	D	39	D	37
PM Peak	E	66	E	66
JULY				
AM Peak	C	30	C	28
MD Peak	D	48	D	45
PM Peak	E	65	E	63

In addition to retiming the signal for short-term improvements, a striping modification on the NB leg is recommended. Currently, on approach to the signal, the NB through movement periodically becomes blocked by a vehicle making a left into the Harris Teeter shopping center. Some minor restriping can shift the through movement over to create space for a full-width turn lane into the shopping center, which can then be carried on through to the intersection. See the Recommendations section for a concept drawing of this short-term improvement.

For a more long-term solution, a roundabout concept was analyzed. The findings of this analysis suggest that a roundabout with multiple approach lanes on the EB and NB legs would operate at acceptable levels of service through 2035. The proposed concept design can be seen in the Recommendations section of this report.

Table 19 presents the no-build and build comparison of operations.

A roundabout at this location is identified in the Glynn County Long Range Transportation Plan as project #32. As an alternative, a more traditional approach to improving the intersection was studied. Dual eastbound left turn lanes may provide similar levels of service, but there are tradeoffs that must be considered. A memorandum documenting this comparison can be found in the Appendix E.

Table 19 2035 Intersection LOS & Delay (s/veh):
#26 Frederica Rd. at Sea Island Rd., Roundabout

PEAK PERIOD	NO BUILD		BUILD	
	LOS	DELAY	LOS	DELAY
MAY				
AM Peak	C	34	B	12
MD Peak	D	39	C	19
PM Peak	E	66	C	23
JULY				
AM Peak	C	30	B	11
MD Peak	D	48	D	33
PM Peak	E	65	E	41

Minor Intersections with Side-Street Delay

The capacity analysis conducted for this study identified several intersections along Frederica Road where the side streets experience a failing level of service caused by delays that exceed generally accepted thresholds. Specifically, the following side-streets were found to fail:

- Redfern Drive/Laurel View Drive
- McIntosh Avenue
- Colonial Drive
- Holly Street
- Palm Drive
- Windward Drive/Fendig Road
- S. Harrington Drive
- N. Harrington Drive

The HCM 2010 methodology for analyzing stop controlled streets assumes even arrivals of traffic on the major street. In reality, arrivals are random and gaps can form naturally. This can lead to less delay than estimated by HCM 2010.

Review of physical characteristics and turning movement volumes at these locations indicate that traffic exiting residential neighborhoods heavily favors a southbound turn. The addition of dedicated left or right turn lanes with the intent of reducing overall delay for exiting vehicles would be constrained significantly by landscaping, utilities, buildings or decorative structures and would provide limited improvements, if any, to side-street delays. Therefore, no recommendations have been made at these locations.





RECOMMENDATIONS

Recommended Roadway Projects

The analysis documented in the previous section helped in the development of recommended roadway improvements. In several cases, a short-term improvement and a mid-term or long-term improvement were analyzed. Short-term recommendations should be completed within 5 years (2015-2020) and consist of either conducting a site-specific study or completing a relatively low-cost modification intended to provide an immediate benefit to existing conditions. Mid-term recommendations are projects that should be completed within the next 5-10 years (2020-2025) and may have higher costs than short-term projects. Long-term recommendations are intended to accommodate long-range volume projections (2025-2035) and are generally expected to have a higher design and construction cost due to the relative scale as compared to short- and mid-term improvements. A list of all recommended projects or initiatives can be found in **Table 20** and can be located on the map in **Figure 18** on the following page.

In addition to the concept drawings, planning-level cost estimates in 2015 dollars have been provided in **Table 20**.

Lastly, when possible, a “return on investment” figure has been provided in **Table 20**. This is an estimate of the amount of time, in years, that a given project will take to recoup its initial cost. This savings amount is based either on a monetary equivalent of delay reduction or savings associated with crash reduction factors. If appropriate, both savings values are used.

ST-1: (#4) Sea Island Rd. at Hamilton Rd.

Construct an EB right turn lane 50' long. Widen Sea Island Road north of the intersection to accommodate a short (50') center turn lane for storage of EB to NB left turns.

ST-2: (#18) Frederica Rd. at Demere Rd.

Construct raised, mountable island area on west side interior (over existing striping); construct a raised, mountable island area on north side outer lane between northern leg exit and entry; restripe pavement markings and resign WB leg.

ST-3: (#23) Frederica Rd. at Riverview Dr.

Stripe an EB right turn lane 50' long using existing pavement.

ST-4: (#26) Sea Island Rd. at Frederica Rd.

Restripe and lengthen NBL turn lane with proper lane shift of NB through lane.

ST-5: (#4) Frederica Rd. at Kings Way

Use existing SEB right turn lane pavement to shift SEB through lane over to make room for 100' auxiliary left turn lane; remove split phasing from traffic signal.

ST-6: (#12) Ocean Blvd. at Mallery St.

Install Flashing Yellow Arrows (FYA) on NB and SB approaches of Mallery Street. The NB head should have both a protected and permitted arrow, while the SB head should have a permitted arrow only. Replace existing EB and WB heads with FYA for consistency.

ST-7: Sea Island Rd. at Hamilton Landing Dr.

Reconstruct SB leg of Sea Island Rd. to improve left turn lane and through lane shift; remove the dual SB receiving lanes with “Yield” condition.

MT-1: (#15) Ocean Blvd. at E. Beach Causeway

Reconstruct two-way stop control as a single lane roundabout.

MT-2: (#17) Demere Rd. at E. Beach Causeway

Reconstruct three-legged intersection as a single lane roundabout with a stub-out for potential 4th leg.

LT-1: (#5) Sea Island Rd. at Demere Rd.

Remove SB free-flow right by removing merge point west of the signal; overlap SB rights with NB through in signal timing.

LT-2: (#10) Frederica Rd. at Kings Way

Reconstruct signal as a single lane roundabout.

LT-3: (#26) Frederica Rd. at Sea Island Rd.

Reconstruct signal as a combination multi-lane/single-lane roundabout with dual lanes entering from the south and from the west and single lanes entering from north and east. Bypass lanes should be placed on SB approach.



RECOMMENDATIONS

Table 20 Recommended Projects & Initiatives

ID #	IMPROVEMENT	COST ⁽¹⁾	ROI
SHORT-TERM			
ST-1	(#4) Sea Is. Rd, at Hamilton Dr., construct EB right turn lane; widen northern leg to include short two-stage LT lane	\$73,200	2.25
ST-2	(#18) Frederica Rd, at Demere Rd, (roundabout)- Restripe/re-sign WB leg to remove conflict point; install raised channelizing islands	\$33,200	3.70
ST-3	(#23) Frederica Rd, at Riverview Dr., stripe EBR turn lane	\$31,400	2.84
ST-4	(#26) Sea Is. Rd, at Frederica Rd., restripe and lengthen NBL turn lane	\$136,800	7.6
ST-5	(#10) Kings Way at Frederica Rd., reconstruct SEB leg to include LT lane and TH-RT lane; remove split-phasing	\$107,200	0.44
ST-6	(#12) Ocean Blvd, at Mallery St., install NB and SB flashing yellow arrow signals with leading NB prot. LT phase w/ ped improv.	\$277,200	27.70
ST-7	Sea Is. Rd, at Hamilton Landing Dr., reconstruct SBL turn lane	\$101,400	11.27
ST-8	Conduct a signal timing effort to determine max/min, detector recall settings, and cycle length at existing signals	\$5,000 per signal	Varies ~0.02
ST-9	Conduct a Village parking study to identify utilization, demand/ capacity, and alternatives to improve parking and flow	\$150,000	N/A
ST-10	Conduct Frederica Rd, access management study to control driveway spacing and plan future development	\$150,000	N/A
ST-11	Reconstruct "go-around" lanes on Frederica Rd.	\$76,000	Varies ~16.9
MID-TERM			
MT-1	(#15) E, Beach Cswy at Ocean Blvd., reconstruct as roundabout	\$1,274,700	31.0
MT-2	(#17) E, Beach Cswy at Demere Rd., reconstruct as roundabout	\$770,500	4.62
LONG-TERM			
LT-1	(#5) Sea Is. Rd, at Demere Rd., remove SBR free-flow; signalize SBR turn lane	\$124,200	0.10
LT-2	(#10) Kings Way at Frederica Rd., reconstruct as roundabout	\$1,087,800	2.90
LT-3	(#26) Sea Is. Rd, at Frederica Rd., reconstruct as roundabout	\$4,040,280	9.2

(1) In Year 2015 dollars

FIGURE 18

Recommendations Map





RECOMMENDATIONS

Recommended Projects

Short-Term Improvements



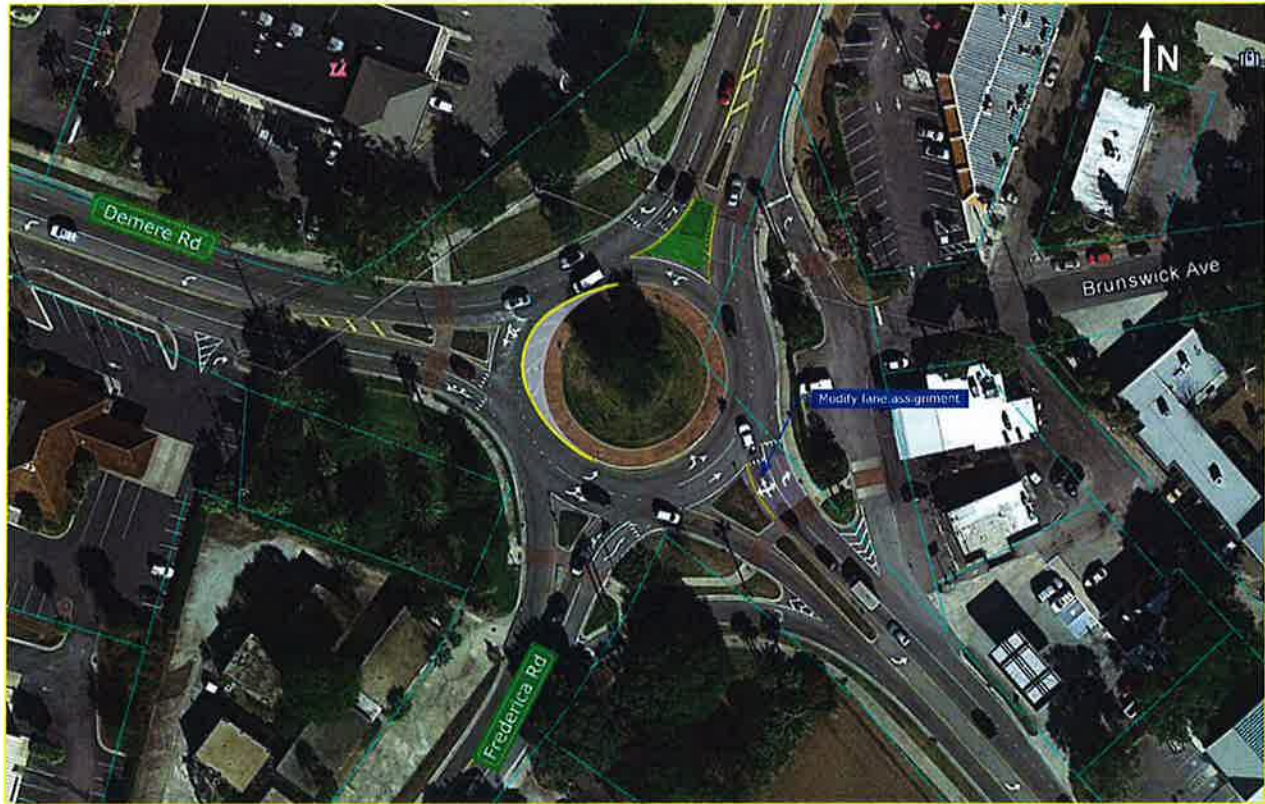
ST-1: Sea Island Road at Hamilton Road

Project Description	2015 Project Costs
- Construct a 50' eastbound right turn lane on Hamilton Road - Construct a 50' long center turn lane on northern leg of Sea Island Road for two-stage left turns	Preliminary Engineering: \$12,600.00
	Right-of-Way: \$0.00
	Utilities: \$10,100.00
	Construction: \$50,500.00
	Total 2015 Cost: \$73,200.00





RECOMMENDATIONS



ST-2: Frederica Road at Demere Road

Project Description

- Extend splitter island on northern leg of Frederica towards the center of the roundabout to reduce number of circulation lanes to 1
- Construct raised, but mountable, island over existing striping on western side of roundabout
- Modify the westbound lane assignment signs and pavement markings

2015 Project Costs

Preliminary Engineering: \$6,600.00

Right-of-Way: \$0.00

Utilities: \$0.00

Construction: \$26,600.00

Total 2015 Cost: \$33,200.00





RECOMMENDATIONS



ST-3: Frederica Road at Riverview Road

Project Description	2015 Project Costs	
- Construct a 150' right turn lane on Riverview Road - Add pavement markings to designate turn lanes	Preliminary Engineering: \$6,400.00	
	Right-of-Way:	\$0.00
	Utilities:	4,200.00
	Construction:	\$20,800.00
	Total 2015 Cost: \$31,400.00	





RECOMMENDATIONS



ST-4: Frederica Road at Sea Island Road

Project Description	2015 Project Costs
- Widen pavement south of driveway to Shops at Sea Island - Restripe NB left turn lane into Shops at Sea Island - Stripe NB approach to Sea Island Road with a center two-way left turn lane	Preliminary Engineering: \$26,300.00 Right-of-Way: \$0.00 Utilities: \$18,400.00 Construction: \$92,100.00 Total 2015 Cost: \$136,800.00





RECOMMENDATIONS



ST-5: Frederica Road at Kings Way

Project Description	2015 Project Costs										
- Widen pavement of southeast-bound approach to accommodate shifting taper for SEB left turn lane - Install pedestrian push buttons and countdown times at crosswalk - Retime signal to remove split phasing and to give SEB left turn a leading protected phase	<table><tr><td>Preliminary Engineering:</td><td>\$18,500.00</td></tr><tr><td>Right-of-Way:</td><td>\$0.00</td></tr><tr><td>Utilities:</td><td>\$14,800.00</td></tr><tr><td>Construction:</td><td>\$73,900.00</td></tr><tr><td>Total 2015 Cost:</td><td>\$107,200.00</td></tr></table>	Preliminary Engineering:	\$18,500.00	Right-of-Way:	\$0.00	Utilities:	\$14,800.00	Construction:	\$73,900.00	Total 2015 Cost:	\$107,200.00
Preliminary Engineering:	\$18,500.00										
Right-of-Way:	\$0.00										
Utilities:	\$14,800.00										
Construction:	\$73,900.00										
Total 2015 Cost:	\$107,200.00										





RECOMMENDATIONS



ST-6: Ocean Boulevard at Mallery Street

Project Description	2015 Project Costs
- Reconstruct NE and NW corner sidewalk area to include ADA compliant ramps and to create a pedestrian waiting zone - Remove existing strain poles for signal span wire and replace with decorative mast arms on NE, NW, and SW corners - Install flashing yellow arrows (FYAs) on all approaches with a leading NB protected left turn phase	Preliminary Engineering: \$37,000.00 Right-of-Way: \$0.00 Utilities: \$18,500 Construction Materials and Labor: \$221,700.00 Total 2015 Cost: \$277,200.00





RECOMMENDATIONS



ST-7: Sea Island Road at Hamilton Landing Drive

Project Description

- Widen pavement on northern leg to accommodate a shifting taper of approximately 250'
- Maintain existing 160' full width SB left turn lane on Sea Island Road
- Utilize existing pavement to stripe a shifting taper of approximately 250' and stripe a dividing median area on southern leg to remove merge point

2015 Project Costs

Preliminary Engineering: \$18,800.00

Right-of-Way: \$0.00

Utilities: \$13,800.00

Construction: \$68,800.00

Total 2015 Cost: \$101,400.00





RECOMMENDATIONS



ST-11: Frederica Road at Wymberly Road

Project Description

- Widen pavement on southern leg to accommodate a shifting taper of approximately 205'
- Stripe an approximately 50' NB left turn lane on Frederica Road
- Widen pavement on northern leg to accommodate a shifting taper of 205' back to center

2015 Project Costs

Preliminary Engineering: \$13,100.00

Right-of-Way: \$0.00

Utilities: \$10,400.00

Construction: \$52,500.00

Total 2015 Cost: \$76,000.00

Note: This intersection is provided as an example of a typical improvement for removing the "go-around" lanes frequently found on high volume roads on the island. Design and construction costs for similar improvements at other locations are subject to vary with conditions, obstacles within shoulder, available right-of-way, etc.





RECOMMENDATIONS

Mid-Term Improvements



MT-1: East Beach Causeway at Ocean Boulevard

Project Description	2015 Project Costs
Reconstruct two-way stop controlled intersection into a single lane roundabout with appropriate pedestrian crossings and facilities	Preliminary Engineering: \$142,000.00
	Right-of-Way: \$25,000.00
	Utilities: \$184,600
	Construction: \$923,100.00
	Total 2015 Cost: \$1,274,700.00

Note: Right-of-way lines are approximate and based on GIS parcel layers obtained from the Glynn County GIS database.





RECOMMENDATIONS



MT-2: East Beach Causeway at Demere Road

Project Description	2015 Project Costs
Reconstruct one-way stop controlled intersection into a single lane roundabout with appropriate pedestrian crossings and facilities	Preliminary Engineering: \$98,100.00
	Right-of-Way: \$25,000.00
	Utilities: \$107,900.00
	Construction: \$539,500.00
	Total 2015 Cost: \$770,500.00

Note: Right-of-way lines are approximate and based on GIS parcel layers obtained from the Glynn County GIS database.





RECOMMENDATIONS

Long-Term Improvements



LT-1: Sea Island Road at Demere Road

Project Description	2015 Project Costs										
- Remove merge point on western leg of intersection - Reconstruct free-flowing SB right turn lane on Sea Island Road by removing channelizing island and bringing the movement back into signal control - Install new signal heads and retime signal to give the SB right turn an overlapping right turn arrow during the NB through movement.	<table><tr><td>Preliminary Engineering:</td><td>\$17,700.00</td></tr><tr><td>Right-of-Way:</td><td>\$0.00</td></tr><tr><td>Utilities:</td><td>\$0.00</td></tr><tr><td>Construction:</td><td>\$106,500.00</td></tr><tr><td>Total 2015 Cost:</td><td>\$124,200.00</td></tr></table>	Preliminary Engineering:	\$17,700.00	Right-of-Way:	\$0.00	Utilities:	\$0.00	Construction:	\$106,500.00	Total 2015 Cost:	\$124,200.00
Preliminary Engineering:	\$17,700.00										
Right-of-Way:	\$0.00										
Utilities:	\$0.00										
Construction:	\$106,500.00										
Total 2015 Cost:	\$124,200.00										





RECOMMENDATIONS



LT-2: Kings Way at Frederica Road

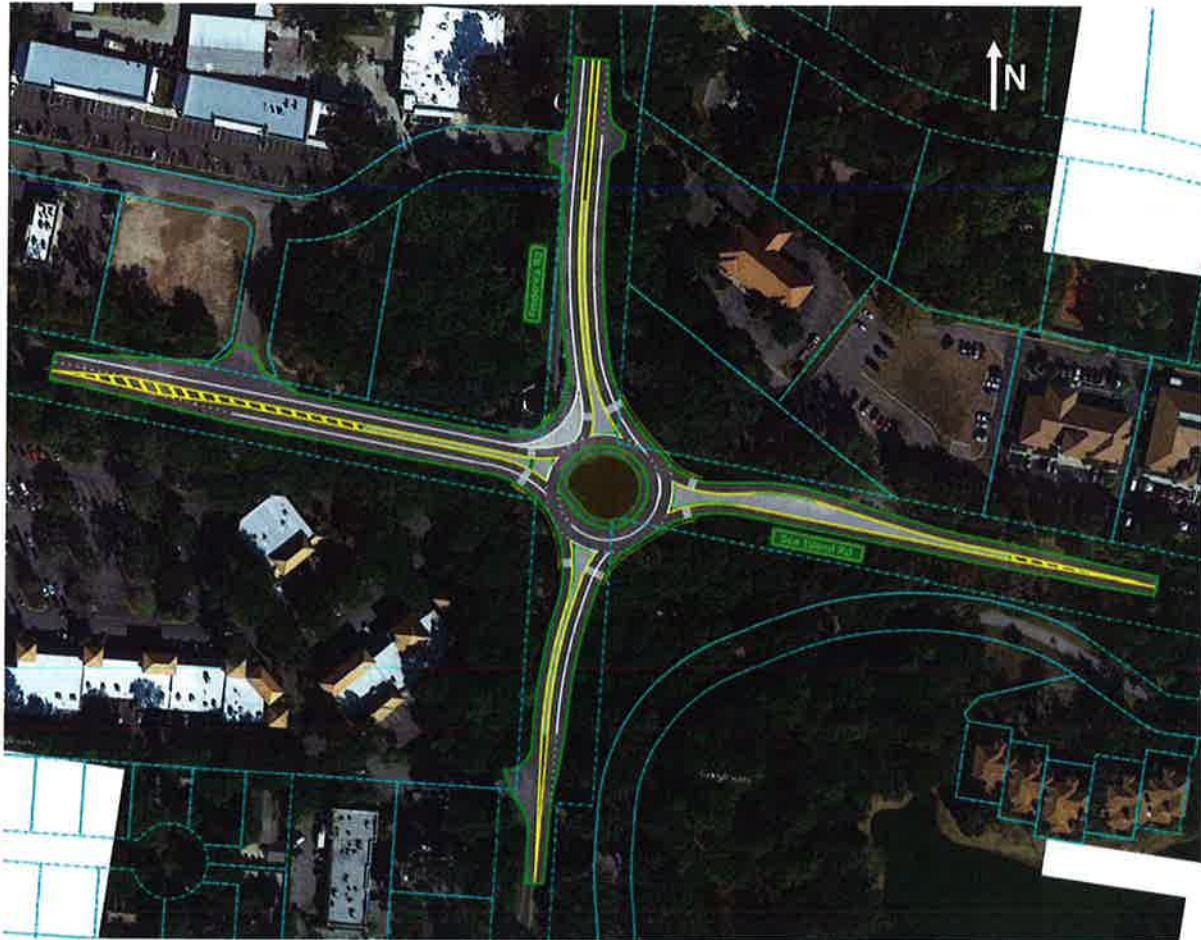
Project Description	2015 Project Costs
Reconstruct signal controlled intersection into a single lane roundabout with appropriate pedestrian crossings and facilities	Preliminary Engineering: \$136,500.00
	Right-of-Way: \$50,000.00
	Utilities: \$150,200
	Construction: \$751,100.00
	Total 2015 Cost: \$1,087,800.00

Note: Right-of-way lines are approximate and based on GIS parcel layers obtained from the Glynn County GIS database.





RECOMMENDATIONS



LT-3: Sea Island Road at Frederica Road

Project Description	2015 Project Costs
- Reconstruct signal controlled intersection into a multi-lane roundabout with appropriate pedestrian crossings and facilities - Construct a SB right turn bypass lane	Preliminary Engineering: \$282,800.00
	Right-of-Way: \$25,000.00
	Utilities: \$622,100
	Construction: \$3,110,400.00
	Total 2015 Cost: \$4,040,280.00

Note: Right-of-way lines are approximate and based on GIS parcel layers obtained from the Glynn County GIS database.





RECOMMENDATIONS

Recommended Areas of Additional Study and Other Initiatives

Existing traffic signals on the island could benefit from retiming based on current traffic volumes. Recalibrating maximum and minimum green times for major streets and for left turn protection is recommended, as is an adjustment to existing cycle lengths. The signals that are recommended for this timing study are:

- Sea Island Road at Demere Road
- Kings Way at Frederica Road (after completion of project **ST-5**)
- Ocean Boulevard at Mallery Street (after completion of project **ST-6**)
- Demere Road at Frederica Academy
- Sea Island Road at Frederica Road

These signal retiming efforts are recommended as one island-wide project, **ST-8**.

Additional study is recommended for the Saint Simons Island Village area and for the commercial area on Frederica Road north of the roundabout. These locations are both characterized as having a high number of destinations in the form of dining and retail establishments, museums, and other attractions which generate much demand for parking and access points.

In the Village area, parking was observed to be a significant problem during peaks. A parking study for this area is recommended to help quantify the demand and to identify some alternative solutions to help mitigate lack of parking, improve flow through parking lots, and potentially identify sites for additional parking spaces. A parking study can help analyze the benefits and costs of charging for parking and can help establish concepts such as maximum time limits on parking spaces in certain areas. A study can also help identify ways to encourage alternative travel which can reduce parking demand. This study is recommended as short-term project, **ST-9**.

North of the roundabout at Frederica Road and Demere Road, frequent driveways, a lack of

shared parking, and a lack of inter-parcel connectivity were all identified as conditions that should be improved to help with vehicle flow and to decrease conflict points. It is recommended that the county conduct a study that addresses one or all of the following:

- The consolidation of frequently-spaced driveways at centrally-located, signalized intersections with inter-parcel access
- The identification of areas and/or establishments where shared parking spaces could be implemented
- The potential for removal of street-accessible parking
- Improved accessibility for biking and walking to decrease vehicle trips

Stakeholder engagement should be a part of this effort due to the potential impacts to existing privately owned sites. This study is recommended as a short-term project, **ST-10**.

The bypass, or “go-around”, lanes located on Frederica Road should be periodically reconstructed to include a left turn lane by shifting the through lane out and back based on recommended shifting taper lengths found in GDOT’s Design Policy Manual. Generally, when posted speed limits are less than 45 mph, the calculated taper length is:

$$L = \frac{(\text{Shifting Width}) * (\text{Speed}^2)}{60}$$

Removing the bypass lanes will improve driver safety by removing the rear-end conflict point. Intersections identified for improvement in project **ST-11** are:

- Frederica Rd. at Redfern Dr./Laurel View Dr.
- Frederica Rd. at Heritage Dr.
- Frederica Rd. at Vassar Point Dr.
- Frederica Rd. at Settlers Rd.
- Frederica Rd. at Devonwood Dr.
- Frederica Rd. at Wymberly Rd.
- Frederica Rd. at Palm Dr.
- Frederica Rd. at Dunbarton Dr.
- Frederica Rd. at St. Clair Pkwy.



