

COUNTY COUNCIL OF BEAUFORT COUNTY
ADMINISTRATION BUILDING
BEAUFORT COUNTY GOVERNMENT ROBERT SMALLS COMPLEX
100 RIBAUT ROAD
POST OFFICE DRAWER 1228
BEAUFORT, SOUTH CAROLINA 29901-1228
TELEPHONE: (843) 255-2180
www.bcgov.net

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COUNTY ATTORNEY

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CLERK TO COUNCIL

AGENDA
NATURAL RESOURCES COMMITTEE

Tuesday, August 22, 2017

3:00 p.m.

Executive Conference Room, Administration Building
Beaufort County Government Robert Smalls Complex
100 Ribaut Road, Beaufort

Committee Members:

Brian Flewelling, Chairman
Roberts "Tabor" Vaux, Vice Chairman
Rick Caporale
Gerald Dawson
Steve Fobes
York Glover
Alice Howard

Staff Support:

Anthony Criscitiello, Planning Director
Gary James, Assessor
Eric Larson, Division Director
Environmental Engineering
Dan Morgan, Division Director
Mapping & Applications

1. CALL TO ORDER – 3:00 P.M.
2. DISCUSSION / PREVIOUS PLANNING COMMISSION MEETING
3. AWARD PROFESSIONAL SERVICE CONTRACTS FOR ENGINEERING DESIGNS AND CONSTRUCTION ADMINISTRATION SERVICES FOR FY 2018 GROUP CIP PROJECTS ([backup](#))
4. AN ORDINANCE OF BEAUFORT COUNTY COUNCIL CREATING A SPECIAL TAX ASSESSMENT FOR REHABILITATED HISTORIC PROPERTIES IN THE GEOGRAPHICAL BOUNDARIES KNOWN AS DAUFUSKIE ISLAND ([backup](#))
5. AN ORDINANCE OF BEAUFORT COUNTY COUNCIL AMENDING THE COMMUNITY DEVELOPMENT CODE, DIVISION A.2 (LADY'S ISLAND COMMUNITY PRESERVATION DISTRICT--LICP) OF APPENDIX A, COMMUNITY PRESERVATION DISTRICT: TABLE A.2.40.A (LAND USES) AND SECTION A.2.50 (CONDITIONAL AND SPECIAL USE STANDARDS) TO PERMIT COMMUNITY RESIDENCES (E.G. DORMS, CONVENTS, ASSISTED LIVING FACILITIES, TEMPORARY SHELTERS) AS A SPECIAL USE SUBJECT TO ADDITIONAL STANDARDS; APPLICANT: JADE EASTRIDGE ([backup](#))
6. DISCUSSION OF POSSIBLE ORDINANCE / ADDING CHAPTER 38, ARTICLE 6: SINGLE-USE PLASTIC BAGS TO THE BEAUFORT COUNTY CODE OF ORDINANCES TO ENCOURAGE THE USE OF REUSABLE CHECKOUT BAGS AND RECYCLABLE PAPER CARRYOUT BAGS AND BANNING THE USE OF SINGLE-USE PLASTIC BAGS FOR RETAIL CHECKOUT OF PURCHASED GOODS IN THE UNINCORPORATED AREAS OF THE COUNTY ([backup](#))
7. A RESOLUTION ADOPTING THE LADY'S ISLAND CORRIDOR STUDY (STANTEC REPORT) ([backup](#))

8. DISCUSSION / PROPOSAL BY CITY OF BEAUFORT FOR BRIDGE ACCESS AND BIKE PATH TO WHITEHALL PLANTATION ON LADY’S ISLAND ([Beaufort County Trails and Blueways Master Plan](#))
9. DISCUSSION / PARKING TRACTOR TRAILERS ON RURAL AND RESIDENTIAL PROPERTY ([backup](#))
10. DISCUSSION / SOUTHERN BEAUFORT COUNTY FUTURE LAND USE MAP
11. CONSIDERATION OF REAPPOINTMENTS AND APPOINTMENTS
 - A. Planning Commission
 - B. Southern Beaufort County Corridor Beautification Board
12. ADJOURNMENT

2017 Strategic Plan Committee Assignments

Hilton Head National Rezoning/Development Agreement
Priority Investment – Capital Projects Long-Term Prioritized Requirements
Passive County Parks: Plan, Funding
Comprehensive Countywide System/Stormwater Utility (Agreements with Municipalities)
2018 Priority Projects: Immediate Opportunities
Stormwater Management Program/Policy: Implementation
Okatie River Restoration: Funding
May River Action Plan
Rivers and Creeks Water Quality: Evaluation
Transfer of Development Rights
Buckingham Plantation Community Development Plan: Amendment



COUNTY COUNCIL OF BEAUFORT COUNTY

PURCHASING DEPARTMENT

106 Industrial Village Road, Bldg. 2, Post Office Drawer 1228
Beaufort, South Carolina 29901-1228

David L Thomas, Purchasing Director
dthomas@bcgov.net 843.255.2353

TO: Councilman Brian Flewelling, Chairman, Natural Resources Committee

FROM: David L Thomas. CPPO. Purchasing Director

SUBJ: New Contract as a Result of Solicitation
RFP 07192017, Engineering and Consulting Services for Capital Improvement Plan - FY 2018 Project Grouping

DATE: 08/16/2017

BACKGROUND:

Beaufort County Purchasing Department issued a Request for Proposal (RFP) for Engineering and Consulting Services for Stormwater Management to assist with the construction of regional stormwater best management practices in four locations throughout Beaufort County. The projects were part of the 2015 Stormwater Capital Improvement Plan (CIP) that was proposed and adopted as part of the County's budget for FY16. The proposal requested that the consultant staff prepare the design, secure permitting, and oversee construction administration of the four projects outlined in the RFP.

These projects included:

- 1) Brewer Memorial Park BMP Demonstration
- 2) Sawmill Creek sub-watershed Regional Detention BMP
- 3) Salt Creek South sub-watershed Regional Detention Basin
- 4) Shanklin Road sub-watershed Regional BMP

The County received four proposals. All four consultants were interviewed.

- 1) Andrews Engineering / CDM Smith
- 2) ATM / Floyd and Davis
- 3) Thomas and Hutton
- 4) Ward Edwards Engineering

The Evaluation Committee consisted of five (5) representatives from Beaufort County including Eric Larson with Beaufort County Stormwater Management, Rebecca Baker with Beaufort County Stormwater Regulation, Danny Polk with Beaufort County Stormwater Regulation, Andrea Atherton with Beaufort County Engineering and Chris Inglese with Beaufort County Legal. The five (5) representatives of Beaufort County elected to split the award and unanimously selected Ward Edwards for projects 1 and 2 and Andrews Engineering / CDM Smith for projects 3 and 4. The contract term is effective August 29, 2017, to July 31, 2019. Contract fee for the projects will be a negotiated amount not to exceed \$743,959.

VENDOR INFORMATION:

See above

COST:

NTE \$743,959

FUNDING:

Primary Funding - Brewer Memorial Park – 50260017, Sawmill Creek Overtopping – 50260023, Salt Creek South M1 – 50260020, Shanklin Road M2 – 50260021

PROPOSED COST: \$743,959 (Budget = \$629,500 per 2015 Capital Improvement Plan approved by County Council)

Stormwater Utility Enterprise Fund has a net position of approximately \$4 million as of June 30, 2017. Additionally, at the beginning of Fiscal Year 2018, \$5 million General Obligation Bonds were issued for the Stormwater Utility Enterprise Fund.

Funding approved: By: Date:

FOR ACTION:

RECOMMENDATION:

The Purchasing Department recommends that the Natural Resources Committee approves and recommends to County Council the contract award to Andrews Engineering / CDM Smith and Ward Edwards for Engineering and Consulting Services for Stormwater Management not to exceed \$743,959.

Attachment: 
12.82 KB

cc: Gary Kubic, County Administrator

Approved: Date:

Check to override approval: ☒ Overridden by: Override Date:

Joshua Gruber, Deputy County Administrator/Special Counsel Approved: Date:

Check to override approval: ☐ Overridden by: Override Date:

Alicia Holland, Assistant County Administrator, Finance Approved: Date:

Approved: Date:

Check to override approval: ☒ Overridden by: Override Date: ready for admin: ☒

After Initial Submission, Use the Save and Close Buttons

Project Fee Schedule

	ATM	Andrews Engineering	Thomas & Hutton	Ward Edwards
Brewer Memorial Park	\$74,900.00	\$80,664.45	\$49,500.00	\$66,000.00
Sawmill Creek	\$145,000.00	\$186,337.30	\$48,000.00	\$88,000.00
Salt Creek South M1	\$267,700.00	\$203,301.40	\$80,000.00	\$110,000.00
Shanklin Road M2	\$292,500.00	\$172,870.05	\$50,500.00	\$114,000.00
Total	\$780,100.00	\$643,173.20	\$228,000.00	\$378,000.00

Evaluation Summary

<u>ATM</u>	Larson	Baker	Polk	Inglese	Atherton	
Demonstrated experience with stormwater best management practices design.	15	20	15	10	18	
Working knowledge of computer based water quantity and water quality models.	12	10	13	10	12	
Demonstrated experience with land, right of way, and easement acquisition	5	8	5	5	8	
Demonstrated experience in construction project management.	10	10	8	10	10	
Capacity to perform.	6	10	5	5	8	
Location and knowledge of locality of the project.	8	8	6	5	9	
Price proposal.	15	15	18	0	5	
Total	71	81	70	45	70	337

<u>Andrews Engineering</u>	Larson	Baker	Polk	Inglese	Atherton	
Demonstrated experience with stormwater best management practices design.	20	18	19	20	20	
Working knowledge of computer based water quantity and water quality models.	14	13	14	15	15	
Demonstrated experience with land, right of way, and easement acquisition	8	8	8	10	8	
Demonstrated experience in construction project management.	8	10	9	10	9	
Capacity to perform.	9	10	9	10	10	
Location and knowledge of locality of the project.	7	10	8	10	10	
Price proposal.	20	15	20	24	18	
Total	86	84	87	99	90	446

<u>Thomas & Hutton</u>	Larson	Baker	Polk	Inglese	Atherton	
Demonstrated experience with stormwater best management practices design.	20	15	19	20	20	
Working knowledge of computer based water quantity and water quality models.	13	10	13	5	12	
Demonstrated experience with land, right of way, and easement acquisition	8	8	9	5	9	
Demonstrated experience in construction project management.	8	8	8	10	10	
Capacity to perform.	8	10	7	10	10	
Location and knowledge of locality of the project.	7	10	8	9	10	
Price proposal.	20	20	20	15	10	
Total	84	81	84	74	81	404

<u>Ward Edwards</u>	Larson	Baker	Polk	Inglese	Atherton	
Demonstrated experience with stormwater best management practices design.	20	20	20	20	18	
Working knowledge of computer based water quantity and water quality models.	12	15	13	15	15	
Demonstrated experience with land, right of way, and easement acquisition	8	8	8	10	8	
Demonstrated experience in construction project management.	7	10	8	10	9	
Capacity to perform.	5	10	8	5	9	
Location and knowledge of locality of the project.	10	10	8	10	10	
Price proposal.	20	25	21	25	22	
Total	82	98	86	95	91	452

Total	
ATM	337
Andrews Engineering	446

Thomas & Hutton	404
Ward Edwards	452

CONTRACT

THIS CONTRACT is made this August 29, 2017, by and between Beaufort County, a political subdivision of the State of South Carolina (hereinafter referred to as "County") and Andrews Engineering Co., Inc. (hereinafter referred to as "Consultant"). This Contract shall consist, by reference of all the terms, conditions, scope of work, specifications and provisions contained in RFP Number 071917 dated June 20, 2017 (advertised in The Island Packet/Beaufort Gazette on June 20, 2017, all Addendums and Consultant's Statement of Qualifications dated July 19, 2017.

W I T N E S S E T H:

WHEREAS, the Consultant and the County desire to enter into this contract relating to Engineering and Consulting Services for Capital Improvement Plan-FY18 Projects 3 & 4 (Project 3 - Salt Creek South sub-watershed Regional Detention Basin and Project 4 - Shanklin Road sub-watershed Regional BMP) subject to the terms, specifications, conditions and provisions of the request for proposals as heretofore mentioned.

NOW, THEREFORE, the Consultant and the County agree to all of these terms, conditions, specifications, provisions and the special provisions as listed below:

- A. This Contract is deemed to be under and shall be governed by and construed according to the laws of the State of South Carolina.
- B. Any litigation arising out of this Contract shall be held only in a circuit court of Beaufort County, Beaufort, South Carolina in the Fourteenth Judicial Circuit.
- C. The Consultant shall not sublet, assign, nor by means of a stock transfer sale of its business, assign or transfer this Contract without the written consent of the County.
- D. This Contract, including the terms, conditions, specifications and provisions listed herein makes up the entire contract between the Consultant and County. No other Contract, oral or otherwise, regarding the subject matter of this Contract shall be deemed to exist or bind either party hereto.
- E. It is understood that this Contract shall be considered exclusive between the parties.
- F. Any provisions of this Contract found to be prohibited by law shall be ineffective, to the extent of such prohibition, without invalidating the remainder of this Contract.

NOW, THEREFORE, in consideration of the mutual covenants contained herein, the parties agree as follows:

ARTICLE 1 BACKGROUND/SCOPE OF WORK

Background

The Consultant does hereby offer to the County services for the purpose of providing Engineering and Consulting Services as contained and described in the Scope of Work.

Scope of Work

Project 3 – Salt Creek

TASK 1: DATA COLLECTION & PROJECT INITIATION

- Kick off meeting with key members of the County staff for a review of the Project's scope of work and its goals, milestones, and schedule.
- Collection of available data from the County.
- Coordination with the County in contacting property owners for permission to access property for monitoring and begin discussions regarding easements and/or property acquisition.
- Create an overall project concept figures that will enable the County to thoroughly explain the project to property owners.
- Attendance for up to three (3) County and property owner meetings;
- Survey the areas indicated on Exhibit "3A".
- Flag wetlands at indicated survey areas shown on Exhibit "3A"; and
- Four (4) 15' geotechnical borings; soil evaluation; determination of seasonal high ground water table; and infiltration rates.

Deliverable: Overall Preliminary Project Figures; Survey as shown in Exhibit "3A"; and Geotechnical Evaluation Report.

Fee: \$48,290.00

TASK 2: CONCEPTUAL DESIGN

- Evaluation of gathered data for design and constructability.
- Verify watershed and update water quality and quantity models with new available data and drainage basin modifications.
- Develop proposed design stormwater model. (Please note: Model *excludes* a no-rise study and sea level rise analysis.)
- Provide results of existing model.
- Run model scenarios with BMPs concepts.
- Provide summary of results, methodology, peak flows, BMP recommendations, and support for design.
- Develop figures of conceptual design of BMPs.
- Engineer's cost estimates.
- Meet with all necessary permitting agencies, include permitting requirements and challenges per conceptual design in technical memorandum.
- Meet with the County to review conceptual technical memorandum.

Deliverable: Conceptual Technical Memorandum.

Fee: \$34,200.00

TASK 3: DESIGN SERVICES

- 30% Construction Drawings; Engineer's Cost Estimate; review meeting with County Staff.
- 90% Construction Drawings; Engineer's Cost Estimate; review meeting with County Staff.
- Final Drainage Report.
- 100% Bid Documents; Technical Specifications; Bid Schedule (front end documents to be completed by Beaufort County).

Deliverable: Construction Plans; Engineer's Cost Estimate; Bid Schedule; and Technical Specifications.

Fee: \$69,460.00

TASK 4: QA/QC

- Completed by Technical Review Committee (TRC) and supporting design firm at 30% and 90% design stages.
- TRC representative to attend kick off meeting and 30%, and 90% review meetings with County.

Deliverable: N/A

Fee: \$9,360.00

TASK 5: PERMITTING

- OCRM Land Disturbance Permit.
- USACE Nationwide Permit (includes impacts 0.50 acres or less).
- Beaufort County Land Development Permit.
- Permit fees and wetland mitigation cost to be paid by County.

Deliverable: Permit Submittals.

Fee: \$17,590.00

TASK 6: BIDDING ASSISTANCE

- Attend pre-bid meeting.
- Bid document distribution.
- Plan holder list compilation.
- Response to contractor Request for Information (RFI).
- Development of addenda as necessary.
- Bid procurement; evaluation; and award recommendation.
- Review draft contract and bid bond prior to submission to County.
- Review of insurance certificates and compliance with minimum requirements.
- Permit review.

Deliverable: N/A

Fee: \$4,120.00

TASK 7: CONSTRUCTION ADMINISTRATION

- Attend pre-construction meeting.
- Shop drawings review.
- RFI's and clarifications.
- Conduct site visits at key times of construction including an observation report and construction photos.
- SWPPP inspections.
- Conduct progress meetings at major construction milestones; and provide agenda and meeting minutes for the progress meeting.
- Document construction activities.
- Document geotechnical data received by contractor.
- Review as-built survey.
- Conduct substantial and final-completion reviews and documented memorandum.

Deliverable: Show drawing review memorandum; progress meeting agendas and meeting minutes; construction milestone observation reports and photos; substantial and final-completion reviews; and documented memorandum.

Fee: \$21,840.00

TASK 8: WATER SAMPLING

- Conduct field site visit to acquire water quality samples and delivery to USCB Lab.
- Assumes two (2) locations, every other week for two years, approximately 52 site visits. (Per trip cost is \$450.00 with or without samples being pulled).

Deliverable: N/A

Fee: \$11,050.00

Project 4 – Shanklin Road

TASK 1: DATA COLLECTION & PROJECT INITIATION

- Kick off meeting with key members of the County staff for a review of the Project's scope of work and its goals, milestones, and schedule.
- Collection of available data from the County.
- Coordination with the County in contacting property owners for permission to access property for monitoring and begin discussions regarding easements and/or property acquisition.
- Create an overall project concept figures that will enable the County to thoroughly explain the project to property owners.
- Attendance for up to three (3) County and property owner meetings;
- Survey the areas indicated on Exhibit "4A".
- Flag wetlands at indicated survey areas shown on Exhibit "4A"; and
- Four (4) 15' geotechnical borings; soil evaluation; determination of seasonal high ground water table; and infiltration rates.

Deliverable: Overall Preliminary Project Figures; Survey as shown in Exhibit "4A"; and Geotechnical Evaluation Report.

Fee: \$34,720.00

TASK 2: CONCEPTUAL DESIGN

- Evaluation of gathered data for design and constructability.
- Verify watershed; and update water quality and quantity models with new available data and drainage basin modifications.
- Develop proposed design stormwater models for BMPs 1, 2, 3, and 4. (Please note: Model *excludes* no-rise study and sea level rise analysis.)
- Provide results of existing model.
- Run model scenarios with BMPs concepts.
- Provide summary of results; methodology; peak flows; BMP recommendations; and support for design.
- Develop figures of conceptual design of BMPs.
- Engineer's Cost Estimates.
- Meet with permitting agencies; include permitting requirements and challenges per conceptual design in technical memorandum.
- Meet with the County to review conceptual technical memorandum.

Deliverable: Conceptual Technical Memorandum.

Fee: \$47,150.00

TASK 3: DESIGN SERVICES

- Provide additional survey required for design construction drawings (areas estimated per Exhibit "4B").
- 30% Construction Drawings; Engineer's Cost Estimate; review meeting with County Staff.
- 90% Construction Drawings; Engineer's Cost Estimate, review meeting with County Staff.
- Final Drainage Report.
- 100% Bid Documents; Technical Specifications; Bid Schedule (front end documents to be completed by Beaufort County).

Deliverable: Construction Plans; Engineer's Cost Estimate; Bid Schedule; and Technical Specifications.

Fee:

BMP 1: \$75,560.00

BMP 2: \$33,120.00

BMP 3: \$38,820.00

BMP 4: \$22,695.00

TASK 4: QA/QC

- Completed by Technical Review Committee (TRC) and supporting design firm at 30% and 90% design stages.
- TRC representative to attend kick off meeting and 30%, and 90% review meetings with County.

Deliverable: N/A

Fee:

BMP 1: \$5,520.00

BMP 2: \$3,120.00

BMP 3: \$3,120.00

BMP 4: \$2,400.00

TASK 5: PERMITTING

- OCRM Land Disturbance Permit.
- USACE Nationwide Permit (includes impacts 0.50 acres or less).
- Beaufort County Land Development Permit.
- Permit fees and wetland mitigation cost to be paid by County.

Deliverable: Permit Submittals.

Fee:

BMP 1: \$ 14,480.00

BMP 2: \$7,300.00

BMP 3: \$ 9,580.00

BMP 4: \$ 6,435.00

TASK 6: BIDDING ASSISTANCE

- Attend pre-bid meeting.
- Bid document distribution.
- Plan holder list compilation.
- Response to contractor Request for Information (RFI).
- Development of addenda as necessary.
- Bid procurement; evaluation; and award recommendation.
- Review draft contract and bid bond prior to submission to County.
- Review of insurance certificates and compliance with minimum requirements.
- Permit review.

Deliverable: N/A

Fee:

BMP 1: \$2,720.00

BMP 2: \$1,290.00

BMP 3: \$2,360.00

BMP 4: \$1,290.00

TASK 7: CONSTRUCTION ADMINISTRATION

- Attend pre-construction meeting.
- Shop drawings review.
- RFI's and clarifications.
- Conduct site visits at key times of construction (including an observation report and construction photos).
- SWPPP inspections.
- Conduct progress meetings at major construction milestones; provide agenda of meeting and meeting minutes of progress meeting.
- Document construction activities.
- Document geotechnical data received by contractor.
- Review as-built survey.
- Conduct substantial and final-completion reviews and documented memorandum.

Deliverable: Show drawing review memorandum; progress meeting agendas and meeting minutes; construction milestone observation reports and photos; substantial and final-completion reviews and documented memorandum.

Fee:

BMP 1: \$6,140.00

BMP 2: \$5,090.00

BMP 3: \$6,880.00

BMP 4: \$3,740.00

TASK 8: WATER SAMPLING

- Conduct field site visit to obtain water quality samples and deliver to USCB Lab.
- Assumes two (2) locations, every other week for two years, approximately 52 site visits. (Per trip cost is \$450.00 with or without samples being pulled.)

Deliverable: N/A

Fee: \$ 11,050.00

**ARTICLE 2
LIABILITY**

The County and Consultant shall not be responsible to each other for any incidental, indirect or consequential damages incurred by either Consultant or County or for which either party may be liable to any third party which damages have been or are occasioned by services performed or reports prepared or other work performed hereunder.

**ARTICLE 3
INDEMNIFICATION AND HOLD HARMLESS**

The Consultant does hereby agree to indemnify and save harmless the County, its officers, agents and employees from and against any and all liability, claims, demands, damages, fines, fees, expenses, penalties, suits, proceedings, actions and cost of actions, including attorney's fees for trial and on appeal of any kind and nature to the extent arising or growing out of or in any way connected with the negligent performance of the Contract, by Consultant, its agents, servants or employees.

**ARTICLE 4
ASSIGNMENT**

Consultant shall not assign any rights or duties of the professional services contract without the expressed written consent of the County. Any assignment or subletting without the written consent of County shall be void and this Contract shall terminate at the option of the County.

**ARTICLE 5
PERFORMANCE PERIOD/TERM**

The term of this Contract shall be for a period of (determined by negotiated schedule of work) starting on August 29, 2017 and ending on July 31, 2019. At the County's option, this

contract may be extended to July 31, 2022, not to exceed five (5) years total.

ARTICLE 6 COMPENSATION

Total annual compensation is not to exceed Five Hundred, Forty –One Thousand, Nine Hundred and Fifty-Nine dollars (\$541,959), billed at unit rates provided in the SOQ and invoiced monthly.

Project 3 – Salt Creek

Service Description		
Project Initiation and Data Collection	Hourly Not To Exceed	\$33,790
	Lump Sum	\$14,500
Conceptual Design	Hourly Not To Exceed	\$34,200
Design Services, QA/QC, Permitting, Bidding Services, and Const. Admin.	Hourly Not To Exceed	\$115,370
	Lump Sum	\$7,000
Monitoring	Hourly Not To Exceed	\$11,050
Reimbursements	As Incurred	\$6477
	Total	\$222,387

Project 4 – Shanklin Road

Service Description		
Project Initiation and Data Collection	Hourly Not To Exceed	\$19,220
	Lump Sum	\$15,500
Conceptual Design	Hourly Not To Exceed	\$32,160
	Lump Sum	\$14,540
Item #1: Wetland Enhancement	Hourly Not To Exceed	\$97,420
	Lump Sum	\$7,000
Item #2: Borrow Pit A	Hourly Not To Exceed	\$46,920
	Lump Sum	\$3,000
Item #3: Borrow Pit B & Oxy. Ponds C	Hourly Not To Exceed	\$57,760
	Lump Sum	\$3,000
Item #4: Spanish Moss Trail	Hourly Not To Exceed	\$33,560
	Lump Sum	\$3,000
Monitoring	Hourly Not To Exceed	\$11,050
Reimbursements	As Incurred	\$10,500
	Total	\$355,080
	Discounted Total	\$319,572

ARTICLE 7 INSURANCE/PERFORMANCE BOND

Insurance

Consultant does hereby covenant, agree and hereby represent to the County that it has obtained workmen's compensation insurance, general liability and automobile liability insurance, as well as providing coverage against potential liability arising from and in any manner relating to the Consultant's use or occupation of the premises during the course of performing the contracted services, all in accordance with and as **specified** in the County's RFP Number 071917,. **Additionally, the Consultant agrees to list the County as 'additional insured' on Certificates of Insurance related to the execution of this Contract.**

Performance Bond

No performance bond is required for this contract.

ARTICLE 8 DEFAULT/TERMINATION

Default

In the event of default or breach of any condition of this Contract resulting in litigation, the prevailing party would be entitled to reasonable attorneys' fees fixed by the Court. The remedies herein given to County under Default shall be cumulative, and the exercise of any one remedy by the County shall not be to the exclusion of any other remedy.

Termination

This contract may be terminated by the County,' 'for convenience' 'for cause,' or by 'by mutual consent' as described in RFP number 071917.

1. Termination for Convenience

The County may, without cause, terminate this contract in whole or in part at any time for its convenience. In such instance, an adjustment shall be made to the Consultant, for the reasonable costs of the work performed through the date of termination. Termination costs do not include lost profits, consequential damages, delay damages, unabsorbed or under absorbed overhead of the Consultant or its sub-consultants, and/or failure of Consultant to include termination for convenience clause into its subcontracts and material purchase orders shall not expose the County to liability for lost profits in conjunction with a termination for convenience settlement or equitable adjustment. Consultant expressly waives any damages, delay damages, or indirect costs which may arise from County's election to terminate this contract in whole or in part for its convenience.

2. Termination For Cause

Termination by the County for cause, default, or negligence on the part of the Consultant shall be excluded from the foregoing provisions. Termination costs, if any, shall not apply. The ten (10) days advance notice requirement is waived, and the default provision in this bid shall apply.

Reasons for Termination for Cause shall include but not limited to:

- a) Default as defined above,
- b) failing to make satisfactory progress in the prosecution of the contract
- c) endangering the performance of this contract
- d) criminal activity or misconduct,
- e) work that is deemed sub-standard by the County Representative.

3. Termination by Mutual Consent

Either party may terminate this Contract by mutual consent with written notice attesting and agreeing to a termination by mutual consent by either party. Upon such termination, the County shall pay the Consultant for all services performed hereunder up through the date of such termination. Termination by mutual consent may entitle the Consultant to reasonable costs allocable to the contract for work or costs incurred by the Consultant up to the date of termination. The Consultant must not be paid compensation as a result of a termination by mutual consent that exceeds the amount encumbered to pay for work to be performed under the contract.

ARTICLE 9 RESPONSIBILITY

The County will be responsible to provide the Consultant reasonable access to County locations when necessary, ensure cooperation of County employees in activities reasonable and appropriate under the project, and obtain authorization for access to third party sites, if required.

ARTICLE 10 FORCE MAJEURE

Should performance of Consultant services be materially affected by causes beyond its reasonable control, a *Force Majeure* results. *Force Majeure* includes, but is not restricted to:

- a) acts of God,
- b) acts of a legislative,
- c) administrative or judicial entity,
- d) acts of Consultants (other than sub-consultants of Consultant),
- e) fires,
- f) floods,
- g) labor disturbances,
- h) civil unrest
- i) incorrect/inferior parts or materials
- j) terrorism
- k) unusually severe weather.

Consultant will be granted a time extension and the parties will negotiate an adjustment to the fee, where appropriate, based upon the effect of the Force Majeure upon Consultant's performance.

ARTICLE 11 SEVERABILITY

Every term or provision of this Contract is severable from others. Notwithstanding any possible future finding by a duly constituted authority that a particular term or provision is invalid, void, or unenforceable, this Contract has been made with the clear intention that the validity and enforceability of the remaining parts, terms and provisions shall not be affected thereby.

ARTICLE 12 INDEPENDENT CONSULTANT

The Consultant shall be fully independent in performing the services and shall not act as an agent or employee of the County. As such, the Consultant shall be solely responsible for its employees, sub-consultants, and agents and for their compensation, benefits, contributions and taxes, if any.

ARTICLE 13 NOTICE

The Consultant and the County shall notify each other of service of any notice of violation of any law, regulation, permit or license relating to the services; initiation of any proceedings to revoke any permits or licenses which relate to such services; revocation of any permits, licenses or other governmental authorizations relating to such services; or commencement of any litigation that could affect such services. Such notice shall be delivered by U.S. mail with proper postage affixed thereto and addressed as follows:

County:

Beaufort County Administrator
P. O. Drawer 1228
Beaufort, SC 29901-1228

Beaufort County
Attn: Beaufort County Purchasing Director
P. O. Drawer 1228
Beaufort, SC 29901-1228

Consultant:

Andrews Engineering Co., Inc.
2712 Bull Street, Suite A
Beaufort, SC 29902

ARTICLE 14 CHANGE ORDERS

Change order(s) are applicable under this contract. Change order(s) initiated by the County must be delivered to the Consultant for review and approval. Change order(s) initiated by the Consultant must be delivered to the County for review and approval. The Consultant and County must execute the Change Order(s) prior to work being performed.

ARTICLE 15 AUDITING

The Consultant shall make available to the County if requested, true and complete records, which support billing statements, reports, performance indices, and all other related documentation. The County's authorized representatives shall have access during reasonable hours to all records, which are deemed appropriate to auditing billing statements, reports, performance indices, and all other related documentation. The Consultant agrees that it will keep and preserve for at least seven years all documents related to the Contract, which are routinely prepared, collected or compiled by the Consultant during the performance of this contract.

The County's Auditor and the Auditor's authorized representatives shall have the right at any time to audit all of the related documentation. The Consultant shall make all documentation available for examination at the Auditor's request at either the Auditor or Consultant's office and without expense to the County.

ARTICLE 16 GRATUITIES

The right of the Consultant to proceed or otherwise perform this Contract, and this Contract may be terminated if the County Manager and/or the County Contracting Manager determine, in their sole discretion, that the Consultant or any officer, employee, agent, or other representative whatsoever, of the Consultant offered or gave a gift or hospitality to a County officer, employee, agent or Consultant for the purpose of influencing any decision to grant a County Contract or to obtain favorable treatment under any County Contract.

The terms "hospitality" and "gift" include, but are not limited to, any payment, subscription, advance, forbearance, acceptance, rendering or deposit of money, services, or items of value given or offered, including but not limited to food, lodging, transportation, recreation or entertainment, token or award.

ARTICLE 17 INVOICES

All invoices for work done under this contract should be directed to the County Representative, Eric W. Larson, PE, CPSWQ, AICP, CFM – Director of Environmental Engineering & Land Management, located at:

Beaufort County Stormwater Utility
120 Shanklin Road
Beaufort, SC 29906

Invoices should include:

- a) Period of time covered by the invoice
- b) Detail of work performed
- c) Purchase order and Contract Number
- d) Tax Identification Number

ARTICLE 18 Purchase Orders

The County will issue Purchase Orders from properly executed requisitions. The County shall not be responsible for invoices of \$500 or more that do not have a purchase order covering them.

ARTICLE 19 ORDER OF DOCUMENTS

The following are incorporated into and made a part of this contract by reference:

- a) Request for Proposals Number 071917
- b) General Terms and Conditions between County and Consultant.
- c) Insurance Requirements
- d) XXXXXXXXXX SOQ Submission to RFP Number 071917
- e) Notice of Award Letter dated XXXXXX.
- f) Recommendation Letter dated XXXXXX
- g) Exhibits 3A – 3B and 4A – 4C.

SIGNATURE PAGE

This Contract with the above Articles constitutes the entire contract between the parties hereto. No representations, warranties or promises pertaining to this Contract have been made or shall be binding upon any of the parties, except as expressly stated herein.

This Contract shall be construed in accordance and governed by the laws of the State of South Carolina.

IN WITNESS WHEREOF, the parties hereto have executed this Contract on the day and year first above written.

WITNESSES:

BEAUFORT COUNTY, a political sub-division of the State of South Carolina

By: _____
Name: Gary Kubic
Title: County Administrator
Address: P.O. Drawer 1228
Beaufort, SC 29901-1228
Phone: (843) 255-2026
Fax: (843) 255-9403
Date: _____

WITNESSES:

CONSULTANT NAME

By: _____
Name: Steve Andrews
Title: President
Address: 2712 Bull Street, Suite A
Beaufort, SC 29902
Phone: 843-379-2222
Fax: 843-379-2223
Tax ID Number: 57-1035293
Date: _____

CONTRACT

THIS CONTRACT is made this August 29, 2017, by and between Beaufort County, a political subdivision of the State of South Carolina (hereinafter referred to as "County") and Ward Edwards, Inc. (hereinafter referred to as "Consultant"). This Contract shall consist, by reference of all the terms, conditions, scope of work, specifications and provisions contained in RFP Number 071917 dated June 20, 2017 (advertised in The Island Packet/Beaufort Gazette on June 20, 2017, all Addendums and Consultant's Statement of Qualifications dated July 19, 2017.

WITNESSETH:

WHEREAS, the Consultant and the County desire to enter into this contract relating to Engineering and Consulting Services for Capital Improvement Plan-FY18 Projects 1 & 2 (Project 1 - Brewer Memorial Park BMP Demonstration and Project 2 - Sawmill Creek sub-watershed Regional Detention BMP) subject to the terms, specifications, conditions and provisions of the request for proposals as heretofore mentioned.

NOW, THEREFORE, the Consultant and the County agree to all of these terms, conditions, specifications, provisions and the special provisions as listed below:

- A. This Contract is deemed to be under and shall be governed by and construed according to the laws of the State of South Carolina.
- B. Any litigation arising out of this Contract shall be held only in a circuit court of Beaufort County, Beaufort, South Carolina in the Fourteenth Judicial Circuit.
- C. The Consultant shall not sublet, assign, nor by means of a stock transfer sale of its business, assign or transfer this Contract without the written consent of the County.
- D. This Contract, including the terms, conditions, specifications and provisions listed herein makes up the entire contract between the Consultant and County. No other Contract, oral or otherwise, regarding the subject matter of this Contract shall be deemed to exist or bind either party hereto.
- E. It is understood that this Contract shall be considered exclusive between the parties.
- F. Any provisions of this Contract found to be prohibited by law shall be ineffective, to the extent of such prohibition, without invalidating the remainder of this Contract.

NOW, THEREFORE, in consideration of the mutual covenants contained herein, the parties agree as follows:

ARTICLE 1 BACKGROUND/SCOPE OF WORK

Background

The Consultant does hereby offer to the County services for the purpose of providing Engineering and Consulting Services as contained and described in the Scope of Work.

Scope of Work

Project 1 – Brewer Memorial Park

PROJECT UNDERSTANDING

Our project understanding is described in the Work Plan section of the Response to Request for Qualifications for the Engineering and Consulting Services for Capital Improvement Plan – FY18. The scope of services and the associated fees match those listed in the Work Plan, but also include services for water quality monitoring collections services requested by the County.

SCOPE OF SERVICES

TASK 1: Conceptual Engineering

The Consultant will provide the following Engineering Consulting Services:

1. Review background information provided by Beaufort County or gathered by the Consultant.
2. Conduct a review of the gathered information and perform exploratory field investigations of the project site and contributing watershed.
3. Attend meeting with the County and SCDHEC-OCRM to determine the project feasibility, identify permitting roadblocks, and decide upon the best course of action for design and permitting.
4. Prepare conceptual site plan showing the proposed BMP and site improvements.
5. Meet with the County to review the conceptual design and gain approval prior to final design and permitting.

TASK 2: Wetland Delineation & Verification

The Consultant will provide the following Natural Resources consulting services through a sub-consultant:

1. Complete a comprehensive delineation of freshwater and saltwater wetlands within the referenced tract. This task will include flagging of wetland boundaries and coordination with survey crews to complete a field survey of the identified wetlands.
2. Upon completion and receipt of a survey plat of the wetlands, the Consultant will prepare and submit the required information to the US Army Corps of Engineers (USACE) and SCDHEC OCRM to obtain verification of the wetland delineation.
3. The Consultant will prepare and submit a request for jurisdictional determination which will include aerial photography depicting approximate wetland locations, USGS topographic maps, soil maps and data sheets representing typical site conditions to USACE.
4. The Consultant will coordinate the jurisdictional determination with the USACE throughout the review process to and initial conclusion. This will include site visits with USACE that are necessary to complete their review. Should revisions to the delineation

be required including any additional fieldwork and/or documentation that's not normally required, this time will be billed as a time and expense fee.

TASK 3: Site Surveying

The Consultant will provide the following Surveying services through a sub-consultant:

1. Prepare tree, topographic, boundary and wetland survey of the park site including the existing bait pond and the adjacent marsh. The survey will be on the South Carolina State Plane coordinate system and the NAVD88 datum, to match horizontally and vertically with the Beaufort County LiDAR. Matching the LiDAR will allow for easy comparison of surveyed locations to un-surveyed onsite and offsite areas.

TASK 4: Geotechnical Investigation

The Consultant will provide the following Natural Resources consulting services through a sub-consultant:

1. The Consultant will advance two soil test borings within the proposed basin foot print at each site. Each boring will be extended to a depth of fifteen feet below the ground surface, auger refusal, or hole collapse; whichever is shallower. Borings may be Standard Penetration Test (SPT) soil borings, hand auger borings with Dynamic Cone Penetrometer, or some combination of each. Soil samples will be classified in the field at the time of boring according to the USCS by the ASTM Visual-Manual method. Two bulk samples will be obtained from the top five feet within each boring. These bulk samples will be subjected to Standard Proctor Compaction testing to help evaluate the soil suitability for use in an earthen berm.
2. Boring and bulk sample locations and elevations will be estimated from drawings provided by The Consultant and will be measured in the field with Trimble R6 GPS equipment. Northing and easting coordinates and ground surface elevation will be recorded on the log for each boring.
3. The Consultant will evaluate recovered test boring soil samples and bulk samples. They will perform at least ten classification tests (natural moisture content and grain size analysis with hydrometers), 4 Atterberg Limits tests, two Standard Proctor tests, and two Organic Content tests at each site. The results of the laboratory testing will be utilized to help classify recovered soil samples and to prepare grading recommendations.
4. The Consultant will provide a report that includes a summary of the field exploration, laboratory test results, measured groundwater levels, boring logs, site plan, and boring/bulk sample location plan. The report will also include recommendations for the following:
 - a. Groundwater mitigation if the Consultant believes groundwater mitigation will be needed during construction.
 - b. Recommendation for site preparation for mass grading.
5. Assumptions/Limitations:
 - a. Clearing will be needed to access some or all of the test locations. The Consultant will attempt to locate borings to minimize clearing, however, some trees and underbrush will be cut. The County will be responsible for providing access and clearing permissions to The Consultant and the Consultant.
 - b. The Consultant has proposed sampling and testing for hydrocarbon based pollutants in the sediments at Brewers Memorial Park. The Consultant's environmental testing is limited to sediments the Park site. The Consultant's environmental exploration at the Park is limited to hydrocarbon based pollutants

that can be detected by BTEX laboratory tests. No other sampling and testing for pollutants are included.

- c. Due to past history of site usage, hydrocarbon testing of the soils in the pond may be needed. Testing for hydrocarbon (BTEX) contamination may be needed of the on-site soils to determine proper disposal. It was assumed that if needed, the testing will be required of the selection contractor prior to construction.

TASK 5: Civil-Site Engineering

The Consultant will prepare the civil-site engineering design based on the conceptual plan developed with County input, the determined wetland delineation, the geotechnical investigation, and the site surveying. The scope of the design will include:

1. Compile base plan using the survey file provided in AutoCAD format and using the previous Conceptual Engineering Design plan.
2. Design the pond outfall modifications.
3. Locate other site improvements based on preservation of significant trees and limits to wetland impacts.
4. Prepare a stormwater hydrologic & hydraulic model to match the new proposed conditions. The model output will help estimate the expected runoff volume and rate reductions.

It is assumed that the County will provide revised sub-basin information from the newly updated SWMP.

5. Prepare a basic water quality model to estimate the expected pollutant removal from the designed regional BMP. The revised water quality model will demonstrate that the proposed design will meet the County's water quality goals.
6. Prepare design plans detailing the civil construction associated with this project. Plans are prepared using AutoCAD software and paper copies are printed on 24" x 36" sheets.

Design drawings will show:

- a. Tree removal and preservation plans
- b. Demolition plans
- c. Staking plans
- d. Sedimentation and soil erosion control plans
- e. Drainage and grading plans
- f. Civil Construction details and specifications

The proposed boardwalk and landscape improvement were excluded from the project design and permitting scope, assuming that the scope of this project is limited to the BMP improvements. It is understood that the County may want to construct additional BMPs at the site for use as a public education a demonstration site, in conjunction with Clemson Extension. The design and permitting of any additional site BMPs beyond the pond improvements are also excluded from the current civil engineering design and permitting scope.

TASK 6: Wetland Permitting

The Consultant will provide the following Natural Resources consulting services through a sub-consultant:

1. The Consultant will create permit drawings suitable for submittal to USACE and OCRM. Coordination will include attendance at team meetings and review of draft plans and

permitting drawings. Upon receipt of suitable permit drawings, the Consultant will prepare and submit a Nationwide Permit along with a Critical Area Permit application package to USACE and SCDHEC-OCRM.

2. The Consultant will serve as a liaison between the applicant and the various state and federal regulatory agencies throughout the permit review and decision process to an initial conclusion by USACE and applicable certification by OCRM. This will include attendance at agency meetings, response to comment or questions, and coordination of additional information as needed.

The tasks and associated fees were estimated based on several assumptions based on prior experience. These assumptions, however, can be affected by sudden policy changes and discretions by regulatory agencies. In some instances, these sudden changes and discretions result in unanticipated actions and requests by the regulatory agencies. Unanticipated actions could include but are not limited to additional field work required by coordination with agencies, additional maps and/or additional research. Upon knowledge of such requests, and prior to undertaking work outside of the scope of the proposed tasks, the Consultant will notify the County.

TASK 7: Regulatory Permitting

The Consultant will apply for the following regulatory permits needed to construct the proposed pond and associated infrastructure:

- Beaufort County MS4 NPDES Permit
- SCDHEC OCRM Coastal Zone Consistency.
- SCDOT Encroachment Permit for utility improvements (if needed) within highway right-of-way.
- SCDOT Stormwater Permit for SCDOT drainage system outfall modification.
- Beaufort County Community Development Department for coordination on tree removal and site impacts.

The Consultant will prepare permit application packages according to each agency's application instructions. This task includes a single round of minor modifications associated with each agency's comments. A single iteration of comment/modification is typically sufficient for approval. In the event that there are additional comments that are "agency-specific" and not design-related, additional Permitting Consulting budget will be needed. The County is responsible for permit-related fees.

Note: The proposed boardwalk and landscape improvements were excluded from the project design and permitting scope, assuming that the scope of this project is limited to the BMP improvements.

TASK 8: Bidding and Construction Support

The Consultant will provide the following services to support the bidding and construction Phase:

1. Prepare construction quantity takeoff
2. Update the Engineer's Estimate of Probable Construction Costs based on the final construction documents
3. Review front-end bidding and contract documents provided by County staff
4. Attend pre-bid conference
5. Support reviewing bids with County staff
6. Assist in contract negotiations between County and selected Contractor, if requested

7. Support in contract document coordination for execution
8. Attend a pre-construction conference with the County and contractor(s).
9. Attend a weekly team coordination meeting with the County and contractor(s).
10. Provide a single review iteration of the supplied shop drawings associated with the construction documents and provide response to the contractor.
11. Visit the project at appropriate intervals during construction to become generally familiar with the progress and quality of the contractors' work and to determine if the work is proceeding in general accordance with the contract documents. It was assumed that the Consultant will not make detailed inspections to provide exhaustive, continuous project review or observation services; however these levels of service can be provided if the project budget allows. The effort assumes 4 hours per week during construction for a 10 month construction schedule.
12. Provide services associated with construction observation on as as-needed basis in order to resolve questions or conflicts during the construction process. (RFI's Field Requests)
13. Perform a final Site Tour for general design compliance.
14. Prepare a punch list of identified site design deficiencies that need to be corrected prior to processing the final pay application for the project.
15. Schedule and attend final inspection with the County.
16. A record drawing survey of the infrastructure will be prepared as part of the project surveying scope as required by regulatory agencies with jurisdiction over the project.
17. Manage construction documentation needed to comply with the EPA 319 Grant closeout requirements.

TASK 9: Post-Construction As-built Surveying

The Consultant will provide the following Surveying services through a sub-consultant:

1. Prepare a post-construction as-built survey of the constructed BMP suitable for NPDES permit closeout. The survey will be on the South Carolina State Plane coordinate system and the NAVD88 datum, to match horizontally and vertically with the Beaufort County LiDAR.

TASK 10: Water Quality Monitoring Collection

The Consultant will provide the following services to support the pre and post construction water quality monitoring:

1. Determine location of field water collection sample at the proposed post-construction BMP outfall location. The location will be determined based on site visits of the property in current conditions on a couple of occasions to determine existing flow paths and areas that are most likely to contain water during routine visits throughout the year. The location will be reviewed with the County and the USCB Water Quality Lab for final approval. GPS coordinates will be provided to USCB and Beaufort County for use in mapping.
2. Field collect water samples at the determined location, every other week for one year before construction and for one year after construction, regardless of rainfall conditions. This will result in 26 pre-construction samples and 26 post-construction samples.
3. It is assumed that the USCB lab will provide gloves and sample bottles for use by the Consultant. USCB will also purchase the collection pole and will be reimbursed by the Consultant. The Consultant will provide the cooler used to store the sample.
4. The Consultant will record weather and tidal conditions at the time of sampling per the Beaufort County monitoring SOPs.

5. It was assumed that samples will be collected on Wednesdays and delivered to the USCB lab no later than 2:00pm.
6. It was assumed that the Consultant will collect one sample for use by the County and USCB to test for their pollutant of choice.
7. The fee assumed 5 hours of “Principal” time and 30 hours of “Project Manager” time to manage the two-year effort.
8. The fee assumed 3 hours per week of a field technician time to drive to the site, collect the sample, deliver it to the downtown Beaufort campus, and return to the Consultant office. All mileage expenses are included in this fee. This results in a \$330 charge for each sample collection and delivery.

If the technician arrives at the site and is unable to collect a sample that week due to dry conditions, the effort is assumed to be only 2 hour of time and the County will be billed \$220 for that bi-weekly period.

Project 2 – Sawmill Creek

PROJECT UNDERSTANDING

Our project understanding is described in the Work Plan section of the Response to Request for Qualifications for the Engineering and Consulting Services for Capital Improvement Plan – FY18. The scope of services and the associated fees match those listed in the Work Plan, but also include services for water quality monitoring collections services requested by the County.

SCOPE OF SERVICES

TASK 1: Conceptual Engineering

The Consultant will provide the following Engineering Consulting Services:

1. Review background information provided by the County or gathered by the Consultant.
2. Conduct a review of the gathered information and perform exploratory field investigations of the project site and contributing watershed.
3. Attend meeting with the County and SCDHEC-OCRM to determine the project feasibility, identify permitting roadblocks, and decide upon the best course of action for design and permitting. Preliminary site investigations indicate that the majority of the parcel is likely wetlands. State policies prevent the construction of ponds within wetlands (Waters of the State) so the pond concept is dependent on finding enough upland area onsite that could fit a proposed pond.
4. Prepare conceptual site plan showing the proposed BMP and site improvements. The conceptual design of the Sawmill Creek project will carefully consider tailwater effects related to the Tanger drainage system. The Consultant designed Tanger and can model the original design with different tailwater conditions in order to evaluate potential impacts. Similar tailwater impacts for developments south of Bluffton Parkway will also need to be considered.
5. After the fieldwork related to wetlands determination is complete, the Consultant will analyze detention options and other options to mitigate the undersized highway culverts. The Consultant will provide a conceptual engineering options to the County for review and decisions on how to proceed.
6. Meet with the County to review the conceptual design and gain approval prior to final design and permitting.

TASK 2: Wetland Delineation & Verification

The Consultant will provide the following Natural Resources consulting services through a sub-consultant:

1. Complete a comprehensive delineation of freshwater and saltwater wetlands within the referenced tract. This task will include flagging of wetland boundaries and coordination with survey crews to complete a field survey of the identified wetlands.
2. Upon completion and receipt of a survey plat of the wetlands, the Consultant will prepare and submit the required information to the US Army Corps of Engineers (USACE) and SCDHEC OCRM to obtain verification of the wetland delineation.
3. The Consultant will prepare and submit a request for jurisdictional determination which will include aerial photography depicting approximate wetland locations, USGS topographic maps, soil maps and data sheets representing typical site conditions to USACE.
4. The Consultant will coordinate the jurisdictional determination with the USACE throughout the review process to an initial conclusion. This will include site visits with USACE that are necessary to complete their review. Should revisions to the delineation be required including any additional fieldwork and/or documentation that's not normally required, this time will be billed as a time and expense fee.

TASK 3: Site Surveying

The Consultant will provide the following Surveying services through a sub-consultant:

1. Prepare tree, topographic, boundary and wetland survey for the 9.9 acre property (R600 040 000 0134 0000) and the topography/drainage of the offsite upstream (Bluffton Pkwy) and downstream (HWY 278). The survey will be on the South Carolina State Plane coordinate system and the NAVD88 datum, to match horizontally and vertically with the Beaufort County LiDAR. Matching the LiDAR will allow for easy comparison of surveyed locations to un-surveyed onsite and offsite areas.

TASK 4: Geotechnical Investigation

The Consultant will provide the following Natural Resources consulting services through a sub-consultant:

1. The Consultant will advance two soil test borings within the proposed basin foot print at each site. Each boring will be extended to a depth of fifteen feet below the ground surface, auger refusal, or hole collapse; whichever is shallower. Borings may be Standard Penetration Test (SPT) soil borings, hand auger borings with Dynamic Cone Penetrometer, or some combination of each. Soil samples will be classified in the field at the time of boring according to the USCS by the ASTM Visual-Manual method.
2. Two bulk samples will be obtained from the top five feet within each boring. These bulk samples will be subjected to Standard Proctor Compaction testing to help evaluate the soil suitability for use in an earthen berm.
3. Boring and bulk sample locations and elevations will be estimated from drawings provided by The Consultant and will be measured in the field with Trimble R6 GPS equipment. Northing and easting coordinates and ground surface elevation will be recorded on the log for each boring.
4. The Consultant will evaluate recovered test boring soil samples and bulk samples. They will perform at least ten classification tests (natural moisture content and grain size analysis with hydrometers), 4 Atterberg Limits tests, two Standard Proctor tests, and two Organic Content tests at each site. The results of the laboratory testing will be utilized to help classify recovered soil samples and to prepare grading recommendations.

5. The Consultant will provide a report that includes a summary of the field exploration, laboratory test results, measured groundwater levels, boring logs, site plan, and boring/bulk sample location plan. The report will also include recommendations for the following:
 - a. Groundwater mitigation if the Consultant believes groundwater mitigation will be needed during construction
 - b. Recommendation for site preparation for mass grading.
6. Assumptions/Limitations: Clearing will be needed to access some or all of the test locations. The Consultant will attempt to locate borings to minimize clearing, however, some trees and underbrush will be cut. Beaufort County will be responsible for providing access and clearing permissions to the Consultant.

TASK 5: Civil-Site Engineering

The Consultant will prepare the civil-site engineering design based on the conceptual plan developed with County input, the determined wetland delineation, the geotechnical investigation, and the site surveying. The scope of the design will include:

1. Compile base plan using the survey file provided in AutoCAD format and using the previous Conceptual Engineering Design plan.
2. Design the pond outfall modifications.
3. Locate other site improvements based on preservation of significant trees and limits to wetland impacts.
4. Prepare a stormwater hydrologic & hydraulic model to match the new proposed conditions. The model output will help estimate the expected runoff volume and rate reductions. It is assumed that the County will provide revised sub-basin information from the newly updated SWMP.
5. Prepare a basic water quality model to estimate the expected pollutant removal from the designed regional BMP. The revised water quality model will demonstrate that the proposed design will meet the County's water quality goals.
6. Prepare design plans detailing the civil construction associated with this project. Plans are prepared using AutoCAD software and paper copies are printed on 24" x 36" sheets.

Design drawings will show:

- a. Tree removal and preservation plans
- b. Demolition plans
- c. Staking plans
- d. Sedimentation and soil erosion control plans
- e. Drainage and grading plans
- f. Civil Construction details and specifications

TASK 6: Wetland Permitting

The Consultant will provide the following Natural Resources consulting services through a sub-consultant:

1. The Consultant will create permit drawings suitable for submittal to USACE and OCRM. Coordination will include attendance at team meetings and review of draft plans and permitting drawings. Upon receipt of suitable permit drawings, the Consultant will prepare and submit a Nationwide Permit along with a Critical Area Permit application package to USACE and SCDHEC-OCRM.
2. The Consultant will serve as a liaison between the applicant and the various state and federal regulatory agencies throughout the permit review and decision process to an

initial conclusion by USACE and applicable certification by OCRM. This will include attendance at agency meetings, response to comment or questions, and coordination of additional information as needed.

The tasks and associated fees were estimated based on several assumptions based on prior experience. These assumptions, however, can be affected by sudden policy changes and discretions by regulatory agencies. In some instances, these sudden changes and discretions result in unanticipated actions and requests by the regulatory agencies. Unanticipated actions could include but are not limited to additional field work required by coordination with agencies, additional maps and/or additional research. Upon knowledge of such requests, and prior to undertaking work outside of the scope of the proposed tasks, The Consultant will notify the County.

It was assumed that the wetland impacts will be justified by the proposed frontage road and not by the proposed stormwater BMP. If detailed alternative analyses are needed to justify the road design and location, the County will provide this information or an addendum for additional wetland scientist consulting will be required. If the design and permit of the proposed frontage road is delayed or not following a similar schedule to the proposed BMP, the wetland permitting task will be delayed as well.

TASK 7: Regulatory Permitting

The Consultant will apply for the following regulatory permits needed to construct the proposed pond and associated infrastructure:

- Beaufort County MS4 NPDES Permit
- SCDHEC OCRM Coastal Zone Consistency.
- SCDOT Encroachment Permit for utility improvements (if needed) within highway right-of-way.
- SCDOT Stormwater Permit for SCDOT drainage system outfall modification.
- Beaufort County Community Development Department for coordination on tree removal and site impacts.

The Consultant will prepare permit application packages according to each agency's application instructions. This task includes a single round of minor modifications associated with each agency's comments. A single iteration of comment/modification is typically sufficient for approval. In the event that there are additional comments that are "agency-specific" and not design-related, additional Permitting Consulting budget will be needed. The County is responsible for permit-related fees.

TASK 8: Bidding and Construction Support

The Consultant will provide the following services to support the bidding and construction Phase:

1. Prepare construction quantity takeoff
2. Update the Engineer's Estimate of Probable Construction Costs based on the final construction documents
3. Review front-end bidding and contract documents provided by County staff
4. Attend pre-bid conference
5. Support reviewing bids with County staff
6. Assist in contract negotiations between County and selected Contractor, if requested
7. Support in contract document coordination for execution
8. Attend a pre-construction conference with the Beaufort County and contractor(s).

9. Attend a weekly team coordination meeting with the County and contractor(s).
10. Provide a single review iteration of the supplied shop drawings associated with the construction documents and provide response to the contractor.
11. Visit the project at appropriate intervals during construction to become generally familiar with the progress and quality of the contractors' work and to determine if the work is proceeding in general accordance with the contract documents. It was assumed that The Consultant will not make detailed inspections to provide exhaustive, continuous project review or observation services; however these levels of service can be provided if the project budget allows. The effort assumes 4 hours per week during construction for a 10 month construction schedule.
12. Provide services associated with construction observation on as as-needed basis in order to resolve questions or conflicts during the construction process. (RFI's Field Requests)
13. Perform a final Site Tour for general design compliance.
14. Prepare a punch list of identified site design deficiencies that need to be corrected prior to processing the final pay application for the project.
15. Schedule and attend final inspection with the County.
16. A record drawing survey of the infrastructure will be prepared by the Consultant as part of the project surveying scope as required by regulatory agencies with jurisdiction over the project.
17. Manage construction documentation needed to comply with the EPA 319 Grant closeout requirements.

TASK 9: Post-Construction As-built Surveying

The Consultant will provide the following Surveying services through a sub-consultant:

1. Prepare a post-construction as-built survey of the constructed BMP suitable for NPDES permit closeout. The survey will be on the South Carolina State Plane coordinate system and the NAVD88 datum, to match horizontally and vertically with the Beaufort County LiDAR.

TASK 10: Water Quality Monitoring Collection

The Consultant will provide the following services to support the pre and post construction water quality monitoring:

1. Determine location of field water collection sample at the proposed post-construction BMP outfall location. The location will be determined based on site visits of the property in current conditions on a couple of occasions to determine existing flow paths and areas that are most likely to contain water during routine visits throughout the year. The location will be reviewed with the County and the USCB Water Quality Lab for final approval. GPS coordinates will be provided to USCB and Beaufort County for use in mapping.
2. Field collect water samples at the determined location, every other week for one year before construction and for one year after construction, regardless of rainfall conditions. This will result in 26 pre-construction samples and 26 post-construction samples.
3. It is assumed that the USCB lab will provide gloves and sample bottles for use by the Consultant. USCB will also purchase the collection pole and will be reimbursed by the Consultant. The Consultant will provide the cooler used to store the sample.
4. The Consultant will record weather and tidal conditions at the time of sampling per the Beaufort County monitoring SOPs.
5. It was assumed that samples will be collected on Wednesdays and delivered to the USCB lab no later than 2:00pm.

6. It was assumed that the Consultant will collect one sample for use by the County and USCB to test for their pollutant of choice.
7. The fee assumed 5 hours of “Principal” time and 30 hours of “Project Manager” time to manage the two-year effort.
8. The fee assumed 3 hours per week of a field technician time to drive to the site, collect the sample, deliver it to the downtown Beaufort campus, and return to the Consultant office. All mileage expenses are included in this fee. This results in a \$330 charge for each sample collection and delivery.

If the technician arrives at the site and is unable to collect a sample that week due to dry conditions, the effort is assumed to be only 1 hour of time and the County will be billed \$110 for that bi-weekly period.

ARTICLE 2 LIABILITY

The County and Consultant shall not be responsible to each other for any incidental, indirect or consequential damages incurred by either Consultant or County or for which either party may be liable to any third party which damages have been or are occasioned by services performed or reports prepared or other work performed hereunder.

ARTICLE 3 INDEMNIFICATION AND HOLD HARMLESS

The Consultant does hereby agree to indemnify and save harmless the County, its officers, agents and employees from and against any and all liability, claims, demands, damages, fines, fees, expenses, penalties, suits, proceedings, actions and cost of actions, including attorney's fees for trial and on appeal of any kind and nature to the extent arising or growing out of or in any way connected with the negligent performance of the Contract, by Consultant, its agents, servants or employees.

ARTICLE 4 ASSIGNMENT

Consultant shall not assign any rights or duties of the professional services contract without the expressed written consent of the County. Any assignment or subletting without the written consent of County shall be void and this Contract shall terminate at the option of the County.

ARTICLE 5 PERFORMANCE PERIOD/TERM

The term of this Contract shall be for a period of (determined by negotiated schedule of work) starting on August 29, 2017 and ending on July 31, 2019. At the County's option, this contract may be extended to July 31, 2022, not to exceed five (5) years total.

ARTICLE 6 COMPENSATION

Total annual compensation is not to exceed Two Hundred and Two Thousand dollars (\$202,000), billed at unit rates provided in the SOQ and invoiced monthly.

FEES: The below fees are based on prompt payment of invoices and on the orderly and continuous progress of the Project.

Project 1 – Brewer Memorial Park

Service Description		
Task 1: Conceptual Engineering	Hourly Not To Exceed	\$12,000.00
Task 2: Wetland Delineation & Verification	Hourly Not To Exceed	\$2,500.00
Task 3: Site Surveying	Hourly Not To Exceed	\$3,000.00
Task 4: Geotechnical Investigation	Hourly Not To Exceed	\$8,300.00
Task 5: Civil Site Engineering	Hourly Not To Exceed	\$11,000.00
Task 6: Wetland Permitting	Hourly Not To Exceed	\$8,500.00
Task 7: Regulatory Permitting	Hourly Not To Exceed	\$10,000.00
Task 8: Bidding and Construction Support	Hourly Not To Exceed	\$8,000.00
Task 9: Post Construction Asbuilt Surveying	Hourly Not To Exceed	\$1,500.00
Task 10: Water Quality Monitoring Collection	Hourly Not To Exceed	\$24,000.00
Reimbursable Expenses	As Incurred	\$1,200.00
	Total	\$90,000.00

Project 2 – Sawmill Creek

Service Description		
Task 1: Conceptual Engineering	Hourly Not To Exceed	\$15,500.00
Task 2: Wetland Delineation & Verification	Hourly Not To Exceed	\$3,600.00
Task 3: Site Surveying	Hourly Not To Exceed	\$13,000.00
Task 4: Geotechnical Investigation	Hourly Not To Exceed	\$8,300.00
Task 5: Civil Site Engineering	Hourly Not To Exceed	\$13,000.00
Task 6: Wetland Permitting	Hourly Not To Exceed	\$10,500.00

Task 7: Regulatory Permitting	Hourly Not To Exceed	\$10,000.00
Task 8: Bidding and Construction Support	Hourly Not To Exceed	\$8,500.00
Task 9: Post Construction Asbuilt Surveying	Hourly Not To Exceed	\$3,600.00
Task 10: Water Quality Monitoring Collection	Hourly Not To Exceed	\$24,000.00
Reimbursable Expenses	As Incurred	\$2,000.00
	Total	\$112,000.00

ARTICLE 7 INSURANCE/PERFORMANCE BOND

Insurance

Consultant does hereby covenant, agree and hereby represent to the County that it has obtained workmen's compensation insurance, general liability and automobile liability insurance, as well as providing coverage against potential liability arising from and in any manner relating to the Consultant's use or occupation of the premises during the course of performing the contracted services, all in accordance with and as **specified** in the County's RFP Number 071917,. **Additionally, the Consultant agrees to list the County as 'additional insured' on Certificates of Insurance related to the execution of this Contract.**

Performance Bond

No performance bond is required for this contract.

ARTICLE 8 DEFAULT/TERMINATION

Default

In the event of default or breach of any condition of this Contract resulting in litigation, the prevailing party would be entitled to reasonable attorneys' fees fixed by the Court. The remedies herein given to County under Default shall be cumulative, and the exercise of any one remedy by the County shall not be to the exclusion of any other remedy.

Termination

This contract may be terminated by the County,' 'for convenience' 'for cause,' or by 'by mutual consent' as described in RFP number 071917.

1. Termination for Convenience

The County may, without cause, terminate this contract in whole or in part at any time for its convenience. In such instance, an adjustment shall be made to the Consultant, for the reasonable costs of the work performed through the date of termination. Termination costs do

not include lost profits, consequential damages, delay damages, unabsorbed or under absorbed overhead of the Consultant or its sub-consultants, and/or failure of Consultant to include termination for convenience clause into its subcontracts and material purchase orders shall not expose the County to liability for lost profits in conjunction with a termination for convenience settlement or equitable adjustment. Consultant expressly waives any damages, delay damages, or indirect costs which may arise from County's election to terminate this contract in whole or in part for its convenience.

2. Termination For Cause

Termination by the County for cause, default, or negligence on the part of the Consultant shall be excluded from the foregoing provisions. Termination costs, if any, shall not apply. The ten (10) days advance notice requirement is waived, and the default provision in this bid shall apply.

Reasons for Termination for Cause shall include but not limited to:

- a) Default as defined above,
- b) failing to make satisfactory progress in the prosecution of the contract
- c) endangering the performance of this contract
- d) criminal activity or misconduct,
- e) work that is deemed sub-standard by the County Representative.

3. Termination by Mutual Consent

Either party may terminate this Contract by mutual consent with written notice attesting and agreeing to a termination by mutual consent by either party. Upon such termination, the County shall pay the Consultant for all services performed hereunder up through the date of such termination. Termination by mutual consent may entitle the Consultant to reasonable costs allocable to the contract for work or costs incurred by the Consultant up to the date of termination. The Consultant must not be paid compensation as a result of a termination by mutual consent that exceeds the amount encumbered to pay for work to be performed under the contract.

ARTICLE 9 RESPONSIBILITY

The County will be responsible to provide the Consultant reasonable access to County locations when necessary, ensure cooperation of County employees in activities reasonable and appropriate under the project, and obtain authorization for access to third party sites, if required.

ARTICLE 10 FORCE MAJEURE

Should performance of Consultant services be materially affected by causes beyond its reasonable control, a *Force Majeure* results. *Force Majeure* includes, but is not restricted to:

- a) acts of God,
- b) acts of a legislative,

- c) administrative or judicial entity,
- d) acts of Consultants (other than sub-consultants of Consultant),
- e) fires,
- f) floods,
- g) labor disturbances,
- h) civil unrest
- i) incorrect/inferior parts or materials
- j) terrorism
- k) unusually severe weather.

Consultant will be granted a time extension and the parties will negotiate an adjustment to the fee, where appropriate, based upon the effect of the Force Majeure upon Consultant's performance.

ARTICLE 11 SEVERABILITY

Every term or provision of this Contract is severable from others. Notwithstanding any possible future finding by a duly constituted authority that a particular term or provision is invalid, void, or unenforceable, this Contract has been made with the clear intention that the validity and enforceability of the remaining parts, terms and provisions shall not be affected thereby.

ARTICLE 12 INDEPENDENT CONSULTANT

The Consultant shall be fully independent in performing the services and shall not act as an agent or employee of the County. As such, the Consultant shall be solely responsible for its employees, sub-consultants, and agents and for their compensation, benefits, contributions and taxes, if any.

ARTICLE 13 NOTICE

The Consultant and the County shall notify each other of service of any notice of violation of any law, regulation, permit or license relating to the services; initiation of any proceedings to revoke any permits or licenses which relate to such services; revocation of any permits, licenses or other governmental authorizations relating to such services; or commencement of any litigation that could affect such services. Such notice shall be delivered by U.S. mail with proper postage affixed thereto and addressed as follows:

County:	Beaufort County Administrator P. O. Drawer 1228 Beaufort, SC 29901-1228
	Beaufort County Attn: Beaufort County Purchasing Director P. O. Drawer 1228

Beaufort, SC 29901-1228

Consultant: Ward Edwards, Inc.
119 Palmetto Way, Suite C
PO Box 381
Bluffton, SC 29910

DRAFT

ARTICLE 14 CHANGE ORDERS

Change order(s) are applicable under this contract. Change order(s) initiated by the County must be delivered to the Consultant for review and approval. Change order(s) initiated by the Consultant must be delivered to the County for review and approval. The Consultant and County must execute the Change Order(s) prior to work being performed.

ARTICLE 15 AUDITING

The Consultant shall make available to the County if requested, true and complete records, which support billing statements, reports, performance indices, and all other related documentation. The County's authorized representatives shall have access during reasonable hours to all records, which are deemed appropriate to auditing billing statements, reports, performance indices, and all other related documentation. The Consultant agrees that it will keep and preserve for at least seven years all documents related to the Contract, which are routinely prepared, collected or compiled by the Consultant during the performance of this contract.

The County's Auditor and the Auditor's authorized representatives shall have the right at any time to audit all of the related documentation. The Consultant shall make all documentation available for examination at the Auditor's request at either the Auditor or Consultant's office and without expense to the County.

ARTICLE 16 GRATUITIES

The right of the Consultant to proceed or otherwise perform this Contract, and this Contract may be terminated if the County Manager and/or the County Contracting Manager determine, in their sole discretion, that the Consultant or any officer, employee, agent, or other representative whatsoever, of the Consultant offered or gave a gift or hospitality to a County officer, employee, agent or Consultant for the purpose of influencing any decision to grant a County Contract or to obtain favorable treatment under any County Contract.

The terms "hospitality" and "gift" include, but are not limited to, any payment, subscription, advance, forbearance, acceptance, rendering or deposit of money, services, or items of value given or offered, including but not limited to food, lodging, transportation, recreation or entertainment, token or award.

ARTICLE 17 INVOICES

All invoices for work done under this contract should be directed to the County Representative, Eric W. Larson, PE, CPSWQ, AICP, CFM – Director of Environmental Engineering & Land Management, located at:

Beaufort County Stormwater Utility
120 Shanklin Road
Beaufort, SC 29906

Invoices should include:

- a) Period of time covered by the invoice
- b) Detail of work performed
- c) Purchase order and Contract Number
- d) Tax Identification Number

ARTICLE 18 Purchase Orders

The County will issue Purchase Orders from properly executed requisitions. The County shall not be responsible for invoices of \$500 or more that do not have a purchase order covering them.

ARTICLE 19 ORDER OF DOCUMENTS

The following are incorporated into and made a part of this contract by reference:

- a) Request for Proposals Number 071917
- b) General Terms and Conditions between County and Consultant.
- c) Insurance Requirements
- d) XXXXXXXXXX SOQ Submission to RFP Number 071917
- e) Notice of Award Letter dated XXXXXX.
- f) Recommendation Letter dated XXXXXX

SIGNATURE PAGE

This Contract with the above Articles constitutes the entire contract between the parties hereto. No representations, warranties or promises pertaining to this Contract have been made or shall be binding upon any of the parties, except as expressly stated herein.

This Contract shall be construed in accordance and governed by the laws of the State of South Carolina.

IN WITNESS WHEREOF, the parties hereto have executed this Contract on the day and year first above written.

WITNESSES:

BEAUFORT COUNTY, a political sub-division of the State of South Carolina

By: _____
Name: Gary Kubic
Title: County Administrator
Address: P.O. Drawer 1228
Beaufort, SC 29901-1228
Phone: (843) 255-2026
Fax: (843) 255-9403
Date: _____

WITNESSES:

CONSULTANT NAME

By: _____
Name: Allen Ward
Title: President/Principal-in-Charge
Address: 119 Palmetto Way, Suite C
PO Box 381
Bluffton, SC 29910
Phone: 843-837-5250
Fax: 843-837-2558
Tax ID Number: 57-0888952
Date: _____

AN ORDINANCE OF BEAUFORT COUNTY COUNCIL CREATING A SPECIAL TAX ASSESSMENT FOR REHABILITATED HISTORIC PROPERTIES IN THE GEOGRAPHICAL BOUNDARIES KNOWN AS DAUFUSKIE ISLAND

WHEREAS, Section 4-9-195 of the South Carolina Code of Laws, as amended (“S.C. Code”), provides that counties may by ordinance grant special property tax assessments to real property which qualifies as “rehabilitated historic property”; and

WHEREAS, the geographic area known as Daufuskie Island, in the County of Beaufort, South Carolina (“Daufuskie”) contains a substantial amount of historic property, the preservation of which is beneficial for the economic development of the County and for its citizens; and

WHEREAS, Beaufort County Council (the “County Council”) has determined that it is in the best interests of the County and its citizens to allow for a special property tax assessment available and as set forth in S.C. Code §4-9-195 to qualifying properties located within the geographic boundaries of Daufuskie; and

WHEREAS, the County Council finds that providing for this special property tax assessment will (1) encourage the restoration of historic properties, (2) promote community development and redevelopment, (3) encourage sound community planning, and (4) promote the general health, safety, and welfare of the community; and

WHEREAS, pursuant to S.C. Code §4-9-195, the County must specify the minimum investment threshold and the number of years in which the special assessment shall apply, and in the absence of a board of architectural review the County may name an appropriate reviewing authority to consider proposed rehabilitation plans and actual rehabilitation work.

NOW, THEREFORE, BE IT ORDAINED by Beaufort County Council that Chapter 66, Article III of the Beaufort County Code of Ordinances is hereby amended by inserting the following into Beaufort County Code of Ordinances Chapter 66, Division 4:

Division 4. Special Assessment Ratio for Rehabilitated Historic Properties

Section 66-155. Special tax assessment created –Daufuskie Island.

A special tax assessment is created for eligible rehabilitated historic properties located within the geographic boundaries of Daufuskie Island for 10 years equal to the appraised value of the property at the time of preliminary certification.

Section 66-156. Purpose.

It is the purpose of this division to:

- (a) Encourage the restoration of historic properties;
- (b) Promote community development and redevelopment;
- (c) Encourage sound community planning; and
- (d) Promote the general health, safety, and welfare of the community.

Section 66-157. Eligible properties.

- (a) *Certification.* In order to be eligible for the special tax assessment, historic properties must receive preliminary and final certification.

- (1) To receive preliminary certification a property must meet the following conditions:

- a. The property has received historic designation from the Daufuskie Island Council and in accordance with the Daufuskie Island Plan or is listed on the Beaufort County Above Ground Historic Resources Survey completed in 1998.
- b. The proposed rehabilitation work receives approval from the Beaufort County Historic Preservation Review Board (HPRB) under Sec. 5.10 and Sec. 7.2.120 of the Beaufort County Community Development Code (CDC).; and
- c. Be a project that commences on or after the date of the adoption of this ordinance. Preliminary certification must be received prior to beginning work.

- (2) To receive final certification, a property must have met the following conditions:

- a. The property has received preliminary certification.
- b. The minimum expenditures for rehabilitation were incurred and paid.
- c. The completed rehabilitation receives approval from the Beaufort County Planning Director, or designee, as being consistent with the plans approved by the HPRB as part of preliminary certification.

- (b) *Historic designation.* As used in this section, "Historic Designation" means:

- (1) The structure is at least 50 years old and is located in the geographic area known as Daufuskie Island;
- (2) The structure is listed on the National Register of Historic Places; or
- (3) The structure is listed on the "1998 Beaufort County Above Ground Historic Sites Survey."

Section 66-158. Eligible rehabilitation.

- (a) Standards for rehabilitation work. To be eligible for the special tax assessment, historic rehabilitations must be appropriate for the historic building and the geographic district. This is achieved through adherence to the standards set forth in the Community Development Code and, if required, approval of a Certificate of Appropriateness in accordance with Sec. 7.2.120 of the CDC.
- (b) Work to be reviewed. The following work will be reviewed according to the standards set forth above:
 - (1) Repairs to the exterior of the designated building.
 - (2) Alterations to the exterior of the designated building.
 - (3) New construction on the property on which the building is located.
 - (4) Alterations to interior primary public spaces.
 - (5) Any remaining work where the expenditures for such work are being used to satisfy the minimum expenditures for rehabilitation.
- (c) Minimum expenditures for rehabilitation means the owner rehabilitates the building, with expenditures for rehabilitation exceeding 75 percent of the fair market value of the building. Fair market value means the appraised value as certified by a real estate appraiser licensed by the State of South Carolina, the sales price as delineated in a bona fide contract of sale within 12 months of the time it is submitted, or the most recent appraised value published by the Beaufort County Tax Assessor.
- (d) Expenditures for rehabilitation means the actual cost of rehabilitation relating to one or more of the following:
 - (1) Improvements located on or within the historic building as designated.
 - (2) Improvements outside of but directly attached to the historic building which are necessary to make the building fully useable (such as vertical circulation) but shall not include rentable/habitable floorspace attributable to new construction.
 - (3) Architectural and engineering services attributable to the design of the improvements.
 - (4) Costs necessary to maintain the historic character or integrity of the building.
- (e) Scope. The special tax assessment may apply to the following:
 - (1) Structure(s) rehabilitated.
 - (2) Real property on which the building is located.

- (f) Time limits. To be eligible for the special tax assessment, rehabilitation must be completed within two years of the preliminary certification date. If the project is not complete after two years, but the minimum expenditures for rehabilitation have been incurred, the property continues to receive the special assessment until the project is completed or until the end of the special assessment period, whichever shall first occur.

Section 66-159. Process.

- (a) Fee required. A fee as set out in the County of Beaufort's Fee Schedule, as appropriate, shall be required for final certification for each application.
- (b) Plan required. Owners of property seeking approval of rehabilitation work must submit an application for a Certificate of Appropriateness, as required under Sec. 7.2.120 of the CDC, with supporting documentation and application fee(s) prior to beginning work.
- (c) Preliminary certification. Upon receipt of the completed application, the proposal shall be placed on the next available agenda of the Beaufort County Historic Preservation Review Board (HPRB). After the HPRB makes its' determination(s), the owner shall be notified in writing. Upon receipt of this determination the owner may:
- (1) If the application is approved, apply for building permits to begin rehabilitation;
 - (2) If the application is not approved, may revise such application in accordance with comments provided by the HPRB.
- (d) Substantive changes. Once preliminary certification is granted to an application, substantive changes must be approved by the HPRB. Unapproved substantive changes are conducted at the risk of the property owner and may disqualify the project from eligibility. Additional expenditures will not qualify the project for an extension on the special assessment.
- (e) Final certification. Upon completion of the project, the project must receive final certification in order to be eligible for the special assessment. The Beaufort County Planning Director and Director of Building Codes, or designees, will inspect completed projects to determine if the work is consistent with the approval granted by the HPRB. Final certification will be granted when verification is made that expenditures have been made in accordance with Section 66-158(c) above. Upon receiving final certification, the property will be assessed for the remainder of the special assessment period on the fair market value of the

property at the time the preliminary certification was made or the final certification was made, whichever occurred earlier.

(f) *Additional work.* For the remainder of the special assessment period after final certification, the property owner shall notify the Beaufort County Community Development Department of any additional work, other than ordinary maintenance. The HPRB will review the work at a regularly scheduled hearing and determine whether the overall project is consistent with the standards for rehabilitation. If the additional work is found to be inconsistent, the property owner may withdraw his request and cancel or revise the proposed additional work.

(g) *Decertification.* When the property has received final certification and has been assessed as rehabilitated historic property, it remains so certified and must be granted the special assessment until the property becomes disqualified by any one of the following:

- (1) Written notice from the owner to the Beaufort County Assessor's Office requesting removal of the preferential assessment; or
- (2) Rescission of the approval of rehabilitation by the HPRB because of alterations or renovation by the owner or the owner's estate, which causes the property to no longer possess the qualities and features which made it eligible for final certification.

Notification of any change affecting eligibility must be given immediately to the Beaufort County Assessor, Auditor, and Treasurer.

(h) *Notification.* The Beaufort County Community Development Department shall, upon final certification of a property, notify the Beaufort County Assessor, Auditor and Treasurer that such property has been duly certified and is eligible for the special tax assessment.

(i) *Date effective.* If an application for preliminary or final certification is filed by May 1 or the preliminary or final certification is approved by August 1, the special assessment authorized herein is effective for that year. Otherwise, it is effective beginning with the following year.

The special assessment only begins in the current or future tax years as provided for in this section. In no instance may the special assessment be applied retroactively.

- (j) Application. Once a property has received final certification, the owner of the property shall make application to the Beaufort County Assessor's Office for the special assessment provided for herein.

SECTIONS 66-160. Reserved.

This ordinance shall become effective immediately upon adoption.

DONE, this ____ of _____, 2017.

COUNTY COUNCIL OF BEAUFORT COUNTY

By: _____
D. Paul Sommerville, Chairman

APPROVED AS TO FORM:

Thomas J. Keaveny, II, Esquire
Beaufort County Attorney

ATTEST:

Ashley M. Bennett, Clerk to Council

First Reading: May 22, 2017

Second Reading:

Public Hearing:

Third and Final Reading:



MEMORANDUM

To: Natural Resource Committee of Beaufort County Council

From: Anthony Criscitiello, Beaufort County Community Development Director

Subject: Amendment to the Beaufort County Community Development Code to Permit Community Residences as a Special Use in the LICP District with Conditions

Date: August 16, 2017

PLANNING COMMISSION RECOMMENDATION from the excerpt of its July 6, 2017, draft minutes:

Mr. Criscitiello briefed the Commission on the text amendments. The Planning staff asked the Lady's Island Community Preservation (LICP) Committee for their recommendation on the text amendments. Since the text amendments were a change to the intent (see Section A.2.40 of the Community Development Code) of the LICP District, the LICP Committee felt making the use a Special Use would be acceptable since additional review by the Zoning Board of Appeals (ZBOA) would be required. Mr. Criscitiello then explained the ZBOA process. The Housing Chapter of the Comprehensive Plan notes that more infill development is needed for elderly residents, especially assisted living and continuing care facilities in urbanized areas of the County. The proposed 9.5-acre assisted living project meets a community need. Staff established additional conditions for the Special Use to include: a minimum site area of 5.0 acres, a maximum height of 35 feet, adjoining buffers and setbacks of 50 feet for LICP Districts and 20 feet for all other districts, 50 feet for local/collector; and Community Residences being limited to sites within one and one-half mile from the centerline of the intersection of Sea Island Parkway (US 21) and Sam's Point Road/Lady's Island Drive. The Metropolitan Planning Commission forwarded no comment since there was not a quorum.

Applicant's Comments:

1. Mr. Greg Baisch with Ward Edwards Engineering noted that he and the applicant met several times with staff and the LICP Committee. Generally, the LICP Committee accepted the revisions of the project after the applicant addressed the site area and setbacks in order to be sensitive of the area. The staff's addition as a special use and additional requirements would open other properties to the use and allow the public to see site-specific details as a Special Use. *(Commission discussion included noting that this is the first time the public hears about this proposal and asking for additional information from the applicant; concerns with temporary shelters being included in the text amendment; Mr. Criscitiello noting that the staff added the use to accommodate the community; noting that County-wide temporary shelters are kept private to provide privacy to individuals in the shelter; Mr. Criscitiello noted that the staff must have the ability to address such uses across the population spectrum; clarification on the text amendment covering the LICP District, and reiterating that the amendment was not site/parcel specific.)*
2. Mr. Eric Sauers, partner with CR Senior Living LLC, stated that his project was a 60,000 square foot/66-room facility, with 60-65 employees, about 20-25 employees per shift. His company has 3 sites in Greenville, SC, that have been in operation for 4 years; there is one near Spartanburg, SC, and another at Little River, SC. The site (on Lady's Island) is large enough for nice landscaping appeal;

he anticipates 80-90 residents. He stated he would place his mother in the facility. He said the bathrooms are spa-like, and there are interior lights with an atrium in the center of the facility. The facility is large enough to support this smaller market. He believes Beaufort is a little gem. He believes his company will add to the community.

3. Mr. Baisch noted the start of the parcel is where Dore Drive connects Lady's Island Drive to Meridian Road. The parcel has frontage off Lady's Island Drive and Meridian Road. The lot could accommodate 27 homes, the proposed use (as an assisted living facility) would decrease the traffic impact. There is an existing dirt road that the property owner will improve, but the majority of the traffic would be centered off Lady's Island Drive. There are sidewalks on Lady's Island Drive for people to interact with the property. The building will be single-storied. The current zoning only allows the use in a TCP (Traditional Community Plan). The property owner considered annexing into the City of Beaufort but the connection with other parcels did not occur. *(Commission discussion included noting that the property involves heirs property, noting that the area has transportation issues along Sea Island Parkway, concern with property egress/ingress, concern with how this property interacts with the proposed Lady's Island Plan; noting the intent to maintain Polk Road and giving easement to adjoining property owners, and querying the definition of a buffer for public information.)* Mr. Baisch noted the undisturbed buffers were to the east and north on the property--all other buffers must be rebuilt since the majority of the site had been timbered by the former owner. There are no wetlands on the property per the National Wetland Inventory map. He noted that stormwater issues were addressed. He stated that the buffers and setbacks are such that the building can be 50 feet off the road. *(Mr. Criscitiello noted that the Staff Review Team (SRT) would deal with details of the development when the project is submitted for permitting.)* The building will have a Beaufort facade/coastal look.

Public Comment: None were received.

Mr. Criscitiello noted that posting and review will occur at the staff level with the SRT. He explained the Special Use process involving the Zoning Board of Appeals and its level of review.

Further discussion included concern with the grouping of uses such as dorms and convents, along with assisted living facilities; and supporting the additional standards that added another layer of review.

Motion: Mr. Jason Hinchler made a motion, and Ms. Carolyn Fermin seconded the motion, **to forward to County Council with a recommendation of approval of the Text Amendments to the Community Development Code, Division A.2 (Lady's Island Community Preservation District--LICP) of Appendix A, Community Preservation District: Table A.2.40.A (Land Uses) and Section A.2.50 (Conditional and Special Use Standards) to permit Community Residences (e.g. dorms, convents, assisted living facilities, temporary shelters) as a Special Use subject to additional standards.** No further discussion occurred. The motion **carried (FOR: Chmelik, Fermin, Hinchler, Mitchell, Pappas, Semmler, and Stewart; ABSENT: Fireall and Walsnovich).**

STAFF REPORT

A. BACKGROUND:

Case No. ZTA 2017-07

Applicant: Jade Eastridge

Proposed Text Change: Amendment to Permit Community Residences as a “Special Use” in the LICP District with Conditions

B. SUMMARY OF REQUEST:

The proposed amendment would change the Use Table for the Lady’s Island Community Preservation (LICP) district to permit “Community Residence” (e.g. dorms, convents, assisted living, and temporary shelters) as a Special Use. This use is currently only allowed in the LICP district if part of a larger Traditional Community Plan (TCP). The Special Use designation means that this use could be developed as a stand-alone project in the LICP district if approved by the Zoning Board of Appeals through a public hearing process. The applicant is also proposing the following additional standards apply to this use:

1. Minimum Site Area: 5.0 acres
2. Maximum Height: 35 feet
3. Adjoining Buffers: LICP = 50 ft., All other districts = 20 ft., Local/collector roads = 50 ft.
4. Adjoining Setbacks: LICP = 50 ft., All other districts = 20 ft., Local/collector roads = 50 ft.
5. Community Residences are limited to sites within one and one-half mile from the centerline of the intersection of Sea Island Parkway (US 21) and Sams Point Rd./Lady’s Island Dr.

C. ANALYSIS:

Sec. 7.7.30(C). Code Text Amendment Review Standards. The advisability of amending the text of this Development Code is a matter committed to the legislative discretion of the County Council and is not controlled by any one factor. In determining whether to adopt or deny the proposed text amendment, the County Council shall weigh the relevance of and consider whether, and the extent to which, the proposed amendment:

1. Is consistent with the goals, objectives, and policies of the Comprehensive Plan;

The proposed amendment is consistent with one of the goals of the Comprehensive Plan to ensure a variety of housing types in the County to accommodate the full range of income, age, cultural groups, disabilities and special needs in the community. This amendment would make more sites available on Lady’s Island for elderly residents in needs of assisted living facilities.

2. Is not in conflict with any provision of this Development Code or the Code of Ordinances;

The proposed change does not conflict with other provisions of the Development Code or Code of Ordinances.

3. Is required by changed conditions;

(Not Applicable)

4. Addresses a demonstrated community need;

The Housing Chapter of the Comprehensive Plan notes that more infill development is needed for elderly residents, especially assisted living and continuing care facilities, in urbanized areas of the County. This amendment would help address this need by allowing these facilities as a Special Use within a 1 ½-mile radius of the intersection of Sea Island Parkway (US 21) and Sams Point Rd./Lady’s Island Dr., near grocery stores, pharmacies, medical and dental offices, banks, restaurants, and churches.

5. Is consistent with the purpose and intent of the zones in this Development Code, or would improve compatibility among uses and ensure efficient development within the County;

This amendment would promote these facilities in residential areas of Lady's Island close to the commercial core, while requiring large buffers from adjoining residential development, a minimum site area of five acres, height restrictions, and special use review by the Zoning Board of Appeals to mitigate incompatibilities.

6. Would result in a logical and orderly development pattern; and

See responses to Items 4 and 5.

7. Would not result in adverse impacts on the natural environment, including but not limited to water, air, noise, stormwater management, wildlife, vegetation, wetlands, and the natural functioning of the environment.

The proposed amendment does not affect any environmental regulations contained in the Code.

D. STAFF RECOMMENDATION:

After review of the standards set forth in Section 7.7.30(C) of the Community Development Code, staff recommends Approval of the proposed amendment:

PROPOSED AMENDMENT (new language underscored)

Table A.2.40.A: Lady's Island Community Preservation Land Uses

Land Use	Use Definition	Use Permission
Residential		
Community Residence (dorms, convents, assisted living, temporary shelters)	See definition in Article 8, Table 3.1.70	S

Sec. A.2.50 Conditional and Special Use Standards

L. Community Residence not part of a Traditional Community Plan

1. Minimum Site Area: 5.0 acres
2. Maximum Height: 35 feet
3. Adjoining Buffers: LICP = 50 ft., All other districts = 20 ft., Road ROWs = 50 ft.
4. Adjoining Setbacks: LICP = 50 ft., All other districts = 20 ft., Road ROWs = 50 ft.
5. Community Residences are limited to sites within one and one-half mile from the centerline of the intersection of Sea Island Parkway (US 21) and Sams Point Rd./Lady's Island Dr.

**E. LADY’S ISLAND COMMUNITY PRESERVATION COMMITTEE
RECOMMENDATION:**

At the Lady's Island Community Preservation Committee meeting held on June 5th, a request for a text change to the Lady’s Island Community Preservation (LICP) District section of the Beaufort County Community Development Code for a 9.5 acre parcel of land was made by RE Capital. The intention of RE capital is to construct a 66 bed assisted living facility near the corner of Sea Island Parkway and Meridian Road. Delores Frazier of the Beaufort County planning staff said that the CP Committee could consider two options for the proposed text amendment: either allow the facility as a “Conditional Use” in the LICP subject to specific requirements (e.g. minimum site area, buffers, setbacks, height restrictions and distance from the intersection of Lady’s Island Drive and Sea Island Parkway), or a “Special Use” that would add an additional notification and public hearing process. Following discussion, the LICPC voted unanimously to recommend that the project move forward as a text amendment to allow it as a “Special Use.” That process will involve notification to nearby property owners, a public review, and a Design Review Board review, before final approval or rejection by the Beaufort County Zoning Board of Appeals.

F. METROPOLITAN PLANNING COMMISSION RECOMMENDATION: The Metropolitan Planning Commission met on June 19, 2017. Commissioners in attendance were Robert Semmler, Caroline Fermin, and Bill Harris. The Commissioners heard a presentation from Mr. Anthony Criscitiello, County Planning Director. There being a lack of quorum, no recommendation was provided by the Commission.

ATTACHMENTS:

- Copy of application for Code Text Amendment
- Map of Lady’s Island
- LICP Land Use Table

BEAUFORT COUNTY, SOUTH CAROLINA
PROPOSED COMMUNITY DEVELOPMENT CODE (CDC)
ZONING MAP OR TEXT AMENDMENT / PUD MASTER PLAN CHANGE APPLICATION

TO: Beaufort County Council

The undersigned hereby respectfully requests that the Beaufort County Zoning/Development Standards Ordinance (ZDSO) be amended as described below:

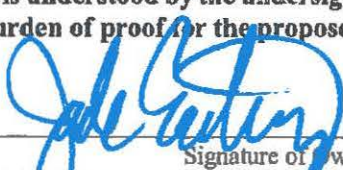

1. This is a request for a change in the (check as appropriate): ☐ PUD Master Plan Change
☐ Zoning Map Designation/Rezoning ☒ Community Development Code Text
2. Give exact information to locate the property for which you propose a change: (N/A: LICP)
Tax District Number: _____, Tax Map Number: _____, Parcel Number(s): _____
Size of subject property: _____ Square Feet / Acres (circle one)
Location: _____
3. How is this property presently zoned? (Check as appropriate)

<input type="checkbox"/> T4NC Neighborhood Center	<input type="checkbox"/> T2RC Rural Center	<input type="checkbox"/> C3 Neighborhood Mixed Use
<input type="checkbox"/> T4HC Hamlet Center	<input type="checkbox"/> T2RN Rural Neighborhood	<input type="checkbox"/> C4 Community Center Mixed Use
<input type="checkbox"/> T4HCO Hamlet Center	<input type="checkbox"/> T2RNO Rural Neighborhood Open	<input type="checkbox"/> C5 Regional Center Mixed Use
<input type="checkbox"/> T4VC Village Center	<input type="checkbox"/> T2R Rural	<input type="checkbox"/> S1 Industrial
<input type="checkbox"/> T3N Neighborhood	<input type="checkbox"/> T1 Natural Preserve	<input type="checkbox"/> Planned Unit Development/PUD
<input type="checkbox"/> T3HN Hamlet Neighborhood	<input checked="" type="checkbox"/> Community Preservation	(name) _____
<input type="checkbox"/> T3E Edge	(specify) <u>Lady's Island</u>	
4. What new zoning do you propose for this property? N/A - Text Amendment
(Under Item 9 explain the reason(s) for your rezoning request.)
5. Do you own all of the property proposed for this zoning change? ☐ Yes ☒ No
Only property owners or their authorized representative/agent can sign this application. If there are multiple owners, each property owner must sign an individual application and all applications must be submitted simultaneously. If a business entity is the owner, the authorized representative/agent of the business must attach: 1- a copy of the power of attorney that gives him the authority to sign for the business, and 2- a copy of the articles of incorporation that lists the names of all the owners of the business.
6. If this request involves a proposed change in the Community Development Code text, the section(s) affected are: Table A3.4.0A and Section A.2.50
(Under Item 9 explain the proposed text change and reasons for the change.)
7. Is this property subject to an Overlay District? Check those which may apply: N/A

<input type="checkbox"/> MCAS-AO Airport Overlay District/MCAS	<input type="checkbox"/> MD Military Overlay District
<input type="checkbox"/> BC-AO Airport Overlay District/Beaufort County	<input type="checkbox"/> RQ River Quality Overlay District
<input type="checkbox"/> CPO Cultural Protection	<input type="checkbox"/> TDR Transfer of Development Rights
<input type="checkbox"/> CFV Commercial Fishing Village	
8. The following sections of the Community Development Code (CDC) (see attached sheets) should be addressed by the applicant and attached to this application form:
 - a. Division 7.3.20 and 7.3.30, Comprehensive Plan Amendments and Text Amendments.
 - b. Division 7.3.40, Zoning map amendments (rezoning).
 - c. Division 1.6.60, Planned Unit Developments (PUDs) Approved Prior to Dec. 8, 2014
 - d. Division 6.3, Traffic Impact Analysis (for PUDs)

9. Explanation (continue on separate sheet if needed): Please see attachment.

It is understood by the undersigned that while this application will be carefully reviewed and considered, the burden of proof for the proposed amendment rests with the owner.

 6-6-17 
Signature of Owner (see Item 5 on page 1 of 1) Date
Printed Name: KR SENIOR LIVING, LLC Telephone Number: 980-201-3348
Address: 2410 DUNMONT STREET, CHARLOTTE, NC, 28203
Email: JEASTRIDGE@CARROLLINVEST.COM
Agent (Name/Address/Phone/email): JAE EASTRIDGE / 704-780-7864
JEASTRIDGE@CARROLLINVEST.COM

UPON RECEIPT OF APPLICATIONS, THE STAFF HAS THREE (3) WORK DAYS TO REVIEW ALL APPLICATIONS FOR COMPLETENESS. THE COMPLETED APPLICATIONS WILL BE REVIEWED FIRST BY THE BEAUFORT COUNTY PLANNING COMMISSION SUBCOMMITTEE RESPONSIBLE FOR THE AREA WHERE YOUR PROPERTY IS LOCATED. MEETING SCHEDULES ARE LISTED ON THE APPLICATION PROCESS (ATTACHED). COMPLETE APPLICATIONS MUST BE SUBMITTED BY NOON THREE WORKING DAYS AND FOUR (4) WEEKS PRIOR FOR PLANNED UNIT DEVELOPMENTS (PUDs) OR THREE (3) WEEKS PRIOR FOR NON-PUD APPLICATIONS TO THE APPLICABLE PLANNING COMMISSION MEETING DATE.

PLANNED UNIT DEVELOPMENT (PUD) APPLICANTS ARE REQUIRED TO SUBMIT FIFTEEN (15) COPIES TO THE PLANNING DEPARTMENT. CONSULT THE APPLICABLE STAFF PLANNER FOR DETAILS.

FOR MAP AMENDMENT REQUESTS, THE PLANNING OFFICE WILL POST A NOTICE ON THE AFFECTED PROPERTY AS OUTLINED IN DIV. 7.4.50 OF THE COMMUNITY DEVELOPMENT CODE.

CONTACT THE PLANNING DEPARTMENT AT (843) 255-2140 FOR EXACT APPLICATION FEES.

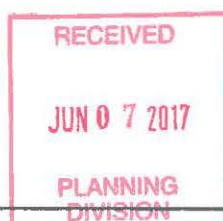
FOR PLANNING DEPARTMENT USE ONLY:

Date Application Received:
(place received stamp below)

Date Posting Notice Issued:

Application Fee Amount Received:

Receipt No. for Application Fee:



Text Amendment Analysis

Section 7.3.30: Code Text Amendment Review Standards. The advisability of amending the text of this Development Code is a matter committed to the legislative discretion of the County Council and is not controlled by any one factor. In determining whether to adopt or deny the proposed text amendment, the County Council shall weigh the relevance of and consider whether, and the extent to which, the proposed amendment:

1. Is consistent with the goals, objectives, and policies of the Comprehensive Plan;

Comment: The Community Preservation (CP) District implements the future land use designation of Residential in Chapter 4 of the Comprehensive Plan. The future land use designation calls for a mix of housing types and pedestrian access to services and facilities. Removing barriers to the development of Community Residence housing type furthers this goal in the Comprehensive Plan. The Comprehensive plan also recommends that the county continue to evaluate the effectiveness of existing CP Plans and zoning districts and make revisions as warranted.

In addition, the Affordable Housing section (chapter 8) of the Comprehensive Plan indicates a greater range of housing types will be essential to meet the anticipated demographic phenomenon caused by the baby boomer generation. Beaufort County should support mix housing types within developments wherever possible to accommodate various incomes, ages, and special needs. The plan specifically states "More infill development for elderly residents, weather working or retired is needed in urban locations near facilities they frequent, **especially assisted living and continuing care facilities**. Special high-density provisions may be required to accommodate this need."

2. Is not in conflict with any provision of this Development Code or the Code of Ordinances;

Comment: The proposed text change does not conflict with any other provisions of the Code of Ordinances.

3. Is required by changed conditions;

Comment: Not Applicable.

4. Addresses a demonstrated community need;

Comment: Community Residence development is permitted in the district to encourage a mix of housing types in Beaufort County and to provide additional housing types in areas of the county in proximity to retail and services. Removing a Regulatory barrier to the creation of community residence (assisted living) housing for seniors furthers these community needs

5. Is consistent with the purpose and intent of the zones in this Development Code, or would improve compatibility among uses and ensure efficient development within the County;

Comment: The CP District currently allows Community Residence as a Traditional Community Plan use. The proposed addition to allow as a Special use with conditions still ensures that new developments are compatible with the surrounding neighborhoods. The special use will also require the community residence project specific sites are reviewed by the zoning board of appeals and notify adjacent properties of the development plans.

6. Would result in a logical and orderly development pattern; and

Comment: The proposed amendment would provide greater opportunity and flexibility in the development of community residence in the CP district while maintaining requirements that development is compatible with surrounding neighborhood character in size, scale, and architecture. New Community Residence developments will also be reviewed by the Beaufort County Design Review Board to ensure that these conditions are being met.

7. Would not result in adverse impacts on the natural environment, including but not limited to water, air, noise, stormwater management, wildlife, vegetation, wetlands, and the natural functioning of the environment.

Comment: The proposed amendment does not change the size or intensity of community residence developments in the CP district. New community residence developments in CP will still be subject to the same environmental and stormwater requirements.



Division A.2: Lady's Island Community Preservation District (LICP)

Table A.3.40.A: Lady's Island Community Preservation Land Uses

Land Use	Use Definition	Use Permission
Residential		
Single-family detached	Detached dwelling unit intended for only one family. Includes any one family dwelling unit, which complies with the Beaufort County Building Code.	C
Single-family cluster	Two or more single-family detached residential uses in a subdivision, or on an individual lot that include, as part of the subdivision or lot design, significant common open space that meets the standards in Article 2, Division 2.8.	C
Traditional Community Plan	See Article 2, Division 2.3 (Traditional Community Plans)	C
Multifamily	A building containing two or more dwelling units, specifically permitting duplexes, mansion apartments, and apartment houses.	C
Accessory dwelling unit	A second dwelling unit, clearly subordinate to the principal unit, either in or added to an existing single-family detached dwelling, or in a separate accessory structure on the same lot as the main dwelling, for use as a complete independent living facility. Maximum building size shall not exceed 50% of the principal unit's floor area.	C
Family compound	Form of traditional rural development which provides affordable housing for family members allowing additional family dwelling units on, and/or subdivisions of, a single lot owned by the same family for at least 50 years (see Article 2, Section 2.7.40).	C
Group home	Residential facility for nine or fewer mentally or physically handicapped persons providing care on a 24-hour basis and licensed by a state agency or department, or is under contract with a state agency or department, for that purpose.	C
Home occupation	A business, profession, occupation or trade located entirely within a residential dwelling, which does not change the essential character of the residential use.	C
Home business	A business operated out of a single-family residence and accessory structures that permits the employment of up to three unrelated individuals. This includes independent contractors operating from the facility. Farm workers are not included. Uses shall be limited to office and service types, carpentry, upholstery, woodworking, potteries, glasswork and other similar uses; wholesale or retail sales are prohibited on-premises.	C
Offices and Services		
Day care, family	A facility in a private home that is operated by one or more persons duly licensed or qualified to be licensed by the state for the purpose of providing child day care for one to not more than eight children at any one time, who are not relatives of the day care provider. (NAICS 62441)	P
Recreation, Education, Safety, Public Assembly		
Public services	These uses include emergency service, buildings, or garages, (e.g., ambulance, fire, police, rescue, and public works) or other garages or areas where vehicles are stored and dispatched. (NAICS 62191, 92212, 92216, see "Office" uses, below)	P
Religious establishments (large)	Establishments engaged in operating religious organizations, such as churches, religious temples and /or establishments primarily engaged in administering an organized religion or promoting religious activities with or without schools (except Sunday schools occupying no more than 50% of the floor area) as part of the complex and having 15,000 or greater square feet of floor area (NAICS 813110).	S

"P" indicates a Use that is Permitted By Right.

"C" indicates a Use that is Permitted with Conditions.

"S" indicates a Use that is Permitted as a Special Use.

"TCP" indicates a Use that is permitted only as part of a Traditional Community Plan under the requirements in Division 2.3

Division A.2: Lady's Island Community Preservation District (LICP)

Table A.3.40.A: Lady's Island Community Preservation Land Uses (continued)		
Land Use	Use Definition	Use Permission
Recreation, Education, Safety, Public Assembly (continued)		
Religious establishments (small)	Establishments engaged in operating religious organizations, such as churches, religious temples and /or establishments primarily engaged in administering an organized religion or promoting religious activities with no schools (except Sunday schools occupying no more than 50% of the floor area) as part of the complex and having less than 15,000 square feet of floor area.	S
Local utility	Utility substations or transmission and local distribution facilities, including telephone, and all government-owned utilities. Not included are generation facilities, storage of combustibles, regional facilities, and landfills or mining operations. (NAICS 221122, 221211)	S
Outdoor recreation	<ol style="list-style-type: none"> 1. Active recreational activities and supporting services including, but not limited to: jogging, cycling, tot lots, playing fields, playgrounds, outdoor swimming pools, and tennis courts (NAICS 71113); fishing clubs; marinas. 2. Passive recreational uses including, but not limited to: arboreturns, wildlife sanctuaries, forests, areas for hiking, nature areas, and other passive recreation-oriented parks 3. Picnic areas, garden plots, and beaches. 	C
Schools, neighborhood (elementary and middle school) and community (high schools)	Institutions of learning or instruction primarily catering to minors, whether public or private, which are licensed by either the county or the State of South Carolina. The definition includes nursery schools, kindergarten, elementary schools, middle schools, senior high schools or any special institution of learning under the jurisdiction of the state department of education catering to those age groups. This does not include charm schools, dancing schools, music schools or similar limited schools. (NAICS 61111)	S
Infrastructure, Transportation, Communications		
Commercial communications towers	A tower, pole or similar structure, which supports a telecommunications antenna, operated for commercial purposes above ground in a fixed location, freestanding or guyed, or atop a structure. This does not include television antennas or satellite dishes. Towers for radio or television station use are regulated as regional utilities.	S
Temporary Uses		
Construction staging or plant	A concrete or asphalt batch plant, or metal forming and cutting facility assembled on the site or located no more than one mile from the site where the construction of a particular road, infrastructure or building is to take place. Such facilities shall be removed within one year.	S
Contractor's office	Security guard buildings and structures, construction equipment sheds, contractor's trailers and similar uses incidental to a construction project. Limited sleeping and/or cooking facilities may also be permitted.	P
Model homes sales office	A dwelling unit or modular unit in a subdivision used as a sales office for that subdivision.	P
Traditional Community Plan Uses		
Single-Family attached	A structure containing one dwelling unit on a single lot and connected along a property line to another dwelling unit on an adjoining lot by a common wall or other integral part of the principal building such as a breezeway or carport.	TCP

"P" indicates a Use that is Permitted By Right.

"C" indicates a Use that is Permitted with Conditions.

"S" indicates a Use that is Permitted as a Special Use.

"TCP" indicates a Use that is permitted only as part of a Traditional Community Plan under the requirements in Division 2.3

Table A.3.40.A: Lady's Island Community Preservation Land Uses (continued)

Land Use	Use Definition	Use Permission
Traditional Community Plan Uses (continued)		
Live/Work	An integrated housing unit and working space, occupied and utilized by a single household in a structure that has been designed or structurally modified to accommodate joint residential occupancy and work activity, and which includes: complete kitchen, living, and sleeping space and sanitary facilities in compliance with the Building Code, and working space reserved for and regularly used by one or more occupants of the unit. Workspace is limited to a maximum fifty percent (50%) of the structure and located on the first floor with living space located to the rear or above. Activities are limited to those uses permitted in the underlying Zone in which the Live/Work unit is located.	TCP
General Retail 3,500 SF or less	Stores and shops that sell and/or rent goods and merchandise to the general public. This category does not include "Open Air Retail," "Vehicle Sales and Rental," or "Gas Stations/Fuel Sales."	TCP
Gas Stations/Fuel Sales	An establishment where petroleum products are dispensed for retail sale. This use may include a retail convenience store and/or a single bay carwash. It does not include towing, vehicle body or engine repair (see "Vehicle Services"), or overnight vehicle storage.	TCP
Restaurant, Café, Coffee Shop	A retail business selling ready-to-eat food and/or beverages for on- or off-premise consumption. These include eating establishments where customers are served from a walk-up ordering counter for either on- or off-premise consumption; and establishments where customers are served food at their tables for on-premise consumption, which may also provide food for take-out, but does not include drive-through services, which are separately defined and regulated. This use includes all mobile kitchens.	TCP
General Offices & Services: 3,500 SF or less	<ol style="list-style-type: none"> 1. Bank/Financial Services. Financial institutions, including, but not limited to: banks, credit agencies, investment companies, security and commodity exchanges, ATM facilities. 2. Business Services. Establishments providing direct services to consumers, including, but not limited to: employment agencies, insurance agent offices, real estate offices, travel agencies, landscaping and tree removal companies, exterminators, carpet cleaners, and contractors' offices without exterior storage. 3. Business Support Services. Establishments providing services to other businesses, including, but not limited to: computer rental and repair, copying, quick printing, mailing and mailbox services. 4. Personal Services. Establishments providing non-medical services to individuals, including, but not limited to: barber and beauty shops, dry cleaners, small appliance repair, laundromats, massage therapists, pet grooming with no boarding, shoe repair shops, tanning salons, funeral homes. These uses may include incidental retail sales related to the services they provide. 5. Professional and Administrative Services. Office-type facilities occupied by businesses or agencies that provide professional or government services, or are engaged in the production of intellectual property. 	TCP
Animal Services: Clinic/Hospital	An establishment used by a veterinarian where animals are treated. This use may include boarding and grooming as accessory uses.	TCP
Day Care: Commercial Center (9 or more clients)	A state-licensed facility that provides non-medical care and supervision for more than 8 adults or children, typically for periods of less than 24 hours per day for any client. Facilities include, but are not limited to: nursery schools, preschools, after-school care facilities, and daycare centers.	TCP
Lodging: Bed & Breakfast (5 rooms or less)	The use of a single residential structure for commercial lodging purposes, with up to 5 guest rooms used for the lodging of transient guests and in which meals may be prepared for them, provided that no meals may be sold to persons other than such guests, and where the owner resides on the property as his/her principal place of residence.	TCP

"TCP" indicates a Use that is permitted only as part of a Traditional Community Plan under the requirements in Division 2.3

Division A.2: Lady's Island Community Preservation District (LICP)

Table A.3.40.A: Lady's Island Community Preservation Land Uses (continued)		
Land Use	Use Definition	Use Permission
Traditional Community Plan Uses (continued)		
Lodging: Bed & Breakfast (5 rooms or less)	The use of a single residential structure for commercial lodging purposes, with up to 5 guest rooms used for the purpose of lodging transient guests and in which meals may be prepared for them, provided that no meals may be sold to persons other than such guests, and where the owner resides on the property as his/her principal place of residence.	TCP
Lodging: Inn (up to 24 rooms)	A building or group of buildings used as a commercial lodging establishment having up to 24 guest rooms providing lodging accommodations to the general public. This includes the use of any dwelling unit for lodging accommodations on a daily or weekly rate to the general public.	TCP
Medical Service: Clinics/Offices	See definition in Article 8, Table 3.1.70	TCP
Community Oriented Cultural Facility (less than 15,000 SF)	Public or non-profit facilities that provide educational and cultural experiences for the general public, examples of which include: aquariums, arboretums, art galleries, botanical gardens, libraries, museums, planetariums, civic centers and theaters predominantly used for live performances, and zoos. May also include accessory retail uses such as a gift/book shop, restaurant, etc.	TCP
Community Residence (dorms, convents, assisted living, temporary shelters)	See definition in Article 8, Table 3.1.70	TCP

"TCP" indicates a Use that is permitted only as part of a Traditional Community Plan under the requirements in Division 2.3

A.2.50 Conditional and Special Use Standards

This section describes the standards governing conditional and special uses as designated in Table A.3.40.A of this division. These standards are in addition to other standards required elsewhere in the Beaufort County Community Development Code (CDC), but supersede the conditional, special use, and accessory use standards in Article 4 of the CDC.

A. Local Utility

1. Reports/studies required. All applications for this use shall include an Area Impact Assessment (A.1.30.B), Environmental Impact Assessment (A.1.30C), and an Archaeological and Historic Impact Assessment (A.1.30.E).
2. In considering an application for a special use permit, the zoning board of appeals shall consider the justification for the location of the proposed utility service and any alternative locations which may be available. Utility agencies shall submit service radii or other locational criteria that demonstrate the need to place facilities in this district.
3. Additional buffers. The required perimeter buffer shall be increased by ten feet along common boundaries with residential uses or zones.
4. Screening and buffering consistent with Article 5, Division 5.8 of the CDC shall be required, unless specifically modified as part of the approved conditional or special use permit.

Ordinance 2017/

AN ORDINANCE ADDING CHAPTER 38, ARTICLE 6: SINGLE-USE PLASTIC BAGS TO THE BEAUFORT COUNTY CODE OF ORDINANCES TO ENCOURAGE THE USE OF REUSABLE CHECKOUT BAGS AND RECYCLABLE PAPER CARRYOUT BAGS AND BANNING THE USE OF SINGLE-USE PLASTIC BAGS FOR RETAIL CHECKOUT OF PURCHASED GOODS IN THE UNINCORPORATED AREAS OF THE COUNTY

Section 38-161 Purpose.

This chapter is adopted to improve the environment of the county by encouraging the use of reusable checkout bags and recyclable paper carryout bags and banning the use of single-use plastic bags for retail checkout of purchased goods. Business establishments are encouraged to make reusable bags available for sale and recyclable paper carryout bags available for distribution.

Section 38-162 Definitions.

The following words, terms and phrases, when used in this chapter, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

- **Business Establishment.** Any commercial enterprise that provides carryout bags to its customers through its employees or independent contractors associated with the business. The term includes sole proprietorships, joint ventures, partnerships, corporations, or any other legal entity, whether for profit or not for profit.
- **Single-Use Plastic Carryout Bag.** A bag provided by a business establishment to a customer typically at the point of sale for the purpose of transporting purchases, which is made predominantly of plastic derived from either petroleum or a biologically-based source. "Single-use plastic carryout bag" includes compostable and biodegradable bags, but does not include reusable carryout bags.
- **Reusable Carryout Bag.** A carryout bag that is specifically designed and manufactured for multiple reuse, and meets the following criteria:
 - (1) Displays in a highly visible manner on the bag exterior, language describing the bag's ability to be reused and recycled;
 - (2) Has a handle; except that handles are not required for carryout bags constructed out of recyclable paper with a height of less than 14 inches and width of less than eight inches; and

- (3) Is constructed out of any of the following materials:
 - (a) Cloth, other washable fabric, or other durable materials, whether woven or non-woven; or
 - (b) Recyclable plastic, with a minimum thickness of 2.25 mils;

- **Customer.** A person who purchases merchandise from a business establishment.

Section 38-163 Regulations.

- (A) No person may provide single-use plastic carryout bags at any county facility, county-sponsored event, or any event held on county property.
- (B) No business establishment within the county limits may provide single use plastic carryout bags to its customers.
- (C) Business establishments within the county limits are strongly encouraged to provide prominently displayed signage advising customers of the benefit of reducing, reusing and recycling and promoting the use of reusable carryout bags and recyclable paper carryout bags by customers.
- (D) All business establishments shall provide or make available to a customer reusable carryout bags or recyclable paper bags.

Section 38-164 Exemptions.

This chapter shall not apply to:

- (A) Laundry dry cleaning bags, door-hanger bags, newspaper bags, or packages of multiple bags intended for use as garbage, pet waste, or yard waste;
- (B) Bags provided by pharmacists or veterinarians to contain prescription drugs or other medical necessities;
- (C) Bags used by a customer inside a business establishment to:
 - (1) Contain bulk items, such as produce, nuts, grains, candy, or small hardware items;
 - (2) Contain or wrap frozen foods, meat, or fish, whether or not prepackaged;
 - (3) Contain or wrap flowers, potted plants or other items to prevent moisture damage to other purchases; or
 - (4) Contain unwrapped prepared foods or bakery goods; and
- (D) Bags of any type that the customer bring to the store for their own use for carrying away from the store goods that are not placed in a bag provided by the store.

Section 38-165 Effective Date and Waivers.

All of the requirements set forth in this chapter shall take effect January 1, 2018. In the event that compliance with the effective date of this chapter is not feasible for a business establishment because of either unavailability of alternative checkout bags or economic hardship, County Council may grant a waiver of not more than 12 months upon application of the business owner or owner's representative.

Section 38-166 Penalties.

- (A) Any business establishment that violates or fails to comply with any of the provisions of this chapter after a written warning notice has been issued for that violation shall be deemed guilty of a misdemeanor. The penalty shall not exceed \$100 for a first violation; \$200 for a second violation within any 12-month period; and \$500 for each additional violation within any 12-month period. Each day that a violation continues will constitute a separate offense.
- (B) In addition to the penalties set forth in this section, repeated violations of this chapter by a person who owns, manages, operates, is a business agent of, or otherwise controls a business establishment may result in the suspension or revocation of the business license issued to the premises on which the violations occurred. No business license shall be issued or renewed until all fines outstanding against the applicant for violations of this chapter are paid in full.
- (C) Violation of this chapter is hereby declared to be a public nuisance, which may be abated by the county by restraining order, preliminary and permanent injunction, or other means provided for by law, and the county may take action to recover the costs of the nuisance abatement.

Adopted this ____ day of _____, 2017.

COUNTY COUNCIL OF BEAUFORT COUNTY

BY: _____
D. Paul Sommerville, Chairman

APPROVED AS TO FORM:

Thomas J. Keaveny, II, Esquire
Beaufort County Attorney

ATTEST:

Ashley M. Bennett, Clerk to Council

First Reading:

Second Reading:

Public Hearing:

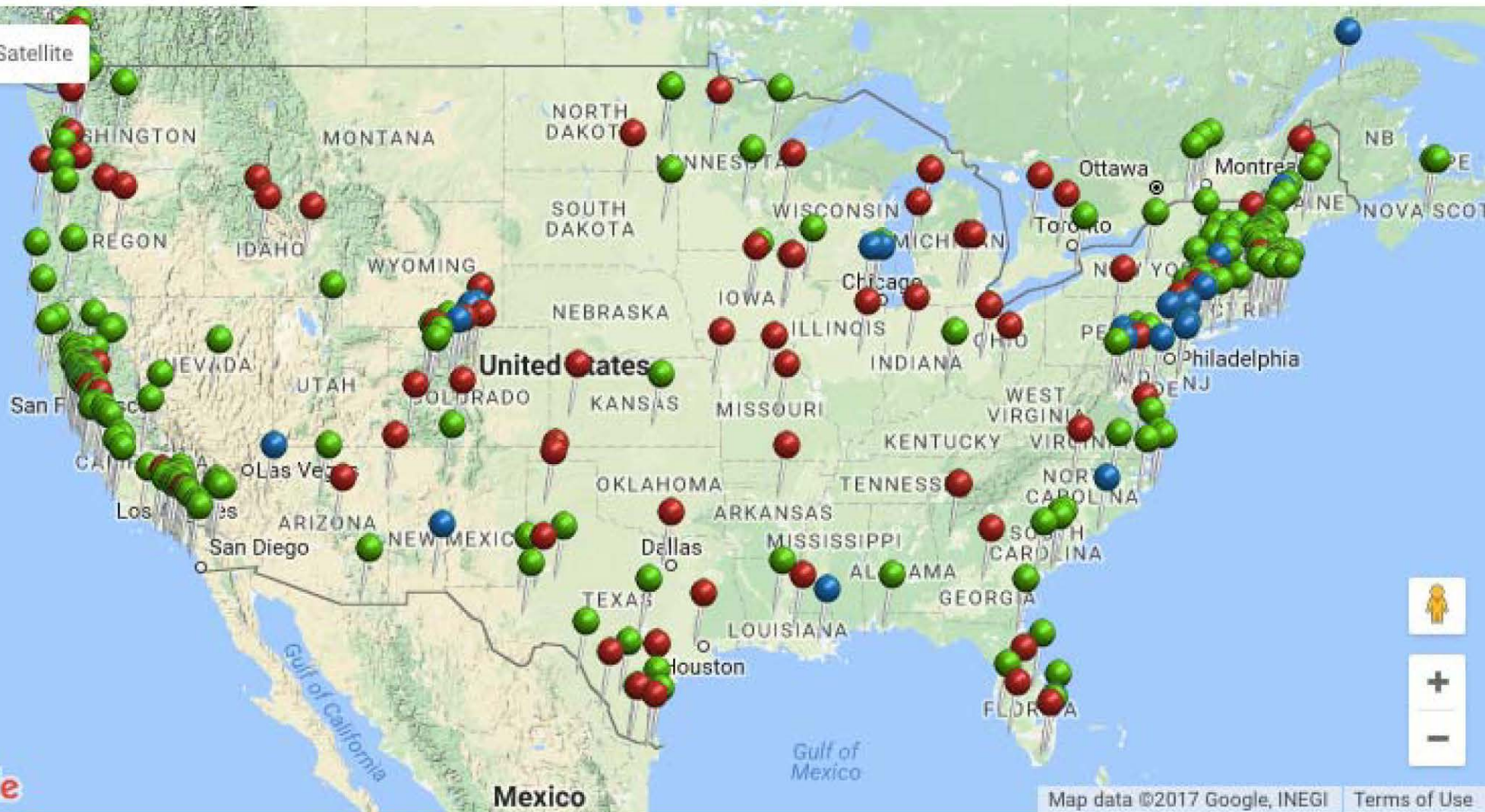
Third and Final Reading:

PLASTIC BAG FACT SHEET

Facts About Single Use Plastic Bags in the Lowcountry

- Each year The Ocean Conservancy organizes an international beach sweep. Last year, volunteers collected over a half million plastic bags. Plastic bags were the fifth most common item found on our beaches.
- In Beaufort County alone, 722 volunteers dedicated three hours of their time on a single day in September. Calculated at South Carolina's average hourly wage, that amounts to \$32,490 in man-hours. If we spent that much time cleaning up litter every day, we would invest over \$12 million.
- Americans use and throw away 100 billion plastic bags every year. Twelve million barrels of oil are used to create that many plastic bags. For comparison, that is about 12% of the amount of oil used by the entire state of South Carolina in 2015.
- There is a myth that plastic bags never decompose; in fact, Plastic bags easily break down in sunlight and seawater. However, they only break down into smaller and smaller pieces of plastic. When they are around 5 millimeter pieces, they are called microplastics. Microplastics never fully break down; they just degrade into smaller and smaller pieces.
- Microplastics are sponges for chemicals and toxins in the environment. Toxins are continually absorbed and released while plastics break down.
- Fish can easily eat microplastics. Other animals affected by plastic include mussels shrimp, and oysters. When we eat fish and shellfish we are also eating plastic.
- Plastic bag pollution impacts over 700 species of marine life worldwide.
- Sea turtles mistake plastic bags for jellyfish and eat them. The bags block their stomachs and can cause the turtles to starve to death. One turtle admitted to the Sea Turtle Hospital in Charleston had eaten at least twelve pieces of plastic bags.
- The average plastic bag is used for 12 minutes and only about 1% are recycled. Instead, they take up space in local landfills.
- Plastic bag litter can clog storm drains. This can cause flooding or standing water that is ideal for mosquitoes.
- Plastic bags are lightweight and can "balloon" out. This makes it easy for the wind to pick them up and carry them from trashcans or recycling bins.
- Plastic bags are expensive, difficult to dispose of and hard to recycle. In Charleston County, recycling facilities no longer accept plastic bags. Christina Moskos, recycling coordinator, says, "[we] have to shut down the sorting line to pull the plastic bags out of the rotors in the machinery."

Map Satellite



[Home](#) / [Plastic Bag Ban Map](#)

◀ 2K

◀ 446 ▶

Plastic Bag Ban Locations




California

Bag Ban

Cities: California

California lawmakers approved a disposable plastic bag ban in 2014. The matter was put on hold and added to the November



-  = Plastic Bags Banned
-  = Plastic Bag Usage Fee
-  = Plastic Bag Ban Failed

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Understanding the Need for Reusable Bags

Why are more and more cities and states beginning to ban plastic bags? One-time use plastic bags are causing destruction throughout the world. These non-biodegradable bags are responsible for unsightly litter, flooding, the degradation of soil, creating an unnecessary expense, wasting petroleum (a non-renewable resource) and natural gas, and causing the deaths of hundreds of thousands of animals a year.

- ▶ Globally, ~500 billion to 1 trillion plastic bags are consumed per year – Over 1 million bags per minute
- ▶ Millions of sea animals die from plastic bags and other waste each year
- ▶ Retail businesses spend about \$4 billion each year on plastic bags

- ▶ Only 8% of the total plastic waste generated in the US in 2010 was recycled
- ▶ The United Nations Environment Program estimates 46,000 pieces of plastic litter floating in every square mile of ocean
- ▶ Americans throw away about 1 billion plastic bags a year, equivalent to dumping ~12 million barrels of oil

The [drawbacks of disposable plastic bags far outweigh the advantages](#) and cities, counties, states and even countries all over the world are looking for solutions to their plastic bag problems.

Tracking the Plastic Bag Ban Progress – Interactive Map

Our interactive Plastic Bag Ban Map offers breaking news and current information, making it easy to examine and scrutinize the always changing, varied and wide-ranging solutions municipalities and governments put into action to resolve the same problem – how to address the abundance of plastic shopping bags.

Click on the color-coded pins to find out why various locations prohibit plastic bags, uncover where efforts were unsuccessful and discover the path some locations have taken to put a tax or fee in place on disposable bags. **Check out our list of U.S. [cities that have banned plastic bags or implemented fees](#).**

Join the Plastic Bag Ban Movement

Are you ready to join us in this Bag Ban Movement? **Please feel free to copy and paste the code above to share our interactive bag ban map on your website, personal or corporate blog.**

Also, feel free to leave a comment with your thoughts on the movement, any updates on what we are missing, where bag ban initiatives off the ground, or just let us know if you are with us in this movement to create a more sustainable future.

Sources:

<http://www.epa.gov/osw/conserve/materials/plastics.htm>

http://www.ehow.com/facts_5552588_harmful-plastic-bags.html

<http://www.factorydirectpromos.com/life-cycle-of-a-plastic-bag>

Share The Map, Support The Movement, Comment Below

Add The Map (Size: 650px x 364px)

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<a href="http://www.factorydirectpromos.com/plastic-bag-bans" title="Plastic Bag Ban Map"></a>
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Share Our Badge (Size: 215px x 150px)

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<a href="http://www.factorydirectpromos.com/plastic-bag-bans" title="Plastic Bag Ban Map">  </a>
```

Copy and paste the code above to share our interactive bag ban map on your website, personal or corporate blog.

What Do You Think?

Tell us if you support bag bans or bag fees, fill us in on bag ban updates you know about but don't see on the map, and tell us about your efforts or the work of others to get the bag ban initiatives off the ground!

39 Comments

Sort by **Newest**



Add a comment...



Now for some good news

Hi, can you please put red pins in Melbourne, Australia as we still do not have a plastic bag ban despite it being 2017! Thanks

Like · Reply · Aug 9, 2017 12:18pm



Marina O'Boyle · Interpretive Naturalist at Oregon State Parks

How do I copy the full image? I am an Interpretive Ranger and would like to include this map in a presentation about beach cleanup. (and site your organization, of course 😊)

Like · Reply · Aug 3, 2017 4:20pm



Silver Seagar · Owner at Self-Employed

Hi, You have 2 green pins in NZ - Gisborne and Christchurch. To my knowledge these places are not plastic bag free, they do have groups that are working on community initiated pbr groups. These towns do not have a plastic bag ban. Please can you tell me where you got your info from? Thanks!

Like · Reply · 1 · Apr 7, 2017 4:00pm



Factory Direct Promos

Hi Silver, we have a person on staff, Alison, who is our resident bag ban maven. She scours the Internet and receives daily updates on bag bans throughout the world. But we need folks like you in our community too that let us know when you have info like this. Thank you! We are on it. - Shane

Like · Reply · 1 · Apr 10, 2017 10:49am



Jeanie Williams · Lead Scientist and Education Specialist at Inland Seas Education Association

Previous versions of this also showed the places bag bans failed - I think this is good information to share, to show the opposition. I appreciate need for a positive message, however. Also, I am from MI and wherever Muskegon is on their ban proposal, it is now dead after a new state law makes it illegal for an municipality to create its own ordinance regarding plastic bags, or any other container.

Like · Reply · 2 · Feb 28, 2017 2:39pm



Factory Direct Promos

Hi Jeanie, thank you for stopping by. We do keep this bag ban map updated but occasionally our red pins disappear! We have alerted our resident bag ban map webmaster and he is working to fix the problem. As far as Michigan goes, thanks for the info and you can check out our latest post on the subject <http://www.factorydirectpromos.com/.../the-pros-and-cons....> Our parent company, SBS Brands, is headquartered in Michigan and I am an MSU grad so this is something we are keeping our eye on and hope we will see some movement on. - Shane

Like · Reply · 1 · Mar 7, 2017 12:48pm



Jeanie Williams · Lead Scientist and Education Specialist at Inland Seas Education Association

Factory Direct Promos Thanks, Shane! Upon re reading my post it appears I'm a little down on your work, but quite the opposite is true! I love this site and what it's trying to do and I find it impressive that each pin has a story attached. I use this image for presentations I do about microplastics and folks always find it interesting. Thanks for your reply and this website. Movement on this issue would be great, I'm in!

Like · Reply · 1 · Mar 7, 2017 8:18pm



Factory Direct Promos

Jeanie Williams Our red pins are back! Looks like we have a pin stealer...seriously this is a labor

of love for us and when we get great feedback from folks like you, it makes our day! Thank you for all you do to help our environment too. - Shane

Like · Reply · 2 · Mar 13, 2017 11:05am



Maija Bigestans · Teacher at Marikas mode och dansstudio

This is excellent! Are you still updating this?

Like · Reply · 1 · Feb 17, 2017 10:47am



Factory Direct Promos

Yes we are Maija! We are so glad you find it useful. Be sure to like us on Facebook to stay in touch. 😊 Shane

Like · Reply · 3 · Feb 28, 2017 1:05pm

[Load 10 more comments](#)

Facebook Comments Plugin

South Carolina Legislature

Session 122 - (2017-2018)

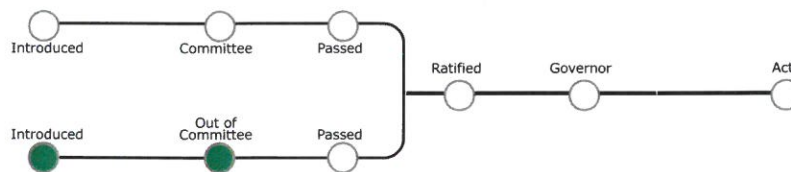
H 3529 General Bill, By Bedingfield, Sandifer, Hamilton, Forrester, Atwater, Yow, Clemmons, Crawford, Fry, Hill, Lowe, Pitts, Putnam, Anderson, Martin and G.R. Smith

Summary: Auxiliary containers

A BILL TO AMEND THE CODE OF LAWS OF SOUTH CAROLINA, 1976, BY ADDING CHAPTER 77 TO TITLE 39 SO AS TO PROVIDE THAT ANY REGULATION REGARDING THE USE, DISPOSITION, SALE, OR ANY IMPOSITION OF ANY PROHIBITION, RESTRICTION, FEE IMPOSITION, OR TAXATION OF AUXILIARY CONTAINERS MUST BE DONE ONLY BY THE GENERAL ASSEMBLY, TO DEFINE AUXILIARY CONTAINER, TO PROVIDE FOR LEGISLATIVE FINDINGS, AND TO PROVIDE FOR EXCEPTIONS.

The following graphic is a general description of the legislation's status. Users must reference the bill history and the respective journals of the House and Senate for detailed status information.

SC Senate >>



SC House >>

- 01/18/17House Introduced and read first time ([House Journal-page 19](#))
- 01/18/17House Referred to Committee on Labor, Commerce and Industry ([House Journal-page 19](#))
- 01/19/17House Member(s) request name added as sponsor: Putnam
- 01/25/17House Member(s) request name added as sponsor: Henderson
- 02/01/17House Member(s) request name removed as sponsor: Henderson
- 02/02/17House Member(s) request name added as sponsor: Anderson
- 02/02/17House Committee report: Favorable with amendment Labor, Commerce and Industry ([House Journal-page 1](#))
- 02/07/17House Member(s) request name added as sponsor: Martin, G.R.Smith
- 02/07/17House Requests for debate-Rep(s). Bedingfield, Toole, Brown, Hiott, Mack, Cogswell, Crosby, Danning, Arrington, Clary, Bernstein, Stavrinakis, McCoy, Henderson, Burns, B Newton, Martin, Forrester, Robinson-Simpson, Dilliard, Mitchell, Norrell, GR Smith, VS Moss, Cobb-Hunter, McEachern, Ridgeway, Douglas, W Newton, Erickson, Clemmons, Williams, Ott, Knight, King, Bradley, Finlay, Henegan, Johnson, S Rivers, Yow, Jefferson ([House Journal-page 16](#))
- 02/23/17House Debate adjourned until Tues., 2-28-17 ([House Journal-page 12](#))
- 02/28/17House Debate adjourned until Wed., 3-1-17 ([House Journal-page 12](#))
- 03/01/17House Debate adjourned until Thur., 3-1-17 ([House Journal-page 14](#))
- 03/02/17House Debate adjourned until Tues., 3-7-17 ([House Journal-page 28](#))
- 03/07/17House Amended ([House Journal-page 83](#))
- 03/07/17House Continued ([House Journal-page 83](#))

South Carolina General Assembly
122nd Session, 2017-2018

H. 3529

STATUS INFORMATION

General Bill

Sponsors: Reps. Bedingfield, Sandifer, Hamilton, Forrester, Atwater, Yow, Clemmons, Crawford, Fry, Hill, Lowe, Pitts, Putnam, Anderson, Martin and G.R. Smith

Document Path: l:\council\bill\dk\3054sa17.docx

Introduced in the House on January 18, 2017

Last Amended on March 7, 2017

Continued by the House on March 7, 2017

Summary: Auxiliary containers

HISTORY OF LEGISLATIVE ACTIONS

Date	Body	Action Description with journal page number
1/18/2017	House	Introduced and read first time (House Journal-page 19)
1/18/2017	House	Referred to Committee on Labor, Commerce and Industry (House Journal-page 19)
1/19/2017	House	Member(s) request name added as sponsor: Putnam
1/25/2017	House	Member(s) request name added as sponsor: Henderson
2/1/2017	House	Member(s) request name removed as sponsor: Henderson
2/2/2017	House	Member(s) request name added as sponsor: Anderson
2/2/2017	House	Committee report: Favorable with amendment Labor, Commerce and Industry (House Journal-page 1)
2/7/2017	House	Member(s) request name added as sponsor: Martin, G.R.Smith
2/7/2017	House	Requests for debate-Rep(s). Bedingfield, Toole, Brown, Hiott, Mack, Cogswell, Crosby, Danning, Arrington, Clary, Bernstein, Stavrinakis, McCoy, Henderson, Burns, B Newton, Martin, Forrester, Robinson-Simpson, Dilliard, Mitchell, Norrell, GR Smith, VS Moss, Cobb-Hunter, McEachern, Ridgeway, Douglas, W Newton, Erickson, Clemmons, Williams, Ott, Knight, King, Bradley, Finlay, Henegan, Johnson, S Rivers, Yow, Jefferson (House Journal-page 16)
2/23/2017	House	Debate adjourned until Tues., 2-28-17 (House Journal-page 12)
2/28/2017	House	Debate adjourned until Wed., 3-1-17 (House Journal-page 12)
3/1/2017	House	Debate adjourned until Thur., 3-1-17 (House Journal-page 14)
3/2/2017	House	Debate adjourned until Tues., 3-7-17 (House Journal-page 28)
3/7/2017	House	Amended (House Journal-page 83)
3/7/2017	House	Continued (House Journal-page 83)

View the latest [legislative information](#) at the website

VERSIONS OF THIS BILL

[1/18/2017](#)

[2/2/2017](#)

[3/7/2017](#)

1
2 AMENDED--NOT PRINTED IN THE HOUSE
3 Amt. No. 1 (3529C002.DKA.SA18.docx)
4 Amt. No. 2 (3529C004.NBD.CZ17.docx)
5 March 7, 2017
6

7 **H. 3529**
8

9 Introduced by Reps. Bedingfield, Sandifer, Hamilton, Forrester,
10 Atwater, Yow, Clemmons, Crawford, Fry, Hill, Lowe, Pitts,
11 Putnam and Anderson
12

13 S. Printed 2/2/17--H.

14 Read the first time January 18, 2017.
15 _____
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A BILL

TO AMEND THE CODE OF LAWS OF SOUTH CAROLINA, 1976, BY ADDING CHAPTER 77 TO TITLE 39 SO AS TO PROVIDE THAT ANY REGULATION REGARDING THE USE, DISPOSITION, SALE, OR ANY IMPOSITION OF ANY PROHIBITION, RESTRICTION, FEE IMPOSITION, OR TAXATION OF AUXILIARY CONTAINERS MUST BE DONE ONLY BY THE GENERAL ASSEMBLY, TO DEFINE AUXILIARY CONTAINER, TO PROVIDE FOR LEGISLATIVE FINDINGS, AND TO PROVIDE FOR EXCEPTIONS.

Amend Title To Conform

Be it enacted by the General Assembly of the State of South Carolina:

SECTION 1. Title 39 of the 1976 Code is amended by adding:

“CHAPTER 77

Auxiliary Containers

Section 39-77-10. The General Assembly finds that:
(1) prudent regulation of auxiliary containers is crucial to the welfare of the state’s economy;
(2) retail and food establishments are sensitive to the costs and regulation of auxiliary containers; and
(3) if individual political subdivisions of the State regulate auxiliary containers, there exists the potential for varying regulations which could lead to unnecessary increased costs for retail and food establishments to comply with the regulations.

1 Section 39-77-20. As used in this chapter, 'auxiliary container'
2 means a bag, cup, package, container, bottle, or other packaging
3 that is:

4 (1) designed to be either reusable or single-use;

5 (2) made of cloth, paper, plastic, including foamed or expanded
6 plastic, cardboard, expanded polystyrene, corrugated material,
7 aluminum, glass, postconsumer recycled, or similar material or
8 substrates, including coated, laminated, or multilayer substrates;
9 and

10 (3) designed for, but not limited to, consuming, transporting, or
11 protecting merchandise, food, or beverages from or at a food
12 service or retail facility.

13

14 Section 39-77-30. (A) Any regulation regarding the use,
15 disposition, sale, or any imposition of any prohibition, restriction,
16 fee imposition, or taxation of auxiliary containers must be done
17 only by the General Assembly. This chapter supersedes and
18 preempts any ordinance enacted by a political subdivision that
19 purports to regulate the use, disposition, sale, or any imposition of
20 any prohibition, restriction, fee imposition, or taxation of auxiliary
21 containers at the retail, manufacturer, or distributor level.

22 (B) Nothing in this chapter may be construed to prohibit or
23 limit any county or municipal ordinance regulating solid waste,
24 any agreement pertaining to the disposal of solid waste, curbside
25 recycling program, designated residential or commercial recycling
26 locations, or commercial recycling program.

27 (C) The provisions of this chapter do not apply to the use of
28 auxiliary containers within the boundaries of a State park, on a
29 property owned by a county or municipality including, but not
30 limited to, coastal tidelands and wetlands, or on a public beach
31 maintained by a coastal county or municipality.

32 (D) The provisions of this chapter apply to auxiliary container
33 regulations enacted after January 1, 2017.”

34

35 SECTION 2. This act takes effect upon approval by the Governor
36 and applies to auxiliary container regulations enacted after the
37 effective date of this act.

38

---XX---

39

**A RESOLUTION
ADOPTING THE LADY'S ISLAND CORRIDOR STUDY**

WHEREAS, Beaufort County, in conjunction with the City of Beaufort, had a corridor study prepared for the Sea Island Parkway corridor on Lady's Island; and

WHEREAS, the study included taking current traffic counts, projecting trips from future development, and modeling future traffic conditions; and

WHEREAS, public meetings regarding the study were held in September 2016 and February 2017; and

WHEREAS, meetings were held with project stakeholders and property owners directly impacted by the project's recommendations; and

WHEREAS, the final study report was presented to the Beaufort-Port Royal Metropolitan Planning Commission at their meeting on July 17, 2017, and the Beaufort County Planning Commission at their meeting on August 7, 2017 with both Commissions recommending approval; and

WHEREAS, the study was coordinated with the Beaufort County Traffic and Transportation Engineer and the South Carolina Department of Transportation; and

WHEREAS, the Beaufort County desires that the appropriate projects be added to the County's Transportation Capital Improvement Plan (CIP).

NOW, THEREFORE, BE IT RESOLVED, by Beaufort County Council that the Lady's Island Corridor Study dated May 19, 2017 (the Study) is approved and adopted. The Study, and the appropriate projects therein, shall be added to Beaufort County's Transportation Capital Improvement Plan (CIP).

Adopted this ____ day of August 2017.

COUNTY COUNCIL OF BEAUFORT COUNCIL

By: _____
D. Paul Sommerville, Chairman

APPROVED AS TO FORM:

Thomas J. Keaveny, II, Esquire
Beaufort County Attorney

ATTEST:

Ashley M. Bennett, Clerk to Council



MEMORANDUM

To: Natural Resource Committee of Beaufort County Council
From: Anthony Criscitiello, Beaufort County Community Development Director
Subject: Lady's Island Corridor Study (Stantec Report)
Date: August 17, 2017

PLANNING COMMISSION RECOMMENDATION from the excerpt of its August 7, 2017, draft minutes:

Mr. Criscitiello briefed the Commission that the Metropolitan Planning Commission recommended approval of the study. Mr. Criscitiello noted in the audience to provide support were the City of Beaufort Planning Director Libby Anderson and County Transportation Engineer Colin Kinton. Mr. Kinton provided comments on the Stantec Report (Lady's Island Corridor Study). Mr. Criscitiello noted that the City of Beaufort has adopted a resolution to support the Stantec Report. Similarly, a resolution will be going to Beaufort County Council to support the Stantec Report, with the Planning Commission recommendation. Mr. Criscitiello noted that the Planning Commission will see this Study again because it will amend the County Comprehensive Plan—the Priority Investment and the Transportation Elements. The Report has prioritized and included the estimated funding costs for each of nine proposed projects totaling \$28 million. He noted that some projects are interdependent, and must be accompanied or preceded by other projects. He noted that collectively speaking the projects make sense. Mr. Criscitiello noted that Mr. Kinton was available to answer any questions regarding the nine proposed projects in the Study.

Discussion by Commission included the project priorities totaling \$28.8 million; stating confidence in the Stantec study; clarification on the multitude of funding sources; noting that projected future needs were included in the study; concern with the next steps so that the study will not sit in the archives gathering dust; concern with updating the study data as time progresses; and concern with who would take ownership of the study (*Mr. Criscitiello noted that the Planning Commission and staff of each affected government jurisdiction would take ownership of the study and related ordinances. He also noted that staff is proposing to develop a Lady's Island Plan to be incorporated in the Beaufort County Comprehensive Plan.*).

Public Comment:

1. Mr. Chuck Newton speaking on behalf of the Sea Island Corridor Coalition stated that they supported the study and its recommendations. The City responded well to traffic concerns. The County responded equally well regarding funding the study. Our concern was that no new major roads are built nor existing thoroughfares widened. New roads means more development. We are concerned with the cost (\$28 million) during a time when resources are scarce. It's a question of priority, not resources. Please act positively on passing this Study to County Council to get it moving. We don't expect immediate results. The plan will occur over a number of years, but the community expects something to happen soon.
2. Ms. Libby Anderson, City of Beaufort Planning Director, offered no comment, when called upon by Mr. Semmler.
3. Mr. Colin Kinton, County Traffic Engineer, offered no comment, when called upon by Mr. Semmler.

Motion: Mr. Jason Hinchey made a motion, and Mr. Ed Pappas seconded the motion, **to favorably forward to County Council for adoption by resolution the Lady's Island Corridor Study (Stantec Report), and to incorporate the Study into the Beaufort County Comprehensive Plan.** Further discussion included clarification of the motion. The motion **carried (FOR: Chmelik, Hinchey, Mitchell, Pappas, Semmler, and Stewart; ABSENT: Fermin and Fireall; ABSTAIN: Walsnovich).**

STAFF REPORT

A. BACKGROUND:

Case No. MISC 2017-09
Applicant: Community Development Staff

B. SUMMARY: In 2016, the City of Beaufort contracted with Stantec and Ward Edwards Engineering to conduct a transportation study primarily along the Sea Island Parkway between the Woods Memorial Bridge and Chowan Creek, and along Lady's Island Drive and Sam's Point Road from Rue Du Bois to Miller Drive. The purpose of the Lady's Island Corridor Study was to address concerns about future traffic resulting from recent development (e.g. Walmart, Harris Teeter, etc.) on Lady's Island. The primary aim of the Study was to:

- Improve traffic congestion and reduce delays;
- Improve safety; and
- Enhance bicycle and pedestrian accommodations.

The Study makes projections for future traffic volumes for the year 2038 based on projected growth for that time period. The Study recommends the following 9 projects to address future traffic congestion:

Project	Cost
1. SC 802 Sam's Point Road Turn Lane	\$ 761,188
2. Hazel Farm Road and Gay Drive (S-7-497)	\$ 2,983,756
3. New Lady's Island Middle School Access	\$ 1,482,880
4. Sunset Blvd. (S-7-186 and Miller Drive West (S-7-187)	\$ 4,842,155
5. Beaufort High School Access Realignment	\$ 1,792,274
6. Sea Island Pkwy. (US 21 Bus.) and SC 802 Mainline Improvements	\$ 10,755,744
7. Meadowbrook Drive Extension	\$ 776,500
8. Mayfair Court Extension	\$ 449,630
9. US 21 Airport Area and Frontage Road	\$ 4,980,303
Total	\$ 28,824,430

A copy of the Lady's Island Corridor Study is attached to this report. Appendices A through F, which contain the technical data to support the Study, are available for review at the Beaufort County Community Development Office.

The Study was recommended for adoption by the Metropolitan Planning Commission on July 18, 2017, and subsequently adopted by Beaufort City Council by resolution on July 25, 2017.

C. ANALYSIS: The Beaufort County Traffic Engineering Department reviewed the Lady's Island Corridor Study (see attached memo).

D. STAFF RECOMMENDATION:

After review of the Lady's Island Corridor Study, staff recommends the Planning Commission forward the Study to County Council to be adopted by resolution. Staff further recommends that upon adoption of the study, the Transportation and Priority Investment Chapters of the Beaufort County Comprehensive Plan be amended to include the study's recommendations and to identify funding sources for improvement projects.

F. METROPOLITAN PLANNING COMMISSION RECOMMENDATION:

The Metropolitan Planning Commission met on July 18, 2017. Commissioners in attendance were Joe DeVito (Chairman), Judy Alling, Caroline Fermin, Bill Harris, Tim Rentz, and Robert Semmler.

The Commissioners heard a presentation from Mr. Brett Gillis of Stantec who did the Study. The Study covers Highway 21/Sea Island Parkway from Woods Memorial Bridge to Chowan Creek. Mr. Gillis indicated that there were two public meetings. Feedback from the public included 48% concerns with traffic, 28% various unrelated concerns, and 8% each of trees/flora and drainage concerns. The national and Lady's Island traffic volumes increased in 2014, after having leveled off from 2007. The Study's 20-year traffic projections included all known proposed developments such as Walmart, Taco Bell, Harris Teeter, Village at Oyster Bluff, Whitehall Plantation, Marina Village, Crystal Lake, etc. Several scenarios were considered including grade separated interchange, road widening, and new bridge accesses, but all were deemed too costly. The Study recommends turn lane improvements at the Highway 21 and Sam's Point Road intersection and connectivity through secondary roads with street lights at Sunset Boulevard and Highway 21, Miller Road and Sam's Point Road, Gay Drive and Highway 21, and Hazel Farm Road and Highway 802. Other recommended improvements include traffic calming, landscaped islands, all-way stop control, mini-roundabouts, streetscape improvements, raised medians, new school accesses for Lady's Island Middle School and Beaufort High School, and a lighted intersection at the Walmart intersection. The Study has nine phases of improvements that can be combined in various combinations, depending on funding availability.

Discussion by the Commissioners included concerns for autonomous cars, widening the road through the Walmart intersection, SCDOT not approving 10-foot wide lanes and traffic calming measures recommended in the Study, and including bike lanes or widening sidewalks for bike traffic.

Public Comment:

1. Mr. Chuck Newton of the Sea Island Coalition indicated the Coalition supports the Study, but is opposed to new road construction. He encouraged that the Commission find a solution to the traffic problem on Lady's Island. He urged the government entities to work together to fund the Study.
2. Mr. Robert McFee, County Facilities & Construction Engineering Director, in answer to Commissioner Semmler's question regarding the County's budget process, noted that funding would be found through various sources for the Study.

Motion: Mr. Tim Rentz made the motion, and Ms. Judy Alling seconded the motion, to recommend approval of the Lady's Island Corridor Study to the Beaufort County Planning Commission/County Council and City of Beaufort Council. The motion passed (FOR: DeVito, Alling, Fermin, Harris, Rentz, and Semmler).

G. ATTACHMENT:

- Copy of the Lady's Island Corridor Study Summary
- Memo from Beaufort County Traffic Engineering Department

**A RESOLUTION
ADOPTING THE LADY’S ISLAND CORRIDOR STUDY**

WHEREAS, Beaufort County, in conjunction with the City of Beaufort, had a corridor study prepared for the Sea Island Parkway corridor on Lady’s Island; and

WHEREAS, the study included taking current traffic counts, projecting trips from future development, and modeling future traffic conditions; and

WHEREAS, public meetings regarding the study were held in September 2016 and February 2017; and

WHEREAS, meetings were held with project stakeholders and property owners directly impacted by the project’s recommendations; and

WHEREAS, the final study report was presented to the Beaufort--Port Royal Metropolitan Planning Commission at their meeting on July 17, 2017, and the Beaufort County Planning Commission at their meeting on August 7, 2017 with both Commissions recommending approval; and,

WHEREAS, the study was coordinated with the Beaufort County Traffic and Transportation Engineer and the South Carolina Department of Transportation; and

WHEREAS, the Beaufort County desires that the appropriate projects be added to the County’s Transportation Capital Improvement Plan (CIP);

NOW, THEREFORE, BE IT RESOLVED, by Beaufort County Council that the Lady’s Island Corridor Study dated May 19, 2017 (the Study) is approved and adopted. The Study, and the appropriate projects therein, shall be added to Beaufort County’s Transportation Capital Improvement Plan (CIP).

Adopted this 28th day of August 2017.

COUNTY COUNCIL OF BEAUFORT COUNCIL

\

By: _____
D. Paul Sommerville, Chairman

APPROVE AS TO FORM:

Thomas J. Keaveny, II, County Attorney

Attest:

Ashley M. Bennett, Clerk to Council

Lady's Island Corridor Study

BEAUFORT, SC

May 19, 2017

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1.0 Introduction

The purpose of the Lady's Island Corridor Study is to determine the most effective means of implementing the following improvements on Lady's Island:

- Improve congestion and reduce delays
- Improve safety
- Enhance bicycle and pedestrian accommodations

This traffic study intends to determine these means while maintaining the character of the area and enhancing the corridors with streetscape elements and lighting. Originally the study was focused on the two main corridors, US 21 Business / US 21 Sea Island Parkway and US 21 Lady's Island Drive / SC 802 Sams Point Road. In order to meet its stated goals, the scope was expanded to include several side streets as identified in this report.

The main intersection where these two corridors intersect is beginning to reach full capacity today in the AM and PM peak hours. With several developments underway, the intersection will likely exceed capacity by 2020. Long queues are expected to develop in the future, blocking access for side streets and driveways. Further to the east, a new Walmart development is under construction on US 21 Sea Island Parkway. Residential side streets in this area already have difficulties making left turns onto US 21. Future increases in the US 21 traffic volumes will increase the side street delays.

Traffic counts collected in 2016 show US 21 Business Sea Island Parkway has reached an ADT of 21,660 vehicles per day (vpd), while US 21 Lady's Island Drive has reached 26,000 vpd. These busy corridors are beginning to outgrow their existing two-way left-turn lanes. Raised medians, where feasible, can reduce right angle conflicts and potentially reduce right angle crashes.

This report documents the data collected, analyses performed, and conceptual improvements planned for the area. Concept plans have also been developed. They are provided separately.

2.0 Existing Conditions

2.1 PROJECT LOCATION

The project study area is approximately a total of 4.4 miles along US 21 Business Sea Island Parkway, SC 802 Sams Point Road, US 21 Lady's Island Drive, and US 21 Sea Island Parkway in Lady's Island. The study area along Sea Island Parkway begins at the Wood's Memorial Bridge and extends to the Chowan Creek Bridge. The study area along Sams Point Road begins at Miller Drive and extends to the intersection of Sea Island Parkway. The study area along Lady's Island Drive begins at the intersection of Sea Island Parkway and extends to Rue Du Bois. The study area is essentially divided into two distinct study sub areas by the natural marsh along Sea Island Parkway. The sub area to the west of the marsh includes the main US 21 Business/SC 802 Intersection and numerous commercial developments. The sub area to the east of the marsh includes the airport, the Walmart development, and the remainder of the study area to the Chowan Creek Bridge. Figure 2.1 below shows the project study area.



Figure 2.1 – Project Study Area

2.2 EXISTING ROADWAYS

US 21 Business/US 21 (Sea Island Parkway) is currently a three-lane roadway at the Wood's Memorial Bridge which widens out to a five-lane road near Youmans Drive. At the marsh, the roadway narrows to four lanes and at airport circle narrows down to a three-lane road. The 3.3 mile section of US 21 Business has a speed limit of 40 miles per hour (mph) from Wood's Memorial Bridge to near Lost Island Road, 50 mph from near Lost Island Road to a location near Hudson Drive, and 55 mph from near Hudson Drive to the study limit at Chowan Creek Bridge. The 2015 Annual Average Daily Traffic (AADT) for US 21B between Meridian Road and US 21 is 19,500 vehicles per day (vpd) and between US 21 and Chowan Creek Bluff is 17,800 vpd.

US 21 (Ladys Island Drive) is currently a five-lane roadway within the study limits. The 0.6 mile section of US 21 has a speed limit of 45 miles per hour (mph) from the intersection at US 21 Business to just north of Hazel Farm Road. From Hazel Farm Road to the southern study limit, the speed limit is 55 mph. The 2015 Annual Average Daily Traffic (AADT) for US 21 between US 21 Business and Meridian Road is 20,600 vehicles per day (vpd).

SC 802 (Sams Point Road) is currently a five-lane roadway within the study limits. The 0.5 mile section of US 21 has a speed limit of 45 miles per hour (mph) and the 2015 Annual Average Daily Traffic (AADT) for SC 802 between US 21 and Robin Drive is 20,000 vehicles per day (vpd) and between Robin Drive and Brickyard Point Road is 20,200 vpd.

Meridian Road The posted speed limit is 35 mph and the 2015 AADT is 2,000 vpd.

S-7-186 Sunset Boulevard The posted speed limit is 35 mph and the 2015 AADT is 3,000 vpd.

Youmans Drive The posted speed limit is 30 mph and the 2015 AADT is 900 vpd.

Sams Point Way The posted speed limit is 45 mph and the 2015 AADT is 2,600 vpd.

S-7-187 Miller Drive West The posted speed limit is 30 mph and the 2015 AADT is 1,450 vpd.

Several other roadways are included in this study and are listed on the following page.

The following roadways are all two-lane roadways with unknown AADTs that intersect US 21 Business, US 21, and SC 802 in the study area:

- ***Geechie Road***
- ***S-7-537 (Ferry Drive)***
- ***Cougar Drive***
- ***Airport Circle***
- ***Eustis Landing Road***
- ***Hazel Farm Road***
- ***Professional Village Circle***
- ***S-7-497 (Gay Drive)***
- ***Lost Island Road***
- ***Old Distant Island Road***
- ***Ashland Park Road***
- ***Rue Du Bois***

2.3 COUNT DATA

48-hour tube count data was collected just west of SC 802 and US 21 on US 21B and just south of US 21B on US 21, which is located near the center of the project limits, on September 7, 2016. Based on the tube count data, it was determined that the peak hours were 7:15 AM – 8:15 AM and 4:30 PM – 5:30 PM. Turning movement counts were conducted during these two peak hours at 20 locations along the corridor. Figure 2.2 on the following page shows the count locations. Count data is shown in Appendix A. The 2016 counts showed noticeable increases from SCDOT's 2015 count data. They showed 21,660 vehicles per day (vpd) for the US 21 Business Sea Island Parkway west of SC 802 and 26,000 vpd for US 21 Lady's Island Drive south of Sea Island Parkway. Seasonal impacts were also considered, with Saturday summer counts collected. The counts conducted in the summer considered 24-hour counts just west of SC 802 and US 21 on US 21B and just south of US 21B on US 21 and turning movement counts at the intersections of Sea Island Parkway & Professional Village Circle, Sea Island Parkway & Sams Point Road/Lady's Island Drive, Sea Island Parkway & Sams Point Way, Sea Island Parkway & Ferry Road, Sams Point Road & Sams Point Way, and Lady's Island Drive & Ferry Drive. The data showed that the weekday volumes during September were consistently higher than the Saturday summer traffic collected, thus the seasonal data was omitted in the final reporting herein for simplicity.

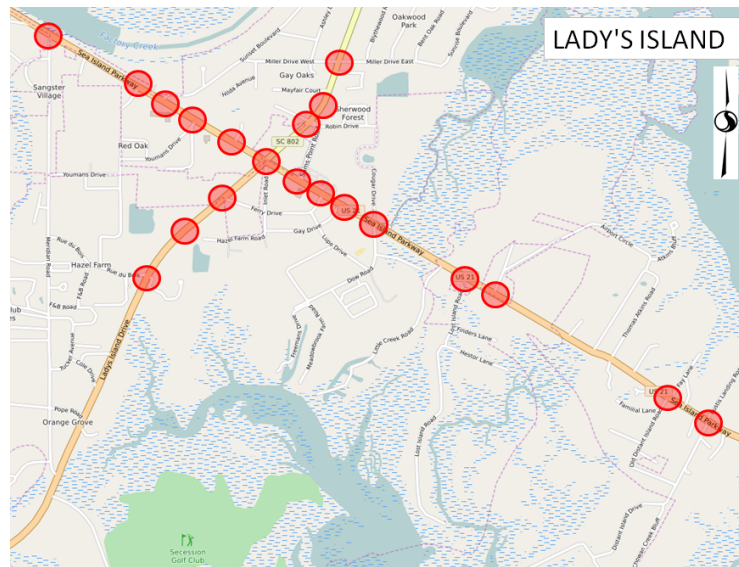


Figure 2.2 – Turning Movement Count Data Map

2.4 CRASH DATA

Crash data within the study area was obtained from the Department of Public Safety. Four years of data were obtained from January 1, 2012 to December 31, 2015. In total, there were 541 crashes in 4 years with two crashes involving at least one fatality and 180 crashes involving at least one injury. A summary of the crash data is provided below in Table 2.1.

Table 2.1 – Summary of Crash Data within Project Limits

Crashes by Injury Class	
Fatal Crashes	2
Injury Crashes	180
PDO Crashes	359
Total Crashes	541

Crashes by Manner of Collision	
Rear End	246
Angle	177
Sideswipe	41
Other	77
Total Crashes	541

Figure 2.3 below and Figure 2.4 on the following page are examples of the types of collisions experienced within the study limits. The segment shown in Figure 2.3 experiences a higher rate of rear-end collisions compared to the other types of collisions due to the stop and go congestion that is experienced in this area. Figure 2.4 shows the second most frequent type of collision in the study area, right angle collisions. At driveway locations and unsignalized intersections, angled collisions are experienced more frequently because of turning vehicles along high volume roads.



Figure 2.3 – Rear End Collisions Along Sea Island Parkway

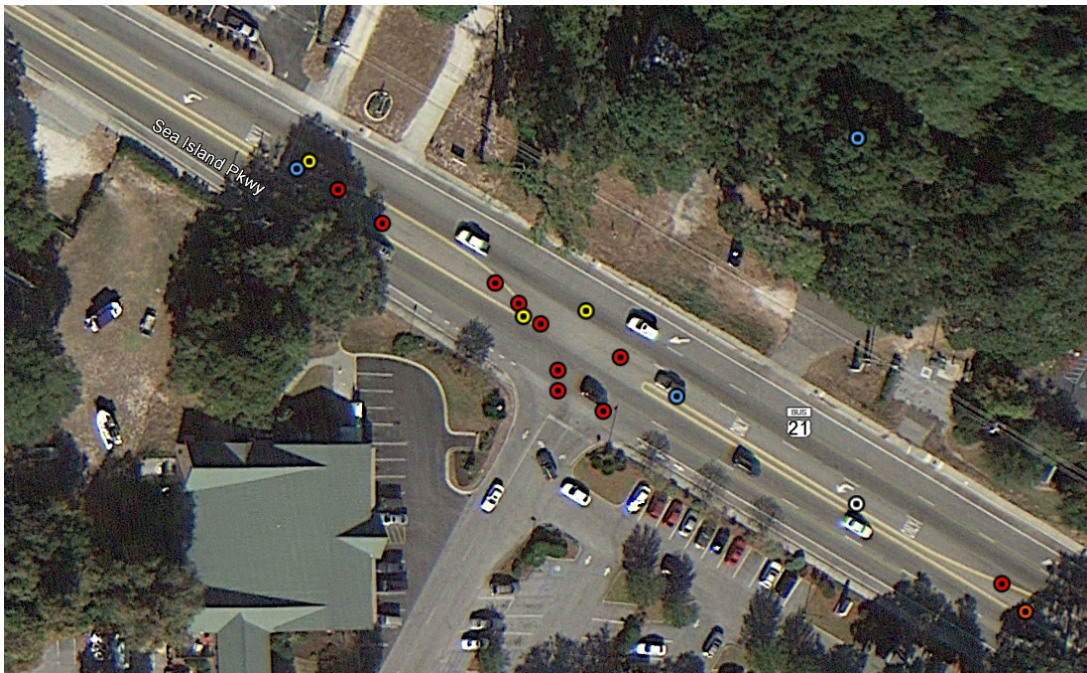


Figure 2.4 – Angled Collisions on Sea Island Parkway Just West of SC 802

3.0 Projected Conditions

3.1 GROWTH RATES

Historic tube counts collected by SCDOT from 2008 – 2015 and tube counts collected by Stantec in 2016 along US 21 Business Sea Island Parkway and US 21 Lady's Island Drive show that the traffic volumes are increasing at a rate of 1.54% compounded annually over the past ten years. Table 3.1 shows AADTs and growth rates for the study area.

Table 3.1 – Lady's Island Area AADT and Growth Rates

Location		US 21 B (West of Sunset Blvd)	US 21 Lady's Island Dr (South of Sea Island Pkwy)	Average	
Station		137	221		
Year	2006	19,900	21,000	20,450	
	2007	19,400	19,700	19,550	
	2008	18,000	19,700	18,850	
	2009	17,100	19,700	18,400	
	2010	17,400	20,000	18,700	
	2011	17,100	20,000	18,550	
	2012	16,200	18,300	17,250	
	2013	16,500	18,600	17,550	
	2014	16,400	18,400	17,400	
	2015	19,500	20,600	20,050	
	2016	21,660	26,000	23,830	
Rates	2-Year	16.04%	20.65%	18.48%	17.03%
	3-Year	10.42%	13.26%	11.93%	10.73%
	4-Year	8.43%	10.52%	9.54%	8.41%
	5-Year	5.33%	6.00%	5.69%	5.14%
	6-Year	4.08%	5.00%	4.57%	4.12%
	7-Year	3.81%	4.57%	4.22%	3.76%
	8-Year	2.54%	4.00%	3.30%	2.97%
	9-Year	1.29%	3.55%	2.43%	2.22%
	10-Year	0.88%	2.38%	1.65%	1.54%
				LINEAR	EXPONENTIAL

3.2 FUTURE VOLUMES

The year 2038 is selected as the Design Year for this study, to give a reasonable long term view of the corridors. Considering the local roads along with US 21 and US 21 Business, a growth rate of 1.0% compounded annually is used to project future traffic volumes. This 1.0% growth rate is used for each intersection turning movement count along the corridor.

3.3 DEVELOPMENTS AND TRIP GENERATION

In an effort to project accurate future traffic, current proposed developments were incorporated in the future volume development as vested traffic. The proposed developments included were Walmart, Taco Bell, Harris Teeter, The Village at Oyster Bluff, Marina Village, Lady's Island Shopping Center redevelopment, and White Hall Plantation. The proposed developments' new trips were determined based off completed Traffic Impact Analyses (TIA) and the ITE's Trip Generation Manual, 9th Edition. The projected traffic was distributed throughout the study area according to the TIAs and existing volumes. These trips are shown in Appendix B.

4.0 Concept Development

4.1 NO BUILD ALTERNATE

As with any project, there is a “do nothing” option where you consider leaving the project in the current conditions for comparison to the proposed conditions. With no improvements to the study area in Lady's Island, traffic congestion will continue to compound each year.

4.2 BUILD CONCEPT

The proposed concept plan is provided separately. It includes the following elements:

Greater Street Connectivity. Seven new connections are shown to provide alternate routes for relief of congested intersections and safer means for difficult turning movements. These connections include:

1. Enhanced access on Miller Drive West and Sunset Boulevard to avoid the congested main US 21 / SC 802 intersection
2. Paving of Hazel Farm Road and enhanced access on Gay Drive to avoid the congested main intersection
3. Relocation of the Beaufort High School access road to align with Sunset Boulevard
4. Additional access for Lady's Island Middle School, to align with Gay Drive
5. Extension of Mayfair Court to Miller Street
6. Extension of Meadowbrook Drive to Dow Road
7. New frontage road to provide better access for Lost Island Road and Little Creek Road

Each of these connections provide their own individual benefits. The first two connections will provide congestion relief from the main US 21 / SC 801 intersection, which is expected to otherwise develop major queues and delays over time. Relocation of the Beaufort High School access road allows the existing traffic signal to be relocated to Sunset Boulevard, providing better access for Sunset Boulevard. The Lady's Island Shopping Center would be redeveloped separately by others to accommodate this new access road. The additional access for Lady's Island Middle School will allow it to use the new traffic signal at Gay Drive, providing safer access onto US 21. Extending Mayfair Court will allow its residents access to the new Miller Drive signal on SC 802 Sams Point Road. Extending Meadowbrook Drive to Dow Road will provide access for Tidewatch Business Center and other properties to the new Gay Drive signal. Lastly, the new

frontage road will allow Lost Island Road and Little Creek Road residents direct access to the new Walmart traffic signal. This will make access onto US 21 safer for them.

Traffic Signal Improvements. New traffic signals are shown at the following locations:

- US 21 Business Sea Island Parkway and Sunset Boulevard / Beaufort High School (relocation from current Beaufort High School access)
- SC 802 Sams Point Road and Miller Drive
- US 21 Lady's Island Drive and Hazel Farm Road
- US 21 Sea Island Parkway and Gay Drive

The five traffic signals in this area are to be interconnected to improve vehicular progression and reduce rear end collisions.

Improvements to the Main Intersection of US 21 and SC 802. Limited space is available to widen this congested intersection. However, there are two additions that can be implemented. As part of the Harris Teeter development, a new right turn lane will be constructed for the US 21 Sea Island Parkway eastbound approach. The concept plan for this study shows a new right turn lane for the SC 802 southbound approach. It will allow the southbound approach to have two through lanes and a dedicated right turn lane. This will be especially beneficial for the morning peak, where very heavy right turn volumes occur.

Extension of the US 21 Sea Island Parkway Eastbound Outside Through Lane. The outside through lane currently tapers down just prior to Lost Island Road. This creates a rear end crash potential for eastbound drivers turning right onto Little Creek Road and Lost Island Road. With the planned Walmart development, extending this outside through lane past the commercial area would provide both congestion and safety benefits. Along with this extension, the westbound right turns onto the two Walmart site driveways will be converted to through-right lanes. This will provide congestion relief for westbound traffic, particularly in the morning peak.

Raised Medians for Access Management and Safety Improvements. The medians are shown in the concept plan for parts of US 21 Business Sea Island Parkway, US 21 Sea Island Parkway, SC 802 Sams Point Road, and US 21 Lady's Island Drive. Careful consideration is given to alternate routes associated with the medians. For example, a new driveway onto the newly signalized Hazel Farm Road is shown for Sea Island Presbyterian Church and Mayfair Court is extended to provide alternate access. Also, the three-lane segment of US 21 Business Sea Island Parkway

does not include a raised median, as it would be too tight to accommodate any u-turn movements.

Traffic Calming Elements. With Sunset Boulevard, Miller Drive, and Gay Drive being designed as alternate routes to relieve the main intersection, it will be important to preserve their residential character. A previous study of Sunset Boulevard and Miller Drive by SCDOT found that those two streets did not meet policy criteria for traffic calming due to speed limits and functional class. Based on public input and the proposed connectivity, this study recognizes there will at least be a need for regulating flows. In the concept plan, these streets are designed to provide traffic flows that are largely uninterrupted, yet at low speeds. The intent is for these streets to flow freely, but at speeds that are safe for residents and pedestrians. The traffic calming elements include groups of landscaped areas along their shoulders that alternate with median chicanes. Also included are 25 mph speed limit postings. Combined, these elements should make drivers feel compelled to drive at a more consistent, slow speed. Lastly, roundabouts are included to avoid delays that would result from stop control and to better regulate traffic flows. The Hazel Farm Road / Gay Drive roundabout has the added benefit of accommodating street geometry needs without displacing any properties.

Enhanced Bicycle and Pedestrian Accommodations. Sidewalks already exist along both major routes and all approaches except for SC 802 Sams Point Road have dedicated bicycle lanes. However, the City of Beaufort wishes to enhance bicycle and pedestrian accommodations, pursuant to its Civic Master Plan. The concept plan shows the sidewalks to be widened, with multi-use paths on SC 802 to account for the lack of dedicated bicycle lanes. Side streets Sunset Boulevard, Miller Drive West, and Gay Drive also feature sidewalk/path enhancements.

Corridor Enhancements. Landscaping, irrigation, and lighting are planned to enhance the main corridors, as well as Sunset Boulevard, Miller Drive West, Gay Drive, and the Beaufort High School access road. These elements should significantly enhance the area.

4.3 OTHER ALTERNATES CONSIDERED

Other design alternates were originally considered under this study. Among them included:

Widening of US 21 Business / US 21 Sea Island Parkway and/or US 21 Lady's Island Drive / SC 802 Sams Point Road. With commercial buildings, parking lots and large oak trees close to the

existing through lanes, no feasible options existed for widening the main corridors. Impacts would have been very significant, so this alternate was omitted from selection.

Hazel Farm Road Extension. Extension through the undeveloped area between Gay Drive and Meadowbrook Drive was considered in lieu of using Gay Drive. This would have routed traffic away from residential streets. However, it would have also incurred significantly higher property impacts and resulted in poor land use, with essentially unusable acreage along its length.

Omitting the US 21 Sea Island Parkway Eastbound Through Lane Extension. Omitting this extension was considered because of the wetland impacts it will require. However, it was determined that the safety benefits outweighed the wetland impacts. The congestion relief it offers is also warranted.

Maintaining the Existing Beaufort High School Traffic Signal. This alternate was considered in case relocating the traffic signal should be disallowed. A right turn acceleration lane from Sunset Boulevard onto US 21 Business westbound could accommodate heavy AM traffic flows in that direction. However, right of way impacts would be significant. It would also not accommodate the much needed left turn from US 21 Business onto Sunset Boulevard.

Other Traffic Signal Locations. Several other intersections were considered for traffic signals. Among them included US 21 Lady's Island Drive at Ferry Drive, US 21 Lady's Island Drive at Rue Du Bois, US 21 Sea Island Parkway at Sams Point Way, US 21 Sea Island Parkway at Ferry Road, and SC 802 Sams Point Road at Sams Point Way. None of these intersections were deemed feasible for signal installation, due to low side street volumes, close proximity to other existing signals, and potential queueing issues.

5.0 Operations Analysis

The No Build Alternate and the Build Concept were compared for intersection delays. Detailed Synchro analyses were performed for each study area intersection. Using the existing and projected traffic volumes, intersection analyses were conducted for the study area intersections considering 2020 No Build conditions, 2038 No Build conditions, and 2038 Build conditions. This analysis was conducted using the Transportation Research Board's *Highway Capacity Manual 2000 (HCM 2000)* methodologies of the Synchro, Version 9 software for intersection analysis.

Intersection level of service (LOS) grades range from LOS A to LOS F, which are directly related to the level of control delay at the intersection and characterize the operational conditions of the intersection traffic flow. LOS A operations typically represent ideal, free-flow conditions where vehicles experience little to no delays, and LOS F operations typically represent poor, forced-flow (bumper-to-bumper) conditions with high vehicular delays, and are generally considered undesirable. Table 5.1 summarizes the *HCM 2010* control delay thresholds associated with each LOS grade for unsignalized and signalized intersections.

Table 5.1 – HCM 2010 LOS Criteria for Unsignalized and Signalized Intersections

Unsignalized Intersections		Signalized Intersections	
LOS	Control Delay Per Vehicle (seconds)	LOS	Control Delay Per Vehicle (seconds)
A	≤ 10	A	≤ 10
B	> 10 and ≤ 15	B	> 10 and ≤ 20
C	> 15 and ≤ 25	C	> 20 and ≤ 35
D	> 25 and ≤ 35	D	> 35 and ≤ 55
E	> 35 and ≤ 50	E	> 55 and ≤ 80
F	> 50	F	> 80

5.1 INTERSECTION LEVEL OF SERVICE AND DELAY RESULTS

An Analysis of the 2016 Existing, 2038 No Build, and 2038 Build conditions was conducted. Intersection levels of service (LOS) results for the AM Peak Hour are shown in Table 5.2 for each of the analysis scenarios and Table 5.4 for the PM Peak Hour. It should be noted that the overall intersection LOS and delay shown in bold is for signalized intersections. All other LOS and delays are for stop controlled side street approaches. Also, the "+" in the table symbolizes that there

are no turning volumes at the intersection. The results highlighted in green represent a letter grade improvement in the 2038 Build LOS for the alternate, whereas the results highlighted in red represent a letter grade worse.

Analysis of the 2016 Existing peak hour shows one approach operates at LOS F, one approach at LOS E, seven approaches/intersections at LOS D, and eleven approaches/intersections at LOS C or better. Overall, the corridor has moderate delays. Analysis of the 2038 No Build AM and PM peak hours shows that the corridor will experience high delays in the future if no improvements are implemented. Analysis of the 2038 Build Conditions shows marked improvement over the No Build conditions. Out of 23 intersections in the 2038 AM Peak Hour Build scenario, 1 intersection got worse than the 2038 AM Peak Hour No Build scenario, 17 intersections improved (green), and 5 intersections remain at the same letter grade LOS. Out of 23 intersections in the 2038 PM Peak Hour Build scenario, 1 intersection got worse than the 2038 PM peak hour No Build scenario, 16 intersections improved (green), and 6 intersections remain at the same letter grade LOS. The intersection with decreased LOS in the Build scenarios is US 21 Business at the High School driveway. Here, the traffic signal has been relocated to Sunset Boulevard and side street volumes are expected to be very low. A very small number of vehicles are expected to experience the reduced LOS shown. The delay reported is only for the worst case minor street and is not the delay experienced by Sea Island Parkway. The 2016 Existing results are shown in Appendix C, the 2038 No Build results are shown in Appendix D, and the 2038 Build results are shown in Appendix E.

The mini roundabouts were analyzed using *Sidra* software. Based on the projected future 2038 Peak Hour Build volumes, the roundabouts are expected to operate at an LOS A in both the AM and PM peak hour. The results are shown for the AM Peak in Table 5.3 on the following page and are shown for the PM Peak in Table 5.5 on page 17. The *Sidra* results are shown in Appendix F. With the intersection of Sunset Boulevard and Miller Drive being an existing intersection, future 2038 delays are also shown for two scenarios without the roundabout: (1) existing stop control conditions (stopping on the Miller Drive approach only) and (2) all way stop control implemented. The results show the roundabout option to provide significantly lower delays. Meanwhile, Hazel Farm Road and Gay Drive would essentially be a new intersection. The roundabout is needed at this intersection to provide roadway geometry that avoids displacing properties.

Table 5.2 – AM Peak Intersection LOS and Delay Results

Intersection	2016 No Build Peak Hour		2038 No Build Peak Hour		2038 Build Peak Hour	
	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
US 21 B (Sea Island Pky) & Meridian Rd	C	23.0 (NB)	F	110.7 (NB)	F	110.7 (NB)
US 21 B (Sea Island Pky) & Beaufort High School	C	21.9	D	40.4	F	98.1
US 21 B (Sea Island Pky) & Sunset Blvd	E	43.6 (SB)	F	N.A. (NB)	E	59.0
US 21 B (Sea Island Pky) & Youmans Dr	C	22.8 (SB)	E	47.8 (NB)	C	24.0 (SB)
US 21 B (Sea Island Pky) & Professional Village Cr	C	22.2 (SB)	F	96.2 (SB)	D	25.7 (SB)
US 21 (Sea Island Pky) & SC 802 (Sams Point Rd)	D	54.9	F	147.9	D	42.2
US 21 (Sea Island Pky) & Sams Point Way	C	17.2 (SB)	F	449.7 (NB)	C	20.2 (NB)
US 21 (Sea Island Pky) & Ferry Rd	D	31.3 (SB)	F	217.9 (SB)	C	21.8 (SB)
US 21 (Sea Island Pky) & Gay Dr	B	14.7 (NB)	D	25.4 (NB)	B	16.9
US 21 (Sea Island Pky) & Cougar Dr	F	62.2 (NB)	F	N.A. (SB)	-	+
US 21 (Sea Island Pky) & Lost Island Rd	B	14.5 (NB)	C	22.0 (NB)	B	12.4 (NB)
US 21 (Sea Island Pky) & Airport Circle	C	19.3 (SB)	B	17.3	B	16.5
US 21 (Sea Island Pky) & Old Distant Island Rd	C	20.9 (NB)	F	224.7 (NB)	F	224.7 (NB)
US 21 (Sea Island Pky) & Eustis Landing Road/Chowan Creek Bluff	C	21.1	E	59.4	E	59.4
US 21 (Lady's Island Drive) & Rue Du Bois	C	24.9 (EB)	F	74.9 (EB)	E	37.0 (EB)
US 21 (Lady's Island Drive) & Hazel Farm Rd	C	17.3 (WB)	D	26.4 (WB)	B	14.3
US 21 (Lady's Island Drive) & Ferry Dr	D	34.5 (WB)	F	284.4 (WB)	C	22.6 (WB)
SC 802 (Sams Point Road) & Sams Point Way	B	13.7 (WB)	C	22.9 (WB)	C	18.0 (WB)
SC 802 (Sams Point Road) & Ashland Park Rd	C	23.0 (EB)	E	43.6 (EB)	C	18.8 (EB)
SC 802 (Sams Point Road) & Miller Rd	D	33.8 (EB)	F	142.8 (EB)	D	35.8
US 21 B (Sea Island Pky) & Taco Bell	-	+	C	22.4 (NB)	B	12.5 (NB)
US 21 B (Sea Island Pky) & Walmart#3	-	+	E	45.5 (SB)	C	24.4 (SB)
US 21 B (Sea Island Pky) & Walmart#4	-	+	E	37.1 (SB)	C	16.9 (SB)

Table 5.3 – 2038 Build Intersection Alternatives AM Peak Hour LOS and Delay Results Comparison

AM Peak Hour LOS and Delay	Existing Stop Control		All Way Stop Control		Roundabout	
	2038 Build		2038 Build		2038 Build	
	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
Sunset Boulevard & Miller Drive	D	27.5 (Westbound)	E	36.0 (Westbound)	A	9.6
Hazel Farm Road & Gay Drive	-	-	-	-	A	8.3

Table 5.4 – PM Peak Intersection LOS and Delay Results

Intersection	2016 No Build Peak Hour		2038 No Build Peak Hour		2038 Build Peak Hour	
	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
US 21 B (Sea Island Pky) & Meridian Rd	D	28.2 (NB)	F	855.8 (SB)	F	855.8 (SB)
US 21 B (Sea Island Pky) & Beaufort High School	C	20.8	D	45.0	E	46.6 (SB)
US 21 B (Sea Island Pky) & Sunset Blvd	C	19.7 (SB)	F	N.A. (SB)	D	52.6
US 21 B (Sea Island Pky) & Youmans Dr	D	32.9 (SB)	F	N.A. (SB)	F	N.A. (SB)
US 21 B (Sea Island Pky) & Professional Village Cr	C	24.4 (SB)	F	223.9 (SB)	E	53.0 (SB)
US 21 (Sea Island Pky) & SC 802 (Sams Point Rd)	D	53.9	F	153.9	E	69.6
US 21 (Sea Island Pky) & Sams Point Way	C	15.9 (NB)	F	2667.8 (NB)	D	25.8 (NB)
US 21 (Sea Island Pky) & Ferry Rd	C	21.9 (SB)	F	126.1 (SB)	D	34.4 (SB)
US 21 (Sea Island Pky) & Gay Dr	C	20.1 (NB)	F	51.8 (NB)	C	21.6
US 21 (Sea Island Pky) & Cougar Dr	D	34.4 (NB)	F	325.5 (NB)	-	+
US 21 (Sea Island Pky) & Lost Island Rd	C	19.7 (NB)	F	55.0 (NB)	C	17.3 (NB)
US 21 (Sea Island Pky) & Airport Circle	B	13.3 (SB)	D	46.6	C	24.0
US 21 (Sea Island Pky) & Old Distant Island Rd	C	17.2 (NB)	D	32.6 (NB)	D	32.6 (NB)
US 21 (Sea Island Pky) & Eustis Landing Road/Chowan Creek Bluff	C	20.1	E	75.7	E	75.7
US 21 (Lady's Island Drive) & Rue Du Bois	D	25.0 (WB)	F	89.6 (WB)	F	81.4 (WB)
US 21 (Lady's Island Drive) & Hazel Farm Rd	D	27.1 (WB)	F	57.2 (WB)	B	14.1
US 21 (Lady's Island Drive) & Ferry Dr	F	53.0 (WB)	F	744.2 (WB)	C	24.7 (WB)
SC 802 (Sams Point Road) & Sams Point Way	D	30.5 (WB)	F	287.5 (WB)	F	125.0 (WB)
SC 802 (Sams Point Road) & Ashland Park Rd	C	18.1 (EB)	E	35.3 (EB)	C	16.8 (EB)
SC 802 (Sams Point Road) & Miller Rd	E	40.5 (WB)	F	183.8 (WB)	C	25.7
US 21 B (Sea Island Pky) & Taco Bell	-	+	F	53.0 (NB)	C	17.0 (NB)
US 21 B (Sea Island Pky) & Walmart#3	-	+	F	N.A. (SB)	C	17.9 (SB)
US 21 B (Sea Island Pky) & Walmart#4	-	+	C	21.1 (SB)	B	13.4 (SB)

Table 5.5 – 2038 Build Intersection Alternatives PM Peak Hour LOS and Delay Results Comparison

PM Peak Hour LOS and Delay	Existing Stop Control		All Way Stop Control		Roundabout	
	2038 Build		2038 Build		2038 Build	
	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
Sunset Boulevard & Miller Drive	C	19.5 (Westbound)	C	20.3 (Northbound)	A	8.6
Hazel Farm Road & Gay Drive	-	-	-	-	A	8.2

5.2 NEW TRAFFIC SIGNALS

The 2038 Build Concept includes recommendations regarding traffic signals along the corridors. Three new traffic signals are recommended: one at the intersections of Sams Point Road and Miller Drive, one at Sea Island Parkway and Gay Drive, and one at Lady's Island Drive and Hazel Farm Road. One traffic signal on US 21 Sea Island Parkway is recommended to be relocated from the current Beaufort High School Access Road intersection to the Sunset Boulevard intersection to accommodate Sunset Boulevard traffic. The high school's main entrance will be relocated to align with Sunset Drive and the new signal. These signals will facilitate traffic in the future to utilize the alternative routes proposed in the concept plan. They are currently scoped to include mast arms to match the streetscape enhancements.

Based on a review of the proposed traffic signals, the AM and PM peak hours whose volumes were counted are expected to meet the *Manual of Uniform Traffic Control Devices* (MUTCD's) one-hour, four-hour, and eight-hour warrants. Hours beyond the AM and PM peaks have not been counted. Based on anticipated traffic patterns, the four-hour warrant is likely to be met at all signals. Some intersections may meet the eight-hour warrant; however, this is difficult to predict.

Currently there are no funds for improvements. By the time any construction can occur, key developments identified, such as Walmart, Harris Teeter, etc., will likely be completed. Thus volumes will be lower than the 2038 turning movement counts projected, but not significantly lower. This study anticipates that by the time these signals can be funded and installed with roadway improvements, they will be warranted. Additional signal warrant analysis may be warranted during the design phase. Like this study, it would need to account for the latent turning movement demand that will exist but not necessarily show up in the volume counts due to difficulties in making these turns without a traffic signal.

6.0 Phases for Improvements

This study recognizes that the improvements will need to be constructed in phases, as individual projects. For planning and budgeting purposes, this study separates the proposed improvements into nine distinct improvement projects. These individual projects are listed below. The pages that follow provide descriptions for each project, with opinions of probable costs.

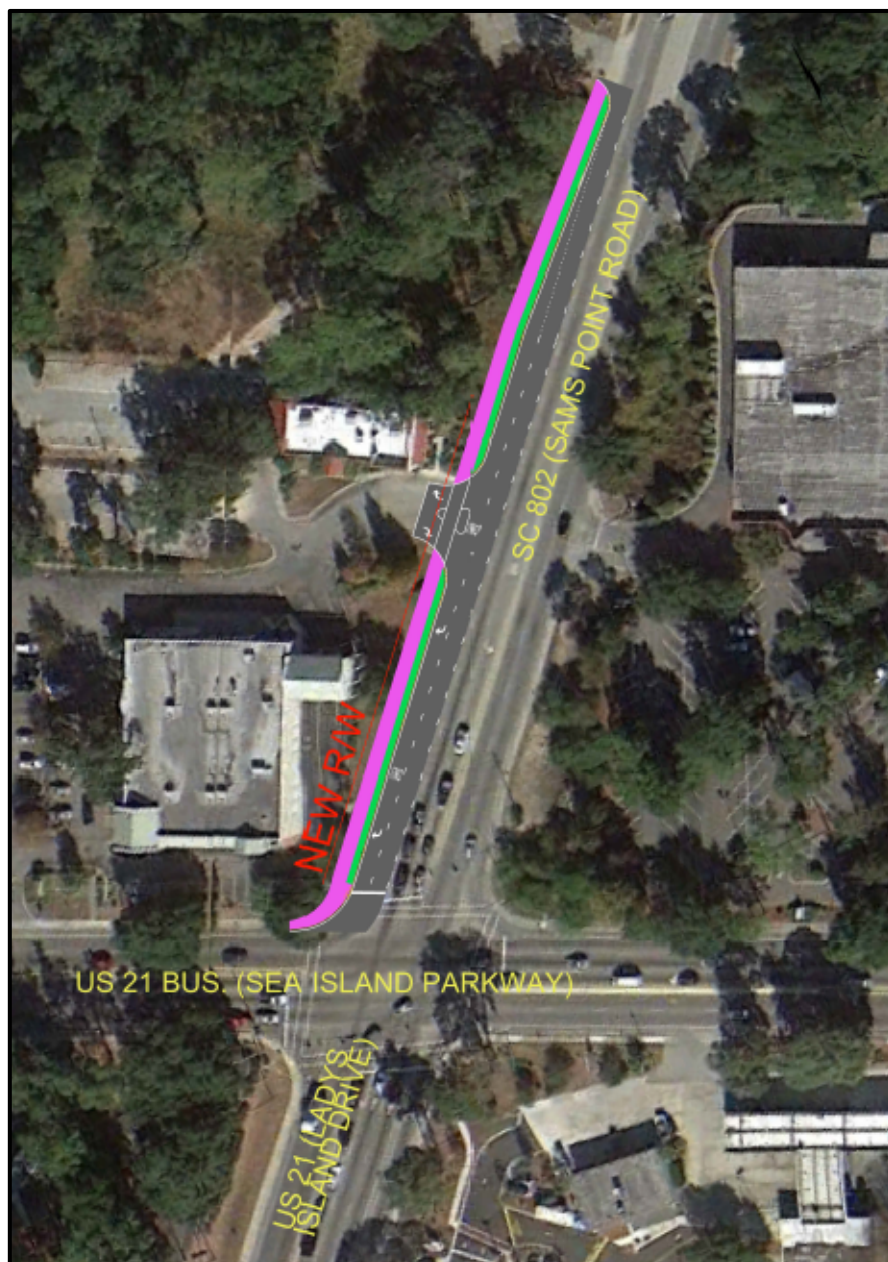
1. SC 802 Sams Point Road Right Turn Lane
2. Hazel Farm Road and S-7-497 Gay Drive
3. New Lady's Island Middle School Access
4. S-7-186 Sunset Boulevard and S-7-187 Miller Drive West
5. Beaufort High School Access Realignment
6. US 21 Business, US 21, and SC 802 Mainline Improvements
7. Meadowbrook Drive Extension
8. Mayfair Court Extension
9. US 21 Airport Area and Frontage Road

Each individual project provides its own specific benefits. Normally, the projects would be prioritized based on order of need. For Lady's Island, prioritization of these projects will depend somewhat on availability. For example, the Beaufort High School Access Realignment will require redevelopment of the adjacent shopping center.

It is not possible to precisely delineate the limits of each individual project because the elements of each project will depend partially on what elements have already been completed. In other words, the individual projects are somewhat interdependent of each other. For example, Hazel Farm Road and S-7-497 Gay Drive improvements will require turn lane / median improvements to Sea Island Parkway and Lady's Island Drive. The extent of those improvements will depend on whether the Hazel Farm / Gay Drive improvements begin first or the Sea Island Parkway and Lady's Island Drive improvements begin first. So the limits and costs for each individual project will likely change over time based on scheduling, but the overall totals should not change significantly.

6.1 SC 802 SAMS POINT ROAD TURN LANE

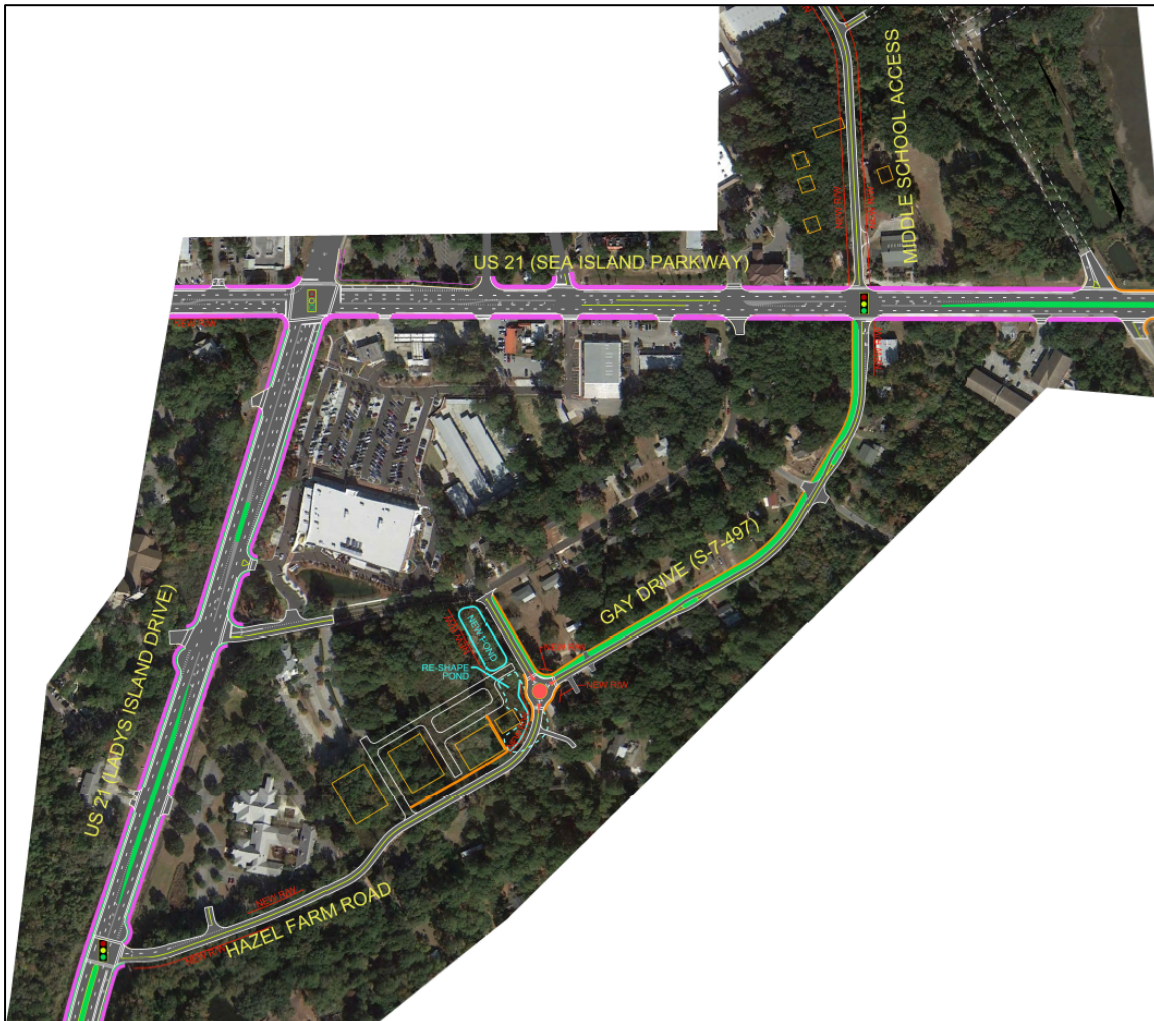
This project would include addition of the right turn lane at SC 802 (Sams Point Road) and US 21 Business. The dedicated right turn lane would open the existing right turn lane for conversion to a thru lane at the signal. This would benefit the intersection by providing relief for the heavy morning peak right turn movement and capacity for the through movement. The right turn is a good candidate for initial construction and can proceed the other projects. Upgrading the US 21 / SC 802 traffic signal to include mast arms would also be accomplished with this project.



SC 802 SAMS POINT TURN LANE					
SECTION	ITEM	QUANTITY	UNIT	UNIT PRICE	NET PRICE
1031000	MOBILIZATION	1.000	LS	\$30,000.00	\$30,000.00
2027000	REM. & DISP. OF EXISTING CONC.	10.000	CY	\$29.00	\$290.00
2031200	SITE EXCAVATION	1.000	LS	\$65,000.00	\$65,000.00
3100310	HOT MIX ASPHALT BASE COURSE - TYPE A	180.000	TON	\$85.00	\$15,300.00
4011004	LIQUID ASPHALT BINDER PG64-22	25.000	TON	\$750.00	\$18,750.00
4013200	MILLING EXISTING ASPHALT PAVEMENT 2.0"	1,098.000	SY	\$19.00	\$20,862.00
4020320	HOT MIX ASPHALT INTERMEDIATE COURSE TYPE B	60.000	TON	\$90.00	\$5,400.00
4030320	HOT MIX ASPHALT SURFACE COURSE TYPE B	170.000	TON	\$105.00	\$17,850.00
7203210	CONCRETE CURB AND GUTTER(2'-0") VERTICAL FACE	580.000	LF	\$21.00	\$12,180.00
7204100	CONCRETE SIDEWALK(4" UNIFORM)	598.000	SY	\$54.00	\$32,292.00
7209000	PEDESTRIAN RAMP CONSTRUCTION	50.000	SY	\$170.00	\$8,500.00
	TRAFFIC CONTROL	1.000	LS	\$35,000.00	\$35,000.00
	PAVEMENT MARKINGS	1.000	LS	\$10,000.00	\$10,000.00
	EROSION CONTROL	1.000	LS	\$12,000.00	\$12,000.00
	DRAINAGE	1.000	LS	\$80,400.00	\$80,400.00
	TRAFFIC SIGNAL UPGRADES WITH MAST ARMS	1.000	LS	\$140,000.00	\$140,000.00
CONSTRUCTION COST=					\$503,824.00
PRELIMINARY ENGINEERING =					\$55,000.00
REIMBURSABLE UTILITY RELOCATION=					\$40,000.00
PERMITTING=					\$500.00
CONSTRUCTION OVERSIGHT=					\$35,000.00
SUBTOTAL =					\$634,324.00
CONTINGENCIES AT 20% =					\$126,864.80
TOTAL PROJECT COST =					\$761,188.80
NOTES:					
1. PROJECT COST EXCLUDES COSTS FOR OBTAINING RIGHT OF WAY AND PERMISSIONS/EASEMENTS.					
2. COSTS FOR REIMBURSABLE UTILITY RELOCATIONS AND PERMITTING ARE HIGHLY CONCEPTUAL. THEY ARE PROVIDED FOR PLANNING PURPOSES ONLY.					
3. ALL COSTS ARE IN 2017 DOLLARS.					

6.2 HAZEL FARM ROAD AND S-7-497 GAY DRIVE

The Hazel Farm Road and S-7-497 Gay Drive project would include paving of Hazel Farm Road, improvements to Gay Drive, construction of the roundabout, installation of new traffic signals at each end, and signal interconnection with the US 21 / SC 802 signal. Upgrading these roads would provide beneficial street connectivity, increased pedestrian and bike safety, and congestion relief for the main intersection. With new signal implementation, this project is interdependent with improvements to mainline SC 802/US 21 Bus (Sea Island Parkway) and alignment of the new Lady's Island Middle School Access project. Addition of turn lanes, realignment of the middle school access, and median work to provide access management is needed at the connection of Hazel Farm at SC 802 and Gay Drive at US 21 Bus (Sea Island Parkway) to provide the full benefit of the signal interconnection.



HAZEL FARM ROAD AND S-7-497 GAY DRIVE					
SECTION	ITEM	QUANTITY	UNIT	UNIT PRICE	NET PRICE
1031000	MOBILIZATION	1.000	LS	\$120,000.00	\$120,000.00
2025000	REM.&DISP.OF EXIST ASPH. PVMT.	1,335.000	SY	\$35.00	\$46,725.00
2031200	SITE EXCAVATION (INCLUDING DET. POND)	1.000	LS	\$450,000.00	\$450,000.00
3100310	HOT MIX ASPHALT BASE COURSE - TYPE A	1,170.000	TON	\$85.00	\$99,450.00
4011004	LIQUID ASPHALT BINDER PG64-22	175.000	TON	\$750.00	\$131,250.00
4013200	MILLING EXISTING ASPHALT PAVEMENT 2.0"	1,122.222	SY	\$19.00	\$21,322.22
4020320	HOT MIX ASPHALT INTERMEDIATE COURSE TYPE B	585.000	TON	\$90.00	\$52,650.00
4030320	HOT MIX ASPHALT SURFACE COURSE TYPE B	1,652.208	TON	\$105.00	\$173,481.88
5019010	STAINED CONCRETE PAVEMENT (8" UNIFORM)	192.111	SY	\$130.00	\$24,974.44
7201000	CONCRETE CURB (9" X 15")	230.000	LF	\$27.00	\$6,210.00
7203210	CONCRETE CURB AND GUTTER (2'-0") VERTICAL FACE	310.000	LF	\$29.00	\$8,990.00
7204100	CONCRETE SIDEWALK (4" UNIFORM)	1,092.000	SY	\$54.00	\$58,968.00
7209000	PEDESTRIAN RAMP CONSTRUCTION	175.000	SY	\$170.00	\$29,750.00
	TRAFFIC CONTROL	1.000	LS	\$150,000.00	\$150,000.00
	PAVEMENT MARKINGS AND SIGNING	1.000	LS	\$75,000.00	\$75,000.00
	TWO TRAFFIC SIGNAL WITH MAST ARMS	1.000	LS	\$280,000.00	\$280,000.00
	TRAFFIC SIGNAL INTERCONNECT	1.000	LS	\$45,000.00	\$45,000.00
	EROSION CONTROL	1.000	LS	\$80,000.00	\$80,000.00
	DRAINAGE	1.000	LS	\$94,000.00	\$94,000.00
	LANDSCAPING	1.000	LS	\$23,192.50	\$23,192.50
	IRRIGATION	1.000	LS	\$75,000.00	\$75,000.00
CONSTRUCTION COST=					\$2,045,964.04
PRELIMINARY ENGINEERING =					\$250,000.00
REIMBURSABLE UTILITY RELOCATION=					\$50,000.00
PERMITTING=					\$500.00
CONSTRUCTION OVERSIGHT=					\$140,000.00
SUBTOTAL =					\$2,486,464.04
CONTINGENCIES AT 20% =					\$497,292.81
TOTAL PROJECT COST =					\$2,983,756.85
NOTES:					
1. PROJECT COST EXCLUDES COSTS FOR OBTAINING RIGHT OF WAY AND PERMISSIONS/EASEMENTS.					
2. COSTS FOR REIMBURSABLE UTILITY RELOCATIONS AND PERMITTING ARE HIGHLY CONCEPTUAL. THEY ARE PROVIDED FOR PLANNING PURPOSES ONLY.					
3. ALL COSTS ARE IN 2017 DOLLARS.					

6.3 NEW LADY'S ISLAND MIDDLE SCHOOL ACCESS

The new Lady's Island Middle School Access project includes realigning the main entrance road to the middle school with Gay Drive and tie-ins to the middle school driveways, existing Cougar Drive, and Robin Drive. Cougar Drive would become right in right out. The benefits of this configuration include safer access to US 21 and street connectivity with the surrounding neighborhood near Robin drive. This project is dependent on improvements to the medians on mainline US 21 Bus (Sea Island Parkway) and signalization with the Gay Drive Project.



NEW LADY'S ISLAND MIDDLE SCHOOL ACCESS					
SECTION	ITEM	QUANTITY	UNIT	UNIT PRICE	NET PRICE
1031000	MOBILIZATION	1.000	LS	\$75,000.00	\$75,000.00
2031200	SITE EXCAVATION	1.000	LS	\$245,000.00	\$245,000.00
3100310	HOT MIX ASPHALT BASE COURSE - TYPE A	680.000	TON	\$85.00	\$57,800.00
4011004	LIQUID ASPHALT BINDER PG64-22	80.000	TON	\$750.00	\$60,000.00
4013200	MILLING EXISTING ASPHALT PAVEMENT 2.0"	333.333	SY	\$19.00	\$6,333.33
4020320	HOT MIX ASPHALT INTERMEDIATE COURSE TYPE B	340.000	TON	\$90.00	\$30,600.00
4030320	HOT MIX ASPHALT SURFACE COURSE TYPE B	500.000	TON	\$105.00	\$52,500.00
7203210	CONCRETE CURB AND GUTTER (2'-0") VERTICAL FACE	1,500.000	LF	\$29.00	\$43,500.00
	TRAFFIC CONTROL	1.000	LS	\$75,000.00	\$75,000.00
	PAVEMENT MARKINGS	1.000	LS	\$50,000.00	\$50,000.00
	EROSION CONTROL	1.000	LS	\$75,000.00	\$75,000.00
	DRAINAGE	1.000	LS	\$260,000.00	\$260,000.00
CONSTRUCTION COST=					\$1,030,733.33
PRELIMINARY ENGINEERING =					\$110,000.00
REIMBURSABLE UTILITY RELOCATION=					\$20,000.00
PERMITTING=					\$5,000.00
CONSTRUCTION OVERSIGHT=					\$70,000.00
SUBTOTAL =					\$1,235,733.33
CONTINGENCIES AT 20% =					\$247,146.67
TOTAL PROJECT COST =					\$1,482,880.00
NOTES:					
1. PROJECT COST EXCLUDES COSTS FOR OBTAINING RIGHT OF WAY AND PERMISSIONS/EASEMENTS.					
2. COSTS FOR REIMBURSABLE UTILITY RELOCATIONS AND PERMITTING ARE HIGHLY CONCEPTUAL. THEY ARE PROVIDED FOR PLANNING PURPOSES ONLY.					
3. ALL COSTS ARE IN 2017 DOLLARS.					

6.4 S-7-186 SUNSET BOULEVARD AND S-7-187 MILLER DRIVE WEST

S-7-186 Sunset Boulevard and S-7-187 Miller Drive West includes improvements to both streets, traffic calming, installation of a new traffic signal at the Miller Drive West intersection with SC 802, and signal interconnection with the US 21 / SC 802 signal. This would increase pedestrian safety on Sunset Boulevard and Miller Drive and provide congestion relief for the main US 21 / SC 801 intersection. These improvements are interdependent with the US 21 / SC 802 mainline project and the Beaufort High School Access Realignment.



S-7-186 SUNSET BOULEVARD AND S-7-187 MILLER DRIVE WEST					
SECTION	ITEM	QUANTITY	UNIT	UNIT PRICE	NET PRICE
1031000	MOBILIZATION	1.000	LS	\$120,000.00	\$120,000.00
2025000	REM.&DISP.OF EXIST ASPH. PVMT.	1,115.000	SY	\$35.00	\$39,025.00
2031200	SITE EXCAVATION	1.000	LS	\$250,000.00	\$250,000.00
3100310	HOT MIX ASPHALT BASE COURSE - TYPE A	350.000	TON	\$85.00	\$29,750.00
4011004	LIQUID ASPHALT BINDER PG64-22	160.000	TON	\$750.00	\$120,000.00
4013200	MILLING EXISTING ASPHALT PAVEMENT 2.0"	6,000.000	SY	\$19.00	\$114,000.00
4020320	HOT MIX ASPHALT INTERMEDIATE COURSE TYPE B	175.000	TON	\$90.00	\$15,750.00
4030320	HOT MIX ASPHALT SURFACE COURSE TYPE B	2,524.736	TON	\$105.00	\$265,097.29
5019010	STAINED CONCRETE PAVEMENT (8" UNIFORM)	199.222	SY	\$130.00	\$25,898.89
7201000	CONCRETE CURB (9" X 15")	690.000	LF	\$27.00	\$18,630.00
7203210	CONCRETE CURB AND GUTTER (2'-0") VERTICAL FACE	6,282.000	LF	\$29.00	\$182,178.00
7204100	CONCRETE SIDEWALK (4" UNIFORM)	5,219.444	SY	\$54.00	\$281,850.00
7206000	CONCRETE MEDIAN	0.000	SY	\$105.00	\$0.00
7209000	PEDESTRIAN RAMP CONSTRUCTION	150.000	SY	\$170.00	\$25,500.00
	TRAFFIC CONTROL	1.000	LS	\$180,000.00	\$180,000.00
	PAVEMENT MARKINGS	1.000	LS	\$95,000.00	\$95,000.00
	TRAFFIC SIGNAL WITH MAST ARMS	1.000	LS	\$140,000.00	\$140,000.00
	TRAFFIC SIGNAL INTERCONNECT	1.000	LS	\$72,000.00	\$72,000.00
	EROSION CONTROL	1.000	LS	\$125,000.00	\$125,000.00
	DRAINAGE	1.000	LS	\$355,000.00	\$355,000.00
	LANDSCAPING	1.000	LS	\$51,450.00	\$51,450.00
	IRRIGATION	1.000	LS	\$100,000.00	\$100,000.00
	LIGHTING	1.000	LS	\$784,000.00	\$784,000.00
CONSTRUCTION COST=					\$3,390,129.18
PRELIMINARY ENGINEERING =					\$370,000.00
REIMBURSABLE UTILITY RELOCATION=					\$100,000.00
PERMITTING=					\$5,000.00
CONSTRUCTION OVERSIGHT=					\$170,000.00
SUBTOTAL =					\$4,035,129.18
CONTINGENCIES AT 20% =					\$807,025.84
TOTAL PROJECT COST =					\$4,842,155.02
NOTES:					
1. PROJECT COST EXCLUDES COSTS FOR OBTAINING RIGHT OF WAY AND PERMISSIONS/EASEMENTS.					
2. COSTS FOR REIMBURSABLE UTILITY RELOCATIONS AND PERMITTING ARE HIGHLY CONCEPTUAL. THEY ARE PROVIDED FOR PLANNING PURPOSES ONLY.					
3. ALL COSTS ARE IN 2017 DOLLARS.					

6.5 BEAUFORT HIGH SCHOOL ACCESS REALIGNMENT

Beaufort High School Access includes realignment of the access road, tie-ins to the existing access and to the Lady's Island Shopping Center redevelopment, relocation of the existing traffic signal, and signal interconnection with the US 21 / SC 802 signal. This project improves the connection to US 21 with an alignment of Sunset Boulevard. Some sections are dependent upon coordination with property owners. For example, the Beaufort High School Access Realignment is dependent upon coordination with Lady's Island Shopping Center redevelopment. It requires relocation of the existing traffic signal. It could precede the Sunset Boulevard / Miller Drive West improvements, or otherwise the Sunset / Miller improvements would just not experience its full benefits until the signal was relocated.



BEAUFORT HIGH SCHOOL ACCESS REALIGNMENT					
SECTION	ITEM	QUANTITY	UNIT	UNIT PRICE	NET PRICE
1031000	MOBILIZATION	1.000	LS	\$75,000.00	\$75,000.00
2025000	REM.&DISP.OF EXIST ASPH. PVMT.	2,225.000	SY	\$35.00	\$77,875.00
2031200	SITE EXCAVATION	1.000	LS	\$225,000.00	\$225,000.00
3100310	HOT MIX ASPHALT BASE COURSE - TYPE A	135.000	TON	\$85.00	\$11,475.00
4011004	LIQUID ASPHALT BINDER PG64-22	55.000	TON	\$750.00	\$41,250.00
4013200	MILLING EXISTING ASPHALT PAVEMENT 2.0"	555.556	SY	\$19.00	\$10,555.56
4020320	HOT MIX ASPHALT INTERMEDIATE COURSE TYPE B	70.000	TON	\$90.00	\$6,300.00
4030320	HOT MIX ASPHALT SURFACE COURSE TYPE B	833.583	TON	\$105.00	\$87,526.25
7203210	CONCRETE CURB AND GUTTER(2'-0") VERTICAL FACE	2,290.000	LF	\$21.00	\$48,090.00
7204100	CONCRETE SIDEWALK(4" UNIFORM)	1,532.222	SY	\$54.00	\$82,740.00
7209000	PEDESTRIAN RAMP CONSTRUCTION	75.000	SY	\$170.00	\$12,750.00
	TRAFFIC CONTROL	1.000	LS	\$130,000.00	\$130,000.00
	PAVEMENT MARKINGS AND SIGNING	1.000	LS	\$35,000.00	\$35,000.00
	TRAFFIC SIGNAL WITH MAST ARMS	1.000	LS	\$140,000.00	\$140,000.00
	TRAFFIC SIGNAL INTERCONNECT	1.000	LS	\$65,000.00	\$65,000.00
	EROSION CONTROL	1.000	LS	\$45,000.00	\$45,000.00
	DRAINAGE	1.000	LS	\$180,000.00	\$180,000.00
CONSTRUCTION COST=					\$1,273,561.81
PRELIMINARY ENGINEERING =					\$95,000.00
REIMBURSABLE UTILITY RELOCATION=					\$50,000.00
PERMITTING=					\$5,000.00
CONSTRUCTION OVERSIGHT=					\$70,000.00
SUBTOTAL =					\$1,493,561.81
CONTINGENCIES AT 20% =					\$298,712.36
TOTAL PROJECT COST =					\$1,792,274.17
NOTES:					
1. PROJECT COST EXCLUDES COSTS FOR OBTAINING RIGHT OF WAY AND PERMISSIONS/EASEMENTS.					
2. COSTS FOR REIMBURSABLE UTILITY RELOCATIONS AND PERMITTING ARE HIGHLY CONCEPTUAL. THEY ARE PROVIDED FOR PLANNING PURPOSES ONLY.					
3. ALL COSTS ARE IN 2017 DOLLARS.					

6.6 US 21 BUSINESS, US 21, AND SC 802 MAINLINE IMPROVEMENTS

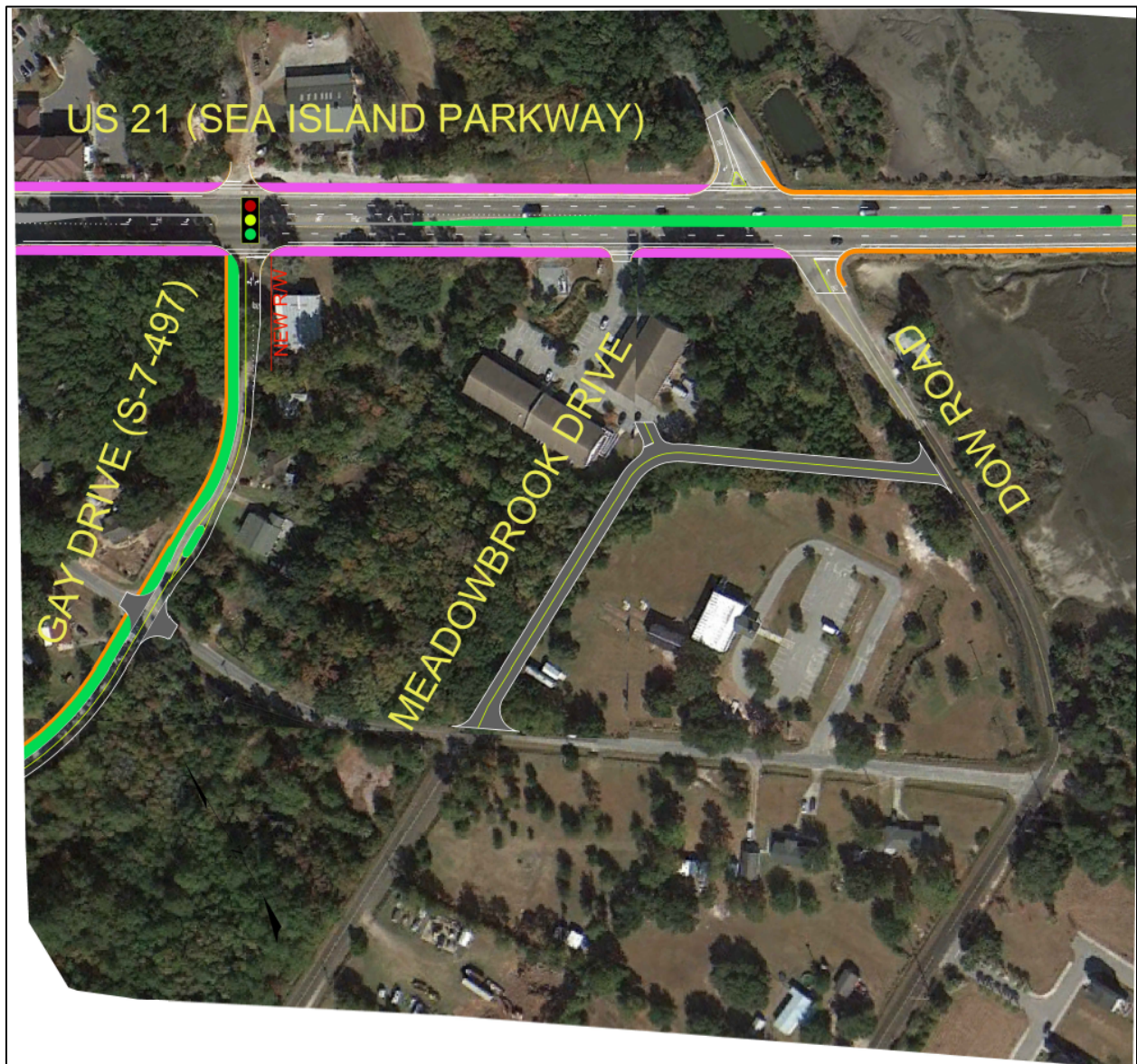
US 21 Business, US 21, and SC 802 Mainline includes all improvements to both corridors as shown below and on sheet 1 of the concept plan. The improvements include medians for access management, grass buffers and multi-use paths, lighting, and landscaping. These improvements would create a complete streets feel to the corridor and benefits include enhancing bicycle and pedestrian accommodations, safety, and improved vehicular progression. The full benefit of this project is interdependent with completion of the other projects.



US 21 BUSINESS, US 21, AND SC 802 MAINLINE IMPROVEMENTS					
SECTION	ITEM	QUANTITY	UNIT	UNIT PRICE	NET PRICE
1031000	MOBILIZATION	1.000	LS	\$225,000.00	\$225,000.00
2027000	REM. & DISP. OF EXISTING CONC.	10.000	CY	\$29.00	\$290.00
2031200	SITE EXCAVATION	1.000	LS	\$325,000.00	\$325,000.00
3100310	HOT MIX ASPHALT BASE COURSE - TYPE A	190.000	TON	\$85.00	\$16,150.00
4011004	LIQUID ASPHALT BINDER PG64-22	685.000	TON	\$750.00	\$513,750.00
4013200	MILLING EXISTING ASPHALT PAVEMENT 2.0"	126,069.191	SY	\$7.50	\$945,518.93
4020320	HOT MIX ASPHALT INTERMEDIATE COURSE TYPE B	65.000	TON	\$90.00	\$5,850.00
4030320	HOT MIX ASPHALT SURFACE COURSE TYPE B	12,675.000	TON	\$105.00	\$1,330,875.00
7203210	CONCRETE CURB AND GUTTER(2'-0") VERTICAL FACE	3,182.000	LF	\$29.00	\$92,278.00
7204100	CONCRETE SIDEWALK(4" UNIFORM)	26,263.111	SY	\$54.00	\$1,418,208.00
7206000	CONCRETE MEDIAN	1,734.333	SY	\$105.00	\$182,105.00
7209000	PEDESTRIAN RAMP CONSTRUCTION	2,500.000	SY	\$170.00	\$425,000.00
	TRAFFIC CONTROL	1.000	LS	\$250,000.00	\$250,000.00
	PAVEMENT MARKINGS AND SIGNING	1.000	LS	\$125,000.00	\$125,000.00
	EROSION CONTROL	1.000	LS	\$225,000.00	\$225,000.00
	DRAINAGE	1.000	LS	\$110,000.00	\$110,000.00
	LANDSCAPING	1.000	LS	\$289,762.50	\$289,762.50
	IRRIGATION	1.000	LS	\$160,000.00	\$160,000.00
	RETAINING WALLS	1.000	LS	\$100,000.00	\$100,000.00
	LIGHTING	1.000	LS	\$1,300,000.00	\$1,300,000.00
CONSTRUCTION COST=					\$8,039,787.43
PRELIMINARY ENGINEERING =					\$600,000.00
REIMBURSABLE UTILITY RELOCATION=					\$100,000.00
PERMITTING=					\$20,000.00
CONSTRUCTION OVERSIGHT=					\$220,000.00
SUBTOTAL =					\$8,979,787.43
CONTINGENCIES AT 20% =					\$1,795,957.49
TOTAL PROJECT COST =					\$10,775,744.92
NOTES:					
1. PROJECT COST EXCLUDES COSTS FOR OBTAINING RIGHT OF WAY AND PERMISSIONS/EASEMENTS.					
2. COSTS FOR REIMBURSABLE UTILITY RELOCATIONS AND PERMITTING ARE HIGHLY CONCEPTUAL. THEY ARE PROVIDED FOR PLANNING PURPOSES ONLY.					
3. ALL COSTS ARE IN 2017 DOLLARS.					

6.7 MEADOWBROOK DRIVE EXTENTION

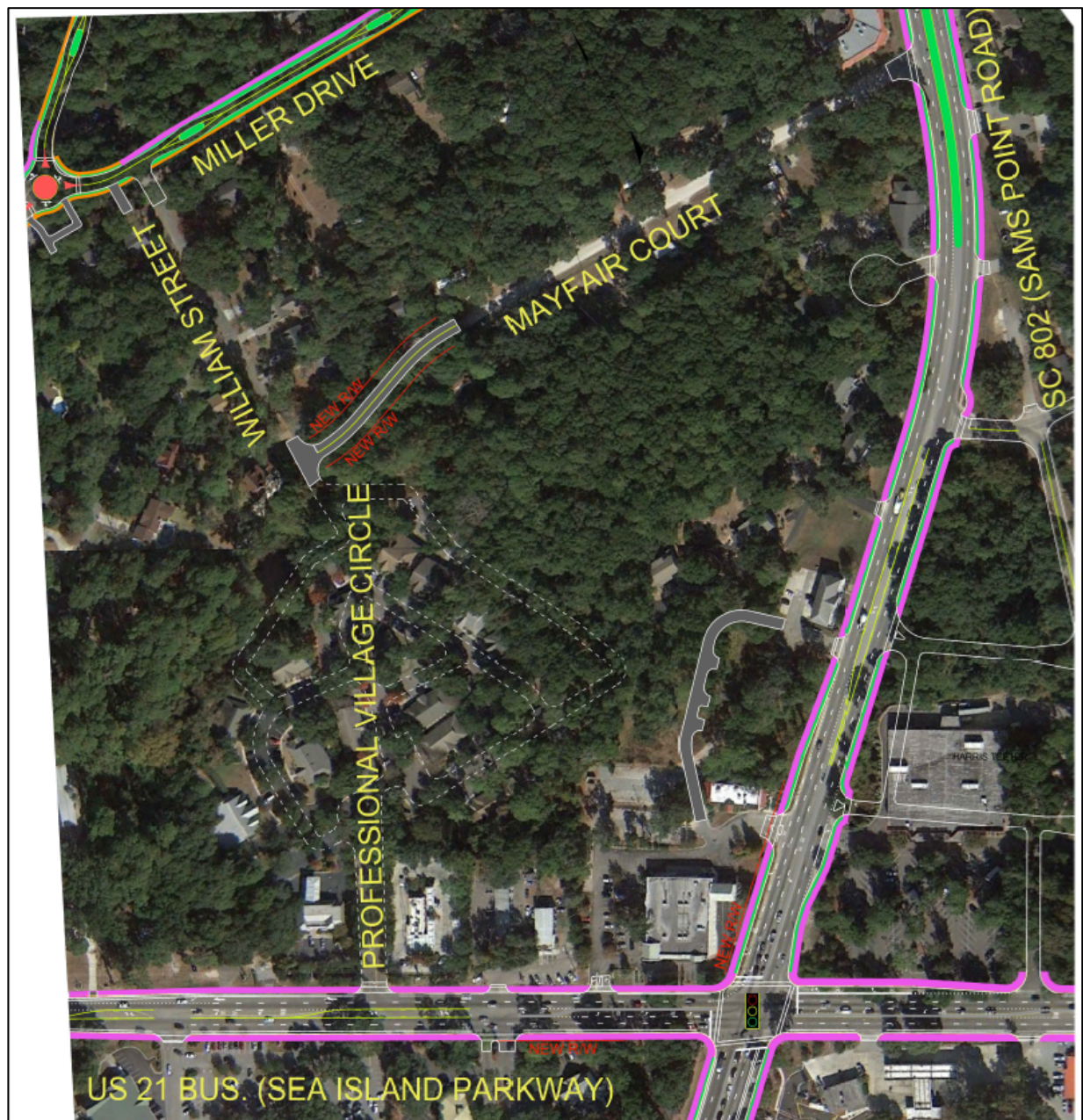
Extension of Meadowbrook Drive to Dow Road involves roadway work in existing right of way. The extension would increase roadway connectivity with access to the proposed signal at Gay Drive. This will be beneficial when Dow Road becomes right-in right-out. The Meadowbrook Drive Extension is not dependent on other projects, but its benefits would not be fully realized without US 21 Sea Island Parkway and Gay Drive improvements.



MEADOWBROOK DRIVE EXTENSION					
SECTION	ITEM	QUANTITY	UNIT	UNIT PRICE	NET PRICE
1031000	MOBILIZATION	1.000	LS	\$75,000.00	\$75,000.00
2031200	SITE EXCAVATION	1.000	LS	\$165,000.00	\$165,000.00
3100310	HOT MIX ASPHALT BASE COURSE - TYPE A	500.000	TON	\$85.00	\$42,500.00
4011004	LIQUID ASPHALT BINDER PG64-22	50.000	TON	\$750.00	\$37,500.00
4013200	MILLING EXISTING ASPHALT PAVEMENT 2.0"	333.333	SY	\$19.00	\$6,333.33
4020320	HOT MIX ASPHALT INTERMEDIATE COURSE TYPE B	250.000	TON	\$90.00	\$22,500.00
4030320	HOT MIX ASPHALT SURFACE COURSE TYPE B	250.000	TON	\$105.00	\$26,250.00
	TRAFFIC CONTROL	1.000	LS	\$12,000.00	\$12,000.00
	PAVEMENT MARKINGS AND SIGNING	1.000	LS	\$50,000.00	\$50,000.00
	EROSION CONTROL	1.000	LS	\$50,000.00	\$50,000.00
CONSTRUCTION COST=					\$487,083.33
PRELIMINARY ENGINEERING =					\$65,000.00
REIMBURSABLE UTILITY RELOCATION=					\$20,000.00
PERMITTING=					\$40,000.00
CONSTRUCTION OVERSIGHT=					\$35,000.00
SUBTOTAL =					\$647,083.33
CONTINGENCIES AT 20% =					\$129,416.67
TOTAL PROJECT COST =					\$776,500.00
NOTES:					
1. PROJECT COST EXCLUDES COSTS FOR OBTAINING RIGHT OF WAY AND PERMISSIONS/EASEMENTS.					
2. COSTS FOR REIMBURSABLE UTILITY RELOCATIONS AND PERMITTING ARE HIGHLY CONCEPTUAL. THEY ARE PROVIDED FOR PLANNING PURPOSES ONLY.					
3. ALL COSTS ARE IN 2017 DOLLARS.					

6.8 MAYFAIR COURT EXTENSION

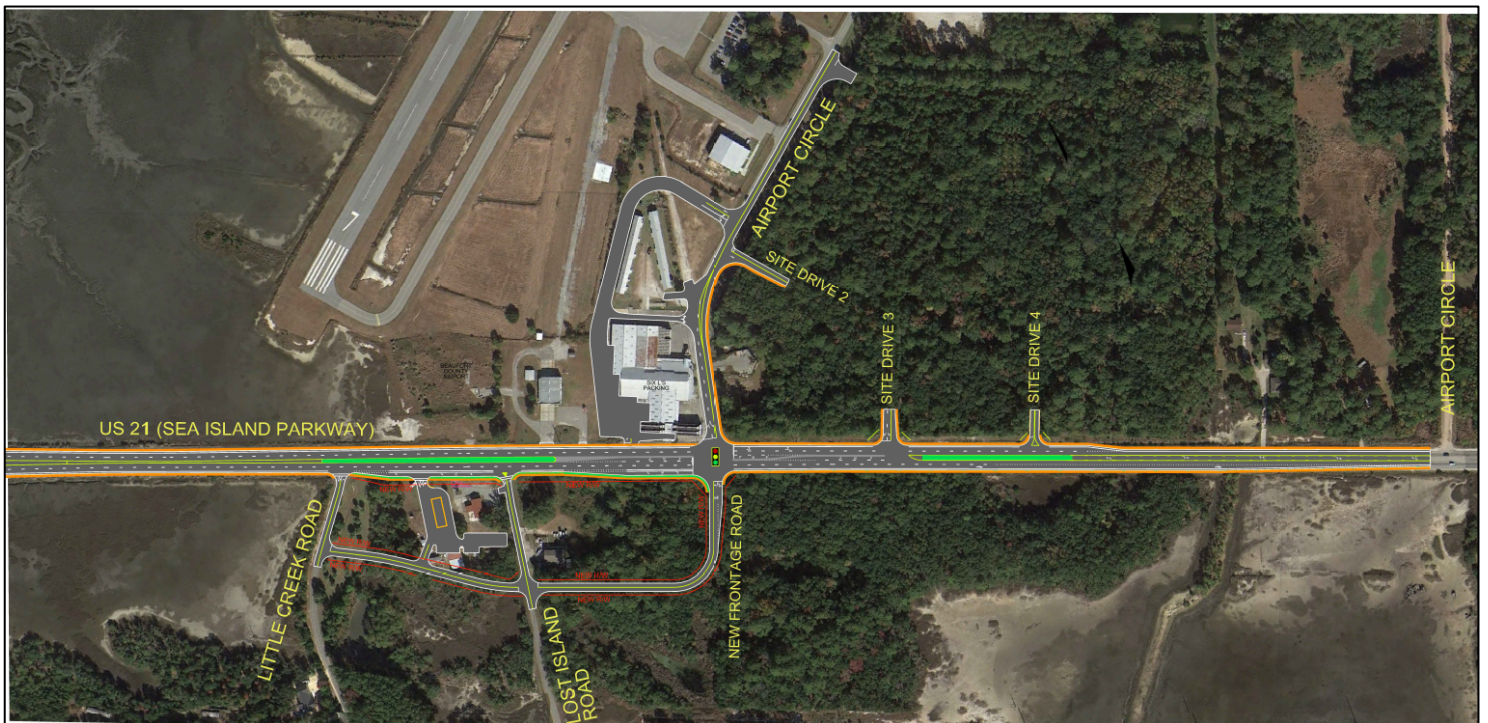
Extension of Mayfair Court to William Street involves a new roadway connection and is dependent upon coordination with property owners. The Mayfair Court Extension is warranted before or during improvements to SC 802 Sams Point Road are made, as a median will be installed on SC 802. The Mayfair Court Extension may be combined with the mainline improvements. This benefits roadway connectivity and traffic progression on mainline SC 802 (Sams Point Road).



MAYFAIR COURT EXTENSION					
SECTION	ITEM	QUANTITY	UNIT	UNIT PRICE	NET PRICE
1031000	MOBILIZATION	1.000	LS	\$25,000.00	\$25,000.00
2031200	SITE EXCAVATION	1.000	LS	\$125,000.00	\$125,000.00
3100310	HOT MIX ASPHALT BASE COURSE - TYPE A	160.000	TON	\$85.00	\$13,600.00
4011004	LIQUID ASPHALT BINDER PG64-22	20.000	TON	\$750.00	\$15,000.00
4013200	MILLING EXISTING ASPHALT PAVEMENT 2.0"	435.111	SY	\$19.00	\$8,267.11
4020320	HOT MIX ASPHALT INTERMEDIATE COURSE TYPE B	80.000	TON	\$90.00	\$7,200.00
4030320	HOT MIX ASPHALT SURFACE COURSE TYPE B	125.000	TON	\$105.00	\$13,125.00
	TRAFFIC CONTROL	1.000	LS	\$50,000.00	\$50,000.00
	PAVEMENT MARKINGS AND SIGNING	1.000	LS	\$20,000.00	\$20,000.00
	EROSION CONTROL	1.000	LS	\$25,000.00	\$25,000.00
CONSTRUCTION COST=					\$302,192.11
PRELIMINARY ENGINEERING =					\$40,000.00
REIMBURSABLE UTILITY RELOCATION=					\$10,000.00
PERMITTING=					\$500.00
CONSTRUCTION OVERSIGHT=					\$22,000.00
SUBTOTAL =					\$374,692.11
CONTINGENCIES AT 20% =					\$74,938.42
TOTAL PROJECT COST =					\$449,630.53
NOTES:					
1. PROJECT COST EXCLUDES COSTS FOR OBTAINING RIGHT OF WAY AND PERMISSIONS/EASEMENTS.					
2. COSTS FOR REIMBURSABLE UTILITY RELOCATIONS AND PERMITTING ARE HIGHLY CONCEPTUAL. THEY ARE PROVIDED FOR PLANNING PURPOSES ONLY.					
3. ALL COSTS ARE IN 2017 DOLLARS.					

6.9 US 21 AIRPORT AREA AND FRONTAGE ROAD

US 21 Airport Area and Frontage Road includes all improvements shown below and in sheet 2 of the concept plan. These improvements would provide reduced travel delays and improved access management on US 21. They would also provide Little Creek Road and Lost Island Road access to the traffic signal. The US 21 Airport Area and the Frontage road improvements are dependent upon right of way acquisitions from property owners.



US 21 AIRPORT AREA AND FRONTAGE ROAD					
SECTION	ITEM	QUANTITY	UNIT	UNIT PRICE	NET PRICE
1031000	MOBILIZATION	1.000	LS	\$225,000.00	\$225,000.00
2027000	REM. & DISP. OF EXISTING CONC.	205.000	CY	\$29.00	\$5,945.00
2031200	SITE EXCAVATION	1.000	LS	\$205,000.00	\$205,000.00
3100310	HOT MIX ASPHALT BASE COURSE - TYPE A	2,025.000	TON	\$85.00	\$172,125.00
4011004	LIQUID ASPHALT BINDER PG64-22	375.000	TON	\$750.00	\$281,250.00
4013200	MILLING EXISTING ASPHALT PAVEMENT 2.0"	35,841.000	SY	\$9.50	\$340,489.50
4020320	HOT MIX ASPHALT INTERMEDIATE COURSE TYPE B	810.000	TON	\$90.00	\$72,900.00
4030320	HOT MIX ASPHALT SURFACE COURSE TYPE B	4,395.000	TON	\$105.00	\$461,475.00
7203210	CONCRETE CURB AND GUTTER(2'-0") VERTICAL FACE	5,670.000	LF	\$29.00	\$164,430.00
7204100	CONCRETE SIDEWALK(4" UNIFORM)	1,809.444	SY	\$54.00	\$97,710.00
7206000	CONCRETE MEDIAN	485.111	SY	\$105.00	\$50,936.67
7209000	PEDESTRIAN RAMP CONSTRUCTION	200.000	SY	\$170.00	\$34,000.00
	TRAFFIC CONTROL	1.000	LS	\$190,000.00	\$190,000.00
	PAVEMENT MARKINGS AND SIGNING	1.000	LS	\$125,000.00	\$125,000.00
	TRAFFIC SIGNAL	1.000	LS	\$190,000.00	\$190,000.00
	EROSION CONTROL	1.000	LS	\$175,000.00	\$175,000.00
	DRAINAGE	1.000	LS	\$370,000.00	\$370,000.00
	LANDSCAPING	1.000	LS	\$43,992.00	\$43,992.00
	IRRIGATION	1.000	LS	\$30,000.00	\$30,000.00
CONSTRUCTION COST=					\$3,235,253.17
PRELIMINARY ENGINEERING =					\$380,000.00
REIMBURSABLE UTILITY RELOCATION=					\$100,000.00
PERMITTING=					\$210,000.00
CONSTRUCTION OVERSIGHT=					\$225,000.00
SUBTOTAL =					\$4,150,253.17
CONTINGENCIES AT 20% =					\$830,050.63
TOTAL PROJECT COST =					\$4,980,303.80
NOTES:					
1. PROJECT COST EXCLUDES COSTS FOR OBTAINING RIGHT OF WAY AND PERMISSIONS/EASEMENTS.					
2. COSTS FOR REIMBURSABLE UTILITY RELOCATIONS AND PERMITTING ARE HIGHLY CONCEPTUAL. THEY ARE PROVIDED FOR PLANNING PURPOSES ONLY.					
3. ALL COSTS ARE IN 2017 DOLLARS.					

7.0 Conclusion

The Lady's Island Corridor Study originated with the goals of Improving congestion and reducing delays, improving safety, enhancing bicycle and pedestrian accommodations, and enhancing aesthetics. The project team consisted of the City of Beaufort, Ward Edwards Engineering, and Stantec Consulting. Beaufort County and SCDOT provided additional cooperation. While developing the study, the team held several stakeholder meetings and two Public Information Meetings. Stakeholder meetings included:

- Area Developers and Engineers
- Various Property Owners
- Public Safety Representatives
- Lady's Island Community Preservation
- Sea Island Coalition
- Coastal Conservation League
- Beaufort County School District
- Northern Regional Plan Implementation Committee

The first Public Information Meeting was held on September 29, 2016. In that meeting, the team introduced the study's goals and objectives and requested citizen input on how the roadway corridors may be improved. The team collected public comments from that meeting and continued developing the study. The second Public Information Meeting was held on February 16, 2017. In that meeting, the team presented the results of the study and presented the concept plans. The team collected public comments from that meeting and then completed the study. The final concept plans and this report are the result of the team's analysis, stakeholder coordination, and feedback from the Public Information Meetings. The proposed improvements as shown in the concept plans will fully meet the intended objectives and significantly improve the corridors.

Programming and funding are needed to accomplish the proposed improvements. Improvements are expected to occur in phases, with the order of phasing to be determined in the near future based on availability and coordination with property owners.

APPENDIX A

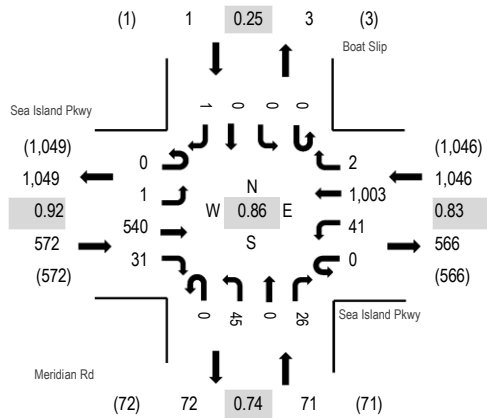
TURNING MOVEMENT COUNTS AND TUBE COUNTS



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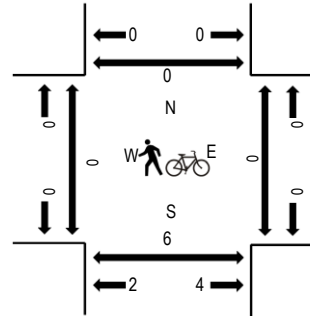
Location: 1 Meridian Rd & Sea Island Pkwy AM
Date and Start Time: Wednesday, September 7, 2016
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Sea Island Pkwy Eastbound				Sea Island Pkwy Westbound				Meridian Rd Northbound				Boat Slip Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:15 AM	0	0	123	3	0	1	218	1	0	8	0	3	0	0	0	0	357	1,690	0	0	0	0
7:30 AM	0	0	140	7	0	8	253	0	0	12	0	3	0	0	0	1	424		0	0	6	0
7:45 AM	0	0	147	8	0	19	295	0	0	12	0	9	0	0	0	0	490		0	0	0	0
8:00 AM	0	1	130	13	0	13	237	1	0	13	0	11	0	0	0	0	419		0	0	0	0

Peak Rolling Hour Flow Rates

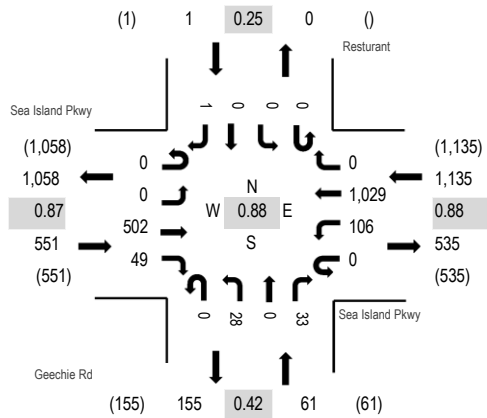
Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	1	531	31	0	41	988	2	0	45	0	26	0	0	0	1	1,666
Mediums	0	0	9	0	0	0	15	0	0	0	0	0	0	0	0	0	24
Total	0	1	540	31	0	41	1,003	2	0	45	0	26	0	0	0	1	1,690



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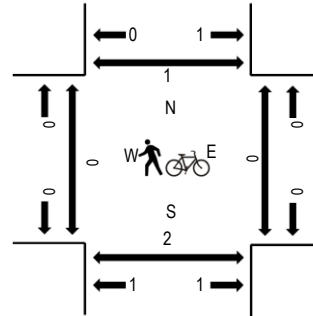
Location: 2 Geechie Rd & Sea Island Pkwy AM
Date and Start Time: Wednesday, September 7, 2016
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Sea Island Pkwy Eastbound				Sea Island Pkwy Westbound				Geechie Rd Northbound				Resturant Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:15 AM	0	0	113	10	0	20	220	0	0	1	0	5	0	0	0	0	369	1,748	0	0	2	1
7:30 AM	0	0	129	5	0	15	259	0	0	5	0	1	0	0	0	0	414		0	0	0	0
7:45 AM	0	0	148	10	0	14	310	0	0	8	0	5	0	0	0	1	496		0	0	0	0
8:00 AM	0	0	112	24	0	57	240	0	0	14	0	22	0	0	0	0	469		0	0	0	0

Peak Rolling Hour Flow Rates

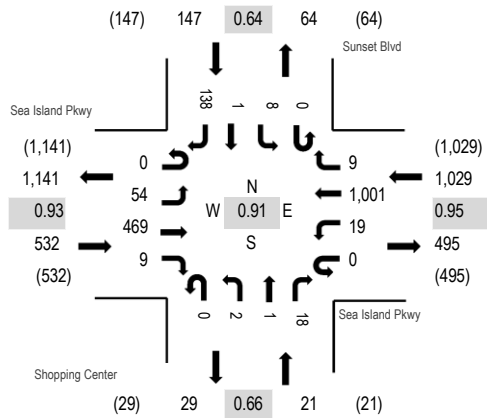
Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	491	49	0	104	1,013	0	0	28	0	31	0	0	0	1	1,717
Mediums	0	0	11	0	0	2	16	0	0	0	0	2	0	0	0	0	31
Total	0	0	502	49	0	106	1,029	0	0	28	0	33	0	0	0	1	1,748



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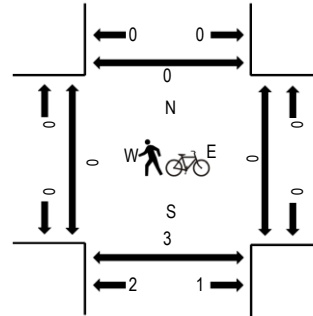
Location: 3 Shopping Center & Sea Island Pkwy AM
Date and Start Time: Wednesday, September 7, 2016
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Sea Island Pkwy Eastbound				Sea Island Pkwy Westbound				Shopping Center Northbound				Sunset Blvd Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:15 AM	0	9	102	2	0	2	223	3	0	0	0	2	0	2	0	19	364	1,729	0	0	2	0
7:30 AM	0	11	124	2	0	5	253	3	0	1	1	6	0	5	0	29	440		0	0	0	0
7:45 AM	0	19	121	3	0	7	259	2	0	1	0	6	0	0	1	56	475		0	0	0	0
8:00 AM	0	15	122	2	0	5	266	1	0	0	0	4	0	1	0	34	450		0	0	1	0

Peak Rolling Hour Flow Rates

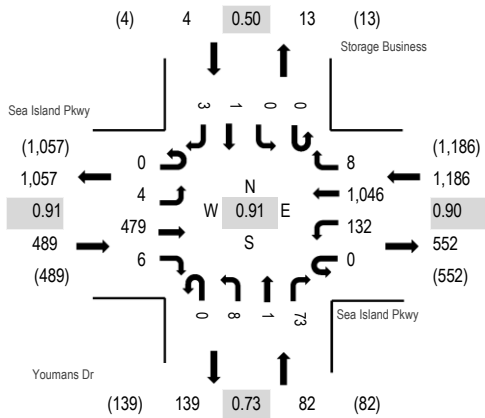
Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	53	458	9	0	19	984	9	0	2	1	17	0	8	1	137	1,698
Mediums	0	1	11	0	0	0	17	0	0	0	0	1	0	0	0	1	31
Total	0	54	469	9	0	19	1,001	9	0	2	1	18	0	8	1	138	1,729



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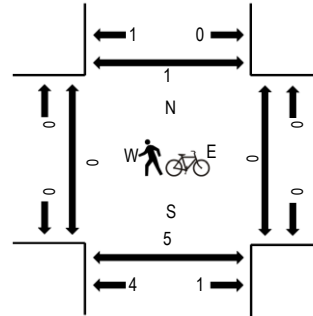
Location: 4 Youmans Dr & Sea Island Pkwy AM
Date and Start Time: Wednesday, September 7, 2016
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 08:00 AM - 08:15 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Sea Island Pkwy Eastbound				Sea Island Pkwy Westbound				Youmans Dr Northbound				Storage Business Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:15 AM	0	0	99	0	0	19	229	0	0	1	1	15	0	0	0	1	365	1,761	0	0	2	0
7:30 AM	0	2	132	1	0	19	281	1	0	2	0	14	0	0	0	1	453		0	0	0	0
7:45 AM	0	0	126	3	0	37	267	4	0	4	0	17	0	0	0	0	458		0	0	3	0
8:00 AM	0	2	122	2	0	57	269	3	0	1	0	27	0	0	1	1	485		0	0	0	1

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	4	472	5	0	121	1,030	8	0	7	1	66	0	0	1	3	1,718
Mediums	0	0	7	1	0	11	16	0	0	1	0	7	0	0	0	0	43
Total	0	4	479	6	0	132	1,046	8	0	8	1	73	0	0	1	3	1,761



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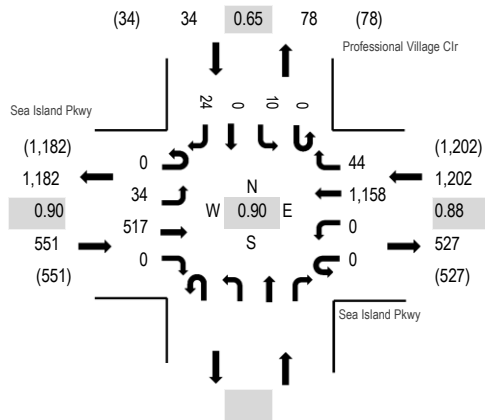
Location: 5 Professional Village Cir & Sea Island Pkwy AM

Date and Start Time: Wednesday, September 7, 2016

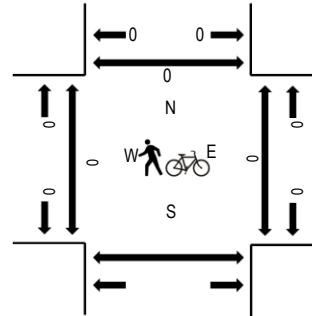
Peak Hour: 07:15 AM - 08:15 AM

Peak 15-Minutes: 08:00 AM - 08:15 AM

Peak Hour - All Vehicles



Peak Hour - Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts

Interval Start Time	Sea Island Pkwy Eastbound				Sea Island Pkwy Westbound				Professional Village Cir Northbound				Professional Village Cir Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:15 AM	0	2	112	0	0	0	0	241	9				0	1	0	1	366	1,787	0	0	0	0
7:30 AM	0	9	131	0	0	0	0	280	10				0	1	0	7	438		0	0	0	0
7:45 AM	0	13	140	0	0	0	0	302	17				0	4	0	9	485		0	0	0	0
8:00 AM	0	10	134	0	0	0	0	335	8				0	4	0	7	498		0	0	0	0

Peak Rolling Hour Flow Rates

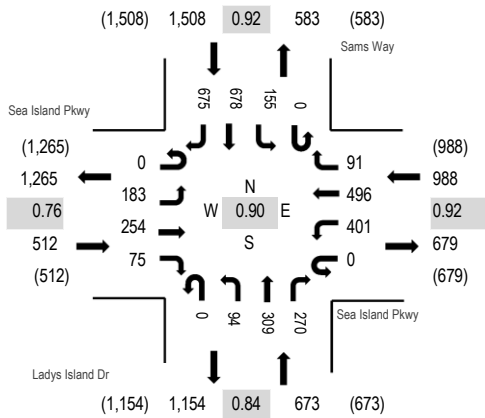
Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0					0	0	0	0	0
Lights	0	34	499	0	0	0	1,131	44					0	9	0	24	1,741
Mediums	0	0	18	0	0	0	27	0					0	1	0	0	46
Total	0	34	517	0	0	0	1,158	44					0	10	0	24	1,787



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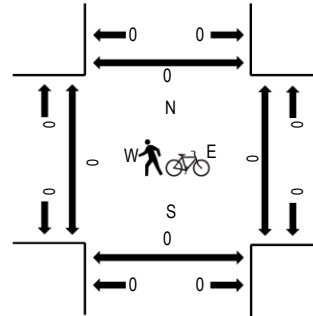
Location: 8 Ladys Island Dr & Sea Island Pkwy AM
Date and Start Time: Wednesday, September 7, 2016
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Sea Island Pkwy Eastbound				Sea Island Pkwy Westbound				Ladys Island Dr Northbound				Sams Way Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:15 AM	0	42	59	12	0	91	88	26	0	16	55	53	0	40	132	138	752	3,681	0	0	0	0
7:30 AM	0	32	54	14	0	108	113	27	0	27	90	66	0	30	197	174	932		0	0	0	0
7:45 AM	0	67	71	31	0	110	136	22	0	29	94	77	0	35	170	182	1,024		0	0	0	0
8:00 AM	0	42	70	18	0	92	159	16	0	22	70	74	0	50	179	181	973		0	0	0	0

Peak Rolling Hour Flow Rates

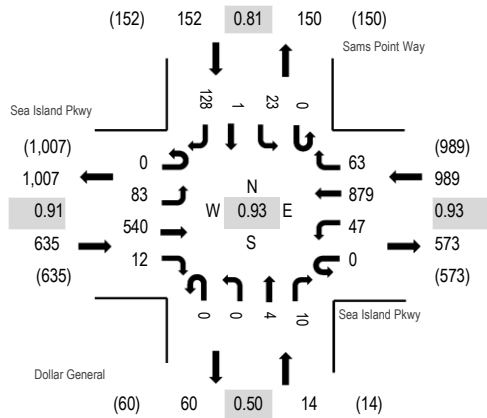
Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	1	0	0	0	0	2	3	0	2	0	0	8
Lights	0	178	248	73	0	390	484	79	0	92	298	262	0	147	667	664	3,582
Mediums	0	5	6	2	0	10	12	12	0	2	9	5	0	6	11	11	91
Total	0	183	254	75	0	401	496	91	0	94	309	270	0	155	678	675	3,681



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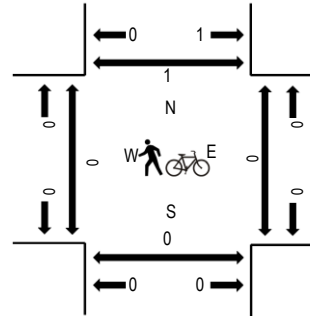
Location: 9 Dollar General & Sea Island Pkwy AM
Date and Start Time: Wednesday, September 7, 2016
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Sea Island Pkwy Eastbound				Sea Island Pkwy Westbound				Dollar General Northbound				Sams Point Way Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:15 AM	0	13	128	5	0	5	188	11	0	0	2	0	0	4	0	25	381	1,790	0	0	0	0
7:30 AM	0	21	118	1	0	8	239	20	0	0	1	6	0	8	0	30	452		0	0	0	1
7:45 AM	0	29	144	2	0	14	229	20	0	0	1	3	0	4	0	34	480		0	0	0	0
8:00 AM	0	20	150	4	0	20	223	12	0	0	0	1	0	7	1	39	477		0	0	0	0

Peak Rolling Hour Flow Rates

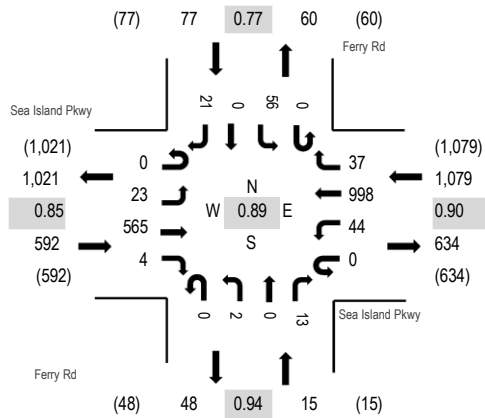
Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	4
Lights	0	82	518	12	0	46	850	63	0	0	4	10	0	23	1	124	1,733
Mediums	0	1	19	0	0	1	28	0	0	0	0	0	0	0	0	4	53
Total	0	83	540	12	0	47	879	63	0	0	4	10	0	23	1	128	1,790



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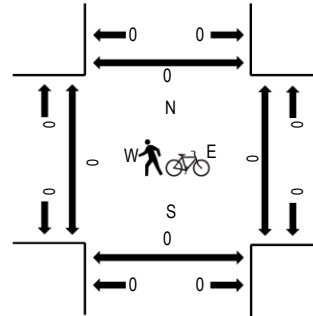
Location: 10 Ferry Rd & Sea Island Pkwy AM
Date and Start Time: Wednesday, September 7, 2016
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 08:00 AM - 08:15 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Sea Island Pkwy Eastbound				Sea Island Pkwy Westbound				Ferry Rd Northbound				Ferry Rd Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:15 AM	0	3	129	2	0	4	204	5	0	0	0	4	0	12	0	6	369	1,763	0	0	0	0
7:30 AM	0	5	127	0	0	11	262	10	0	1	0	3	0	12	0	4	435		0	0	0	0
7:45 AM	0	9	143	0	0	14	259	11	0	1	0	2	0	18	0	7	464		0	0	0	0
8:00 AM	0	6	166	2	0	15	273	11	0	0	0	4	0	14	0	4	495		0	0	0	0

Peak Rolling Hour Flow Rates

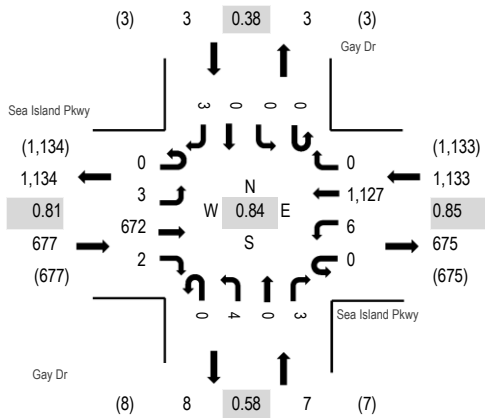
Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	5	0	0	0	2	0	0	0	0	0	0	0	0	0	7
Lights	0	22	540	4	0	43	966	36	0	1	0	13	0	55	0	20	1,700
Mediums	0	1	20	0	0	1	30	1	0	1	0	0	0	1	0	1	56
Total	0	23	565	4	0	44	998	37	0	2	0	13	0	56	0	21	1,763



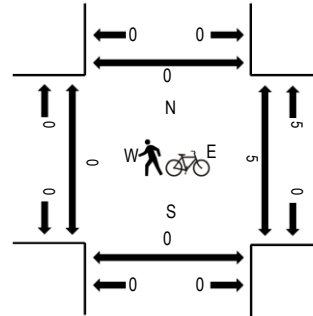
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Location: 11 Gay Dr & Sea Island Pkwy AM
Date and Start Time: Wednesday, September 7, 2016
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 08:00 AM - 08:15 AM

Peak Hour - All Vehicles



Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Sea Island Pkwy Eastbound				Sea Island Pkwy Westbound				Gay Dr Northbound				Gay Dr Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:15 AM	0	2	166	0	0	1	219	0	0	2	0	1	0	0	0	2	393	1,820	0	0	0	0
7:30 AM	0	0	135	1	0	0	306	0	0	1	0	0	0	0	0	1	444		0	5	0	0
7:45 AM	0	0	164	1	0	0	273	0	0	0	0	2	0	0	0	0	440		0	0	0	0
8:00 AM	0	1	207	0	0	5	329	0	0	1	0	0	0	0	0	0	543		0	0	0	0

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	7	0	0	0	1	0	0	0	0	0	0	0	0	0	8
Lights	0	3	644	1	0	5	1,095	0	0	4	0	3	0	0	0	3	1,758
Mediums	0	0	21	1	0	1	31	0	0	0	0	0	0	0	0	0	54
Total	0	3	672	2	0	6	1,127	0	0	4	0	3	0	0	0	3	1,820



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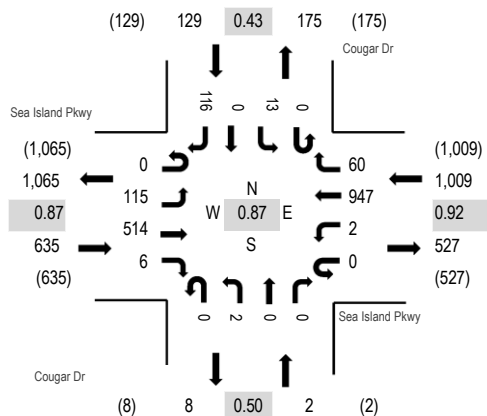
Location: 12 Cougar Dr & Sea Island Pkwy AM

Date and Start Time: Wednesday, September 7, 2016

Peak Hour: 07:15 AM - 08:15 AM

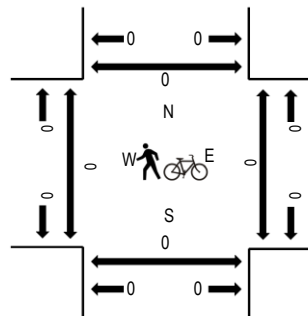
Peak 15-Minutes: 08:00 AM - 08:15 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Sea Island Pkwy Eastbound				Sea Island Pkwy Westbound				Cougar Dr Northbound				Cougar Dr Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:15 AM	0	5	140	2	0	0	202	12	0	0	0	0	0	4	0	9	374	1,775	0	0	0	0
7:30 AM	0	10	132	0	0	1	268	5	0	1	0	0	0	0	0	9	426		0	0	0	0
7:45 AM	0	38	123	2	0	1	244	25	0	1	0	0	0	2	0	30	466		0	0	0	0
8:00 AM	0	62	119	2	0	0	233	18	0	0	0	0	0	7	0	68	509		0	0	0	0

Peak Rolling Hour Flow Rates

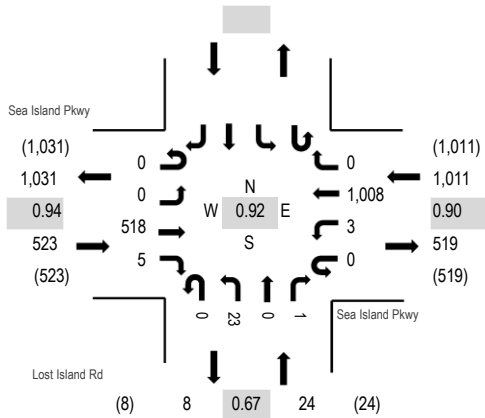
Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Lights	0	115	491	6	0	1	922	51	0	2	0	0	0	9	0	110	1,707
Mediums	0	0	19	0	0	1	25	9	0	0	0	0	0	4	0	6	64
Total	0	115	514	6	0	2	947	60	0	2	0	0	0	13	0	116	1,775



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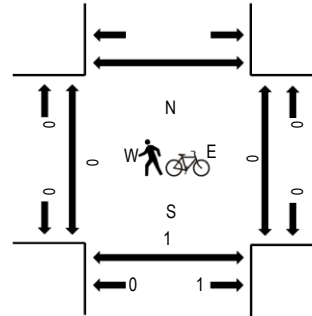
Location: 13 Lost Island Rd & Sea Island Pkwy AM
Date and Start Time: Wednesday, September 7, 2016
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Sea Island Pkwy Eastbound				Sea Island Pkwy Westbound				Lost Island Rd Northbound				Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:15 AM	0	0	137	0	0	0	1	208	0	0	5	0	0				351	1,558	0	0	0	0
7:30 AM	0	0	136	3	0	0	2	279	0	0	3	0	0				423		0	0	0	0
7:45 AM	0	0	123	0	0	0	0	273	0	0	9	0	0				405		0	0	0	0
8:00 AM	0	0	122	2	0	0	0	248	0	0	6	0	1				379		0	0	1	0

Peak Rolling Hour Flow Rates

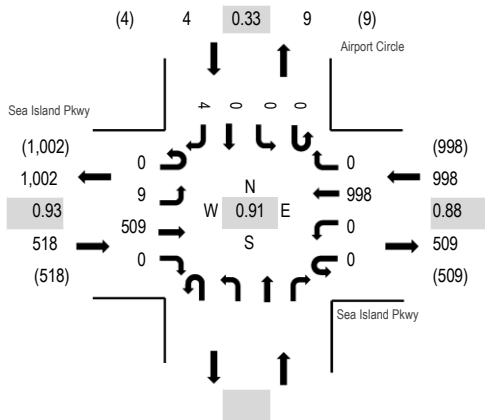
Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	6	0	0	0	2	0	0	0	0	0					8
Lights	0	0	491	5	0	3	968	0	0	23	0	1					1,491
Mediums	0	0	21	0	0	0	38	0	0	0	0	0					59
Total	0	0	518	5	0	3	1,008	0	0	23	0	1					1,558



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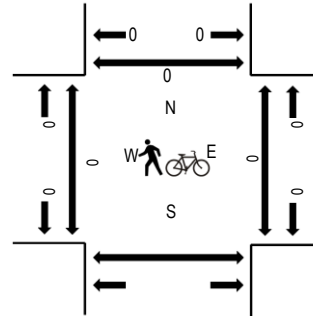
Location: 14 Airport Circle & Sea Island Pkwy AM
Date and Start Time: Wednesday, September 7, 2016
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Sea Island Pkwy Eastbound				Sea Island Pkwy Westbound				Northbound				Airport Circle Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:15 AM	0	1	138	0	0	0	0	202	0				0	0	0	0	341	1,520	0	0	0	0
7:30 AM	0	2	130	0	0	0	0	284	0				0	0	0	1	417		0	0	0	0
7:45 AM	0	2	118	0	0	0	0	261	0				0	0	0	0	381		0	0	0	0
8:00 AM	0	4	123	0	0	0	0	251	0				0	0	0	3	381		0	0	0	0

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	6	0	0	0	0	0					0	0	0	2	8
Lights	0	8	483	0	0	0	959	0					0	0	0	2	1,452
Mediums	0	1	20	0	0	0	39	0					0	0	0	0	60
Total	0	9	509	0	0	0	998	0					0	0	0	4	1,520



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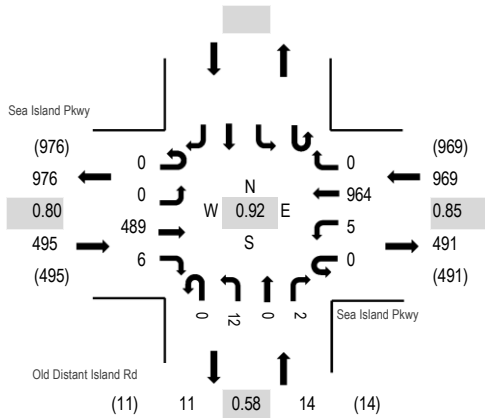
Location: 15 Old Distant Island Rd & Sea Island Pkwy AM

Date and Start Time: Wednesday, September 7, 2016

Peak Hour: 07:15 AM - 08:15 AM

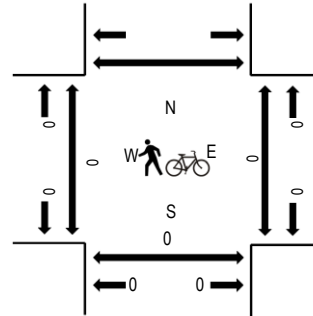
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Sea Island Pkwy Eastbound				Sea Island Pkwy Westbound				Old Distant Island Rd Northbound				Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:15 AM	0	0	117	2	0	2	204	0	0	0	0	1	0	0	0	0	326	1,478	0	0	0	0
7:30 AM	0	0	152	2	0	1	243	0	0	4	0	0	0	0	0	0	402		0	0	0	0
7:45 AM	0	0	110	0	0	1	283	0	0	3	0	0	0	0	0	0	397		0	0	0	0
8:00 AM	0	0	110	2	0	1	234	0	0	5	0	1	0	0	0	0	353		0	0	0	0

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	474	4	0	5	929	0	0	11	0	2	0	0	0	0	1,425
Mediums	0	0	15	2	0	0	35	0	0	1	0	0	0	0	0	0	53
Total	0	0	489	6	0	5	964	0	0	12	0	2	0	0	0	0	1,478



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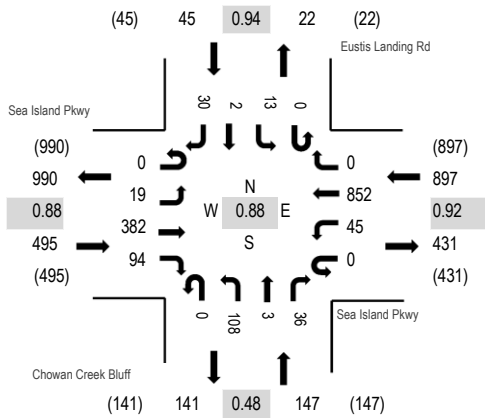
Location: 16 Chowan Creek Bluff & Sea Island Pkwy AM

Date and Start Time: Wednesday, September 7, 2016

Peak Hour: 07:15 AM - 08:15 AM

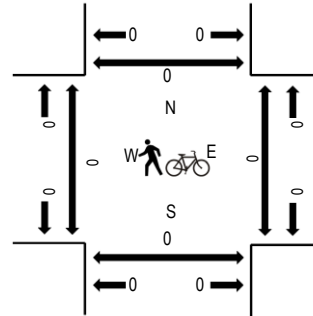
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Sea Island Pkwy Eastbound				Sea Island Pkwy Westbound				Chowan Creek Bluff Northbound				Eustis Landing Rd Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:15 AM	0	9	81	51	0	18	170	0	0	33	1	16	0	3	0	9	391	1,584	0	0	0	0
7:30 AM	0	4	87	32	0	21	219	0	0	57	2	17	0	2	1	6	448		0	0	0	0
7:45 AM	0	3	107	8	0	3	241	0	0	10	0	2	0	5	1	6	386		0	0	0	0
8:00 AM	0	3	107	3	0	3	222	0	0	8	0	1	0	3	0	9	359		0	0	0	0

Peak Rolling Hour Flow Rates

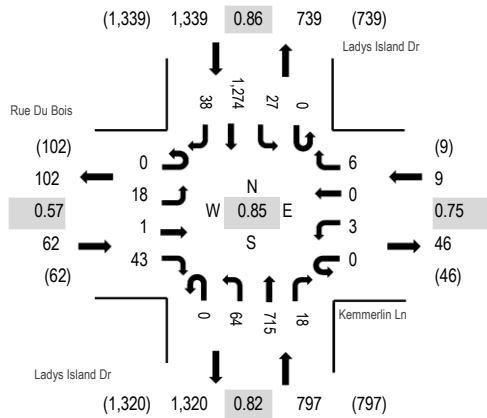
Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Lights	0	17	363	93	0	43	822	0	0	105	3	35	0	12	2	26	1,521
Mediums	0	0	19	1	0	2	30	0	0	3	0	1	0	1	0	4	61
Total	0	19	382	94	0	45	852	0	0	108	3	36	0	13	2	30	1,584



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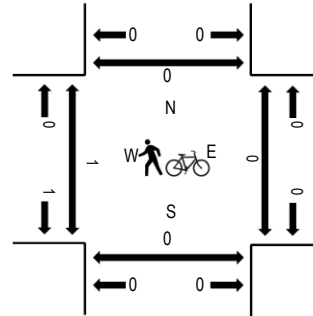
Location: 17 Ladys Island Dr & Kemmerlin Ln AM
Date and Start Time: Wednesday, September 7, 2016
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Rue Du Bois Eastbound				Kemmerlin Ln Westbound				Ladys Island Dr Northbound				Ladys Island Dr Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:15 AM	0	4	0	3	0	1	0	1	0	8	140	3	0	3	247	11	421	2,207	1	0	0	0
7:30 AM	0	6	1	4	0	1	0	1	0	10	182	3	0	6	322	4	540		0	0	0	0
7:45 AM	0	6	0	11	0	0	0	2	0	15	220	7	0	6	373	11	651		0	0	0	0
8:00 AM	0	2	0	25	0	1	0	2	0	31	173	5	0	12	332	12	595		0	0	0	0

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	4	0	0	0	2	0	6
Lights	0	17	0	43	0	3	0	6	0	61	695	18	0	27	1,248	35	2,153
Mediums	0	1	1	0	0	0	0	0	0	3	16	0	0	0	24	3	48
Total	0	18	1	43	0	3	0	6	0	64	715	18	0	27	1,274	38	2,207



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Location: 18 Ladys Island Dr & Hazel Farm Rd AM

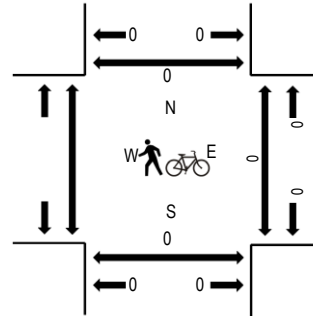
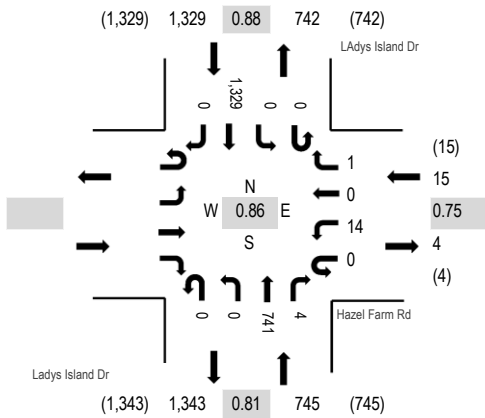
Date and Start Time: Wednesday, September 7, 2016

Peak Hour: 07:15 AM - 08:15 AM

Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - All Vehicles

Peak Hour - Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts

Interval Start Time	Eastbound				Hazel Farm Rd Westbound				Ladys Island Dr Northbound				LAdys Island Dr Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:15 AM					0	4	0	1	0	0	143	1	0	0	257	0	406	2,089		0	0	0
7:30 AM					0	4	0	0	0	0	192	2	0	0	341	0	539			0	0	0
7:45 AM					0	3	0	0	0	0	229	1	0	0	377	0	610			0	0	0
8:00 AM					0	3	0	0	0	0	177	0	0	0	354	0	534			0	0	0

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks					0	0	0	0	0	0	7	0	0	0	1	0	8
Lights					0	14	0	1	0	0	720	3	0	0	1,304	0	2,042
Mediums					0	0	0	0	0	0	14	1	0	0	24	0	39
Total					0	14	0	1	0	0	741	4	0	0	1,329	0	2,089



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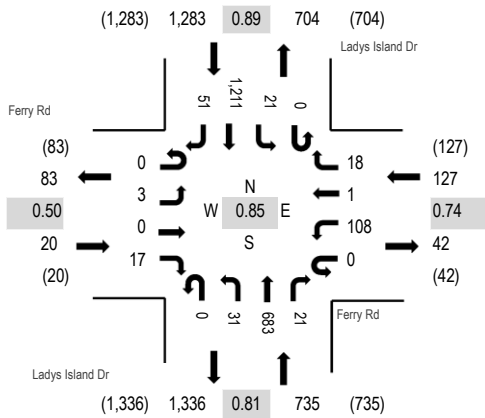
Location: 19 Ladys Island Dr & Ferry Rd AM

Date and Start Time: Wednesday, September 7, 2016

Peak Hour: 07:15 AM - 08:15 AM

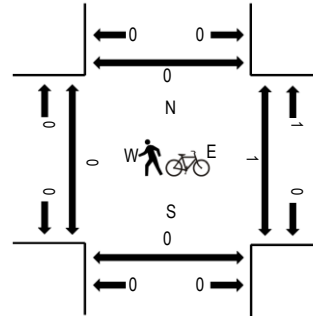
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Ferry Rd Eastbound				Ferry Rd Westbound				Ladys Island Dr Northbound				Ladys Island Dr Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:15 AM	0	1	0	1	0	14	0	5	0	3	137	1	0	3	240	9	414	2,165	0	0	0	0
7:30 AM	0	0	0	3	0	21	0	6	0	8	173	7	0	7	319	19	563		0	1	0	0
7:45 AM	0	2	0	8	0	32	1	5	0	18	201	9	0	5	338	19	638		0	0	0	0
8:00 AM	0	0	0	5	0	41	0	2	0	2	172	4	0	6	314	4	550		0	0	0	0

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	1	0	0	0	0	6	0	0	0	1	0	8
Lights	0	3	0	16	0	105	1	17	0	31	664	20	0	20	1,189	51	2,117
Mediums	0	0	0	1	0	2	0	1	0	0	13	1	0	1	21	0	40
Total	0	3	0	17	0	108	1	18	0	31	683	21	0	21	1,211	51	2,165

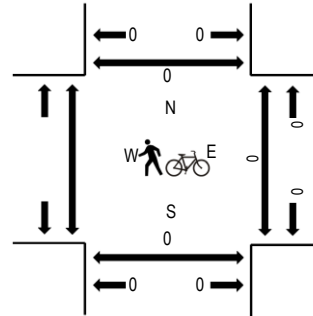
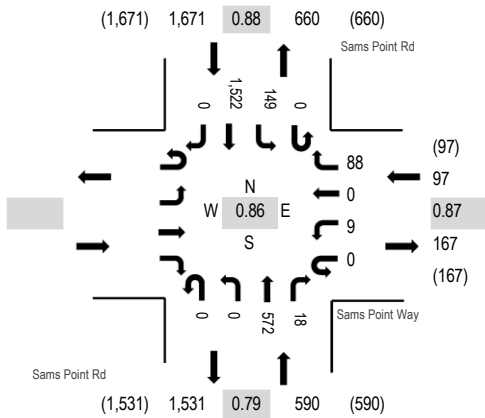


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Location: 20 Sams Point Rd & Sams Point Way AM
Date and Start Time: Wednesday, September 7, 2016
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - All Vehicles

Peak Hour - Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts

Interval Start Time	Eastbound				Sams Point Way Westbound				Sams Point Rd Northbound				Sams Point Rd Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:15 AM					0	3	0	16	0	0	125	7	0	26	334	0	511	2,358		0	0	0
7:30 AM					0	2	0	21	0	0	134	4	0	32	375	0	568			0	0	0
7:45 AM					0	0	0	28	0	0	181	5	0	44	431	0	689			0	0	0
8:00 AM					0	4	0	23	0	0	132	2	0	47	382	0	590			0	0	0

Peak Rolling Hour Flow Rates

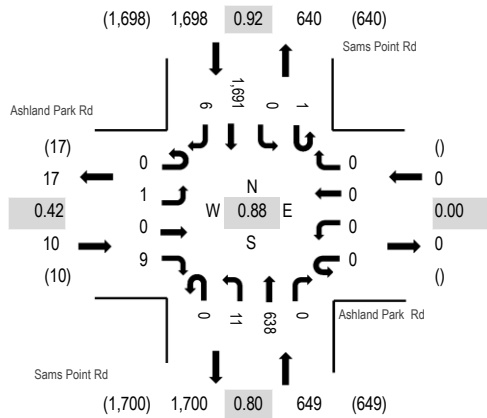
Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks					0	0	0	0	0	0	2	0	0	0	2	0	4
Lights					0	7	0	87	0	0	544	18	0	143	1,494	0	2,293
Mediums					0	2	0	1	0	0	26	0	0	6	26	0	61
Total					0	9	0	88	0	0	572	18	0	149	1,522	0	2,358



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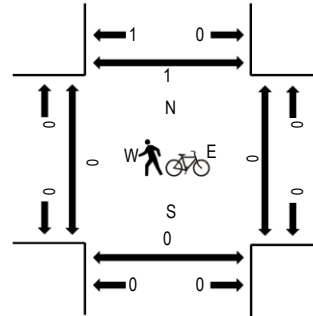
Location: 21 Sams Point Rd & Ashland Park Rd AM
Date and Start Time: Wednesday, September 7, 2016
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Ashland Park Rd Eastbound				Ashland Park Rd Westbound				Sams Point Rd Northbound				Sams Point Rd Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:15 AM	0	0	0	0	0	0	0	0	0	2	141	0	1	0	379	0	523	2,357	0	0	0	0
7:30 AM	0	1	0	5	0	0	0	0	0	3	163	0	0	0	420	5	597		0	0	0	0
7:45 AM	0	0	0	3	0	0	0	0	0	2	200	0	0	0	461	0	666		0	0	0	1
8:00 AM	0	0	0	1	0	0	0	0	0	4	134	0	0	0	431	1	571		0	0	0	0

Peak Rolling Hour Flow Rates

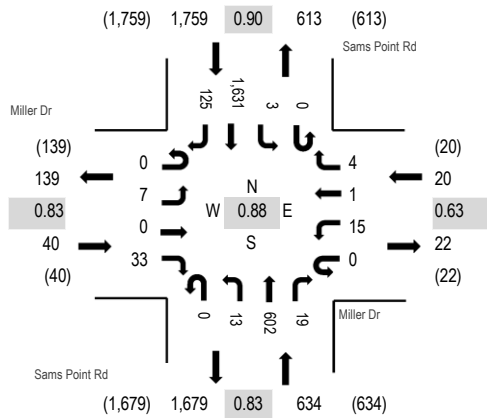
Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	3
Lights	0	1	0	9	0	0	0	0	0	11	613	0	1	0	1,656	6	2,297
Mediums	0	0	0	0	0	0	0	0	0	0	23	0	0	0	34	0	57
Total	0	1	0	9	0	0	0	0	0	11	638	0	1	0	1,691	6	2,357



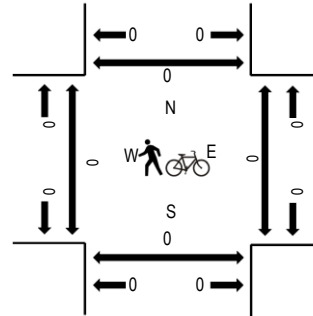
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Location: 22 Sams Point Rd & Miller Dr AM
Date and Start Time: Wednesday, September 7, 2016
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - All Vehicles



Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Miller Dr Eastbound				Miller Dr Westbound				Sams Point Rd Northbound				Sams Point Rd Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:15 AM	0	0	0	10	0	2	0	0	0	4	132	6	0	0	377	14	545	2,453	0	0	0	0
7:30 AM	0	4	0	8	0	1	0	2	0	0	164	2	0	0	426	27	634		0	0	0	0
7:45 AM	0	1	0	7	0	5	1	1	0	3	183	5	0	0	434	54	694		0	0	0	0
8:00 AM	0	2	0	8	0	7	0	1	0	6	123	6	0	3	394	30	580		0	0	0	0

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	2
Lights	0	7	0	31	0	15	1	4	0	12	580	17	0	3	1,598	124	2,392
Mediums	0	0	0	2	0	0	0	0	0	1	21	2	0	0	32	1	59
Total	0	7	0	33	0	15	1	4	0	13	602	19	0	3	1,631	125	2,453



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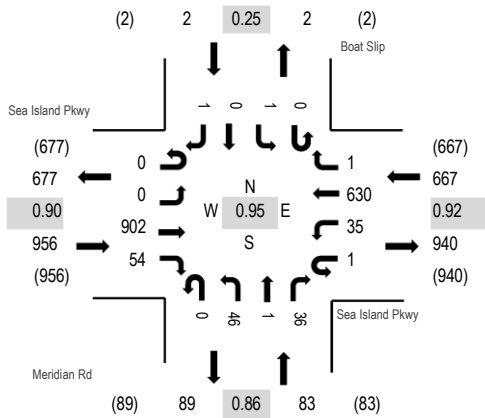
Location: 1 Meridian Rd & Sea Island Pkwy PM

Date and Start Time: Wednesday, September 7, 2016

Peak Hour: 04:30 PM - 05:30 PM

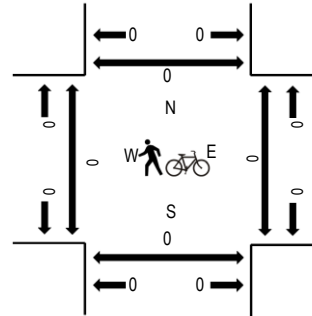
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Sea Island Pkwy Eastbound				Sea Island Pkwy Westbound				Meridian Rd Northbound				Boat Slip Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:30 PM	0	0	221	21	0	9	145	1	0	11	0	8	0	0	0	0	416	1,708	0	0	0	0
4:45 PM	0	0	197	10	1	9	156	0	0	8	1	9	0	1	0	1	393		0	0	0	0
5:00 PM	0	0	225	17	0	9	173	0	0	16	0	8	0	0	0	0	448		0	0	0	0
5:15 PM	0	0	259	6	0	8	156	0	0	11	0	11	0	0	0	0	451		0	0	0	0

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	0	896	53	1	35	626	1	0	46	1	36	0	1	0	1	1,697
Mediums	0	0	6	1	0	0	4	0	0	0	0	0	0	0	0	0	11
Total	0	0	902	54	1	35	630	1	0	46	1	36	0	1	0	1	1,708



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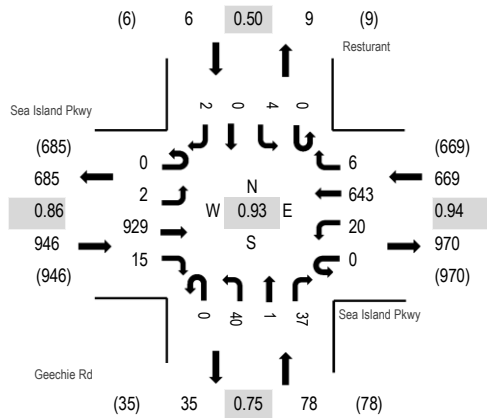
Location: 2 Geechie Rd & Sea Island Pkwy PM

Date and Start Time: Wednesday, September 7, 2016

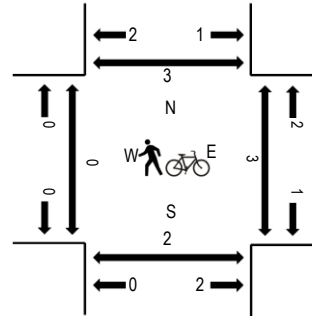
Peak Hour: 04:30 PM - 05:30 PM

Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - All Vehicles



Peak Hour - Pedestrians/Bicycles in Crosswalk

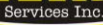


Traffic Counts

Interval Start Time	Sea Island Pkwy Eastbound				Sea Island Pkwy Westbound				Geechie Rd Northbound				Resturant Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:30 PM	0	0	232	3	0	4	147	0	0	13	0	13	0	0	0	0	412	1,699	0	0	0	0
4:45 PM	0	1	206	3	0	10	162	2	0	7	1	12	0	2	0	1	407		0	2	1	1
5:00 PM	0	1	221	4	0	4	171	2	0	12	0	5	0	1	0	1	422		0	1	0	0
5:15 PM	0	0	270	5	0	2	163	2	0	8	0	7	0	1	0	0	458		0	0	0	0

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	2	923	15	0	20	639	6	0	40	1	37	0	4	0	2	1,689
Mediums	0	0	6	0	0	0	4	0	0	0	0	0	0	0	0	0	10
Total	0	2	929	15	0	20	643	6	0	40	1	37	0	4	0	2	1,699



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Peak 15-Minutes: 05:15 PM - 05:30 PM

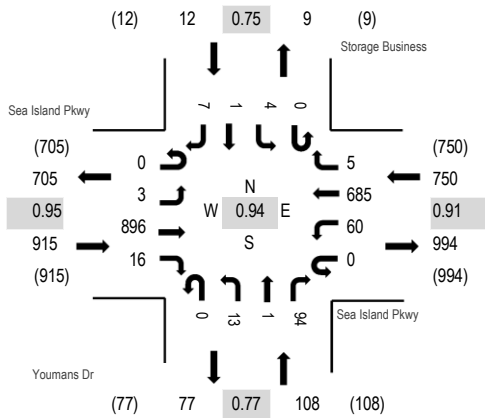
Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	108	815	22	0	15	612	27	0	1	0	39	0	7	0	58	1,704
Mediums	0	0	13	0	0	1	3	0	0	0	0	1	0	0	0	0	18
Total	0	108	828	22	0	16	615	27	0	1	0	40	0	7	0	58	1,722



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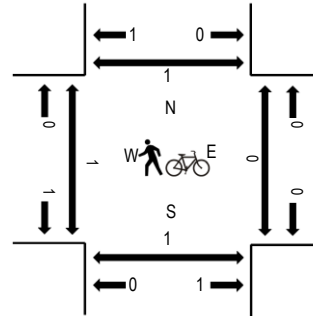
Location: 4 Youmans Dr & Sea Island Pkwy PM
Date and Start Time: Wednesday, September 7, 2016
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 05:00 PM - 05:15 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Sea Island Pkwy Eastbound				Sea Island Pkwy Westbound				Youmans Dr Northbound				Storage Business Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:30 PM	0	0	222	6	0	16	159	1	0	2	0	19	0	1	0	2	428	1,785	0	0	0	0
4:45 PM	0	1	211	2	0	14	154	1	0	4	0	22	0	3	0	1	413		0	0	0	0
5:00 PM	0	0	226	5	0	15	189	1	0	3	1	31	0	0	1	1	473		1	0	0	0
5:15 PM	0	2	237	3	0	15	183	2	0	4	0	22	0	0	0	3	471		0	0	0	0

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lights	0	3	888	16	0	54	682	5	0	13	1	93	0	4	1	7	1,767
Mediums	0	0	8	0	0	6	3	0	0	0	0	1	0	0	0	0	18
Total	0	3	896	16	0	60	685	5	0	13	1	94	0	4	1	7	1,785



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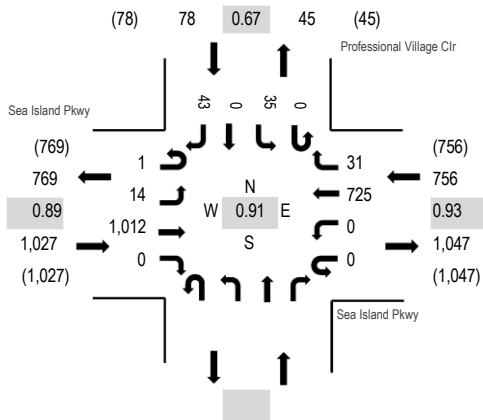
Location: 5 Professional Village Cir & Sea Island Pkwy PM

Date and Start Time: Wednesday, September 7, 2016

Peak Hour: 04:30 PM - 05:30 PM

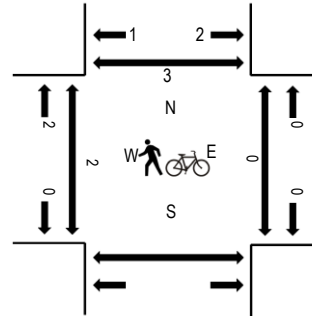
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Sea Island Pkwy Eastbound				Sea Island Pkwy Westbound				Northbound				Professional Village Cir Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:30 PM	0	5	235	0	0	0	0	169	11				0	5	0	12	437	1,861	2	0		2
4:45 PM	1	2	249	0	0	0	0	167	5				0	8	0	5	437		0	0		0
5:00 PM	0	2	246	0	0	0	0	191	9				0	15	0	14	477		0	0		0
5:15 PM	0	5	282	0	0	0	0	198	6				0	7	0	12	510		0	0		0

Peak Rolling Hour Flow Rates

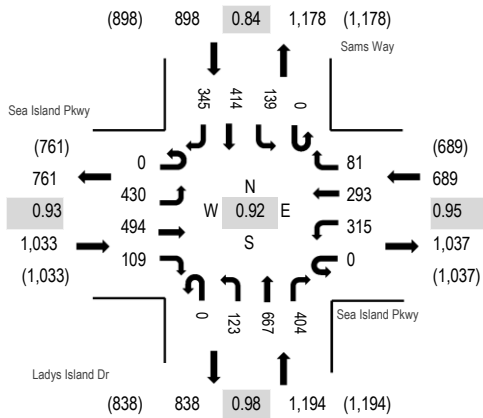
Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0					0	0	0	0	0
Lights	1	14	1,000	0	0	0	714	31					0	35	0	43	1,838
Mediums	0	0	12	0	0	0	11	0					0	0	0	0	23
Total	1	14	1,012	0	0	0	725	31					0	35	0	43	1,861



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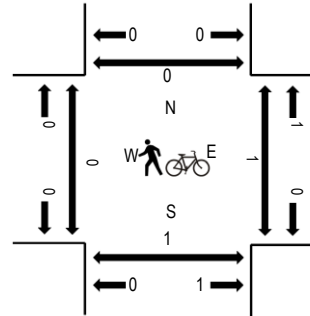
Location: 8 Ladys Island Dr & Sea Island Pkwy PM
Date and Start Time: Wednesday, September 7, 2016
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Sea Island Pkwy Eastbound				Sea Island Pkwy Westbound				Ladys Island Dr Northbound				Sams Way Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:30 PM	0	113	111	27	0	74	73	21	0	35	157	98	0	31	94	77	911	3,814	0	0	0	0
4:45 PM	0	103	109	36	0	82	65	16	0	27	170	96	0	33	90	81	908		0	1	0	0
5:00 PM	0	108	128	20	0	76	78	23	0	34	172	99	0	32	105	89	964		0	0	0	0
5:15 PM	0	106	146	26	0	83	77	21	0	27	168	111	0	43	125	98	1,031		0	0	1	0

Peak Rolling Hour Flow Rates

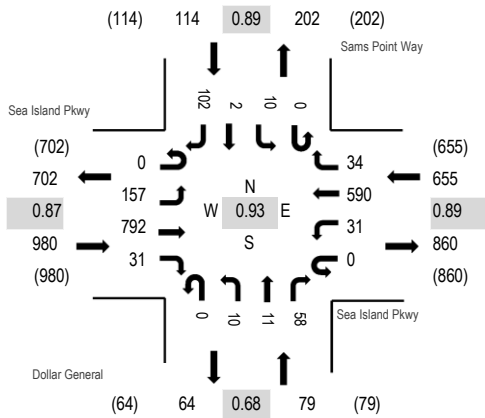
Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	7	0	1	0	0	1	0	0	0	4	0	13
Lights	0	423	493	107	0	299	290	79	0	122	661	399	0	135	402	337	3,747
Mediums	0	7	1	2	0	9	3	1	0	1	5	5	0	4	8	8	54
Total	0	430	494	109	0	315	293	81	0	123	667	404	0	139	414	345	3,814



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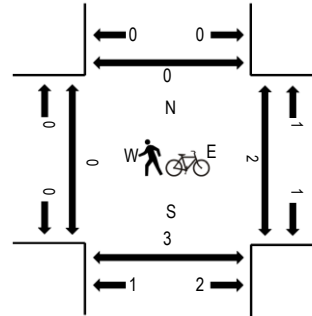
Location: 9 Dollar General & Sea Island Pkwy PM
Date and Start Time: Wednesday, September 7, 2016
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Sea Island Pkwy Eastbound				Sea Island Pkwy Westbound				Dollar General Northbound				Sams Point Way Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:30 PM	0	38	192	6	0	10	145	9	0	1	1	8	0	5	0	26	441	1,828	0	0	0	0
4:45 PM	0	33	183	5	0	5	132	9	0	5	3	21	0	1	0	21	418		0	0	0	0
5:00 PM	0	44	186	10	0	7	168	8	0	3	3	15	0	1	1	30	476		0	1	3	0
5:15 PM	0	42	231	10	0	9	145	8	0	1	4	14	0	3	1	25	493		0	1	0	0

Peak Rolling Hour Flow Rates

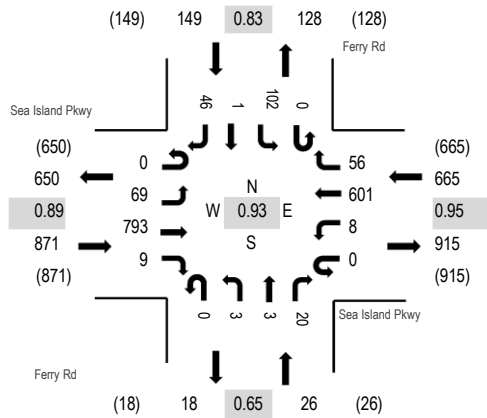
Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0	9
Lights	0	157	782	31	0	31	567	34	0	10	11	57	0	10	2	102	1,794
Mediums	0	0	10	0	0	0	14	0	0	0	0	1	0	0	0	0	25
Total	0	157	792	31	0	31	590	34	0	10	11	58	0	10	2	102	1,828



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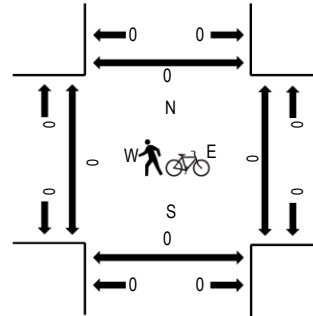
Location: 10 Ferry Rd & Sea Island Pkwy PM
Date and Start Time: Wednesday, September 7, 2016
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Sea Island Pkwy Eastbound				Sea Island Pkwy Westbound				Ferry Rd Northbound				Ferry Rd Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:30 PM	0	11	183	5	0	1	155	16	0	2	0	8	0	24	0	13	418	1,711	0	0	0	0
4:45 PM	0	20	183	1	0	2	142	11	0	0	2	3	0	18	1	4	387		0	0	0	0
5:00 PM	0	16	205	2	0	2	161	12	0	0	1	5	0	33	0	11	448		0	0	0	0
5:15 PM	0	22	222	1	0	3	143	17	0	1	0	4	0	27	0	18	458		0	0	0	0

Peak Rolling Hour Flow Rates

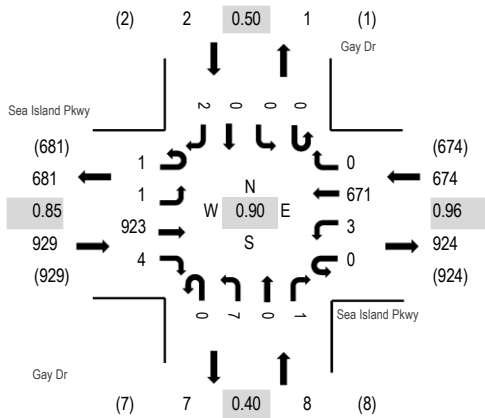
Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	9	0	0	0	0	0	0	1	0	0	10
Lights	0	69	780	9	0	8	580	56	0	3	3	20	0	100	1	46	1,675
Mediums	0	0	13	0	0	0	12	0	0	0	0	0	0	1	0	0	26
Total	0	69	793	9	0	8	601	56	0	3	3	20	0	102	1	46	1,711



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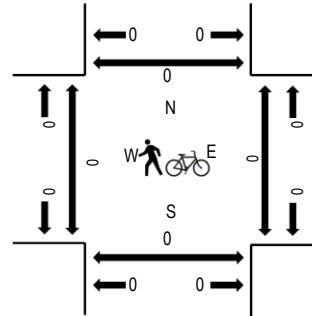
Location: 11 Gay Dr & Sea Island Pkwy PM
Date and Start Time: Wednesday, September 7, 2016
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 05:00 PM - 05:15 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Sea Island Pkwy Eastbound				Sea Island Pkwy Westbound				Gay Dr Northbound				Gay Dr Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:30 PM	1	1	212	2	0	1	174	0	0	2	0	0	0	0	0	0	393	1,613	0	0	0	0
4:45 PM	0	0	195	0	0	1	158	0	0	4	0	1	0	0	0	1	360		0	0	0	0
5:00 PM	0	0	271	2	0	1	172	0	0	0	0	0	0	0	0	0	446		0	0	0	0
5:15 PM	0	0	245	0	0	0	167	0	0	1	0	0	0	0	0	1	414		0	0	0	0

Peak Rolling Hour Flow Rates

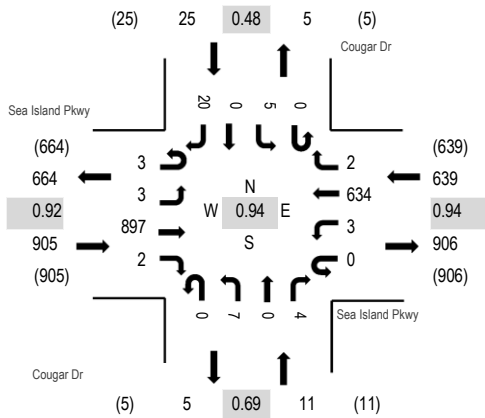
Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	1	0	0	0	9	0	0	0	0	0	0	0	0	0	10
Lights	1	1	910	4	0	3	650	0	0	7	0	1	0	0	0	2	1,579
Mediums	0	0	12	0	0	0	12	0	0	0	0	0	0	0	0	0	24
Total	1	1	923	4	0	3	671	0	0	7	0	1	0	0	0	2	1,613



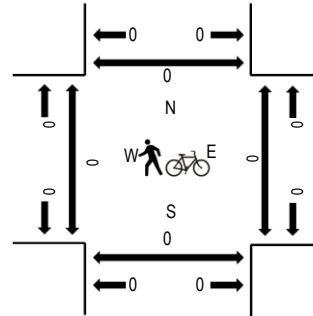
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Location: 12 Cougar Dr & Sea Island Pkwy PM
Date and Start Time: Wednesday, September 7, 2016
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 05:00 PM - 05:15 PM

Peak Hour - All Vehicles



Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Sea Island Pkwy Eastbound				Sea Island Pkwy Westbound				Cougar Dr Northbound				Cougar Dr Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:30 PM	0	1	205	0	0	0	155	0	0	2	0	1	0	2	0	11	377	1,580	0	0	0	0
4:45 PM	0	1	204	2	0	2	146	2	0	2	0	2	0	1	0	3	365		0	0	0	0
5:00 PM	1	0	245	0	0	0	170	0	0	2	0	0	0	0	0	4	422		0	0	0	0
5:15 PM	2	1	243	0	0	1	163	0	0	1	0	1	0	2	0	2	416		0	0	0	0

Peak Rolling Hour Flow Rates

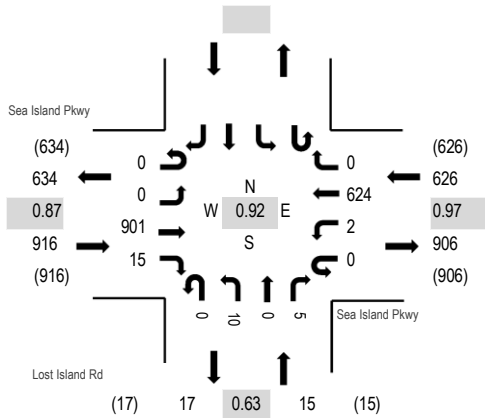
Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	1	0	0	0	9	0	0	0	0	0	0	0	0	0	10
Lights	3	2	884	2	0	3	615	2	0	7	0	2	0	4	0	18	1,542
Mediums	0	1	12	0	0	0	10	0	0	0	0	2	0	1	0	2	28
Total	3	3	897	2	0	3	634	2	0	7	0	4	0	5	0	20	1,580



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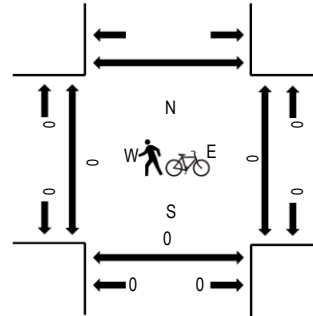
Location: 13 Lost Island Rd & Sea Island Pkwy PM
Date and Start Time: Wednesday, September 7, 2016
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Sea Island Pkwy Eastbound				Sea Island Pkwy Westbound				Lost Island Rd Northbound				Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:30 PM	0	0	224	1	0	0	158	0	0	1	0	1					385	1,557	0	0	0	0
4:45 PM	0	0	205	4	0	1	148	0	0	3	0	1					362		0	0	0	0
5:00 PM	0	0	214	5	0	1	160	0	0	6	0	0					386		0	0	0	0
5:15 PM	0	0	258	5	0	0	158	0	0	0	0	3					424		0	0	0	0

Peak Rolling Hour Flow Rates

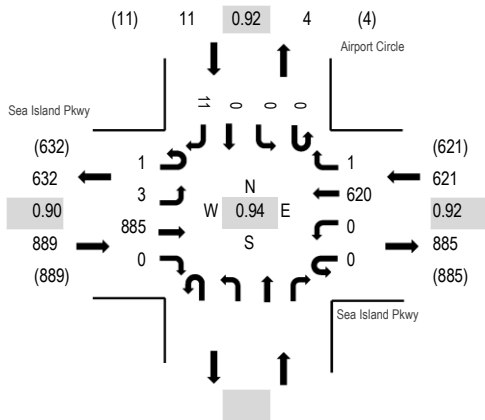
Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	1	0	0	0	7	0	0	0	0	0					8
Lights	0	0	883	14	0	2	609	0	0	9	0	5					1,522
Mediums	0	0	17	1	0	0	8	0	0	1	0	0					27
Total	0	0	901	15	0	2	624	0	0	10	0	5					1,557



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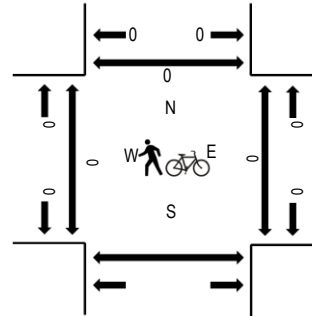
Location: 14 Airport Circle & Sea Island Pkwy PM
Date and Start Time: Wednesday, September 7, 2016
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Sea Island Pkwy Eastbound				Sea Island Pkwy Westbound				Northbound				Airport Circle Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:30 PM	0	0	211	0	0	0	0	154	1				0	0	0	3	369	1,521	0	0	0	0
4:45 PM	0	0	199	0	0	0	0	140	0				0	0	0	3	342		0	0	0	0
5:00 PM	0	2	231	0	0	0	0	168	0				0	0	0	3	404		0	0	0	0
5:15 PM	1	1	244	0	0	0	0	158	0				0	0	0	2	406		0	0	0	0

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	1	0	0	0	0	7	0				0	0	0	2	10
Lights	1	3	873	0	0	0	0	601	1				0	0	0	9	1,488
Mediums	0	0	11	0	0	0	0	12	0				0	0	0	0	23
Total	1	3	885	0	0	0	0	620	1				0	0	0	11	1,521



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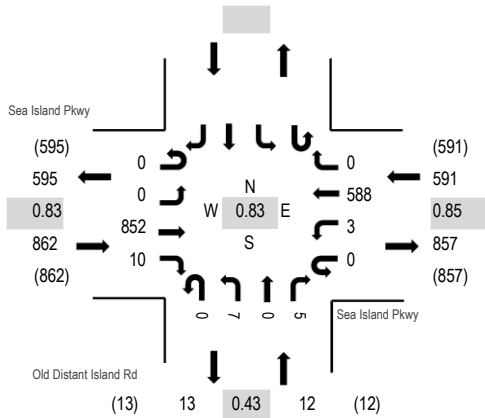
Location: 15 Old Distant Island Rd & Sea Island Pkwy PM

Date and Start Time: Wednesday, September 7, 2016

Peak Hour: 04:30 PM - 05:30 PM

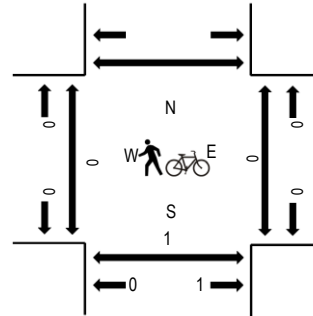
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Sea Island Pkwy Eastbound				Sea Island Pkwy Westbound				Old Distant Island Rd Northbound				Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:30 PM	0	0	209	2	0	0	125	0	0	1	0	0					337	1,465	0	0	0	0
4:45 PM	0	0	198	2	0	2	147	0	0	2	0	0					351		0	0	0	0
5:00 PM	0	0	185	5	0	0	144	0	0	1	0	1					336		0	0	0	0
5:15 PM	0	0	260	1	0	1	172	0	0	3	0	4					441		0	0	0	0

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	2	0	0	0	7	0	0	0	0	0					9
Lights	0	0	836	10	0	3	569	0	0	7	0	5					1,430
Mediums	0	0	14	0	0	0	12	0	0	0	0	0					26
Total	0	0	852	10	0	3	588	0	0	7	0	5					1,465



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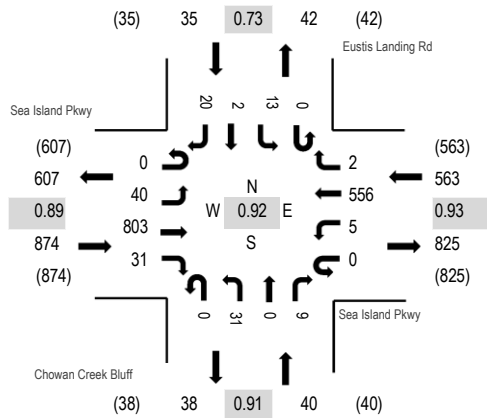
Location: 16 Chowan Creek Bluff & Sea Island Pkwy PM

Date and Start Time: Wednesday, September 7, 2016

Peak Hour: 04:30 PM - 05:30 PM

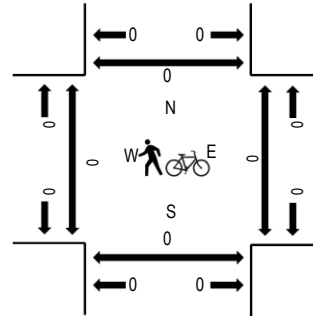
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Sea Island Pkwy Eastbound				Sea Island Pkwy Westbound				Chowan Creek Bluff Northbound				Eustis Landing Rd Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:30 PM	0	8	196	11	0	0	139	1	0	8	0	3	0	2	0	2	370	1,512	0	0	0	0
4:45 PM	0	9	182	7	0	0	127	1	0	10	0	1	0	1	2	5	345		0	0	0	0
5:00 PM	0	9	199	7	0	3	149	0	0	5	0	2	0	5	0	6	385		0	0	0	0
5:15 PM	0	14	226	6	0	2	141	0	0	8	0	3	0	5	0	7	412		0	0	0	0

Peak Rolling Hour Flow Rates

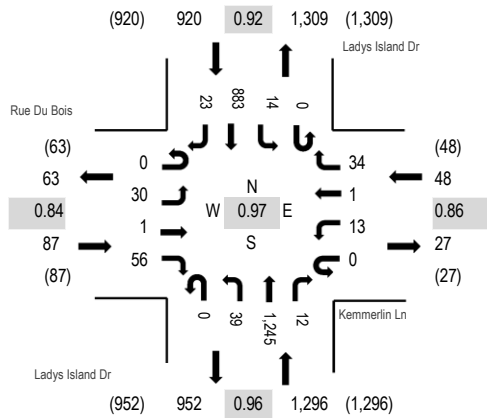
Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	1	0	0	0	5	0	0	0	0	0	0	0	0	1	7
Lights	0	35	793	30	0	5	539	2	0	29	0	9	0	13	2	19	1,476
Mediums	0	5	9	1	0	0	12	0	0	2	0	0	0	0	0	0	29
Total	0	40	803	31	0	5	556	2	0	31	0	9	0	13	2	20	1,512



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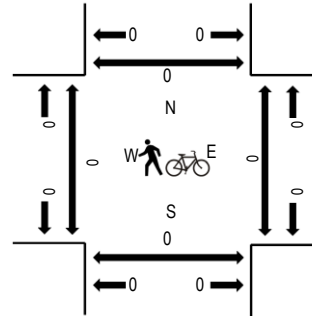
Location: 17 Ladys Island Dr & Kemmerlin Ln PM
Date and Start Time: Wednesday, September 7, 2016
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Rue Du Bois Eastbound				Kemmerlin Ln Westbound				Ladys Island Dr Northbound				Ladys Island Dr Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:30 PM	0	4	0	16	0	4	0	10	0	8	323	5	0	7	201	7	585	2,351	0	0	0	0
4:45 PM	0	9	1	14	0	2	0	9	0	5	299	3	0	3	222	5	572		0	0	0	0
5:00 PM	0	12	0	14	0	3	0	8	0	12	312	0	0	2	215	7	585		0	0	0	0
5:15 PM	0	5	0	12	0	4	1	7	0	14	311	4	0	2	245	4	609		0	0	0	0

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	1	0	0	0	5	0	6
Lights	0	29	1	56	0	13	1	34	0	37	1,232	12	0	14	855	23	2,307
Mediums	0	1	0	0	0	0	0	0	0	2	12	0	0	0	23	0	38
Total	0	30	1	56	0	13	1	34	0	39	1,245	12	0	14	883	23	2,351



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Location: 18 Ladys Island Dr & Hazel Farm Rd PM

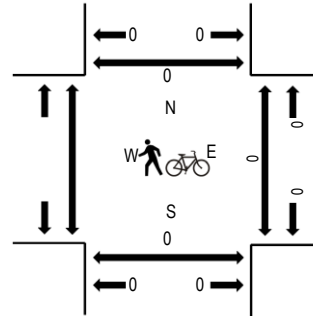
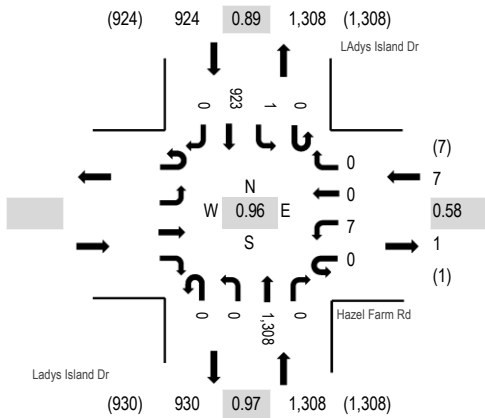
Date and Start Time: Wednesday, September 7, 2016

Peak Hour: 04:30 PM - 05:30 PM

Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - All Vehicles

Peak Hour - Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts

Interval Start Time	Eastbound				Hazel Farm Rd Westbound				Ladys Island Dr Northbound				Ladys Island Dr Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:30 PM					0	1	0	0	0	0	335	0	0	0	216	0	552	2,239	0	0	0	0
4:45 PM					0	3	0	0	0	0	313	0	0	1	230	0	547		0	0	0	0
5:00 PM					0	3	0	0	0	0	338	0	0	0	218	0	559		0	0	0	0
5:15 PM					0	0	0	0	0	0	322	0	0	0	259	0	581		0	0	0	0

Peak Rolling Hour Flow Rates

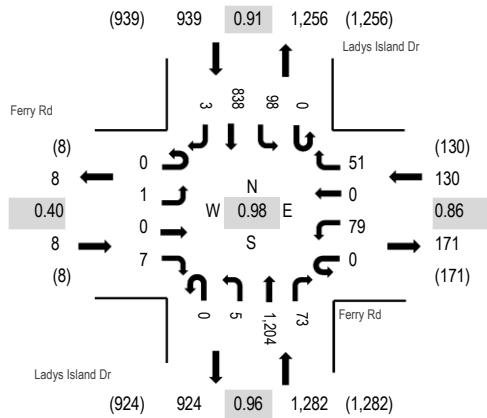
Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks					0	0	0	0	0	0	1	0	0	0	11	0	12
Lights					0	7	0	0	0	0	1,293	0	0	1	890	0	2,191
Mediums					0	0	0	0	0	0	14	0	0	0	22	0	36
Total					0	7	0	0	0	0	1,308	0	0	1	923	0	2,239



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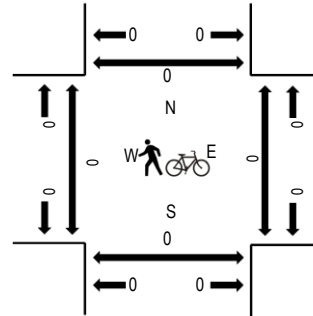
Location: 19 Ladys Island Dr & Ferry Rd PM
Date and Start Time: Wednesday, September 7, 2016
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Ferry Rd Eastbound				Ferry Rd Westbound				Ladys Island Dr Northbound				Ladys Island Dr Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:30 PM	0	0	0	2	0	19	0	10	0	2	306	22	0	22	194	1	578	2,359	0	0	0	0
4:45 PM	0	1	0	4	0	21	0	17	0	1	290	19	0	26	211	1	591		0	0	0	0
5:00 PM	0	0	0	0	0	20	0	8	0	1	315	18	0	32	193	0	587		0	0	0	0
5:15 PM	0	0	0	1	0	19	0	16	0	1	293	14	0	18	240	1	603		0	0	0	0

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	1	0	0	0	8	0	9
Lights	0	1	0	7	0	78	0	51	0	5	1,191	73	0	98	805	3	2,312
Mediums	0	0	0	0	0	1	0	0	0	0	12	0	0	0	25	0	38
Total	0	1	0	7	0	79	0	51	0	5	1,204	73	0	98	838	3	2,359

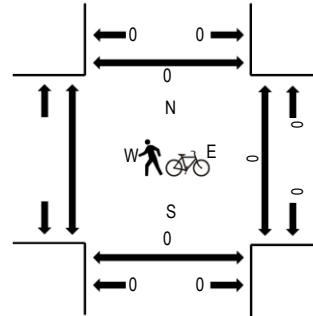
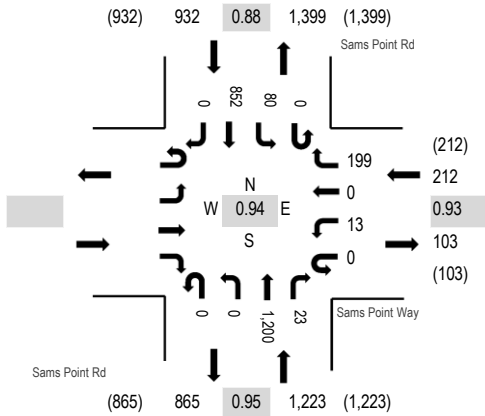


(303) 216-2439
www.alltrafficdata.net

Location: 20 Sams Point Rd & Sams Point Way PM
Date and Start Time: Wednesday, September 7, 2016
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - All Vehicles

Peak Hour - Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts

Interval Start Time	Eastbound				Sams Point Way Westbound				Sams Point Rd Northbound				Sams Point Rd Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:30 PM					0	4	0	42	0	0	276	8	0	21	188	0	539	2,367		0	0	0
4:45 PM					0	0	0	57	0	0	300	7	0	16	199	0	579			0	0	0
5:00 PM					0	6	0	51	0	0	317	5	0	21	221	0	621			0	0	0
5:15 PM					0	3	0	49	0	0	307	3	0	22	244	0	628			0	0	0

Peak Rolling Hour Flow Rates

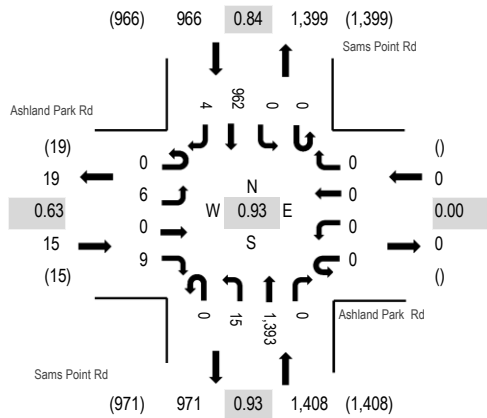
Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks					0	0	0	0	0	0	2	0	0	0	3	0	5
Lights					0	13	0	198	0	0	1,188	21	0	79	828	0	2,327
Mediums					0	0	0	1	0	0	10	2	0	1	21	0	35
Total					0	13	0	199	0	0	1,200	23	0	80	852	0	2,367



(303) 216-2439
www.alltrafficdata.net

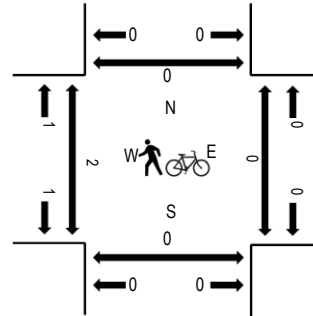
Location: 21 Sams Point Rd & Ashland Park Rd PM
Date and Start Time: Wednesday, September 7, 2016
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Ashland Park Rd Eastbound				Ashland Park Rd Westbound				Sams Point Rd Northbound				Sams Point Rd Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:30 PM	0	2	0	2	0	0	0	0	0	4	329	0	0	0	216	1	554	2,389	0	0	0	0
4:45 PM	0	2	0	2	0	0	0	0	0	4	340	0	0	0	218	0	566		1	0	0	0
5:00 PM	0	2	0	4	0	0	0	0	0	5	373	0	0	0	243	2	629		0	0	0	0
5:15 PM	0	0	0	1	0	0	0	0	0	2	351	0	0	0	285	1	640		0	0	0	0

Peak Rolling Hour Flow Rates

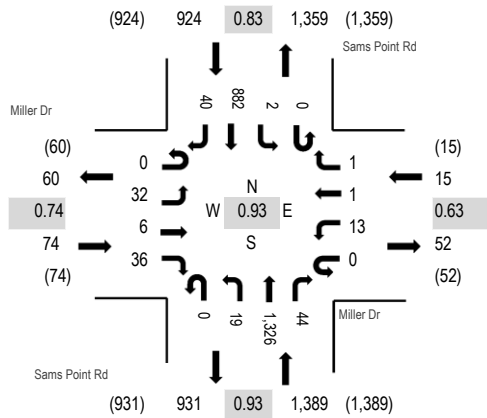
Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	2	0	0	0	3	0	5
Lights	0	6	0	8	0	0	0	0	0	15	1,381	0	0	0	937	3	2,350
Mediums	0	0	0	1	0	0	0	0	0	0	10	0	0	0	22	1	34
Total	0	6	0	9	0	0	0	0	0	15	1,393	0	0	0	962	4	2,389



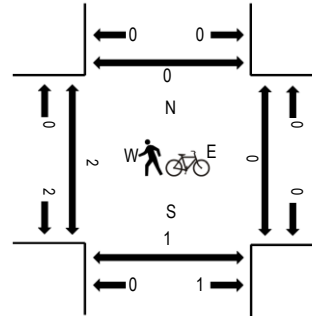
(303) 216-2439
www.alltrafficdata.net

Location: 22 Sams Point Rd & Miller Dr PM
Date and Start Time: Wednesday, September 7, 2016
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - All Vehicles



Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts

Interval Start Time	Miller Dr Eastbound				Miller Dr Westbound				Sams Point Rd Northbound				Sams Point Rd Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:30 PM	0	6	3	7	0	3	1	0	0	5	311	12	0	1	205	10	564	2,402	0	0	0	0
4:45 PM	0	12	3	10	0	3	0	0	0	5	325	12	0	1	193	6	570		1	0	0	0
5:00 PM	0	8	0	7	0	1	0	1	0	3	358	13	0	0	217	12	620		0	0	0	0
5:15 PM	0	6	0	12	0	6	0	0	0	6	332	7	0	0	267	12	648		0	0	0	0

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	3
Lights	0	32	6	35	0	13	1	1	0	19	1,315	43	0	2	860	40	2,367
Mediums	0	0	0	1	0	0	0	0	0	0	9	0	0	0	22	0	32
Total	0	32	6	36	0	13	1	1	0	19	1,326	44	0	2	882	40	2,402

APPENDIX B

VOLUME DEVELOPMENT

INTERSECTION TRAFFIC VOLUME DEVELOPMENT

US 21 Business (Sea Island Parkway) & Meridian Road

TRAFFIC CONTROL: Unsignalized

DATE COUNTED: September 7, 2016

AM PEAK HOUR (7:15-8:15 AM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES	45	0	26	0	0	1	41	1003	2	1	540	31
Walmart								60			72	
Harris Teeter								24			36	
The Village at Oyster Bluff								10			8	
Marina Village								3			3	
Taco Bell (New Trips)								6			7	
Lady's Island Shopping Center (additional)								9			14	
White Hall Plantation	3		11				13	56			42	3
Total	3	0	11	0	0	0	13	168	0	0	182	3
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	11	0	6	0	0	0	10	245	0	0	132	8
Redistributed Trips by Median												
2038 NO-BUILD TRAFFIC VOLUMES	59	0	43	0	0	1	64	1,416	2	1	854	42
Redistributed Trips Concept Plan												
2038 TRAFFIC VOLUMES CONCEPT PLAN	59	0	43	0	0	1	64	1,416	2	1	854	42

PM PEAK HOUR (4:30-5:30 PM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES	46	1	36	1	0	1	36	630	1	0	902	54
Walmart								86			81	
Harris Teeter								51			52	
The Village at Oyster Bluff								15			12	
Marina Village								7			7	
Taco Bell (New Trips)								4			5	
Lady's Island Shopping Center (additional)								47			44	
White Hall Plantation	6		24				16	67			94	4
Total	6	0	24	0	0	0	16	277	0	0	295	4
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	11	0	9	0	0	0	9	154	0	0	221	13
Redistributed Trips by Median												
2038 NO-BUILD TRAFFIC VOLUMES	63	1	69	1	0	1	61	1,061	1	0	1,418	71
Redistributed Trips Concept Plan												
2038 TRAFFIC VOLUMES CONCEPT PLAN	63	1	69	1	0	1	61	1,061	1	0	1,418	71

INTERSECTION TRAFFIC VOLUME DEVELOPMENT

US 21 Business (Sea Island Parkway) & Beaufort High School

TRAFFIC CONTROL: Unsignalized

DATE COUNTED: September 7, 2016

AM PEAK HOUR (7:15-8:15 AM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES	28	0	33	0	0	1	106	1029	0	0	502	49
Walmart								60			72	
Harris Teeter								24			36	
The Village at Oyster Bluff								10			8	
Marina Village								5			5	
Taco Bell (New Trips)								6			7	
Lady's Island Shopping Center (additional)								9			14	
White Hall Plantation								69			53	
Total	0	0	0	0	0	0	0	183	0	0	195	0
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	7	0	8	0	0	0	26	252	0	0	123	12
Redistributed Trips by Median												
2038 NO-BUILD TRAFFIC VOLUMES	35	0	41	0	0	1	132	1,464	0	0	820	61
Redistributed Trips Concept Plan	-35		-41				-132	35				
2038 TRAFFIC VOLUMES CONCEPT PLAN	0	0	0	0	0	1	0	1,499	0	0	820	61

PM PEAK HOUR (4:30-5:30 PM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES	40	1	37	4	0	2	20	643	6	2	929	15
Walmart								86			81	
Harris Teeter								51			52	
The Village at Oyster Bluff								15			12	
Marina Village								13			13	
Taco Bell (New Trips)								4			5	
Lady's Island Shopping Center (additional)								47			44	
White Hall Plantation								83			118	
Total	0	0	0	0	0	0	0	299	0	0	325	0
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	10	0	9	1	0	0	5	157	1	0	227	4
Redistributed Trips by Median												
2038 NO-BUILD TRAFFIC VOLUMES	50	1	46	5	0	2	25	1,099	7	2	1,481	19
Redistributed Trips Concept Plan	-50	-1	-46				-25	50	1			
2038 TRAFFIC VOLUMES CONCEPT PLAN	0	0	0	5	0	2	0	1,149	8	2	1,481	19

INTERSECTION TRAFFIC VOLUME DEVELOPMENT

US 21 Business (Sea Island Parkway) & Sunset Boulevard

TRAFFIC CONTROL: Unsignalized

DATE COUNTED: September 7, 2016

AM PEAK HOUR (7:15-8:15 AM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES	2	1	18	8	1	138	19	1001	9	54	469	9
Walmart								60			72	
Harris Teeter								24			36	
The Village at Oyster Bluff								10			8	
Marina Village				9		2		3	8	2	3	
Taco Bell (New Trips)								6			7	
Lady's Island Shopping Center (additional)	9	3	5		6		9					14
White Hall Plantation								69			53	
Total	9	3	5	9	6	2	9	172	8	2	179	14
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	0	0	4	2	0	34	5	245	2	13	115	2
Redistributed Trips by Median												
2038 NO-BUILD TRAFFIC VOLUMES	11	4	27	19	7	174	33	1,418	19	69	763	25
Redistributed Trips Concept Plan	35		41			442	132	-442		144	-185	
2038 TRAFFIC VOLUMES CONCEPT PLAN	46	4	68	19	7	616	165	976	19	213	578	25

PM PEAK HOUR (4:30-5:30 PM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES	1	0	40	7	0	58	16	615	27	108	828	22
Walmart								86			81	
Harris Teeter								51			52	
The Village at Oyster Bluff								15			12	
Marina Village				20		5		8	21	5	8	
Taco Bell (New Trips)								4			5	
Lady's Island Shopping Center (additional)	47	19	28		17		26					44
White Hall Plantation								83			118	
Total	47	19	28	20	17	5	26	247	21	5	276	44
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	0	0	10	2	0	14	4	151	7	26	203	5
Redistributed Trips by Median												
2038 NO-BUILD TRAFFIC VOLUMES	48	19	78	29	17	77	46	1,013	55	139	1,307	71
Redistributed Trips Concept Plan	51		46			251	25	-251		321	-367	
2038 TRAFFIC VOLUMES CONCEPT PLAN	99	19	124	29	17	328	71	762	55	460	940	71

INTERSECTION TRAFFIC VOLUME DEVELOPMENT

US 21 Business (Sea Island Parkway) & Youmans Drive

TRAFFIC CONTROL: Unsignalized

DATE COUNTED: September 7, 2016

AM PEAK HOUR (7:15-8:15 AM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES	8	1	73	0	1	3	132	1046	8	4	479	6
Walmart								60			72	
Harris Teeter								24			36	
The Village at Oyster Bluff								10			8	
Marina Village								11			12	
Taco Bell (New Trips)								6			7	
Lady's Island Shopping Center (additional)								9			5	
White Hall Plantation								69			53	
Total	0	0	0	0	0	0	0	189	0	0	193	0
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	2	0	18	0	0	1	32	256	2	1	117	1
Redistributed Trips by Median												
2038 NO-BUILD TRAFFIC VOLUMES	10	1	91	0	1	4	164	1,491	10	5	789	7
Redistributed Trips Concept Plan								-442			-144	
2038 TRAFFIC VOLUMES CONCEPT PLAN	10	1	91	0	1	4	164	1,049	10	5	645	7

PM PEAK HOUR (4:30-5:30 PM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES	13	1	94	4	1	7	60	685	5	3	896	16
Walmart								86			81	
Harris Teeter								51			52	
The Village at Oyster Bluff								15			12	
Marina Village								29			28	
Taco Bell (New Trips)								4			5	
Lady's Island Shopping Center (additional)								26			28	
White Hall Plantation								83			118	
Total	0	0	0	0	0	0	0	294	0	0	324	0
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	3	0	23	1	0	2	15	168	1	1	219	4
Redistributed Trips by Median												
2038 NO-BUILD TRAFFIC VOLUMES	16	1	117	5	1	9	75	1,147	6	4	1,439	20
Redistributed Trips Concept Plan								-251			-321	
2038 TRAFFIC VOLUMES CONCEPT PLAN	16	1	117	5	1	9	75	896	6	4	1,118	20

INTERSECTION TRAFFIC VOLUME DEVELOPMENT

US 21 Business (Sea Island Parkway) & Professional Village Circle

TRAFFIC CONTROL: Unsignalized

DATE COUNTED: September 7, 2016

AM PEAK HOUR (7:15-8:15 AM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES	0	0	0	10	0	24	0	1158	44	34	517	0
Walmart								60			72	
Harris Teeter								24			36	
The Village at Oyster Bluff								10			8	
Marina Village								11			12	
Taco Bell (New Trips)								6			7	
Lady's Island Shopping Center (additional)								9			5	
White Hall Plantation								69			53	
Total	0	0	0	0	0	0	0	189	0	0	193	0
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	0	0	0	2	0	6	0	283	11	8	127	0
Redistributed Trips by Median												
2038 NO-BUILD TRAFFIC VOLUMES	0	0	0	12	0	30	0	1,630	55	42	837	0
Redistributed Trips Concept Plan								-442			-144	
2038 TRAFFIC VOLUMES CONCEPT PLAN	0	0	0	12	0	30	0	1,188	55	42	693	0

PM PEAK HOUR (4:30-5:30 PM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES	0	0	0	35	0	43	0	725	31	14	1012	0
Walmart								86			81	
Harris Teeter								51			52	
The Village at Oyster Bluff								15			12	
Marina Village								29			28	
Taco Bell (New Trips)								4			5	
Lady's Island Shopping Center (additional)								26			28	
White Hall Plantation								83			118	
Total	0	0	0	0	0	0	0	294	0	0	324	0
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	0	0	0	9	0	11	0	177	8	3	248	0
Redistributed Trips by Median												
2038 NO-BUILD TRAFFIC VOLUMES	0	0	0	44	0	54	0	1,196	39	17	1,584	0
Redistributed Trips Concept Plan								-251			-321	
2038 TRAFFIC VOLUMES CONCEPT PLAN	0	0	0	44	0	54	0	945	39	17	1,263	0

INTERSECTION TRAFFIC VOLUME DEVELOPMENT

US 21 Business (Sea Island Parkway) & SC 802 (Sams Point Road)

TRAFFIC CONTROL: Signalized

DATE COUNTED: September 7, 2016

AM PEAK HOUR (7:15-8:15 AM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES	94	309	270	155	678	675	401	496	91	183	254	75
Walmart			73	108			60	60	91		72	
Harris Teeter		37	9	4	4	4	25	20		27	9	
The Village at Oyster Bluff	0	23	0	15	34	10	0	0	12	8	0	0
Marina Village	3					4		4		5	4	3
Taco Bell (New Trips)			7	10			6	6	9		7	
Lady's Island Shopping Center (additional)	6					1		2		1	1	3
White Hall Plantation	17					26		26		20	20	13
Total	26	60	89	137	38	45	91	118	112	61	113	19
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	23	76	66	38	166	165	98	121	22	45	62	18
Redistributed Trips by Median												
2038 NO-BUILD TRAFFIC VOLUMES	143	445	425	330	882	885	590	735	225	289	429	112
Redistributed Trips Concept Plan			-255			-442	-354			-144		
2038 TRAFFIC VOLUMES CONCEPT PLAN	143	445	170	330	882	443	236	735	225	145	429	112

PM PEAK HOUR (4:30-5:30 PM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES	123	667	404	139	414	345	315	293	81	430	494	109
Walmart			81	122			86	86	128		81	
Harris Teeter		53	13	8	10	8	53	43		39	13	
The Village at Oyster Bluff	0	39	0	15	50	23	0	0	18	12	0	0
Marina Village	7					11		11		11	10	7
Taco Bell (New Trips)			5	7			4	4	6		5	
Lady's Island Shopping Center (additional)	17					3		6		5	6	17
White Hall Plantation	21					31		31		44	44	30
Total	45	92	99	152	60	76	143	181	152	111	159	54
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	30	163	99	34	101	84	77	72	20	105	121	27
Redistributed Trips by Median												
2038 NO-BUILD TRAFFIC VOLUMES	198	922	602	325	575	505	535	546	253	646	774	190
Redistributed Trips Concept Plan			-361			-251	-375			-321		
2038 TRAFFIC VOLUMES CONCEPT PLAN	198	922	241	325	575	254	160	546	253	325	774	190

INTERSECTION TRAFFIC VOLUME DEVELOPMENT

US 21 Business (Sea Island Parkway) & Sams Point Way

TRAFFIC CONTROL: Unsignalized

DATE COUNTED: September 7, 2016

AM PEAK HOUR (7:15-8:15 AM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES	0	4	10	23	1	128	63	879	47	83	540	12
Walmart								211			253	
Harris Teeter				21		2		27	10	18	4	
The Village at Oyster Bluff								12			15	
Marina Village								4			4	
Taco Bell (New Trips)								21			24	
Lady's Island Shopping Center (additional)								2			1	
White Hall Plantation								26			20	
Total	0	0	0	21	0	2	0	303	10	18	321	0
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	0	1	2	6	0	31	15	215	12	20	132	3
Redistributed Trips by Median												
2038 NO-BUILD TRAFFIC VOLUMES	0	5	12	50	1	161	78	1,397	69	121	993	15
Redistributed Trips Concept Plan								-354			-255	
2038 TRAFFIC VOLUMES CONCEPT PLAN	0	5	12	50	1	161	78	1,043	69	121	738	15

PM PEAK HOUR (4:30-5:30 PM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES	10	11	58	10	2	102	31	590	34	157	792	31
Walmart								300			284	
Harris Teeter				43		6		39	14	26	8	
The Village at Oyster Bluff								18			23	
Marina Village								11			10	
Taco Bell (New Trips)								14			17	
Lady's Island Shopping Center (additional)								6			6	
White Hall Plantation								31			44	
Total	0	0	0	43	0	6	0	419	14	26	392	0
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	2	3	14	2	0	25	8	144	8	38	194	8
Redistributed Trips by Median												
2038 NO-BUILD TRAFFIC VOLUMES	12	14	72	55	2	133	39	1,153	56	221	1,378	39
Redistributed Trips Concept Plan								-375			-361	
2038 TRAFFIC VOLUMES CONCEPT PLAN	12	14	72	55	2	133	39	778	56	221	1,017	39

INTERSECTION TRAFFIC VOLUME DEVELOPMENT

US 21 Business (Sea Island Parkway) & Ferry Drive

TRAFFIC CONTROL: Unsignalized

DATE COUNTED: September 7, 2016

AM PEAK HOUR (7:15-8:15 AM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES	2	0	13	56	0	21	44	998	37	23	565	4
Walmart								211			253	
Harris Teeter								37			25	
The Village at Oyster Bluff								12			15	
Marina Village								4			4	
Taco Bell (New Trips)								21			24	
Lady's Island Shopping Center (additional)								2			1	
White Hall Plantation								26			20	
Total	0	0	0	0	0	0	0	313	0	0	342	0
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	0	0	3	14	0	5	11	244	9	6	138	1
Redistributed Trips by Median												
2038 NO-BUILD TRAFFIC VOLUMES	2	0	16	70	0	26	55	1,555	46	29	1,045	5
Redistributed Trips Concept Plan							-55	-354			-255	
2038 TRAFFIC VOLUMES CONCEPT PLAN	2	0	16	70	0	26	0	1,201	46	29	790	5

PM PEAK HOUR (4:30-5:30 PM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES	3	3	20	102	1	46	8	601	56	69	793	9
Walmart								300			284	
Harris Teeter								53			51	
The Village at Oyster Bluff								18			23	
Marina Village								11			10	
Taco Bell (New Trips)								14			17	
Lady's Island Shopping Center (additional)								6			6	
White Hall Plantation								31			44	
Total	0	0	0	0	0	0	0	433	0	0	435	0
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	1	1	5	25	0	11	2	147	14	17	194	2
Redistributed Trips by Median												
2038 NO-BUILD TRAFFIC VOLUMES	4	4	25	127	1	57	10	1,181	70	86	1,422	11
Redistributed Trips Concept Plan							-10	-375			-361	
2038 TRAFFIC VOLUMES CONCEPT PLAN	4	4	25	127	1	57	0	806	70	86	1,061	11

INTERSECTION TRAFFIC VOLUME DEVELOPMENT

US 21 Business (Sea Island Parkway) & Gay Drive

TRAFFIC CONTROL: Unsignalized

DATE COUNTED: September 7, 2016

AM PEAK HOUR (7:15-8:15 AM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES	4	0	3	0	0	3	6	1059	0	3	672	2
Walmart								211			253	
Harris Teeter								37			25	
The Village at Oyster Bluff								12			15	
Marina Village								4			4	
Taco Bell (New Trips)								21			24	
Lady's Island Shopping Center (additional)								2			1	
White Hall Plantation								26			20	
Total	0	0	0	0	0	0	0	313	0	0	342	0
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	1	0	1	0	0	1	1	259	0	1	164	0
Redistributed Trips by Median												
2038 NO-BUILD TRAFFIC VOLUMES	5	0	4	0	0	4	7	1,631	0	4	1,178	2
Redistributed Trips Concept Plan	2		255	16		144	411	-498	75	143	-405	7
2038 TRAFFIC VOLUMES CONCEPT PLAN	7	0	259	16	0	148	418	1,133	75	147	773	9

PM PEAK HOUR (4:30-5:30 PM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES	7	0	1	0	0	2	3	671	0	2	923	4
Walmart								300			284	
Harris Teeter								53			51	
The Village at Oyster Bluff								18			23	
Marina Village								11			10	
Taco Bell (New Trips)								14			17	
Lady's Island Shopping Center (additional)								6			6	
White Hall Plantation								31			44	
Total	0	0	0	0	0	0	0	433	0	0	435	0
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	2	0	0	0	0	0	1	164	0	0	226	1
Redistributed Trips by Median												
2038 NO-BUILD TRAFFIC VOLUMES	9	0	1	0	0	2	4	1,268	0	2	1,584	5
Redistributed Trips Concept Plan	9		366	6		25	389	-400	2	7	-370	2
2038 TRAFFIC VOLUMES CONCEPT PLAN	18	0	367	6	0	27	393	868	2	9	1,214	7

INTERSECTION TRAFFIC VOLUME DEVELOPMENT

US 21 Business (Sea Island Parkway) & Cougar Drive

TRAFFIC CONTROL: Unsignalized

DATE COUNTED: September 7, 2016

AM PEAK HOUR (7:15-8:15 AM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES	2	0	0	13	0	116	2	947	60	115	514	6
Walmart								211			253	
Harris Teeter								37			25	
The Village at Oyster Bluff								12			15	
Marina Village								4			4	
Taco Bell (New Trips)								21			24	
Lady's Island Shopping Center (additional)								2			1	
White Hall Plantation								26			20	
Total	0	0	0	0	0	0	0	313	0	0	342	0
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	0	0	0	3	0	28	0	232	15	28	126	1
Redistributed Trips by Median												
2038 NO-BUILD TRAFFIC VOLUMES	2	0	0	16	0	144	2	1,492	75	143	982	7
Redistributed Trips Concept Plan	-2			-16		-144	-2		-75	-143	16	-7
2038 TRAFFIC VOLUMES CONCEPT PLAN	0	0	0	0	0	0	0	1,492	0	0	998	0

PM PEAK HOUR (4:30-5:30 PM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES	7	0	4	5	0	20	3	634	2	6	897	2
Walmart								300			284	
Harris Teeter								53			51	
The Village at Oyster Bluff								18			23	
Marina Village								11			10	
Taco Bell (New Trips)								14			17	
Lady's Island Shopping Center (additional)								6			6	
White Hall Plantation								31			44	
Total	0	0	0	0	0	0	0	433	0	0	435	0
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	2	0	1	1	0	5	1	155	0	1	220	0
Redistributed Trips by Median												
2038 NO-BUILD TRAFFIC VOLUMES	9	0	5	6	0	25	4	1,222	2	7	1,552	2
Redistributed Trips Concept Plan	-9		-5	-6		-25	-4		-2	-7	6	-2
2038 TRAFFIC VOLUMES CONCEPT PLAN	0	0	0	0	0	0	0	1,222	0	0	1,558	0

INTERSECTION TRAFFIC VOLUME DEVELOPMENT

US 21 Business (Sea Island Parkway) & Lost Island Road

TRAFFIC CONTROL: Unsignalized

DATE COUNTED: September 7, 2016

AM PEAK HOUR (7:15-8:15 AM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES	23	0	1	0	0	0	3	1008	0	0	518	5
Walmart								211			253	
Harris Teeter								37			25	
The Village at Oyster Bluff								12			15	
Marina Village								4			4	
Taco Bell (New Trips)	21						10				10	7
Lady's Island Shopping Center (additional)								2			1	
White Hall Plantation								26			20	
Total	21	0	0	0	0	0	10	292	0	0	328	7
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	6	0	0	0	0	0	1	247	0	0	127	1
Redistributed Trips by Median	-50						-14	50				
2038 NO-BUILD TRAFFIC VOLUMES	0	0	1	0	0	0	0	1,597	0	0	973	13
Redistributed Trips Concept Plan												
2038 TRAFFIC VOLUMES CONCEPT PLAN	0	0	1	0	0	0	0	1,597	0	0	973	13

PM PEAK HOUR (4:30-5:30 PM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES	10	0	5	0	0	0	2	624	0	0	901	15
Walmart								300			284	
Harris Teeter								53			51	
The Village at Oyster Bluff								18			23	
Marina Village								11			10	
Taco Bell (New Trips)	14						7				7	5
Lady's Island Shopping Center (additional)								6			6	
White Hall Plantation								31			44	
Total	14	0	0	0	0	0	7	419	0	0	425	5
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	2	0	1	0	0	0	0	153	0	0	220	4
Redistributed Trips by Median	-26						-9	26				
2038 NO-BUILD TRAFFIC VOLUMES	0	0	6	0	0	0	0	1,222	0	0	1,546	24
Redistributed Trips Concept Plan												
2038 TRAFFIC VOLUMES CONCEPT PLAN	0	0	6	0	0	0	0	1,222	0	0	1,546	24

INTERSECTION TRAFFIC VOLUME DEVELOPMENT

US 21 Business (Sea Island Parkway) & Airport Circle

TRAFFIC CONTROL: Unsignalized

DATE COUNTED: September 7, 2016

AM PEAK HOUR (7:15-8:15 AM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES	0	0	0	0	0	4	0	998	0	9	509	0
Walmart				60		121		90		108	145	
Harris Teeter								37			25	
The Village at Oyster Bluff								12			15	
Marina Village								4			4	
Taco Bell (New Trips)								10			10	
Lady's Island Shopping Center (additional)								2			1	
White Hall Plantation								26			20	
Total	0	0	0	60	0	121	0	181	0	108	220	0
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	0	0	0	0	0	1	0	244	0	2	125	0
Redistributed Trips by Median	50						14					
2038 NO-BUILD TRAFFIC VOLUMES	50	0	0	60	0	126	14	1,423	0	119	854	0
Redistributed Trips Concept Plan												
2038 TRAFFIC VOLUMES CONCEPT PLAN	50	0	0	60	0	126	14	1,423	0	119	854	0

PM PEAK HOUR (4:30-5:30 PM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES	0	0	0	0	0	11	0	620	1	4	885	0
Walmart				207		171		129		244	40	
Harris Teeter								53			51	
The Village at Oyster Bluff								18			23	
Marina Village								11			10	
Taco Bell (New Trips)								7			7	
Lady's Island Shopping Center (additional)								6			6	
White Hall Plantation								31			44	
Total	0	0	0	207	0	171	0	255	0	244	181	0
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	0	0	0	0	0	3	0	152	0	1	217	0
Redistributed Trips by Median	26						9					
2038 NO-BUILD TRAFFIC VOLUMES	26	0	0	207	0	185	9	1,027	1	249	1,283	0
Redistributed Trips Concept Plan												
2038 TRAFFIC VOLUMES CONCEPT PLAN	26	0	0	207	0	185	9	1,027	1	249	1,283	0

INTERSECTION TRAFFIC VOLUME DEVELOPMENT

US 21 Business (Sea Island Parkway) & Old Distant Island Road

TRAFFIC CONTROL: Unsignalized

DATE COUNTED: September 7, 2016

AM PEAK HOUR (7:15-8:15 AM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES	12	0	2	0	0	0	5	964	0	0	489	6
Walmart								108			90	
Harris Teeter								37			25	
The Village at Oyster Bluff								12			15	
Marina Village								4			4	
Taco Bell (New Trips)								10			10	
Lady's Island Shopping Center (additional)								2			1	
White Hall Plantation								26			20	
Total	0	0	0	0	0	0	0	199	0	0	165	0
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	3	0	0	0	0	0	1	236	0	0	120	1
Redistributed Trips by Median												
2038 NO-BUILD TRAFFIC VOLUMES	15	0	2	0	0	0	6	1,399	0	0	774	7
Redistributed Trips Concept Plan												
2038 TRAFFIC VOLUMES CONCEPT PLAN	15	0	2	0	0	0	6	1,399	0	0	774	7

PM PEAK HOUR (4:30-5:30 PM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES	7	0	5	0	0	0	3	588	0	0	852	10
Walmart								122			128	
Harris Teeter								53			51	
The Village at Oyster Bluff								18			23	
Marina Village								11			10	
Taco Bell (New Trips)								7			7	
Lady's Island Shopping Center (additional)								6			6	
White Hall Plantation								31			44	
Total	0	0	0	0	0	0	0	248	0	0	269	0
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	2	0	1	0	0	0	1	144	0	0	208	2
Redistributed Trips by Median												
2038 NO-BUILD TRAFFIC VOLUMES	9	0	6	0	0	0	4	980	0	0	1,329	12
Redistributed Trips Concept Plan												
2038 TRAFFIC VOLUMES CONCEPT PLAN	9	0	6	0	0	0	4	980	0	0	1,329	12

INTERSECTION TRAFFIC VOLUME DEVELOPMENT

US 21 Business (Sea Island Parkway) & Eustis Landing Road

TRAFFIC CONTROL: Signalized

DATE COUNTED: September 7, 2016

AM PEAK HOUR (7:15-8:15 AM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES	108	3	36	13	2	30	45	852	0	19	382	94
Walmart	18							90			75	15
Harris Teeter								37			25	
The Village at Oyster Bluff								12			15	
Marina Village								4			4	
Taco Bell (New Trips)								10			10	
Lady's Island Shopping Center (additional)								2			1	
White Hall Plantation								26			20	
Total	18	0	0	0	0	0	0	181	0	0	150	15
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	26	1	9	3	0	7	11	208	0	5	93	23
Redistributed Trips by Median												
2038 NO-BUILD TRAFFIC VOLUMES	152	4	45	16	2	37	56	1,241	0	24	625	132
Redistributed Trips Concept Plan												
2038 TRAFFIC VOLUMES CONCEPT PLAN	152	4	45	16	2	37	56	1,241	0	24	625	132

PM PEAK HOUR (4:30-5:30 PM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES	31	0	9	13	2	20	5	556	2	40	803	31
Walmart	20							102			107	21
Harris Teeter								53			51	
The Village at Oyster Bluff								18			23	
Marina Village								11			10	
Taco Bell (New Trips)								7			7	
Lady's Island Shopping Center (additional)								6			6	
White Hall Plantation								31			44	
Total	20	0	0	0	0	0	0	228	0	0	248	21
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	8	0	2	3	0	5	1	136	0	10	197	8
Redistributed Trips by Median												
2038 NO-BUILD TRAFFIC VOLUMES	59	0	11	16	2	25	6	920	2	50	1,248	60
Redistributed Trips Concept Plan												
2038 TRAFFIC VOLUMES CONCEPT PLAN	59	0	11	16	2	25	6	920	2	50	1,248	60

INTERSECTION TRAFFIC VOLUME DEVELOPMENT

US 21 Business (Lasy's Island Drive) & Rue Du Bois

TRAFFIC CONTROL: Unsignalized

DATE COUNTED: September 7, 2016

AM PEAK HOUR (7:15-8:15 AM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES	64	715	18	27	1274	38	3	0	6	18	1	43
Walmart		73			168							
Harris Teeter		46			29							
The Village at Oyster Bluff		23			34							
Marina Village		3			3							
Taco Bell (New Trips)		7			6							
Lady's Island Shopping Center (additional)		6			3							
White Hall Plantation		17			13							
Total	0	175	0	0	256	0	0	0	0	0	0	0
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	16	175	4	7	312	9	1	0	1	4	0	11
Redistributed Trips by Median												
2038 NO-BUILD TRAFFIC VOLUMES	80	1,065	22	34	1,842	47	4	0	7	22	1	54
Redistributed Trips Concept Plan												
2038 TRAFFIC VOLUMES CONCEPT PLAN	80	1,065	22	34	1,842	47	4	0	7	22	1	54

PM PEAK HOUR (4:30-5:30 PM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES	39	1245	12	14	883	23	13	1	34	30	1	56
Walmart		81			208							
Harris Teeter		66			63							
The Village at Oyster Bluff		39			50							
Marina Village		7			7							
Taco Bell (New Trips)		5			4							
Lady's Island Shopping Center (additional)		17			17							
White Hall Plantation		21			30							
Total	0	236	0	0	379	0	0	0	0	0	0	0
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	10	305	3	3	216	6	3	0	8	7	0	14
Redistributed Trips by Median												
2038 NO-BUILD TRAFFIC VOLUMES	49	1,786	15	17	1,478	29	16	1	42	37	1	70
Redistributed Trips Concept Plan												
2038 TRAFFIC VOLUMES CONCEPT PLAN	49	1,786	15	17	1,478	29	16	1	42	37	1	70

INTERSECTION TRAFFIC VOLUME DEVELOPMENT

US 21 Business (Lady's Island Drive) & Hazel Farm Road

TRAFFIC CONTROL: Unsignalized

DATE COUNTED: September 7, 2016

AM PEAK HOUR (7:15-8:15 AM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES	0	741	4	0	1329	0	14	0	1	0	0	0
Walmart		73			168							
Harris Teeter		46			29							
The Village at Oyster Bluff		23			34							
Marina Village		3			3							
Taco Bell (New Trips)		7			6							
Lady's Island Shopping Center (additional)		6			3							
White Hall Plantation		17			13							
Total	0	175	0	0	256	0	0	0	0	0	0	0
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	0	181	1	0	325	0	3	0	0	0	0	0
Redistributed Trips by Median												
2038 NO-BUILD TRAFFIC VOLUMES	0	1,097	5	0	1,910	0	17	0	1	0	0	0
Redistributed Trips Concept Plan		-255	255		-354		354					
2038 TRAFFIC VOLUMES CONCEPT PLAN	0	842	260	0	1,556	0	371	0	1	0	0	0

PM PEAK HOUR (4:30-5:30 PM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES	0	1308	0	1	923	0	7	0	0	0	0	0
Walmart		81			208							
Harris Teeter		66			63							
The Village at Oyster Bluff		39			50							
Marina Village		7			7							
Taco Bell (New Trips)		5			4							
Lady's Island Shopping Center (additional)		17			17							
White Hall Plantation		21			30							
Total	0	236	0	0	379	0	0	0	0	0	0	0
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	0	320	0	0	226	0	2	0	0	0	0	0
Redistributed Trips by Median												
2038 NO-BUILD TRAFFIC VOLUMES	0	1,864	0	1	1,528	0	9	0	0	0	0	0
Redistributed Trips Concept Plan		-361	361		-375		375					
2038 TRAFFIC VOLUMES CONCEPT PLAN	0	1,503	361	1	1,153	0	384	0	0	0	0	0

INTERSECTION TRAFFIC VOLUME DEVELOPMENT

US 21 Business (Lady's Island Drive) & Ferry Road

TRAFFIC CONTROL: Unsignalized

DATE COUNTED: September 7, 2016

AM PEAK HOUR (7:15-8:15 AM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES	31	683	21	21	1211	51	108	1	18	3	0	17
Walmart		73			168							
Harris Teeter		46			29							
The Village at Oyster Bluff		23			34							
Marina Village		3			3							
Taco Bell (New Trips)		7			6							
Lady's Island Shopping Center (additional)		6			3							
White Hall Plantation		17			13							
Total	0	175	0	0	256	0	0	0	0	0	0	0
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	8	167	5	5	296	12	26	0	4	1	0	4
Redistributed Trips by Median												
2038 NO-BUILD TRAFFIC VOLUMES	39	1,025	26	26	1,763	63	134	1	22	4	0	21
Redistributed Trips Concept Plan		-255			-354							
2038 TRAFFIC VOLUMES CONCEPT PLAN	39	770	26	26	1,409	63	134	1	22	4	0	21

PM PEAK HOUR (4:30-5:30 PM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES	5	1204	73	98	838	3	79	0	51	1	0	7
Walmart		81			208							
Harris Teeter		66			63							
The Village at Oyster Bluff		39			50							
Marina Village		7			7							
Taco Bell (New Trips)		5			4							
Lady's Island Shopping Center (additional)		17			17							
White Hall Plantation		21			30							
Total	0	236	0	0	379	0	0	0	0	0	0	0
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	1	295	18	24	205	1	19	0	12	0	0	2
Redistributed Trips by Median												
2038 NO-BUILD TRAFFIC VOLUMES	6	1,735	91	122	1,422	4	98	0	63	1	0	9
Redistributed Trips Concept Plan		-361			-375							
2038 TRAFFIC VOLUMES CONCEPT PLAN	6	1,374	91	122	1,047	4	98	0	63	1	0	9

INTERSECTION TRAFFIC VOLUME DEVELOPMENT

SC 802 (Sams Point Road) & Sams Point Way

TRAFFIC CONTROL: Unsignalized

DATE COUNTED: September 7, 2016

AM PEAK HOUR (7:15-8:15 AM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES	0	572	18	149	1522	0	9	0	88	0	0	0
Walmart		91			108							
Harris Teeter		40		4	60				2			
The Village at Oyster Bluff		43			34							
Marina Village		5			4							
Packing Shed												
Taco Bell (New Trips)		9			10							
Lady's Island Shopping Center (additional)		1			1							
White Hall Plantation		20			26							
Total	0	209	0	4	243	0	0	0	2	0	0	0
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	0	140	4	36	372	0	2	0	22	0	0	0
Redistributed Trips by Median												
2038 NO-BUILD TRAFFIC VOLUMES	0	921	22	189	2,137	0	11	0	112	0	0	0
Redistributed Trips Concept Plan		-144			-422							
2038 TRAFFIC VOLUMES CONCEPT PLAN	0	777	22	189	1,715	0	11	0	112	0	0	0

PM PEAK HOUR (4:30-5:30 PM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES	0	1200	23	80	852	0	13	0	199	0	0	0
Walmart		128			122							
Harris Teeter		85		5	86				5			
The Village at Oyster Bluff		69			88							
Marina Village		11			11							
Taco Bell (New Trips)		6			7							
Lady's Island Shopping Center (additional)		5			3							
White Hall Plantation		44			31							
Total	0	348	0	5	348	0	0	0	5	0	0	0
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	0	294	6	20	208	0	3	0	49	0	0	0
Redistributed Trips by Median												
2038 NO-BUILD TRAFFIC VOLUMES	0	1,842	29	105	1,408	0	16	0	253	0	0	0
Redistributed Trips Concept Plan		-321			-251							
2038 TRAFFIC VOLUMES CONCEPT PLAN	0	1,521	29	105	1,157	0	16	0	253	0	0	0

INTERSECTION TRAFFIC VOLUME DEVELOPMENT

SC 802 (Sams Point Road) & Ashland Park Road

TRAFFIC CONTROL: Unsignalized

DATE COUNTED: September 7, 2016

AM PEAK HOUR (7:15-8:15 AM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES	11	638	0	1	1691	6	0	0	0	1	0	9
Walmart		91			108							
Harris Teeter		40			64							
The Village at Oyster Bluff		43			34							
Marina Village		5			4							
Taco Bell (New Trips)		9			10							
Lady's Island Shopping Center (additional)		1			1							
White Hall Plantation		20			26							
Total	0	209	0	0	247	0	0	0	0	0	0	0
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	3	156	0	0	414	1	0	0	0	0	0	2
Redistributed Trips by Median												
2038 NO-BUILD TRAFFIC VOLUMES	14	1,003	0	1	2,352	7	0	0	0	1	0	11
Redistributed Trips Concept Plan		-144			-422							
2038 TRAFFIC VOLUMES CONCEPT PLAN	14	859	0	1	1,930	7	0	0	0	1	0	11

PM PEAK HOUR (4:30-5:30 PM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES	15	1393	0	0	962	4	0	0	0	6	0	9
Walmart		128			122							
Harris Teeter		85			91							
The Village at Oyster Bluff		69			88							
Marina Village		11			11							
Taco Bell (New Trips)		6			7							
Lady's Island Shopping Center (additional)		5			3							
White Hall Plantation		44			31							
Total	0	348	0	0	353	0	0	0	0	0	0	0
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	4	341	0	0	235	1	0	0	0	1	0	2
Redistributed Trips by Median												
2038 NO-BUILD TRAFFIC VOLUMES	19	2,082	0	0	1,550	5	0	0	0	7	0	11
Redistributed Trips Concept Plan		-321			-251							
2038 TRAFFIC VOLUMES CONCEPT PLAN	19	1,761	0	0	1,299	5	0	0	0	7	0	11

INTERSECTION TRAFFIC VOLUME DEVELOPMENT

SC 802 (Sams Point Road) & Miller Drive

TRAFFIC CONTROL: Unsignalized

DATE COUNTED: September 7, 2016

AM PEAK HOUR (7:15-8:15 AM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES	13	602	19	3	1631	125	15	1	4	7	0	33
Walmart		91			108							
Harris Teeter		40			64							
The Village at Oyster Bluff		43			34							
Marina Village		5			4							
Taco Bell (New Trips)		9			10							
Lady's Island Shopping Center (additional)		1			1							
White Hall Plantation		20			26							
Total	0	209	0	0	247	0	0	0	0	0	0	0
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	3	147	5	1	399	31	4	0	1	2	0	8
Redistributed Trips by Median												
2038 NO-BUILD TRAFFIC VOLUMES	16	958	24	4	2,277	156	19	1	5	9	0	41
Redistributed Trips Concept Plan		-144			-442	422				144		
2038 TRAFFIC VOLUMES CONCEPT PLAN	16	814	24	4	1,835	578	19	1	5	153	0	41

PM PEAK HOUR (4:30-5:30 PM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES	19	1326	44	2	882	40	13	1	1	32	6	36
Walmart		128			122							
Harris Teeter		85			91							
The Village at Oyster Bluff		69			88							
Marina Village		11			11							
Taco Bell (New Trips)		6			7							
Lady's Island Shopping Center (additional)		5			3							
White Hall Plantation		44			31							
Total	0	348	0	0	353	0	0	0	0	0	0	0
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	5	324	11	0	216	10	3	0	0	8	1	9
Redistributed Trips by Median												
2038 NO-BUILD TRAFFIC VOLUMES	24	1,998	55	2	1,451	50	16	1	1	40	7	45
Redistributed Trips Concept Plan		-321			-251	251				321		
2038 TRAFFIC VOLUMES CONCEPT PLAN	24	1,677	55	2	1,200	301	16	1	1	361	7	45

INTERSECTION TRAFFIC VOLUME DEVELOPMENT

US 21 Business (Sea Island Parkway) & Taco Bell Driveway

TRAFFIC CONTROL: Unsignalized

DATE COUNTED: NA

AM PEAK HOUR (7:15-8:15 AM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES								1009			527	
Walmart								211			253	
Harris Teeter								37			25	
The Village at Oyster Bluff								12			15	
Marina Village								4			4	
Taco Bell (New Trips)			10					21			7	17
Lady's Island Shopping Center (additional)								2			1	
White Hall Plantation								26			20	
Total	0	0	10	0	0	0	0	313	0	0	325	17
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	0	0	0	0	0	0	0	247	0	0	129	0
Redistributed Trips by Median												
2038 NO-BUILD TRAFFIC VOLUMES	0	0	10	0	0	0	0	1,569	0	0	981	17
Redistributed Trips Concept Plan												
2038 TRAFFIC VOLUMES CONCEPT PLAN	0	0	10	0	0	0	0	1,569	0	0	981	17

PM PEAK HOUR (4:30-5:30 PM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES								639			906	
Walmart								300			284	
Harris Teeter								53			51	
The Village at Oyster Bluff								18			23	
Marina Village								11			10	
Taco Bell (New Trips)			7					14			5	12
Lady's Island Shopping Center (additional)								6			6	
White Hall Plantation								31			44	
Total	0	0	7	0	0	0	0	433	0	0	423	12
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	0	0	0	0	0	0	0	156	0	0	222	0
Redistributed Trips by Median												
2038 NO-BUILD TRAFFIC VOLUMES	0	0	7	0	0	0	0	1,228	0	0	1,551	12
Redistributed Trips Concept Plan												
2038 TRAFFIC VOLUMES CONCEPT PLAN	0	0	7	0	0	0	0	1,228	0	0	1,551	12

INTERSECTION TRAFFIC VOLUME DEVELOPMENT

US 21 Business (Sea Island Parkway) & Walmart Driveway #3

TRAFFIC CONTROL: Unsignalized

DATE COUNTED: NA

AM PEAK HOUR (7:15-8:15 AM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES								998			509	
Walmart				30		60		30	72	145	60	
Harris Teeter								37			25	
The Village at Oyster Bluff								12			15	
Marina Village								4			4	
Taco Bell (New Trips)								10			10	
Lady's Island Shopping Center (additional)								2			1	
White Hall Plantation								26			20	
Total	0	0	0	30	0	60	0	121	72	145	135	0
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	0	0	0	0	0	0	0	244	0	0	125	0
Redistributed Trips by Median												
2038 NO-BUILD TRAFFIC VOLUMES	0	0	0	30	0	60	0	1,363	72	145	769	0
Redistributed Trips Concept Plan												
2038 TRAFFIC VOLUMES CONCEPT PLAN	0	0	0	30	0	60	0	1,363	72	145	769	0

PM PEAK HOUR (4:30-5:30 PM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES								620			885	
Walmart				43		86		43	81	162	85	
Harris Teeter								53			51	
The Village at Oyster Bluff								18			23	
Marina Village								11			10	
Taco Bell (New Trips)								7			7	
Lady's Island Shopping Center (additional)								6			6	
White Hall Plantation								31			44	
Total	0	0	0	43	0	86	0	169	81	162	226	0
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	0	0	0	0	0	0	0	152	0	0	217	0
Redistributed Trips by Median												
2038 NO-BUILD TRAFFIC VOLUMES	0	0	0	43	0	86	0	941	81	162	1,328	0
Redistributed Trips Concept Plan												
2038 TRAFFIC VOLUMES CONCEPT PLAN	0	0	0	43	0	86	0	941	81	162	1,328	0

INTERSECTION TRAFFIC VOLUME DEVELOPMENT

US 21 Business (Sea Island Parkway) & Walmart Driveway #4

TRAFFIC CONTROL: Unsignalized

DATE COUNTED: NA

AM PEAK HOUR (7:15-8:15 AM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES								998			509	
Walmart						30		72	36		90	
Harris Teeter								37			25	
The Village at Oyster Bluff								12			15	
Marina Village								4			4	
Taco Bell (New Trips)								10			10	
Lady's Island Shopping Center (additional)								2			1	
White Hall Plantation								26			20	
Total	0	0	0	0	0	30	0	163	36	0	165	0
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	0	0	0	0	0	0	0	244	0	0	125	0
Redistributed Trips by Median												
2038 NO-BUILD TRAFFIC VOLUMES	0	0	0	0	0	30	0	1,405	36	0	799	0
Redistributed Trips Concept Plan												
2038 TRAFFIC VOLUMES CONCEPT PLAN	0	0	0	0	0	30	0	1,405	36	0	799	0

PM PEAK HOUR (4:30-5:30 PM)	NBL	NBT	NBR	SBL	SBT	SBR	WBL	WBT	WBR	EBL	EBT	EBR
2016 TRAFFIC VOLUMES								620			885	
Walmart						43		81	41		128	
Harris Teeter								53			51	
The Village at Oyster Bluff								18			23	
Marina Village								11			10	
Taco Bell (New Trips)								7			7	
Lady's Island Shopping Center (additional)								6			6	
White Hall Plantation								31			44	
Total	0	0	0	0	0	43	0	207	41	0	269	0
Years To Buildout (2038)	22	22	22	22	22	22	22	22	22	22	22	22
Background Traffic Growth	0	0	0	0	0	0	0	152	0	0	217	0
Redistributed Trips by Median												
2038 NO-BUILD TRAFFIC VOLUMES	0	0	0	0	0	43	0	979	41	0	1,371	0
Redistributed Trips Concept Plan												
2038 TRAFFIC VOLUMES CONCEPT PLAN	0	0	0	0	0	43	0	979	41	0	1,371	0


















APPENDIX C

2016 EXISTING SYNCHRO RESULTS

HCM Unsignalized Intersection Capacity Analysis

1: Meridian Rd/Driveway & US 21 Sea Island Pkwy

2016 Existing
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	540	31	1	1003	2	45	0	26	0	0	1
Future Volume (Veh/h)	1	540	31	1	1003	2	45	0	26	0	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1	600	34	1	1114	2	50	0	29	0	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLT			TL							
Median storage (veh)		2										
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1116			634			1736	1737	617	1765	1753	1115
vC1, stage 1 conf vol							619	619		1117	1117	
vC2, stage 2 conf vol							1117	1118		648	636	
vCu, unblocked vol	1116			634			1736	1737	617	1765	1753	1115
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			78	100	94	100	100	100
cM capacity (veh/h)	626			949			222	248	490	218	247	253
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1							
Volume Total	635	1	1116	79	1							
Volume Left	1	1	0	50	0							
Volume Right	34	0	2	29	1							
cSH	626	949	1700	278	253							
Volume to Capacity	0.00	0.00	0.66	0.28	0.00							
Queue Length 95th (ft)	0	0	0	28	0							
Control Delay (s)	0.0	8.8	0.0	23.0	19.3							
Lane LOS	A	A		C	C							
Approach Delay (s)	0.0	0.0		23.0	19.3							
Approach LOS				C	C							
Intersection Summary												
Average Delay			1.0									
Intersection Capacity Utilization			70.3%		ICU Level of Service					C		
Analysis Period (min)			15									

Timings 2: Geechie Rd/Driveway & US 21 Sea Island Pkwy

2016 Existing
AM Peak Hour

	→	↗	←	↖	↑	↓
Lane Group	EBT	WBL	WBT	NBL	NBT	SBT
Lane Configurations	↔	↗	↖		↔	↔
Traffic Volume (vph)	502	106	1029	28	0	0
Future Volume (vph)	502	106	1029	28	0	0
Turn Type	NA	pm+pt	NA	Perm	NA	NA
Protected Phases	4	3	8		2	6
Permitted Phases		8		2		
Detector Phase	4	3	8	2	2	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	9.5	22.5	22.5	22.5	22.5
Total Split (s)	46.4	10.6	57.0	23.0	23.0	23.0
Total Split (%)	58.0%	13.3%	71.3%	28.8%	28.8%	28.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5		4.5	4.5
Lead/Lag	Lag	Lead				
Lead-Lag Optimize?	Yes	Yes				
Recall Mode	None	None	None	Max	Max	Max
Act Effect Green (s)	41.6	49.8	49.8		18.6	18.6
Actuated g/C Ratio	0.54	0.64	0.64		0.24	0.24
v/c Ratio	0.62	0.29	0.95		0.16	0.00
Control Delay	16.3	7.0	31.5		5.9	0.0
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	16.3	7.0	31.5		5.9	0.0
LOS	B	A	C		A	A
Approach Delay	16.3		29.2		5.9	
Approach LOS	B		C		A	

Intersection Summary

Cycle Length: 80
 Actuated Cycle Length: 77.4
 Natural Cycle: 80
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.95
 Intersection Signal Delay: 24.3
 Intersection Capacity Utilization 105.0%
 Analysis Period (min) 15

Intersection LOS: C
 ICU Level of Service G

Splits and Phases: 2: Geechie Rd/Driveway & US 21 Sea Island Pkwy

↑ Ø2	↗ Ø3	→ Ø4
23 s	10.6 s	46.4 s
↓ Ø6	↖ Ø8	
23 s	57 s	

Phasings
2: Geechie Rd/Driveway & US 21 Sea Island Pkwy

2016 Existing
AM Peak Hour

	→	↘	←	↙	↑	↓
Lane Group	EBT	WBL	WBT	NBL	NBT	SBT
Protected Phases	4	3	8		2	6
Permitted Phases		8		2		
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	9.5	22.5	22.5	22.5	22.5
Total Split (s)	46.4	10.6	57.0	23.0	23.0	23.0
Total Split (%)	58.0%	13.3%	71.3%	28.8%	28.8%	28.8%
Maximum Green (s)	41.9	6.1	52.5	18.5	18.5	18.5
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag	Lag	Lead				
Lead-Lag Optimize?	Yes	Yes				
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	Max	Max	Max
Walk Time (s)	7.0		7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0		11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0		0	0	0	0
90th %ile Green (s)	41.9	6.1	52.5	18.5	18.5	18.5
90th %ile Term Code	Hold	Max	Max	MaxR	MaxR	MaxR
70th %ile Green (s)	41.9	6.1	52.5	18.5	18.5	18.5
70th %ile Term Code	Hold	Max	Max	MaxR	MaxR	MaxR
50th %ile Green (s)	41.9	6.1	52.5	18.5	18.5	18.5
50th %ile Term Code	Hold	Max	Max	MaxR	MaxR	MaxR
30th %ile Green (s)	41.9	6.1	52.5	18.5	18.5	18.5
30th %ile Term Code	Hold	Max	Max	MaxR	MaxR	MaxR
10th %ile Green (s)	39.6	0.0	39.6	18.5	18.5	18.5
10th %ile Term Code	Hold	Skip	Gap	MaxR	MaxR	MaxR

Intersection Summary

Cycle Length: 80
 Actuated Cycle Length: 77.4
 Control Type: Actuated-Uncoordinated
 90th %ile Actuated Cycle: 80
 70th %ile Actuated Cycle: 80
 50th %ile Actuated Cycle: 80
 30th %ile Actuated Cycle: 80
 10th %ile Actuated Cycle: 67.1

Queues

2: Geechie Rd/Driveway & US 21 Sea Island Pkwy

2016 Existing

AM Peak Hour

	→	↘	←	↑	↓
Lane Group	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	612	118	1143	68	1
v/c Ratio	0.62	0.29	0.95	0.16	0.00
Control Delay	16.3	7.0	31.5	5.9	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	16.3	7.0	31.5	5.9	0.0
Queue Length 50th (ft)	201	19	443	0	0
Queue Length 95th (ft)	309	36	#795	25	0
Internal Link Dist (ft)	1300		417	377	79
Turn Bay Length (ft)		200			
Base Capacity (vph)	1004	408	1269	425	469
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.61	0.29	0.90	0.16	0.00

Intersection Summary


















95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

2: Geechie Rd/Driveway & US 21 Sea Island Pkwy



















2016 Existing
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	502	49	106	1029	0	28	0	33	0	0	1
Future Volume (vph)	0	502	49	106	1029	0	28	0	33	0	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5			4.5			4.5	
Lane Util. Factor		1.00		1.00	1.00			1.00			1.00	
Frt		0.99		1.00	1.00			0.93			0.86	
Flt Protected		1.00		0.95	1.00			0.98			1.00	
Satd. Flow (prot)		1841		1770	1863			1652			1611	
Flt Permitted		1.00		0.25	1.00			0.89			1.00	
Satd. Flow (perm)		1841		475	1863			1509			1611	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	558	54	118	1143	0	31	0	37	0	0	1
RTOR Reduction (vph)	0	4	0	0	0	0	0	52	0	0	1	0
Lane Group Flow (vph)	0	608	0	118	1143	0	0	16	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	6%	2%	2%	2%
Turn Type		NA		pm+pt	NA		Perm	NA			NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		41.6		50.8	50.8			18.6			18.6	
Effective Green, g (s)		41.6		50.8	50.8			18.6			18.6	
Actuated g/C Ratio		0.53		0.65	0.65			0.24			0.24	
Clearance Time (s)		4.5		4.5	4.5			4.5			4.5	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		976		385	1207			358			382	
v/s Ratio Prot		0.33		0.02	c0.61						0.00	
v/s Ratio Perm				0.18				c0.01				
v/c Ratio		0.62		0.31	0.95			0.05			0.00	
Uniform Delay, d1		12.9		7.9	12.6			23.1			22.8	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		1.2		0.5	14.8			0.2			0.0	
Delay (s)		14.1		8.3	27.4			23.3			22.8	
Level of Service		B		A	C			C			C	
Approach Delay (s)		14.1			25.6			23.3			22.8	
Approach LOS		B			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			21.9			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.75									
Actuated Cycle Length (s)			78.4			Sum of lost time (s)			13.5			
Intersection Capacity Utilization			105.0%			ICU Level of Service			G			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

3: Driveway/Sunset Blvd & US 21 Sea Island Pkwy


















2016 Existing
AM Peak Hour

														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR		
Lane Configurations														
Traffic Volume (veh/h)	54	469	9	19	1001	9	2	1	18	8	1	138		
Future Volume (Veh/h)	54	469	9	19	1001	9	2	1	18	8	1	138		
Sign Control	Free			Free			Stop			Stop				
Grade	0%			0%			0%			0%				
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly flow rate (vph)	60	521	10	21	1112	10	2	1	20	9	1	153		
Pedestrians														
Lane Width (ft)														
Walking Speed (ft/s)														
Percent Blockage														
Right turn flare (veh)														
Median type	None				TWLTL									
Median storage veh					2									
Upstream signal (ft)	497													
pX, platoon unblocked				0.78			0.78			0.78	0.78	0.78		
vC, conflicting volume	1122			531			1954			1810	526	1820	1810	1117
vC1, stage 1 conf vol							646			646		1159	1159	
vC2, stage 2 conf vol							1308			1164		662	651	
vCu, unblocked vol	1122			258			2081			1897	251	1911	1897	1117
tC, single (s)	4.1			4.1			7.1			6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)							6.1			5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5			4.0	3.4	3.5	4.0	3.3
p0 queue free %	90			98			87			99	97	95	100	39
cM capacity (veh/h)	623			1019			15			182	607	196	218	252
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1	SW 1								
Volume Total	60	531	21	1122	23	163								
Volume Left	60	0	21	0	2	9								
Volume Right	0	10	0	10	20	153								
cSH	623	1700	1019	1700	134	248								
Volume to Capacity	0.10	0.31	0.02	0.66	0.17	0.66								
Queue Length 95th (ft)	8	0	2	0	15	103								
Control Delay (s)	11.4	0.0	8.6	0.0	37.4	43.6								
Lane LOS	B		A		E	E								
Approach Delay (s)	1.2		0.2		37.4	43.6								
Approach LOS					E	E								
Intersection Summary														
Average Delay				4.6										
Intersection Capacity Utilization				70.5%			ICU Level of Service			C				
Analysis Period (min)				15										

HCM Unsignalized Intersection Capacity Analysis

4: Youmans Dr/Driveway & US 21 Sea Island Pkwy

2016 Existing
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	4	479	6	132	1046	8	8	1	73	0	1	3
Future Volume (Veh/h)	4	479	6	132	1046	8	8	1	73	0	1	3
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	532	7	147	1162	9	9	1	81	0	1	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	TWLTL				None							
Median storage veh	2											
Upstream signal (ft)	1218											
pX, platoon unblocked				0.81			0.81	0.81	0.81	0.81	0.81	
vC, conflicting volume	1171			539			2003	2008	536	2086	2008	1166
vC1, stage 1 conf vol							544	544		1460	1460	
vC2, stage 2 conf vol							1460	1465		625	547	
vCu, unblocked vol	1171			314			2121	2127	310	2222	2126	1166
tC, single (s)	4.1			4.2			7.2	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)							6.2	5.5		6.1	5.5	
tF (s)	2.2			2.3			3.6	4.0	3.4	3.5	4.0	3.3
p0 queue free %	99			85			92	99	86	100	99	99
cM capacity (veh/h)	596			983			117	150	577	119	148	236
Direction, Lane #	EB 1	WB 1	WB 2	NE 1	SW 1							
Volume Total	543	147	1171	91	4							
Volume Left	4	147	0	9	0							
Volume Right	7	0	9	81	3							
cSH	596	983	1700	406	206							
Volume to Capacity	0.01	0.15	0.69	0.22	0.02							
Queue Length 95th (ft)	1	13	0	21	1							
Control Delay (s)	0.2	9.3	0.0	16.4	22.8							
Lane LOS	A	A		C	C							
Approach Delay (s)	0.2	1.0		16.4	22.8							
Approach LOS				C	C							
Intersection Summary												
Average Delay			1.6									
Intersection Capacity Utilization			103.0%		ICU Level of Service				G			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

5: US 21 Sea Island Pkwy & Professional Village Cir

2016 Existing
AM Peak Hour























Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔↗	↔↗		↔↗	↔↗
Traffic Volume (veh/h)	34	517	1158	44	10	24
Future Volume (Veh/h)	34	517	1158	44	10	24
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	38	574	1287	49	11	27
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)			681			
pX, platoon unblocked	0.85				0.85	0.85
vC, conflicting volume	1336				1674	668
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1041				1440	255
tC, single (s)	4.1				7.0	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.6	3.3
p0 queue free %	93				88	96
cM capacity (veh/h)	564				91	632
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	229	383	858	478	11	27
Volume Left	38	0	0	0	11	0
Volume Right	0	0	0	49	0	27
cSH	564	1700	1700	1700	91	632
Volume to Capacity	0.07	0.23	0.50	0.28	0.12	0.04
Queue Length 95th (ft)	5	0	0	0	10	3
Control Delay (s)	2.7	0.0	0.0	0.0	50.0	10.9
Lane LOS	A				E	B
Approach Delay (s)	1.0		0.0		22.2	
Approach LOS					C	
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			49.9%		ICU Level of Service	A
Analysis Period (min)			15			

Timings

6: Ladys Island Dr/Sams Point Rd & US 21 Sea Island Pkwy

2016 Existing

AM Peak Hour

										
Lane Group	EBL	EBT	WBL	WBT	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations										
Traffic Volume (vph)	183	254	401	496	94	309	270	155	678	675
Future Volume (vph)	183	254	401	496	94	309	270	155	678	675
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2	1	6	3	8	1	7	4	
Permitted Phases	2		6		8		8	4		4
Detector Phase	5	2	1	6	3	8	1	7	4	4
Switch Phase										
Minimum Initial (s)	6.0	25.0	6.0	25.0	6.0	15.0	6.0	6.0	15.0	15.0
Minimum Split (s)	13.3	43.0	13.3	39.0	12.3	42.3	13.3	13.3	43.3	43.3
Total Split (s)	26.4	43.0	26.7	43.3	12.3	58.9	26.7	16.4	63.0	63.0
Total Split (%)	18.2%	29.7%	18.4%	29.9%	8.5%	40.6%	18.4%	11.3%	43.4%	43.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.3	4.0	4.0	4.3	4.3
All-Red Time (s)	3.3	2.0	3.3	2.0	2.3	2.0	3.3	2.3	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.3	6.0	7.3	6.0	6.3	6.3	7.3	6.3	6.3	6.3
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	None	Max	None	None	None	None	Max	Max
Act Effct Green (s)	49.3	34.2	55.3	37.3	58.8	52.8	78.6	66.6	56.7	56.7
Actuated g/C Ratio	0.35	0.24	0.39	0.26	0.41	0.37	0.55	0.47	0.40	0.40
v/c Ratio	0.69	0.44	1.05	0.72	0.82	0.26	0.30	0.37	1.01	0.87
Control Delay	40.5	44.2	92.6	52.4	69.4	32.3	2.9	24.1	79.0	30.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.5	44.2	92.6	52.4	69.4	32.3	2.9	24.1	79.0	30.7
LOS	D	D	F	D	E	C	A	C	E	C
Approach Delay		42.8		68.7		25.7			51.7	
Approach LOS		D		E		C			D	

Intersection Summary

Cycle Length: 145

Actuated Cycle Length: 142.3

Natural Cycle: 145

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.05

Intersection Signal Delay: 50.3









Intersection LOS: D

Intersection Capacity Utilization 104.4%

ICU Level of Service G

Analysis Period (min) 15

Splits and Phases: 6: Ladys Island Dr/Sams Point Rd & US 21 Sea Island Pkwy











 Ø1	 Ø2	 Ø3	 Ø4
26.7 s	43 s	12.3 s	63 s
 Ø5	 Ø6	 Ø7	 Ø8
26.4 s	43.3 s	16.4 s	58.9 s

Phasings

6: Ladys Island Dr/Sams Point Rd & US 21 Sea Island Pkwy

2016 Existing

AM Peak Hour

										
Lane Group	EBL	EBT	WBL	WBT	NEL	NET	NER	SWL	SWT	SWR
Protected Phases	5	2	1	6	3	8	1	7	4	
Permitted Phases	2		6		8		8	4		4
Minimum Initial (s)	6.0	25.0	6.0	25.0	6.0	15.0	6.0	6.0	15.0	15.0
Minimum Split (s)	13.3	43.0	13.3	39.0	12.3	42.3	13.3	13.3	43.3	43.3
Total Split (s)	26.4	43.0	26.7	43.3	12.3	58.9	26.7	16.4	63.0	63.0
Total Split (%)	18.2%	29.7%	18.4%	29.9%	8.5%	40.6%	18.4%	11.3%	43.4%	43.4%
Maximum Green (s)	19.1	37.0	19.4	37.3	6.0	52.6	19.4	10.1	56.7	56.7
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.3	4.0	4.0	4.3	4.3
All-Red Time (s)	3.3	2.0	3.3	2.0	2.3	2.0	3.3	2.3	2.0	2.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.5	3.0	3.5	3.0	3.5	3.0	3.0	3.5	3.5
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	Min	None	Max	None	None	None	None	Max	Max
Walk Time (s)		5.0		5.0		5.0			5.0	5.0
Flash Dont Walk (s)		32.0		28.0		31.0			28.0	28.0
Pedestrian Calls (#/hr)		0		0		0			0	0
90th %ile Green (s)	19.1	37.0	19.4	37.3	6.0	52.6	19.4	10.1	56.7	56.7
90th %ile Term Code	Max	Hold	Max	MaxR	Max	Hold	Max	Max	MaxR	MaxR
70th %ile Green (s)	19.1	37.0	19.4	37.3	6.0	52.6	19.4	10.1	56.7	56.7
70th %ile Term Code	Max	Hold	Max	MaxR	Max	Hold	Max	Max	MaxR	MaxR
50th %ile Green (s)	17.5	35.4	19.4	37.3	6.0	52.6	19.4	10.1	56.7	56.7
50th %ile Term Code	Gap	Hold	Max	MaxR	Max	Hold	Max	Max	MaxR	MaxR
30th %ile Green (s)	14.8	32.7	19.4	37.3	6.0	52.6	19.4	10.1	56.7	56.7
30th %ile Term Code	Gap	Hold	Max	MaxR	Max	Hold	Max	Max	MaxR	MaxR
10th %ile Green (s)	11.4	29.3	19.4	37.3	6.0	53.6	19.4	9.1	56.7	56.7
10th %ile Term Code	Gap	Hold	Max	MaxR	Max	Hold	Max	Gap	MaxR	MaxR

Intersection Summary

Cycle Length: 145

Actuated Cycle Length: 142.3

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 145

70th %ile Actuated Cycle: 145

50th %ile Actuated Cycle: 143.4

30th %ile Actuated Cycle: 140.7











10th %ile Actuated Cycle: 137.3

Queues

6: Ladys Island Dr/Sams Point Rd & US 21 Sea Island Pkwy

2016 Existing

AM Peak Hour

										
Lane Group	EBL	EBT	WBL	WBT	NEL	NET	NER	SWL	SWT	SWR
Lane Group Flow (vph)	203	365	446	652	104	343	300	172	753	750
v/c Ratio	0.69	0.44	1.05	0.72	0.82	0.26	0.30	0.37	1.01	0.87
Control Delay	40.5	44.2	92.6	52.4	69.4	32.3	2.9	24.1	79.0	30.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.5	44.2	92.6	52.4	69.4	32.3	2.9	24.1	79.0	30.7
Queue Length 50th (ft)	122	141	~347	288	52	117	5	91	~745	356
Queue Length 95th (ft)	183	191	#499	365	#158	161	50	143	#1010	#644
Internal Link Dist (ft)		253		679		521			619	
Turn Bay Length (ft)	200		350		350		550	460		
Base Capacity (vph)	329	906	425	902	127	1301	1002	467	742	863
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.40	1.05	0.72	0.82	0.26	0.30	0.37	1.01	0.87

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.























95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

6: Ladys Island Dr/Sams Point Rd & US 21 Sea Island Pkwy





















2016 Existing
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	183	254	75	401	496	91	94	309	270	155	678	675
Future Volume (vph)	183	254	75	401	496	91	94	309	270	155	678	675
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.3	6.0		7.3	6.0		6.3	6.3	7.3	6.3	6.3	6.3
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1752	3411		1770	3400		1770	3505	1583	1736	1863	1583
Flt Permitted	0.22	1.00		0.39	1.00		0.08	1.00	1.00	0.47	1.00	1.00
Satd. Flow (perm)	405	3411		728	3400		141	3505	1583	864	1863	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	203	282	83	446	551	101	104	343	300	172	753	750
RTOR Reduction (vph)	0	19	0	0	10	0	0	0	142	0	0	233
Lane Group Flow (vph)	203	346	0	446	642	0	104	343	158	172	753	517
Heavy Vehicles (%)	3%	2%	3%	2%	2%	13%	2%	3%	2%	4%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8	1	7	4	
Permitted Phases	2			6			8		8	4		4
Actuated Green, G (s)	50.5	34.2		56.7	37.3		58.8	52.8	72.2	66.6	56.7	56.7
Effective Green, g (s)	50.5	34.2		56.7	37.3		58.8	52.8	72.2	66.6	56.7	56.7
Actuated g/C Ratio	0.36	0.24		0.40	0.26		0.41	0.37	0.51	0.47	0.40	0.40
Clearance Time (s)	7.3	6.0		7.3	6.0		6.3	6.3	7.3	6.3	6.3	6.3
Vehicle Extension (s)	3.0	3.5		3.0	3.5		3.0	3.5	3.0	3.0	3.5	3.5
Lane Grp Cap (vph)	298	820		432	891		127	1301	803	465	742	631
v/s Ratio Prot	0.08	0.10		c0.14	0.19		c0.03	0.10	0.03	0.03	c0.40	
v/s Ratio Perm	0.16			c0.27			0.30		0.07	0.15		0.33
v/c Ratio	0.68	0.42		1.03	0.72		0.82	0.26	0.20	0.37	1.01	0.82
Uniform Delay, d1	34.6	45.6		38.8	47.7		34.9	31.2	19.1	22.6	42.7	38.2
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.3	0.4		51.9	5.0		32.0	0.1	0.1	0.5	36.8	11.4
Delay (s)	40.9	46.1		90.7	52.7		66.9	31.3	19.3	23.0	79.5	49.6
Level of Service	D	D		F	D		E	C	B	C	E	D
Approach Delay (s)		44.2			68.1			31.4			60.3	
Approach LOS		D			E			C			E	
Intersection Summary												
HCM 2000 Control Delay			54.9				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			1.04									
Actuated Cycle Length (s)			142.2				Sum of lost time (s)		25.9			
Intersection Capacity Utilization			104.4%				ICU Level of Service		G			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

7: Driveway/Sams Point Way & US 21 Sea Island Pkwy




















2016 Existing
AM Peak Hour

														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations														
Traffic Volume (veh/h)	83	540	12	63	879	47	0	4	10	23	1	128		
Future Volume (Veh/h)	83	540	12	63	879	47	0	4	10	23	1	128		
Sign Control	Free			Free			Stop			Stop				
Grade	0%			0%			0%			0%				
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly flow rate (vph)	92	600	13	70	977	52	0	4	11	26	1	142		
Pedestrians														
Lane Width (ft)														
Walking Speed (ft/s)														
Percent Blockage														
Right turn flare (veh)														
10														
Median type	None			TWLTL										
Median storage veh	2													
Upstream signal (ft)	759													
pX, platoon unblocked				0.97			0.97			0.97	0.97	0.97		
vC, conflicting volume	1029			613			1420			1960	306	1640	1940	514
vC1, stage 1 conf vol							790			790	1143		1143	
vC2, stage 2 conf vol							629			1169	497		797	
vCu, unblocked vol	1029			548			1377			1931	234	1603	1911	514
tC, single (s)	4.1			4.1			7.5			6.5	6.9	7.5	6.5	7.0
tC, 2 stage (s)							6.5			5.5	6.5		5.5	
tF (s)	2.2			2.2			3.5			4.0	3.3	3.5	4.0	3.3
p0 queue free %	86			93			100			97	99	85	99	72
cM capacity (veh/h)	671			990			173			143	748	178	191	502
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1					
Volume Total	92	400	213	70	651	378	4	11	169					
Volume Left	92	0	0	70	0	0	0	0	26					
Volume Right	0	0	13	0	0	52	0	11	142					
cSH	671	1700	1700	990	1700	1700	143	748	598					
Volume to Capacity	0.14	0.24	0.13	0.07	0.38	0.22	0.03	0.01	0.28					
Queue Length 95th (ft)	12	0	0	6	0	0	2	1	29					
Control Delay (s)	11.2	0.0	0.0	8.9	0.0	0.0	30.9	9.9	17.2					
Lane LOS	B			A			D		A	C				
Approach Delay (s)	1.5			0.6			15.5		17.2					
Approach LOS							C		C					
Intersection Summary														
Average Delay			2.4											
Intersection Capacity Utilization			48.4%		ICU Level of Service					A				
Analysis Period (min)			15											

HCM Unsignalized Intersection Capacity Analysis

8: Ferry Drive/Driveway & US 21 Sea Island Pkwy


















2016 Existing
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	565	4	44	998	37	2	0	13	56	0	21
Future Volume (Veh/h)	23	565	4	44	998	37	2	0	13	56	0	21
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	26	628	4	49	1109	41	2	0	14	62	0	23
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	TWLTL			TWLTL								
Median storage veh)	2			2								
Upstream signal (ft)	1208											
pX, platoon unblocked												
vC, conflicting volume	1150			632			1358	1930	316	1608	1912	575
vC1, stage 1 conf vol							682	682		1228	1228	
vC2, stage 2 conf vol							676	1248		380	684	
vCu, unblocked vol	1150			632			1358	1930	316	1608	1912	575
tC, single (s)	4.2			4.1			8.5	6.5	6.9	7.5	6.5	7.0
tC, 2 stage (s)							7.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			4.0	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			95			99	100	98	63	100	95
cM capacity (veh/h)	592			947			198	186	680	169	202	454
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1	SB 2			
Volume Total	26	419	213	49	739	411	16	62	23			
Volume Left	26	0	0	49	0	0	2	62	0			
Volume Right	0	0	4	0	0	41	14	0	23			
cSH	592	1700	1700	947	1700	1700	522	169	454			
Volume to Capacity	0.04	0.25	0.13	0.05	0.43	0.24	0.03	0.37	0.05			
Queue Length 95th (ft)	3	0	0	4	0	0	2	39	4			
Control Delay (s)	11.4	0.0	0.0	9.0	0.0	0.0	12.1	38.0	13.4			
Lane LOS	B			A			B	E	B			
Approach Delay (s)	0.4			0.4			12.1	31.3				
Approach LOS							B	D				
Intersection Summary												
Average Delay	1.8											
Intersection Capacity Utilization	51.9%			ICU Level of Service					A			
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis

9: Gay Dr & US 21 Sea Island Pkwy




















2016 Existing
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	672	2	6	1059	0	4	0	3	0	0	3
Future Volume (Veh/h)	3	672	2	6	1059	0	4	0	3	0	0	3
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	3	747	2	7	1177	0	4	0	3	0	0	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	TWLTL				None							
Median storage veh	2											
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1177			749			1360	1945	374	1574	1946	588
vC1, stage 1 conf vol							754	754		1191	1191	
vC2, stage 2 conf vol							606	1191		382	755	
vCu, unblocked vol	1177			749			1360	1945	374	1574	1946	588
tC, single (s)	4.1			4.4			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.4			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			99	100	100	100	100	99
cM capacity (veh/h)	589			764			293	218	623	187	219	452
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1					
Volume Total	376	376	7	785	392	7	3					
Volume Left	3	0	7	0	0	4	0					
Volume Right	0	2	0	0	0	3	3					
cSH	589	1700	764	1700	1700	379	452					
Volume to Capacity	0.01	0.22	0.01	0.46	0.23	0.02	0.01					
Queue Length 95th (ft)	0	0	1	0	0	1	1					
Control Delay (s)	0.2	0.0	9.8	0.0	0.0	14.7	13.0					
Lane LOS	A		A			B	B					
Approach Delay (s)	0.1		0.1			14.7	13.0					
Approach LOS						B	B					
Intersection Summary												
Average Delay			0.1									
Intersection Capacity Utilization			39.9%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

10: Cougar Dr & US 21 Sea Island Pkwy










2016 Existing
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	514	6	2	947	60	2	0	0	13	0	116
Future Volume (Veh/h)	115	514	6	2	947	60	2	0	0	13	0	116
Sign Control	Free				Free				Stop		Stop	
Grade	0%				0%				0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	128	571	7	2	1052	67	2	0	0	14	0	129
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												12
Median type	None				None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1119			578			1360	1954	289	1631	1924	560
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1119			578			1360	1954	289	1631	1924	560
tC, single (s)	4.1			5.1			7.5	6.5	6.9	8.1	6.5	7.0
tC, 2 stage (s)												
tF (s)	2.2			2.7			3.5	4.0	3.3	3.8	4.0	3.3
p0 queue free %	79			100			97	100	100	67	100	72
cM capacity (veh/h)	620			725			65	50	708	42	52	464
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	128	381	197	2	701	418	2	143				
Volume Left	128	0	0	2	0	0	2	14				
Volume Right	0	0	7	0	0	67	0	129				
cSH	620	1700	1700	725	1700	1700	65	430				
Volume to Capacity	0.21	0.22	0.12	0.00	0.41	0.25	0.03	0.33				
Queue Length 95th (ft)	19	0	0	0	0	0	2	36				
Control Delay (s)	12.3	0.0	0.0	10.0	0.0	0.0	62.2	26.7				
Lane LOS	B			A			F	D				
Approach Delay (s)	2.2			0.0			62.2	26.7				
Approach LOS							F	D				
Intersection Summary												
Average Delay			2.8									
Intersection Capacity Utilization			48.6%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

11: Lost Island Rd & US 21 Sea Island Pkwy












2016 Existing
AM Peak Hour

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	518	5	3	1008	23	1
Future Volume (Veh/h)	518	5	3	1008	23	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	576	6	3	1120	26	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage veh)	2		2			
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			582		1145	579
vC1, stage 1 conf vol					579	
vC2, stage 2 conf vol					566	
vCu, unblocked vol			582		1145	579
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		94	100
cM capacity (veh/h)			988		405	458
Direction, Lane #	EB 1	WB 1	WB 2	NB 1		
Volume Total	582	376	747	27		
Volume Left	0	3	0	26		
Volume Right	6	0	0	1		
cSH	1700	988	1700	407		
Volume to Capacity	0.34	0.00	0.44	0.07		
Queue Length 95th (ft)	0	0	0	5		
Control Delay (s)	0.0	0.1	0.0	14.5		
Lane LOS		A		B		
Approach Delay (s)	0.0	0.0		14.5		
Approach LOS				B		
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			40.0%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

12: US 21 Sea Island Pkwy & Airport Cir










2016 Existing
AM Peak Hour

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	9	509	998	0	0	4
Future Volume (Veh/h)	9	509	998	0	0	4
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	10	566	1109	0	0	4
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1109				1695	1109
vC1, stage 1 conf vol					1109	
vC2, stage 2 conf vol					586	
vCu, unblocked vol	1109				1695	1109
tC, single (s)	4.2				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.3				3.5	3.3
p0 queue free %	98				100	98
cM capacity (veh/h)	597				280	255
Direction, Lane #	EB 1	EB 2	WB 1	SB 1		
Volume Total	10	566	1109	4		
Volume Left	10	0	0	0		
Volume Right	0	0	0	4		
cSH	597	1700	1700	255		
Volume to Capacity	0.02	0.33	0.65	0.02		
Queue Length 95th (ft)	1	0	0	1		
Control Delay (s)	11.1	0.0	0.0	19.3		
Lane LOS	B			C		
Approach Delay (s)	0.2		0.0	19.3		
Approach LOS				C		
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			62.5%	ICU Level of Service		B
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

13: Old Distant Island Rd & US 21 Sea Island Pkwy

2016 Existing
AM Peak Hour














						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	489	6	5	964	12	2
Future Volume (Veh/h)	489	6	5	964	12	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	543	7	6	1071	13	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage veh)	2		2			
Upstream signal (ft)			1133			
pX, platoon unblocked			0.49			
vC, conflicting volume			550		1630	546
vC1, stage 1 conf vol					546	
vC2, stage 2 conf vol					1083	
vCu, unblocked vol			550		1763	546
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)					5.5	
tF (s)			2.2		3.6	3.3
p0 queue free %			99		94	100
cM capacity (veh/h)			1020		223	537
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	550	1077	15			
Volume Left	0	6	13			
Volume Right	7	0	2			
cSH	1700	1020	241			
Volume to Capacity	0.32	0.01	0.06			
Queue Length 95th (ft)	0	0	5			
Control Delay (s)	0.0	0.2	20.9			
Lane LOS		A	C			
Approach Delay (s)	0.0	0.2	20.9			
Approach LOS			C			
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			64.7%	ICU Level of Service	C	
Analysis Period (min)			15			

Timings

14: Chowan Creek Bluff/Eustis Landing Rd & US 21 Sea Island Pkwy

2016 Existing

AM Peak Hour

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	19	382	45	852	108	3	13	2
Future Volume (vph)	19	382	45	852	108	3	13	2
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	42.0	42.0	42.0	42.0	23.0	23.0	23.0	23.0
Total Split (%)	64.6%	64.6%	64.6%	64.6%	35.4%	35.4%	35.4%	35.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)		4.5	4.5	4.5		4.5		4.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effect Green (s)		35.1	35.1	35.1		18.6		18.6
Actuated g/C Ratio		0.56	0.56	0.56		0.30		0.30
v/c Ratio		0.74	0.12	0.93		0.39		0.11
Control Delay		17.0	7.1	29.7		19.1		9.9
Queue Delay		0.0	0.0	0.0		0.0		0.0
Total Delay		17.0	7.1	29.7		19.1		9.9
LOS		B	A	C		B		A
Approach Delay		17.0		28.6		19.1		9.9
Approach LOS		B		C		B		A

Intersection Summary

Cycle Length: 65

Actuated Cycle Length: 62.7

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 23.6





Intersection LOS: C

Intersection Capacity Utilization 67.3%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 14: Chowan Creek Bluff/Eustis Landing Rd & US 21 Sea Island Pkwy









 Ø2	 Ø4
23 s	42 s
 Ø6	 Ø8
23 s	42 s

Phasings

14: Chowan Creek Bluff/Eustis Landing Rd & US 21 Sea Island Pkwy

2016 Existing

AM Peak Hour

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	42.0	42.0	42.0	42.0	23.0	23.0	23.0	23.0
Total Split (%)	64.6%	64.6%	64.6%	64.6%	35.4%	35.4%	35.4%	35.4%
Maximum Green (s)	37.5	37.5	37.5	37.5	18.5	18.5	18.5	18.5
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0
90th %ile Green (s)	37.5	37.5	37.5	37.5	18.5	18.5	18.5	18.5
90th %ile Term Code	Max	Max	Max	Max	MaxR	MaxR	MaxR	MaxR
70th %ile Green (s)	37.5	37.5	37.5	37.5	18.5	18.5	18.5	18.5
70th %ile Term Code	Hold	Hold	Max	Max	MaxR	MaxR	MaxR	MaxR
50th %ile Green (s)	37.5	37.5	37.5	37.5	18.5	18.5	18.5	18.5
50th %ile Term Code	Hold	Hold	Max	Max	MaxR	MaxR	MaxR	MaxR
30th %ile Green (s)	36.6	36.6	36.6	36.6	18.5	18.5	18.5	18.5
30th %ile Term Code	Hold	Hold	Gap	Gap	MaxR	MaxR	MaxR	MaxR
10th %ile Green (s)	26.8	26.8	26.8	26.8	18.5	18.5	18.5	18.5
10th %ile Term Code	Hold	Hold	Gap	Gap	MaxR	MaxR	MaxR	MaxR

Intersection Summary

Cycle Length: 65

Actuated Cycle Length: 62.7

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 65

70th %ile Actuated Cycle: 65

50th %ile Actuated Cycle: 65

30th %ile Actuated Cycle: 64.1

10th %ile Actuated Cycle: 54.3

Queues

14: Chowan Creek Bluff/Eustis Landing Rd & US 21 Sea Island Pkwy

2016 Existing

AM Peak Hour

	→	↘	←	↑	↓
Lane Group	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	549	50	947	163	49
v/c Ratio	0.74	0.12	0.93	0.39	0.11
Control Delay	17.0	7.1	29.7	19.1	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	17.0	7.1	29.7	19.1	9.9
Queue Length 50th (ft)	132	8	294	43	5
Queue Length 95th (ft)	251	22	#564	92	27
Internal Link Dist (ft)	1053		490	351	331
Turn Bay Length (ft)		290			
Base Capacity (vph)	797	467	1098	417	446
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.69	0.11	0.86	0.39	0.11

Intersection Summary


















95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

14: Chowan Creek Bluff/Eustis Landing Rd & US 21 Sea Island Pkwy





















2016 Existing
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	382	94	45	852	0	108	3	36	13	2	30
Future Volume (vph)	19	382	94	45	852	0	108	3	36	13	2	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5			4.5			4.5	
Lane Util. Factor		1.00		1.00	1.00			1.00			1.00	
Frt		0.97		1.00	1.00			0.97			0.91	
Flt Protected		1.00		0.95	1.00			0.96			0.99	
Satd. Flow (prot)		1771		1736	1827			1721			1532	
Flt Permitted		0.74		0.43	1.00			0.75			0.92	
Satd. Flow (perm)		1306		779	1827			1346			1426	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	21	424	104	50	947	0	120	3	40	14	2	33
RTOR Reduction (vph)	0	14	0	0	0	0	0	18	0	0	23	0
Lane Group Flow (vph)	0	535	0	50	947	0	0	145	0	0	26	0
Heavy Vehicles (%)	2%	5%	2%	4%	4%	2%	3%	2%	3%	8%	2%	13%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		35.0		35.0	35.0			18.6			18.6	
Effective Green, g (s)		35.0		35.0	35.0			18.6			18.6	
Actuated g/C Ratio		0.56		0.56	0.56			0.30			0.30	
Clearance Time (s)		4.5		4.5	4.5			4.5			4.5	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		730		435	1021			399			423	
v/s Ratio Prot					c0.52							
v/s Ratio Perm		0.41		0.06				c0.11			0.02	
v/c Ratio		0.73		0.11	0.93			0.36			0.06	
Uniform Delay, d1		10.3		6.5	12.6			17.3			15.7	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		3.8		0.1	13.8			2.6			0.3	
Delay (s)		14.1		6.6	26.5			19.9			16.0	
Level of Service		B		A	C			B			B	
Approach Delay (s)		14.1			25.5			19.9			16.0	
Approach LOS		B			C			B			B	
Intersection Summary												
HCM 2000 Control Delay			21.1			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			62.6			Sum of lost time (s)			9.0			
Intersection Capacity Utilization			67.3%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

15: US 21 Lady's Island Rd & Rue Du Bois/Driveway










2016 Existing
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	1	43	3	0	6	64	715	18	27	1274	38
Future Volume (Veh/h)	18	1	43	3	0	6	64	715	18	27	1274	38
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	20	1	48	3	0	7	71	794	20	30	1416	42
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None						TWLTL					
Median storage veh)							2					
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2022	2432	708	1762	2464	407	1458			814		
vC1, stage 1 conf vol	1476	1476		946	946							
vC2, stage 2 conf vol	546	956		816	1518							
vCu, unblocked vol	2022	2432	708	1762	2464	407	1458			814		
tC, single (s)	7.6	8.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)	6.6	7.5		6.5	5.5							
tF (s)	3.6	5.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	83	98	87	98	100	99	84			96		
cM capacity (veh/h)	114	61	377	157	95	593	445			809		
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4		
Volume Total	21	48	10	71	529	285	30	708	708	42		
Volume Left	20	0	3	71	0	0	30	0	0	0		
Volume Right	0	48	7	0	0	20	0	0	0	42		
cSH	110	377	323	445	1700	1700	809	1700	1700	1700		
Volume to Capacity	0.19	0.13	0.03	0.16	0.31	0.17	0.04	0.42	0.42	0.02		
Queue Length 95th (ft)	17	11	2	14	0	0	3	0	0	0		
Control Delay (s)	45.4	15.9	16.5	14.6	0.0	0.0	9.6	0.0	0.0	0.0		
Lane LOS	E	C	C	B			A					
Approach Delay (s)	24.9		16.5	1.2			0.2					
Approach LOS	C		C									
Intersection Summary												
Average Delay	1.3											
Intersection Capacity Utilization	52.1%			ICU Level of Service					A			
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis

16: US 21 Lady's Island Rd & Hazel Farm Rd





















2016 Existing
AM Peak Hour

						
Movement	WBL	WBR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (veh/h)	14	1	741	4	0	1329
Future Volume (Veh/h)	14	1	741	4	0	1329
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	16	1	823	4	0	1477
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLT		TWLT	
Median storage veh)			2		2	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1564	414			827	
vC1, stage 1 conf vol	825					
vC2, stage 2 conf vol	738					
vCu, unblocked vol	1564	414			827	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	100			100	
cM capacity (veh/h)	300	588			800	
Direction, Lane #	WB 1	NE 1	NE 2	SW 1	SW 2	
Volume Total	17	549	278	492	985	
Volume Left	16	0	0	0	0	
Volume Right	1	0	4	0	0	
cSH	309	1700	1700	800	1700	
Volume to Capacity	0.05	0.32	0.16	0.00	0.58	
Queue Length 95th (ft)	4	0	0	0	0	
Control Delay (s)	17.3	0.0	0.0	0.0	0.0	
Lane LOS	C					
Approach Delay (s)	17.3	0.0		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			46.7%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

17: US 21 Lady's Island Rd & Ferry Dr











2016 Existing
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	3	0	17	108	1	18	31	683	21	21	1211	51
Future Volume (Veh/h)	3	0	17	108	1	18	31	683	21	21	1211	51
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	3	0	19	120	1	20	34	759	23	23	1346	57
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)	5			5								
Median type							TWLTL			TWLTL		
Median storage veh							2			2		
Upstream signal (ft)										1003		
pX, platoon unblocked												
vC, conflicting volume	1878	2270	702	1558	2288	391	1403				782	
vC1, stage 1 conf vol	1420	1420		838	838							
vC2, stage 2 conf vol	458	850		719	1449							
vCu, unblocked vol	1878	2270	702	1558	2288	391	1403				782	
tC, single (s)	7.5	6.5	7.0	7.5	6.5	7.0	4.1				4.2	
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.4	3.5	4.0	3.4	2.2				2.2	
p0 queue free %	98	100	95	47	99	97	93				97	
cM capacity (veh/h)	132	165	372	225	140	597	483				812	
Direction, Lane #	EB 1	WB 1	NE 1	NE 2	SW 1	SW 2	SW 3					
Volume Total	22	141	414	402	23	897	506					
Volume Left	3	120	34	0	23	0	0					
Volume Right	19	20	0	23	0	0	57					
cSH	431	261	483	1700	812	1700	1700					
Volume to Capacity	0.05	0.54	0.07	0.24	0.03	0.53	0.30					
Queue Length 95th (ft)	4	73	6	0	2	0	0					
Control Delay (s)	17.6	34.5	2.2	0.0	9.6	0.0	0.0					
Lane LOS	C	D	A		A							
Approach Delay (s)	17.6	34.5	1.1	0.2								
Approach LOS	C	D										
Intersection Summary												
Average Delay	2.6											
Intersection Capacity Utilization	61.8%			ICU Level of Service					B			
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis

18: SC 802 Sams Point Rd & Sams Point Way

















2016 Existing
AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	9	88	572	18	149	1522
Future Volume (Veh/h)	9	88	572	18	149	1522
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	10	98	636	20	166	1691
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL		TWLTL	
Median storage (veh)			2		2	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1824	328			656	
vC1, stage 1 conf vol	646					
vC2, stage 2 conf vol	1178					
vCu, unblocked vol	1824	328			656	
tC, single (s)	7.2	6.9			4.2	
tC, 2 stage (s)	6.2					
tF (s)	3.7	3.3			2.2	
p0 queue free %	94	85			82	
cM capacity (veh/h)	163	668			914	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	108	424	232	166	846	846
Volume Left	10	0	0	166	0	0
Volume Right	98	0	20	0	0	0
cSH	519	1700	1700	914	1700	1700
Volume to Capacity	0.21	0.25	0.14	0.18	0.50	0.50
Queue Length 95th (ft)	19	0	0	17	0	0
Control Delay (s)	13.7	0.0	0.0	9.8	0.0	0.0
Lane LOS	B			A		
Approach Delay (s)	13.7	0.0		0.9		
Approach LOS	B					
Intersection Summary						
Average Delay			1.2			
Intersection Capacity Utilization			54.7%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

19: SC 802 Sams Point Rd & Ashland Park Rd/Driveway



















2016 Existing
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	0	9	0	0	0	11	638	0	1	1691	6
Future Volume (Veh/h)	1	0	9	0	0	0	11	638	0	1	1691	6
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1	0	10	0	0	0	12	709	0	1	1879	7
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage (veh)								2			2	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2263	2618	943	1684	2621	354	1886			709		
vC1, stage 1 conf vol	1884	1884		733	733							
vC2, stage 2 conf vol	378	733		952	1888							
vCu, unblocked vol	2263	2618	943	1684	2621	354	1886			709		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	96	100	100	100	96			100		
cM capacity (veh/h)	71	111	264	211	100	642	314			886		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	11	0	366	354	940	946						
Volume Left	1	0	12	0	1	0						
Volume Right	10	0	0	0	0	7						
cSH	211	1700	314	1700	886	1700						
Volume to Capacity	0.05	0.00	0.04	0.21	0.00	0.56						
Queue Length 95th (ft)	4	0	3	0	0	0						
Control Delay (s)	23.0	0.0	1.3	0.0	0.0	0.0						
Lane LOS	C	A	A		A							
Approach Delay (s)	23.0	0.0	0.7		0.0							
Approach LOS	C	A										
Intersection Summary												
Average Delay			0.3									
Intersection Capacity Utilization			57.6%		ICU Level of Service					B		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

20: SC 802 Sams Point Rd & Miller Dr W/Miller Dr E


















2016 Existing
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	0	33	15	1	4	13	602	19	3	1631	125
Future Volume (Veh/h)	7	0	33	15	1	4	13	602	19	3	1631	125
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	8	0	37	17	1	4	14	669	21	3	1812	139
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh								2			2	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2254	2606	976	1656	2664	345	1951			690		
vC1, stage 1 conf vol	1888	1888		708	708							
vC2, stage 2 conf vol	367	718		949	1957							
vCu, unblocked vol	2254	2606	976	1656	2664	345	1951			690		
tC, single (s)	7.5	6.5	7.0	7.5	6.5	6.9	4.3			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.4	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	89	100	85	91	99	99	95			100		
cM capacity (veh/h)	70	110	244	191	90	651	273			900		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	45	22	14	446	244	3	1208	743				
Volume Left	8	17	14	0	0	3	0	0				
Volume Right	37	4	0	0	21	0	0	139				
cSH	169	207	273	1700	1700	900	1700	1700				
Volume to Capacity	0.27	0.11	0.05	0.26	0.14	0.00	0.71	0.44				
Queue Length 95th (ft)	25	9	4	0	0	0	0	0				
Control Delay (s)	33.8	24.4	18.9	0.0	0.0	9.0	0.0	0.0				
Lane LOS	D	C	C			A						
Approach Delay (s)	33.8	24.4	0.4			0.0						
Approach LOS	D	C										
Intersection Summary												
Average Delay			0.9									
Intersection Capacity Utilization			59.4%		ICU Level of Service					B		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis














1: Meridian Rd/Driveway & US 21 Sea Island Pkwy

2016 Existing
PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	902	54	36	630	1	46	1	36	1	0	1
Future Volume (Veh/h)	0	902	54	36	630	1	46	1	36	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1002	60	40	700	1	51	1	40	1	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	TWLTL				None							
Median storage veh	2											
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	701			1062			1813	1813	1032	1853	1842	700
vC1, stage 1 conf vol							1032	1032		780	780	
vC2, stage 2 conf vol							781	781		1072	1062	
vCu, unblocked vol	701			1062			1813	1813	1032	1853	1842	700
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			94			77	100	86	99	100	100
cM capacity (veh/h)	896			656			223	245	283	167	219	439
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1							
Volume Total	1062	40	701	92	2							
Volume Left	0	40	0	51	1							
Volume Right	60	0	1	40	1							
cSH	896	656	1700	246	242							
Volume to Capacity	0.00	0.06	0.41	0.37	0.01							
Queue Length 95th (ft)	0	5	0	41	1							
Control Delay (s)	0.0	10.8	0.0	28.2	20.0							
Lane LOS		B		D	C							
Approach Delay (s)	0.0	0.6		28.2	20.0							
Approach LOS				D	C							
Intersection Summary												
Average Delay				1.6								
Intersection Capacity Utilization				63.7%	ICU Level of Service				B			
Analysis Period (min)				15								

Timings 2: Geechie Rd/Driveway & US 21 Sea Island Pkwy

2016 Existing
PM Peak






								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	2	929	20	643	40	1	4	0
Future Volume (vph)	2	929	20	643	40	1	4	0
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases		4	3	8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	3	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	83.0	83.0	9.5	92.5	22.5	22.5	22.5	22.5
Total Split (%)	72.2%	72.2%	8.3%	80.4%	19.6%	19.6%	19.6%	19.6%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)		4.5	4.5	4.5		4.5		4.5
Lead/Lag	Lag	Lag	Lead					
Lead-Lag Optimize?	Yes	Yes	Yes					
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effct Green (s)		52.9	55.8	55.8		19.3		19.3
Actuated g/C Ratio		0.62	0.66	0.66		0.23		0.23
v/c Ratio		0.91	0.06	0.59		0.23		0.01
Control Delay		25.8	4.0	9.2		26.2		0.0
Queue Delay		0.0	0.0	0.0		0.0		0.0
Total Delay		25.8	4.0	9.2		26.2		0.0
LOS		C	A	A		C		A
Approach Delay		25.8		9.0		26.2		
Approach LOS		C		A		C		

Intersection Summary

Cycle Length: 115
 Actuated Cycle Length: 84.8
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.91
 Intersection Signal Delay: 19.1
 Intersection Capacity Utilization 63.8%
 Analysis Period (min) 15









Intersection LOS: B
 ICU Level of Service B

Splits and Phases: 2: Geechie Rd/Driveway & US 21 Sea Island Pkwy

 Ø2	 Ø3	 Ø4
22.5 s	9.5 s	83 s
 Ø6	 Ø8	
22.5 s	92.5 s	

Phasings
2: Geechie Rd/Driveway & US 21 Sea Island Pkwy

2016 Existing
PM Peak

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Protected Phases		4	3	8		2		6
Permitted Phases	4		8		2		6	
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	83.0	83.0	9.5	92.5	22.5	22.5	22.5	22.5
Total Split (%)	72.2%	72.2%	8.3%	80.4%	19.6%	19.6%	19.6%	19.6%
Maximum Green (s)	78.5	78.5	5.0	88.0	18.0	18.0	18.0	18.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag	Lag	Lag	Lead					
Lead-Lag Optimize?	Yes	Yes	Yes					
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	Max	Max	Max	Max
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0
90th %ile Green (s)	78.5	78.5	5.0	88.0	18.0	18.0	18.0	18.0
90th %ile Term Code	Max	Max	Max	Hold	MaxR	MaxR	MaxR	MaxR
70th %ile Green (s)	72.8	72.8	5.0	82.3	18.0	18.0	18.0	18.0
70th %ile Term Code	Gap	Gap	Max	Hold	MaxR	MaxR	MaxR	MaxR
50th %ile Green (s)	47.4	47.4	0.0	47.4	18.0	18.0	18.0	18.0
50th %ile Term Code	Gap	Gap	Skip	Hold	MaxR	MaxR	MaxR	MaxR
30th %ile Green (s)	40.2	40.2	0.0	40.2	18.0	18.0	18.0	18.0
30th %ile Term Code	Gap	Gap	Skip	Hold	MaxR	MaxR	MaxR	MaxR
10th %ile Green (s)	31.1	31.1	0.0	31.1	18.0	18.0	18.0	18.0
10th %ile Term Code	Gap	Gap	Skip	Hold	MaxR	MaxR	MaxR	MaxR

Intersection Summary

Cycle Length: 115
 Actuated Cycle Length: 84.8
 Control Type: Actuated-Uncoordinated
 90th %ile Actuated Cycle: 115
 70th %ile Actuated Cycle: 109.3
 50th %ile Actuated Cycle: 74.4
 30th %ile Actuated Cycle: 67.2
 10th %ile Actuated Cycle: 58.1

Queues

2016 Existing

2: Geechie Rd/Driveway & US 21 Sea Island Pkwy


















PM Peak

	→	↘	←	↑	↓
Lane Group	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	1051	22	721	86	6
v/c Ratio	0.91	0.06	0.59	0.23	0.01
Control Delay	25.8	4.0	9.2	26.2	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	25.8	4.0	9.2	26.2	0.0
Queue Length 50th (ft)	353	3	171	19	0
Queue Length 95th (ft)	742	9	239	83	0
Internal Link Dist (ft)	1321		417	377	79
Turn Bay Length (ft)		200			
Base Capacity (vph)	1635	349	1701	370	407
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.64	0.06	0.42	0.23	0.01
Intersection Summary					

HCM Signalized Intersection Capacity Analysis

2: Geechie Rd/Driveway & US 21 Sea Island Pkwy

2016 Existing
PM Peak



















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	929	15	20	643	6	40	1	37	4	0	2
Future Volume (vph)	2	929	15	20	643	6	40	1	37	4	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5			4.5			4.5	
Lane Util. Factor		1.00		1.00	1.00			1.00			1.00	
Frt		1.00		1.00	1.00			0.94			0.95	
Flt Protected		1.00		0.95	1.00			0.98			0.97	
Satd. Flow (prot)		1859		1770	1860			1699			1722	
Flt Permitted		1.00		0.21	1.00			0.86			0.90	
Satd. Flow (perm)		1857		399	1860			1507			1593	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	2	1032	17	22	714	7	44	1	41	4	0	2
RTOR Reduction (vph)	0	1	0	0	0	0	0	26	0	0	5	0
Lane Group Flow (vph)	0	1050	0	22	721	0	0	60	0	0	1	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		52.9		58.9	58.9			19.3			19.3	
Effective Green, g (s)		52.9		58.9	58.9			19.3			19.3	
Actuated g/C Ratio		0.61		0.68	0.68			0.22			0.22	
Clearance Time (s)		4.5		4.5	4.5			4.5			4.5	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		1126		293	1256			333			352	
v/s Ratio Prot				0.00	c0.39							
v/s Ratio Perm		c0.57		0.05				c0.04			0.00	
v/c Ratio		0.93		0.08	0.57			0.18			0.00	
Uniform Delay, d1		15.5		7.4	7.5			27.5			26.5	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		13.6		0.1	0.6			1.2			0.0	
Delay (s)		29.1		7.5	8.1			28.7			26.5	
Level of Service		C		A	A			C			C	
Approach Delay (s)		29.1			8.1			28.7			26.5	
Approach LOS		C			A			C			C	
Intersection Summary												
HCM 2000 Control Delay			20.8			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			87.2			Sum of lost time (s)			13.5			
Intersection Capacity Utilization			63.8%			ICU Level of Service			B			
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

3: Driveway/Sunset Blvd & US 21 Sea Island Pkwy


















2016 Existing
PM Peak

															
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR			
Lane Configurations															
Traffic Volume (veh/h)	108	828	22	16	615	27	1	0	40	7	0	58			
Future Volume (Veh/h)	108	828	22	16	615	27	1	0	40	7	0	58			
Sign Control	Free			Free			Stop			Stop					
Grade	0%			0%			0%			0%					
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90			
Hourly flow rate (vph)	120	920	24	18	683	30	1	0	44	8	0	64			
Pedestrians															
Lane Width (ft)															
Walking Speed (ft/s)															
Percent Blockage															
Right turn flare (veh)															
Median type	None				TWLTL										
Median storage veh					2										
Upstream signal (ft)	497														
pX, platoon unblocked				0.46			0.46			0.46					
vC, conflicting volume	713			944			1955			1921					
vC1, stage 1 conf vol							1172			1172					
vC2, stage 2 conf vol							783			749					
vCu, unblocked vol	713			287			2493			2419					
tC, single (s)	4.1			4.2			7.1			6.5					
tC, 2 stage (s)							6.1			5.5					
tF (s)	2.2			2.3			3.5			4.0					
p0 queue free %	86			97			99			100					
cM capacity (veh/h)	887			574			114			133					
							355			98					
										126					
										440					
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1	SW 1									
Volume Total	120	944	18	713	45	72									
Volume Left	120	0	18	0	1	8									
Volume Right	0	24	0	30	44	64									
cSH	887	1700	574	1700	340	317									
Volume to Capacity	0.14	0.56	0.03	0.42	0.13	0.23									
Queue Length 95th (ft)	12	0	2	0	11	21									
Control Delay (s)	9.7	0.0	11.5	0.0	17.2	19.7									
Lane LOS	A		B		C	C									
Approach Delay (s)	1.1		0.3		17.2	19.7									
Approach LOS					C	C									
Intersection Summary															
Average Delay				1.9											
Intersection Capacity Utilization				65.9%			ICU Level of Service			C					
Analysis Period (min)				15											

HCM Unsignalized Intersection Capacity Analysis

4: Youmans Dr/Driveway & US 21 Sea Island Pkwy

2016 Existing
PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	3	896	16	60	685	5	13	1	94	4	1	7
Future Volume (Veh/h)	3	896	16	60	685	5	13	1	94	4	1	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	3	996	18	67	761	6	14	1	104	4	1	8
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			None							
Median storage (veh)		2										
Upstream signal (ft)		1218										
pX, platoon unblocked				0.46			0.46	0.46	0.46	0.46	0.46	
vC, conflicting volume	767			1014			1914	1912	1005	2014	1918	764
vC1, stage 1 conf vol							1011	1011		898	898	
vC2, stage 2 conf vol							904	901		1116	1020	
vCu, unblocked vol	767			439			2405	2399	420	2621	2412	764
tC, single (s)	4.1			4.2			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			86			92	99	64	93	99	98
cM capacity (veh/h)	847			495			182	189	290	61	156	404
Direction, Lane #	EB 1	WB 1	WB 2	NE 1	SW 1							
Volume Total	1017	67	767	119	13							
Volume Left	3	67	0	14	4							
Volume Right	18	0	6	104	8							
cSH	847	495	1700	270	142							
Volume to Capacity	0.00	0.14	0.45	0.44	0.09							
Queue Length 95th (ft)	0	12	0	53	7							
Control Delay (s)	0.1	13.4	0.0	28.4	32.9							
Lane LOS	A	B		D	D							
Approach Delay (s)	0.1	1.1		28.4	32.9							
Approach LOS				D	D							
Intersection Summary												
Average Delay			2.4									
Intersection Capacity Utilization			64.2%		ICU Level of Service					C		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

5: US 21 Sea Island Pkwy & Professional Village Cir

2016 Existing
PM Peak























Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔↔	↔↔		↔	↔
Traffic Volume (veh/h)	14	1012	725	31	35	43
Future Volume (Veh/h)	14	1012	725	31	35	43
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	16	1124	806	34	39	48
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)			681			
pX, platoon unblocked	0.94				0.94	0.94
vC, conflicting volume	840				1417	420
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	709				1321	264
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				72	93
cM capacity (veh/h)	835				137	693
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	391	749	537	303	39	48
Volume Left	16	0	0	0	39	0
Volume Right	0	0	0	34	0	48
cSH	835	1700	1700	1700	137	693
Volume to Capacity	0.02	0.44	0.32	0.18	0.28	0.07
Queue Length 95th (ft)	1	0	0	0	27	6
Control Delay (s)	0.6	0.0	0.0	0.0	41.5	10.6
Lane LOS	A				E	B
Approach Delay (s)	0.2		0.0		24.4	
Approach LOS					C	
Intersection Summary						
Average Delay			1.1			
Intersection Capacity Utilization			47.9%		ICU Level of Service	A
Analysis Period (min)			15			

Timings

6: Ladys Island Dr/Sams Point Rd & US 21 Sea Island Pkwy

2016 Existing

PM Peak

										
Lane Group	EBL	EBT	WBL	WBT	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations										
Traffic Volume (vph)	430	494	315	293	123	667	404	139	414	345
Future Volume (vph)	430	494	315	293	123	667	404	139	414	345
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2	1	6	3	8	1	7	4	
Permitted Phases	2		6		8		8	4		4
Detector Phase	5	2	1	6	3	8	1	7	4	4
Switch Phase										
Minimum Initial (s)	6.0	25.0	6.0	25.0	6.0	15.0	6.0	6.0	15.0	15.0
Minimum Split (s)	13.3	43.0	13.3	39.0	12.3	42.3	13.3	13.3	43.3	43.3
Total Split (s)	19.0	43.4	16.0	40.4	12.3	42.3	16.0	13.3	43.3	43.3
Total Split (%)	16.5%	37.7%	13.9%	35.1%	10.7%	36.8%	13.9%	11.6%	37.7%	37.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.3	4.0	4.0	4.3	4.3
All-Red Time (s)	3.3	2.0	3.3	2.0	2.3	2.0	3.3	2.3	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.3	6.0	7.3	6.0	6.3	6.3	7.3	6.3	6.3	6.3
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	None	Max	None	None	None	None	Max	Max
Act Effct Green (s)	47.8	37.4	41.8	34.4	42.0	36.0	51.0	44.0	37.0	37.0
Actuated g/C Ratio	0.42	0.33	0.36	0.30	0.37	0.31	0.44	0.38	0.32	0.32
v/c Ratio	1.16	0.59	1.24	0.40	0.61	0.67	0.58	0.68	0.77	0.50
Control Delay	123.6	33.7	161.8	30.9	34.6	37.9	19.7	38.3	45.1	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	123.6	33.7	161.8	30.9	34.6	37.9	19.7	38.3	45.1	5.3
LOS	F	C	F	C	C	D	B	D	D	A
Approach Delay		71.2		90.7		31.4			28.7	
Approach LOS		E		F		C			C	

Intersection Summary

Cycle Length: 115

Actuated Cycle Length: 115

Natural Cycle: 115

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.24

Intersection Signal Delay: 52.3









Intersection LOS: D

Intersection Capacity Utilization 93.8%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 6: Ladys Island Dr/Sams Point Rd & US 21 Sea Island Pkwy











 Ø1	 Ø2	 Ø3	 Ø4
16 s	43.4 s	12.3 s	43.3 s
 Ø5	 Ø6	 Ø7	 Ø8
19 s	40.4 s	13.3 s	42.3 s

Phasings

6: Ladys Island Dr/Sams Point Rd & US 21 Sea Island Pkwy

2016 Existing

PM Peak

										
Lane Group	EBL	EBT	WBL	WBT	NEL	NET	NER	SWL	SWT	SWR
Protected Phases	5	2	1	6	3	8	1	7	4	
Permitted Phases	2		6		8		8	4		4
Minimum Initial (s)	6.0	25.0	6.0	25.0	6.0	15.0	6.0	6.0	15.0	15.0
Minimum Split (s)	13.3	43.0	13.3	39.0	12.3	42.3	13.3	13.3	43.3	43.3
Total Split (s)	19.0	43.4	16.0	40.4	12.3	42.3	16.0	13.3	43.3	43.3
Total Split (%)	16.5%	37.7%	13.9%	35.1%	10.7%	36.8%	13.9%	11.6%	37.7%	37.7%
Maximum Green (s)	11.7	37.4	8.7	34.4	6.0	36.0	8.7	7.0	37.0	37.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.3	4.0	4.0	4.3	4.3
All-Red Time (s)	3.3	2.0	3.3	2.0	2.3	2.0	3.3	2.3	2.0	2.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.5	3.0	3.5	3.0	3.5	3.0	3.0	3.5	3.5
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	Min	None	Max	None	None	None	None	Max	Max
Walk Time (s)		5.0		5.0		5.0			5.0	5.0
Flash Dont Walk (s)		32.0		28.0		31.0			28.0	28.0
Pedestrian Calls (#/hr)		0		0		0			0	0
90th %ile Green (s)	11.7	37.4	8.7	34.4	6.0	36.0	8.7	7.0	37.0	37.0
90th %ile Term Code	Max	Hold	Max	MaxR	Max	Max	Max	Max	MaxR	MaxR
70th %ile Green (s)	11.7	37.4	8.7	34.4	6.0	36.0	8.7	7.0	37.0	37.0
70th %ile Term Code	Max	Hold	Max	MaxR	Max	Hold	Max	Max	MaxR	MaxR
50th %ile Green (s)	11.7	37.4	8.7	34.4	6.0	36.0	8.7	7.0	37.0	37.0
50th %ile Term Code	Max	Hold	Max	MaxR	Max	Hold	Max	Max	MaxR	MaxR
30th %ile Green (s)	11.7	37.4	8.7	34.4	6.0	36.0	8.7	7.0	37.0	37.0
30th %ile Term Code	Max	Hold	Max	MaxR	Max	Hold	Max	Max	MaxR	MaxR
10th %ile Green (s)	11.7	37.4	8.7	34.4	6.0	36.0	8.7	7.0	37.0	37.0
10th %ile Term Code	Max	Hold	Max	MaxR	Max	Hold	Max	Max	MaxR	MaxR

Intersection Summary

Cycle Length: 115

Actuated Cycle Length: 115

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 115

70th %ile Actuated Cycle: 115

50th %ile Actuated Cycle: 115

30th %ile Actuated Cycle: 115











10th %ile Actuated Cycle: 115

Queues

2016 Existing

6: Ladys Island Dr/Sams Point Rd & US 21 Sea Island Pkwy

PM Peak

										
Lane Group	EBL	EBT	WBL	WBT	NEL	NET	NER	SWL	SWT	SWR
Lane Group Flow (vph)	478	670	350	416	137	741	449	154	460	383
v/c Ratio	1.16	0.59	1.24	0.40	0.61	0.67	0.58	0.68	0.77	0.50
Control Delay	123.6	33.7	161.8	30.9	34.6	37.9	19.7	38.3	45.1	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	123.6	33.7	161.8	30.9	34.6	37.9	19.7	38.3	45.1	5.3
Queue Length 50th (ft)	~324	209	~234	118	62	250	169	70	305	0
Queue Length 95th (ft)	#590	271	#439	165	105	318	275	#127	433	68
Internal Link Dist (ft)		376		679		587			543	
Turn Bay Length (ft)	200		350		350		550	460		
Base Capacity (vph)	412	1136	282	1046	226	1107	776	228	599	769
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.16	0.59	1.24	0.40	0.61	0.67	0.58	0.68	0.77	0.50

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.























95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

6: Ladys Island Dr/Sams Point Rd & US 21 Sea Island Pkwy





















2016 Existing
PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	430	494	109	315	293	81	123	667	404	139	414	345
Future Volume (vph)	430	494	109	315	293	81	123	667	404	139	414	345
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.3	6.0		7.3	6.0		6.3	6.3	7.3	6.3	6.3	6.3
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3443		1752	3424		1770	3539	1583	1752	1863	1583
Flt Permitted	0.40	1.00		0.28	1.00		0.23	1.00	1.00	0.20	1.00	1.00
Satd. Flow (perm)	740	3443		521	3424		426	3539	1583	377	1863	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	478	549	121	350	326	90	137	741	449	154	460	383
RTOR Reduction (vph)	0	16	0	0	22	0	0	0	82	0	0	260
Lane Group Flow (vph)	478	654	0	350	394	0	137	741	367	154	460	123
Heavy Vehicles (%)	2%	2%	2%	3%	2%	2%	2%	2%	2%	3%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8	1	7	4	
Permitted Phases	2			6			8		8	4		4
Actuated Green, G (s)	49.1	37.4		43.1	34.4		42.0	36.0	44.7	44.0	37.0	37.0
Effective Green, g (s)	49.1	37.4		43.1	34.4		42.0	36.0	44.7	44.0	37.0	37.0
Actuated g/C Ratio	0.43	0.33		0.37	0.30		0.37	0.31	0.39	0.38	0.32	0.32
Clearance Time (s)	7.3	6.0		7.3	6.0		6.3	6.3	7.3	6.3	6.3	6.3
Vehicle Extension (s)	3.0	3.5		3.0	3.5		3.0	3.5	3.0	3.0	3.5	3.5
Lane Grp Cap (vph)	420	1119		288	1024		225	1107	615	227	599	509
v/s Ratio Prot	c0.12	0.19		0.09	0.12		0.03	0.21	0.05	c0.04	c0.25	
v/s Ratio Perm	c0.37			0.36			0.19		0.19	0.22		0.08
v/c Ratio	1.14	0.58		1.22	0.39		0.61	0.67	0.60	0.68	0.77	0.24
Uniform Delay, d1	30.6	32.3		33.0	31.9		27.3	34.3	28.0	25.6	35.1	28.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	87.3	0.8		124.4	1.1		4.6	1.6	1.6	7.8	9.1	1.1
Delay (s)	117.9	33.2		157.4	33.0		32.0	35.9	29.5	33.4	44.3	29.8
Level of Service	F	C		F	C		C	D	C	C	D	C
Approach Delay (s)		68.4			89.8			33.4			37.0	
Approach LOS		E			F			C			D	
Intersection Summary												
HCM 2000 Control Delay			53.9				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			1.00									
Actuated Cycle Length (s)			115.0				Sum of lost time (s)			25.9		
Intersection Capacity Utilization			93.8%				ICU Level of Service			F		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

7: Driveway/Sams Point Way & US 21 Sea Island Pkwy




















2016 Existing
PM Peak

																			
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR							
Lane Configurations																			
Traffic Volume (veh/h)	157	792	31	31	590	34	10	11	58	10	2	102							
Future Volume (Veh/h)	157	792	31	31	590	34	10	11	58	10	2	102							
Sign Control	Free			Free			Stop			Stop									
Grade	0%			0%			0%			0%									
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90							
Hourly flow rate (vph)	174	880	34	34	656	38	11	12	64	11	2	113							
Pedestrians																			
Lane Width (ft)																			
Walking Speed (ft/s)																			
Percent Blockage																			
Right turn flare (veh)												10							
Median type	None			TWLTL															
Median storage veh	2																		
Upstream signal (ft)	759																		
pX, platoon unblocked				0.90			0.90			0.90	0.90	0.90							
vC, conflicting volume	694				914				1642	2007	457	1601	2005	347					
vC1, stage 1 conf vol							1245	1245					743	743					
vC2, stage 2 conf vol							397	762					858	1262					
vCu, unblocked vol	694				683				1491	1897	175	1446	1895	347					
tC, single (s)	4.1				4.1				7.5	6.5	6.9	7.5	6.5	6.9					
tC, 2 stage (s)							6.5	5.5					6.5	5.5					
tF (s)	2.2				2.2				3.5	4.0	3.3	3.5	4.0	3.3					
p0 queue free %	81				96				93	92	92	95	99	83					
cM capacity (veh/h)	897				816				154	159	754	203	164	649					
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1										
Volume Total	174	587	327	34	437	257	23	64	126										
Volume Left	174	0	0	34	0	0	11	0	11										
Volume Right	0	0	34	0	0	38	0	64	113										
cSH	897	1700	1700	816	1700	1700	157	754	724										
Volume to Capacity	0.19	0.35	0.19	0.04	0.26	0.15	0.15	0.08	0.17										
Queue Length 95th (ft)	18	0	0	3	0	0	13	7	16										
Control Delay (s)	10.0	0.0	0.0	9.6	0.0	0.0	31.9	10.2	13.0										
Lane LOS	A				A				D	B	B								
Approach Delay (s)	1.6				0.4				15.9	13.0									
Approach LOS							C												
Intersection Summary																			
Average Delay				2.5															
Intersection Capacity Utilization				44.0%			ICU Level of Service			A									
Analysis Period (min)	15																		

HCM Unsignalized Intersection Capacity Analysis

8: Ferry Drive/Driveway & US 21 Sea Island Pkwy


















2016 Existing
PM Peak

																		
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR						
Lane Configurations																		
Traffic Volume (veh/h)	69	793	9	8	601	56	3	3	20	102	1	46						
Future Volume (Veh/h)	69	793	9	8	601	56	3	3	20	102	1	46						
Sign Control	Free			Free			Stop			Stop								
Grade	0%			0%			0%			0%								
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90						
Hourly flow rate (vph)	77	881	10	9	668	62	3	3	22	113	1	51						
Pedestrians																		
Lane Width (ft)																		
Walking Speed (ft/s)																		
Percent Blockage																		
Right turn flare (veh)																		
Median type	TWLTL			TWLTL														
Median storage veh)	2			2														
Upstream signal (ft)	1208																	
pX, platoon unblocked																		
vC, conflicting volume	730			891			1444	1788	446	1335	1762	365						
vC1, stage 1 conf vol							1040	1040			717	717						
vC2, stage 2 conf vol							404	748			618	1045						
vCu, unblocked vol	730			891			1444	1788	446	1335	1762	365						
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9						
tC, 2 stage (s)							6.5	5.5			6.5	5.5						
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3						
p0 queue free %	91			99			99	99	96	59	100	92						
cM capacity (veh/h)	870			757			206	220	560	278	231	632						
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1	SB 2									
Volume Total	77	587	304	9	445	285	28	114	51									
Volume Left	77	0	0	9	0	0	3	113	0									
Volume Right	0	0	10	0	0	62	22	0	51									
cSH	870	1700	1700	757	1700	1700	415	278	632									
Volume to Capacity	0.09	0.35	0.18	0.01	0.26	0.17	0.07	0.41	0.08									
Queue Length 95th (ft)	7	0	0	1	0	0	5	48	7									
Control Delay (s)	9.5	0.0	0.0	9.8	0.0	0.0	14.3	26.7	11.2									
Lane LOS	A			A			B	D	B									
Approach Delay (s)	0.8			0.1			14.3	21.9										
Approach LOS				B			C											
Intersection Summary																		
Average Delay				2.5														
Intersection Capacity Utilization				47.9%	ICU Level of Service							A						
Analysis Period (min)				15														

HCM Unsignalized Intersection Capacity Analysis

9: Gay Dr & US 21 Sea Island Pkwy




















2016 Existing
PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	923	4	3	671	0	7	0	1	0	0	2
Future Volume (Veh/h)	2	923	4	3	671	0	7	0	1	0	0	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	2	1026	4	3	746	0	8	0	1	0	0	2
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLT			None							
Median storage (veh)		2										
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	746			1030			1413	1784	515	1270	1786	373
vC1, stage 1 conf vol							1032	1032		752	752	
vC2, stage 2 conf vol							381	752		518	1034	
vCu, unblocked vol	746			1030			1413	1784	515	1270	1786	373
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			97	100	100	100	100	100
cM capacity (veh/h)	858			670			233	252	505	311	250	624
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1					
Volume Total	515	517	3	497	249	9	2					
Volume Left	2	0	3	0	0	8	0					
Volume Right	0	4	0	0	0	1	2					
cSH	858	1700	670	1700	1700	248	624					
Volume to Capacity	0.00	0.30	0.00	0.29	0.15	0.04	0.00					
Queue Length 95th (ft)	0	0	0	0	0	3	0					
Control Delay (s)	0.1	0.0	10.4	0.0	0.0	20.1	10.8					
Lane LOS	A		B			C	B					
Approach Delay (s)	0.0		0.0			20.1	10.8					
Approach LOS						C	B					
Intersection Summary												
Average Delay			0.1									
Intersection Capacity Utilization			39.8%		ICU Level of Service		A					
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

10: Cougar Dr & US 21 Sea Island Pkwy










2016 Existing
PM Peak

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	6	897	2	3	634	2	7	0	4	5	0	20	
Future Volume (Veh/h)	6	897	2	3	634	2	7	0	4	5	0	20	
Sign Control	Free			Free			Stop			Stop			
Grade	0%			0%			0%			0%			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Hourly flow rate (vph)	7	997	2	3	704	2	8	0	4	6	0	22	
Pedestrians													
Lane Width (ft)													
Walking Speed (ft/s)													
Percent Blockage													
Right turn flare (veh)													12
Median type	None					None							
Median storage (veh)													
Upstream signal (ft)													
pX, platoon unblocked													
vC, conflicting volume	706			999			1370	1724	500	1228	1724	353	
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	706			999			1370	1724	500	1228	1724	353	
tC, single (s)	4.8			4.1			7.5	6.5	7.9	7.9	6.5	7.1	
tC, 2 stage (s)													
tF (s)	2.5			2.2			3.5	4.0	3.8	3.7	4.0	3.4	
p0 queue free %	99			100			92	100	99	95	100	96	
cM capacity (veh/h)	710			689			100	87	407	113	87	621	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1					
Volume Total	7	665	334	3	469	237	12	28					
Volume Left	7	0	0	3	0	0	8	6					
Volume Right	0	0	2	0	0	2	4	22					
cSH	710	1700	1700	689	1700	1700	134	529					
Volume to Capacity	0.01	0.39	0.20	0.00	0.28	0.14	0.09	0.05					
Queue Length 95th (ft)	1	0	0	0	0	0	7	4					
Control Delay (s)	10.1	0.0	0.0	10.3	0.0	0.0	34.4	16.9					
Lane LOS	B			B			D	C					
Approach Delay (s)	0.1			0.0			34.4	16.9					
Approach LOS							D	C					
Intersection Summary													
Average Delay	0.6												
Intersection Capacity Utilization	38.3%			ICU Level of Service					A				
Analysis Period (min)	15												

HCM Unsignalized Intersection Capacity Analysis

11: Lost Island Rd & US 21 Sea Island Pkwy












2016 Existing
PM Peak

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	901	15	2	624	10	5
Future Volume (Veh/h)	901	15	2	624	10	5
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1001	17	2	693	11	6
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			1018		1360	1010
vC1, stage 1 conf vol					1010	
vC2, stage 2 conf vol					350	
vCu, unblocked vol			1018		1360	1010
tC, single (s)			4.1		7.0	6.9
tC, 2 stage (s)					6.0	
tF (s)			2.2		3.6	3.3
p0 queue free %			100		96	97
cM capacity (veh/h)			677		277	238
Direction, Lane #	EB 1	WB 1	WB 2	NB 1		
Volume Total	1018	233	462	17		
Volume Left	0	2	0	11		
Volume Right	17	0	0	6		
cSH	1700	677	1700	262		
Volume to Capacity	0.60	0.00	0.27	0.06		
Queue Length 95th (ft)	0	0	0	5		
Control Delay (s)	0.0	0.1	0.0	19.7		
Lane LOS		A		C		
Approach Delay (s)	0.0	0.0		19.7		
Approach LOS				C		
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			58.3%	ICU Level of Service		B
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

12: US 21 Sea Island Pkwy & Airport Cir











2016 Existing
PM Peak

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	4	885	620	1	0	11
Future Volume (Veh/h)	4	885	620	1	0	11
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	983	689	1	0	12
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage (veh)		2	2			
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	690				1680	690
vC1, stage 1 conf vol					690	
vC2, stage 2 conf vol					991	
vCu, unblocked vol	690				1680	690
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	97
cM capacity (veh/h)	905				299	445
Direction, Lane #	EB 1	EB 2	WB 1	SB 1		
Volume Total	4	983	690	12		
Volume Left	4	0	0	0		
Volume Right	0	0	1	12		
cSH	905	1700	1700	445		
Volume to Capacity	0.00	0.58	0.41	0.03		
Queue Length 95th (ft)	0	0	0	2		
Control Delay (s)	9.0	0.0	0.0	13.3		
Lane LOS	A			B		
Approach Delay (s)	0.0		0.0	13.3		
Approach LOS				B		
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			56.6%		ICU Level of Service	B
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

13: Old Distant Island Rd & US 21 Sea Island Pkwy

2016 Existing
PM Peak














						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	852	10	3	588	7	5
Future Volume (Veh/h)	852	10	3	588	7	5
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	947	11	3	653	8	6
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage veh)	2		2			
Upstream signal (ft)			1133			
pX, platoon unblocked			0.78			
vC, conflicting volume			958		1612	952
vC1, stage 1 conf vol					952	
vC2, stage 2 conf vol					659	
vCu, unblocked vol			958		1643	952
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		97	98
cM capacity (veh/h)			718		305	314
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	958	656	14			
Volume Left	0	3	8			
Volume Right	11	0	6			
cSH	1700	718	309			
Volume to Capacity	0.56	0.00	0.05			
Queue Length 95th (ft)	0	0	4			
Control Delay (s)	0.0	0.1	17.2			
Lane LOS		A	C			
Approach Delay (s)	0.0	0.1	17.2			
Approach LOS			C			
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			55.4%	ICU Level of Service		B
Analysis Period (min)			15			

Timings

14: Chowan Creek Bluff/Eustis Landing Rd & US 21 Sea Island Pkwy

2016 Existing

PM Peak

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	40	803	5	556	31	0	13	2
Future Volume (vph)	40	803	5	556	31	0	13	2
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	47.0	47.0	47.0	47.0	23.0	23.0	23.0	23.0
Total Split (%)	67.1%	67.1%	67.1%	67.1%	32.9%	32.9%	32.9%	32.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)		4.5	4.5	4.5		4.5		4.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effct Green (s)		39.3	39.3	39.3		18.6		18.6
Actuated g/C Ratio		0.59	0.59	0.59		0.28		0.28
v/c Ratio		0.94	0.02	0.57		0.10		0.08
Control Delay		30.4	5.8	10.8		12.9		12.4
Queue Delay		0.0	0.0	0.0		0.0		0.0
Total Delay		30.4	5.8	10.8		12.9		12.4
LOS		C	A	B		B		B
Approach Delay		30.4		10.8		12.9		12.4
Approach LOS		C		B		B		B

Intersection Summary

Cycle Length: 70

Actuated Cycle Length: 67

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.94

Intersection Signal Delay: 22.2





Intersection LOS: C

Intersection Capacity Utilization 88.7%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 14: Chowan Creek Bluff/Eustis Landing Rd & US 21 Sea Island Pkwy









 Ø2	 Ø4
23 s	47 s
 Ø6	 Ø8
23 s	47 s

Phasings

14: Chowan Creek Bluff/Eustis Landing Rd & US 21 Sea Island Pkwy

2016 Existing

PM Peak

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	47.0	47.0	47.0	47.0	23.0	23.0	23.0	23.0
Total Split (%)	67.1%	67.1%	67.1%	67.1%	32.9%	32.9%	32.9%	32.9%
Maximum Green (s)	42.5	42.5	42.5	42.5	18.5	18.5	18.5	18.5
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	Max	Max	Max	Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0
90th %ile Green (s)	42.5	42.5	42.5	42.5	18.5	18.5	18.5	18.5
90th %ile Term Code	Max	Max	Hold	Hold	MaxR	MaxR	MaxR	MaxR
70th %ile Green (s)	42.5	42.5	42.5	42.5	18.5	18.5	18.5	18.5
70th %ile Term Code	Max	Max	Hold	Hold	MaxR	MaxR	MaxR	MaxR
50th %ile Green (s)	42.5	42.5	42.5	42.5	18.5	18.5	18.5	18.5
50th %ile Term Code	Max	Max	Hold	Hold	MaxR	MaxR	MaxR	MaxR
30th %ile Green (s)	40.5	40.5	40.5	40.5	18.5	18.5	18.5	18.5
30th %ile Term Code	Gap	Gap	Hold	Hold	MaxR	MaxR	MaxR	MaxR
10th %ile Green (s)	29.6	29.6	29.6	29.6	18.5	18.5	18.5	18.5
10th %ile Term Code	Gap	Gap	Hold	Hold	MaxR	MaxR	MaxR	MaxR

Intersection Summary

Cycle Length: 70

Actuated Cycle Length: 67

Control Type: Actuated-Uncoordinated

90th %ile Actuated Cycle: 70

70th %ile Actuated Cycle: 70

50th %ile Actuated Cycle: 70

30th %ile Actuated Cycle: 68

10th %ile Actuated Cycle: 57.1

Queues

2016 Existing

14: Chowan Creek Bluff/Eustis Landing Rd & US 21 Sea Island Pkwy

PM Peak

	→	↘	←	↑	↓
Lane Group	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	970	6	620	44	38
v/c Ratio	0.94	0.02	0.57	0.10	0.08
Control Delay	30.4	5.8	10.8	12.9	12.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	30.4	5.8	10.8	12.9	12.4
Queue Length 50th (ft)	320	1	139	7	5
Queue Length 95th (ft)	#614	5	220	29	26
Internal Link Dist (ft)	1053		490	351	331
Turn Bay Length (ft)		290			
Base Capacity (vph)	1127	314	1189	428	456
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.86	0.02	0.52	0.10	0.08

Intersection Summary


















95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

14: Chowan Creek Bluff/Eustis Landing Rd & US 21 Sea Island Pkwy






















2016 Existing
PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	803	31	5	556	2	31	0	9	13	2	20
Future Volume (vph)	40	803	31	5	556	2	31	0	9	13	2	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5			4.5			4.5	
Lane Util. Factor		1.00		1.00	1.00			1.00			1.00	
Frt		1.00		1.00	1.00			0.97			0.92	
Flt Protected		1.00		0.95	1.00			0.96			0.98	
Satd. Flow (prot)		1840		1770	1862			1738			1686	
Flt Permitted		0.96		0.26	1.00			0.82			0.92	
Satd. Flow (perm)		1764		494	1862			1481			1585	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	44	892	34	6	618	2	34	0	10	14	2	22
RTOR Reduction (vph)	0	2	0	0	0	0	0	17	0	0	16	0
Lane Group Flow (vph)	0	968	0	6	620	0	0	27	0	0	22	0
Heavy Vehicles (%)	13%	2%	3%	2%	2%	2%	2%	7%	2%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		39.3		39.3	39.3			18.6			18.6	
Effective Green, g (s)		39.3		39.3	39.3			18.6			18.6	
Actuated g/C Ratio		0.59		0.59	0.59			0.28			0.28	
Clearance Time (s)		4.5		4.5	4.5			4.5			4.5	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		1036		290	1093			411			440	
v/s Ratio Prot					0.33							
v/s Ratio Perm		c0.55		0.01				c0.02			0.01	
v/c Ratio		0.93		0.02	0.57			0.07			0.05	
Uniform Delay, d1		12.6		5.8	8.5			17.8			17.7	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		14.7		0.0	0.7			0.3			0.2	
Delay (s)		27.3		5.8	9.2			18.1			17.9	
Level of Service		C		A	A			B			B	
Approach Delay (s)		27.3			9.2			18.1			17.9	
Approach LOS		C			A			B			B	
Intersection Summary												
HCM 2000 Control Delay			20.1			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			66.9			Sum of lost time (s)			9.0			
Intersection Capacity Utilization			88.7%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

15: US 21 Lady's Island Rd & Rue Du Bois/Driveway










2016 Existing
PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	1	56	13	1	34	39	1245	12	14	883	23
Future Volume (Veh/h)	30	1	56	13	1	34	39	1245	12	14	883	23
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	33	1	62	14	1	38	43	1383	13	16	981	26
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None						TWLTL					
Median storage veh							2					
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1829	2495	490	2060	2514	698	1007			1396		
vC1, stage 1 conf vol	1013	1013		1476	1476							
vC2, stage 2 conf vol	816	1482		585	1039							
vCu, unblocked vol	1829	2495	490	2060	2514	698	1007			1396		
tC, single (s)	7.6	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)	6.6	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	82	99	88	88	99	90	94			97		
cM capacity (veh/h)	178	138	524	115	141	383	666			486		
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4		
Volume Total	34	62	53	43	922	474	16	490	490	26		
Volume Left	33	0	14	43	0	0	16	0	0	0		
Volume Right	0	62	38	0	0	13	0	0	0	26		
cSH	177	524	232	666	1700	1700	486	1700	1700	1700		
Volume to Capacity	0.19	0.12	0.23	0.06	0.54	0.28	0.03	0.29	0.29	0.02		
Queue Length 95th (ft)	17	10	21	5	0	0	3	0	0	0		
Control Delay (s)	30.1	12.8	25.0	10.8	0.0	0.0	12.7	0.0	0.0	0.0		
Lane LOS	D	B	D	B			B					
Approach Delay (s)	18.9		25.0	0.3			0.2					
Approach LOS	C		D									
Intersection Summary												
Average Delay	1.5											
Intersection Capacity Utilization	51.0%			ICU Level of Service					A			
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis

16: US 21 Lady's Island Rd & Hazel Farm Rd




















2016 Existing
PM Peak

						
Movement	WBL	WBR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (veh/h)	7	0	1308	0	1	923
Future Volume (Veh/h)	7	0	1308	0	1	923
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	8	0	1453	0	1	1026
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLT		TWLT	
Median storage veh)			2		2	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1968	726			1453	
vC1, stage 1 conf vol	1453					
vC2, stage 2 conf vol	515					
vCu, unblocked vol	1968	726			1453	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	100			100	
cM capacity (veh/h)	171	367			462	
Direction, Lane #	WB 1	NE 1	NE 2	SW 1	SW 2	
Volume Total	8	969	484	343	684	
Volume Left	8	0	0	1	0	
Volume Right	0	0	0	0	0	
cSH	171	1700	1700	462	1700	
Volume to Capacity	0.05	0.57	0.28	0.00	0.40	
Queue Length 95th (ft)	4	0	0	0	0	
Control Delay (s)	27.1	0.0	0.0	0.1	0.0	
Lane LOS	D			A		
Approach Delay (s)	27.1	0.0		0.0		
Approach LOS	D					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			46.2%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

17: US 21 Lady's Island Rd & Ferry Rd











2016 Existing
PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	1	0	7	79	0	51	5	1204	73	98	838	3
Future Volume (Veh/h)	1	0	7	79	0	51	5	1204	73	98	838	3
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1	0	8	88	0	57	6	1338	81	109	931	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)	5			5								
Median type							TWLTL			TWLTL		
Median storage veh)							2			2		
Upstream signal (ft)										1003		
pX, platoon unblocked												
vC, conflicting volume	1860	2582	467	2074	2542	710	934			1419		
vC1, stage 1 conf vol	1150	1150		1390	1390							
vC2, stage 2 conf vol	710	1431		684	1152							
vCu, unblocked vol	1860	2582	467	2074	2542	710	934			1419		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	99	32	100	85	99			77		
cM capacity (veh/h)	130	80	542	130	139	376	729			476		
Direction, Lane #	EB 1	WB 1	NE 1	NE 2	SW 1	SW 2	SW 3					
Volume Total	9	145	675	750	109	621	313					
Volume Left	1	88	6	0	109	0	0					
Volume Right	8	57	0	81	0	0	3					
cSH	610	215	729	1700	476	1700	1700					
Volume to Capacity	0.01	0.68	0.01	0.44	0.23	0.37	0.18					
Queue Length 95th (ft)	1	105	1	0	22	0	0					
Control Delay (s)	14.1	53.0	0.2	0.0	14.8	0.0	0.0					
Lane LOS	B	F	A		B							
Approach Delay (s)	14.1	53.0	0.1		1.5							
Approach LOS	B	F										
Intersection Summary												
Average Delay	3.7											
Intersection Capacity Utilization	80.1%			ICU Level of Service					D			
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis

18: SC 802 Sams Point Rd & Sams Point Way

















2016 Existing
PM Peak

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	13	199	1200	23	80	852
Future Volume (Veh/h)	13	199	1200	23	80	852
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	14	221	1333	26	89	947
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLT		TWLT	
Median storage (veh)			2		2	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1998	680			1359	
vC1, stage 1 conf vol	1346					
vC2, stage 2 conf vol	652					
vCu, unblocked vol	1998	680			1359	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	92	44			82	
cM capacity (veh/h)	182	394			502	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	235	889	470	89	474	474
Volume Left	14	0	0	89	0	0
Volume Right	221	0	26	0	0	0
cSH	368	1700	1700	502	1700	1700
Volume to Capacity	0.64	0.52	0.28	0.18	0.28	0.28
Queue Length 95th (ft)	106	0	0	16	0	0
Control Delay (s)	30.5	0.0	0.0	13.7	0.0	0.0
Lane LOS	D			B		
Approach Delay (s)	30.5	0.0		1.2		
Approach LOS	D					
Intersection Summary						
Average Delay			3.2			
Intersection Capacity Utilization			61.4%		ICU Level of Service	B
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

19: SC 802 Sams Point Rd & Ashland Park Rd/Driveway



















2016 Existing
PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	0	9	0	0	0	15	1393	0	0	962	4
Future Volume (Veh/h)	6	0	9	0	0	0	15	1393	0	0	962	4
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	7	0	10	0	0	0	17	1548	0	0	1069	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							TWLTL			TWLTL		
Median storage veh)							2			2		
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1879	2653	536	2126	2655	774	1073				1548	
vC1, stage 1 conf vol	1071	1071		1582	1582							
vC2, stage 2 conf vol	808	1582		544	1073							
vCu, unblocked vol	1879	2653	536	2126	2655	774	1073				1548	
tC, single (s)	7.5	6.5	7.1	7.5	6.5	6.9	4.1				4.1	
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.4	3.5	4.0	3.3	2.2				2.2	
p0 queue free %	96	100	98	100	100	100	97				100	
cM capacity (veh/h)	190	138	466	105	136	341	645				424	
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	17	0	791	774	534	538						
Volume Left	7	0	17	0	0	0						
Volume Right	10	0	0	0	0	4						
cSH	292	1700	645	1700	424	1700						
Volume to Capacity	0.06	0.00	0.03	0.46	0.00	0.32						
Queue Length 95th (ft)	5	0	2	0	0	0						
Control Delay (s)	18.1	0.0	0.7	0.0	0.0	0.0						
Lane LOS	C	A	A									
Approach Delay (s)	18.1	0.0	0.4	0.0								
Approach LOS	C	A										
Intersection Summary												
Average Delay			0.3									
Intersection Capacity Utilization			59.1%	ICU Level of Service					B			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

20: SC 802 Sams Point Rd & Miller Dr W/Miller Dr E

2016 Existing
PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	32	6	36	13	1	1	19	1326	44	2	882	40
Future Volume (Veh/h)	32	6	36	13	1	1	19	1326	44	2	882	40
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	36	7	40	14	1	1	21	1473	49	2	980	44
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh								2			2	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1786	2570	512	2077	2568	761	1024			1522		
vC1, stage 1 conf vol	1006	1006		1540	1540							
vC2, stage 2 conf vol	780	1564		538	1028							
vCu, unblocked vol	1786	2570	512	2077	2568	761	1024			1522		
tC, single (s)	7.5	6.5	7.0	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	82	95	92	87	99	100	97			100		
cM capacity (veh/h)	204	141	504	111	143	348	674			434		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	83	16	21	982	540	2	653	371				
Volume Left	36	14	21	0	0	2	0	0				
Volume Right	40	1	0	0	49	0	0	44				
cSH	272	117	674	1700	1700	434	1700	1700				
Volume to Capacity	0.31	0.14	0.03	0.58	0.32	0.00	0.38	0.22				
Queue Length 95th (ft)	31	11	2	0	0	0	0	0				
Control Delay (s)	23.9	40.5	10.5	0.0	0.0	13.3	0.0	0.0				
Lane LOS	C	E	B			B						
Approach Delay (s)	23.9	40.5	0.1			0.0						
Approach LOS	C	E										
Intersection Summary												
Average Delay			1.1									
Intersection Capacity Utilization			48.8%		ICU Level of Service					A		
Analysis Period (min)			15									


















APPENDIX D

2038 NO BUILD SYNCHRO RESULTS

HCM Unsignalized Intersection Capacity Analysis

1: Meridian Rd/Driveway & US 21 Sea Island Pkwy

2038 No Build
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	854	42	64	1416	2	59	0	43	0	0	1
Future Volume (Veh/h)	1	854	42	64	1416	2	59	0	43	0	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1	949	47	71	1573	2	66	0	48	0	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	TWLTL				None							
Median storage veh)	2											
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1575			996			2690	2692	972	2738	2714	1574
vC1, stage 1 conf vol							974	974		1716	1716	
vC2, stage 2 conf vol							1716	1717		1022	998	
vCu, unblocked vol	1575			996			2690	2692	972	2738	2714	1574
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			90			29	100	84	100	100	99
cM capacity (veh/h)	418			695			93	117	306	84	112	135
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1							
Volume Total	997	71	1575	114	1							
Volume Left	1	71	0	66	0							
Volume Right	47	0	2	48	1							
cSH	418	695	1700	131	135							
Volume to Capacity	0.00	0.10	0.93	0.87	0.01							
Queue Length 95th (ft)	0	9	0	139	1							
Control Delay (s)	0.1	10.8	0.0	110.7	31.8							
Lane LOS	A	B		F	D							
Approach Delay (s)	0.1	0.5		110.7	31.8							
Approach LOS				F	D							
Intersection Summary												
Average Delay				4.9								
Intersection Capacity Utilization				93.9%	ICU Level of Service				F			
Analysis Period (min)				15								

Timings 2: Geechie Rd/Driveway & US 21 Sea Island Pkwy

2038 No Build
AM Peak Hour

	→	↗	←	↖	↑	↓
Lane Group	EBT	WBL	WBT	NBL	NBT	SBT
Lane Configurations	↔	↗	↖		↔	↔
Traffic Volume (vph)	820	132	1464	35	0	0
Future Volume (vph)	820	132	1464	35	0	0
Turn Type	NA	pm+pt	NA	Perm	NA	NA
Protected Phases	4	3	8		2	6
Permitted Phases		8		2		
Detector Phase	4	3	8	2	2	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	9.5	22.5	22.5	22.5	22.5
Total Split (s)	112.2	14.8	127.0	23.0	23.0	23.0
Total Split (%)	74.8%	9.9%	84.7%	15.3%	15.3%	15.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5		4.5	4.5
Lead/Lag	Lag	Lead				
Lead-Lag Optimize?	Yes	Yes				
Recall Mode	None	None	None	Max	Max	Max
Act Effect Green (s)	110.0	122.5	122.5		18.5	18.5
Actuated g/C Ratio	0.73	0.82	0.82		0.12	0.12
v/c Ratio	0.72	0.42	1.07		0.39	0.00
Control Delay	15.3	6.5	60.0		36.9	0.0
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	15.3	6.5	60.0		36.9	0.0
LOS	B	A	E		D	A
Approach Delay	15.3		55.6		36.9	
Approach LOS	B		E		D	

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Natural Cycle: 150
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.07
Intersection Signal Delay: 41.1
Intersection Capacity Utilization 128.3%
Analysis Period (min) 15

Intersection LOS: D
ICU Level of Service H

Splits and Phases: 2: Geechie Rd/Driveway & US 21 Sea Island Pkwy

↑ Ø2	↗ Ø3	→ Ø4
23 s	14.8 s	112.2 s
↓ Ø6	↖ Ø8	
23 s	127 s	

Queues

2038 No Build

2: Geechie Rd/Driveway & US 21 Sea Island Pkwy

AM Peak Hour

	→	↘	←	↑	↓
Lane Group	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	979	147	1627	85	1
v/c Ratio	0.72	0.42	1.07	0.39	0.00
Control Delay	15.3	6.5	60.0	36.9	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	15.3	6.5	60.0	36.9	0.0
Queue Length 50th (ft)	488	24	~1757	37	0
Queue Length 95th (ft)	678	38	#2021	94	0
Internal Link Dist (ft)	1300		417	377	79
Turn Bay Length (ft)		200			
Base Capacity (vph)	1355	370	1521	218	266
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.72	0.40	1.07	0.39	0.00

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.


















95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

2: Geechie Rd/Driveway & US 21 Sea Island Pkwy



















2038 No Build
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	820	61	132	1464	0	35	0	41	0	0	1
Future Volume (vph)	0	820	61	132	1464	0	35	0	41	0	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5			4.5			4.5	
Lane Util. Factor		1.00		1.00	1.00			1.00			1.00	
Frt		0.99		1.00	1.00			0.93			0.86	
Flt Protected		1.00		0.95	1.00			0.98			1.00	
Satd. Flow (prot)		1845		1770	1863			1653			1611	
Flt Permitted		1.00		0.18	1.00			0.86			1.00	
Satd. Flow (perm)		1845		334	1863			1459			1611	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	911	68	147	1627	0	39	0	46	0	0	1
RTOR Reduction (vph)	0	2	0	0	0	0	0	39	0	0	1	0
Lane Group Flow (vph)	0	977	0	147	1627	0	0	46	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	6%	2%	2%	2%
Turn Type		NA		pm+pt	NA		Perm	NA			NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		110.0		122.5	122.5			18.5			18.5	
Effective Green, g (s)		110.0		122.5	122.5			18.5			18.5	
Actuated g/C Ratio		0.73		0.82	0.82			0.12			0.12	
Clearance Time (s)		4.5		4.5	4.5			4.5			4.5	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		1353		349	1521			179			198	
v/s Ratio Prot		0.53		0.02	c0.87						0.00	
v/s Ratio Perm				0.32				c0.03				
v/c Ratio		0.72		0.42	1.07			0.26			0.00	
Uniform Delay, d1		11.3		13.0	13.8			59.5			57.6	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		1.9		0.8	44.2			3.5			0.0	
Delay (s)		13.3		13.8	58.0			63.0			57.7	
Level of Service		B		B	E			E			E	
Approach Delay (s)		13.3			54.3			63.0			57.7	
Approach LOS		B			D			E			E	
Intersection Summary												
HCM 2000 Control Delay			40.4			HCM 2000 Level of Service					D	
HCM 2000 Volume to Capacity ratio			0.99									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)				13.5		
Intersection Capacity Utilization			128.3%			ICU Level of Service				H		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

3: Driveway/Sunset Blvd & US 21 Sea Island Pkwy


















2038 No Build
AM Peak Hour

														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR		
Lane Configurations														
Traffic Volume (veh/h)	69	763	25	33	1418	19	11	4	27	19	7	174		
Future Volume (Veh/h)	69	763	25	33	1418	19	11	4	27	19	7	174		
Sign Control	Free			Free			Stop			Stop				
Grade	0%			0%			0%			0%				
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly flow rate (vph)	77	848	28	37	1576	21	12	4	30	21	8	193		
Pedestrians														
Lane Width (ft)														
Walking Speed (ft/s)														
Percent Blockage														
Right turn flare (veh)														
Median type	None				TWLTL									
Median storage veh					2									
Upstream signal (ft)	497													
pX, platoon unblocked				0.69			0.69			0.69	0.69	0.69		
vC, conflicting volume	1597			876			2863			2687	862	2694	2690	1586
vC1, stage 1 conf vol							1016			1016		1660	1660	
vC2, stage 2 conf vol							1847			1671		1034	1030	
vCu, unblocked vol	1597			596			3474			3219	576	3230	3224	1586
tC, single (s)	4.1			4.1			7.1			6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)							6.1			5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5			4.0	3.4	3.5	4.0	3.3
p0 queue free %	81			95			0			94	91	75	92	0
cM capacity (veh/h)	410			677			0			62	352	85	106	133
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1	SW 1								
Volume Total	77	876	37	1597	46	222								
Volume Left	77	0	37	0	12	21								
Volume Right	0	28	0	21	30	193								
cSH	410	1700	677	1700	0	125								
Volume to Capacity	0.19	0.52	0.05	0.94	Err	1.77								
Queue Length 95th (ft)	17	0	4	0	Err	425								
Control Delay (s)	15.8	0.0	10.6	0.0	Err	437.3								
Lane LOS	C		B		F	F								
Approach Delay (s)	1.3		0.2		Err	437.3								
Approach LOS					F	F								
Intersection Summary														
Average Delay				Err										
Intersection Capacity Utilization				95.7%			ICU Level of Service			F				
Analysis Period (min)				15										

HCM Unsignalized Intersection Capacity Analysis

4: Youmans Dr/Driveway & US 21 Sea Island Pkwy













2038 No Build
AM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR	
Lane Configurations													
Traffic Volume (veh/h)	5	789	7	164	1491	10	10	1	91	0	1	4	
Future Volume (Veh/h)	5	789	7	164	1491	10	10	1	91	0	1	4	
Sign Control	Free			Free			Stop			Stop			
Grade	0%			0%			0%			0%			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Hourly flow rate (vph)	6	877	8	182	1657	11	11	1	101	0	1	4	
Pedestrians													
Lane Width (ft)													
Walking Speed (ft/s)													
Percent Blockage													
Right turn flare (veh)													
Median type	TWLTL			None									
Median storage veh	2												
Upstream signal (ft)	1218												
pX, platoon unblocked				0.69			0.69			0.69			
vC, conflicting volume	1668				885			2918			2925		
vC1, stage 1 conf vol							893			893			
vC2, stage 2 conf vol							2026			2032			
vCu, unblocked vol	1668				611			3550			3559		
tC, single (s)	4.1				4.2			7.2			6.5		
tC, 2 stage (s)							6.2			5.5			
tF (s)	2.2				2.3			3.6			4.0		
p0 queue free %	98				72			73			98		
cM capacity (veh/h)	385				650			40			63		
Direction, Lane #	EB 1	WB 1	WB 2	NE 1	SW 1								
Volume Total	891	182	1668	113	5								
Volume Left	6	182	0	11	0								
Volume Right	8	0	11	101	4								
cSH	385	650	1700	191	101								
Volume to Capacity	0.02	0.28	0.98	0.59	0.05								
Queue Length 95th (ft)	1	29	0	81	4								
Control Delay (s)	0.6	12.7	0.0	47.8	42.6								
Lane LOS	A	B		E	E								
Approach Delay (s)	0.6	1.2		47.8	42.6								
Approach LOS				E	E								
Intersection Summary													
Average Delay				2.9									
Intersection Capacity Utilization				144.2%			ICU Level of Service			H			
Analysis Period (min)				15									

HCM Unsignalized Intersection Capacity Analysis

5: US 21 Sea Island Pkwy & Professional Village Cir

2038 No Build
AM Peak Hour























						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		 	 			
Traffic Volume (veh/h)	42	837	1630	55	12	30
Future Volume (Veh/h)	42	837	1630	55	12	30
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	47	930	1811	61	13	33
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)			681			
pX, platoon unblocked	0.78				0.78	0.78
vC, conflicting volume	1872				2400	936
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1554				2232	355
tC, single (s)	4.1				7.0	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.6	3.3
p0 queue free %	86				40	93
cM capacity (veh/h)	329				22	501
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	357	620	1207	665	13	33
Volume Left	47	0	0	0	13	0
Volume Right	0	0	0	61	0	33
cSH	329	1700	1700	1700	22	501
Volume to Capacity	0.14	0.36	0.71	0.39	0.60	0.07
Queue Length 95th (ft)	12	0	0	0	43	5
Control Delay (s)	5.0	0.0	0.0	0.0	308.3	12.7
Lane LOS	A				F	B
Approach Delay (s)	1.8		0.0		96.2	
Approach LOS					F	
Intersection Summary						
Average Delay			2.1			
Intersection Capacity Utilization			64.2%		ICU Level of Service	C
Analysis Period (min)			15			

Timings

6: Ladys Island Dr/Sams Point Rd & US 21 Sea Island Pkwy

2038 No Build

AM Peak Hour

											
Lane Group	EBL	EBT	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations											
Traffic Volume (vph)	289	429	590	735	225	143	445	425	330	882	885
Future Volume (vph)	289	429	590	735	225	143	445	425	330	882	885
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2	1	6		3	8	1	7	4	
Permitted Phases	2		6		6	8		8	4		4
Detector Phase	5	2	1	6	6	3	8	1	7	4	4
Switch Phase											
Minimum Initial (s)	6.0	25.0	6.0	25.0	25.0	6.0	15.0	6.0	6.0	15.0	15.0
Minimum Split (s)	13.3	43.0	13.3	39.0	39.0	12.3	42.3	13.3	13.3	43.3	43.3
Total Split (s)	28.7	44.7	27.0	43.0	43.0	12.3	43.5	27.0	29.8	61.0	61.0
Total Split (%)	19.8%	30.8%	18.6%	29.7%	29.7%	8.5%	30.0%	18.6%	20.6%	42.1%	42.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.3	4.0	4.0	4.3	4.3
All-Red Time (s)	3.3	2.0	3.3	2.0	2.0	2.3	2.0	3.3	2.3	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.3	6.0	7.3	6.0	6.0	6.3	6.3	7.3	6.3	6.3	6.3
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	None	Max	Max	None	None	None	None	Max	Max
Act Effct Green (s)	58.8	38.7	55.4	37.0	37.0	44.0	38.0	64.0	67.0	54.7	54.7
Actuated g/C Ratio	0.41	0.27	0.38	0.26	0.26	0.30	0.26	0.44	0.46	0.38	0.38
v/c Ratio	1.05	0.65	1.84	0.90	0.51	1.28	0.54	0.62	0.86	1.40	1.20
Control Delay	106.0	49.1	413.6	66.6	18.1	203.9	48.8	26.8	47.5	222.2	128.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	106.0	49.1	413.6	66.6	18.1	203.9	48.8	26.8	47.5	222.2	128.4
LOS	F	D	F	E	B	F	D	C	D	F	F
Approach Delay		68.9		191.7			61.5			155.1	
Approach LOS		E		F			E			F	

Intersection Summary

Cycle Length: 145

Actuated Cycle Length: 145

Natural Cycle: 145

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.84

Intersection Signal Delay: 135.1









Intersection LOS: F

Intersection Capacity Utilization 128.4%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 6: Ladys Island Dr/Sams Point Rd & US 21 Sea Island Pkwy












 Ø1	 Ø2	 Ø3	 Ø4
27 s	44.7 s	12.3 s	61 s
 Ø5	 Ø6	 Ø7	 Ø8
28.7 s	43 s	29.8 s	43.5 s

Queues

2038 No Build

6: Ladys Island Dr/Sams Point Rd & US 21 Sea Island Pkwy

AM Peak Hour

											
Lane Group	EBL	EBT	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Group Flow (vph)	321	601	656	817	250	159	494	472	367	980	983
v/c Ratio	1.05	0.65	1.84	0.90	0.51	1.28	0.54	0.62	0.86	1.40	1.20
Control Delay	106.0	49.1	413.6	66.6	18.1	203.9	48.8	26.8	47.5	222.2	128.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	106.0	49.1	413.6	66.6	18.1	203.9	48.8	26.8	47.5	222.2	128.4
Queue Length 50th (ft)	~279	256	~827	396	56	~138	213	257	233	~1231	~905
Queue Length 95th (ft)	#477	324	#1072	#510	146	#294	273	381	#345	#1492	#1169
Internal Link Dist (ft)		376		679			587			549	
Turn Bay Length (ft)	200		350		200	350		550	460		
Base Capacity (vph)	307	929	356	903	494	124	917	765	434	702	818
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.05	0.65	1.84	0.90	0.51	1.28	0.54	0.62	0.85	1.40	1.20

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.
























95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

6: Ladys Island Dr/Sams Point Rd & US 21 Sea Island Pkwy





















2038 No Build
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	289	429	112	590	735	225	143	445	425	330	882	885
Future Volume (vph)	289	429	112	590	735	225	143	445	425	330	882	885
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.3	6.0		7.3	6.0	6.0	6.3	6.3	7.3	6.3	6.3	6.3
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1752	3423		1770	3539	1429	1770	3505	1583	1736	1863	1583
Flt Permitted	0.10	1.00		0.25	1.00	1.00	0.11	1.00	1.00	0.28	1.00	1.00
Satd. Flow (perm)	191	3423		471	3539	1429	196	3505	1583	510	1863	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	321	477	124	656	817	250	159	494	472	367	980	983
RTOR Reduction (vph)	0	16	0	0	0	130	0	0	72	0	0	222
Lane Group Flow (vph)	321	585	0	656	817	120	159	494	400	367	980	761
Heavy Vehicles (%)	3%	2%	3%	2%	2%	13%	2%	3%	2%	4%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8	1	7	4	
Permitted Phases	2			6		6	8		8	4		4
Actuated Green, G (s)	60.1	38.7		56.7	37.0	37.0	44.0	38.0	57.7	67.0	54.7	54.7
Effective Green, g (s)	60.1	38.7		56.7	37.0	37.0	44.0	38.0	57.7	67.0	54.7	54.7
Actuated g/C Ratio	0.41	0.27		0.39	0.26	0.26	0.30	0.26	0.40	0.46	0.38	0.38
Clearance Time (s)	7.3	6.0		7.3	6.0	6.0	6.3	6.3	7.3	6.3	6.3	6.3
Vehicle Extension (s)	3.0	3.5		3.0	3.5	3.5	3.0	3.5	3.0	3.0	3.5	3.5
Lane Grp Cap (vph)	309	913		360	903	364	124	918	629	427	702	597
v/s Ratio Prot	0.15	0.17		c0.25	0.23		0.05	0.14	0.09	c0.13	c0.53	
v/s Ratio Perm	0.28			c0.46		0.08	0.33		0.17	0.26		0.48
v/c Ratio	1.04	0.64		1.82	0.90	0.33	1.28	0.54	0.64	0.86	1.40	1.28
Uniform Delay, d1	45.3	47.0		37.5	52.3	43.9	47.5	46.0	35.2	28.6	45.1	45.1
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	61.6	1.6		380.8	14.2	2.4	174.9	0.7	2.1	15.7	186.8	136.5
Delay (s)	106.9	48.6		418.3	66.5	46.3	222.4	46.6	37.3	44.3	232.0	181.7
Level of Service	F	D		F	E	D	F	D	D	D	F	F
Approach Delay (s)		68.9			197.5			67.6			181.2	
Approach LOS		E			F			E			F	
Intersection Summary												
HCM 2000 Control Delay			147.9				HCM 2000 Level of Service			F		
HCM 2000 Volume to Capacity ratio			1.58									
Actuated Cycle Length (s)			145.0				Sum of lost time (s)			25.9		
Intersection Capacity Utilization			128.4%				ICU Level of Service			H		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

7: Driveway/Sams Point Way & US 21 Sea Island Pkwy




















2038 No Build
AM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	121	993	15	78	1397	69	0	5	12	50	1	161	
Future Volume (Veh/h)	121	993	15	78	1397	69	0	5	12	50	1	161	
Sign Control	Free			Free			Stop			Stop			
Grade	0%			0%			0%			0%			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Hourly flow rate (vph)	134	1103	17	87	1552	77	0	6	13	56	1	179	
Pedestrians													
Lane Width (ft)													
Walking Speed (ft/s)													
Percent Blockage													
Right turn flare (veh)													
10													
Median type	None			TWLTL									
Median storage veh	2												
Upstream signal (ft)	759												
pX, platoon unblocked				0.89			0.89			0.89	0.89	0.89	
vC, conflicting volume	1629				1120			2330			3182	560	2600
vC1, stage 1 conf vol							1380			1380	1764		1764
vC2, stage 2 conf vol							950			1803	836		1388
vCu, unblocked vol	1629				881			2245			3206	250	2549
tC, single (s)	4.1				4.1			7.5			6.5	6.9	7.5
tC, 2 stage (s)							6.5			5.5	6.5		5.5
tF (s)	2.2				2.2			3.5			4.0	3.3	3.5
p0 queue free %	66				87			100			0	98	15
cM capacity (veh/h)	395				677			6			5	665	66
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1				
Volume Total	134	735	385	87	1035	594	6	13	236				
Volume Left	134	0	0	87	0	0	0	0	56				
Volume Right	0	0	17	0	0	77	0	13	179				
cSH	395	1700	1700	677	1700	1700	5	665	271				
Volume to Capacity	0.34	0.43	0.23	0.13	0.61	0.35	1.20	0.02	0.87				
Queue Length 95th (ft)	37	0	0	11	0	0	39	1	187				
Control Delay (s)	18.7	0.0	0.0	11.1	0.0	0.0	1401.3	10.5	66.2				
Lane LOS	C				B			F			B		
Approach Delay (s)	2.0				0.6			449.7			66.2		
Approach LOS							F			F			
Intersection Summary													
Average Delay				8.6									
Intersection Capacity Utilization				67.0%			ICU Level of Service			C			
Analysis Period (min)				15									

HCM Unsignalized Intersection Capacity Analysis

8: Ferry Drive/Driveway & US 21 Sea Island Pkwy


















2038 No Build
AM Peak Hour

														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations														
Traffic Volume (veh/h)	29	1045	5	55	1555	46	2	0	16	70	0	26		
Future Volume (Veh/h)	29	1045	5	55	1555	46	2	0	16	70	0	26		
Sign Control	Free			Free			Stop			Stop				
Grade	0%			0%			0%			0%				
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly flow rate (vph)	32	1161	6	61	1728	51	2	0	18	78	0	29		
Pedestrians														
Lane Width (ft)														
Walking Speed (ft/s)														
Percent Blockage														
Right turn flare (veh)														
Median type	TWLTL			TWLTL										
Median storage veh	2			2										
Upstream signal (ft)	1208													
pX, platoon unblocked				0.92			0.92			0.92	0.92	0.92		
vC, conflicting volume	1779			1167			2243			3129	584	2538	3106	890
vC1, stage 1 conf vol							1228			1228		1876	1876	
vC2, stage 2 conf vol							1015			1901		662	1231	
vCu, unblocked vol	1779			1016			2181			3140	384	2500	3115	890
tC, single (s)	4.2			4.1			8.5			6.5	6.9	7.5	6.5	7.0
tC, 2 stage (s)							7.5			5.5		6.5	5.5	
tF (s)	2.2			2.2			4.0			4.0	3.3	3.5	4.0	3.3
p0 queue free %	90			90			98			100	97	0	100	90
cM capacity (veh/h)	337			627			84			67	567	64	88	280
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1	SB 2					
Volume Total	32	774	393	61	1152	627	20	78	29					
Volume Left	32	0	0	61	0	0	2	78	0					
Volume Right	0	0	6	0	0	51	18	0	29					
cSH	337	1700	1700	627	1700	1700	360	64	280					
Volume to Capacity	0.10	0.46	0.23	0.10	0.68	0.37	0.06	1.22	0.10					
Queue Length 95th (ft)	8	0	0	8	0	0	4	159	9					
Control Delay (s)	16.8	0.0	0.0	11.4	0.0	0.0	15.6	291.8	19.3					
Lane LOS	C			B			C	F	C					
Approach Delay (s)	0.4			0.4			15.6	217.9						
Approach LOS							C	F						
Intersection Summary														
Average Delay				7.9										
Intersection Capacity Utilization				62.9%			ICU Level of Service			B				
Analysis Period (min)				15										

HCM Unsignalized Intersection Capacity Analysis

9: Gay Dr & US 21 Sea Island Pkwy




















2038 No Build
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	1178	2	7	1631	0	5	0	4	0	0	4
Future Volume (Veh/h)	4	1178	2	7	1631	0	5	0	4	0	0	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	1309	2	8	1812	0	6	0	4	0	0	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	TWLTL				None							
Median storage veh	2											
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1812			1311			2244	3146	656	2494	3147	906
vC1, stage 1 conf vol							1318	1318		1828	1828	
vC2, stage 2 conf vol							926	1828		666	1319	
vCu, unblocked vol	1812			1311			2244	3146	656	2494	3147	906
tC, single (s)	4.1			4.4			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.4			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			96	100	99	100	100	99
cM capacity (veh/h)	335			450			137	101	408	75	102	279
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1					
Volume Total	658	656	8	1208	604	10	4					
Volume Left	4	0	8	0	0	6	0					
Volume Right	0	2	0	0	0	4	4					
cSH	335	1700	450	1700	1700	187	279					
Volume to Capacity	0.01	0.39	0.02	0.71	0.36	0.05	0.01					
Queue Length 95th (ft)	1	0	1	0	0	4	1					
Control Delay (s)	0.4	0.0	13.1	0.0	0.0	25.4	18.1					
Lane LOS	A		B			D	C					
Approach Delay (s)	0.2		0.1			25.4	18.1					
Approach LOS						D	C					
Intersection Summary												
Average Delay			0.2									
Intersection Capacity Utilization			56.7%		ICU Level of Service				B			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

10: Cougar Dr & US 21 Sea Island Pkwy











2038 No Build
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	143	982	7	2	1492	75	2	0	0	16	0	144
Future Volume (Veh/h)	143	982	7	2	1492	75	2	0	0	16	0	144
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	159	1091	8	2	1658	83	2	0	0	18	0	160
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												12
Median type	None				None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1741			1099			2246	3158	550	2567	3120	870
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1741			1099			2246	3158	550	2567	3120	870
tC, single (s)	4.1			5.1			7.5	6.5	6.9	8.1	6.5	7.0
tC, 2 stage (s)												
tF (s)	2.2			2.7			3.5	4.0	3.3	3.8	4.0	3.3
p0 queue free %	55			100			70	100	100	0	100	45
cM capacity (veh/h)	357			413			7	6	479	5	6	289
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	159	727	372	2	1105	636	2	178				
Volume Left	159	0	0	2	0	0	2	18				
Volume Right	0	0	8	0	0	83	0	160				
cSH	357	1700	1700	413	1700	1700	7	54				
Volume to Capacity	0.45	0.43	0.22	0.00	0.65	0.37	0.30	3.30				
Queue Length 95th (ft)	55	0	0	0	0	0	16	Err				
Control Delay (s)	22.9	0.0	0.0	13.8	0.0	0.0	705.5	Err				
Lane LOS	C			B			F	F				
Approach Delay (s)	2.9			0.0			705.5	Err				
Approach LOS							F	F				
Intersection Summary												
Average Delay				561.1								
Intersection Capacity Utilization				65.9%	ICU Level of Service				C			
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis

11: Lost Island Rd & US 21 Sea Island Pkwy

2038 No Build
AM Peak Hour














						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	973	13	0	1597	0	1
Future Volume (Veh/h)	973	13	0	1597	0	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1081	14	0	1774	0	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLT			TWLT		
Median storage (veh)	2			2		
Upstream signal (ft)				612		
pX, platoon unblocked					0.67	
vC, conflicting volume			1095		1968	1081
vC1, stage 1 conf vol					1081	
vC2, stage 2 conf vol					887	
vCu, unblocked vol			1095		1466	1081
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			633		264	213
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	1086	9	591	1183	1	
Volume Left	0	0	0	0	0	
Volume Right	5	9	0	0	1	
cSH	1700	1700	633	1700	213	
Volume to Capacity	0.64	0.01	0.00	0.70	0.00	
Queue Length 95th (ft)	0	0	0	0	0	
Control Delay (s)	0.0	0.0	0.0	0.0	22.0	
Lane LOS					C	
Approach Delay (s)	0.0		0.0		22.0	
Approach LOS					C	
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			61.5%		ICU Level of Service	B
Analysis Period (min)			15			

Timings

12: New Frontage Road/Airport Cir & US 21 Sea Island Pkwy

2038 No Build

AM Peak Hour

								
Lane Group	EBL	EBT	WBL	WBT	NBL	SBL	SBT	Ø2
Lane Configurations								
Traffic Volume (vph)	119	854	14	1423	50	60	0	
Future Volume (vph)	119	854	14	1423	50	60	0	
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	pm+pt	NA	
Protected Phases	7	4	3	8	5	1	6	2
Permitted Phases	4		8		2	6		
Detector Phase	7	4	3	8	5	1	6	
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	22.5	9.5	22.5	22.5	22.5
Total Split (s)	10.3	74.8	9.5	74.0	9.9	22.5	35.8	23.2
Total Split (%)	7.9%	57.5%	7.3%	56.9%	7.6%	17.3%	27.5%	18%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Min	Min	Min
Act Effct Green (s)	79.9	79.9		69.6	11.8	19.2	12.0	
Actuated g/C Ratio	0.74	0.74		0.64	0.11	0.18	0.11	
v/c Ratio	0.72	0.71		0.76	0.34	0.29	0.56	
Control Delay	33.9	12.3		17.4	43.5	40.9	28.2	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	33.9	12.3		17.4	43.5	40.9	28.2	
LOS	C	B		B	D	D	C	
Approach Delay		14.9		17.4			32.3	
Approach LOS		B		B			C	

Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 108.7

Natural Cycle: 130

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 18.0









Intersection LOS: B

Intersection Capacity Utilization 111.7%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 12: New Frontage Road/Airport Cir & US 21 Sea Island Pkwy







 Ø1	 Ø2	 Ø3	 Ø4
22.5 s	23.2 s	9.5 s	74.8 s
 Ø5	 Ø6	 Ø7	 Ø8
9.9 s	35.8 s	10.3 s	74 s

Queues

2038 No Build

12: New Frontage Road/Airport Cir & US 21 Sea Island Pkwy

AM Peak Hour

						
Lane Group	EBL	EBT	WBT	NBL	SBL	SBT
Lane Group Flow (vph)	132	949	1596	54	67	140
v/c Ratio	0.72	0.71	0.76	0.34	0.29	0.56
Control Delay	33.9	12.3	17.4	43.5	40.9	28.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.9	12.3	17.4	43.5	40.9	28.2
Queue Length 50th (ft)	22	302	368	32	40	35
Queue Length 95th (ft)	#78	556	542	68	80	98
Internal Link Dist (ft)		532	392			381
Turn Bay Length (ft)	375				250	
Base Capacity (vph)	183	1342	2094	161	311	519
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.72	0.71	0.76	0.34	0.22	0.27

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.





















Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

12: New Frontage Road/Airport Cir & US 21 Sea Island Pkwy

2038 No Build










AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	119	854	0	14	1423	0	50	0	0	60	0	126
Future Volume (vph)	119	854	0	14	1423	0	50	0	0	60	0	126
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5		4.5			4.5	4.5	
Lane Util. Factor	1.00	1.00			0.95		1.00			1.00	1.00	
Frt	1.00	1.00			1.00		1.00			1.00	0.85	
Flt Protected	0.95	1.00			1.00		0.95			0.95	1.00	
Satd. Flow (prot)	1626	1827			3470		1770			1770	1583	
Flt Permitted	0.08	1.00			0.94		0.67			0.47	1.00	
Satd. Flow (perm)	142	1827			3273		1244			877	1583	
Peak-hour factor, PHF	0.90	0.90	0.92	0.92	0.90	0.90	0.92	0.92	0.92	0.90	0.92	0.90
Adj. Flow (vph)	132	949	0	15	1581	0	54	0	0	67	0	140
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	78	0
Lane Group Flow (vph)	132	949	0	0	1596	0	54	0	0	67	62	0
Heavy Vehicles (%)	11%	4%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt			pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	79.9	79.9			69.6		11.7			20.8	12.0	
Effective Green, g (s)	79.9	79.9			69.6		11.7			20.8	12.0	
Actuated g/C Ratio	0.73	0.73			0.63		0.11			0.19	0.11	
Clearance Time (s)	4.5	4.5			4.5		4.5			4.5	4.5	
Vehicle Extension (s)	3.0	3.0			3.0		3.0			3.0	3.0	
Lane Grp Cap (vph)	181	1330			2076		153			238	173	
v/s Ratio Prot	0.04	c0.52					0.01			c0.02	c0.04	
v/s Ratio Perm	0.49				c0.49		0.02			0.03		
v/c Ratio	0.73	0.71			0.77		0.35			0.28	0.36	
Uniform Delay, d1	15.4	8.4			14.3		45.2			37.5	45.3	
Progression Factor	1.00	1.00			1.00		1.00			1.00	1.00	
Incremental Delay, d2	13.7	1.8			1.8		1.4			0.7	1.3	
Delay (s)	29.1	10.3			16.1		46.6			38.2	46.5	
Level of Service	C	B			B		D			D	D	
Approach Delay (s)		12.6			16.1			46.6			43.8	
Approach LOS		B			B			D			D	
Intersection Summary												
HCM 2000 Control Delay			17.3				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.71									
Actuated Cycle Length (s)			109.7				Sum of lost time (s)			18.0		
Intersection Capacity Utilization			111.7%				ICU Level of Service			H		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

13: Old Distant Island Rd & US 21 Sea Island Pkwy

2038 No Build
AM Peak Hour














						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	774	7	6	1399	15	2
Future Volume (Veh/h)	774	7	6	1399	15	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	860	8	7	1554	17	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage veh)	2		2			
Upstream signal (ft)			1133			
pX, platoon unblocked			0.22			
vC, conflicting volume			868		2432	864
vC1, stage 1 conf vol					864	
vC2, stage 2 conf vol					1568	
vCu, unblocked vol			868		5798	864
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)					5.5	
tF (s)			2.2		3.6	3.3
p0 queue free %			99		41	99
cM capacity (veh/h)			776		29	354
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	868	1561	19			
Volume Left	0	7	17			
Volume Right	8	0	2			
cSH	1700	776	32			
Volume to Capacity	0.51	0.01	0.60			
Queue Length 95th (ft)	0	1	50			
Control Delay (s)	0.0	1.1	224.7			
Lane LOS		A	F			
Approach Delay (s)	0.0	1.1	224.7			
Approach LOS			F			
Intersection Summary						
Average Delay			2.4			
Intersection Capacity Utilization			88.4%	ICU Level of Service		E
Analysis Period (min)			15			

Timings

14: Chowan Creek Bluff/Eustis Landing Rd & US 21 Sea Island Pkwy

2038 No Build

AM Peak Hour

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	24	625	56	1241	152	4	16	2
Future Volume (vph)	24	625	56	1241	152	4	16	2
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	22.5	9.5	22.5	9.5	22.5
Total Split (s)	9.5	108.0	9.5	108.0	9.5	23.0	9.5	23.0
Total Split (%)	6.3%	72.0%	6.3%	72.0%	6.3%	15.3%	6.3%	15.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)		4.5	4.5	4.5		4.5		4.5
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max
Act Effct Green (s)		103.6	111.1	111.1		18.5		18.5
Actuated g/C Ratio		0.75	0.80	0.80		0.13		0.13
v/c Ratio		1.09	0.13	0.94		1.24		0.27
Control Delay		80.5	3.4	25.6		191.3		26.7
Queue Delay		0.0	0.0	0.0		0.0		0.0
Total Delay		80.5	3.4	25.6		191.3		26.7
LOS		F	A	C		F		C
Approach Delay		80.5		24.7		191.3		26.7
Approach LOS		F		C		F		C

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 138.6

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.24

Intersection Signal Delay: 57.7









Intersection LOS: E

Intersection Capacity Utilization 90.9%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 14: Chowan Creek Bluff/Eustis Landing Rd & US 21 Sea Island Pkwy

 Ø1	 Ø2	 Ø3	 Ø4
9.5 s	23 s	9.5 s	108 s
 Ø5	 Ø6	 Ø7	 Ø8
9.5 s	23 s	9.5 s	108 s

Queues

2038 No Build

14: Chowan Creek Bluff/Eustis Landing Rd & US 21 Sea Island Pkwy

AM Peak Hour

	→	↙	←	↑	↓
Lane Group	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	868	62	1379	223	61
v/c Ratio	1.09	0.13	0.94	1.24	0.27
Control Delay	80.5	3.4	25.6	191.3	26.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	80.5	3.4	25.6	191.3	26.7
Queue Length 50th (ft)	~902	10	841	~248	16
Queue Length 95th (ft)	#1160	18	#1487	#420	61
Internal Link Dist (ft)	1053		490	351	331
Turn Bay Length (ft)		290			
Base Capacity (vph)	793	493	1464	180	229
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.09	0.13	0.94	1.24	0.27

Intersection Summary


















- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

14: Chowan Creek Bluff/Eustis Landing Rd & US 21 Sea Island Pkwy

2038 No Build





















AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	625	132	56	1241	0	152	4	45	16	2	37
Future Volume (vph)	24	625	132	56	1241	0	152	4	45	16	2	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5			4.5			4.5	
Lane Util. Factor		1.00		1.00	1.00			1.00			1.00	
Frt		0.98		1.00	1.00			0.97			0.91	
Flt Protected		1.00		0.95	1.00			0.96			0.99	
Satd. Flow (prot)		1776		1736	1827			1724			1532	
Flt Permitted		0.59		0.31	1.00			0.73			0.93	
Satd. Flow (perm)		1056		563	1827			1301			1447	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	27	694	147	62	1379	0	169	4	50	18	2	41
RTOR Reduction (vph)	0	5	0	0	0	0	0	7	0	0	36	0
Lane Group Flow (vph)	0	863	0	62	1379	0	0	216	0	0	25	0
Heavy Vehicles (%)	2%	5%	2%	4%	4%	2%	3%	2%	3%	8%	2%	13%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		103.6		112.0	112.0			18.5			18.5	
Effective Green, g (s)		103.6		112.0	112.0			18.5			18.5	
Actuated g/C Ratio		0.74		0.80	0.80			0.13			0.13	
Clearance Time (s)		4.5		4.5	4.5			4.5			4.5	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		784		484	1466			172			191	
v/s Ratio Prot				0.00	c0.75							
v/s Ratio Perm		c0.82		0.10				c0.17			0.02	
v/c Ratio		1.10		0.13	0.94			1.26			0.13	
Uniform Delay, d1		18.0		4.0	11.1			60.5			53.4	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		63.5		0.1	12.1			153.8			0.3	
Delay (s)		81.4		4.1	23.2			214.3			53.7	
Level of Service		F		A	C			F			D	
Approach Delay (s)		81.4			22.4			214.3			53.7	
Approach LOS		F			C			F			D	
Intersection Summary												
HCM 2000 Control Delay			59.4			HCM 2000 Level of Service				E		
HCM 2000 Volume to Capacity ratio			1.18									
Actuated Cycle Length (s)			139.5			Sum of lost time (s)			18.0			
Intersection Capacity Utilization			90.9%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

15: US 21 Lady's Island Rd & Rue Du Bois/Driveway










2038 No Build
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	1	54	4	0	7	80	1065	22	34	1842	47
Future Volume (Veh/h)	22	1	54	4	0	7	80	1065	22	34	1842	47
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	24	1	60	4	0	8	89	1183	24	38	2047	52
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None						TWLTL					
Median storage veh							2					
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2900	3508	1024	2533	3548	604	2099			1207		
vC1, stage 1 conf vol	2123	2123		1373	1373							
vC2, stage 2 conf vol	778	1385		1160	2175							
vCu, unblocked vol	2900	3508	1024	2533	3548	604	2099			1207		
tC, single (s)	7.6	8.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)	6.6	7.5		6.5	5.5							
tF (s)	3.6	5.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	44	93	74	91	100	98	64			93		
cM capacity (veh/h)	43	15	233	43	3	442	248			574		
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4		
Volume Total	25	60	12	89	789	418	38	1024	1024	52		
Volume Left	24	0	4	89	0	0	38	0	0	0		
Volume Right	0	60	8	0	0	24	0	0	0	52		
cSH	40	233	108	248	1700	1700	574	1700	1700	1700		
Volume to Capacity	0.63	0.26	0.11	0.36	0.46	0.25	0.07	0.60	0.60	0.03		
Queue Length 95th (ft)	57	25	9	39	0	0	5	0	0	0		
Control Delay (s)	192.9	25.7	42.6	27.4	0.0	0.0	11.7	0.0	0.0	0.0		
Lane LOS	F	D	E	D			B					
Approach Delay (s)	74.9		42.6	1.9			0.2					
Approach LOS	F		E									
Intersection Summary												
Average Delay	2.8											
Intersection Capacity Utilization	69.7%			ICU Level of Service					C			
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis

16: US 21 Lady's Island Rd & Hazel Farm Rd




















2038 No Build
AM Peak Hour

						
Movement	WBL	WBR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (veh/h)	17	1	1097	5	0	1910
Future Volume (Veh/h)	17	1	1097	5	0	1910
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	19	1	1219	6	0	2122
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLT		TWLT	
Median storage veh)			2		2	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2283	612			1225	
vC1, stage 1 conf vol	1222					
vC2, stage 2 conf vol	1061					
vCu, unblocked vol	2283	612			1225	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	90	100			100	
cM capacity (veh/h)	183	436			565	
Direction, Lane #	WB 1	NE 1	NE 2	SW 1	SW 2	
Volume Total	20	813	412	707	1415	
Volume Left	19	0	0	0	0	
Volume Right	1	0	6	0	0	
cSH	188	1700	1700	565	1700	
Volume to Capacity	0.11	0.48	0.24	0.00	0.83	
Queue Length 95th (ft)	9	0	0	0	0	
Control Delay (s)	26.4	0.0	0.0	0.0	0.0	
Lane LOS	D					
Approach Delay (s)	26.4	0.0		0.0		
Approach LOS	D					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			62.8%	ICU Level of Service		B
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis











17: US 21 Lady's Island Rd & Ferry Rd

2038 No Build
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	4	0	21	134	1	22	39	1025	26	26	1763	63
Future Volume (Veh/h)	4	0	21	134	1	22	39	1025	26	26	1763	63
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	0	23	149	1	24	43	1139	29	29	1959	70
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)	5			5								
Median type							TWLTL			TWLTL		
Median storage veh							2			2		
Upstream signal (ft)										1003		
pX, platoon unblocked												
vC, conflicting volume	2720	3306	1014	2277	3326	584	2029				1168	
vC1, stage 1 conf vol	2052	2052		1240	1240							
vC2, stage 2 conf vol	668	1254		1038	2087							
vCu, unblocked vol	2720	3306	1014	2277	3326	584	2029				1168	
tC, single (s)	7.5	6.5	7.0	7.5	6.5	7.0	4.1				4.2	
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.4	3.5	4.0	3.4	2.2				2.2	
p0 queue free %	92	100	90	0	98	95	84				95	
cM capacity (veh/h)	52	78	229	111	43	445	276				577	
Direction, Lane #	EB 1	WB 1	NE 1	NE 2	SW 1	SW 2	SW 3					
Volume Total	27	174	612	598	29	1306	723					
Volume Left	4	149	43	0	29	0	0					
Volume Right	23	24	0	29	0	0	70					
cSH	269	125	276	1700	577	1700	1700					
Volume to Capacity	0.10	1.40	0.16	0.35	0.05	0.77	0.43					
Queue Length 95th (ft)	8	293	14	0	4	0	0					
Control Delay (s)	31.0	284.4	5.9	0.0	11.6	0.0	0.0					
Lane LOS	D	F	A	B								
Approach Delay (s)	31.0	284.4	3.0	0.2								
Approach LOS	D	F										
Intersection Summary												
Average Delay	15.6											
Intersection Capacity Utilization	78.5%			ICU Level of Service					D			
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis 18: SC 802 Sams Point Rd & Sams Point Way

















2038 No Build
AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	11	112	921	22	189	2137
Future Volume (Veh/h)	11	112	921	22	189	2137
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	12	124	1023	24	210	2374
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLT		TWLT	
Median storage (veh)			2		2	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2642	524			1047	
vC1, stage 1 conf vol	1035					
vC2, stage 2 conf vol	1607					
vCu, unblocked vol	2642	524			1047	
tC, single (s)	7.2	6.9			4.2	
tC, 2 stage (s)	6.2					
tF (s)	3.7	3.3			2.2	
p0 queue free %	84	75			68	
cM capacity (veh/h)	76	498			648	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	136	682	365	210	1187	1187
Volume Left	12	0	0	210	0	0
Volume Right	124	0	24	0	0	0
cSH	335	1700	1700	648	1700	1700
Volume to Capacity	0.41	0.40	0.21	0.32	0.70	0.70
Queue Length 95th (ft)	48	0	0	35	0	0
Control Delay (s)	22.9	0.0	0.0	13.2	0.0	0.0
Lane LOS	C			B		
Approach Delay (s)	22.9	0.0		1.1		
Approach LOS	C					
Intersection Summary						
Average Delay			1.6			
Intersection Capacity Utilization			73.3%		ICU Level of Service	D
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

19: SC 802 Sams Point Rd & Ashland Park Rd/Driveway



















2038 No Build
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	0	11	0	0	0	14	1003	0	1	2352	7
Future Volume (Veh/h)	1	0	11	0	0	0	14	1003	0	1	2352	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1	0	12	0	0	0	16	1114	0	1	2613	8
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh								2			2	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	3208	3765	1310	2466	3769	557	2621			1114		
vC1, stage 1 conf vol	2619	2619		1146	1146							
vC2, stage 2 conf vol	589	1146		1320	2623							
vCu, unblocked vol	3208	3765	1310	2466	3769	557	2621			1114		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	100	92	100	100	100	90			100		
cM capacity (veh/h)	24	47	149	106	32	474	161			623		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	13	0	573	557	1308	1314						
Volume Left	1	0	16	0	1	0						
Volume Right	12	0	0	0	0	8						
cSH	106	1700	161	1700	623	1700						
Volume to Capacity	0.12	0.00	0.10	0.33	0.00	0.77						
Queue Length 95th (ft)	10	0	8	0	0	0						
Control Delay (s)	43.6	0.0	5.1	0.0	0.1	0.0						
Lane LOS	E	A	A		A							
Approach Delay (s)	43.6	0.0	2.6		0.0							
Approach LOS	E	A										
Intersection Summary												
Average Delay			1.0									
Intersection Capacity Utilization			75.9%		ICU Level of Service					D		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

20: SC 802 Sams Point Rd & Miller Dr W/Miller Dr E

2038 No Build
AM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	9	0	41	19	1	5	16	958	24	4	2277	156	
Future Volume (Veh/h)	9	0	41	19	1	5	16	958	24	4	2277	156	
Sign Control	Stop			Stop			Free			Free			
Grade	0%			0%			0%			0%			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Hourly flow rate (vph)	10	0	46	21	1	6	18	1064	27	4	2530	173	
Pedestrians													
Lane Width (ft)													
Walking Speed (ft/s)													
Percent Blockage													
Right turn flare (veh)													
Median type							TWLTL			TWLTL			
Median storage veh							2			2			
Upstream signal (ft)													
pX, platoon unblocked													
vC, conflicting volume	3199	3752	1352	2432	3824	546	2703						1091
vC1, stage 1 conf vol	2624	2624		1114	1114								
vC2, stage 2 conf vol	574	1127		1319	2711								
vCu, unblocked vol	3199	3752	1352	2432	3824	546	2703						1091
tC, single (s)	7.5	6.5	7.0	7.5	6.5	6.9	4.3						4.1
tC, 2 stage (s)	6.5	5.5		6.5	5.5								
tF (s)	3.5	4.0	3.4	3.5	4.0	3.3	2.3						2.2
p0 queue free %	57	100	66	73	96	99	87						99
cM capacity (veh/h)	23	46	135	79	25	482	135						635
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3					
Volume Total	56	28	18	709	382	4	1687	1016					
Volume Left	10	21	18	0	0	4	0	0					
Volume Right	46	6	0	0	27	0	0	173					
cSH	73	88	135	1700	1700	635	1700	1700					
Volume to Capacity	0.77	0.32	0.13	0.42	0.22	0.01	0.99	0.60					
Queue Length 95th (ft)	91	30	11	0	0	0	0	0					
Control Delay (s)	142.8	64.0	35.8	0.0	0.0	10.7	0.0	0.0					
Lane LOS	F	F	E				B						
Approach Delay (s)	142.8	64.0	0.6				0.0						
Approach LOS	F	F											
Intersection Summary													
Average Delay				2.7									
Intersection Capacity Utilization				79.1%	ICU Level of Service				D				
Analysis Period (min)				15									

HCM Unsignalized Intersection Capacity Analysis













21: Taco Bell Driveway & US 21 Sea Island Pkwy

2038 No Build
AM Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗		↑↑		↗
Traffic Volume (veh/h)	981	17	0	1569	0	10
Future Volume (Veh/h)	981	17	0	1569	0	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1066	18	0	1705	0	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			TWLTL		
Median storage veh				2		
Upstream signal (ft)				897		
pX, platoon unblocked					0.67	
vC, conflicting volume			1084		1918	1066
vC1, stage 1 conf vol					1066	
vC2, stage 2 conf vol					852	
vCu, unblocked vol			1084		1393	1066
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	95
cM capacity (veh/h)			639		270	218
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	1066	18	852	852	11	
Volume Left	0	0	0	0	0	
Volume Right	0	18	0	0	11	
cSH	1700	1700	1700	1700	218	
Volume to Capacity	0.63	0.01	0.50	0.50	0.05	
Queue Length 95th (ft)	0	0	0	0	4	
Control Delay (s)	0.0	0.0	0.0	0.0	22.4	
Lane LOS					C	
Approach Delay (s)	0.0		0.0		22.4	
Approach LOS					C	
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			61.6%		ICU Level of Service	B
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 22: US 21 Sea Island Pkwy & Walmart Driveway #3

2038 No Build
AM Peak Hour

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	145	769	1363	72	30	60
Future Volume (Veh/h)	145	769	1363	72	30	60
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	158	836	1482	78	33	65
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						7
Median type		TWLTL	TWLTL			
Median storage (veh)		2	2			
Upstream signal (ft)		472				
pX, platoon unblocked					0.70	
vC, conflicting volume	1560				2634	1482
vC1, stage 1 conf vol					1482	
vC2, stage 2 conf vol					1152	
vCu, unblocked vol	1560				3113	1482
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	63				72	58
cM capacity (veh/h)	424				117	154
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	158	836	1482	78	98	
Volume Left	158	0	0	0	33	
Volume Right	0	0	0	78	65	
cSH	424	1700	1700	1700	232	
Volume to Capacity	0.37	0.49	0.87	0.05	0.42	
Queue Length 95th (ft)	42	0	0	0	49	
Control Delay (s)	18.5	0.0	0.0	0.0	45.5	
Lane LOS	C				E	
Approach Delay (s)	2.9		0.0		45.5	
Approach LOS					E	
Intersection Summary						
Average Delay			2.8			
Intersection Capacity Utilization			93.1%		ICU Level of Service	F
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

23: US 21 Sea Island Pkwy & Walmart Driveway #4

2038 No Build
AM Peak Hour




















Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↗		↗
Traffic Volume (veh/h)	0	799	1405	36	0	30
Future Volume (Veh/h)	0	799	1405	36	0	30
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	868	1527	39	0	33
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh		2	2			
Upstream signal (ft)		911				
pX, platoon unblocked					0.70	
vC, conflicting volume	1566				2395	1527
vC1, stage 1 conf vol					1527	
vC2, stage 2 conf vol					868	
vCu, unblocked vol	1566				2775	1527
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	77
cM capacity (veh/h)	421				168	145
Direction, Lane #	EB 1	WB 1	WB 2	SB 1		
Volume Total	868	1527	39	33		
Volume Left	0	0	0	0		
Volume Right	0	0	39	33		
cSH	1700	1700	1700	145		
Volume to Capacity	0.51	0.90	0.02	0.23		
Queue Length 95th (ft)	0	0	0	21		
Control Delay (s)	0.0	0.0	0.0	37.1		
Lane LOS				E		
Approach Delay (s)	0.0	0.0		37.1		
Approach LOS				E		
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			83.9%	ICU Level of Service		E
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis














1: Meridian Rd/Driveway & US 21 Sea Island Pkwy

2038 No Build
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1418	71	61	1061	2	63	1	69	1	0	1
Future Volume (Veh/h)	0	1418	71	61	1061	2	63	1	69	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1576	79	68	1179	2	70	1	77	1	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	TWLTL				None							
Median storage veh)	2											
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1181			1655			2932	2932	1616	3009	2971	1180
vC1, stage 1 conf vol							1616	1616		1316	1316	
vC2, stage 2 conf vol							1316	1317		1693	1655	
vCu, unblocked vol	1181			1655			2932	2932	1616	3009	2971	1180
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			83			27	99	40	65	100	100
cM capacity (veh/h)	591			390			96	117	128	3	77	232
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1							
Volume Total	1655	68	1181	148	2							
Volume Left	0	68	0	70	1							
Volume Right	79	0	2	77	1							
cSH	591	390	1700	110	6							
Volume to Capacity	0.00	0.17	0.69	1.34	0.36							
Queue Length 95th (ft)	0	16	0	254	17							
Control Delay (s)	0.0	16.2	0.0	274.4	855.8							
Lane LOS		C		F	F							
Approach Delay (s)	0.0	0.9		274.4	855.8							
Approach LOS				F	F							
Intersection Summary												
Average Delay				14.2								
Intersection Capacity Utilization				95.1%	ICU Level of Service				F			
Analysis Period (min)				15								

Timings 2: Geechie Rd/Driveway & US 21 Sea Island Pkwy

2038 No Build
PM Peak Hour





								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	2	1481	25	1099	50	1	5	0
Future Volume (vph)	2	1481	25	1099	50	1	5	0
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	127.0	127.0	127.0	127.0	23.0	23.0	23.0	23.0
Total Split (%)	84.7%	84.7%	84.7%	84.7%	15.3%	15.3%	15.3%	15.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)		4.5	4.5	4.5		4.5		4.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effct Green (s)		122.5	122.5	122.5		18.5		18.5
Actuated g/C Ratio		0.82	0.82	0.82		0.12		0.12
v/c Ratio		1.10	0.12	0.81		0.54		0.04
Control Delay		72.3	4.0	12.9		58.6		22.4
Queue Delay		0.0	0.0	0.0		0.0		0.0
Total Delay		72.3	4.0	12.9		58.6		22.4
LOS		E	A	B		E		C
Approach Delay		72.3		12.7		58.6		22.4
Approach LOS		E		B		E		C

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Natural Cycle: 150
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.10
Intersection Signal Delay: 47.0
Intersection Capacity Utilization 94.1%
Analysis Period (min) 15

Intersection LOS: D
ICU Level of Service F

Splits and Phases: 2: Geechie Rd/Driveway & US 21 Sea Island Pkwy

 Ø2	 Ø4
23 s	127 s
 Ø6	 Ø8
23 s	127 s

Queues

2038 No Build

2: Geechie Rd/Driveway & US 21 Sea Island Pkwy

PM Peak Hour

	→	↘	←	↑	↓
Lane Group	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	1669	28	1229	108	8
v/c Ratio	1.10	0.12	0.81	0.54	0.04
Control Delay	72.3	4.0	12.9	58.6	22.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	72.3	4.0	12.9	58.6	22.4
Queue Length 50th (ft)	~1851	5	541	78	0
Queue Length 95th (ft)	#2116	12	758	146	15
Internal Link Dist (ft)	1321		417	377	79
Turn Bay Length (ft)		200			
Base Capacity (vph)	1516	234	1520	200	204
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.10	0.12	0.81	0.54	0.04

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.


















95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

2: Geechie Rd/Driveway & US 21 Sea Island Pkwy

2038 No Build
PM Peak Hour



















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	1481	19	25	1099	7	50	1	46	5	0	2
Future Volume (vph)	2	1481	19	25	1099	7	50	1	46	5	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5			4.5			4.5	
Lane Util. Factor		1.00		1.00	1.00			1.00			1.00	
Frt		1.00		1.00	1.00			0.94			0.97	
Flt Protected		1.00		0.95	1.00			0.97			0.96	
Satd. Flow (prot)		1859		1770	1861			1700			1735	
Flt Permitted		1.00		0.15	1.00			0.83			0.88	
Satd. Flow (perm)		1858		287	1861			1453			1584	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	2	1646	21	28	1221	8	56	1	51	6	0	2
RTOR Reduction (vph)	0	0	0	0	0	0	0	21	0	0	7	0
Lane Group Flow (vph)	0	1669	0	28	1229	0	0	87	0	0	1	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		122.5		122.5	122.5			18.5			18.5	
Effective Green, g (s)		122.5		122.5	122.5			18.5			18.5	
Actuated g/C Ratio		0.82		0.82	0.82			0.12			0.12	
Clearance Time (s)		4.5		4.5	4.5			4.5			4.5	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		1517		234	1519			179			195	
v/s Ratio Prot					0.66							
v/s Ratio Perm		c0.90		0.10				c0.06			0.00	
v/c Ratio		1.10		0.12	0.81			0.49			0.01	
Uniform Delay, d1		13.8		2.8	7.4			61.3			57.7	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		55.6		0.2	3.3			9.1			0.0	
Delay (s)		69.3		3.0	10.7			70.5			57.7	
Level of Service		E		A	B			E			E	
Approach Delay (s)		69.3			10.5			70.5			57.7	
Approach LOS		E			B			E			E	
Intersection Summary												
HCM 2000 Control Delay			45.0			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			1.02									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			9.0			
Intersection Capacity Utilization			94.1%			ICU Level of Service			F			
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

3: Driveway/Sunset Blvd & US 21 Sea Island Pkwy


















2038 No Build
PM Peak Hour

														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR		
Lane Configurations														
Traffic Volume (veh/h)	139	1307	71	46	1013	55	48	19	78	29	17	77		
Future Volume (Veh/h)	139	1307	71	46	1013	55	48	19	78	29	17	77		
Sign Control	Free			Free			Stop			Stop				
Grade	0%			0%			0%			0%				
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly flow rate (vph)	154	1452	79	51	1126	61	53	21	87	32	19	86		
Pedestrians														
Lane Width (ft)														
Walking Speed (ft/s)														
Percent Blockage														
Right turn flare (veh)														
Median type	None				TWLTL									
Median storage veh					2									
Upstream signal (ft)	497													
pX, platoon unblocked				0.24			0.24			0.24	0.24	0.24		
vC, conflicting volume	1187			1531			3123			3088	1492	3116	3098	1156
vC1, stage 1 conf vol							1800			1800		1258	1258	
vC2, stage 2 conf vol							1324			1289		1858	1839	
vCu, unblocked vol	1187			1632			8403			8256	1464	8373	8295	1156
tC, single (s)	4.1			4.2			7.1			6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1			5.5		6.1	5.5	
tF (s)	2.2			2.3			3.5			4.0	3.3	3.5	4.0	3.3
p0 queue free %	74			44			0			0	0	0	0	64
cM capacity (veh/h)	588			91			0			0	37	0	0	239
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NE 1	SW 1								
Volume Total	154	1531	51	1187	161	137								
Volume Left	154	0	51	0	53	32								
Volume Right	0	79	0	61	87	86								
cSH	588	1700	91	1700	0	0								
Volume to Capacity	0.26	0.90	0.56	0.70	Err	Err								
Queue Length 95th (ft)	26	0	63	0	Err	Err								
Control Delay (s)	13.3	0.0	86.3	0.0	Err	Err								
Lane LOS	B		F		F	F								
Approach Delay (s)	1.2		3.6		Err	Err								
Approach LOS					F	F								
Intersection Summary														
Average Delay				Err										
Intersection Capacity Utilization				99.4%			ICU Level of Service			F				
Analysis Period (min)				15										

HCM Unsignalized Intersection Capacity Analysis

4: Youmans Dr/Driveway & US 21 Sea Island Pkwy













2038 No Build
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	4	1439	20	75	1147	5	16	1	117	5	1	9
Future Volume (Veh/h)	4	1439	20	75	1147	5	16	1	117	5	1	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	1599	22	83	1274	6	18	1	130	6	1	10
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLT			None							
Median storage veh		2										
Upstream signal (ft)		1218										
pX, platoon unblocked				0.24			0.24	0.24	0.24	0.24	0.24	
vC, conflicting volume	1280			1621			3068	3064	1610	3192	3072	1277
vC1, stage 1 conf vol							1618	1618		1443	1443	
vC2, stage 2 conf vol							1450	1446		1748	1629	
vCu, unblocked vol	1280			2005			8043	8024	1959	8556	8057	1277
tC, single (s)	4.1			4.2			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			0			0	0	0	0	0	95
cM capacity (veh/h)	542			64			0	0	19	0	0	203
Direction, Lane #	EB 1	WB 1	WB 2	NE 1	SW 1							
Volume Total	1625	83	1280	149	17							
Volume Left	4	83	0	18	6							
Volume Right	22	0	6	130	10							
cSH	542	64	1700	0	0							
Volume to Capacity	0.01	1.29	0.75	Err	Err							
Queue Length 95th (ft)	1	172	0	Err	Err							
Control Delay (s)	1.9	318.1	0.0	Err	Err							
Lane LOS	A	F		F	F							
Approach Delay (s)	1.9	19.4		Err	Err							
Approach LOS				F	F							
Intersection Summary												
Average Delay			Err									
Intersection Capacity Utilization			95.5%		ICU Level of Service				F			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

5: US 21 Sea Island Pkwy & Professional Village Cir

2038 No Build
PM Peak Hour























						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		 	 			
Traffic Volume (veh/h)	17	1584	1196	39	44	54
Future Volume (Veh/h)	17	1584	1196	39	44	54
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	19	1760	1329	43	49	60
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)			681			
pX, platoon unblocked	0.86				0.86	0.86
vC, conflicting volume	1372				2268	686
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1096				2144	294
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				0	90
cM capacity (veh/h)	541				34	601
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	606	1173	886	486	49	60
Volume Left	19	0	0	0	49	0
Volume Right	0	0	0	43	0	60
cSH	541	1700	1700	1700	34	601
Volume to Capacity	0.04	0.69	0.52	0.29	1.43	0.10
Queue Length 95th (ft)	3	0	0	0	133	8
Control Delay (s)	1.0	0.0	0.0	0.0	483.7	11.7
Lane LOS	A				F	B
Approach Delay (s)	0.3		0.0		223.9	
Approach LOS					F	
Intersection Summary						
Average Delay			7.7			
Intersection Capacity Utilization			65.7%		ICU Level of Service	C
Analysis Period (min)			15			

Timings

6: Ladys Island Dr/Sams Point Rd & US 21 Sea Island Pkwy

2038 No Build

PM Peak Hour

											
Lane Group	EBL	EBT	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations											
Traffic Volume (vph)	646	774	535	546	253	198	922	602	325	575	505
Future Volume (vph)	646	774	535	546	253	198	922	602	325	575	505
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2	1	6		3	8	1	7	4	
Permitted Phases	2		6		6	8		8	4		4
Detector Phase	5	2	1	6	6	3	8	1	7	4	4
Switch Phase											
Minimum Initial (s)	6.0	25.0	6.0	25.0	25.0	6.0	15.0	6.0	6.0	15.0	15.0
Minimum Split (s)	13.3	43.0	13.3	39.0	39.0	12.3	42.3	13.3	13.3	43.3	43.3
Total Split (s)	33.0	47.0	33.0	47.0	47.0	15.0	44.0	33.0	21.0	50.0	50.0
Total Split (%)	22.8%	32.4%	22.8%	32.4%	32.4%	10.3%	30.3%	22.8%	14.5%	34.5%	34.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.3	4.0	4.0	4.3	4.3
All-Red Time (s)	3.3	2.0	3.3	2.0	2.0	2.3	2.0	3.3	2.3	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.3	6.0	7.3	6.0	6.0	6.3	6.3	7.3	6.3	6.3	6.3
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	None	Max	Max	None	None	None	None	Max	Max
Act Effct Green (s)	65.4	41.0	65.4	41.0	41.0	46.4	37.7	69.7	58.4	43.7	43.7
Actuated g/C Ratio	0.45	0.28	0.45	0.28	0.28	0.32	0.26	0.48	0.40	0.30	0.30
v/c Ratio	1.62	1.09	1.65	0.61	0.51	1.40	1.11	0.84	1.58	1.14	0.78
Control Delay	316.4	102.7	335.6	48.1	24.5	243.4	114.4	40.3	312.0	127.8	26.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	316.4	102.7	335.6	48.1	24.5	243.4	114.4	40.3	312.0	127.8	26.0
LOS	F	F	F	D	C	F	F	D	F	F	C
Approach Delay		188.5		158.8			103.3			133.8	
Approach LOS		F		F			F			F	

Intersection Summary

Cycle Length: 145

Actuated Cycle Length: 145

Natural Cycle: 145

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.65

Intersection Signal Delay: 145.1









Intersection LOS: F

Intersection Capacity Utilization 122.2%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 6: Ladys Island Dr/Sams Point Rd & US 21 Sea Island Pkwy












 Ø1	 Ø2	 Ø3	 Ø4
33 s	47 s	15 s	50 s
 Ø5	 Ø6	 Ø7	 Ø8
33 s	47 s	21 s	44 s

Queues

2038 No Build

6: Ladys Island Dr/Sams Point Rd & US 21 Sea Island Pkwy

PM Peak Hour

											
Lane Group	EBL	EBT	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Group Flow (vph)	718	1071	594	607	281	220	1024	669	361	639	561
v/c Ratio	1.62	1.09	1.65	0.61	0.51	1.40	1.11	0.84	1.58	1.14	0.78
Control Delay	316.4	102.7	335.6	48.1	24.5	243.4	114.4	40.3	312.0	127.8	26.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	316.4	102.7	335.6	48.1	24.5	243.4	114.4	40.3	312.0	127.8	26.0
Queue Length 50th (ft)	~851	~589	~768	262	108	~227	~581	494	~435	~702	202
Queue Length 95th (ft)	#1101	#729	#1008	328	201	#402	#718	692	#642	#941	366
Internal Link Dist (ft)		376		679			587			517	
Turn Bay Length (ft)	200		350		200	350		550	460		
Base Capacity (vph)	442	985	360	1000	549	157	920	797	228	561	716
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.62	1.09	1.65	0.61	0.51	1.40	1.11	0.84	1.58	1.14	0.78

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.
























95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

6: Ladys Island Dr/Sams Point Rd & US 21 Sea Island Pkwy





















2038 No Build
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	646	774	190	535	546	253	198	922	602	325	575	505
Future Volume (vph)	646	774	190	535	546	253	198	922	602	325	575	505
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.3	6.0		7.3	6.0	6.0	6.3	6.3	7.3	6.3	6.3	6.3
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3435		1752	3539	1583	1770	3539	1583	1752	1863	1583
Flt Permitted	0.25	1.00		0.10	1.00	1.00	0.11	1.00	1.00	0.09	1.00	1.00
Satd. Flow (perm)	471	3435		180	3539	1583	198	3539	1583	169	1863	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	718	860	211	594	607	281	220	1024	669	361	639	561
RTOR Reduction (vph)	0	15	0	0	0	102	0	0	39	0	0	240
Lane Group Flow (vph)	718	1056	0	594	607	179	220	1024	630	361	639	321
Heavy Vehicles (%)	2%	2%	2%	3%	2%	2%	2%	2%	2%	3%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8	1	7	4	
Permitted Phases	2			6		6	8		8	4		4
Actuated Green, G (s)	66.7	41.0		66.7	41.0	41.0	46.4	37.7	63.4	58.4	43.7	43.7
Effective Green, g (s)	66.7	41.0		66.7	41.0	41.0	46.4	37.7	63.4	58.4	43.7	43.7
Actuated g/C Ratio	0.46	0.28		0.46	0.28	0.28	0.32	0.26	0.44	0.40	0.30	0.30
Clearance Time (s)	7.3	6.0		7.3	6.0	6.0	6.3	6.3	7.3	6.3	6.3	6.3
Vehicle Extension (s)	3.0	3.5		3.0	3.5	3.5	3.0	3.5	3.0	3.0	3.5	3.5
Lane Grp Cap (vph)	446	971		361	1000	447	157	920	692	228	561	477
v/s Ratio Prot	0.28	0.31		c0.29	0.17		0.08	0.29	0.16	c0.16	0.34	
v/s Ratio Perm	0.45			c0.46		0.11	0.36		0.24	c0.48		0.20
v/c Ratio	1.61	1.09		1.65	0.61	0.40	1.40	1.11	0.91	1.58	1.14	0.67
Uniform Delay, d1	31.0	52.0		46.5	45.0	42.1	43.4	53.6	38.1	43.7	50.6	44.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	284.7	55.7		302.6	2.7	2.7	214.3	65.8	15.9	282.4	82.5	7.4
Delay (s)	315.7	107.7		349.1	47.8	44.7	257.7	119.4	54.0	326.1	133.2	51.8
Level of Service	F	F		F	D	D	F	F	D	F	F	D
Approach Delay (s)		191.1			168.0			112.4			148.6	
Approach LOS		F			F			F			F	
Intersection Summary												
HCM 2000 Control Delay			153.9				HCM 2000 Level of Service			F		
HCM 2000 Volume to Capacity ratio			1.65									
Actuated Cycle Length (s)			145.0				Sum of lost time (s)			25.9		
Intersection Capacity Utilization			122.2%				ICU Level of Service			H		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

7: Driveway/Sams Point Way & US 21 Sea Island Pkwy




















2038 No Build
PM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	221	1378	39	39	1153	56	12	14	72	55	2	133	
Future Volume (Veh/h)	221	1378	39	39	1153	56	12	14	72	55	2	133	
Sign Control	Free			Free			Stop			Stop			
Grade	0%			0%			0%			0%			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Hourly flow rate (vph)	246	1531	43	43	1281	62	13	16	80	61	2	148	
Pedestrians													
Lane Width (ft)													
Walking Speed (ft/s)													
Percent Blockage													
Right turn flare (veh)													
10													
Median type	None			TWLTL									
Median storage veh	2												
Upstream signal (ft)	759												
pX, platoon unblocked				0.75			0.75			0.75	0.75	0.75	0.75
vC, conflicting volume	1343			1574			2772			3474	787	2744	3464
vC1, stage 1 conf vol							2044			2044		1398	1398
vC2, stage 2 conf vol							728			1429		1346	2066
vCu, unblocked vol	1343			1096			2696			3632	45	2657	3620
tC, single (s)	4.1			4.1			7.5			6.5	6.9	7.5	6.5
tC, 2 stage (s)							6.5			5.5		6.5	5.5
tF (s)	2.2			2.2			3.5			4.0	3.3	3.5	4.0
p0 queue free %	52			91			0			0	89	0	80
cM capacity (veh/h)	509			474			2			2	761	39	10
399													
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1				
Volume Total	246	1021	553	43	854	489	29	80	211				
Volume Left	246	0	0	43	0	0	13	0	61				
Volume Right	0	0	43	0	0	62	0	80	148				
cSH	509	1700	1700	474	1700	1700	2	761	124				
Volume to Capacity	0.48	0.60	0.33	0.09	0.50	0.29	14.41	0.11	1.70				
Queue Length 95th (ft)	65	0	0	7	0	0	Err	9	396				
Control Delay (s)	18.5	0.0	0.0	13.4	0.0	0.0	Err	10.3	407.8				
Lane LOS	C			B			F	B	F				
Approach Delay (s)	2.5			0.4			2667.8		407.8				
Approach LOS							F		F				
Intersection Summary													
Average Delay			108.3										
Intersection Capacity Utilization			65.7%			ICU Level of Service				C			
Analysis Period (min)			15										

HCM Unsignalized Intersection Capacity Analysis

8: Ferry Drive/Driveway & US 21 Sea Island Pkwy


















2038 No Build
PM Peak Hour

														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations														
Traffic Volume (veh/h)	86	1422	11	10	1181	70	4	4	25	127	1	57		
Future Volume (Veh/h)	86	1422	11	10	1181	70	4	4	25	127	1	57		
Sign Control	Free			Free			Stop			Stop				
Grade	0%			0%			0%			0%				
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly flow rate (vph)	96	1580	12	11	1312	78	4	4	28	141	1	63		
Pedestrians														
Lane Width (ft)														
Walking Speed (ft/s)														
Percent Blockage														
Right turn flare (veh)														
Median type	TWLTL			TWLTL										
Median storage veh	2			2										
Upstream signal (ft)	1208													
pX, platoon unblocked				0.78			0.78			0.78	0.78	0.78		
vC, conflicting volume	1390			1592			2520			3190	796	2385	3157	695
vC1, stage 1 conf vol							1778			1778		1373	1373	
vC2, stage 2 conf vol							742			1412		1012	1784	
vCu, unblocked vol	1390			1202			2386			3243	185	2214	3201	695
tC, single (s)	4.1			4.1			7.5			6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5			5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5			4.0	3.3	3.5	4.0	3.3
p0 queue free %	80			98			95			95	96	0	99	84
cM capacity (veh/h)	488			451			78			74	646	129	93	385
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1	SB 2					
Volume Total	96	1053	539	11	875	515	36	142	63					
Volume Left	96	0	0	11	0	0	4	141	0					
Volume Right	0	0	12	0	0	78	28	0	63					
cSH	488	1700	1700	451	1700	1700	242	129	385					
Volume to Capacity	0.20	0.62	0.32	0.02	0.51	0.30	0.15	1.10	0.16					
Queue Length 95th (ft)	18	0	0	2	0	0	13	204	14					
Control Delay (s)	14.2	0.0	0.0	13.2	0.0	0.0	22.4	174.8	16.2					
Lane LOS	B			B			C	F	C					
Approach Delay (s)	0.8			0.1			22.4	126.1						
Approach LOS							C	F						
Intersection Summary														
Average Delay	8.5													
Intersection Capacity Utilization	66.7%			ICU Level of Service			C							
Analysis Period (min)	15													

HCM Unsignalized Intersection Capacity Analysis

9: Gay Dr & US 21 Sea Island Pkwy
























2038 No Build
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	1584	5	4	1268	0	9	0	1	0	0	2
Future Volume (Veh/h)	2	1584	5	4	1268	0	9	0	1	0	0	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	2	1760	6	4	1409	0	10	0	1	0	0	2
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLT			None							
Median storage veh)		2										
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1409			1766			2482	3184	883	2302	3187	704
vC1, stage 1 conf vol							1767	1767		1417	1417	
vC2, stage 2 conf vol							714	1417		885	1770	
vCu, unblocked vol	1409			1766			2482	3184	883	2302	3187	704
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			88	100	100	100	100	99
cM capacity (veh/h)	480			349			82	106	289	125	104	379
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1					
Volume Total	882	886	4	939	470	11	2					
Volume Left	2	0	4	0	0	10	0					
Volume Right	0	6	0	0	0	1	2					
cSH	480	1700	349	1700	1700	88	379					
Volume to Capacity	0.00	0.52	0.01	0.55	0.28	0.13	0.01					
Queue Length 95th (ft)	0	0	1	0	0	10	0					
Control Delay (s)	0.1	0.0	15.4	0.0	0.0	51.8	14.5					
Lane LOS	A		C			F	B					
Approach Delay (s)	0.1		0.0			51.8	14.5					
Approach LOS						F	B					
Intersection Summary												
Average Delay			0.2									
Intersection Capacity Utilization			59.2%		ICU Level of Service		B					
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

10: Cougar Dr & US 21 Sea Island Pkwy

2038 No Build
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (veh/h)	7	1552	2	4	1222	2	9	0	5	6	0	25
Future Volume (Veh/h)	7	1552	2	4	1222	2	9	0	5	6	0	25
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	8	1724	2	4	1358	2	10	0	6	7	0	28
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None				None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1360			1726			2428	3109	863	2251	3109	680
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1360			1726			2428	3109	863	2251	3109	680
tC, single (s)	4.8			4.1			7.5	6.5	7.9	7.9	6.5	7.1
tC, 2 stage (s)												
tF (s)	2.5			2.2			3.5	4.0	3.8	3.7	4.0	3.4
p0 queue free %	98			99			33	100	97	59	100	93
cM capacity (veh/h)	366			362			15	11	217	17	11	375
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	8	1149	577	4	905	455	16	35				
Volume Left	8	0	0	4	0	0	10	7				
Volume Right	0	0	2	0	0	2	6	28				
cSH	366	1700	1700	362	1700	1700	23	85				
Volume to Capacity	0.02	0.68	0.34	0.01	0.53	0.27	0.70	0.41				
Queue Length 95th (ft)	2	0	0	1	0	0	51	42				
Control Delay (s)	15.1	0.0	0.0	15.1	0.0	0.0	325.5	77.1				
Lane LOS	C			C			F	F				
Approach Delay (s)	0.1			0.0			325.5	77.1				
Approach LOS							F	F				
Intersection Summary												
Average Delay	2.6											
Intersection Capacity Utilization	57.1%			ICU Level of Service				B				
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis

11: Lost Island Rd & US 21 Sea Island Pkwy

2038 No Build
PM Peak Hour














	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗		↖↑		↗
Traffic Volume (veh/h)	1545	24	0	1222	0	6
Future Volume (Veh/h)	1545	24	0	1222	0	6
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1717	27	0	1358	0	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLT			TWLT		
Median storage (veh)	2			2		
Upstream signal (ft)				612		
pX, platoon unblocked					0.79	
vC, conflicting volume			1744		2396	1717
vC1, stage 1 conf vol					1717	
vC2, stage 2 conf vol					679	
vCu, unblocked vol			1744		2238	1717
tC, single (s)			4.1		7.0	6.9
tC, 2 stage (s)					6.0	
tF (s)			2.2		3.6	3.3
p0 queue free %			100		100	91
cM capacity (veh/h)			356		115	79
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	1717	27	453	905	7	
Volume Left	0	0	0	0	0	
Volume Right	0	27	0	0	7	
cSH	1700	1700	356	1700	79	
Volume to Capacity	1.01	0.02	0.00	0.53	0.09	
Queue Length 95th (ft)	0	0	0	0	7	
Control Delay (s)	0.0	0.0	0.0	0.0	55.0	
Lane LOS					F	
Approach Delay (s)	0.0		0.0		55.0	
Approach LOS					F	
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			91.3%		ICU Level of Service	F
Analysis Period (min)			15			

Timings

12: New Frontage Rd/Airport Cir & US 21 Sea Island Pkwy

2038 No Build

PM Peak Hour

								
Lane Group	EBL	EBT	WBL	WBT	NBL	SBL	SBT	Ø2
Lane Configurations								
Traffic Volume (vph)	249	1283	9	1027	26	207	0	
Future Volume (vph)	249	1283	9	1027	26	207	0	
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	pm+pt	NA	
Protected Phases	7	4	3	8	5	1	6	2
Permitted Phases	4		8		2	6		
Detector Phase	7	4	3	8	5	1	6	
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	22.5	9.5	22.5	22.5	22.5
Total Split (s)	22.0	95.0	9.5	82.5	9.6	22.5	35.9	23.0
Total Split (%)	14.7%	63.3%	6.3%	55.0%	6.4%	15.0%	23.9%	15%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Min	Min	Min
Act Effct Green (s)	91.8	91.8		74.6	10.6	27.0	21.3	
Actuated g/C Ratio	0.72	0.72		0.58	0.08	0.21	0.17	
v/c Ratio	0.77	1.07		0.74	0.23	0.76	0.48	
Control Delay	25.8	64.1		23.9	46.8	62.7	12.4	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	
Total Delay	25.8	64.1		23.9	46.8	62.7	12.4	
LOS	C	E		C	D	E	B	
Approach Delay		57.9		23.9			38.9	
Approach LOS		E		C			D	

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 127.8

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.07

Intersection Signal Delay: 43.5









Intersection LOS: D

Intersection Capacity Utilization 126.8%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 12: New Frontage Rd/Airport Cir & US 21 Sea Island Pkwy







 Ø1	 Ø2	 Ø3	 Ø4
22.5 s	23 s	9.5 s	95 s
 Ø5	 Ø6	 Ø7	 Ø8
9.6 s	35.9 s	22 s	82.5 s

Queues

2038 No Build

12: New Frontage Rd/Airport Cir & US 21 Sea Island Pkwy

PM Peak Hour

						
Lane Group	EBL	EBT	WBT	NBL	SBL	SBT
Lane Group Flow (vph)	277	1426	1152	28	230	206
v/c Ratio	0.77	1.07	0.74	0.23	0.76	0.48
Control Delay	25.8	64.1	23.9	46.8	62.7	12.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.8	64.1	23.9	46.8	62.7	12.4
Queue Length 50th (ft)	71	~1312	355	19	172	8
Queue Length 95th (ft)	160	#1620	490	47	#296	84
Internal Link Dist (ft)		532	413			381
Turn Bay Length (ft)	375				250	
Base Capacity (vph)	414	1337	1625	121	311	536
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.67	1.07	0.71	0.23	0.74	0.38

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.






















Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

12: New Frontage Rd/Airport Cir & US 21 Sea Island Pkwy

2038 No Build

PM Peak Hour










												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	249	1283	0	9	1027	1	26	0	0	207	0	185
Future Volume (vph)	249	1283	0	9	1027	1	26	0	0	207	0	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5		4.5			4.5	4.5	
Lane Util. Factor	1.00	1.00			0.95		1.00			1.00	1.00	
Frt	1.00	1.00			1.00		1.00			1.00	0.85	
Flt Protected	0.95	1.00			1.00		0.95			0.95	1.00	
Satd. Flow (prot)	1770	1863			3537		1770			1770	1583	
Flt Permitted	0.16	1.00			0.75		0.63			0.47	1.00	
Satd. Flow (perm)	297	1863			2662		1171			873	1583	
Peak-hour factor, PHF	0.90	0.90	0.92	0.92	0.90	0.90	0.92	0.92	0.92	0.90	0.92	0.90
Adj. Flow (vph)	277	1426	0	10	1141	1	28	0	0	230	0	206
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	163	0
Lane Group Flow (vph)	277	1426	0	0	1152	0	28	0	0	230	43	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt			pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	91.7	91.7			74.6		10.3			28.8	21.3	
Effective Green, g (s)	91.7	91.7			74.6		10.3			28.8	21.3	
Actuated g/C Ratio	0.71	0.71			0.58		0.08			0.22	0.16	
Clearance Time (s)	4.5	4.5			4.5		4.5			4.5	4.5	
Vehicle Extension (s)	3.0	3.0			3.0		3.0			3.0	3.0	
Lane Grp Cap (vph)	353	1319			1533		107			311	260	
v/s Ratio Prot	0.08	c0.77					0.01			c0.10	0.03	
v/s Ratio Perm	0.48				0.43		0.01			c0.07		
v/c Ratio	0.78	1.08			0.75		0.26			0.74	0.17	
Uniform Delay, d1	14.1	18.9			20.5		55.7			45.1	46.5	
Progression Factor	1.00	1.00			1.00		1.00			1.00	1.00	
Incremental Delay, d2	10.9	49.8			2.1		1.3			8.9	0.3	
Delay (s)	25.0	68.7			22.6		57.0			54.0	46.8	
Level of Service	C	E			C		E			D	D	
Approach Delay (s)		61.6			22.6			57.0			50.6	
Approach LOS		E			C			E			D	
Intersection Summary												
HCM 2000 Control Delay			46.6				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			1.07									
Actuated Cycle Length (s)			129.5				Sum of lost time (s)			18.0		
Intersection Capacity Utilization			126.8%				ICU Level of Service			H		
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

13: Old Distant Island Rd & US 21 Sea Island Pkwy

2038 No Build
PM Peak Hour














						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1329	12	4	980	9	6
Future Volume (Veh/h)	1329	12	4	980	9	6
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1477	13	4	1089	10	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLT			TWLT		
Median storage veh)	2			2		
Upstream signal (ft)				1133		
pX, platoon unblocked					0.23	
vC, conflicting volume			1490		2580	1484
vC1, stage 1 conf vol					1484	
vC2, stage 2 conf vol					1097	
vCu, unblocked vol			1490		6139	1484
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			99		93	95
cM capacity (veh/h)			451		144	153
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	1490	1093	17			
Volume Left	0	4	10			
Volume Right	13	0	7			
cSH	1700	451	148			
Volume to Capacity	0.88	0.01	0.12			
Queue Length 95th (ft)	0	1	10			
Control Delay (s)	0.0	0.4	32.6			
Lane LOS		A	D			
Approach Delay (s)	0.0	0.4	32.6			
Approach LOS			D			
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			80.7%	ICU Level of Service		D
Analysis Period (min)			15			

Timings

14: Chowan Creek Bluff/Eustis Landing Rd & US 21 Sea Island Pkwy

2038 No Build

PM Peak Hour

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	50	1248	6	920	59	0	16	2
Future Volume (vph)	50	1248	6	920	59	0	16	2
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	22.5	9.5	22.5	9.5	22.5
Total Split (s)	9.5	108.0	9.5	108.0	9.5	23.0	9.5	23.0
Total Split (%)	6.3%	72.0%	6.3%	72.0%	6.3%	15.3%	6.3%	15.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)		4.5	4.5	4.5		4.5		4.5
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max
Act Effct Green (s)		103.6	105.4	105.4		18.5		18.5
Actuated g/C Ratio		0.78	0.79	0.79		0.14		0.14
v/c Ratio		1.19	0.02	0.69		0.34		0.20
Control Delay		111.6	3.0	9.3		30.5		29.5
Queue Delay		0.0	0.0	0.0		0.0		0.0
Total Delay		111.6	3.0	9.3		30.5		29.5
LOS		F	A	A		C		C
Approach Delay		111.6		9.3		30.5		29.5
Approach LOS		F		A		C		C

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 132.9

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.19

Intersection Signal Delay: 68.2









Intersection LOS: E

Intersection Capacity Utilization 125.5%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 14: Chowan Creek Bluff/Eustis Landing Rd & US 21 Sea Island Pkwy

 Ø1	 Ø2	 Ø3	 Ø4
9.5 s	23 s	9.5 s	108 s
 Ø5	 Ø6	 Ø7	 Ø8
9.5 s	23 s	9.5 s	108 s

Queues

2038 No Build

14: Chowan Creek Bluff/Eustis Landing Rd & US 21 Sea Island Pkwy

PM Peak Hour

	→	↘	←	↑	↓
Lane Group	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	1510	7	1024	78	48
v/c Ratio	1.19	0.02	0.69	0.34	0.20
Control Delay	111.6	3.0	9.3	30.5	29.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	111.6	3.0	9.3	30.5	29.5
Queue Length 50th (ft)	~1534	1	340	26	15
Queue Length 95th (ft)	#2004	4	460	81	56
Internal Link Dist (ft)	1053		490	351	331
Turn Bay Length (ft)		290			
Base Capacity (vph)	1270	301	1476	228	237
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.19	0.02	0.69	0.34	0.20


















Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

14: Chowan Creek Bluff/Eustis Landing Rd & US 21 Sea Island Pkwy





















2038 No Build
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	1248	60	6	920	2	59	0	11	16	2	25
Future Volume (vph)	50	1248	60	6	920	2	59	0	11	16	2	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5			4.5			4.5	
Lane Util. Factor		1.00		1.00	1.00			1.00			1.00	
Frt		0.99		1.00	1.00			0.98			0.92	
Flt Protected		1.00		0.95	1.00			0.96			0.98	
Satd. Flow (prot)		1840		1770	1862			1750			1684	
Flt Permitted		0.88		0.17	1.00			0.75			0.89	
Satd. Flow (perm)		1627		311	1862			1370			1532	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	56	1387	67	7	1022	2	66	0	12	18	2	28
RTOR Reduction (vph)	0	1	0	0	0	0	0	38	0	0	24	0
Lane Group Flow (vph)	0	1509	0	7	1024	0	0	40	0	0	24	0
Heavy Vehicles (%)	13%	2%	3%	2%	2%	2%	2%	7%	2%	2%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		103.6		109.0	109.0			18.5			18.5	
Effective Green, g (s)		103.6		109.0	109.0			18.5			18.5	
Actuated g/C Ratio		0.76		0.80	0.80			0.14			0.14	
Clearance Time (s)		4.5		4.5	4.5			4.5			4.5	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		1234		257	1486			185			207	
v/s Ratio Prot				0.00	c0.55							
v/s Ratio Perm		c0.93		0.02				c0.03			0.02	
v/c Ratio		1.22		0.03	0.69			0.22			0.11	
Uniform Delay, d1		16.5		4.9	6.2			52.5			51.8	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		107.7		0.0	1.4			0.6			0.2	
Delay (s)		124.2		4.9	7.5			53.1			52.1	
Level of Service		F		A	A			D			D	
Approach Delay (s)		124.2			7.5			53.1			52.1	
Approach LOS		F			A			D			D	
Intersection Summary												
HCM 2000 Control Delay			75.7			HCM 2000 Level of Service				E		
HCM 2000 Volume to Capacity ratio			1.12									
Actuated Cycle Length (s)			136.5			Sum of lost time (s)			18.0			
Intersection Capacity Utilization			125.5%			ICU Level of Service			H			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

15: US 21 Lady's Island Rd & Rue Du Bois/Driveway










2038 No Build
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	1	70	16	1	42	49	1786	15	17	1478	29
Future Volume (Veh/h)	37	1	70	16	1	42	49	1786	15	17	1478	29
Sign Control	Stop				Stop				Free			
Grade	0%				0%				0%			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	41	1	78	18	1	47	54	1984	17	19	1642	32
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None								TWLTL			
Median storage veh									2			
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2828	3789	821	3038	3812	1000	1674			2001		
vC1, stage 1 conf vol	1680	1680		2100	2100							
vC2, stage 2 conf vol	1148	2109		938	1712							
vCu, unblocked vol	2828	3789	821	3038	3812	1000	1674			2001		
tC, single (s)	7.6	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)	6.6	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	41	98	75	57	98	81	85			93		
cM capacity (veh/h)	69	51	318	42	53	241	366			283		
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4		
Volume Total	42	78	66	54	1323	678	19	821	821	32		
Volume Left	41	0	18	54	0	0	19	0	0	0		
Volume Right	0	78	47	0	0	17	0	0	0	32		
cSH	69	318	102	366	1700	1700	283	1700	1700	1700		
Volume to Capacity	0.61	0.25	0.65	0.15	0.78	0.40	0.07	0.48	0.48	0.02		
Queue Length 95th (ft)	66	24	80	13	0	0	5	0	0	0		
Control Delay (s)	118.7	20.0	89.6	16.5	0.0	0.0	18.7	0.0	0.0	0.0		
Lane LOS	F	C	F	C				C				
Approach Delay (s)	54.5		89.6	0.4				0.2				
Approach LOS	F		F									
Intersection Summary												
Average Delay	3.5											
Intersection Capacity Utilization	66.7%			ICU Level of Service					C			
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis

16: US 21 Lady's Island Rd & Hazel Farm Rd




















2038 No Build
PM Peak Hour

						
Movement	WBL	WBR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (veh/h)	9	0	1864	0	1	1528
Future Volume (Veh/h)	9	0	1864	0	1	1528
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	10	0	2071	0	1	1698
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL		TWLTL	
Median storage veh)			2		2	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2922	1036			2071	
vC1, stage 1 conf vol	2071					
vC2, stage 2 conf vol	851					
vCu, unblocked vol	2922	1036			2071	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	87	100			100	
cM capacity (veh/h)	79	229			265	
Direction, Lane #	WB 1	NE 1	NE 2	SW 1	SW 2	
Volume Total	10	1381	690	567	1132	
Volume Left	10	0	0	1	0	
Volume Right	0	0	0	0	0	
cSH	79	1700	1700	265	1700	
Volume to Capacity	0.13	0.81	0.41	0.00	0.67	
Queue Length 95th (ft)	10	0	0	0	0	
Control Delay (s)	57.2	0.0	0.0	0.1	0.0	
Lane LOS	F			A		
Approach Delay (s)	57.2	0.0		0.0		
Approach LOS	F					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			61.5%	ICU Level of Service		B
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

17: US 21 Lady's Island Rd & Ferry Rd











2038 No Build
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	1	0	9	98	0	63	6	1735	91	122	1422	4
Future Volume (Veh/h)	1	0	9	98	0	63	6	1735	91	122	1422	4
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1	0	10	109	0	70	7	1928	101	136	1580	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)	5			5								
Median type							TWLTL			TWLTL		
Median storage (veh)							2			2		
Upstream signal (ft)										1003		
pX, platoon unblocked												
vC, conflicting volume	2867	3897	792	3054	3848	1014	1584				2029	
vC1, stage 1 conf vol	1854	1854		1992	1992							
vC2, stage 2 conf vol	1013	2043		1062	1856							
vCu, unblocked vol	2867	3897	792	3054	3848	1014	1584				2029	
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1				4.1	
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2	
p0 queue free %	96	100	97	0	100	70	98				51	
cM capacity (veh/h)	27	2	332	51	46	236	411				276	
Direction, Lane #	EB 1	WB 1	NE 1	NE 2	SW 1	SW 2	SW 3					
Volume Total	11	179	971	1065	136	1053	531					
Volume Left	1	109	7	0	136	0	0					
Volume Right	10	70	0	101	0	0	4					
cSH	296	75	411	1700	276	1700	1700					
Volume to Capacity	0.04	2.37	0.02	0.63	0.49	0.62	0.31					
Queue Length 95th (ft)	3	423	1	0	64	0	0					
Control Delay (s)	27.8	744.2	0.6	0.0	30.1	0.0	0.0					
Lane LOS	D	F	A		D							
Approach Delay (s)	27.8	744.2	0.3		2.4							
Approach LOS	D	F										
Intersection Summary												
Average Delay	35.0											
Intersection Capacity Utilization	112.6%			ICU Level of Service					H			
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis

18: SC 802 Sams Point Rd & Sams Point Way

















2038 No Build
PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	16	253	1842	29	105	1408
Future Volume (Veh/h)	16	253	1842	29	105	1408
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	18	281	2047	32	117	1564
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLT		TWLT	
Median storage (veh)			2		2	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	3079	1040			2079	
vC1, stage 1 conf vol	2063					
vC2, stage 2 conf vol	1016					
vCu, unblocked vol	3079	1040			2079	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	75	0			56	
cM capacity (veh/h)	72	227			263	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	299	1365	714	117	782	782
Volume Left	18	0	0	117	0	0
Volume Right	281	0	32	0	0	0
cSH	201	1700	1700	263	1700	1700
Volume to Capacity	1.49	0.80	0.42	0.44	0.46	0.46
Queue Length 95th (ft)	459	0	0	54	0	0
Control Delay (s)	287.5	0.0	0.0	29.1	0.0	0.0
Lane LOS	F			D		
Approach Delay (s)	287.5	0.0		2.0		
Approach LOS	F					
Intersection Summary						
Average Delay			22.0			
Intersection Capacity Utilization			84.2%		ICU Level of Service	E
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

19: SC 802 Sams Point Rd & Ashland Park Rd/Driveway



















2038 No Build
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	0	11	0	0	0	19	2082	0	0	1550	5
Future Volume (Veh/h)	7	0	11	0	0	0	19	2082	0	0	1550	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	8	0	12	0	0	0	21	2313	0	0	1722	6
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh								2			2	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2924	4080	864	3228	4083	1156	1728			2313		
vC1, stage 1 conf vol	1725	1725		2355	2355							
vC2, stage 2 conf vol	1198	2355		873	1728							
vCu, unblocked vol	2924	4080	864	3228	4083	1156	1728			2313		
tC, single (s)	7.5	6.5	7.1	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.4	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	90	100	96	100	100	100	94			100		
cM capacity (veh/h)	79	55	280	33	53	190	361			213		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	20	0	1178	1156	861	867						
Volume Left	8	0	21	0	0	0						
Volume Right	12	0	0	0	0	6						
cSH	138	1700	361	1700	213	1700						
Volume to Capacity	0.14	0.00	0.06	0.68	0.00	0.51						
Queue Length 95th (ft)	12	0	5	0	0	0						
Control Delay (s)	35.3	0.0	3.1	0.0	0.0	0.0						
Lane LOS	E	A	A									
Approach Delay (s)	35.3	0.0	1.5		0.0							
Approach LOS	E	A										
Intersection Summary												
Average Delay			1.1									
Intersection Capacity Utilization			80.9%		ICU Level of Service					D		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

20: SC 802 Sams Point Rd & Miller Dr W/Miller Dr E

2038 No Build
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	7	45	16	1	1	24	1998	55	2	1451	50
Future Volume (Veh/h)	40	7	45	16	1	1	24	1998	55	2	1451	50
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	44	8	50	18	1	1	27	2220	61	2	1612	56
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLT			TWLT	
Median storage veh								2			2	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2810	3979	834	3168	3976	1140	1668			2281		
vC1, stage 1 conf vol	1644	1644		2304	2304							
vC2, stage 2 conf vol	1166	2335		864	1672							
vCu, unblocked vol	2810	3979	834	3168	3976	1140	1668			2281		
tC, single (s)	7.5	6.5	7.0	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	49	85	84	48	98	99	93			99		
cM capacity (veh/h)	86	55	309	35	55	194	381			219		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	102	20	27	1480	801	2	1075	593				
Volume Left	44	18	27	0	0	2	0	0				
Volume Right	50	1	0	0	61	0	0	56				
cSH	124	37	381	1700	1700	219	1700	1700				
Volume to Capacity	0.82	0.54	0.07	0.87	0.47	0.01	0.63	0.35				
Queue Length 95th (ft)	123	47	6	0	0	1	0	0				
Control Delay (s)	104.3	183.8	15.2	0.0	0.0	21.6	0.0	0.0				
Lane LOS	F	F	C			C						
Approach Delay (s)	104.3	183.8	0.2			0.0						
Approach LOS	F	F										
Intersection Summary												
Average Delay			3.6									
Intersection Capacity Utilization			68.6%		ICU Level of Service					C		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

21: Taco Bell Driveway & US 21 Sea Island Pkwy

2038 No Build
PM Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗		↑↑		↗
Traffic Volume (veh/h)	1551	12	0	1228	0	7
Future Volume (Veh/h)	1551	12	0	1228	0	7
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1686	13	0	1335	0	8
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			TWLTL		
Median storage veh				2		
Upstream signal (ft)				905		
pX, platoon unblocked					0.79	
vC, conflicting volume			1699		2354	1686
vC1, stage 1 conf vol					1686	
vC2, stage 2 conf vol					668	
vCu, unblocked vol			1699		2185	1686
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	90
cM capacity (veh/h)			371		130	83
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	1686	13	668	668	8	
Volume Left	0	0	0	0	0	
Volume Right	0	13	0	0	8	
cSH	1700	1700	1700	1700	83	
Volume to Capacity	0.99	0.01	0.39	0.39	0.10	
Queue Length 95th (ft)	0	0	0	0	8	
Control Delay (s)	0.0	0.0	0.0	0.0	53.0	
Lane LOS					F	
Approach Delay (s)	0.0		0.0		53.0	
Approach LOS					F	
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			91.6%		ICU Level of Service	F
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

22: US 21 Sea Island Pkwy & Walmart Driveway #3

2038 No Build
PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	162	1328	941	81	43	86
Future Volume (Veh/h)	162	1328	941	81	43	86
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	176	1443	1023	88	47	93
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						7
Median type		TWLTL	TWLTL			
Median storage (veh)		2	2			
Upstream signal (ft)		493				
pX, platoon unblocked					0.19	
vC, conflicting volume	1111				2818	1023
vC1, stage 1 conf vol					1023	
vC2, stage 2 conf vol					1795	
vCu, unblocked vol	1111				8420	1023
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	72				0	67
cM capacity (veh/h)	629				4	286
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	176	1443	1023	88	140	
Volume Left	176	0	0	0	47	
Volume Right	0	0	0	88	93	
cSH	629	1700	1700	1700	13	
Volume to Capacity	0.28	0.85	0.60	0.05	11.06	
Queue Length 95th (ft)	29	0	0	0	Err	
Control Delay (s)	12.9	0.0	0.0	0.0	Err	
Lane LOS	B				F	
Approach Delay (s)	1.4		0.0		Err	
Approach LOS					F	
Intersection Summary						
Average Delay			488.5			
Intersection Capacity Utilization			79.9%	ICU Level of Service		D
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

23: US 21 Sea Island Pkwy & Walmart Driveway #4

2038 No Build
PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↗		↗
Traffic Volume (veh/h)	0	1371	979	41	0	43
Future Volume (Veh/h)	0	1371	979	41	0	43
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1490	1064	45	0	47
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh		2	2			
Upstream signal (ft)		897				
pX, platoon unblocked					0.21	
vC, conflicting volume	1109				2554	1064
vC1, stage 1 conf vol					1064	
vC2, stage 2 conf vol					1490	
vCu, unblocked vol	1109				6493	1064
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	83
cM capacity (veh/h)	630				44	271
Direction, Lane #	EB 1	WB 1	WB 2	SB 1		
Volume Total	1490	1064	45	47		
Volume Left	0	0	0	0		
Volume Right	0	0	45	47		
cSH	1700	1700	1700	271		
Volume to Capacity	0.88	0.63	0.03	0.17		
Queue Length 95th (ft)	0	0	0	15		
Control Delay (s)	0.0	0.0	0.0	21.1		
Lane LOS				C		
Approach Delay (s)	0.0	0.0		21.1		
Approach LOS				C		
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			75.5%	ICU Level of Service		D
Analysis Period (min)			15			

Intersection Sign configuration not allowed in HCM analysis.


















APPENDIX E

2038 BUILD SYNCHRO RESULTS

HCM Unsignalized Intersection Capacity Analysis

1: Meridian Rd/Driveway & US 21 Sea Island Pkwy



















2038 Build
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	854	42	64	1416	2	59	0	43	0	0	1
Future Volume (Veh/h)	1	854	42	64	1416	2	59	0	43	0	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1	949	47	71	1573	2	66	0	48	0	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLT			None							
Median storage veh		2										
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1575			996			2690	2692	972	2738	2714	1574
vC1, stage 1 conf vol							974	974		1716	1716	
vC2, stage 2 conf vol							1716	1717		1022	998	
vCu, unblocked vol	1575			996			2690	2692	972	2738	2714	1574
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			90			29	100	84	100	100	99
cM capacity (veh/h)	418			695			93	117	306	84	112	135
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1							
Volume Total	997	71	1575	114	1							
Volume Left	1	71	0	66	0							
Volume Right	47	0	2	48	1							
cSH	418	695	1700	131	135							
Volume to Capacity	0.00	0.10	0.93	0.87	0.01							
Queue Length 95th (ft)	0	9	0	139	1							
Control Delay (s)	0.1	10.8	0.0	110.7	31.8							
Lane LOS	A	B		F	D							
Approach Delay (s)	0.1	0.5		110.7	31.8							
Approach LOS				F	D							
Intersection Summary												
Average Delay			4.9									
Intersection Capacity Utilization			93.9%		ICU Level of Service				F			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

















2: Geechie Rd/Driveway & US 21 Sea Island Pkwy

2038 Build
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	820	61	0	1499	0	0	0	0	0	0	1
Future Volume (Veh/h)	0	820	61	0	1499	0	0	0	0	0	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	911	68	0	1666	0	0	0	0	0	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	TWLTL				None							
Median storage veh	2											
Upstream signal (ft)	497											
pX, platoon unblocked	0.44						0.44	0.44		0.44	0.44	0.44
vC, conflicting volume	1666			979			2578	2577	911	2577	2645	1666
vC1, stage 1 conf vol							911	911		1666	1666	
vC2, stage 2 conf vol							1667	1666		911	979	
vCu, unblocked vol	1874			979			3931	3929	911	3929	4082	1874
tC, single (s)	4.1			4.1			7.1	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	97
cM capacity (veh/h)	142			705			38	51	327	39	51	40
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1							
Volume Total	911	68	1666	0	1							
Volume Left	0	0	0	0	0							
Volume Right	0	68	0	0	1							
cSH	142	1700	1700	1700	40							
Volume to Capacity	0.00	0.04	0.98	0.00	0.03							
Queue Length 95th (ft)	0	0	0	0	2							
Control Delay (s)	0.0	0.0	0.0	0.0	98.1							
Lane LOS				A	F							
Approach Delay (s)	0.0		0.0	0.0	98.1							
Approach LOS				A	F							
Intersection Summary												
Average Delay			0.0									
Intersection Capacity Utilization			88.9%	ICU Level of Service					E			
Analysis Period (min)			15									

Timings 3: Driveway/Sunset Blvd & US 21 Sea Island Pkwy

2038 Build
AM Peak Hour







									
Lane Group	EBL	EBT	WBL	WBT	NEL	NET	SWL	SWT	SWR
Lane Configurations									
Traffic Volume (vph)	213	578	165	976	46	4	19	7	616
Future Volume (vph)	213	578	165	976	46	4	19	7	616
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	NA	pm+ov
Protected Phases	5	2	1	6		4		8	5
Permitted Phases	2		6		4		8		8
Detector Phase	5	2	1	6	4	4	8	8	5
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5	9.5
Total Split (s)	33.0	93.5	14.0	74.5	22.5	22.5	22.5	22.5	33.0
Total Split (%)	25.4%	71.9%	10.8%	57.3%	17.3%	17.3%	17.3%	17.3%	25.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5		4.5		4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lag					Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					Yes
Recall Mode	None	Min	None	Min	None	None	None	None	None
Act Effct Green (s)	103.1	90.7	78.1	70.1		12.6		12.6	45.6
Actuated g/C Ratio	0.83	0.73	0.63	0.56		0.10		0.10	0.37
v/c Ratio	0.51	0.50	0.34	1.06		0.71		0.24	1.09
Control Delay	30.0	9.5	7.4	72.6		56.3		55.8	98.2
Queue Delay	0.0	2.4	0.0	0.0		0.0		0.0	0.0
Total Delay	30.0	11.9	7.4	72.6		56.3		55.8	98.2
LOS	C	B	A	E		E		E	F
Approach Delay		16.6		63.4		56.3		96.4	
Approach LOS		B		E		E		F	

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 124.7
 Natural Cycle: 130
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.09
 Intersection Signal Delay: 56.9
 Intersection Capacity Utilization 108.8%
 Analysis Period (min) 15

Intersection LOS: E
 ICU Level of Service G

Splits and Phases: 3: Driveway/Sunset Blvd & US 21 Sea Island Pkwy








 Ø1	 Ø2	 Ø4
14 s	93.5 s	22.5 s
 Ø5	 Ø6	 Ø8
33 s	74.5 s	22.5 s

Queues

2038 Build

3: Driveway/Sunset Blvd & US 21 Sea Island Pkwy

AM Peak Hour

							
Lane Group	EBL	EBT	WBL	WBT	NET	SWT	SWR
Lane Group Flow (vph)	237	670	183	1105	131	29	684
v/c Ratio	0.51	0.50	0.34	1.06	0.71	0.24	1.09
Control Delay	30.0	9.5	7.4	72.6	56.3	55.8	98.2
Queue Delay	0.0	2.4	0.0	0.0	0.0	0.0	0.0
Total Delay	30.0	11.9	7.4	72.6	56.3	55.8	98.2
Queue Length 50th (ft)	112	207	27	~985	68	22	~582
Queue Length 95th (ft)	208	344	46	#1326	138	53	#814
Internal Link Dist (ft)		417		641	61	384	
Turn Bay Length (ft)	215		150				150
Base Capacity (vph)	465	1347	564	1044	246	172	625
Starvation Cap Reductn	0	524	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.81	0.32	1.06	0.53	0.17	1.09

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.




















95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

3: Driveway/Sunset Blvd & US 21 Sea Island Pkwy


















2038 Build
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	213	578	25	165	976	19	46	4	68	19	7	616
Future Volume (vph)	213	578	25	165	976	19	46	4	68	19	7	616
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	16	12	12
Total Lost time (s)	4.5	4.5		4.5	4.5			4.5			4.5	4.5
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frt	1.00	0.99		1.00	1.00			0.92			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.97	1.00
Satd. Flow (prot)	1770	1851		1770	1857			1647			1798	1583
Flt Permitted	0.05	1.00		0.41	1.00			0.86			0.64	1.00
Satd. Flow (perm)	100	1851		764	1857			1443			1197	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	237	642	28	183	1084	21	51	4	76	21	8	684
RTOR Reduction (vph)	0	1	0	0	0	0	0	40	0	0	0	50
Lane Group Flow (vph)	237	669	0	183	1105	0	0	91	0	0	29	634
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	6%	2%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2		1	6			4			8	5
Permitted Phases	2			6			4			8		8
Actuated Green, G (s)	103.1	90.6		78.1	70.1			12.6			12.6	41.1
Effective Green, g (s)	103.1	90.6		78.1	70.1			12.6			12.6	41.1
Actuated g/C Ratio	0.83	0.73		0.63	0.56			0.10			0.10	0.33
Clearance Time (s)	4.5	4.5		4.5	4.5			4.5			4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	464	1344		543	1043			145			120	578
v/s Ratio Prot	0.12	0.36		0.02	c0.59							c0.25
v/s Ratio Perm	0.31			0.19				0.06			0.02	0.15
v/c Ratio	0.51	0.50		0.34	1.06			0.63			0.24	1.10
Uniform Delay, d1	33.8	7.3		11.4	27.3			53.8			51.6	41.8
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	1.0	0.3		0.4	44.9			8.6			1.0	66.9
Delay (s)	34.7	7.6		11.8	72.2			62.4			52.7	108.7
Level of Service	C	A		B	E			E			D	F
Approach Delay (s)		14.7			63.6			62.4			106.4	
Approach LOS		B			E			E			F	
Intersection Summary												
HCM 2000 Control Delay			59.0			HCM 2000 Level of Service			E			
HCM 2000 Volume to Capacity ratio			1.12									
Actuated Cycle Length (s)			124.7			Sum of lost time (s)			13.5			
Intersection Capacity Utilization			108.8%			ICU Level of Service			G			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

4: Youmans Dr/Driveway & US 21 Sea Island Pkwy

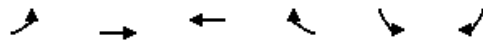
2038 Build
AM Peak Hour

														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR		
Lane Configurations														
Traffic Volume (veh/h)	5	645	7	164	1049	10	10	1	91	0	1	4		
Future Volume (Veh/h)	5	645	7	164	1049	10	10	1	91	0	1	4		
Sign Control	Free			Free			Stop			Stop				
Grade	0%			0%			0%			0%				
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90		
Hourly flow rate (vph)	6	717	8	182	1166	11	11	1	101	0	1	4		
Pedestrians														
Lane Width (ft)														
Walking Speed (ft/s)														
Percent Blockage														
Right turn flare (veh)														
Median type	TWLTL			None										
Median storage veh	2													
Upstream signal (ft)	721													
pX, platoon unblocked				0.84			0.84			0.84	0.84	0.84		
vC, conflicting volume	1177			725			2268			2274	721	2370	2272	1172
vC1, stage 1 conf vol							733			733	1536		1536	
vC2, stage 2 conf vol							1534			1541	834		737	
vCu, unblocked vol	1177			574			2417			2425	570	2539	2423	1172
tC, single (s)	4.1			4.2			7.2			6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)							6.2			5.5	6.1		5.5	
tF (s)	2.2			2.3			3.6			4.0	3.4	3.5	4.0	3.3
p0 queue free %	99			78			88			99	76	100	99	98
cM capacity (veh/h)	593			812			92			122	424	66	115	234
Direction, Lane #	EB 1	WB 1	WB 2	NE 1	SW 1									
Volume Total	731	182	1177	113	5									
Volume Left	6	182	0	11	0									
Volume Right	8	0	11	101	4									
cSH	593	812	1700	309	194									
Volume to Capacity	0.01	0.22	0.69	0.37	0.03									
Queue Length 95th (ft)	1	21	0	41	2									
Control Delay (s)	0.3	10.7	0.0	23.2	24.0									
Lane LOS	A	B		C	C									
Approach Delay (s)	0.3	1.4		23.2	24.0									
Approach LOS				C	C									
Intersection Summary														
Average Delay	2.2													
Intersection Capacity Utilization	113.4%			ICU Level of Service			H							
Analysis Period (min)	15													

HCM Unsignalized Intersection Capacity Analysis

5: US 21 Sea Island Pkwy & Professional Village Cir

2038 Build
AM Peak Hour

























Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔↔	↔↔		↔	↔
Traffic Volume (veh/h)	42	696	1188	55	12	30
Future Volume (Veh/h)	42	696	1188	55	12	30
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	47	773	1320	61	13	33
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)			681			
pX, platoon unblocked	0.80				0.80	0.80
vC, conflicting volume	1381				1831	690
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	968				1533	102
tC, single (s)	4.1				7.0	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.6	3.3
p0 queue free %	92				82	96
cM capacity (veh/h)	564				72	744
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	305	515	880	501	13	33
Volume Left	47	0	0	0	13	0
Volume Right	0	0	0	61	0	33
cSH	564	1700	1700	1700	72	744
Volume to Capacity	0.08	0.30	0.52	0.29	0.18	0.04
Queue Length 95th (ft)	7	0	0	0	15	3
Control Delay (s)	2.8	0.0	0.0	0.0	65.2	10.1
Lane LOS	A				F	B
Approach Delay (s)	1.1		0.0		25.7	
Approach LOS					D	
Intersection Summary						
Average Delay			0.9			
Intersection Capacity Utilization			60.7%		ICU Level of Service	B
Analysis Period (min)			15			

Timings

2038 Build

6: Ladys Island Dr/Sams Point Rd & US 21 Sea Island Pkwy

AM Peak Hour

											
Lane Group	EBL	EBT	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations											
Traffic Volume (vph)	145	429	236	735	225	143	445	170	330	882	443
Future Volume (vph)	145	429	236	735	225	143	445	170	330	882	443
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	pt+ov
Protected Phases	5	2	1	6		3	8	1	7	4	4 5
Permitted Phases	2		6		6	8		8	4		
Detector Phase	5	2	1	6	6	3	8	1	7	4	4 5
Switch Phase											
Minimum Initial (s)	6.0	25.0	6.0	25.0	25.0	6.0	15.0	6.0	6.0	15.0	
Minimum Split (s)	13.3	43.0	13.3	39.0	39.0	12.3	42.3	13.3	13.3	43.3	
Total Split (s)	15.8	43.4	13.6	41.2	41.2	13.4	42.3	13.6	15.7	44.6	
Total Split (%)	13.7%	37.7%	11.8%	35.8%	35.8%	11.7%	36.8%	11.8%	13.7%	38.8%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.3	4.0	4.0	4.3	
All-Red Time (s)	3.3	2.0	3.3	2.0	2.0	2.3	2.0	3.3	2.3	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	7.3	6.0	7.3	6.0	6.0	6.3	6.3	7.3	6.3	6.3	
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	Min	None	Max	Max	None	None	None	None	Max	
Act Effct Green (s)	44.6	37.4	40.2	35.2	35.2	43.1	36.0	48.6	47.7	38.3	54.1
Actuated g/C Ratio	0.39	0.33	0.35	0.31	0.31	0.37	0.31	0.42	0.41	0.33	0.47
v/c Ratio	0.75	0.53	0.95	0.75	0.42	0.91	0.45	0.25	1.03	0.83	0.62
Control Delay	44.1	32.0	74.5	41.3	7.0	74.3	33.2	6.5	83.2	42.8	22.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.1	32.0	74.5	41.3	7.0	74.3	33.2	6.5	83.2	42.8	22.5
LOS	D	C	E	D	A	E	C	A	F	D	C
Approach Delay		34.6		41.4			35.0			45.4	
Approach LOS		C		D			C			D	

Intersection Summary

Cycle Length: 115

Actuated Cycle Length: 115

Natural Cycle: 115

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.03

Intersection Signal Delay: 40.7









Intersection LOS: D

Intersection Capacity Utilization 87.8%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 6: Ladys Island Dr/Sams Point Rd & US 21 Sea Island Pkwy












 Ø1	 Ø2	 Ø3	 Ø4
13.6 s	43.4 s	13.4 s	44.6 s
 Ø5	 Ø6	 Ø7	 Ø8
15.8 s	41.2 s	15.7 s	42.3 s

Queues

2038 Build

6: Ladys Island Dr/Sams Point Rd & US 21 Sea Island Pkwy

AM Peak Hour

											
Lane Group	EBL	EBT	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Group Flow (vph)	161	601	262	817	250	159	494	189	367	980	492
v/c Ratio	0.75	0.53	0.95	0.75	0.42	0.91	0.45	0.25	1.03	0.83	0.62
Control Delay	44.1	32.0	74.5	41.3	7.0	74.3	33.2	6.5	83.2	42.8	22.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.1	32.0	74.5	41.3	7.0	74.3	33.2	6.5	83.2	42.8	22.5
Queue Length 50th (ft)	73	180	127	286	7	70	153	17	~193	350	218
Queue Length 95th (ft)	#151	237	#280	361	69	#198	204	62	#403	435	333
Internal Link Dist (ft)		376		679			587			657	
Turn Bay Length (ft)	200		350		200	350		550	460		350
Base Capacity (vph)	215	1133	275	1083	601	174	1097	755	358	1178	791
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.53	0.95	0.75	0.42	0.91	0.45	0.25	1.03	0.83	0.62

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.
























95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

6: Ladys Island Dr/Sams Point Rd & US 21 Sea Island Pkwy





















2038 Build
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	145	429	112	236	735	225	143	445	170	330	882	443
Future Volume (vph)	145	429	112	236	735	225	143	445	170	330	882	443
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.3	6.0		7.3	6.0	6.0	6.3	6.3	7.3	6.3	6.3	6.3
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1752	3423		1770	3539	1429	1770	3505	1583	1736	3539	1583
Flt Permitted	0.15	1.00		0.32	1.00	1.00	0.11	1.00	1.00	0.36	1.00	1.00
Satd. Flow (perm)	274	3423		604	3539	1429	209	3505	1583	651	3539	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	161	477	124	262	817	250	159	494	189	367	980	492
RTOR Reduction (vph)	0	20	0	0	0	164	0	0	94	0	0	47
Lane Group Flow (vph)	161	581	0	262	817	86	159	494	95	367	980	445
Heavy Vehicles (%)	3%	2%	3%	2%	2%	13%	2%	3%	2%	4%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	pt+ov
Protected Phases	5	2		1	6		3	8	1	7	4	4 5
Permitted Phases	2			6		6	8		8	4		
Actuated Green, G (s)	45.9	37.4		41.5	35.2	35.2	43.1	36.0	42.3	47.7	38.3	53.1
Effective Green, g (s)	45.9	37.4		41.5	35.2	35.2	43.1	36.0	42.3	47.7	38.3	53.1
Actuated g/C Ratio	0.40	0.33		0.36	0.31	0.31	0.37	0.31	0.37	0.41	0.33	0.46
Clearance Time (s)	7.3	6.0		7.3	6.0	6.0	6.3	6.3	7.3	6.3	6.3	
Vehicle Extension (s)	3.0	3.5		3.0	3.5	3.5	3.0	3.5	3.0	3.0	3.5	
Lane Grp Cap (vph)	218	1113		281	1083	437	174	1097	582	358	1178	730
v/s Ratio Prot	0.05	0.17		0.05	0.23		0.06	0.14	0.01	c0.08	0.28	c0.28
v/s Ratio Perm	0.24			c0.28		0.06	0.29		0.05	c0.34		
v/c Ratio	0.74	0.52		0.93	0.75	0.20	0.91	0.45	0.16	1.03	0.83	0.61
Uniform Delay, d1	25.5	31.5		34.0	36.0	29.5	27.7	31.6	24.4	31.7	35.4	23.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	12.3	0.5		36.0	4.9	1.0	44.0	0.3	0.1	54.1	6.9	1.4
Delay (s)	37.8	32.0		70.0	40.9	30.5	71.7	31.9	24.6	85.8	42.3	24.6
Level of Service	D	C		E	D	C	E	C	C	F	D	C
Approach Delay (s)		33.3			44.7			37.8			46.3	
Approach LOS		C			D			D			D	
Intersection Summary												
HCM 2000 Control Delay			42.2				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			0.99									
Actuated Cycle Length (s)			115.0				Sum of lost time (s)			25.9		
Intersection Capacity Utilization			87.8%				ICU Level of Service			E		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

7: Driveway/Sams Point Way & US 21 Sea Island Pkwy





















2038 Build
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	121	738	15	78	1043	69	0	5	12	50	1	161
Future Volume (Veh/h)	121	738	15	78	1043	69	0	5	12	50	1	161
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	134	820	17	87	1159	77	0	6	13	56	1	179
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
10												
Median type	None			TWLTL								
Median storage veh	2											
Upstream signal (ft)	759			853								
pX, platoon unblocked	0.75			0.92			0.79	0.79	0.92	0.79	0.79	0.75
vC, conflicting volume	1236			837			1850	2506	418	2066	2476	618
vC1, stage 1 conf vol							1096	1096		1372	1372	
vC2, stage 2 conf vol							754	1410		694	1105	
vCu, unblocked vol	648			662			1112	1945	209	1385	1906	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	7.0
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	81			90			100	94	98	69	99	78
cM capacity (veh/h)	700			854			192	102	737	180	139	811
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1			
Volume Total	134	547	290	87	773	463	6	13	236			
Volume Left	134	0	0	87	0	0	0	0	56			
Volume Right	0	0	17	0	0	77	0	13	179			
cSH	700	1700	1700	854	1700	1700	102	737	744			
Volume to Capacity	0.19	0.32	0.17	0.10	0.45	0.27	0.06	0.02	0.32			
Queue Length 95th (ft)	18	0	0	8	0	0	5	1	34			
Control Delay (s)	11.4	0.0	0.0	9.7	0.0	0.0	42.4	10.0	16.3			
Lane LOS	B			A			E	A	C			
Approach Delay (s)	1.6			0.6			20.2		16.3			
Approach LOS							C		C			
Intersection Summary												
Average Delay	2.6											
Intersection Capacity Utilization	57.2%			ICU Level of Service					B			
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis

















8: Ferry Drive/Driveway & US 21 Sea Island Pkwy

2038 Build
AM Peak Hour

																
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR				
Lane Configurations																
Traffic Volume (veh/h)	29	790	5	0	1201	46	2	0	16	70	0	26				
Future Volume (Veh/h)	29	790	5	0	1201	46	2	0	16	70	0	26				
Sign Control	Free			Free			Stop			Stop						
Grade	0%			0%			0%			0%						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90				
Hourly flow rate (vph)	32	878	6	0	1334	51	2	0	18	78	0	29				
Pedestrians																
Lane Width (ft)																
Walking Speed (ft/s)																
Percent Blockage																
Right turn flare (veh)	14															
Median type	TWLTL			TWLTL												
Median storage veh	2			2												
Upstream signal (ft)	1208			404												
pX, platoon unblocked	0.71						0.71	0.71								
vC, conflicting volume	1385	884					1641	2330	442	1862	2308	692				
vC1, stage 1 conf vol							945	945	1360		1360					
vC2, stage 2 conf vol							696	1385	503		948					
vCu, unblocked vol	717	884					1079	2053	442	1392	2021	0				
tC, single (s)	4.2	4.1					8.5	6.5	6.9	7.5	6.5	7.0				
tC, 2 stage (s)							7.5	5.5	6.5		5.5					
tF (s)	2.2	2.2					4.0	4.0	3.3	3.5	4.0	3.3				
p0 queue free %	95	100					99	100	97	68	100	96				
cM capacity (veh/h)	613	761					183	203	563	246	220	760				
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1	SB 2							
Volume Total	32	585	299	0	889	496	20	78	29							
Volume Left	32	0	0	0	0	0	2	78	0							
Volume Right	0	0	6	0	0	51	18	0	29							
cSH	613	1700	1700	1700	1700	1700	626	246	760							
Volume to Capacity	0.05	0.34	0.18	0.00	0.52	0.29	0.03	0.32	0.04							
Queue Length 95th (ft)	4	0	0	0	0	0	2	33	3							
Control Delay (s)	11.2	0.0	0.0	0.0	0.0	0.0	12.9	26.2	9.9							
Lane LOS	B						B	D	A							
Approach Delay (s)	0.4	0.0					12.9	21.8								
Approach LOS							B	C								
Intersection Summary																
Average Delay	1.2															
Intersection Capacity Utilization	51.9%			ICU Level of Service									A			
Analysis Period (min)	15															

Timings 9: Gay Dr & US 21 Sea Island Pkwy

2038 Build
AM Peak Hour

									
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	147	773	418	1133	7	0	259	16	0
Future Volume (vph)	147	773	418	1133	7	0	259	16	0
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	Perm	NA
Protected Phases	7	4	3	8		2			6
Permitted Phases	4		8		2		2	6	
Detector Phase	7	4	3	8	2	2	2	6	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	12.4	26.0	29.0	42.6	25.0	25.0	25.0	25.0	25.0
Total Split (%)	15.5%	32.5%	36.3%	53.3%	31.3%	31.3%	31.3%	31.3%	31.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5		4.5	4.5		4.5
Lead/Lag	Lead	Lag	Lead	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					
Recall Mode	None	None	None	None	Min	Min	Min	Min	Min
Act Effct Green (s)	27.9	20.5	43.9	32.0		7.6	7.6		7.6
Actuated g/C Ratio	0.46	0.34	0.72	0.53		0.12	0.12		0.12
v/c Ratio	0.49	0.74	0.79	0.73		0.07	0.64		0.53
Control Delay	16.5	24.3	22.8	14.0		26.6	11.1		12.9
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0		0.0
Total Delay	16.5	24.3	22.8	14.0		26.6	11.1		12.9
LOS	B	C	C	B		C	B		B
Approach Delay		23.1		16.3		11.6			12.9
Approach LOS		C		B		B			B

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 60.8

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 17.8







Intersection LOS: B

Intersection Capacity Utilization 72.8%

ICU Level of Service C








Analysis Period (min) 15

Splits and Phases: 9: Gay Dr & US 21 Sea Island Pkwy

 Ø2	 Ø3	 Ø4
25 s	29 s	26 s
 Ø6	 Ø7	 Ø8
25 s	12.4 s	42.6 s

Queues
9: Gay Dr & US 21 Sea Island Pkwy

2038 Build
AM Peak Hour

							
Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	163	869	464	1342	8	288	182
v/c Ratio	0.49	0.74	0.79	0.73	0.07	0.64	0.53
Control Delay	16.5	24.3	22.8	14.0	26.6	11.1	12.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.5	24.3	22.8	14.0	26.6	11.1	12.9
Queue Length 50th (ft)	14	142	95	167	3	0	6
Queue Length 95th (ft)	62	#290	#275	304	14	61	57
Internal Link Dist (ft)		324		647	804		269
Turn Bay Length (ft)	150		250			350	
Base Capacity (vph)	358	1263	718	2238	338	735	653
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.69	0.65	0.60	0.02	0.39	0.28




















Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

9: Gay Dr & US 21 Sea Island Pkwy

2038 Build
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	147	773	9	418	1133	75	7	0	259	16	0	148
Future Volume (vph)	147	773	9	418	1133	75	7	0	259	16	0	148
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5			4.5	4.5		4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frt	1.00	1.00		1.00	0.99			1.00	0.85		0.88	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		1.00	
Satd. Flow (prot)	1770	3481		1543	3474			1770	1583		1628	
Flt Permitted	0.20	1.00		0.16	1.00			0.53	1.00		0.97	
Satd. Flow (perm)	363	3481		260	3474			980	1583		1580	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	163	859	10	464	1259	83	8	0	288	18	0	164
RTOR Reduction (vph)	0	1	0	0	5	0	0	0	252	0	143	0
Lane Group Flow (vph)	163	868	0	464	1337	0	0	8	36	0	39	0
Heavy Vehicles (%)	2%	3%	50%	17%	3%	2%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	27.8	20.5		43.8	32.0			7.6	7.6		7.6	
Effective Green, g (s)	27.8	20.5		43.8	32.0			7.6	7.6		7.6	
Actuated g/C Ratio	0.46	0.34		0.73	0.53			0.13	0.13		0.13	
Clearance Time (s)	4.5	4.5		4.5	4.5			4.5	4.5		4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	337	1181		587	1840			123	199		198	
v/s Ratio Prot	0.06	0.25		c0.25	0.38							
v/s Ratio Perm	0.16			c0.33				0.01	0.02		c0.02	
v/c Ratio	0.48	0.74		0.79	0.73			0.07	0.18		0.20	
Uniform Delay, d1	9.8	17.6		11.9	10.9			23.3	23.6		23.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	1.1	2.4		7.2	1.5			0.2	0.4		0.5	
Delay (s)	10.9	20.0		19.0	12.3			23.5	24.1		24.1	
Level of Service	B	B		B	B			C	C		C	
Approach Delay (s)		18.5			14.0			24.0			24.1	
Approach LOS		B			B			C			C	
Intersection Summary												
HCM 2000 Control Delay			16.9			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			60.4			Sum of lost time (s)			13.5			
Intersection Capacity Utilization			72.8%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

10: Cougar Dr & US 21 Sea Island Pkwy







2038 Build
AM Peak Hour

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↓	↑↑	↓	
Traffic Volume (veh/h)	998	0	0	1492	0	0
Future Volume (Veh/h)	998	0	0	1492	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1109	0	0	1658	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	727					
pX, platoon unblocked			0.79		0.79	0.79
vC, conflicting volume			1109		1938	554
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			616		1661	0
tC, single (s)			5.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.7		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			552		70	860
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	739	370	0	829	829	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.43	0.22	0.00	0.49	0.49	0.00
Queue Length 95th (ft)	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS						A
Approach Delay (s)	0.0		0.0			0.0
Approach LOS						A
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			44.6%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

11: Lost Island Rd & US 21 Sea Island Pkwy

2038 Build
AM Peak Hour















						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑		↑↑		↑
Traffic Volume (veh/h)	973	13	0	1597	0	1
Future Volume (Veh/h)	973	13	0	1597	0	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1081	14	0	1774	0	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLT			TWLT		
Median storage (veh)	2			2		
Upstream signal (ft)				612		
pX, platoon unblocked					0.63	
vC, conflicting volume			1095		1968	540
vC1, stage 1 conf vol					1081	
vC2, stage 2 conf vol					887	
vCu, unblocked vol			1095		1361	540
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			633		263	486
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	540	540	14	591	1183	1
Volume Left	0	0	0	0	0	0
Volume Right	0	0	14	0	0	1
cSH	1700	1700	1700	633	1700	486
Volume to Capacity	0.32	0.32	0.01	0.00	0.70	0.00
Queue Length 95th (ft)	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	12.4
Lane LOS						B
Approach Delay (s)	0.0			0.0		12.4
Approach LOS						B
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			54.1%		ICU Level of Service	A
Analysis Period (min)			15			

Timings

12: New Frontage Road/Airport Cir & US 21 Sea Island Pkwy

2038 Build

AM Peak Hour

								
Lane Group	EBL	EBT	WBL	WBT	NBL	SBL	SBT	Ø2
Lane Configurations								
Traffic Volume (vph)	119	854	14	1423	50	60	0	
Future Volume (vph)	119	854	14	1423	50	60	0	
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	pm+pt	NA	
Protected Phases	7	4	3	8	5	1	6	2
Permitted Phases	4		8		2	6		
Detector Phase	7	4	3	8	5	1	6	
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	22.5	9.5	22.5	22.5	22.5
Total Split (s)	10.2	54.7	9.5	54.0	9.6	22.5	36.2	23.3
Total Split (%)	9.3%	49.7%	8.6%	49.1%	8.7%	20.5%	32.9%	21%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Min	Min	Min
Act Effct Green (s)	59.0	57.9	54.5	49.5	10.6	17.3	10.5	
Actuated g/C Ratio	0.68	0.67	0.63	0.57	0.12	0.20	0.12	
v/c Ratio	0.74	0.41	0.04	0.80	0.30	0.26	0.42	
Control Delay	40.6	8.1	5.1	19.0	32.7	30.8	8.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	40.6	8.1	5.1	19.0	32.7	30.8	8.8	
LOS	D	A	A	B	C	C	A	
Approach Delay		12.1		18.9			16.0	
Approach LOS		B		B			B	

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 86.9

Natural Cycle: 110

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 16.4









Intersection LOS: B

Intersection Capacity Utilization 72.9%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 12: New Frontage Road/Airport Cir & US 21 Sea Island Pkwy








 Ø1	 Ø2	 Ø3	 Ø4
22.5 s	23.3 s	9.5 s	54.7 s
 Ø5	 Ø6	 Ø7	 Ø8
9.6 s	36.2 s	10.2 s	54 s

Queues

2038 Build

12: New Frontage Road/Airport Cir & US 21 Sea Island Pkwy

AM Peak Hour

							
Lane Group	EBL	EBT	WBL	WBT	NBL	SBL	SBT
Lane Group Flow (vph)	132	949	15	1581	54	67	140
v/c Ratio	0.74	0.41	0.04	0.80	0.30	0.26	0.42
Control Delay	40.6	8.1	5.1	19.0	32.7	30.8	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.6	8.1	5.1	19.0	32.7	30.8	8.8
Queue Length 50th (ft)	27	101	2	333	24	30	0
Queue Length 95th (ft)	#129	207	9	463	55	65	41
Internal Link Dist (ft)		532		392			381
Turn Bay Length (ft)	375		75			250	
Base Capacity (vph)	178	2311	399	1977	182	374	679
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.41	0.04	0.80	0.30	0.18	0.21

Intersection Summary























95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

12: New Frontage Road/Airport Cir & US 21 Sea Island Pkwy










2038 Build
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	119	854	0	14	1423	0	50	0	0	60	0	126
Future Volume (vph)	119	854	0	14	1423	0	50	0	0	60	0	126
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5			4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00			1.00	1.00	
Frt	1.00	1.00		1.00	1.00		1.00			1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95			0.95	1.00	
Satd. Flow (prot)	1626	3471		1770	3471		1770			1770	1583	
Flt Permitted	0.07	1.00		0.28	1.00		0.67			0.46	1.00	
Satd. Flow (perm)	119	3471		522	3471		1244			860	1583	
Peak-hour factor, PHF	0.90	0.90	0.92	0.92	0.90	0.90	0.92	0.92	0.92	0.90	0.92	0.90
Adj. Flow (vph)	132	949	0	15	1581	0	54	0	0	67	0	140
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	124	0
Lane Group Flow (vph)	132	949	0	15	1581	0	54	0	0	67	16	0
Heavy Vehicles (%)	11%	4%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt			pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	63.4	57.9		54.2	53.2		10.5			18.7	10.5	
Effective Green, g (s)	63.4	57.9		54.2	53.2		10.5			18.7	10.5	
Actuated g/C Ratio	0.69	0.63		0.59	0.58		0.11			0.20	0.11	
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5			4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0			3.0	3.0	
Lane Grp Cap (vph)	176	2196		322	2018		166			257	181	
v/s Ratio Prot	c0.05	0.27		0.00	0.46		0.01			c0.02	0.01	
v/s Ratio Perm	c0.47			0.03			0.02			c0.03		
v/c Ratio	0.75	0.43		0.05	0.78		0.33			0.26	0.09	
Uniform Delay, d1	17.8	8.5		7.7	14.7		37.0			30.2	36.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00			1.00	1.00	
Incremental Delay, d2	16.3	0.1		0.1	2.1		1.1			0.5	0.2	
Delay (s)	34.2	8.6		7.8	16.8		38.1			30.7	36.4	
Level of Service	C	A		A	B		D			C	D	
Approach Delay (s)		11.7			16.7			38.1			34.6	
Approach LOS		B			B			D			C	
Intersection Summary												
HCM 2000 Control Delay			16.5			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			91.5			Sum of lost time (s)				18.0		
Intersection Capacity Utilization			72.9%			ICU Level of Service				C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

13: Old Distant Island Rd & US 21 Sea Island Pkwy

2038 Build
AM Peak Hour














						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	774	7	6	1399	15	2
Future Volume (Veh/h)	774	7	6	1399	15	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	860	8	7	1554	17	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLT			TWLT		
Median storage veh)	2			2		
Upstream signal (ft)				1133		
pX, platoon unblocked					0.22	
vC, conflicting volume			868		2432	864
vC1, stage 1 conf vol					864	
vC2, stage 2 conf vol					1568	
vCu, unblocked vol			868		5798	864
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)					5.5	
tF (s)			2.2		3.6	3.3
p0 queue free %			99		41	99
cM capacity (veh/h)			776		29	354
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	868	1561	19			
Volume Left	0	7	17			
Volume Right	8	0	2			
cSH	1700	776	32			
Volume to Capacity	0.51	0.01	0.60			
Queue Length 95th (ft)	0	1	50			
Control Delay (s)	0.0	1.1	224.7			
Lane LOS		A	F			
Approach Delay (s)	0.0	1.1	224.7			
Approach LOS			F			
Intersection Summary						
Average Delay		2.4				
Intersection Capacity Utilization		88.4%	ICU Level of Service	E		
Analysis Period (min)		15				

Timings

2038 Build

14: Chowan Creek Bluff/Eustis Landing Rd & US 21 Sea Island Pkwy

AM Peak Hour

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	24	625	56	1241	152	4	16	2
Future Volume (vph)	24	625	56	1241	152	4	16	2
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	22.5	9.5	22.5	9.5	22.5
Total Split (s)	9.5	108.0	9.5	108.0	9.5	23.0	9.5	23.0
Total Split (%)	6.3%	72.0%	6.3%	72.0%	6.3%	15.3%	6.3%	15.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)		4.5	4.5	4.5		4.5		4.5
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max
Act Effct Green (s)		103.6	111.1	111.1		18.5		18.5
Actuated g/C Ratio		0.75	0.80	0.80		0.13		0.13
v/c Ratio		1.09	0.13	0.94		1.24		0.27
Control Delay		80.5	3.4	25.6		191.3		26.7
Queue Delay		0.0	0.0	0.0		0.0		0.0
Total Delay		80.5	3.4	25.6		191.3		26.7
LOS		F	A	C		F		C
Approach Delay		80.5		24.7		191.3		26.7
Approach LOS		F		C		F		C

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 138.6

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.24

Intersection Signal Delay: 57.7









Intersection LOS: E

Intersection Capacity Utilization 90.9%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 14: Chowan Creek Bluff/Eustis Landing Rd & US 21 Sea Island Pkwy

 Ø1	 Ø2	 Ø3	 Ø4
9.5 s	23 s	9.5 s	108 s
 Ø5	 Ø6	 Ø7	 Ø8
9.5 s	23 s	9.5 s	108 s

Queues

2038 Build

14: Chowan Creek Bluff/Eustis Landing Rd & US 21 Sea Island Pkwy

AM Peak Hour

	→	↙	←	↑	↓
Lane Group	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	868	62	1379	223	61
v/c Ratio	1.09	0.13	0.94	1.24	0.27
Control Delay	80.5	3.4	25.6	191.3	26.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	80.5	3.4	25.6	191.3	26.7
Queue Length 50th (ft)	~902	10	841	~248	16
Queue Length 95th (ft)	#1160	18	#1487	#420	61
Internal Link Dist (ft)	1053		490	351	331
Turn Bay Length (ft)		290			
Base Capacity (vph)	793	493	1464	180	229
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.09	0.13	0.94	1.24	0.27


















Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

14: Chowan Creek Bluff/Eustis Landing Rd & US 21 Sea Island Pkwy





















2038 Build
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	625	132	56	1241	0	152	4	45	16	2	37
Future Volume (vph)	24	625	132	56	1241	0	152	4	45	16	2	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5			4.5			4.5	
Lane Util. Factor		1.00		1.00	1.00			1.00			1.00	
Frt		0.98		1.00	1.00			0.97			0.91	
Flt Protected		1.00		0.95	1.00			0.96			0.99	
Satd. Flow (prot)		1776		1736	1827			1724			1532	
Flt Permitted		0.59		0.31	1.00			0.73			0.93	
Satd. Flow (perm)		1056		563	1827			1301			1447	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	27	694	147	62	1379	0	169	4	50	18	2	41
RTOR Reduction (vph)	0	5	0	0	0	0	0	7	0	0	36	0
Lane Group Flow (vph)	0	863	0	62	1379	0	0	216	0	0	25	0
Heavy Vehicles (%)	2%	5%	2%	4%	4%	2%	3%	2%	3%	8%	2%	13%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		103.6		112.0	112.0			18.5			18.5	
Effective Green, g (s)		103.6		112.0	112.0			18.5			18.5	
Actuated g/C Ratio		0.74		0.80	0.80			0.13			0.13	
Clearance Time (s)		4.5		4.5	4.5			4.5			4.5	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		784		484	1466			172			191	
v/s Ratio Prot				0.00	c0.75							
v/s Ratio Perm		c0.82		0.10				c0.17			0.02	
v/c Ratio		1.10		0.13	0.94			1.26			0.13	
Uniform Delay, d1		18.0		4.0	11.1			60.5			53.4	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		63.5		0.1	12.1			153.8			0.3	
Delay (s)		81.4		4.1	23.2			214.3			53.7	
Level of Service		F		A	C			F			D	
Approach Delay (s)		81.4			22.4			214.3			53.7	
Approach LOS		F			C			F			D	
Intersection Summary												
HCM 2000 Control Delay			59.4			HCM 2000 Level of Service			E			
HCM 2000 Volume to Capacity ratio			1.18									
Actuated Cycle Length (s)			139.5			Sum of lost time (s)			18.0			
Intersection Capacity Utilization			90.9%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis











15: US 21 Lady's Island Rd & Rue Du Bois/Driveway

2038 Build
AM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	22	1	54	4	0	7	80	1065	22	34	1842	47	
Future Volume (Veh/h)	22	1	54	4	0	7	80	1065	22	34	1842	47	
Sign Control	Stop			Stop			Free			Free			
Grade	0%			0%			0%			0%			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Hourly flow rate (vph)	24	1	60	4	0	8	89	1183	24	38	2047	52	
Pedestrians													
Lane Width (ft)													
Walking Speed (ft/s)													
Percent Blockage													
Right turn flare (veh)													
Median type							None			TWLTL			
Median storage (veh)							2						
Upstream signal (ft)							1063						
pX, platoon unblocked	0.52	0.52	0.52	0.52	0.52		0.52						
vC, conflicting volume	2900	3508	1024	2533	3548	604	2099				1207		
vC1, stage 1 conf vol	2123	2123		1373	1373								
vC2, stage 2 conf vol	778	1385		1160	2175								
vCu, unblocked vol	2809	3973	0	2105	4050	604	1274				1207		
tC, single (s)	7.6	8.5	6.9	7.5	6.5	6.9	4.2				4.1		
tC, 2 stage (s)	6.6	7.5		6.5	5.5								
tF (s)	3.6	5.0	3.3	3.5	4.0	3.3	2.2				2.2		
p0 queue free %	65	95	89	96	100	98	68				93		
cM capacity (veh/h)	69	20	566	96	9	442	274				574		
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4			
Volume Total	25	60	12	89	789	418	38	1024	1024	52			
Volume Left	24	0	4	89	0	0	38	0	0	0			
Volume Right	0	60	8	0	0	24	0	0	0	52			
cSH	62	566	201	274	1700	1700	574	1700	1700	1700			
Volume to Capacity	0.40	0.11	0.06	0.32	0.46	0.25	0.07	0.60	0.60	0.03			
Queue Length 95th (ft)	38	9	5	34	0	0	5	0	0	0			
Control Delay (s)	96.9	12.1	24.1	24.3	0.0	0.0	11.7	0.0	0.0	0.0			
Lane LOS	F	B	C	C	B								
Approach Delay (s)	37.0		24.1	1.7	0.2								
Approach LOS	E		C										
Intersection Summary													
Average Delay				1.7									
Intersection Capacity Utilization				69.7%	ICU Level of Service					C			
Analysis Period (min)				15									

Timings
16: US 21 Lady's Island Rd & Hazel Farm Rd

2038 Build
AM Peak Hour




					
Lane Group	NWL	NWR	NET	NER	SWT
Lane Configurations					
Traffic Volume (vph)	371	1	842	260	1556
Future Volume (vph)	371	1	842	260	1556
Turn Type	Prot	Perm	NA	Perm	NA
Protected Phases	8		2		6
Permitted Phases		8		2	
Detector Phase	8	8	2	2	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5	37.5	37.5	37.5
Total Split (%)	37.5%	37.5%	62.5%	62.5%	62.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	None	None	None	None	Min
Act Effct Green (s)	16.4	16.4	32.1	32.1	32.1
Actuated g/C Ratio	0.28	0.28	0.56	0.56	0.56
v/c Ratio	0.82	0.00	0.47	0.34	0.88
Control Delay	34.8	12.0	8.9	2.3	18.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	34.8	12.0	8.9	2.3	18.3
LOS	C	B	A	A	B
Approach Delay	34.8		7.3		18.3
Approach LOS	C		A		B

Intersection Summary

Cycle Length: 60
 Actuated Cycle Length: 57.6
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.88
 Intersection Signal Delay: 16.4
 Intersection Capacity Utilization 71.1%
 Analysis Period (min) 15

Intersection LOS: B
 ICU Level of Service C

Splits and Phases: 16: US 21 Lady's Island Rd & Hazel Farm Rd






 Ø2	
37.5 s	
 Ø6	
37.5 s	 Ø8 22.5 s

Queues

2038 Build

16: US 21 Lady's Island Rd & Hazel Farm Rd

AM Peak Hour

					
Lane Group	NWL	NWR	NET	NER	SWT
Lane Group Flow (vph)	412	1	936	289	1729
v/c Ratio	0.82	0.00	0.47	0.34	0.88
Control Delay	34.8	12.0	8.9	2.3	18.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	34.8	12.0	8.9	2.3	18.3
Queue Length 50th (ft)	134	0	97	0	260
Queue Length 95th (ft)	#264	3	138	28	#434
Internal Link Dist (ft)	1323		983		904
Turn Bay Length (ft)		100		350	
Base Capacity (vph)	556	497	2037	866	2037
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.74	0.00	0.46	0.33	0.85













Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
16: US 21 Lady's Island Rd & Hazel Farm Rd




















2038 Build
AM Peak Hour

						
Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Traffic Volume (vph)	371	1	842	260	0	1556
Future Volume (vph)	371	1	842	260	0	1556
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5		4.5
Lane Util. Factor	1.00	1.00	0.95	1.00		0.95
Frt	1.00	0.85	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	1.00		1.00
Satd. Flow (prot)	1770	1583	3539	1292		3539
Flt Permitted	0.95	1.00	1.00	1.00		1.00
Satd. Flow (perm)	1770	1583	3539	1292		3539
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	412	1	936	289	0	1729
RTOR Reduction (vph)	0	1	0	127	0	0
Lane Group Flow (vph)	412	0	936	162	0	1729
Heavy Vehicles (%)	2%	2%	2%	25%	2%	2%
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)	16.4	16.4	32.2	32.2		32.2
Effective Green, g (s)	16.4	16.4	32.2	32.2		32.2
Actuated g/C Ratio	0.28	0.28	0.56	0.56		0.56
Clearance Time (s)	4.5	4.5	4.5	4.5		4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	503	450	1978	722		1978
v/s Ratio Prot	c0.23		0.26			c0.49
v/s Ratio Perm		0.00		0.13		
v/c Ratio	0.82	0.00	0.47	0.22		0.87
Uniform Delay, d1	19.2	14.7	7.6	6.4		11.0
Progression Factor	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	10.0	0.0	0.2	0.2		4.6
Delay (s)	29.3	14.7	7.8	6.6		15.6
Level of Service	C	B	A	A		B
Approach Delay (s)	29.2		7.5			15.6
Approach LOS	C		A			B
Intersection Summary						
HCM 2000 Control Delay			14.3		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.85			
Actuated Cycle Length (s)			57.6		Sum of lost time (s)	9.0
Intersection Capacity Utilization			71.1%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

HCM Unsignalized Intersection Capacity Analysis

17: US 21 Lady's Island Rd & Ferry Rd











2038 Build
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	4	0	21	134	1	22	39	770	26	26	1409	63
Future Volume (Veh/h)	4	0	21	134	1	22	39	770	26	26	1409	63
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	0	23	149	1	24	43	856	29	29	1566	70
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)	5			5								
Median type							TWLTL			TWLTL		
Median storage veh							2			2		
Upstream signal (ft)							984			1003		
pX, platoon unblocked	0.82	0.82	0.74	0.82	0.82	0.85	0.74			0.85		
vC, conflicting volume	2186	2630	818	1798	2650	442	1636			885		
vC1, stage 1 conf vol	1659	1659		956	956							
vC2, stage 2 conf vol	526	971		841	1694							
vCu, unblocked vol	1192	1736	65	718	1762	1	1165			520		
tC, single (s)	7.5	6.5	7.0	7.5	6.5	7.0	4.1			4.2		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.4	3.5	4.0	3.4	2.2			2.2		
p0 queue free %	97	100	97	55	99	97	90			97		
cM capacity (veh/h)	138	166	723	330	127	912	443			871		
Direction, Lane #	EB 1	WB 1	NE 1	NE 2	SW 1	SW 2	SW 3					
Volume Total	27	174	471	457	29	1044	592					
Volume Left	4	149	43	0	29	0	0					
Volume Right	23	24	0	29	0	0	70					
cSH	849	382	443	1700	871	1700	1700					
Volume to Capacity	0.03	0.46	0.10	0.27	0.03	0.61	0.35					
Queue Length 95th (ft)	2	58	8	0	3	0	0					
Control Delay (s)	13.4	22.6	2.9	0.0	9.3	0.0	0.0					
Lane LOS	B	C	A		A							
Approach Delay (s)	13.4	22.6	1.5		0.2							
Approach LOS	B	C										
Intersection Summary												
Average Delay	2.1											
Intersection Capacity Utilization	71.9%			ICU Level of Service					C			
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis

18: SC 802 Sams Point Rd & Sams Point Way

















2038 Build
AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	11	112	777	22	189	1715
Future Volume (Veh/h)	11	112	777	22	189	1715
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	12	124	863	24	210	1906
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLT		TWLT	
Median storage (veh)			2		2	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2248	444			887	
vC1, stage 1 conf vol	875					
vC2, stage 2 conf vol	1373					
vCu, unblocked vol	2248	444			887	
tC, single (s)	7.2	6.9			4.2	
tC, 2 stage (s)	6.2					
tF (s)	3.7	3.3			2.2	
p0 queue free %	89	78			72	
cM capacity (veh/h)	110	562			747	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	136	575	312	210	953	953
Volume Left	12	0	0	210	0	0
Volume Right	124	0	24	0	0	0
cSH	412	1700	1700	747	1700	1700
Volume to Capacity	0.33	0.34	0.18	0.28	0.56	0.56
Queue Length 95th (ft)	35	0	0	29	0	0
Control Delay (s)	18.0	0.0	0.0	11.7	0.0	0.0
Lane LOS	C			B		
Approach Delay (s)	18.0	0.0		1.2		
Approach LOS	C					
Intersection Summary						
Average Delay			1.6			
Intersection Capacity Utilization			61.6%		ICU Level of Service	B
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

















19: SC 802 Sams Point Rd & Ashland Park Rd/Driveway

2038 Build
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	0	11	0	0	0	14	859	0	1	1930	7
Future Volume (Veh/h)	1	0	11	0	0	0	14	859	0	1	1930	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1	0	12	0	0	0	16	954	0	1	2144	8
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage (veh)								2			2	
Upstream signal (ft)											530	
pX, platoon unblocked	0.26	0.26	0.26	0.26	0.26		0.26					
vC, conflicting volume	2659	3136	1076	2072	3140	477	2152			954		
vC1, stage 1 conf vol	2150	2150		986	986							
vC2, stage 2 conf vol	509	986		1086	2154							
vCu, unblocked vol	1680	3526	0	0	3542	477	0			954		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	96	100	100	100	96			100		
cM capacity (veh/h)	221	172	280	245	164	534	419			716		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	13	0	493	477	1073	1080						
Volume Left	1	0	16	0	1	0						
Volume Right	12	0	0	0	0	8						
cSH	275	1700	419	1700	716	1700						
Volume to Capacity	0.05	0.00	0.04	0.28	0.00	0.64						
Queue Length 95th (ft)	4	0	3	0	0	0						
Control Delay (s)	18.8	0.0	1.2	0.0	0.0	0.0						
Lane LOS	C	A	A		A							
Approach Delay (s)	18.8	0.0	0.6		0.0							
Approach LOS	C	A										
Intersection Summary												
Average Delay			0.3									
Intersection Capacity Utilization			64.3%		ICU Level of Service					C		
Analysis Period (min)			15									

Timings
20: SC 802 Sams Point Rd & Miller Dr W/Miller Dr E

2038 Build
AM Peak Hour







									
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	153	0	41	19	1	16	814	4	1835
Future Volume (vph)	153	0	41	19	1	16	814	4	1835
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	Perm	NA
Protected Phases	7	4		3	8	5	2		6
Permitted Phases	4		4	8		2		6	
Detector Phase	7	4	4	3	8	5	2	6	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	9.5	22.5	22.5	22.5
Total Split (s)	9.5	22.5	22.5	9.5	22.5	9.5	118.0	108.5	108.5
Total Split (%)	6.3%	15.0%	15.0%	6.3%	15.0%	6.3%	78.7%	72.3%	72.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.5	4.5		4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead		Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	Min	Min
Act Effct Green (s)		17.2	17.2		17.2	107.8	107.8	104.2	104.2
Actuated g/C Ratio		0.13	0.13		0.13	0.80	0.80	0.78	0.78
v/c Ratio		0.97	0.18		0.20	0.16	0.33	0.01	1.01
Control Delay		116.9	4.8		48.8	5.8	3.9	4.5	34.4
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		116.9	4.8		48.8	5.8	3.9	4.5	34.4
LOS		F	A		D	A	A	A	C
Approach Delay		93.0			48.8		3.9		34.3
Approach LOS		F			D		A		C

Intersection Summary

Cycle Length: 150
 Actuated Cycle Length: 134
 Natural Cycle: 150
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.01
 Intersection Signal Delay: 30.2
 Intersection Capacity Utilization 88.8%
 Analysis Period (min) 15

Intersection LOS: C
 ICU Level of Service E

Splits and Phases: 20: SC 802 Sams Point Rd & Miller Dr W/Miller Dr E








 Ø2	 Ø3	 Ø4
118 s	9.5 s	22.5 s
 Ø5	 Ø7	 Ø8
9.5 s	108.5 s	9.5 s
		22.5 s

Queues

2038 Build

20: SC 802 Sams Point Rd & Miller Dr W/Miller Dr E

AM Peak Hour

							
Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	170	46	28	18	931	4	2681
v/c Ratio	0.97	0.18	0.20	0.16	0.33	0.01	1.01
Control Delay	116.9	4.8	48.8	5.8	3.9	4.5	34.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	116.9	4.8	48.8	5.8	3.9	4.5	34.4
Queue Length 50th (ft)	144	0	17	3	96	1	933
Queue Length 95th (ft)	#309	13	51	7	117	4	#1522
Internal Link Dist (ft)	466		412		450		410
Turn Bay Length (ft)		100		230		265	
Base Capacity (vph)	185	270	144	112	2955	444	2666
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.92	0.17	0.19	0.16	0.32	0.01	1.01

Intersection Summary





















95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

20: SC 802 Sams Point Rd & Miller Dr W/Miller Dr E







2038 Build
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	153	0	41	19	1	5	16	814	24	4	1835	578
Future Volume (vph)	153	0	41	19	1	5	16	814	24	4	1835	578
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.97		1.00	1.00		1.00	0.96	
Flt Protected		0.95	1.00		0.96		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1770	1524		1743		1671	3482		1770	3412	
Flt Permitted		0.74	1.00		0.57		0.04	1.00		0.31	1.00	
Satd. Flow (perm)		1377	1524		1038		65	3482		572	3412	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	170	0	46	21	1	6	18	904	27	4	2039	642
RTOR Reduction (vph)	0	0	40	0	5	0	0	1	0	0	15	0
Lane Group Flow (vph)	0	170	6	0	23	0	18	930	0	4	2666	0
Heavy Vehicles (%)	2%	2%	6%	2%	2%	2%	8%	3%	11%	2%	2%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)		17.2	17.2		17.2		110.6	110.6		104.2	104.2	
Effective Green, g (s)		17.2	17.2		17.2		110.6	110.6		104.2	104.2	
Actuated g/C Ratio		0.13	0.13		0.13		0.81	0.81		0.76	0.76	
Clearance Time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		173	191		130		74	2815		435	2598	
v/s Ratio Prot							0.00	c0.27			c0.78	
v/s Ratio Perm		c0.12	0.00		0.02		0.19			0.01		
v/c Ratio		0.98	0.03		0.18		0.24	0.33		0.01	1.03	
Uniform Delay, d1		59.7	52.5		53.5		43.0	3.4		3.9	16.3	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		62.9	0.1		0.6		1.7	0.1		0.0	24.7	
Delay (s)		122.6	52.5		54.1		44.7	3.5		3.9	41.0	
Level of Service		F	D		D		D	A		A	D	
Approach Delay (s)		107.7			54.1			4.3			40.9	
Approach LOS		F			D			A			D	
Intersection Summary												
HCM 2000 Control Delay			35.8				HCM 2000 Level of Service				D	
HCM 2000 Volume to Capacity ratio			1.05									
Actuated Cycle Length (s)			136.8				Sum of lost time (s)			18.0		
Intersection Capacity Utilization			88.8%				ICU Level of Service			E		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

21: Taco Bell Driveway & US 21 Sea Island Pkwy

2038 Build
AM Peak Hour

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗		↑↑		↗
Traffic Volume (veh/h)	981	17	0	1569	0	10
Future Volume (Veh/h)	981	17	0	1569	0	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1066	18	0	1705	0	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		TWLTL			
Median storage veh)			2			
Upstream signal (ft)			897			
pX, platoon unblocked			0.63			
vC, conflicting volume			1084		1918	533
vC1, stage 1 conf vol					1066	
vC2, stage 2 conf vol					852	
vCu, unblocked vol			1084		1288	533
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	98
cM capacity (veh/h)			639		269	491
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	533	533	18	852	852	11
Volume Left	0	0	0	0	0	0
Volume Right	0	0	18	0	0	11
cSH	1700	1700	1700	1700	1700	491
Volume to Capacity	0.31	0.31	0.01	0.50	0.50	0.02
Queue Length 95th (ft)	0	0	0	0	0	2
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	12.5
Lane LOS						B
Approach Delay (s)	0.0			0.0		12.5
Approach LOS						B
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			46.7%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

22: US 21 Sea Island Pkwy & Walmart Driveway #3

2038 Build
AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	145	769	1363	72	30	60
Future Volume (Veh/h)	145	769	1363	72	30	60
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	158	836	1482	78	33	65
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						7
Median type		TWLTL	TWLTL			
Median storage veh		2	2			
Upstream signal (ft)		472				
pX, platoon unblocked					0.88	
vC, conflicting volume	1560				2255	780
vC1, stage 1 conf vol					1521	
vC2, stage 2 conf vol					734	
vCu, unblocked vol	1560				2153	780
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	62				77	81
cM capacity (veh/h)	420				146	338
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	158	418	418	988	572	98
Volume Left	158	0	0	0	0	33
Volume Right	0	0	0	0	78	65
cSH	420	1700	1700	1700	1700	432
Volume to Capacity	0.38	0.25	0.25	0.58	0.34	0.23
Queue Length 95th (ft)	43	0	0	0	0	22
Control Delay (s)	18.7	0.0	0.0	0.0	0.0	24.4
Lane LOS	C					C
Approach Delay (s)	3.0			0.0		24.4
Approach LOS						C
Intersection Summary						
Average Delay			2.0			
Intersection Capacity Utilization			61.3%		ICU Level of Service	B
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

23: US 21 Sea Island Pkwy & Walmart Driveway #4

2038 Build
AM Peak Hour




















Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	799	1405	36	0	30
Future Volume (Veh/h)	0	799	1405	36	0	30
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	868	1527	39	0	33
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage (veh)		2	2			
Upstream signal (ft)		911				
pX, platoon unblocked					0.89	
vC, conflicting volume	1566				1980	783
vC1, stage 1 conf vol					1546	
vC2, stage 2 conf vol					434	
vCu, unblocked vol	1566				1861	783
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	90
cM capacity (veh/h)	418				156	337
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	434	434	1018	548	33	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	39	33	
cSH	1700	1700	1700	1700	337	
Volume to Capacity	0.26	0.26	0.60	0.32	0.10	
Queue Length 95th (ft)	0	0	0	0	8	
Control Delay (s)	0.0	0.0	0.0	0.0	16.9	
Lane LOS					C	
Approach Delay (s)	0.0		0.0		16.9	
Approach LOS					C	
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			50.0%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

1: Meridian Rd/Driveway & US 21 Sea Island Pkwy


















2038 Build
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1418	71	61	1061	2	63	1	69	1	0	1
Future Volume (Veh/h)	0	1418	71	61	1061	2	63	1	69	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1576	79	68	1179	2	70	1	77	1	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	TWLTL				None							
Median storage veh	2											
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1181			1655			2932	2932	1616	3009	2971	1180
vC1, stage 1 conf vol							1616	1616		1316	1316	
vC2, stage 2 conf vol							1316	1317		1693	1655	
vCu, unblocked vol	1181			1655			2932	2932	1616	3009	2971	1180
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			83			27	99	40	65	100	100
cM capacity (veh/h)	591			390			96	117	128	3	77	232
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1							
Volume Total	1655	68	1181	148	2							
Volume Left	0	68	0	70	1							
Volume Right	79	0	2	77	1							
cSH	591	390	1700	110	6							
Volume to Capacity	0.00	0.17	0.69	1.34	0.36							
Queue Length 95th (ft)	0	16	0	254	17							
Control Delay (s)	0.0	16.2	0.0	274.4	855.8							
Lane LOS		C		F	F							
Approach Delay (s)	0.0	0.9		274.4	855.8							
Approach LOS				F	F							
Intersection Summary												
Average Delay			14.2									
Intersection Capacity Utilization			95.1%		ICU Level of Service				F			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

















2: Geechie Rd/Driveway & US 21 Sea Island Pkwy

2038 Build
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	1481	19	0	1149	8	0	0	0	5	0	2
Future Volume (Veh/h)	2	1481	19	0	1149	8	0	0	0	5	0	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	2	1646	21	0	1277	9	0	0	0	6	0	2
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	TWLTL				None							
Median storage veh	2											
Upstream signal (ft)					497							
pX, platoon unblocked	0.53							0.53	0.53			0.53
vC, conflicting volume	1286					1667		2934	2936	1646	2932	2952
vC1, stage 1 conf vol							1650	1650			1282	1282
vC2, stage 2 conf vol							1284	1286			1650	1671
vCu, unblocked vol	1097					1667		4198	4203	1646	4195	4234
tC, single (s)	4.1					4.1		7.1	6.5	6.2	7.1	6.5
tC, 2 stage (s)							6.1	5.5			6.1	5.5
tF (s)	2.2					2.2		3.5	4.0	3.3	3.5	4.0
p0 queue free %	99					100		100	100	100	93	100
cM capacity (veh/h)	338					385		84	100	123	85	100
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1							
Volume Total	1648	21	1286	0	8							
Volume Left	2	0	0	0	6							
Volume Right	0	21	9	0	2							
cSH	338	1700	1700	1700	94							
Volume to Capacity	0.01	0.01	0.76	0.00	0.08							
Queue Length 95th (ft)	0	0	0	0	7							
Control Delay (s)	2.9	0.0	0.0	0.0	46.6							
Lane LOS	A			A	E							
Approach Delay (s)	2.9		0.0	0.0	46.6							
Approach LOS				A	E							
Intersection Summary												
Average Delay					1.8							
Intersection Capacity Utilization					89.5%	ICU Level of Service				E		
Analysis Period (min)					15							

Timings 3: Driveway/Sunset Blvd & US 21 Sea Island Pkwy

2038 Build
PM Peak Hour







									
Lane Group	EBL	EBT	WBL	WBT	NEL	NET	SWL	SWT	SWR
Lane Configurations									
Traffic Volume (vph)	460	940	71	762	99	19	29	17	328
Future Volume (vph)	460	940	71	762	99	19	29	17	328
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	NA	pm+ov
Protected Phases	5	2	1	6		4		8	5
Permitted Phases	2		6		4		8		8
Detector Phase	5	2	1	6	4	4	8	8	5
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5	9.5
Total Split (s)	31.0	77.8	9.6	56.4	22.6	22.6	22.6	22.6	31.0
Total Split (%)	28.2%	70.7%	8.7%	51.3%	20.5%	20.5%	20.5%	20.5%	28.2%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5		4.5		4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lag					Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					Yes
Recall Mode	None	Min	None	Min	None	None	None	None	None
Act Effct Green (s)	82.9	75.2	57.0	51.9		18.1		18.1	49.1
Actuated g/C Ratio	0.75	0.68	0.52	0.47		0.16		0.16	0.45
v/c Ratio	1.04	0.89	0.48	1.04		0.99		0.26	0.48
Control Delay	83.3	25.7	22.0	71.3		90.8		44.3	17.5
Queue Delay	0.0	47.0	0.0	0.0		0.0		0.0	0.0
Total Delay	83.3	72.6	22.0	71.3		90.8		44.3	17.5
LOS	F	E	C	E		F		D	B
Approach Delay		76.0		67.4		90.8		20.8	
Approach LOS		E		E		F		C	

Intersection Summary

Cycle Length: 110
 Actuated Cycle Length: 110
 Natural Cycle: 110
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.04
 Intersection Signal Delay: 67.7
 Intersection Capacity Utilization 100.9%
 Analysis Period (min) 15

Intersection LOS: E
 ICU Level of Service G

Splits and Phases: 3: Driveway/Sunset Blvd & US 21 Sea Island Pkwy








 Ø1	 Ø2	 Ø4
9.6 s	77.8 s	22.6 s
 Ø5	 Ø6	 Ø8
31 s	56.4 s	22.6 s

Queues

2038 Build

3: Driveway/Sunset Blvd & US 21 Sea Island Pkwy

PM Peak Hour

							
Lane Group	EBL	EBT	WBL	WBT	NET	SWT	SWR
Lane Group Flow (vph)	511	1123	79	908	269	51	364
v/c Ratio	1.04	0.89	0.48	1.04	0.99	0.26	0.48
Control Delay	83.3	25.7	22.0	71.3	90.8	44.3	17.5
Queue Delay	0.0	47.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.3	72.6	22.0	71.3	90.8	44.3	17.5
Queue Length 50th (ft)	~339	609	12	~695	165	32	125
Queue Length 95th (ft)	#551	#1000	34	#942	#336	69	209
Internal Link Dist (ft)		417		641	61	384	
Turn Bay Length (ft)	215		150				150
Base Capacity (vph)	493	1261	166	872	273	194	762
Starvation Cap Reductn	0	242	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.04	1.10	0.48	1.04	0.99	0.26	0.48




















Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

3: Driveway/Sunset Blvd & US 21 Sea Island Pkwy


















2038 Build
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	460	940	71	71	762	55	99	19	124	29	17	328
Future Volume (vph)	460	940	71	71	762	55	99	19	124	29	17	328
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	16	12	12
Total Lost time (s)	4.5	4.5		4.5	4.5			4.5			4.5	4.5
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Frt	1.00	0.99		1.00	0.99			0.93			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.97	1.00
Satd. Flow (prot)	1770	1843		1703	1844			1690			1806	1583
Flt Permitted	0.07	1.00		0.10	1.00			0.84			0.64	1.00
Satd. Flow (perm)	130	1843		186	1844			1456			1183	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	511	1044	79	79	847	61	110	21	138	32	19	364
RTOR Reduction (vph)	0	2	0	0	2	0	0	34	0	0	0	60
Lane Group Flow (vph)	511	1121	0	79	906	0	0	235	0	0	51	304
Heavy Vehicles (%)	2%	2%	2%	6%	2%	2%	2%	2%	3%	2%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2		1	6			4			8	5
Permitted Phases	2			6			4			8		8
Actuated Green, G (s)	83.8	75.2		56.9	52.8			18.1			18.1	44.6
Effective Green, g (s)	83.8	75.2		56.9	52.8			18.1			18.1	44.6
Actuated g/C Ratio	0.76	0.68		0.51	0.48			0.16			0.16	0.40
Clearance Time (s)	4.5	4.5		4.5	4.5			4.5			4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	490	1249		151	877			237			193	700
v/s Ratio Prot	c0.25	0.61		0.02	0.49							0.10
v/s Ratio Perm	c0.54			0.25				c0.16			0.04	0.09
v/c Ratio	1.04	0.90		0.52	1.03			0.99			0.26	0.43
Uniform Delay, d1	36.4	14.7		19.4	29.1			46.3			40.6	24.0
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	52.3	8.7		3.2	39.2			55.6			0.7	0.4
Delay (s)	88.7	23.4		22.7	68.2			101.9			41.3	24.4
Level of Service	F	C		C	E			F			D	C
Approach Delay (s)		43.8			64.6			101.9			26.5	
Approach LOS		D			E			F			C	
Intersection Summary												
HCM 2000 Control Delay			52.6				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			1.06									
Actuated Cycle Length (s)			110.9				Sum of lost time (s)		13.5			
Intersection Capacity Utilization			100.9%				ICU Level of Service		G			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

4: Youmans Dr/Driveway & US 21 Sea Island Pkwy

2038 Build
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	4	1118	20	75	896	6	16	1	117	5	1	9
Future Volume (Veh/h)	4	1118	20	75	896	6	16	1	117	5	1	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	1242	22	83	996	7	18	1	130	6	1	10
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TW	LT		None							
Median storage veh		2										
Upstream signal (ft)		721										
pX, platoon unblocked				0.35			0.35	0.35	0.35	0.35	0.35	
vC, conflicting volume	1003			1264			2434	2430	1253	2557	2438	1000
vC1, stage 1 conf vol							1261	1261		1166	1166	
vC2, stage 2 conf vol							1172	1169		1392	1272	
vCu, unblocked vol	1003			823			4176	4166	792	4530	4188	1000
tC, single (s)	4.1			4.2			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			69			80	99	4	0	98	97
cM capacity (veh/h)	690			270			91	100	136	0	45	295
Direction, Lane #	EB 1	WB 1	WB 2	NE 1	SW 1							
Volume Total	1268	83	1003	149	17							
Volume Left	4	83	0	18	6							
Volume Right	22	0	7	130	10							
cSH	690	270	1700	128	0							
Volume to Capacity	0.01	0.31	0.59	1.17	917.05							
Queue Length 95th (ft)	0	32	0	223	Err							
Control Delay (s)	0.3	24.2	0.0	197.9	Err							
Lane LOS	A	C		F	F							
Approach Delay (s)	0.3	1.8		197.9	Err							
Approach LOS				F	F							
Intersection Summary												
Average Delay			80.1									
Intersection Capacity Utilization			78.6%		ICU Level of Service					D		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

5: US 21 Sea Island Pkwy & Professional Village Cir

2038 Build
PM Peak Hour

























Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔↔	↔↔		↔	↔
Traffic Volume (veh/h)	17	1263	945	39	44	54
Future Volume (Veh/h)	17	1263	945	39	44	54
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	19	1403	1050	43	49	60
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)			681			
pX, platoon unblocked	0.86				0.86	0.86
vC, conflicting volume	1093				1811	546
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	770				1609	130
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				38	92
cM capacity (veh/h)	719				79	765
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	487	935	700	393	49	60
Volume Left	19	0	0	0	49	0
Volume Right	0	0	0	43	0	60
cSH	719	1700	1700	1700	79	765
Volume to Capacity	0.03	0.55	0.41	0.23	0.62	0.08
Queue Length 95th (ft)	2	0	0	0	70	6
Control Delay (s)	0.8	0.0	0.0	0.0	105.6	10.1
Lane LOS	A				F	B
Approach Delay (s)	0.3		0.0		53.0	
Approach LOS					F	
Intersection Summary						
Average Delay			2.3			
Intersection Capacity Utilization			56.9%		ICU Level of Service	B
Analysis Period (min)			15			

Timings

2038 Build

6: Ladys Island Dr/Sams Point Rd & US 21 Sea Island Pkwy

PM Peak Hour

											
Lane Group	EBL	EBT	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations											
Traffic Volume (vph)	325	774	160	546	253	198	922	241	325	575	254
Future Volume (vph)	325	774	160	546	253	198	922	241	325	575	254
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	pt+ov
Protected Phases	5	2	1	6		3	8	1	7	4	4 5
Permitted Phases	2		6		6	8		8	4		
Detector Phase	5	2	1	6	6	3	8	1	7	4	4 5
Switch Phase											
Minimum Initial (s)	6.0	25.0	6.0	25.0	25.0	6.0	15.0	6.0	6.0	15.0	
Minimum Split (s)	13.3	43.0	13.3	39.0	39.0	12.3	42.3	13.3	13.3	43.3	
Total Split (s)	19.0	44.7	15.0	40.7	40.7	20.0	42.3	15.0	23.0	45.3	
Total Split (%)	15.2%	35.8%	12.0%	32.6%	32.6%	16.0%	33.8%	12.0%	18.4%	36.2%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.3	4.0	4.0	4.3	
All-Red Time (s)	3.3	2.0	3.3	2.0	2.0	2.3	2.0	3.3	2.3	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	7.3	6.0	7.3	6.0	6.0	6.3	6.3	7.3	6.3	6.3	
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	Min	None	Max	Max	None	None	None	None	Max	
Act Effct Green (s)	49.1	38.7	41.1	34.7	34.7	48.8	36.0	50.0	56.5	39.9	58.9
Actuated g/C Ratio	0.39	0.31	0.33	0.28	0.28	0.39	0.29	0.40	0.45	0.32	0.47
v/c Ratio	1.23	0.99	1.09	0.62	0.44	0.64	1.00	0.39	1.24	0.57	0.35
Control Delay	157.0	67.6	124.6	42.6	6.9	30.0	73.8	20.1	164.2	37.9	13.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	157.0	67.6	124.6	42.6	6.9	30.0	73.8	20.1	164.2	37.9	13.4
LOS	F	E	F	D	A	C	E	C	F	D	B
Approach Delay		90.1		46.9			57.9			68.1	
Approach LOS		F		D			E			E	

Intersection Summary

Cycle Length: 125

Actuated Cycle Length: 125

Natural Cycle: 145

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.24

Intersection Signal Delay: 66.9









Intersection LOS: E

Intersection Capacity Utilization 103.9%

ICU Level of Service G

Analysis Period (min) 15

Splits and Phases: 6: Ladys Island Dr/Sams Point Rd & US 21 Sea Island Pkwy












 Ø1	 Ø2	 Ø3	 Ø4
15 s	44.7 s	20 s	45.3 s
 Ø5	 Ø6	 Ø7	 Ø8
19 s	40.7 s	23 s	42.3 s

Queues

2038 Build

6: Ladys Island Dr/Sams Point Rd & US 21 Sea Island Pkwy

PM Peak Hour

											
Lane Group	EBL	EBT	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Group Flow (vph)	361	1071	178	607	281	220	1024	268	361	639	282
v/c Ratio	1.23	0.99	1.09	0.62	0.44	0.64	1.00	0.39	1.24	0.57	0.35
Control Delay	157.0	67.6	124.6	42.6	6.9	30.0	73.8	20.1	164.2	37.9	13.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	157.0	67.6	124.6	42.6	6.9	30.0	73.8	20.1	164.2	37.9	13.4
Queue Length 50th (ft)	~247	445	~111	225	5	105	~440	104	~314	227	80
Queue Length 95th (ft)	#446	#599	#262	289	73	161	#588	178	#510	290	146
Internal Link Dist (ft)		376		679			587			517	
Turn Bay Length (ft)	200		350		200	350		550	460		350
Base Capacity (vph)	294	1080	164	982	636	356	1019	681	292	1129	806
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.23	0.99	1.09	0.62	0.44	0.62	1.00	0.39	1.24	0.57	0.35

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.
























95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

6: Ladys Island Dr/Sams Point Rd & US 21 Sea Island Pkwy





















2038 Build
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	325	774	190	160	546	253	198	922	241	325	575	254
Future Volume (vph)	325	774	190	160	546	253	198	922	241	325	575	254
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.3	6.0		7.3	6.0	6.0	6.3	6.3	7.3	6.3	6.3	6.3
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3435		1752	3539	1583	1770	3539	1583	1752	3539	1583
Flt Permitted	0.23	1.00		0.12	1.00	1.00	0.30	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)	431	3435		213	3539	1583	564	3539	1583	185	3539	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	361	860	211	178	607	281	220	1024	268	361	639	282
RTOR Reduction (vph)	0	17	0	0	0	197	0	0	53	0	0	62
Lane Group Flow (vph)	361	1054	0	178	607	84	220	1024	215	361	639	220
Heavy Vehicles (%)	2%	2%	2%	3%	2%	2%	2%	2%	2%	3%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	pt+ov
Protected Phases	5	2		1	6		3	8	1	7	4	4 5
Permitted Phases	2			6		6	8		8	4		
Actuated Green, G (s)	50.4	38.7		42.4	34.7	34.7	48.8	36.0	43.7	56.6	39.9	57.9
Effective Green, g (s)	50.4	38.7		42.4	34.7	34.7	48.8	36.0	43.7	56.6	39.9	57.9
Actuated g/C Ratio	0.40	0.31		0.34	0.28	0.28	0.39	0.29	0.35	0.45	0.32	0.46
Clearance Time (s)	7.3	6.0		7.3	6.0	6.0	6.3	6.3	7.3	6.3	6.3	
Vehicle Extension (s)	3.0	3.5		3.0	3.5	3.5	3.0	3.5	3.0	3.0	3.5	
Lane Grp Cap (vph)	299	1063		167	982	439	343	1019	553	293	1129	733
v/s Ratio Prot	c0.11	0.31		0.07	0.17		0.07	0.29	0.02	c0.16	c0.18	0.14
v/s Ratio Perm	c0.37			0.30		0.05	0.18		0.11	c0.39		
v/c Ratio	1.21	0.99		1.07	0.62	0.19	0.64	1.00	0.39	1.23	0.57	0.30
Uniform Delay, d1	33.1	43.0		36.6	39.4	34.4	27.0	44.5	30.6	38.3	35.4	20.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	120.5	25.4		88.2	2.9	1.0	4.1	29.4	0.5	130.5	2.1	0.2
Delay (s)	153.5	68.4		124.9	42.3	35.4	31.1	73.9	31.1	168.8	37.4	21.1
Level of Service	F	E		F	D	D	C	E	C	F	D	C
Approach Delay (s)		89.9			54.3			60.1			70.8	
Approach LOS		F			D			E			E	
Intersection Summary												
HCM 2000 Control Delay			69.6				HCM 2000 Level of Service			E		
HCM 2000 Volume to Capacity ratio			1.31									
Actuated Cycle Length (s)			125.0				Sum of lost time (s)			25.9		
Intersection Capacity Utilization			103.9%				ICU Level of Service			G		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

7: Driveway/Sams Point Way & US 21 Sea Island Pkwy





















2038 Build
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	221	1017	39	39	778	56	12	14	72	55	2	133
Future Volume (Veh/h)	221	1017	39	39	778	56	12	14	72	55	2	133
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	246	1130	43	43	864	62	13	16	80	61	2	148
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
10												
Median type	None			TWLTL								
Median storage veh	2											
Upstream signal (ft)	759			853								
pX, platoon unblocked	0.91			0.76			0.80	0.80	0.76	0.80	0.80	0.91
vC, conflicting volume	926			1173			2162	2656	586	2126	2646	463
vC1, stage 1 conf vol							1644	1644		981	981	
vC2, stage 2 conf vol							519	1012		1145	1665	
vCu, unblocked vol	724			583			1453	2070	0	1408	2058	215
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	69			94			86	79	90	57	98	79
cM capacity (veh/h)	797			747			95	75	819	143	83	719
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1			
Volume Total	246	753	420	43	576	350	29	80	211			
Volume Left	246	0	0	43	0	0	13	0	61			
Volume Right	0	0	43	0	0	62	0	80	148			
cSH	797	1700	1700	747	1700	1700	83	819	471			
Volume to Capacity	0.31	0.44	0.25	0.06	0.34	0.21	0.35	0.10	0.45			
Queue Length 95th (ft)	33	0	0	5	0	0	34	8	57			
Control Delay (s)	11.5	0.0	0.0	10.1	0.0	0.0	69.9	9.9	22.8			
Lane LOS	B			B			F	A	C			
Approach Delay (s)	2.0			0.4			25.8		22.8			
Approach LOS							D		C			
Intersection Summary												
Average Delay	4.0											
Intersection Capacity Utilization	55.4%			ICU Level of Service					B			
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis















8: Ferry Drive/Driveway & US 21 Sea Island Pkwy

2038 Build
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	86	1061	11	0	806	70	4	4	25	127	1	57
Future Volume (Veh/h)	86	1061	11	0	806	70	4	4	25	127	1	57
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	96	1179	12	0	896	78	4	4	28	141	1	63
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)	14											
Median type	TWLTL			TWLTL								
Median storage veh)	2			2								
Upstream signal (ft)	1208			404								
pX, platoon unblocked	0.88						0.88	0.88				
vC, conflicting volume	974	1191					1888	2351	596	1718	2318	487
vC1, stage 1 conf vol							1377	1377				
vC2, stage 2 conf vol							512	974				
vCu, unblocked vol	707	1191					1742	2266	596	1550	2228	156
tC, single (s)	4.1	4.1					7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5				
tF (s)	2.2	2.2					3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	88	100					97	97	94	37	99	92
cM capacity (veh/h)	784	582					128	153	447	225	164	761
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1	SB 2			
Volume Total	96	786	405	0	597	377	36	142	63			
Volume Left	96	0	0	0	0	0	4	141	0			
Volume Right	0	0	12	0	0	78	28	0	63			
cSH	784	1700	1700	1700	1700	1700	575	224	761			
Volume to Capacity	0.12	0.46	0.24	0.00	0.35	0.22	0.06	0.63	0.08			
Queue Length 95th (ft)	10	0	0	0	0	0	5	95	7			
Control Delay (s)	10.2	0.0	0.0	0.0	0.0	0.0	17.7	45.2	10.2			
Lane LOS	B						C	E	B			
Approach Delay (s)	0.8	0.0					17.7	34.4				
Approach LOS							C	D				
Intersection Summary												
Average Delay	3.5											
Intersection Capacity Utilization	56.8%			ICU Level of Service					B			
Analysis Period (min)	15											

Timings 9: Gay Dr & US 21 Sea Island Pkwy

2038 Build
PM Peak Hour

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	9	1214	393	868	18	0	6	0
Future Volume (vph)	9	1214	393	868	18	0	6	0
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases	7	4	3	8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	3	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	9.6	40.0	25.0	55.4	25.0	25.0	25.0	25.0
Total Split (%)	10.7%	44.4%	27.8%	61.6%	27.8%	27.8%	27.8%	27.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5		4.5		4.5
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	None	None	None	None	Min	Min	Min	Min
Act Effct Green (s)	39.8	34.6	57.7	56.0		11.3		11.3
Actuated g/C Ratio	0.51	0.44	0.74	0.72		0.14		0.14
v/c Ratio	0.03	0.87	0.87	0.38		0.81		0.12
Control Delay	6.7	28.8	39.3	6.3		20.6		0.8
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	6.7	28.8	39.3	6.3		20.6		0.8
LOS	A	C	D	A		C		A
Approach Delay		28.6		16.6		20.6		0.8
Approach LOS		C		B		C		A

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 78.1

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 22.0

Intersection LOS: C

Intersection Capacity Utilization 92.1%

ICU Level of Service F







Analysis Period (min) 15

Splits and Phases: 9: Gay Dr & US 21 Sea Island Pkwy

 Ø2	 Ø3	 Ø4
25 s	25 s	40 s
 Ø6	 Ø7	 Ø8
25 s	9.6 s	55.4 s

Queues
9: Gay Dr & US 21 Sea Island Pkwy

2038 Build
PM Peak Hour

						
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	10	1357	437	966	428	37
v/c Ratio	0.03	0.87	0.87	0.38	0.81	0.12
Control Delay	6.7	28.8	39.3	6.3	20.6	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.7	28.8	39.3	6.3	20.6	0.8
Queue Length 50th (ft)	1	309	152	65	38	0
Queue Length 95th (ft)	7	#548	#372	208	139	0
Internal Link Dist (ft)		324		647	1158	269
Turn Bay Length (ft)	150		250			
Base Capacity (vph)	361	1635	554	2579	679	449
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.83	0.79	0.37	0.63	0.08



















Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

9: Gay Dr & US 21 Sea Island Pkwy

2038 Build
PM Peak Hour







												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	1214	7	393	868	2	18	0	367	6	0	27
Future Volume (vph)	9	1214	7	393	868	2	18	0	367	6	0	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5			4.5			4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.87			0.89	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1770	3536		1770	3538			1619			1643	
Flt Permitted	0.30	1.00		0.09	1.00			0.98			0.80	
Satd. Flow (perm)	552	3536		174	3538			1597			1332	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	10	1349	8	437	964	2	20	0	408	7	0	30
RTOR Reduction (vph)	0	1	0	0	0	0	0	298	0	0	32	0
Lane Group Flow (vph)	10	1356	0	437	966	0	0	130	0	0	5	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	39.3	38.4		61.4	56.0			11.3			11.3	
Effective Green, g (s)	39.3	38.4		61.4	56.0			11.3			11.3	
Actuated g/C Ratio	0.48	0.47		0.75	0.69			0.14			0.14	
Clearance Time (s)	4.5	4.5		4.5	4.5			4.5			4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	278	1661		492	2425			220			184	
v/s Ratio Prot	0.00	0.38		c0.20	0.27							
v/s Ratio Perm	0.02			c0.47				c0.08			0.00	
v/c Ratio	0.04	0.82		0.89	0.40			0.59			0.03	
Uniform Delay, d1	11.2	18.6		23.0	5.6			33.0			30.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	3.2		17.4	0.1			4.2			0.1	
Delay (s)	11.3	21.9		40.4	5.7			37.2			30.5	
Level of Service	B	C		D	A			D			C	
Approach Delay (s)		21.8			16.5			37.2			30.5	
Approach LOS		C			B			D			C	
Intersection Summary												
HCM 2000 Control Delay		21.6			HCM 2000 Level of Service			C				
HCM 2000 Volume to Capacity ratio		0.87										
Actuated Cycle Length (s)		81.7			Sum of lost time (s)			13.5				
Intersection Capacity Utilization		92.1%			ICU Level of Service			F				
Analysis Period (min)		15										

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

10: Cougar Dr & US 21 Sea Island Pkwy







2038 Build
PM Peak Hour

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↓	↑↑	↓	
Traffic Volume (veh/h)	1558	0	0	1222	0	0
Future Volume (Veh/h)	1558	0	0	1222	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1731	0	0	1358	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	727					
pX, platoon unblocked			0.66		0.66	0.66
vC, conflicting volume			1731		2410	866
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1073		2104	0
tC, single (s)			4.1		6.8	7.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.8
p0 queue free %			100		100	100
cM capacity (veh/h)			425		29	624
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	1154	577	0	679	679	0
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.68	0.34	0.00	0.40	0.40	0.00
Queue Length 95th (ft)	0	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS						A
Approach Delay (s)	0.0		0.0			0.0
Approach LOS						A
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			46.4%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

11: Lost Island Rd & US 21 Sea Island Pkwy

2038 Build
PM Peak Hour
















						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑		↑↑		↑
Traffic Volume (veh/h)	1546	24	0	1222	0	6
Future Volume (Veh/h)	1546	24	0	1222	0	6
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1718	27	0	1358	0	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLT			TWLT		
Median storage (veh)	2			2		
Upstream signal (ft)				612		
pX, platoon unblocked					0.71	
vC, conflicting volume			1745		2397	859
vC1, stage 1 conf vol					1718	
vC2, stage 2 conf vol					679	
vCu, unblocked vol			1745		2154	859
tC, single (s)			4.1		7.0	6.9
tC, 2 stage (s)					6.0	
tF (s)			2.2		3.6	3.3
p0 queue free %			100		100	98
cM capacity (veh/h)			356		115	300
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	859	859	27	679	679	7
Volume Left	0	0	0	0	0	0
Volume Right	0	0	27	0	0	7
cSH	1700	1700	1700	1700	1700	300
Volume to Capacity	0.51	0.51	0.02	0.40	0.40	0.02
Queue Length 95th (ft)	0	0	0	0	0	2
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	17.3
Lane LOS						C
Approach Delay (s)	0.0			0.0		17.3
Approach LOS						C
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			52.7%		ICU Level of Service	A
Analysis Period (min)			15			

Timings

12: New Frontage Rd/Airport Cir & US 21 Sea Island Pkwy

2038 Build

PM Peak Hour

								
Lane Group	EBL	EBT	WBL	WBT	NBL	SBL	SBT	Ø2
Lane Configurations								
Traffic Volume (vph)	249	1283	9	1027	26	207	0	
Future Volume (vph)	249	1283	9	1027	26	207	0	
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	pm+pt	NA	
Protected Phases	7	4	3	8	5	1	6	2
Permitted Phases	4		8		2	6		
Detector Phase	7	4	3	8	5	1	6	
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	22.5	9.5	22.5	22.5	22.5
Total Split (s)	16.2	45.0	9.5	38.3	9.5	22.5	36.0	23.0
Total Split (%)	16.2%	45.0%	9.5%	38.3%	9.5%	22.5%	36.0%	23%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Min	Min	Min
Act Effct Green (s)	48.6	46.8	37.3	32.3	10.5	24.0	20.4	
Actuated g/C Ratio	0.60	0.57	0.46	0.40	0.13	0.29	0.25	
v/c Ratio	0.82	0.70	0.05	0.82	0.15	0.55	0.34	
Control Delay	40.1	16.3	9.0	28.2	24.2	29.2	2.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	40.1	16.3	9.0	28.2	24.2	29.2	2.9	
LOS	D	B	A	C	C	C	A	
Approach Delay		20.2		28.0			16.8	
Approach LOS		C		C			B	

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 81.6

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 22.5









Intersection LOS: C

Intersection Capacity Utilization 72.9%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 12: New Frontage Rd/Airport Cir & US 21 Sea Island Pkwy








 Ø1	 Ø2	 Ø3	 Ø4
22.5 s	23 s	9.5 s	45 s
 Ø5	 Ø6	 Ø7	 Ø8
9.5 s	36 s	16.2 s	38.3 s

Queues

2038 Build

12: New Frontage Rd/Airport Cir & US 21 Sea Island Pkwy

PM Peak Hour

							
Lane Group	EBL	EBT	WBL	WBT	NBL	SBL	SBT
Lane Group Flow (vph)	277	1426	10	1142	28	230	206
v/c Ratio	0.82	0.70	0.05	0.82	0.15	0.55	0.34
Control Delay	40.1	16.3	9.0	28.2	24.2	29.2	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.1	16.3	9.0	28.2	24.2	29.2	2.9
Queue Length 50th (ft)	92	238	2	268	11	97	0
Queue Length 95th (ft)	#240	454	9	376	29	161	21
Internal Link Dist (ft)		532		413			381
Turn Bay Length (ft)	375		75			250	
Base Capacity (vph)	338	2029	193	1472	188	458	782
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.70	0.05	0.78	0.15	0.50	0.26

Intersection Summary






















95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

12: New Frontage Rd/Airport Cir & US 21 Sea Island Pkwy

2038 Build
PM Peak Hour











												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	249	1283	0	9	1027	1	26	0	0	207	0	185
Future Volume (vph)	249	1283	0	9	1027	1	26	0	0	207	0	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5			4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00			1.00	1.00	
Frt	1.00	1.00		1.00	1.00		1.00			1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95			0.95	1.00	
Satd. Flow (prot)	1770	3539		1770	3539		1770			1770	1583	
Flt Permitted	0.10	1.00		0.11	1.00		0.63			0.49	1.00	
Satd. Flow (perm)	184	3539		212	3539		1171			918	1583	
Peak-hour factor, PHF	0.90	0.90	0.92	0.92	0.90	0.90	0.92	0.92	0.92	0.90	0.92	0.90
Adj. Flow (vph)	277	1426	0	10	1141	1	28	0	0	230	0	206
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	158	0
Lane Group Flow (vph)	277	1426	0	10	1142	0	28	0	0	230	48	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt			pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	52.2	46.8		36.8	35.9		10.3			26.8	20.4	
Effective Green, g (s)	52.2	46.8		36.8	35.9		10.3			26.8	20.4	
Actuated g/C Ratio	0.59	0.53		0.42	0.41		0.12			0.30	0.23	
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5			4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0			3.0	3.0	
Lane Grp Cap (vph)	321	1882		104	1443		149			414	366	
v/s Ratio Prot	c0.12	0.40		0.00	0.32		0.00			c0.09	0.03	
v/s Ratio Perm	c0.39			0.04			0.02			c0.08		
v/c Ratio	0.86	0.76		0.10	0.79		0.19			0.56	0.13	
Uniform Delay, d1	22.4	16.2		16.1	22.8		34.9			24.6	26.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00			1.00	1.00	
Incremental Delay, d2	20.5	1.8		0.4	3.1		0.6			1.6	0.2	
Delay (s)	43.0	17.9		16.5	25.8		35.5			26.2	26.9	
Level of Service	D	B		B	C		D			C	C	
Approach Delay (s)		22.0			25.7			35.5			26.6	
Approach LOS		C			C			D			C	
Intersection Summary												
HCM 2000 Control Delay			24.0			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.82									
Actuated Cycle Length (s)			88.0			Sum of lost time (s)			18.0			
Intersection Capacity Utilization			72.9%			ICU Level of Service			C			
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

13: Old Distant Island Rd & US 21 Sea Island Pkwy

2038 Build
PM Peak Hour














						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1329	12	4	980	9	6
Future Volume (Veh/h)	1329	12	4	980	9	6
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1477	13	4	1089	10	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage veh)	2		2			
Upstream signal (ft)			1133			
pX, platoon unblocked			0.23			
vC, conflicting volume			1490		2580	1484
vC1, stage 1 conf vol					1484	
vC2, stage 2 conf vol					1097	
vCu, unblocked vol			1490		6139	1484
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			99		93	95
cM capacity (veh/h)			451		144	153
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	1490	1093	17			
Volume Left	0	4	10			
Volume Right	13	0	7			
cSH	1700	451	148			
Volume to Capacity	0.88	0.01	0.12			
Queue Length 95th (ft)	0	1	10			
Control Delay (s)	0.0	0.4	32.6			
Lane LOS		A	D			
Approach Delay (s)	0.0	0.4	32.6			
Approach LOS			D			
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			80.7%	ICU Level of Service		D
Analysis Period (min)			15			

Timings

2038 Build

14: Chowan Creek Bluff/Eustis Landing Rd & US 21 Sea Island Pkwy

PM Peak Hour

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	50	1248	6	920	59	0	16	2
Future Volume (vph)	50	1248	6	920	59	0	16	2
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	22.5	9.5	22.5	9.5	22.5
Total Split (s)	9.5	108.0	9.5	108.0	9.5	23.0	9.5	23.0
Total Split (%)	6.3%	72.0%	6.3%	72.0%	6.3%	15.3%	6.3%	15.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0	0.0		0.0		0.0
Total Lost Time (s)		4.5	4.5	4.5		4.5		4.5
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max
Act Effct Green (s)		103.6	105.4	105.4		18.5		18.5
Actuated g/C Ratio		0.78	0.79	0.79		0.14		0.14
v/c Ratio		1.19	0.02	0.69		0.34		0.20
Control Delay		111.6	3.0	9.3		30.5		29.5
Queue Delay		0.0	0.0	0.0		0.0		0.0
Total Delay		111.6	3.0	9.3		30.5		29.5
LOS		F	A	A		C		C
Approach Delay		111.6		9.3		30.5		29.5
Approach LOS		F		A		C		C

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 132.9

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.19

Intersection Signal Delay: 68.2









Intersection LOS: E

Intersection Capacity Utilization 125.5%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 14: Chowan Creek Bluff/Eustis Landing Rd & US 21 Sea Island Pkwy

 Ø1	 Ø2	 Ø3	 Ø4
9.5 s	23 s	9.5 s	108 s
 Ø5	 Ø6	 Ø7	 Ø8
9.5 s	23 s	9.5 s	108 s

Queues

2038 Build

14: Chowan Creek Bluff/Eustis Landing Rd & US 21 Sea Island Pkwy

PM Peak Hour

	→	↙	←	↑	↓
Lane Group	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	1510	7	1024	78	48
v/c Ratio	1.19	0.02	0.69	0.34	0.20
Control Delay	111.6	3.0	9.3	30.5	29.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	111.6	3.0	9.3	30.5	29.5
Queue Length 50th (ft)	~1534	1	340	26	15
Queue Length 95th (ft)	#2004	4	460	81	56
Internal Link Dist (ft)	1053		490	351	331
Turn Bay Length (ft)		290			
Base Capacity (vph)	1270	301	1476	228	237
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.19	0.02	0.69	0.34	0.20


















Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis





















14: Chowan Creek Bluff/Eustis Landing Rd & US 21 Sea Island Pkwy

2038 Build
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	1248	60	6	920	2	59	0	11	16	2	25
Future Volume (vph)	50	1248	60	6	920	2	59	0	11	16	2	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5			4.5			4.5	
Lane Util. Factor		1.00		1.00	1.00			1.00			1.00	
Frt		0.99		1.00	1.00			0.98			0.92	
Flt Protected		1.00		0.95	1.00			0.96			0.98	
Satd. Flow (prot)		1840		1770	1862			1750			1684	
Flt Permitted		0.88		0.17	1.00			0.75			0.89	
Satd. Flow (perm)		1627		311	1862			1370			1532	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	56	1387	67	7	1022	2	66	0	12	18	2	28
RTOR Reduction (vph)	0	1	0	0	0	0	0	38	0	0	24	0
Lane Group Flow (vph)	0	1509	0	7	1024	0	0	40	0	0	24	0
Heavy Vehicles (%)	13%	2%	3%	2%	2%	2%	2%	7%	2%	2%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		103.6		109.0	109.0			18.5			18.5	
Effective Green, g (s)		103.6		109.0	109.0			18.5			18.5	
Actuated g/C Ratio		0.76		0.80	0.80			0.14			0.14	
Clearance Time (s)		4.5		4.5	4.5			4.5			4.5	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		1234		257	1486			185			207	
v/s Ratio Prot				0.00	c0.55							
v/s Ratio Perm		c0.93		0.02				c0.03			0.02	
v/c Ratio		1.22		0.03	0.69			0.22			0.11	
Uniform Delay, d1		16.5		4.9	6.2			52.5			51.8	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		107.7		0.0	1.4			0.6			0.2	
Delay (s)		124.2		4.9	7.5			53.1			52.1	
Level of Service		F		A	A			D			D	
Approach Delay (s)		124.2			7.5			53.1			52.1	
Approach LOS		F			A			D			D	
Intersection Summary												
HCM 2000 Control Delay			75.7			HCM 2000 Level of Service					E	
HCM 2000 Volume to Capacity ratio			1.12									
Actuated Cycle Length (s)			136.5			Sum of lost time (s)				18.0		
Intersection Capacity Utilization			125.5%			ICU Level of Service				H		
Analysis Period (min)			15									
c Critical Lane Group												











HCM Unsignalized Intersection Capacity Analysis 15: US 21 Lady's Island Rd & Rue Du Bois/Driveway

2038 Build
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	1	70	16	1	42	49	1786	15	17	1478	29
Future Volume (Veh/h)	37	1	70	16	1	42	49	1786	15	17	1478	29
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	41	1	78	18	1	47	54	1984	17	19	1642	32
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							None			TWLTL		
Median storage veh)							2					
Upstream signal (ft)							1063					
pX, platoon unblocked	0.74	0.74	0.74	0.74	0.74		0.74					
vC, conflicting volume	2828	3789	821	3038	3812	1000	1674				2001	
vC1, stage 1 conf vol	1680	1680		2100	2100							
vC2, stage 2 conf vol	1148	2109		938	1712							
vCu, unblocked vol	2766	4071	42	3052	4103	1000	1200				2001	
tC, single (s)	7.6	6.5	6.9	7.5	6.5	6.9	4.2				4.1	
tC, 2 stage (s)	6.6	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2	
p0 queue free %	52	98	90	60	98	81	87				93	
cM capacity (veh/h)	85	54	751	45	61	241	413				283	
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4		
Volume Total	42	78	66	54	1323	678	19	821	821	32		
Volume Left	41	0	18	54	0	0	19	0	0	0		
Volume Right	0	78	47	0	0	17	0	0	0	32		
cSH	84	751	107	413	1700	1700	283	1700	1700	1700		
Volume to Capacity	0.50	0.10	0.61	0.13	0.78	0.40	0.07	0.48	0.48	0.02		
Queue Length 95th (ft)	53	9	76	11	0	0	5	0	0	0		
Control Delay (s)	84.2	10.3	81.4	15.0	0.0	0.0	18.7	0.0	0.0	0.0		
Lane LOS	F	B	F	C	C							
Approach Delay (s)	36.2		81.4	0.4	0.2							
Approach LOS	E		F									
Intersection Summary												
Average Delay	2.8											
Intersection Capacity Utilization	66.7%			ICU Level of Service					C			
Analysis Period (min)	15											

Timings
16: US 21 Lady's Island Rd & Hazel Farm Rd

2038 Build
PM Peak Hour




					
Lane Group	WBL	NET	NER	SWL	SWT
Lane Configurations					
Traffic Volume (vph)	384	1503	361	1	1153
Future Volume (vph)	384	1503	361	1	1153
Turn Type	Prot	NA	Perm	Perm	NA
Protected Phases	8	2			6
Permitted Phases			2	6	
Detector Phase	8	2	2	6	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5
Total Split (s)	23.2	36.8	36.8	36.8	36.8
Total Split (%)	38.7%	61.3%	61.3%	61.3%	61.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	None	None	None	Min	Min
Act Effct Green (s)	17.0	31.5	31.5	31.5	31.5
Actuated g/C Ratio	0.30	0.55	0.55	0.55	0.55
v/c Ratio	0.82	0.86	0.38	0.01	0.66
Control Delay	34.1	18.0	2.1	7.0	11.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	34.1	18.0	2.1	7.0	11.6
LOS	C	B	A	A	B
Approach Delay	34.1	14.9			11.6
Approach LOS	C	B			B

Intersection Summary

Cycle Length: 60
 Actuated Cycle Length: 57.5
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.86
 Intersection Signal Delay: 15.9
 Intersection Capacity Utilization 70.3%
 Analysis Period (min) 15

Intersection LOS: B
 ICU Level of Service C

Splits and Phases: 16: US 21 Lady's Island Rd & Hazel Farm Rd






 Ø2	
36.8 s	
 Ø6	 Ø8
36.8 s	23.2 s

Queues

2038 Build

16: US 21 Lady's Island Rd & Hazel Farm Rd

PM Peak Hour

					
Lane Group	WBL	NET	NER	SWL	SWT
Lane Group Flow (vph)	427	1670	401	1	1281
v/c Ratio	0.82	0.86	0.38	0.01	0.66
Control Delay	34.1	18.0	2.1	7.0	11.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	34.1	18.0	2.1	7.0	11.6
Queue Length 50th (ft)	138	251	0	0	160
Queue Length 95th (ft)	#269	#382	32	2	222
Internal Link Dist (ft)	1308	983			904
Turn Bay Length (ft)			350	150	
Base Capacity (vph)	578	1999	1068	133	1999
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.74	0.84	0.38	0.01	0.64

Intersection Summary















95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

16: US 21 Lady's Island Rd & Hazel Farm Rd

2038 Build
PM Peak Hour




















						
Movement	WBL	WBR	NET	NER	SWL	SWT
Lane Configurations			 			 
Traffic Volume (vph)	384	0	1503	361	1	1153
Future Volume (vph)	384	0	1503	361	1	1153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5		4.5	4.5	4.5	4.5
Lane Util. Factor	1.00		0.95	1.00	1.00	0.95
Frt	1.00		1.00	0.85	1.00	1.00
Flt Protected	0.95		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770		3539	1583	1770	3539
Flt Permitted	0.95		1.00	1.00	0.13	1.00
Satd. Flow (perm)	1770		3539	1583	237	3539
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	427	0	1670	401	1	1281
RTOR Reduction (vph)	0	0	0	181	0	0
Lane Group Flow (vph)	427	0	1670	220	1	1281
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Actuated Green, G (s)	17.0		31.5	31.5	31.5	31.5
Effective Green, g (s)	17.0		31.5	31.5	31.5	31.5
Actuated g/C Ratio	0.30		0.55	0.55	0.55	0.55
Clearance Time (s)	4.5		4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	523		1938	867	129	1938
v/s Ratio Prot	c0.24		c0.47			0.36
v/s Ratio Perm				0.14	0.00	
v/c Ratio	0.82		0.86	0.25	0.01	0.66
Uniform Delay, d1	18.8		11.1	6.8	5.9	9.2
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	9.6		4.2	0.2	0.0	0.9
Delay (s)	28.4		15.3	7.0	5.9	10.1
Level of Service	C		B	A	A	B
Approach Delay (s)	28.4		13.7			10.1
Approach LOS	C		B			B
Intersection Summary						
HCM 2000 Control Delay			14.1		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.85			
Actuated Cycle Length (s)			57.5		Sum of lost time (s)	9.0
Intersection Capacity Utilization			70.3%		ICU Level of Service	C
Analysis Period (min)			15			

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

17: US 21 Lady's Island Rd & Ferry Rd











2038 Build
PM Peak Hour

																	
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR					
Lane Configurations																	
Traffic Volume (veh/h)	1	0	9	98	0	63	6	1374	91	122	1047	4					
Future Volume (Veh/h)	1	0	9	98	0	63	6	1374	91	122	1047	4					
Sign Control	Stop			Stop			Free			Free							
Grade	0%			0%			0%			0%							
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90					
Hourly flow rate (vph)	1	0	10	109	0	70	7	1527	101	136	1163	4					
Pedestrians																	
Lane Width (ft)																	
Walking Speed (ft/s)																	
Percent Blockage																	
Right turn flare (veh)	5					5											
Median type	TWLTL							TWLTL									
Median storage veh	2							2									
Upstream signal (ft)	984							1003									
pX, platoon unblocked	0.60	0.60	0.87	0.60	0.60	0.54	0.87	0.54									
vC, conflicting volume	2250	3079	584	2445	3030	814	1167	1628									
vC1, stage 1 conf vol	1437	1437		1592	1592												
vC2, stage 2 conf vol	812	1642		854	1439												
vCu, unblocked vol	795	2167	224	1118	2087	0	894	459									
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1	4.1									
tC, 2 stage (s)	6.5	5.5		6.5	5.5												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2	2.2									
p0 queue free %	99	100	99	54	100	88	99	77									
cM capacity (veh/h)	128	114	678	235	142	585	657	593									
Direction, Lane #	EB 1	WB 1	NE 1	NE 2	SW 1	SW 2	SW 3										
Volume Total	11	179	770	864	136	775	392										
Volume Left	1	109	7	0	136	0	0										
Volume Right	10	70	0	101	0	0	4										
cSH	746	387	657	1700	593	1700	1700										
Volume to Capacity	0.01	0.46	0.01	0.51	0.23	0.46	0.23										
Queue Length 95th (ft)	1	59	1	0	22	0	0										
Control Delay (s)	12.5	24.7	0.3	0.0	12.9	0.0	0.0										
Lane LOS	B	C	A		B												
Approach Delay (s)	12.5	24.7	0.1		1.3												
Approach LOS	B	C															
Intersection Summary																	
Average Delay	2.1																
Intersection Capacity Utilization	92.2%			ICU Level of Service					F								
Analysis Period (min)	15																

HCM Unsignalized Intersection Capacity Analysis

18: SC 802 Sams Point Rd & Sams Point Way

















2038 Build
PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	16	253	1521	29	105	1157
Future Volume (Veh/h)	16	253	1521	29	105	1157
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	18	281	1690	32	117	1286
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLT		TWLT	
Median storage (veh)			2		2	
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2583	861			1722	
vC1, stage 1 conf vol	1706					
vC2, stage 2 conf vol	877					
vCu, unblocked vol	2583	861			1722	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	84	6			68	
cM capacity (veh/h)	112	299			363	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	299	1127	595	117	643	643
Volume Left	18	0	0	117	0	0
Volume Right	281	0	32	0	0	0
cSH	272	1700	1700	363	1700	1700
Volume to Capacity	1.10	0.66	0.35	0.32	0.38	0.38
Queue Length 95th (ft)	311	0	0	34	0	0
Control Delay (s)	125.0	0.0	0.0	19.5	0.0	0.0
Lane LOS	F			C		
Approach Delay (s)	125.0	0.0		1.6		
Approach LOS	F					
Intersection Summary						
Average Delay			11.6			
Intersection Capacity Utilization			75.3%		ICU Level of Service	D
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

















19: SC 802 Sams Point Rd & Ashland Park Rd/Driveway

2038 Build
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	0	11	0	0	0	19	1761	0	0	1299	5
Future Volume (Veh/h)	7	0	11	0	0	0	19	1761	0	0	1299	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	8	0	12	0	0	0	21	1957	0	0	1443	6
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh								2			2	
Upstream signal (ft)											530	
pX, platoon unblocked	0.63	0.63	0.63	0.63	0.63		0.63					
vC, conflicting volume	2466	3445	724	2732	3448	978	1449			1957		
vC1, stage 1 conf vol	1446	1446		1999	1999							
vC2, stage 2 conf vol	1020	1999		734	1449							
vCu, unblocked vol	2155	3705	0	2576	3710	978	544			1957		
tC, single (s)	7.5	6.5	7.1	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.4	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	100	98	100	100	100	97			100		
cM capacity (veh/h)	183	91	667	58	91	250	645			294		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	20	0	1000	978	722	728						
Volume Left	8	0	21	0	0	0						
Volume Right	12	0	0	0	0	6						
cSH	324	1700	645	1700	294	1700						
Volume to Capacity	0.06	0.00	0.03	0.58	0.00	0.43						
Queue Length 95th (ft)	5	0	3	0	0	0						
Control Delay (s)	16.8	0.0	1.0	0.0	0.0	0.0						
Lane LOS	C	A	A									
Approach Delay (s)	16.8	0.0	0.5		0.0							
Approach LOS	C	A										
Intersection Summary												
Average Delay			0.4									
Intersection Capacity Utilization			72.0%		ICU Level of Service					C		
Analysis Period (min)			15									

Timings
20: SC 802 Sams Point Rd & Miller Dr W/Miller Dr E

2038 Build
PM Peak Hour






									
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	361	7	45	16	1	24	1677	2	1200
Future Volume (vph)	361	7	45	16	1	24	1677	2	1200
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	NA	Perm	NA
Protected Phases	7	4			8		2		6
Permitted Phases	4		4	8		2		6	
Detector Phase	7	4	4	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	9.6	32.2	32.2	22.6	22.6	57.8	57.8	57.8	57.8
Total Split (%)	10.7%	35.8%	35.8%	25.1%	25.1%	64.2%	64.2%	64.2%	64.2%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.5	4.5		4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead			Lag	Lag				
Lead-Lag Optimize?	Yes			Yes	Yes				
Recall Mode	None	None	None	None	None	Min	Min	Min	Min
Act Effct Green (s)		26.5	26.5		26.5	51.6	51.6	51.6	51.6
Actuated g/C Ratio		0.30	0.30		0.30	0.59	0.59	0.59	0.59
v/c Ratio		1.01	0.10		0.05	0.32	0.92	0.02	0.81
Control Delay		79.7	11.3		21.8	21.5	25.2	8.5	17.6
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		79.7	11.3		21.8	21.5	25.2	8.5	17.6
LOS		E	B		C	C	C	A	B
Approach Delay		72.3			21.8		25.1		17.6
Approach LOS		E			C		C		B

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 87.1
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.01
 Intersection Signal Delay: 27.3
 Intersection Capacity Utilization 76.8%
 Analysis Period (min) 15

Intersection LOS: C
 ICU Level of Service D

Splits and Phases: 20: SC 802 Sams Point Rd & Miller Dr W/Miller Dr E








 Ø2	 Ø4
57.8 s	32.2 s
 Ø6	 Ø7
57.8 s	9.6 s
	 Ø8
	22.6 s

Queues

2038 Build

20: SC 802 Sams Point Rd & Miller Dr W/Miller Dr E

PM Peak Hour

							
Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	409	50	20	27	1924	2	1667
v/c Ratio	1.01	0.10	0.05	0.32	0.92	0.02	0.81
Control Delay	79.7	11.3	21.8	21.5	25.2	8.5	17.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	79.7	11.3	21.8	21.5	25.2	8.5	17.6
Queue Length 50th (ft)	231	6	8	7	474	0	347
Queue Length 95th (ft)	#420	32	24	31	#690	4	450
Internal Link Dist (ft)	466		412		450		410
Turn Bay Length (ft)		100		230		265	
Base Capacity (vph)	426	524	384	88	2167	88	2132
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.10	0.05	0.31	0.89	0.02	0.78

Intersection Summary





















95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

20: SC 802 Sams Point Rd & Miller Dr W/Miller Dr E







2038 Build
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	361	7	45	16	1	1	24	1677	55	2	1200	301
Future Volume (vph)	361	7	45	16	1	1	24	1677	55	2	1200	301
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.99		1.00	1.00		1.00	0.97	
Flt Protected		0.95	1.00		0.96		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1776	1568		1770		1770	3522		1770	3433	
Flt Permitted		0.72	1.00		0.68		0.08	1.00		0.08	1.00	
Satd. Flow (perm)		1333	1568		1259		144	3522		144	3433	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	401	8	50	18	1	1	27	1863	61	2	1333	334
RTOR Reduction (vph)	0	0	24	0	1	0	0	2	0	0	24	0
Lane Group Flow (vph)	0	409	26	0	19	0	27	1922	0	2	1643	0
Heavy Vehicles (%)	2%	2%	3%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases	7	4			8			2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)		26.5	26.5		26.5		51.6	51.6		51.6	51.6	
Effective Green, g (s)		26.5	26.5		26.5		51.6	51.6		51.6	51.6	
Actuated g/C Ratio		0.30	0.30		0.30		0.59	0.59		0.59	0.59	
Clearance Time (s)		4.5	4.5		4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		405	477		383		85	2086		85	2033	
v/s Ratio Prot								c0.55			0.48	
v/s Ratio Perm		c0.31	0.02		0.02		0.19			0.01		
v/c Ratio		1.01	0.05		0.05		0.32	0.92		0.02	0.81	
Uniform Delay, d1		30.3	21.4		21.4		8.9	15.9		7.3	13.9	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		47.2	0.0		0.1		2.2	7.3		0.1	2.5	
Delay (s)		77.5	21.5		21.5		11.1	23.2		7.4	16.3	
Level of Service		E	C		C		B	C		A	B	
Approach Delay (s)		71.4			21.5			23.1			16.3	
Approach LOS		E			C			C			B	
Intersection Summary												
HCM 2000 Control Delay			25.7									
HCM 2000 Volume to Capacity ratio			1.01									
Actuated Cycle Length (s)			87.1							13.5		
Intersection Capacity Utilization			76.8%									
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

21: Taco Bell Driveway & US 21 Sea Island Pkwy

2038 Build
PM Peak Hour

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗		↑↑		↗
Traffic Volume (veh/h)	1551	12	0	1228	0	7
Future Volume (Veh/h)	1551	12	0	1228	0	7
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1686	13	0	1335	0	8
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		TWLTL			
Median storage veh)			2			
Upstream signal (ft)			905			
pX, platoon unblocked			0.71			
vC, conflicting volume			1699	2354	843	
vC1, stage 1 conf vol				1686		
vC2, stage 2 conf vol				668		
vCu, unblocked vol			1699	2094	843	
tC, single (s)			4.1	6.8	6.9	
tC, 2 stage (s)				5.8		
tF (s)			2.2	3.5	3.3	
p0 queue free %			100	100	97	
cM capacity (veh/h)			371	130	307	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	843	843	13	668	668	8
Volume Left	0	0	0	0	0	0
Volume Right	0	0	13	0	0	8
cSH	1700	1700	1700	1700	1700	307
Volume to Capacity	0.50	0.50	0.01	0.39	0.39	0.03
Queue Length 95th (ft)	0	0	0	0	0	2
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	17.0
Lane LOS						C
Approach Delay (s)	0.0				0.0	17.0
Approach LOS						C
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			52.9%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 22: US 21 Sea Island Pkwy & Walmart Driveway #3

2038 Build
PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	162	1328	941	81	43	86
Future Volume (Veh/h)	162	1328	941	81	43	86
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	176	1443	1023	88	47	93
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						7
Median type		TWLTL	TWLTL			
Median storage (veh)		2	2			
Upstream signal (ft)		493				
pX, platoon unblocked					0.69	
vC, conflicting volume	1111				2140	556
vC1, stage 1 conf vol					1067	
vC2, stage 2 conf vol					1074	
vCu, unblocked vol	1111				1755	556
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	72				79	80
cM capacity (veh/h)	624				229	475
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	176	722	722	682	429	140
Volume Left	176	0	0	0	0	47
Volume Right	0	0	0	0	88	93
cSH	624	1700	1700	1700	1700	683
Volume to Capacity	0.28	0.42	0.42	0.40	0.25	0.21
Queue Length 95th (ft)	29	0	0	0	0	19
Control Delay (s)	13.0	0.0	0.0	0.0	0.0	17.9
Lane LOS	B					C
Approach Delay (s)	1.4			0.0		17.9
Approach LOS						C
Intersection Summary						
Average Delay			1.7			
Intersection Capacity Utilization			50.9%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

23: US 21 Sea Island Pkwy & Walmart Driveway #4

2038 Build
PM Peak Hour












Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑			↑
Traffic Volume (veh/h)	0	1371	979	41	0	43
Future Volume (Veh/h)	0	1371	979	41	0	43
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1490	1064	45	0	47
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage (veh)		2	2			
Upstream signal (ft)		897				
pX, platoon unblocked					0.70	
vC, conflicting volume	1109				1832	554
vC1, stage 1 conf vol					1086	
vC2, stage 2 conf vol					745	
vCu, unblocked vol	1109				1319	554
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	90
cM capacity (veh/h)	625				267	476
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	745	745	709	400	47	
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	45	47	
cSH	1700	1700	1700	1700	476	
Volume to Capacity	0.44	0.44	0.42	0.24	0.10	
Queue Length 95th (ft)	0	0	0	0	8	
Control Delay (s)	0.0	0.0	0.0	0.0	13.4	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		13.4	
Approach LOS					B	
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			41.2%		ICU Level of Service	A
Analysis Period (min)			15			

Intersection Sign configuration not allowed in HCM analysis.

HCM Unsignalized Intersection Capacity Analysis

76: Geechie Rd

2038 Build
PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	0
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	0	0	0			
Volume Left (vph)	0	0	0			
Volume Right (vph)	0	0	0			
Hadj (s)	0.00	0.00	0.00			
Departure Headway (s)	3.9	3.9	3.9			
Degree Utilization, x	0.00	0.00	0.00			
Capacity (veh/h)	917	917	917			
Control Delay (s)	6.9	6.9	6.9			
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A	A	A			
Intersection Summary						
Delay			0.0			
Level of Service			A			
Intersection Capacity Utilization			0.0%	ICU Level of Service	A	
Analysis Period (min)			15			

APPENDIX F

2038 BUILD INTERSECTION ALTERNATIVES










LOS AND DELAY RESULTS

HCM Unsignalized Intersection Capacity Analysis

2038 Build

24: Sunset Blvd & Miller Dr W

AM Peak










						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	595	1	43	193	1	47
Future Volume (vph)	595	1	43	193	1	47
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	647	1	47	210	1	51
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	648	257	52			
Volume Left (vph)	647	0	1			
Volume Right (vph)	1	210	0			
Hadj (s)	0.23	-0.46	0.04			
Departure Headway (s)	5.0	5.3	6.2			
Degree Utilization, x	0.90	0.38	0.09			
Capacity (veh/h)	709	656	555			
Control Delay (s)	36.0	11.5	9.8			
Approach Delay (s)	36.0	11.5	9.8			
Approach LOS	E	B	A			
Intersection Summary						
Delay			28.0			
Level of Service			D			
Intersection Capacity Utilization			53.8%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

2038 Build

24: Sunset Blvd & Miller Dr W

PM Peak










						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	326	1	121	413	1	48
Future Volume (vph)	326	1	121	413	1	48
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	354	1	132	449	1	52
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	355	581	53			
Volume Left (vph)	354	0	1			
Volume Right (vph)	1	449	0			
Hadj (s)	0.23	-0.43	0.04			
Departure Headway (s)	5.7	4.7	5.8			
Degree Utilization, x	0.56	0.75	0.09			
Capacity (veh/h)	598	752	556			
Control Delay (s)	15.7	20.3	9.4			
Approach Delay (s)	15.7	20.3	9.4			
Approach LOS	C	C	A			
Intersection Summary						
Delay			18.1			
Level of Service			C			
Intersection Capacity Utilization			56.6%	ICU Level of Service	B	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

2038 Build

24: Sunset Blvd & Miller Dr W

AM Peak










						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	595	1	43	193	1	47
Future Volume (Veh/h)	595	1	43	193	1	47
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	647	1	47	210	1	51
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	205	152			257	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	205	152			257	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	17	100			100	
cM capacity (veh/h)	783	894			1308	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	648	257	52			
Volume Left	647	0	1			
Volume Right	1	210	0			
cSH	783	1700	1308			
Volume to Capacity	0.83	0.15	0.00			
Queue Length 95th (ft)	232	0	0			
Control Delay (s)	27.5	0.0	0.2			
Lane LOS	D		A			
Approach Delay (s)	27.5	0.0	0.2			
Approach LOS	D					
Intersection Summary						
Average Delay			18.6			
Intersection Capacity Utilization			53.8%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

2038 Build

24: Sunset Blvd & Miller Dr W

PM Peak

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	326	1	121	413	1	48
Future Volume (Veh/h)	326	1	121	413	1	48
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	354	1	132	449	1	52
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	410	356			581	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	410	356			581	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	41	100			100	
cM capacity (veh/h)	597	688			993	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	355	581	53			
Volume Left	354	0	1			
Volume Right	1	449	0			
cSH	597	1700	993			
Volume to Capacity	0.59	0.34	0.00			
Queue Length 95th (ft)	97	0	0			
Control Delay (s)	19.5	0.0	0.2			
Lane LOS	C		A			
Approach Delay (s)	19.5	0.0	0.2			
Approach LOS	C					
Intersection Summary						
Average Delay		7.0				
Intersection Capacity Utilization		56.6%		ICU Level of Service		B
Analysis Period (min)		15				

MOVEMENT SUMMARY

 **Site: Hazel Farm Dr/Gay Dr AM Peak**

Hazel Farm Rd/Gay Dr
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
East: Gay Dr											
6	T1	464	1.0	0.527	9.7	LOS A	3.5	88.4	0.24	0.20	23.4
16	R2	101	1.0	0.527	9.7	LOS A	3.5	88.4	0.24	0.20	23.4
Approach		565	1.0	0.527	9.7	LOS A	3.5	88.4	0.24	0.10	23.4
North: Hazel Farm Rd											
7	L2	47	3.0	0.127	6.6	LOS A	0.4	11.1	0.48	0.88	25.2
14	R2	40	3.0	0.127	6.6	LOS A	0.4	11.1	0.48	0.88	25.2
Approach		87	3.0	0.127	6.6	LOS A	0.4	11.1	0.48	0.44	25.2
West: Hazel Farm Rd											
5	L2	40	3.0	0.309	6.5	LOS A	1.4	36.1	0.18	0.16	26.6
2	T1	283	3.0	0.309	6.5	LOS A	1.4	36.1	0.18	0.16	26.6
Approach		323	3.0	0.309	6.5	LOS A	1.4	36.1	0.18	0.08	26.6
All Vehicles		975	1.8	0.527	8.3	LOS A	3.5	88.4	0.24	0.12	24.5

Level of Service (LOS) Method: Delay & v/c (HCM 2010).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY



Site: Miller Dr/Sunset Blvd AM Peak

Miller Dr/Sunset Blvd
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
East: Miller Dr											
6	T1	647	1.0	0.607	11.5	LOS B	4.7	119.3	0.30	0.27	22.7
16	R2	1	1.0	0.607	11.5	LOS B	4.7	119.3	0.30	0.27	22.7
Approach		648	1.0	0.607	11.5	LOS B	4.7	119.3	0.30	0.14	22.7
North: Sunset Blvd											
7	L2	1	3.0	0.091	7.4	LOS A	0.3	7.6	0.54	1.06	26.0
14	R2	51	3.0	0.091	7.4	LOS A	0.3	7.6	0.54	1.06	26.0
Approach		52	3.0	0.091	7.4	LOS A	0.3	7.6	0.54	0.53	26.0
West: Sunset Blvd											
5	L2	46	3.0	0.234	5.5	LOS A	1.0	25.4	0.02	0.00	27.0
2	T1	211	3.0	0.234	5.5	LOS A	1.0	25.4	0.02	0.00	27.0
Approach		257	3.0	0.234	5.5	LOS A	1.0	25.4	0.02	0.00	27.0
All Vehicles		957	1.6	0.607	9.6	LOS A	4.7	119.3	0.24	0.12	23.9

Level of Service (LOS) Method: Delay & v/c (HCM 2010).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY



Site: Hazel Farm Dr/Gay Dr PM Peak

Hazel Farm Rd/Gay Dr
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
East: Gay Dr											
6	T1	435	1.0	0.459	8.5	LOS A	2.7	68.2	0.21	0.18	23.9
16	R2	58	1.0	0.459	8.5	LOS A	2.7	68.2	0.21	0.18	23.9
Approach		492	1.0	0.459	8.5	LOS A	2.7	68.2	0.21	0.09	23.9
North: Hazel Farm Rd											
7	L2	66	3.0	0.151	6.7	LOS A	0.5	13.5	0.48	0.87	25.0
14	R2	40	3.0	0.151	6.7	LOS A	0.5	13.5	0.48	0.87	25.0
Approach		107	3.0	0.151	6.7	LOS A	0.5	13.5	0.48	0.44	25.0
West: Hazel Farm Rd											
5	L2	40	3.0	0.422	8.2	LOS A	2.2	57.1	0.26	0.26	25.8
2	T1	392	3.0	0.422	8.2	LOS A	2.2	57.1	0.26	0.26	25.8
Approach		433	3.0	0.422	8.2	LOS A	2.2	57.1	0.26	0.13	25.8
All Vehicles		1032	2.0	0.459	8.2	LOS A	2.7	68.2	0.26	0.14	24.7

Level of Service (LOS) Method: Delay & v/c (HCM 2010).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY



Site: Miller Dr/Sunset Blvd PM Peak

Miller Dr/Sunset Blvd
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
East: Miller Dr											
6	T1	354	1.0	0.364	7.6	LOS A	1.8	44.2	0.34	0.45	24.3
16	R2	1	1.0	0.364	7.6	LOS A	1.8	44.2	0.34	0.45	24.3
Approach		355	1.0	0.364	7.6	LOS A	1.8	44.2	0.34	0.22	24.3
North: Sunset Blvd											
7	L2	1	3.0	0.069	5.4	LOS A	0.2	5.9	0.41	0.65	27.1
14	R2	52	3.0	0.069	5.4	LOS A	0.2	5.9	0.41	0.65	27.1
Approach		53	3.0	0.069	5.4	LOS A	0.2	5.9	0.41	0.32	27.1
West: Sunset Blvd											
5	L2	132	3.0	0.530	9.6	LOS A	3.6	91.2	0.03	0.01	24.7
2	T1	449	3.0	0.530	9.6	LOS A	3.6	91.2	0.03	0.01	24.7
Approach		580	3.0	0.530	9.6	LOS A	3.6	91.2	0.03	0.00	24.7
All Vehicles		989	2.3	0.530	8.6	LOS A	3.6	91.2	0.16	0.10	24.7

Level of Service (LOS) Method: Delay & v/c (HCM 2010).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

10.1.200- T Definitions

Tractor-Trailer means a combination of a truck-tractor and a semi-trailer wherein the two are attachable and detachable by design.

Truck-tractor (cab) means a motor vehicle designed and used primarily for drawing or pulling a semi-trailer.

10.1.200- S Definitions

Semi-trailer (trailer without front axle) means a detachable trailer designed to attach to a truck-tractor for hauling freight.

5.5.30 General Parking Standards. This section is intended to allow parking of commercial trucks, semi-trailers, truck-tractors (cabs), tractor-trailers and other heavy vehicles (vehicles over 20,000 GVW) in the T2 Rural Neighborhood District and to allow parking truck tractors (cabs) in addition to recreational vehicles, boats, trailers, campers and similar vehicles, in other residential districts on lots one (1) acre or larger, when the following standards are met. This section is intended to provide more flexibility to independent contractors and small business owners while addressing the need to maintain the character of residential areas.

A. Storage and/or Parking of heavy trucks, trailers, recreational vehicles, boats, campers, and similar vehicles in the T2 Rural District. Parking or storage of heavy trucks including commercial trucks, semi-trailers, truck-tractors (cabs), tractor-trailers, trailers, recreational vehicles, boats, campers, and other heavy vehicles, is permitted in the T2 Rural Neighborhood District under the following conditions:

1. One (1) heavy truck, commercial truck, semi-trailer, including one truck-tractor (cab), recreational vehicle, boat, camper or other heavy vehicle is permitted; and
2. A vehicle permitted to park in the T2 Rural Neighborhood District under this provision shall be parked to the rear of the principal building, garage, or carport; or in the side setback and behind the principal building, garage, or carport; and
3. There is a principal use of the property, such that parking or storing a commercial truck, semi-trailer, truck tractor (cab), or other heavy vehicle would be an accessory use and not the principal use; and
4. No living quarters shall be maintained or any business conducted from within such a vehicle while parked or stored; and
5. Required parking for the principal use is maintained notwithstanding the area used to park or store such vehicles; and
6. Heavy trucks, trailers, recreational vehicles, boats, campers, and similar vehicles parked or stored under this provision must be properly licensed and registered. Failure to maintain current license and registration on such trailers or

vehicles shall be a violation of Beaufort County Code of Ordinances Sec. 38-61 Junked and Abandoned Vehicles.

B. Storage and/or Parking of heavy trucks, trailers, recreational vehicles, boats, campers, and similar vehicles in all other residential Zone Districts. Parking or storage of heavy trucks including commercial trucks, *semi-trailers*, truck-tractors (cabs), *tractor-trailers*, trailers, recreational vehicles, boats, campers, and other heavy vehicles, is permitted on any one (1) acre or larger parcel of land in all other residential Zone Districts under the same conditions provided in Section 5.5.30(A)(1-6) above except:

1. *Semi-trailers* and *tractor-trailers* are not permitted to be parked or stored on any residential parcel outside of the T2 Rural Neighborhood District. The prohibition of semi-trailers and tractor-trailers on residential parcels outside of the T2 Rural Neighborhood District does not apply to truck-tractors (cab) which are permitted to be parked or stored in all other Zone Districts on one (1) acre or larger parcels when the conditions of Section 5.5.30(A)(1-6) and Section 5.5.30(B)(2) are met; and
2. When prohibited by private covenants and restrictions.

C. Storage and/or Parking of heavy trucks, trailers, recreational vehicles, boats, campers, and similar vehicles on parcels less than one (1) acre and outside of the T2 Rural Neighborhood District is prohibited. Parking or storage of heavy trucks including commercial trucks, semi-trailers, truck-tractors (cabs), tractor-trailers, trailers, recreational vehicles, boats, campers, and other heavy vehicles, is not allowed on any residential lot less than one (1) acre when located outside of the T2 Rural Neighborhood District.

1

4



Division 5.1: - Building Type Standards

Division 5.2: - Private Frontage Standards

Division 5.3: - Architectural Standards
and Guidelines

Division 5.4: - Fences and Walls

Division 5.5: - Off-Street Parking

5.5.10 - Purpose

5.5.20 - Applicability

5.5.30 - General Parking Standards

5.5.40 - Number of Motor Vehicle Parking Spaces Required

E E EA Parking Spaces, Lot Design and

arise, the standards found in Article 3 (Specific to Zones) shall prevail.

- C. **Location, Design, Landscaping.** All parking spaces provided shall meet the location, design, landscaping and improvement requirements in this Division, Division 3.2 (Transect Zones), and Division 5.8 (Landscaping, Buffers, and Screening Standards).

- A. **Storage and/or Parking of Heavy Trucks, Trailers, Recreational Vehicles, Boats, Campers, and similar Vehicles.** Parking or storage of heavy trucks (vehicles over 20,000 GVW), trailers, recreational vehicles, boats, campers, or similar vehicles in any zone for residential or storage purposes shall be prohibited except as follows:
1. **Semi-trailer** trucks, their cabs or trailers, and other heavy trucks shall not be parked or stored on any residential lot except within the T2 district;
 2. Shall be stored in the rear or interior side setback behind the front of the building, garage, or carport;
 3. There is a principal use of the property, to which such storage would be accessory;
 4. No living quarters shall be maintained or any business conducted from within while such trailer or vehicle is so parked or stored; and
 5. The required parking on the parcel is maintained in addition to the area used for the stored vehicle(s).
- B. **Off-Site/Premises Parking.** If a property owner is unable to provide the required parking on-site, the owner may at the discretion of the Director satisfy the parking requirement off-site provided the following standards are met.
1. **General to All Zones.**
 - a. Required parking may be provided in off-street parking facilities on another property within 600 feet of the site proposed for development, as measured:
 - (1) Along the street right-of-way; or
 - (2) Between the closest edge of such parking facilities to the closest edge of the site being served.
 - b. Pedestrian access between the use or the site and the off-premises parking area shall be via paved sidewalk or walkway.
 - c. The owner shall provide a recorded parking agreement reflecting the arrangement with the other site. The shared parking arrangement shall require a recorded covenant running with the land, recorded by the owner of the parking lot, guaranteeing that the required parking will be maintained exclusively for the uses served and remain for the duration of the use.

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5.5.30 General Parking Standards. This amendment relaxes the restriction that commercial trucks and semi-trailer cabs can only park on residential lots in the T2 district. This provides more flexibility to independent contractors and small business owners.

A. Storage and/or Parking of Heavy Trucks, Trailers, Recreational Vehicles, Boats, Campers, and similar Vehicles. Parking or storage of heavy trucks (vehicles over 20,000 GVW), trailers, recreational vehicles, boats, campers, or similar vehicles in any zone for residential or storage purposes shall be prohibited except as follows:

1. Semi-trailer trucks, their cabs or trailers, and other heavy trucks shall not be parked or stored on any residential lot except within the T2 district, except that one commercial truck or one semi-trailer cab may be parked on any residential lot of one acre or larger provided it is not prohibited by private covenants and restrictions.

10.1.200- T Definitions

Tractor-Trailer means a combination of a truck-tractor and a semi-trailer wherein the two are attachable and detachable by design.

Truck-tractor (cab) means a motor vehicle designed and used primarily for drawing or pulling a semi-trailer.

10.1.200- S Definitions

Semi-trailer (trailer without front axle) means a detachable trailer designed to attach to a truck-tractor for hauling freight.

5.5.30 General Parking Standards. This section is intended to allow parking of commercial trucks, semi-trailers, truck-tractors (cabs), tractor-trailers and other heavy vehicles (vehicles over 20,000 GVW) in the T2 Rural Neighborhood District and to allow parking truck tractors (cabs) in addition to recreational vehicles, boats, trailers, campers and similar vehicles, in other residential districts on lots one (1) acre or larger, when the following standards are met. This section is intended to provide more flexibility to independent contractors and small business owners while addressing the need to maintain the character of residential areas.

A. Storage and/or Parking of heavy trucks, trailers, recreational vehicles, boats, campers, and similar vehicles in the T2 Rural District. Parking or storage of heavy trucks including commercial trucks, semi-trailers, truck-tractors (cabs), tractor-trailers, trailers, recreational vehicles, boats, campers, and other heavy vehicles, is permitted in the T2 Rural Neighborhood District under the following conditions:

1. One (1) heavy truck, commercial truck, semi-trailer, including one truck-tractor (cab), recreational vehicle, boat, camper or other heavy vehicle is permitted; and
2. A vehicle permitted to park in the T2 Rural Neighborhood District under this provision shall be parked to the rear of the principal building, garage, or carport; or in the side setback and behind the principal building, garage, or carport; and
3. There is a principal use of the property, such that parking or storing a commercial truck, semi-trailer, truck tractor (cab), or other heavy vehicle would be an accessory use and not the principal use; and
4. No living quarters shall be maintained or any business conducted from within such a vehicle while parked or stored; and

5. Required parking for the principal use is maintained notwithstanding the area used to park or store such vehicles; and
6. Heavy trucks, trailers, recreational vehicles, boats, campers, and similar vehicles parked or stored under this provision must be properly licensed and registered. Failure to maintain current license and registration on such trailers or vehicles shall be a violation of Beaufort County Code of Ordinances Sec. 38-61 Junked and Abandoned Vehicles.

B. Storage and/or Parking of heavy trucks, trailers, recreational vehicles, boats, campers, and similar vehicles in all other residential Zone Districts. Parking or storage of heavy trucks including commercial trucks, *semi-trailers*, truck-tractors (cabs), *tractor-trailers*, trailers, recreational vehicles, boats, campers, and other heavy vehicles, is permitted on any one (1) acre or larger parcel of land in all other residential Zone Districts under the same conditions provided in Section 5.5.30(A)(1-6) above except:

1. *Semi-trailers* and *tractor-trailers* are not permitted to be parked or stored on any residential parcel outside of the T2 Rural Neighborhood District. The prohibition of semi-trailers and tractor-trailers on residential parcels outside of the T2 Rural Neighborhood District does not apply to truck-tractors (cab) which are permitted to be parked or stored in all other Zone Districts on one (1) acre or larger parcels when the conditions of Section 5.5.30(A)(1-6) and Section 5.5.30(B)(2) are met; and
2. When prohibited by private covenants and restrictions.

C. Storage and/or Parking of heavy trucks, trailers, recreational vehicles, boats, campers, and similar vehicles on parcels less than one (1) acre and outside of the T2 Rural Neighborhood District is prohibited. Parking or storage of heavy trucks including commercial trucks, semi-trailers, truck-tractors (cabs), tractor-trailers, trailers, recreational vehicles, boats, campers, and other heavy vehicles, is not allowed on any residential lot less than one (1) acre when located outside of the T2 Rural Neighborhood District.



MEMORANDUM

TO: Natural Resources Committee of County Council
FROM: Anthony Criscitiello, Planning Director
DATE: August 16, 2017
SUBJECT: Proposed Text Amendment to Community Development Code Section 5.5.30 General Parking Standards (Allow Parking of Commercial Trucks and Semi-Trailer Tractors/Cabs on Residential Lots of One Acre or Larger)

NATURAL RESOURCES COMMITTEE DISCUSSION excerpt from its June 19, 2017, minutes:

Notification: To view video of full discussion of this meeting please visit http://beaufort.granicus.com/ViewPublisher.php?view_id=2

Discussion: Mr. Tony Criscitiello, Planning Director, provided the Committee with an overview of the proposed text amendment to the Community Development Code (CDC) as follows:

- Section 5.5.30 General Parking Standards (allows parking of commercial trucks and semi-trailer tractors/cabs on residential lots of one acre or larger).

Councilman Dawson expressed concern that the amendment would have the effect of restricting truck trailers and cabs from being parked on residential lots in the rural areas of the county. Councilman Vaux said that from his understanding of the amendment, it does not restrict cabs and trailers on lots in rural, but opens up this use in other districts as long as the lot is one acre or greater. After much discussion regarding this proposed amendment, the Committee felt that the amendment was poorly worded and requested that County Staff revise the language and bring back to the Committee.

PLANNING COMMISSION RECOMMENDATION from its June 5, 2017, draft minutes:

Section 5.5.30: Mr. Criscitiello noted that a member of County Council requested allowing tractor cabs only on one acre lots or larger, and staff agreed. Commission discussion included clarification that tractor cabs and not trailers would be allowed on 1-acre lots, clarification of service professionals with trailers attached to their vehicles were allowed especially with home occupations, noting a hardship if only 1 vehicle was allowed in a 1-acre or larger residential lot, and clarification on multi-acre residential lots and the number of vehicles allowed.

Motion: Mr. Jason Hinchler made the motion and Mr. Harold Mitchell seconded the motion, to recommend approval to County Council on the **Text Amendment to the Community Development Code (CDC) Section 5.5.30 General Parking Standards that allows parking of commercial trucks and semi-trailer tractors/cabs on residential lots of one acre or larger.** Discussion included concern for potential abuses of other vehicles, querying the genesis for this amendment came from a resident asking his Councilman to alleviate his situation to allow him to park his tractor-trailer cab at his residence, noting that covenants may prevent this amendment, and recommending citizens who may be affected by this amendment to contact the Planning Department. The motion **carried (FOR: Hinchler, Mitchell, Pappas, Semmler, and Walsnovich; ABSENT: Chmelik, Fermin, Fireall, and Stewart).**

Public Comments: None were received.

STAFF REPORT

5.5.30 General Parking Standards. This amendment relaxes the restriction that commercial trucks and semi-trailer cabs can only park on residential lots in the T2 district. This provides more flexibility to independent contractors and small business owners.

- A. **Storage and/or Parking of Heavy Trucks, and Trailers, Recreational Vehicles, Boats, Campers, and similar Vehicles.** Parking or storage of heavy trucks (vehicles over 20,000 GVW), and trailers, recreational vehicles, boats, campers, or similar vehicles in any zone for residential or storage purposes shall be prohibited except as follows:
1. Semi-trailer trucks, their cabs or trailers, and other heavy trucks ~~may shall not~~ be parked or stored on any residential lot ~~except~~ within the T2 Rural district.
 2. In all other districts, one commercial truck or one semi-trailer cab may be parked on any residential lot of one acre or larger provided it is not prohibited by private covenants and restrictions.
 3. Where storage and/or parking of heavy trucks and trailers is permitted, the following shall apply:
 - a) The vehicle shall be stored in the rear or interior side setback behind the front of the building, garage, or carport;
 - b) There is a principal use of the property, to which such storage would be an accessory use;
 - c) No living quarters shall be maintained or any business conducted from within while such trailer or vehicle is so parked or stored; and
 - d) The required number of parking spaces on the parcel is maintained in addition to the area used for the stored vehicle(s).

ADD-ONS

The document(s) herein were provided to Council for information and/or discussion after release of the official agenda and backup items.

Topic:	Reusable Bags Over Single-Use Plastic Bags
Date Submitted:	August 22, 2017
Submitted By:	Rikki Parker
Venue:	Natural Resources Committee



South Carolina
Aquarium

Topic: Reusable Bags Over Single-Use Plastic Bags
Date Submitted: August 22, 2017
Submitted By: Rikki Parker
Venue: Natural Resources Committee

August 20, 2017

County Council of Beaufort County
Natural Resources Committee
Administration Building
Beaufort County Government Robert Smalls Complex
100 Ribaut Road
Beaufort, SC 29901-1228

To Whom It May Concern:

As a representative of the South Carolina Aquarium, I'd like to provide factual information relevant to the consideration of an ordinance to encourage the use of reusable bags over single-use plastic bags for retail checkout of goods purchased in unincorporated areas of Beaufort County. Information herein is derived from both peer-reviewed scientific literature and South Carolina Aquarium Sea Turtle Care Center staff observations of wildlife in our care. As scientific experts in the fields of wildlife biology and conservation, we are presenting this evidence to aid the Natural Resources Committee in 1) considering the potential impacts of an ordinance on Beaufort County's citizens, businesses, and local ecosystems, and 2) making an informed decision.

A 2016 United Nations Environment Programme (UNEP) publication stated that "marine litter poses serious environmental, health, and economic threats to oceans and coastal ecosystems" and noted that successful policies generally go beyond litter removal to proactively address the production, use, and disposal of products destined to become marine litter. As such, the Committee's consideration of an ordinance, such as this one regulating single-use plastic bags, is timely to promote the continued health and welfare of Beaufort County's citizens, businesses, and associated ecosystems,

A 2011 publication by Müller et al. stated: "The persistence of marine debris such as discarded [plastic] bags has become globally an increasing hazard to marine life." In 2015, Gall and Thompson reported that nearly 700 species globally have been impacted by marine litter, with plastic waste responsible for nearly all (92%) reported incidents. Concerningly, threatened or endangered animals like whales, seals, and birds are negatively affected, and a 2015 publication by Nelms et al. reports that all seven species of sea turtles are known to ingest or become entangled in plastic debris, a problem I've witnessed directly in green, loggerhead, and Kemp's ridley sea turtles found stranded along South Carolina's coast.

Prior to my current role as Conservation and Research Specialist with the South Carolina Aquarium, I rehabilitated sick and injured sea turtles with our Sea Turtle Rescue Program for nearly seven years and personally witnessed life-threatening complications caused by plastic trash in a significant number of our patients. To date, we've collected 113 pieces of plastic litter from the gastrointestinal tracts of 17 different sea turtles undergoing medical treatment in our hospital. One patient, a loggerhead named Midway, passed 59 different pieces of plastic during the first five days he was in our care. A juvenile green sea turtle named Grace underwent an

exploratory enterotomy, a high-risk surgery which involved cutting open her intestines to remove plastic trash, as a last resort to save her life. While Grace has now been successfully released back into the wild, what is the long-term fate for a sea turtle with a demonstrated propensity to eat plastic when our oceans contain so much of it? **It is important to note that, per a 2015 publication by Santos et al., less than 1 gram of debris, the equivalent to 1/10th of a typical plastic bag, can lead to the death of a juvenile green sea turtle like Grace.**

Single-use plastics are problematic on a larger scale as well. A 2015 publication by Green et al. documented anoxic conditions, reduced primary productivity, and significantly reduced numbers of invertebrate animals just nine weeks after plastic bags were experimentally placed in the intertidal zone, concluding that both conventional and biodegradable plastic bags rapidly alter marine habitats and the communities of animals that depend upon them. Dr. Patricia Fair of NOAA and the Medical University of South Carolina states that toxic compounds, such as PCBs and pesticides, adhere to plastic materials and can become a concentrated 'soup' of toxic chemicals when these plastics are then ingested by marine life, including fish (P. Fair, pers. comm.). Research by Rochman et al. (2013) concluded that ingestion of polyethylene, a common plastic bag material, is a vector for PBTs, or persistent bioaccumulative and toxic substances, in fish. While it is known that these toxins negatively affect the health of fish, it is not currently known how this bioaccumulation of toxins may affect those of us who regularly eat fish as a part of our diet. This paucity of information is certainly concerning and warrants consideration in light of potential human health issues.

While many conversations about plastic pollution focus on the marine environment, the problem is primarily terrestrial in origin. The United Nations Joint Group of Experts on the Scientific Aspects of Marine Pollution estimate that the vast majority (~80%) of marine pollution is from land-based sources. Discarded single-use plastics, such as bags, can become part of a pollution problem that can negatively impact our local economies, our local wildlife, and, potentially, even our mental and physical health. In Beaufort County in 2017, citizen scientists using the Aquarium's Litter-free Digital Journal have conducted 5 litter cleanup events at disparate locations. Plastic bag litter was recovered during all five events, including 32 plastic bags or bag fragments documented during a sweep by The Outside Foundation on August 10th. An ordinance, such as the one being considered by the Committee on August 22nd, could serve as an effective and proactive local solution to a local problem.

The South Carolina Aquarium appreciates the opportunity to comment and provide scientific information relevant to the ordinance under consideration. With kind regards,



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SOURCES:

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Topic:	Project Waterfront Park Extension into Whitehall Development
Date Submitted:	August 22, 2017
Submitted By:	Tony Criscitiello
Venue:	Natural Resources Committee

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Beaufort County Council Natural Resources Committee

August 22, 2017

PROJECT WATERFRONT PARK EXTENSION INTO WHITEHALL DEVELOPMENT

SUMMARY:

The City of Beaufort has negotiated with Mid-City Realty Group their donation of property (one-half to one acre +/-) on the Beaufort River side of the property around the old dock and pier. This property would be used for a passive park that will be connected to the Woods Bridge sidewalk and future county trail way. This would be a non-motorized pathway, pier and dock to be used by the public.

The conditions for the donation are: That the infrastructure for the park be financed by the County for an amount of not to exceed \$300,000.00. A closing on the property take place on or before November 1st, 2017. The infrastructure to be completed by December 31st, 2018 or earlier and that the City will assume full responsibility for the project management during construction and all maintenance of the park and infrastructure once the park is completed.

We have an estimated cost of the entire project of approximately \$250,000 to \$300,000. The annual maintenance is estimated to be \$35,000 to \$40,000 per year.

The City is asking for the Natural Resources Committee to support and recommend this project to the County Council for funding of up to \$300,000.00.

BACKGROUND & HISTORY:

This project goes back to the Palmetto Greenways Initiative that was started in Beaufort County in 1997. The purpose of the Beaufort Greenways Project was to determine how and where greenways can best serve the Beaufort Community. Greenway projects have unique purposes for each community they are developed in. The Beaufort Greenway concept was and is intended to connect the community with safe routes for people to access the community's resources via walking or cycling, or by other nonmotorized modes. It is also the purpose of the Beaufort Greenways Project to provide the community with access to the many water courses. By providing water access, the community will be able to access their most valuable resource, their waterways.

In 2015 a proposal to sell a park on this same property to the county, city, and Open Land Trust was proposed by a different developer at that time. The request at that time was for \$2.5 million dollars. For various reason that project did not move forward and the property was sold to a new development group.

We feel that this project will benefit all the residents of the county and the city just as the construction of the Henry Chambers Waterfront Park did in 1974 and it provides and meets the goals of the Beaufort Greenways project developed in 1997 and is still part of the overall masterplan for the county and the city.

THIS WILL BE A PASSIVE PARK:

It will be like the Spanish Moss Trail and will only be for non-motorized use.

It will have a boardwalk and dock for viewing and relaxation.

It will have seating and benches strategically placed.

It will be handicap accessible.

It will tie into a White Hall internal trail and park system.

It will be a continuation of the Henry Chamber Waterfront Park and will connect the downtown to Lady's Island.

It will have established trees and landscaping that will high light the beauty of the Low county.

It will be another recreational asset for our entire community to enjoy.

Requested by: City of Beaufort

Presented by: W. Prokop, City Manager