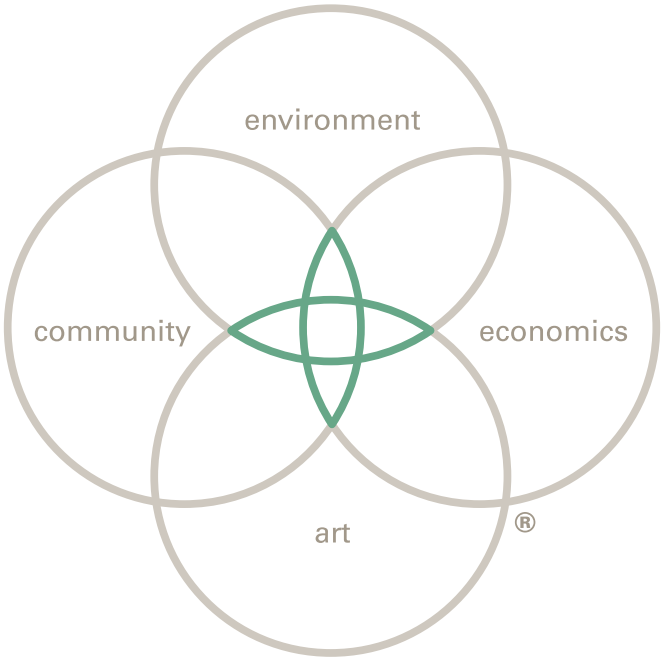
DESIGNWORKSHOP

THE CIRCLE TO CIRCLE VISION PLAN

Hilton Head Island, July 2016



DW Legacy Design® Method

Design Workshop's Legacy Design process emphasizes a deliberate approach to sustainable design solutions that is comprehensive of four Legacy categories: environment, community, art and economics. All aspects of the design process and foundational thinking for a project are captured in this document. Issues associated with the project and our client's Critical Success Factors are defined at the outset. The design team and client define a project Vision, a problem statement and a design solution. These steps are intended to build a strong foundational story for the project that aligns the design team and client to the same Principles and Legacy Goals. DW Legacy Design® metrics are employed to ensure that the project is accountable to comprehensive Legacy Goals set at the beginning of the process.

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INTRODUCTION

On February 17, 2015, Town Council created the Circle to Circle Committee under the oversight of the Planning Commission to develop a vision, incorporating community input, for the future of the Coligny Circle to Sea Pines Circle over the next 20 years.

CHAPTER 1: INTRODUCTION

Context

Hilton Head Island has been successful for many years thanks to its focus on natural resources and understated development. While residents and guests alike value the Hilton Head Island style and ambiance, their wants and needs have and will change over time in relation to the island's maturity, economic conditions, an evolving market and new interests of visiting tourists. Tourism is on the rebound after slumping during the recent recession and is currently at or near pre-recession levels and growing. Although this is good news for the many businesses that survive on tourism, it brings with it traffic and parking challenges that affect both locals and visitors alike. Additionally, the Bluffton area continues to grow, bringing an increasing demand for day trips to visit the beach. At a certain point, the values and aesthetics that have created the "Hilton Head Experience" for many years may be threatened unless appropriate infrastructure, development forms and parks and open spaces are planned for. In addition to increased pressure on infrastructure, the preferences of the island's future home buyer may change. The future buyer may not prefer living in a large home on a golf course behind security gates. Rather, there is an opinion that the next generations of retirees will prefer a more urban experience, with pedestrian oriented streets, more mixing of uses, and walkable development forms.

Any Vision Plan for the C2C area must respond to what has made the island a great place to visit and live for close to 60 years. It is the adherence to strong and timeless values that will enable the island to stand the test of time and be attractive for future generations. The following important island wide values formed the inspiration and value system for the Committee as it began a process to articulate a vision and set of recommendations for the future of the Circle to Circle Corridor:

- Living in Harmony with Nature, Protecting the Natural Beauty, and Creating a Unique Sense of Place
- Sustaining community prosperity through a diversified, strong local economy based upon resort, retirement, and non-hospitality businesses
- Providing meaningful experiences that cherish our history, the arts, cultural diversity, and enrich the lives of our residents and guests
- Striving for excellence in everything we plan, build, do and maintain
- Providing a serene, safe, and healthy living environment for residents, guests and visitors
- Working together and volunteering for the greater good of the Hilton Head Island community

These values, which have guided the beginnings and evolution of the island to date, are important reminders for how best to respond to existing and future challenges and opportunities. Being universal and timeless, they can inspire future direction while also being adaptable to current and future generational trends.

Purpose of the Circle to Circle Committee

On February 17, 2015 Town Council created the Circle to Circle Committee under the oversight of the Planning Commission to develop a vision, incorporating community input, for the future of the Coligny Circle to Sea Pines Circle over the next 20 years. As part of executing its mission, the Committee reviewed existing conditions and potential growth to identify challenges to be addressed within a Vision Plan, created with the assistance of a planning and urban design consultant. The Vision Plan considers the Circle to Circle Corridor, from Coligny Circle through Sea Pines Circle and on to the location of Grayco Hardware on Palmetto Bay Road.
The Committee's mission, as requested by the Town Council, was to work with the Community and a planning consultant, selected by competitive bid, to develop a vision for the C2C area and to make recommendations that address infrastructure requirements. The Town Council Charter tasked the Circle to Circle Committee with the following tasks:

- Develop a strategic vision incorporating community input.
- Review existing conditions and identify challenges to be addressed.
- Prepare a "high level" development outlook that includes an economic, demographic overview of the study area with an examination of residential, office and retail land uses that would be viable for development / redevelopment within the study area.
- Review today's traffic /parking challenges and present plan to address.
- Prepare improvements strategies and high level cost estimates.
- Plan for impact of projected development on traffic/parking.

The Vision Plan, which is the intended outcome of this process, is intended to articulate how the community sees itself in the future, and how it expresses the character and values of the community. It identifies actions that the Town must take to encourage reaching that vision, and obstacles that must be overcome. The Town's role is to enable that vision through appropriate regulations and public investment so that private development is stimulated and occurs in line with the vision.

Previous Studies that Influence the Vision Plan

Several existing plans and studies have been created over the years in response to growth and evolution of the island. These plans were studied and referred to as part of gaining project understanding and to understand areas of common ground. Specifically, the following studies:

- The Land Management Ordinance (LMO)
- The Bridge to Beach Plan
- The Hilton Head Design Guidelines
- Previous Master Plans (15-17) for the Coligny Beach area
- Plans for the Town Park at Coligny Beach
- Plans for the USCB Campus at Sea Pines Circle
- The 2015 Traffic Measurement and Study prepared by SRS Engineers

Pertinent Data and Observations

The Committee, in its presentations to the community, summarized the following pertinent data and observations that have guided the creation of this Vision Plan:

Traffic and Off Island Development:

- Tourism rebounds from recession and surpasses previous levels
- Beaufort County is 12th fastest growing area in US
- Bluffton population expected to double by 2030
- Off island developments marketed as "only 20 minutes from beach"
- Jaspar River Port could add 7,500 jobs by 2028

Hilton Head Island Redevelopment:

- Many aging properties are being redeveloped
- Redevelopment in Forest Beach
- Redevelopment in Sea Pines
- Redevelopment at Shelter Cove, Pineland Station and Island wide
- Retail commercial, offices are migrating off island

Future Generations:

- Market research indicates that younger generations (millennials) want to live/work/play in more urban settings
- Ability to walk to amenities - Less car centric in general
- Looking for quality of life to determine where they live
- Looking for educational recreation

Build on Existing Attributes:

- Multi-generational activities – family focused
- Walk ability
- Parks as venues
- Pet and bike friendly
- Environmental stewardship

Summary of Public Input Sessions

In accordance with its charter, the C2C conducted open community workshops in order to ensure that the Vision Plan was reflective of community sentiment. Prior to engaging the Planning Consultant, the C2C conducted five workshops in May of 2015. Locations included Town Hall, Forest Beach, HH Public Service office, Sea Pines and Hilton Head Plantation. These meetings provided input that led to the creation of a working vision; a description and definition of the character of specific areas of the Corridor; specific threats to the goals; and a listing of the important changes needed to be successful. In summary, the following was derived from the initial community input process:

Purpose/Function of Circle to Circle Area:

1. Walkable, bike, pedestrian friendly plaza area - primarily in Coligny
2. More green, open space for events, concerts, festivals, focal point
3. Update, refurbish, remodel Coligny Area
4. Increase Beach Access and gateway to ocean amenity
5. Coligny as civic center, town center, downtown destination

Important Changes Needed:

1. Reduce traffic congestion – Sea Pines Circle/ Coligny / Pope Avenue
2. Increased parking capacity
3. Need for public transportation, trolley, shuttle
4. Increase pathways for bikes and pedestrian travel and safety
5. Increase green space – neighborhood pocket parks
6. Refurbish existing, aging buildings

Threats to Goals:

1. Traffic congestion not resolved
2. Vacant buildings, property, lack of government incentive to upgrade
3. Political will for plan and follow through
4. Lack of vision and leadership to carry out vision
5. People, community not open to change
6. Inability to balance resident/tourist needs
7. Lack of Public Private partnerships
8. Cost/Taxes

Working Vision:

"Distinguished most by its public spaces and people watching places, by the obvious connection to the natural environment, and by the priority given to pedestrians and bicyclists, our island's traditional downtown is now bustling with activity and investment."

Qualities included in the vision as articulated by the public:

- Distinct area/sense of place and arrival
- Community gathering place with programmed activities (family fun for all ages)
- Beach scene and campus life
- Tied to island environment (beach, sub-tropical vegetation and Boggy Gut)
- Serving the needs of residents and guests alike
- Pedestrian/bicyclist priority: Tied together with a network of walkways and bike paths and shuttle/open-air trolley.
- Entertainment, restaurants, nightlife, campus
- Animated through activities programming

What we see in ten years:

- Distinguished most by its public realm and people watching places. Shade. Water.
- Buildings are backdrops for people places
- Activities: Carousel and calliope, puppet shows, fairs and festival music, bells tolling.
- Bikers and walkers moving up and down Pope Ave - enjoyable and educational

- All tied to nature, the rhythms of tides and seasons.
- Energy comes from the people on the beach, in restaurants, businesses and campus
- Strong reinvestment in buildings and businesses

This initial community input created the launching point for the planning process that followed. During the planning process, the Committee held biweekly public meetings at Town Hall to discuss the plan and to obtain public comment. These meetings ultimately were televised on the County TV Channel and many people viewed these meetings via television. At the conclusion of each meeting, the public was allowed to share its concerns or support.

At the conclusion of the planning process in June, the plan was presented to the public at 4 meetings held over two days at Shipyard, Town Hall, Coligny Plaza and Sea Pines. Attendance ranged from 40 – 140. At these presentations, the community was polled on 20 specific questions related to the content of the Vision Plan. The poll was also posted on the Town's web site so that those not in attendance could participate. The online polling had approximately 220 participants. All of the polling responses were captured and compiled so that they could be reviewed by the Committee prior to making final recommendations.

Project Dilemma

A Dilemma is the key issue that needs to be resolve in order to accomplish the Vision. The following dilemma was drafted to serve as a reminder of the key issue as well as to provide inspiration for solutions:

The Coligny Beach is a highly marketed and successful destination for beach goers. Driving to the beach creates traffic issues in the Corridor and specifically around Sea Pines Circle, especially in the high beach season, which impacts the perceived quality of life for locals and creates a potentially negative experience for vacationers. Not resolving the traffic issues appropriately and comprehensively will limit efforts to revitalize the Corridor and will continue negatively impact the quality of life of the residents and the experience of visitors.

<u>Concepts to Resolve the Dilemma (Thesis):</u>

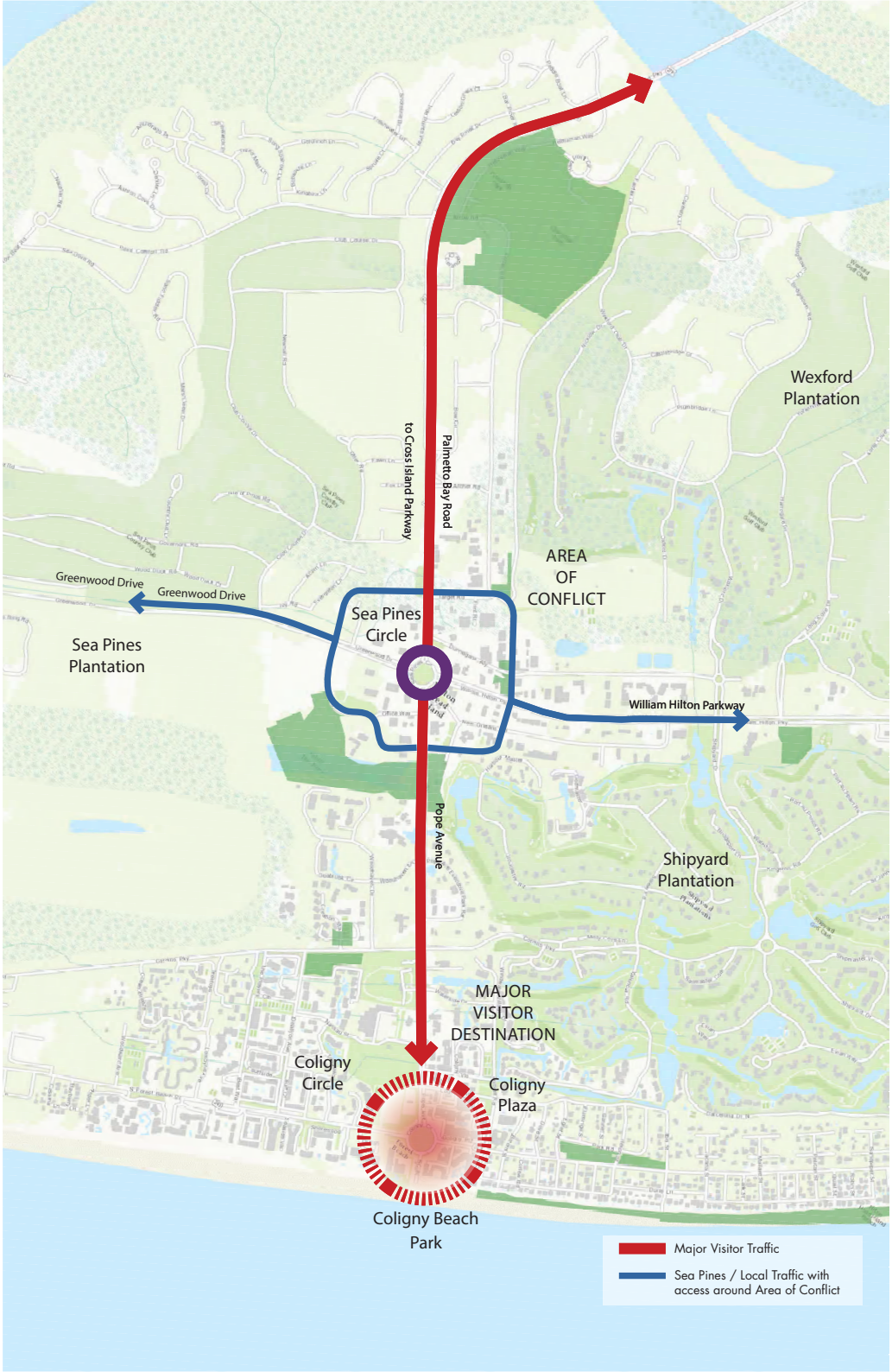
- Improve the safety and function for cars, bikes and pedestrians by addressing access management, signage, pedestrian and bike crossings and other safety related issues.
- Create a long term plan for a network of new roadway connections to enable locals and visitors to move more freely without using the circle.
- Increase capacity within the Sea Pines Circle intersection, while not ruining its sense of place.
- Expand upon the current network of bike and pedestrian trails to create new routes and more opportunities and experiences.
- Promote and make more visible other beach parks on the island so that they become more attractive and more used by the day user.
- Create a shuttle, trolley or other transit system to reduce demand on auto use for off island beach goers and employees in particular.

Dilemma:

Day visitors accessing Coligny Beach during the busy beach going season creates challenges for residents and visitors at Sea Pines Circle to move around the Circle for day to day activities.

Thesis:

Create a balanced plan that reduces car trips by shifting demand; promotes land uses that cause less traffic during the busy season; provide alternative modes of travel and enable more bike and auto routes around the Circle.



Balanced Approach:

- Promote North Beaches.
- Provide better Access Management.
- Create better signage and **wayfinding.**
- Create more routes around Corridor.
- Provide transit options
- Create more trails and promote biking.
- Shift land uses to ones that **create less traffic during** busy season.
- Promote walkable development forms.
- Shift some beach parking out of the Corridor.
- Create strategies that slow cars down in the Corridor.
- Increase the capacity of the Circle if necessary.

Summary of Committee Recommendations

The Committee, based on professional input, community polling, and the community's vision for the Corridor, created the following recommendations to be acted on over time. Many possible courses of action will be defined and take place over the next 10 – 20 years as funding becomes available and priority is placed on improving the condition of the Corridor. Near Term actions set the course and provide relief for congestion, and enable evolution. Mid to Long Term actions create a more complete vision. In all cases, acknowledging the following recommendations when creating budgets and plans for the future will help ensure a successful outcome:

Recommendations to Reduce Traffic Volumes:

Promote Other Beaches

1. Assign marketing firm to develop marketing plan for north beaches for implementation prior to 2017 season.
2. Develop strategy and implementation plan for north beach destination, including parking and amenities.

Implement Shuttle Parking System

1. Approve concept and develop implementation plan for spring 2017 pilot.
2. Implement shuttle parking and beach marketing/destination plan defined under Parking.

Parking Recommendations:

1. Assign marketing firm to develop marketing plan for north beaches for implementation prior to 2017 season.
2. Approve concept of shuttle parking and develop implementation plan for spring 2017 pilot.
3. Engage in discussions with Provident Church to determine if additional surface parking space can be leased, or at other surface parking lots in Coligny area.
4. Assess parking fee structure differences between Coligny and other beaches and develop strategy to incent use of other beaches.
5. Develop strategy and implementation plan for north beach destination, including parking, amenities.
6. Change ordinance to allow food trucks for north beach destinations as soon as possible.
7. Explore public/private partnership for structured parking to determine feasibility and cost.

Connectivity Recommendations:

1. Work with business owners to improve access to southwest quadrant of Sea Pines Circle, eliminating left turn accesses from Greenwood Drive.
2. Develop implementation plan and timeline to build center turn lane for New Orleans Road and incorporate in Capital Improvement Plan.
3. Develop implementation plan and timeline to build connector road between De Allyon, Office Park and Cordillo Drive including Greenwood Drive intersection improvements and incorporate in Capital Improvement Plan.
4. Explore opportunities for Northwest Connector and connector on east side of Pope as redevelopment occurs.

Traffic at Sea Pines Circle Recommendations:

1. Pilot signal synchronization of traffic signals to improve Circle clearing as soon as possible.
2. Develop implementation plan and timing for proposed Access Management improvements addressing priorities of median extensions on Palmetto Bay and William Hilton Parkway, and left turn prohibitions in C2C corridor.
3. Build landscaped medians for Sea Pines Circle approaches on Palmetto Bay Road and William Hilton Parkway to limit left turns and to improve visual appeal.
4. Assign staff to:

- evaluate entry alignment of roads into Sea Pines Circle to determine if changes would improve flow
- propose any lane markings or speed restrictions that would improve flow
- evaluate new technology approaches to island wide traffic management
- determine if traffic officers could help improve flow

5. Starting in 2018 and based on results, develop further mitigation options including 2 lane rotary when needed.

Policy Recommendations:

1. Adopt the proposed Vision and guiding principles for the Circle to Circle area.
2. Further develop design guidelines (built form, public space and landscape) consistent with village character.
3. Prepare land use master plan in conjunction with island wide visioning.
4. Assign Parks & Rec Commission to develop implementation plans and time line for small parks on Town owned land and incorporate in Capital Improvement Plan based on neighborhood input on need and content.
5. Assign Planning Commission to propose ordinance changes required to enable district/ shared storm water and shared open space in order to encourage small village type redevelopment.
6. Assign Planning Commission to re-assess LMO usage and density provisions in light of traffic volumes and vision and make recommendations for changes to LMO.
7. Further develop guidelines and land use strategy to support walkable village character in Coligny and Sea Pines (though combination of Island Visioning process, and follow on consulting engagements.) Envision how would the Town want this area redeveloped if a major hurricane wiped out all existing structures and it needed to be rebuilt.
8. Assign the Planning Commission to develop a redevelopment strategy for under utilized commercial space in the area.
9. **Assign responsibility to Planning Commission to follow up and report annually on status of recommendations. Incorporate recommendations into CIP and Comprehensive Plan.**

Acknowledgements

Twelve dedicated citizens gave their time to this planning process. Without their ongoing effort, this Vision Plan and its sensible recommendations would not have been possible. Additionally, this work could not have been accomplished without the leadership of the Town Council and Town Manager along wit the support and effort undertaken by the Staff:

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ESTABLISH UNIQUE VISION AND CHARACTER

The visioning process conducted by the community revealed that many people wanted the corridor to evolve into new patterns and forms that reinforced pedestrian comfort and mobility; created a charming environment for locals and visitors; provided places to hang out, play, shop and attend cultural events; and provided a place for a diverse population to live full time.

Over time, it is to become a distinctive place with its own distinctive character - Hilton Heads Beach Village - with buildings, streets and public spaces that draw from Hilton Head's unique aesthetic and sense of place, while adding a higher level of connectivity and mix of uses than may currently be provided for on this part of the island.

Guiding Principles

- Conveys a sense of place that is consistent with Hilton Heads image
- Preserves and protects the natural environment
- Provides an exceptional experience for island visitors which encourages them to return and potentially live here
- Balances the needs and wants of current residents with guests and future residents.

CHAPTER 2: VISION AND CHARACTER

The community, in its visioning workshops, during the C2C meetings that were open to the public, and in response to the polling questions asked during final community presentations indicated pretty strongly that it desired the Corridor evolve into a more pedestrian friendly, interconnected pattern. It supported ideas about creating nodal development around Sea Pines Circle and Coligny Circle that had more of a character like a village or a town, rather than a suburban shopping center. They described a place that was reflective of the values that have made Hilton Head an endearing place for over 60 years as well as one that reconsiders development forms and patterns that are more current. The notion of living close to nature, distinguished by its bicycle and pedestrian infrastructure, buildings that form a backdrop for people places is a potent descriptor that the community articulated.

Many of these attributes already exist and have been carried over as the island has evolved. Some patterns, however, have created disconnection and have potentially impacted the Corridors sense of place. Large roads needed to be created because there weren't alternative ways to move around by car, bike or on foot. Shopping centers cater to the automobile and shopping convenience by placing parking between the building and the street, pushing building entrances behind a large expanse of asphalt. Properties have been developed as single components, without connectivity between neighboring properties. Overcoming these challenges with the introduction of timeless planning principles associated with creating a pedestrian oriented environment would set the course for the rebirth of the Corridor.

Putting physical form to the vision expressed by the community enabled review and discussion about the nature of how redevelopment or new development should be considered. Many of these ideas have previously been considered, in fact, within the several (approximately 17) plans for the Coligny area that have been promoted by the Town or by private interests. The Land Management Ordinance (LMO) also leaned toward principles and patterns that are reflective of the vision. It was the job of the Planning Consultant to sift through these ideas and offer up a synthesis of the best ideas for review and comment. The ideas and concepts presented to the Committee and the community, and included:

- Continue to encourage patterns that are more in tune with nature north of Sea Pines Circle and south of Sea Pines Circle. This includes continuing the efforts to purchase vacant or under performing property for "green" uses such as open space, parks or storm water management.
- Creating nodal development at Sea Pines Circle and Coligny Circle that over time would become more walkable and more interconnected with pedestrian friendly "complete streets".
- Enabling and promoting redevelopment by considering consolidated "district" parking, storm water management, and open space so that individual developments didn't have to provide all or a portion of their requirements on their individual site, thus encouraging more compact development pattern and more use of the site for development. Currently, the redevelopment of many of the sites would be less dense than they currently are once storm water management was factored in. Consolidating

these functions would enable land owners more use of their sites for revenue generating uses and the consolidated open space and storm water networks would provide meaningful open spaces that can be enjoyed by all.

- Encouraging through land use controls, special area plans and ideally form based codes the evolution of the Sea Pines Circle and Coligny Circle to include pedestrian scaled blocks, inter connectivity between properties (the creation of streets that connect parking areas together at minimum), inclusion of pedestrian scaled blocks with nicely designed internal streets within large properties, buildings that present themselves and front onto "complete" streets, buildings that frame public spaces, parking that is located behind the buildings for the most part, architecture that is pedestrian in scale, the use of street trees to create shade, the integration of mixed use buildings that allow more people to live next to the shopping areas, amongst other things.
- Creating more street connectivity in Coligny Circle area so that the southern portion might be able to be reduced to 2 lanes of travel rather than 4, which would make it more pedestrian in scale and safer for pedestrians at this busy part of the Corridor.
- Considering the Coligny Circle as focal point, with the inclusion of elements that would present it like a town or village square.
- Building design guidelines that consider mixed use buildings that express the character of Hilton Head. Many thought that buildings should be up to 3 stories in Coligny for instance and that they should be part of the landscape.
- The consideration for a public/private development joint venture that would create a residential development wrapped around the beach parking lot.
- Focusing redevelopment more towards longer term residential uses in order to energize the retail environment, enhance street life, offer a lifestyle that is geared toward the next generation, and to enable people to walk to shopping, the new park, and the beach.

Evaluation

Although it is recognized that the market and the community will further refine and shape the ideas presented for the Corridor, the principles and concepts received lots of support by the community. It began to express what they are looking for as it relates to their description of this part of the island as "Hilton Head's" Beach Village.
Challenges to Implementation:
Although the LMO and the Islands Design Guidelines work well to ensure that new developments adhere to the islands sacred values and principles and also encourage new investment, they may not go far enough to ensure the outcome that the community is seeking for itself. Ultimately, a decision has to be made in favor of, or not, of land use controls that are highly descriptive and tailored to each specific area of the Corridor. This level of land use control is not always acceptable to property owners in particular since it puts limits and requirements on private property. However, the land use controls, such as special area plans and form based codes are not unique, and are used more and more in cities that are concerned with the quality of their physical environment and the adherence to sound and timeless planning principles.

Implementation Steps

The process to articulate a vision took a giant step within the C2C process and momentum has been created. Going forward, more discussion with the community needs to occur around the specific controls that are desired to make the vision a reality.

- It is recommended that the Town Council adopt the proposed Vision and guiding principles for the Circle to Circle area.
- Proceed with developing design guidelines (built form, public space and landscape) and form based codes consistent with village character
- Prepare land use master plan in conjunction with island wide visioning.
- Assign Parks & Recreation Commission to develop implementation plans and time line for small parks on Town owned land and incorporate in Capital Improvement Plan based on neighborhood input on need and content.
- Assign Planning Commission to propose ordinance changes required to enable district/ shared storm water and shared open space in order to encourage small village type redevelopment.
- Assign Planning Commission to re-assess LMO usage and density provisions in light of traffic volumes and vision and make recommendations for changes to LMO.
- Link current codes, guidelines and ordinances so that they are all speaking the same language and support each other.
- Promote refurbishing and redevelopment of under performing properties into new mixed use developments that have a residential component, or other traffic neutral uses, in addition to a retail component.
- Consider property appearance standards ordinance to ensure properties remain attractive
- Seek public / private development opportunities where possible, such as at the beach parking lot.

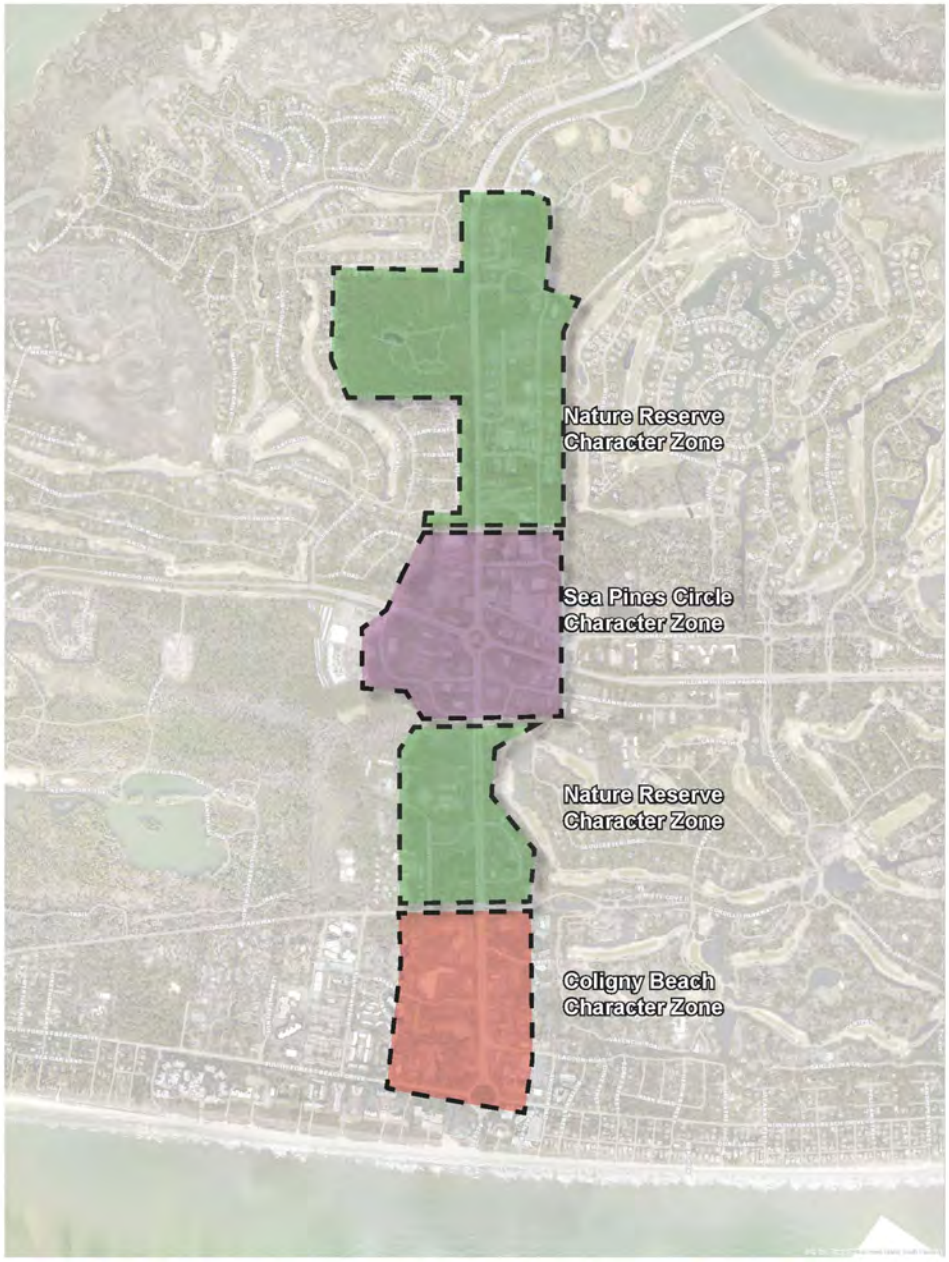
Committee Recommendations

The Committee recommends proceeding with the Implementation Steps outlined above to ensure that the vision for the Corridor is realized based on the following guiding principles:

- Conveys a sense of place that is consistent with Hilton Heads image
- Preserves and protects the natural environment
- Provides an exceptional experience for island visitors which encourages them to return and potentially live here
- Balances the needs and wants of current residents with guests and future residents.

Defined Character Areas - Nodes and Nature:

The Corridor naturally can be divided into nodal areas - such as around Sea Pines Circle and Coligny - and more natural areas - such as the area between the circles which is home to Boggy Gut and several churches and heading north to the Newhall Audobon Nature Preserve and Crossings Park.



Concept - Establish Character Zones

- Support the LMO and future redevelopment by establishing aesthetic and form based guidelines for character zones.
- Public Process used to create description and guidelines
- Sea Pines Character Zone creates gateway into Sea Pines and provides convenient commercial uses.
- Nature Reserve Character Area responds to natural open spaces, institutional uses and lower densities

Alternatives:

- Lower density and a more naturalized landscape environment within the 'Nature Reserve" zones.
- More walkability, pedestrian orientation, compact and walkable development forms and connectivity within the Sea Pines and Coligny Beach nodes.
- The nodes have similar planning principles, but each expresses its on unique character.
- The Nature Reserve areas limit building heights and promote more landscape cover and biodiversity
- Design standards and guidelines can be created that help ensure these outcomes.

Nature Reserve Zone - North:

The large Crossings Park and the Newhall Audobon Nature Preserve, along with established landscape setbacks create a green and natural image when traveling along Palmetto Bay Road. This should be supported going forward so as to enhance links with nature and to contrast with the node proposed for Sea Pines Circle.

Nature Reserve Character Zone Concepts

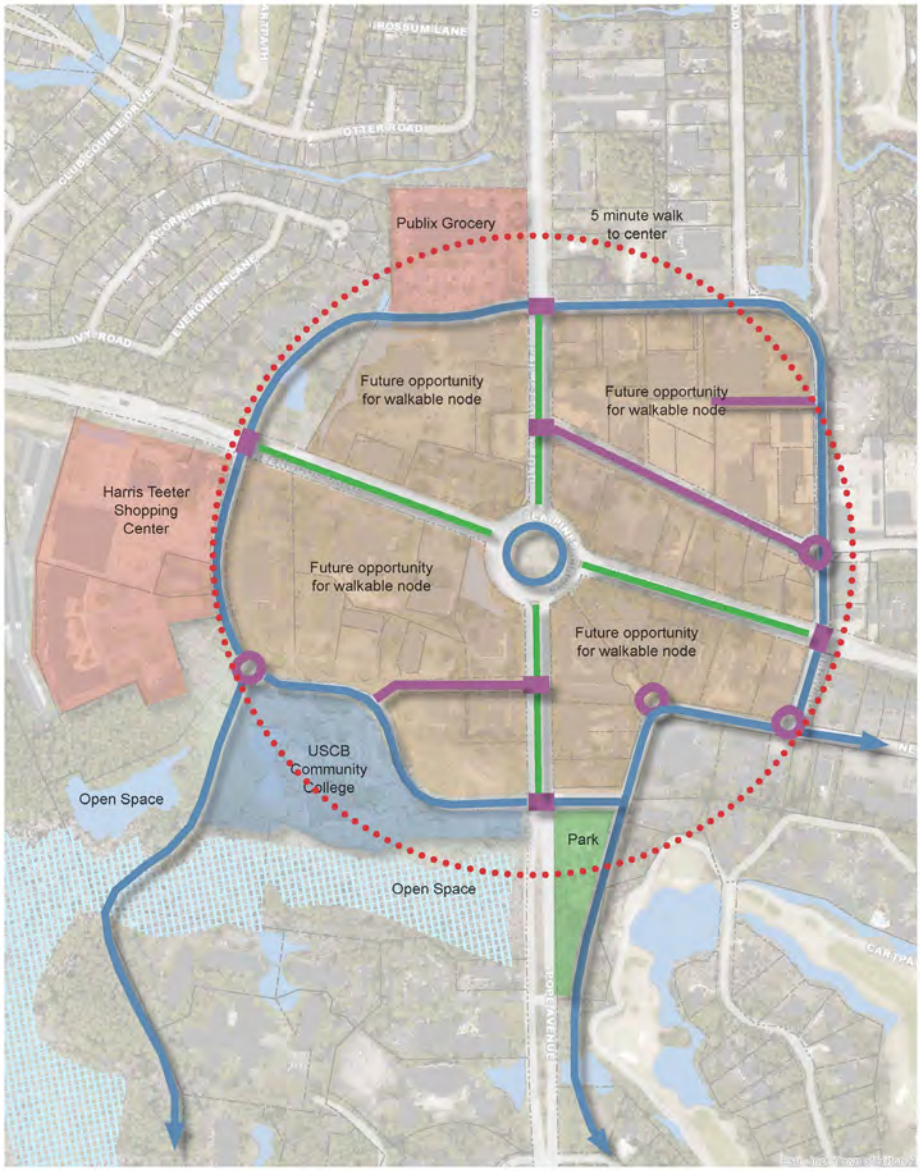
- Retain low density, expansive buffers and vegetated character.
- Ensure environmentally responsible site development and building construction.
- Consider the purchase of undeveloped and under-performing properties to expand natural open space and recreation network and environmentally sound storm water management.

Alternatives:

- More stringent design standards to ensure green development and landscape protection.
- Town should consider continuing purchasing sites that are under utilized to create green space and storm water connectivity.

Sea Pines Character Zone:

Sea Pines Circle is the gateway both to Coligny and the Sea Pines community. The development of USCB will create new activity and potential. Vital to establishing this important node as a walkable place will be to create street connectivity within the four corners.



Sea Pines Character Zone Concepts

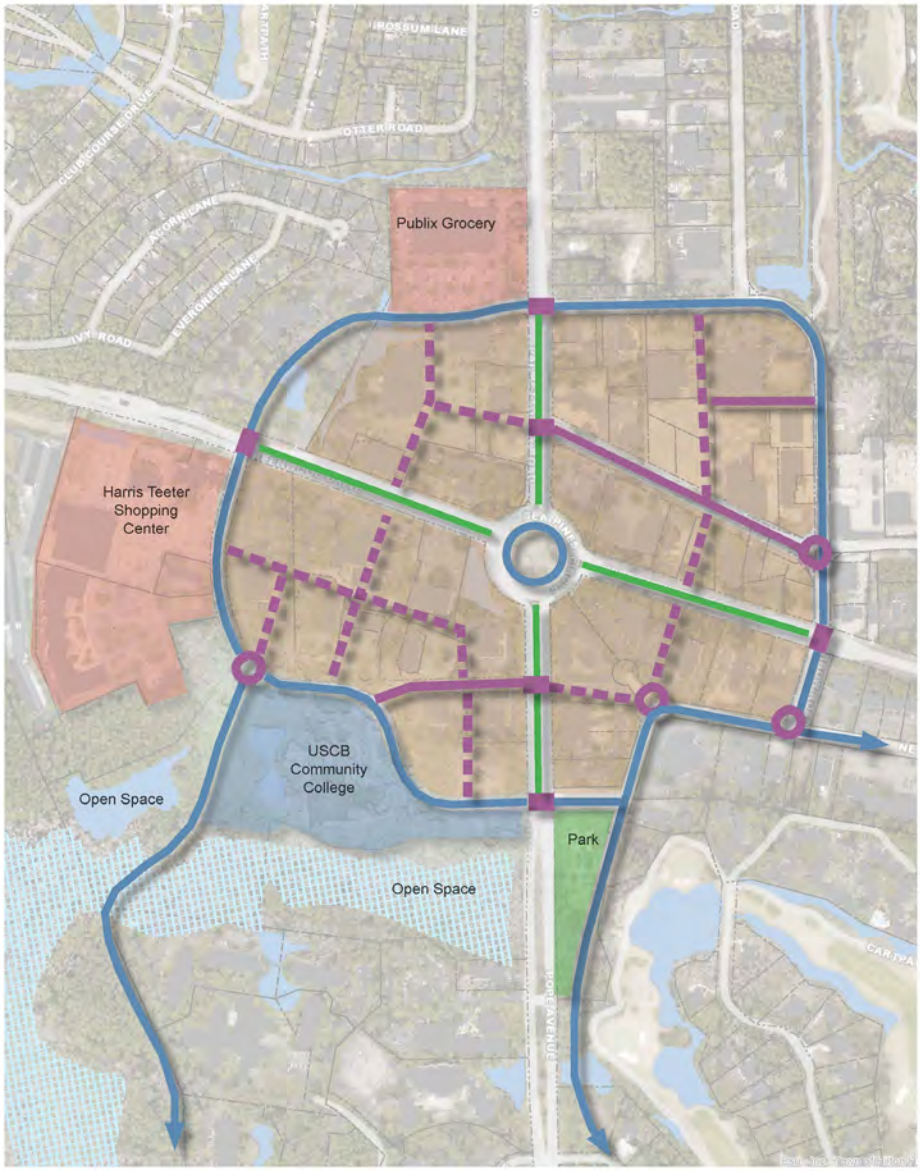
- The potential future "Northwest Connector" and new internal connections relieves traffic congestion and creates the opportunity to evolve into a nodal development pattern in future.
- Potential future connecting roadways on each side of Pope enable new routes and relieve congestion.
- Attractive medians manage access and provide attractive landscaped gateway.
- Access management plans and other functional and safety measures, such as better signage, vegetation management and pavement markings, enable safer and easier movement around the circle.
- Modifications to Circle, near and long term, enhance safety and increase capacity.
- Enhanced intersections provide pedestrian and bike safety and create attractive element in the street.

Alternatives:

- The Northwest Connector
- Access management on the 4 legs of the circle
- Enhanced intersections that allow for safer crossing of busy roads..

Sea Pines Circle Character Zone:

An internal street network that creates walkable scaled blocks will enhance the opportunity for higher levels of pedestrian orientation to new development and redevelopment. New internal street locations should be planned for so that new development conforms to a walkable pattern.



Sea Pines Character Zone Concepts

- The potential future "Northwest Connector" and new internal connections relieves traffic congestion and creates the opportunity to evolve into a nodal development pattern in future.
- Potential future connecting roadways on each side of Pope enable new routes and relieve congestion.
- Attractive medians manage access and provide attractive landscaped gateway.
- Access management plans and other functional and safety measures, such as better signage, vegetation management and pavement markings, enable safer and easier movement around the circle.
- Modifications to Circle, near and long term, enhance safety and increase capacity.
- Enhanced intersections provide pedestrian and bike safety and create attractive element in the street.

Alternatives:

- Internal streets that connect to existing streets and provide access to shopping areas such as Barmuda Triangle.
- Intersections on the 4 legs coming out of the Circle are organized and lined up so that access is managed along these busy roads.

Sea Pines Circle Character Area:

New development should frame pedestrian friendly internal streets with a mix of uses so that they create a walkable environment. Parking should generally be located behind the buildings so that it does not dominate the landscape.

Sea Pines Character Zone Concepts

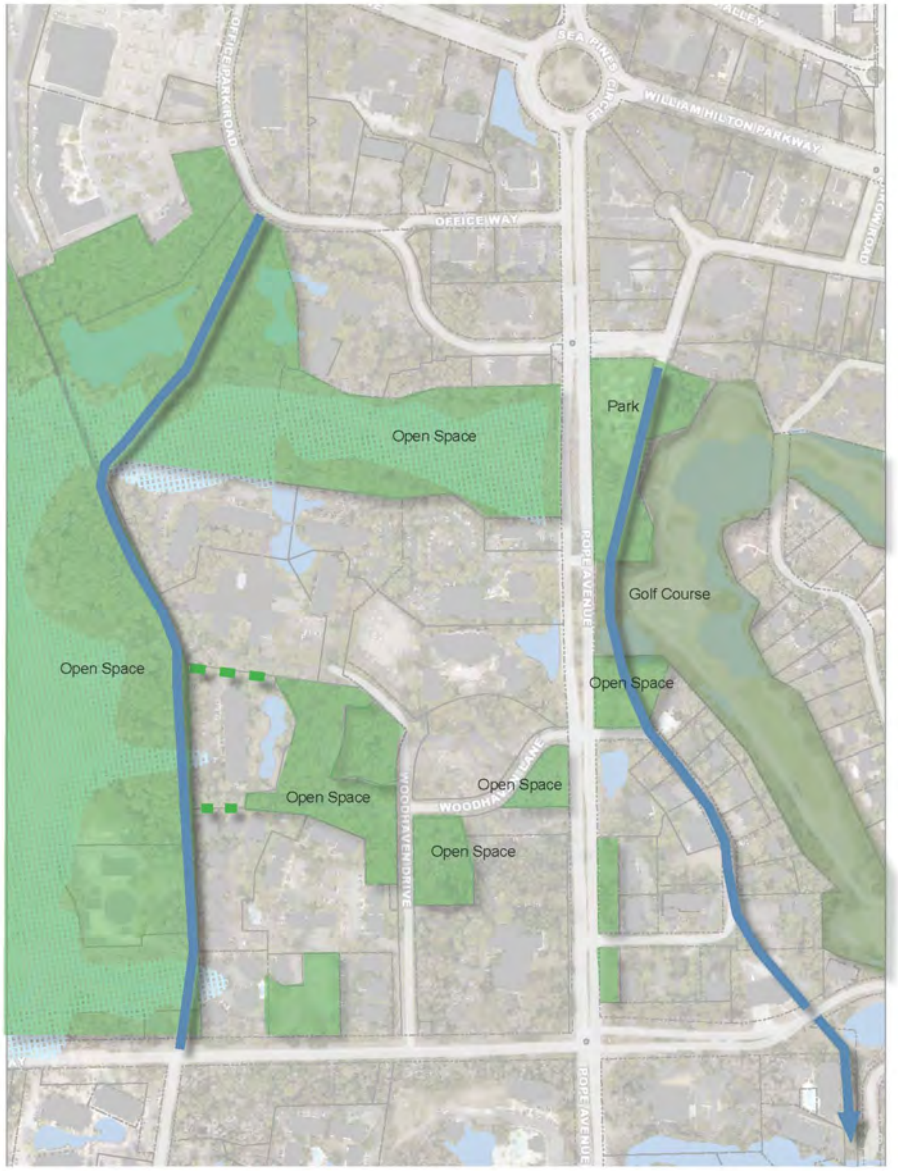
- Encourage development that has attractive mixed use buildings that frame pedestrian oriented streets with parking located in the interior spaces.

Alternatives:

- Each quadrant has the opportunity to promote its own pattern of land uses.
- The quadrant next to USCB can provide uses that work in harmony with the College, **such as housing, office,** research based uses and retail.

Nature Reserve Character Area - South:

The area between the Circles, south of Office Park Way and North of Cordillo Parkway, has several established open spaces and institutions that give this zone a feeling of being in nature. This should character should be supported going forward to allow vital environmental connections and to create a contrast to the more pedestrian oriented nodes on either side of it.



Nature Reserve Character Zone Concepts

- Retain low density, expansive buffers and vegetated character.
- Ensure environmentally responsible site development and building construction.
- Consider the purchase of undeveloped and under-performing properties to expand natural open space and recreation network and environmentally sound storm water management.

Alternatives:

- Large setbacks.
- Completing open space linkages.
- Opportunities for District Storm Water management and District Open Space.
- Design Standards that encourage environmentally sensitive design.

Supporting Open Space and Storm Water:

As part of creating distinct character areas and to support the environmentally responsive management of storm water, the use of Town owned land should be considered for additional parks, open space and storm water management. Doing so would consolidate open space while also incentivizing more compact development within the nodes. The Town should also consider continuing its program to purchase vacant or under utilized sites for open space preservation or developed as parks or storm water management areas.

The above map shows concepts for how existing and potential sites could be consolidated and used for storm water management, parks and/or open space. Doing so would offset the requirements to provide these space consumptive uses on each property, which would encourage more use of each site for compact walkable mixed use development. Any use of these sites should go through a design process that includes the neighborhoods.

Coligny Beach Character Zone:

As mentioned previously in the study, enabling more connectivity and alternative routes to move around the Corridor will lessen traffic delays and congestion and enhance walkability. It is an essential component of making the Coligny Beach Character Zone more pedestrian and bike friendly.

Coligny Beach Village Character Zone

- 4 Lane Boulevard
- Two Lane High Pedestrian Street
- Two Lane Internal High Pedestrian Street
- Perimeter Street Connections
- Local "Complete" Streets with Parking
- Enhanced Intersection
- Pedestrian Connection

Concept #1 - Enhanced Connectivity

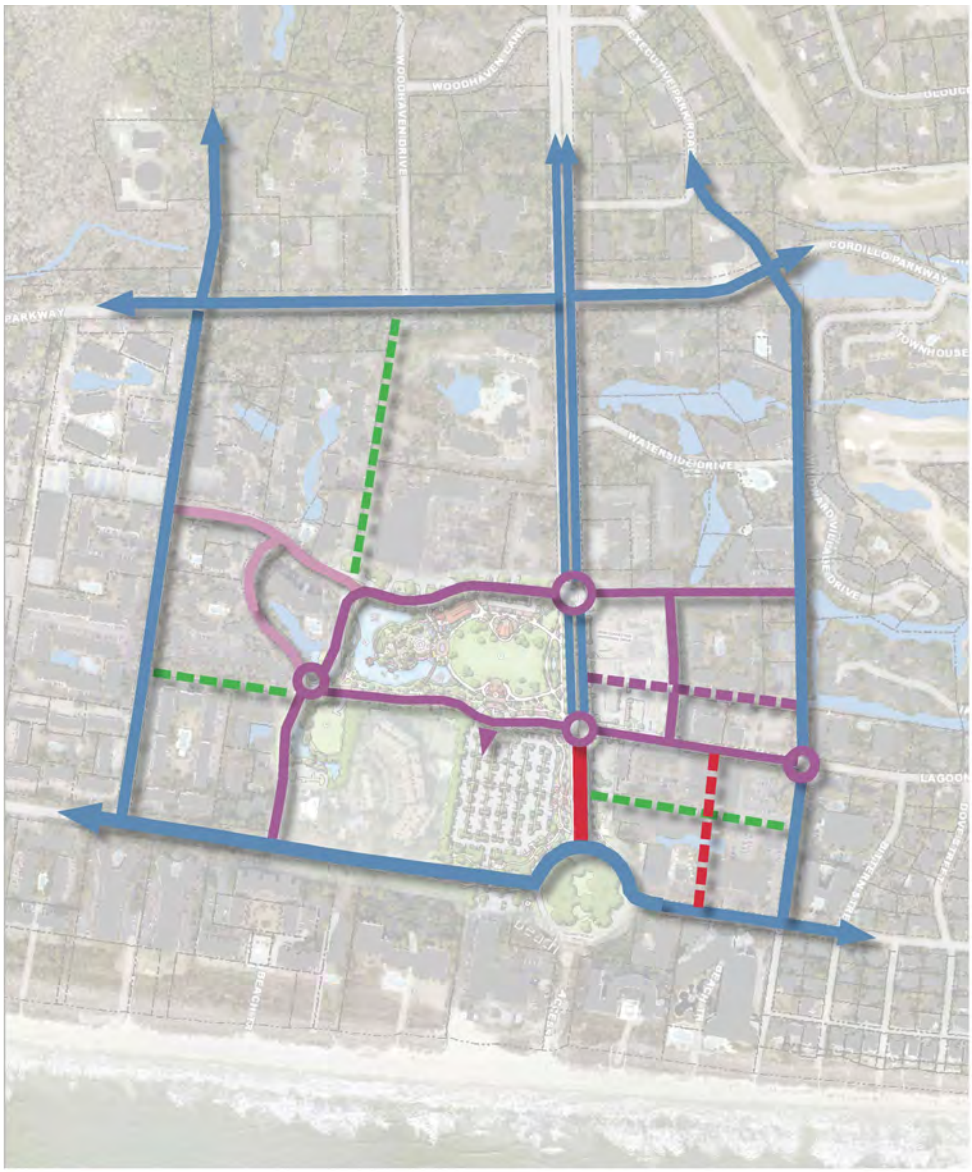
- Create street framework that enables other routes than Pope Avenue.
- Access Beach Parking from Nassau Street to remove traffic from lower portion of Pope Avenue.
- Create enhanced intersections to promote flow to local streets and to create gateways.
- Consider "T" intersection at Coligny Circle to promote pedestrian safety and to make the center of the circle a useable park / civic space.

Alternatives:

- Create enhanced intersections on busy streets that enable safe crossing.
- Consider small circles as a way to encourage cars to take alternative routes around Coligny Circle to reduce **traffic on the south end of** Pope and to create a sense of gateway.
- Access the beach parking lot from Lagoon Road, not Pope, to get those cars off the road sooner.

Coligny Beach Character Area:

Like at Sea Pines Circle, the creation of walkable scaled blocks within the large blocks would enhance connectivity and pedestrian activity. Creating more connectivity and more routes would allow for Pope Avenue to become a smaller scaled street as you get closer to the circle.



4 Lane Boulevard

Two Lane High Pedestrian Street

Two Lane Internal High Pedestrian Street

Perimeter Street Connections

Local "Complete" Streets with Parking

Enhanced Intersection

Pedestrian Connection

Concept #2 - Establish Pedestrian Core

- Turn the last block of Pope into a memorable attractive pedestrian scaled street with on street parking and enhanced sidewalk treatments, street life and street furniture.
- Create appropriately scaled internal, attractive retail streets and pedestrian connections within large blocks.
- Require cross property connectivity to enable circulation off of Pope or other busy streets.

Alternatives:

- Create internal street network with 'complete streets".
- Create pedestrian linkages between properties.
- Implement connectivity improvements so that the last block of Pope can become a smaller more pedestrian scaled street.
- Consider making Coligny **Circle a modified "T"** intersection to enhance pedestrian safety and to allow access into the circle space.

Coligny Beach Character Area:

Framing charming pedestrian scaled streets and public spaces with buildings that reflect Hilton Heads aesthetic will enable the Coligny Beach Character Zone to meet the communities vision and allow it to express 'Hilton Heads Beach Village".

4 Lane Boulevard

Two Lane High Pedestrian Street

Two Lane Internal High Pedestrian Street

Perimeter Street Connections

Local "Complete" Streets with Parking

Enhanced Intersection

Pedestrian Connection

Concept # 3- Create Village Fabric

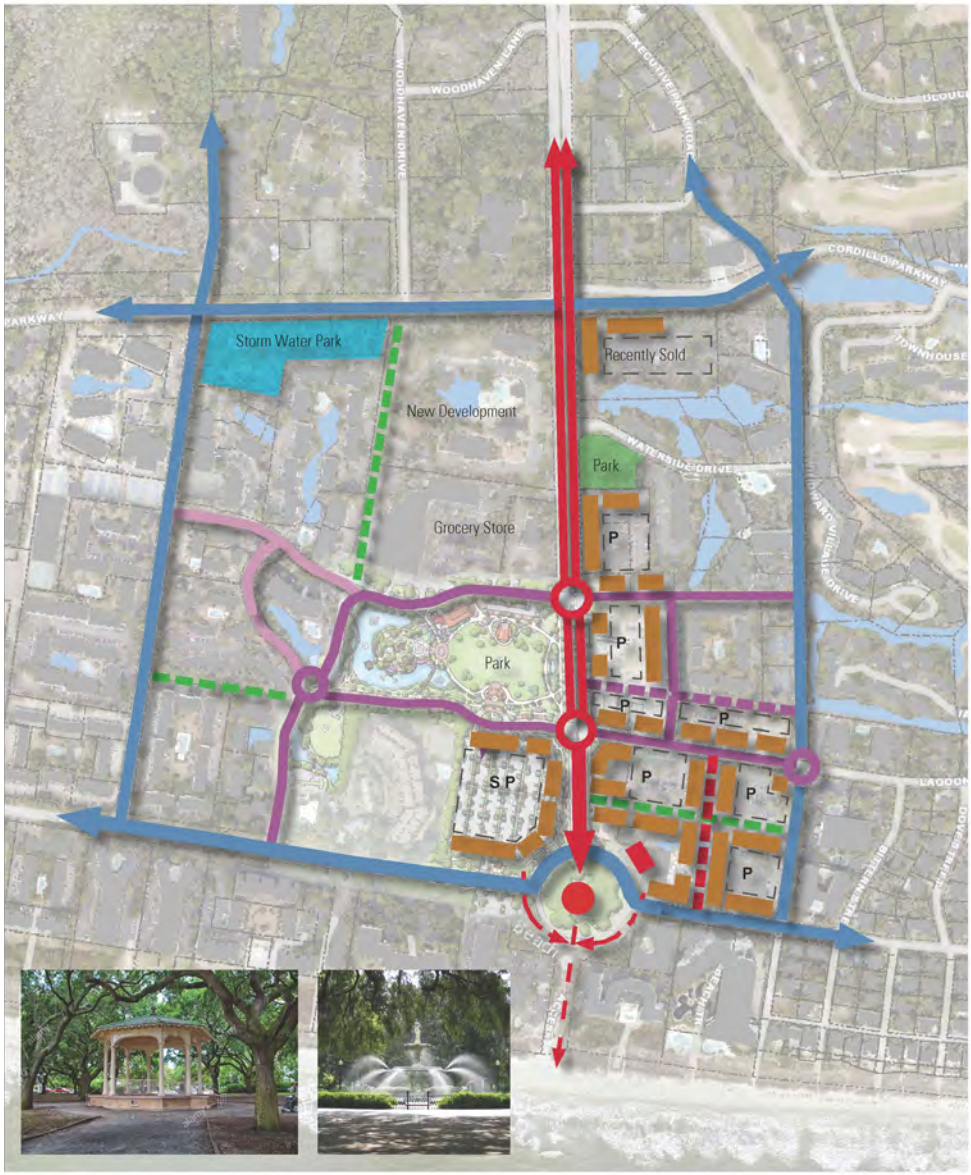
- Create walkable scaled blocks (> 450 feet x 450 feet) with internal streets that have parallel parking within large properties.
- Flank streets with appropriately scaled mixed use buildings and internalize parking lots.
- Where possible, promote ground level retail and residential or lodging uses above retail so that the district is energized with people within walking distance of shops and amenities.
- Promote building and site design that promotes a unique village character and scale that is identifiable as being Hilton Head.

Alternatives:

- **Specific Design Standards** and Guidelines for streets and development form, setbacks, massing etc. will help ensure an outcome that meets with the communities vision.

Coligny Beach Character Area:

The community input process revealed that many people would like to better utilize Coligny Circle as a park or as the beach villages “town square”. doing this would create a focal point at the end of Pope Avenue.



4 Lane Boulevard

Two Lane High Pedestrian Street

Two Lane Internal High Pedestrian Street

Perimeter Street Connections

Local “Complete” Streets with Parking

Enhanced Intersection

Pedestrian Connection

Concept #4 - Iconic Gateways and Civic Uses

- Create an iconic terminal vista feature (pavilion, lighthouse, amphitheater, water feature) at the end of Pope Avenue to create a memorable identity.
- Integrate the iconic element into a public gathering space such as a park, concert lawn or “town square”.
- Consider other civic uses on the Town owned land that surrounds the circle to create a higher sense of this being Hilton Heads traditional downtown.

Alternatives:

- Town squares are part of planning and landscape of historic towns and cities in the Low Country such as at Charleston and Savannah.
- The ‘town square” should work with the native landscape.
- A dramatic fountain, public art, or a pavilion would create a focal point.

Creating Complete Streets:

Implementing the improvements that would enable Pope Avenue to transition from a 4 lane street as its currently designed down to a 2 lane street would greatly enhance the character and pedestrian quality of the Coligny Beach zone.

Pope Avenue Four Lane Boulevard - No Parking

Pope Avenue Two Lane Portion with Diagonal Parking

Local Pedestrian Oriented Street Parallel Parking

Coligny Beach Village Character Zone

Alternatives:

- Pope Avenue transitions from 4 lanes into two lanes at the last block before the Circle.
- A larger pedestrian / bike trail that is of higher design quality than typical trails along the last block or two of Pope Avenue.
- Diagonal on street parking.
- Buildings located a little closer to the street.
- Internal streets with on street parking, sidewalks, street trees and narrow travel lanes, framed by buildings.

Village Planning Patterns:

Many historic and new towns and cities utilize timeless planning principles. These planning principles should inform design standards and guidelines for the nodal areas of Sea Pines Circle and Coligny Beach.

Downtown Bluffton, SC

Palmetto Bluff, SC

Habersham, SC

Coligny Beach Village Character Zone

Alternatives:

- Pedestrian friendly streets.
- Sidewalks
- Street Trees
- Buildings open to the street
- Cafes at the corners.
- Awnings
- On street parking
- Buildings designed for the climate.

Village Planning Patterns:

Coligny Beach Village Character Zone

Alternatives:

- Buildings framing streets and public spaces.
- Conventional retail oriented to the street rather than parking.
- Animated pedestrian environment.

Village Planning Patterns:

Coligny Beach Village Character Zone

Alternatives:

- Residences over retail
- Articulation of building corner elements.
- Design interpretations that can be historic or contemporary.

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3

IMPROVE ROADWAY SAFETY AND FUNCTION

Resolving traffic nuisances and increasing the safety and ease of moving locals and visitors in multiple modes through the corridor is an important component of achieving a successful vision for the Circle to Circle Corridor.

Several high quality transportation engineers have worked corroboratively with the Committee and planning team to determine the most effective ways to relieve traffic congestion and create a safer, more multimodal environment within the Corridor.

Resolving traffic issues must be coordinated with changes in people behaviors related to using multiple modes of travel, creating a pattern of connectivity that enables the Corridor to evolve into the future, and elevating the sense of place, image and character of this important part of Hilton Head.

CHAPTER 3: SAFETY AND FUNCTION ELEMENTS

Moving around the Corridor, and particularly Sea Pines Circle can be confusing for visitors, which impacts locals and visitors from a traffic and safety standpoint. Improving the safety and function of the roadways would enhance the driver experience, particularly the visitor that doesn't have knowledge of the circle and the businesses located around it. Based on the recommendations of the Town's traffic engineer and transportation consultants hired by the Town to help resolve traffic issues within the Corridor, a number of remedies were created to enable cars to move in a safer and organized fashion, which would enhance decision making and alleviate some congestion. These included in summary:

- Extending Landscape Medians from Sea Pines Circle in all directions to control access. This would limit cars from crossing lines of traffic for a distance from the circle, which would reduce the potential for collisions and delays. These medians can also become attractive landscape elements in the roadway, enhancing the Corridors aesthetics.
- Limiting left hand turns out of some of the businesses near the Circle which would also reduce turning movements across traffic.
- Closing some accesses that are close to the circle and accessing these businesses via other means to reduce confusion and delays at the circle.
- Making intersections safer for bikes and pedestrians by creating clear crosswalks, providing pedestrian countdown signals at the signalized intersections and providing hawk signals where needed.
- Exploring how to make the timing of the signals work so that traffic flows were more efficient.
- Creating more visible signage and wayfinding as well as pavement markings so that motorists are better informed about how the Circle works.

Challenges to Implementation:

Implementing the above measures would require cooperation with the various businesses and property owners that are affected by the improvements. There may be concerns that limiting accesses will hurt business, but this is not always the case. In fact, as described by the US Department of Transportation Highway Administration on its "Benefits of Access Management Brochure" web site:

"Though there are few studies of the actual impacts of medians on business sales, there are several surveys of business owner opinions. Surveys conducted in multiple corridors in Texas, Iowa, and Florida demonstrate that the vast majority of business owners believe there have been no declines in sales, with some believing there are actually improvements in business sales. One study in Texas indicated that corridors with access control improvements experienced an 18 percent increase in property values after construction".

http://ops.fhwa.dot.gov/access_mgmt/docs/benefits_am_trifold.htm

Although challenging to understand for the businesses that are affected by access control and raised medians, the US Department of Transportation Highway Administration on its "Benefits of Access Management Brochure" web site also offers:

"According to an analysis of crash data in seven states, raised medians reduce crashes by over 40 percent in urban areas and over 60 percent in rural areas. A study of corridors in several cities in Iowa found that two-way left-turn lanes reduced crashes by as much as 70 percent, improved level of service by one full grade in some areas, and increased lane capacity by as much as 36 percent. Raised medians also provide extra protection for pedestrians. A study of median treatments in Georgia found that raised medians reduced pedestrian-involved crashes by 45 percent and fatalities by 78 percent, compared to two-way left-turn lanes."

http://ops.fhwa.dot.gov/access_mgmt/docs/benefits_am_trifold.htm

Evaluation

The benefits of these improvements as it relates to improving safety, congestion, capacity and ease of use, compared to their relatively reasonable cost supports their consideration for implementation. They would ease confusion around the Circle and within the Corridor which would make the Corridor a safer and more efficient place to drive.

Implementation Steps

Several steps need to occur before the safety and function elements can be realized these include, in summary:

- Council Approval to proceed with design, funding and construction of improvements based on priorities established by the C2C and the Capital Improvement Plan
- Working with Land Owners on their specific issues and resolving access and land needs
- Working with South Carolina Department of Transportation (SCDOT) on an access management plan
- Design and Engineering of the proposed improvements
- Funding via the CIP
- Land Acquisition (if applicable)
- Construction

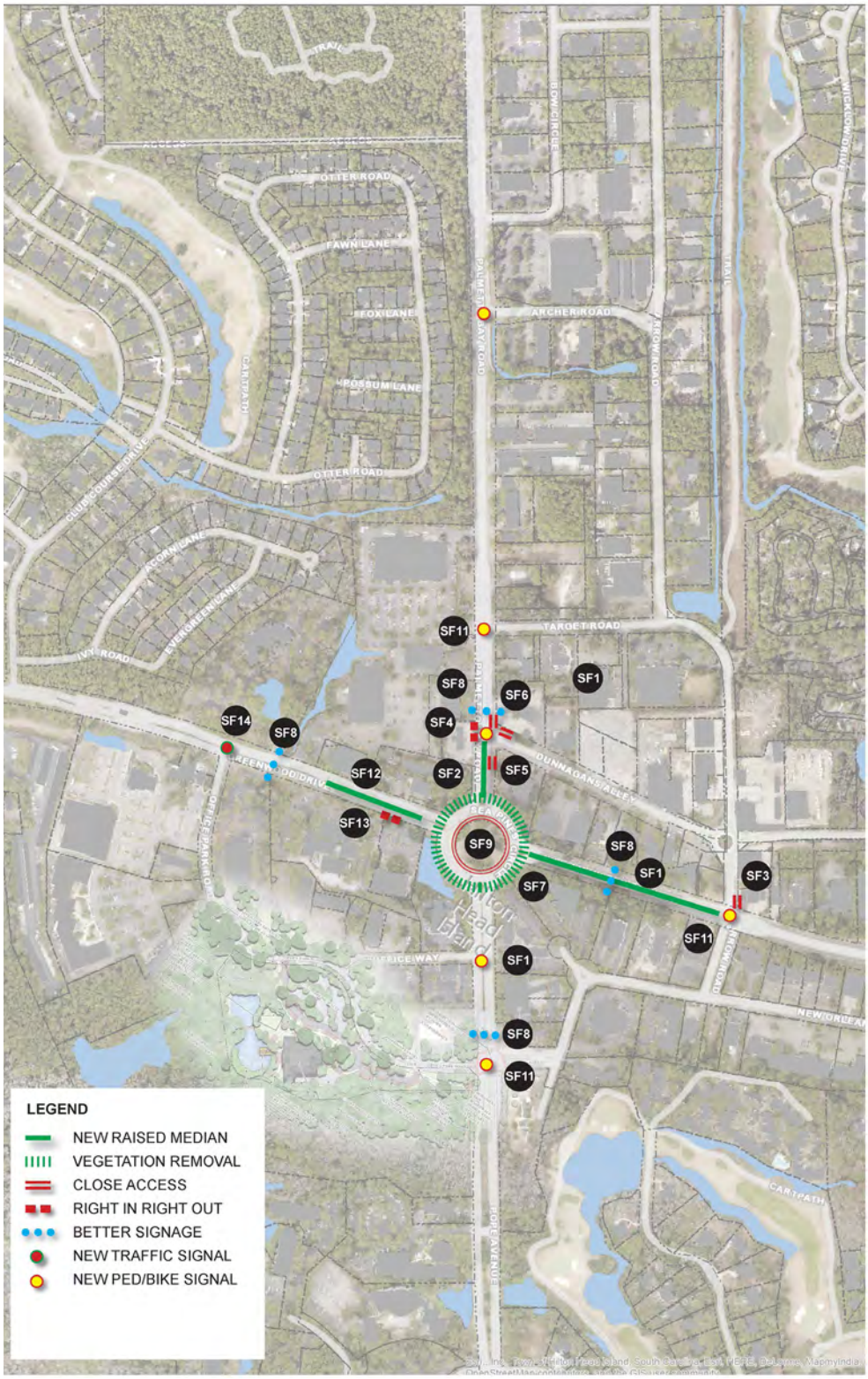
Committee Recommendations

The Committee, based on its cost benefit analysis as well as input from the community supports proceeding with the process to achieve the Safety and Function elements over time. Near term, the Committee recommends:

1. Work with business owners to improve access to southwest quadrant of Sea Pines Circle, eliminating left turn accesses from Greenwood Drive.
2. Develop implementation plan and time line to build center turn lane for New Orleans Road and incorporate in Capital Improvement Plan.
3. Develop implementation plan and timing for proposed Access Management improvements addressing priorities of median extensions on Palmetto Bay and William Hilton Parkway, and left turn prohibitions in C2C corridor.

Improve Safety and Function:

The following exhibits shows locations for various improvements to access management and improving the safety and function of the Corridor. Improvements range from extending medians, improving signage to limiting entrances next to the Circle.

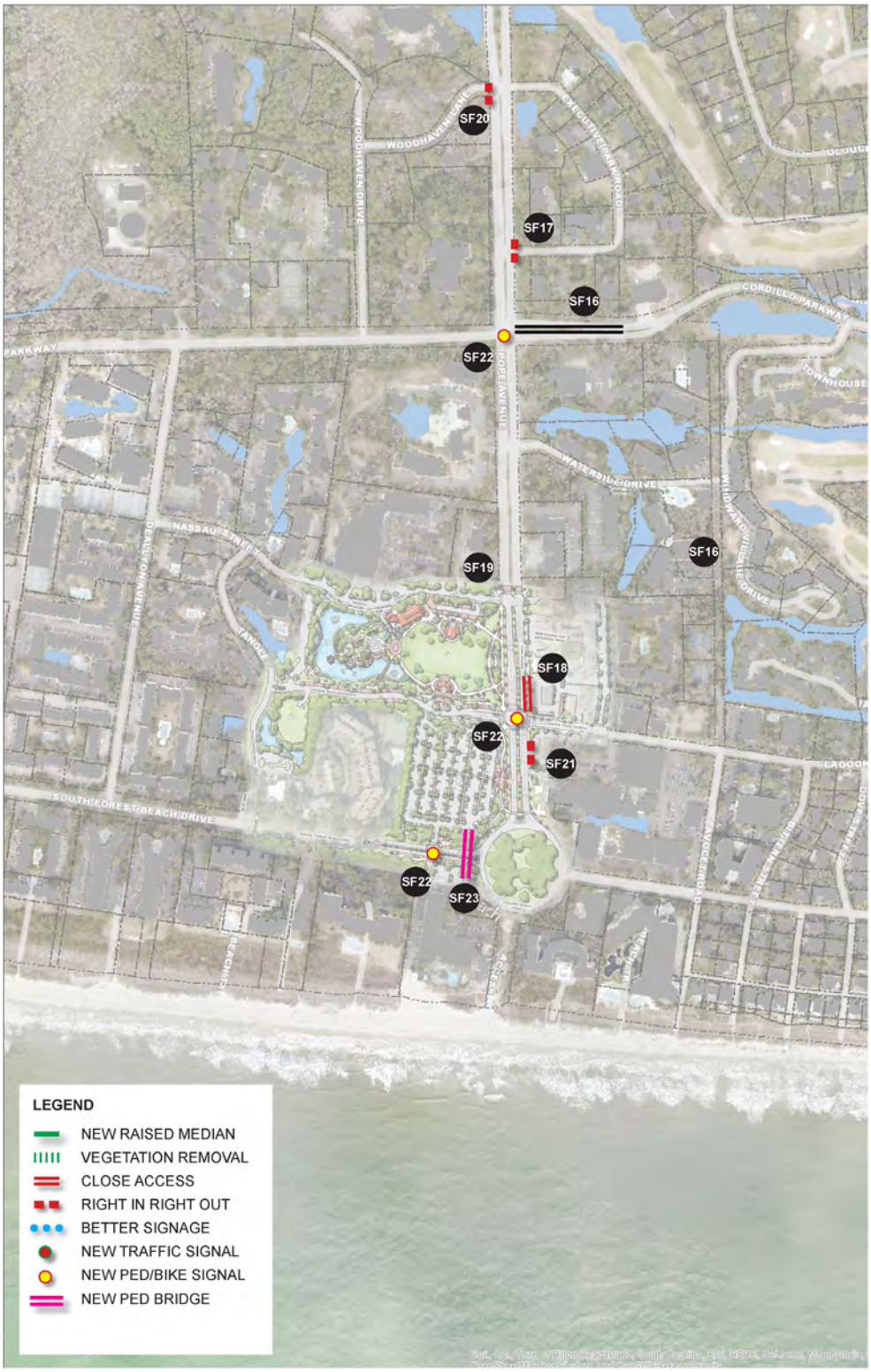


Alternatives:

- Manage access points within the vicinity of the Circle.
- Extend raised and landscaped medians.
- maintain site distance at Circle by managing vegetation.
- Pedestrian crossing signals where feasible.
- Create more effective signage.
- **Reconfigure exits from Circle** to slow travel speeds.
- Synchronize signals.
- Signalized intersections where warranted.

Improve Safety and Function:

The Safety and Function improvements extend down Pope avenue and include access management and signalization improvements to make it safer for bicycles and pedestrians.



	IMPROVE SAFTEY AND FUNCTION	POTENTIAL COST
	PALMETO BAY ROAD CORRIDOR - NORTH OF THE CIRCLE	
SF 1	Raised landscaped median on 278b AND Arrow Road	$144,000
SF2	Median to Dunnagans Alley to allow southbound left in	$60,000
SF3	Close Kangaroo access on Arrow closest to 278	$4,500
SF4	Dunnagans and Enmark RIRO w/ southbound left remaining	$2,500
SF5	Close RIRO access to South State Bank - access from Dunnagans	$30,000
SF6	Close access from Dunnagan's Alley to Island Tire	$30,000
	SEA PINES CIRCLE	
SF7	Vegetation removal to improve sight distance	$5,000 - $10,000
SF8	Improve Sea Pines Circle signage location, size and font	$18,000
SF9	Change stand up curbs around SP Circle to rolled curbs	$20,000
	278B / 278 / POPE AVENUE - GENERAL	
SF10	Signal Phasing on 278B AND 278	
SF11	Pedestrian Signals at key intersections	$150,000 - $250,000
	GREENWOOD AVENUE / SEA PINES	
SF 12	Modify approach to Circle from Greenwood - improve merge area	$50,000
SF 13	Reilly's /Galleria - RIRO only - no cross median movement	$2,500
SF14	Signalized intersection at Office Park and Greenwood	$150,000
SF15	Request Sea Pines CSA close some curb cuts on Greenwood	$5,000
	POPE CORRIDOR SOUTH OF SEA PINES CIRCLE	
SF16	Cordillo Parkway - revise westbound approach of Shipyard for Multi-use path clearance	$75,000
SF17	Exec Park Road South - convert to RIRO , no left turn out	$2,500
SF18	Close 1 of 2 accesses to gas station on Lagoon/Pope	$2,500
SF19	Nassau Street - southbound left turn lane for U Turns	$75,000 PLUS COST OF ROW
SF 20	No Left Turn from Woodland to Pope	$500
	COLIGNY CIRCLE CORRIDOR	
SF21	Coligny Plaza - Preserve left INTO Coligny and prevent left out	$2,500
SF22	New stop lights and crosswalk as part of Town Park project	$150,000
SF23	Pedestrian bridge	$420,000

Potential Costs for new roads based on “high level” cost estimates.

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4

INCREASE CAPACITY WITHIN CIRCLE INTERSECTION

The Sea Pines Circle has been part of the islands sense of place from the beginning. It has reached a point, however, where it cannot handle the traffic effectively enough to meet locally imposed delay standards. Remedies have to be considered that enable it to meet standards, while also protecting the aesthetics and sense of place.

CHAPTER 4: INCREASE CAPACITY WITHIN THE CIRCLE

The Committee recognizes that delays within Sea Pines Circle and the impact it has on residents and visitors alike is a primary issue that must be addressed as part of realizing the vision for the Corridor. At present, and if left as is, the Sea Pines Circle does not meet the locally imposed standard for acceptable delays of 150 seconds or less. And assuming continued growth in the Corridor occurs, it will not meet the standard of 150 second delays or less without modification. This creates a challenge for the evolution of the Corridor.

Finding solutions that will enable Sea Pines Circle to meet these locally imposed requirements was one of the more complex components of creating a vision plan and one of the more contentious. The work of the Committee included study and discussion with several very good traffic and transportation engineers including: Todd Salvagin of SRS, who has worked with the Town for years; Darrin Shoemaker, the towns Traffic Engineer; Walter Kulash, a pioneer in Complete Streets design; Gordon Shaw, an expert on transportation and transit in resort oriented communities; Doyle Kelly of Thomas and Hutton, who has designed rotaries in the region including in St. Simons Island; and Michael Wallwork, who has designed many one and two lane circles in similar communities with similar demographics. The discussion included detailed traffic projections and impacts on the 150 second delay criteria by the Town's traffic engineer consultant as well as peer review by up to five other traffic engineers. It should be noted that resolving for the 150 second delay criteria was not typical criteria for the team. As one mentioned, by many measures, or by using different modeling programs, the Circle functions fairly well. In other words, if the circle was in a more populated environment, very few would be concerned about its current delays. However, as important as the 150 second delay criteria are, the impact that delays in the Circle has on people's perceptions of "too much traffic" day to day. Clearly, many believe that the Circle is a challenge to drive through, particularly during the peak summer period of beach activity, when off island visitors come through the Circle to access Coligny Beach.

The existing Circle is also part of Hilton Heads history and sense of place. It is familiar to residents and guests and has been part of Hilton Heads sense of place since the 1960's. It has been modified over the years and in the 1990's evolved in recent past from a two lane circle with no dedicated right hand turns into a single lane circle that has dedicated right hand turns. Currently, the existing circle does not handle LMO target of 150 second delay according to recent traffic studies conducted by SRS Engineers using the Town's preferred modeling methodologies. Delays at noon for the peak period range from 84 seconds at Pope Avenue to 190 seconds at 278B. In addition to its short comings related to local standards, it is also generally perceived by the public as being a nuisance and something that needs to be improved in order that quality of life is maintained. It is important to note, however, that the Circle doesn't meet the target criteria only during the peak beach going months of June to August. At other times of the year, it generally functions within the target criteria of 150 seconds

The Committee and its Consultant Team studied options to resolve the 150 second delay standard. Each option was studied based on its fit within the space available as well as

its ability to meet the criteria now and over the next 30 years. These alternative designs included:

- Doing Nothing and keeping the Circle as is
- Changing the Circle into a Four-way Signalized Intersection
- Creating a Fly Over Bridge
- Creating a Fly Under Tunnel
- Completing the “Circle Bypass” by creating a roadway on the Northwest Quadrant where the current Publix is.
- Creating a circle that has two lanes on a portion of it, along with dedicated right hand turns
- Creating a two lane circle for its entirety with dedicated right hand turns

Each of the above concepts was then evaluated based on: 1) its ability to manage traffic; 2) it relative cost in comparison to other solutions; 3) its impact to the aesthetics and sense of place that is currently treasured; 4) its construction complexity; 5) its ability to get approved by SCDOT or other; 6) the input received from the public during the public meetings and discussions and 7) its ability to meet the 150 second delay criteria.

Several two lane circles were studied that are located in places with similar traffic and demographics to better understand the issues and opportunities.

St. Simonds Island:
2 free right turns. Manages +/- 20-25 K ADT
Inscribed Circle - 170 ft. Designed by Thomas and Hutton

West Bluffton Circle:
3 free right turns. Manages +/- 20-25K ADT
Inscribed Circle - 206 ft. Designed by Thomas and Hutton

Davidson, North Carolina:
No free right turns. Manages +/- 15-20K ADT
Inscribed Circle - 150 ft.

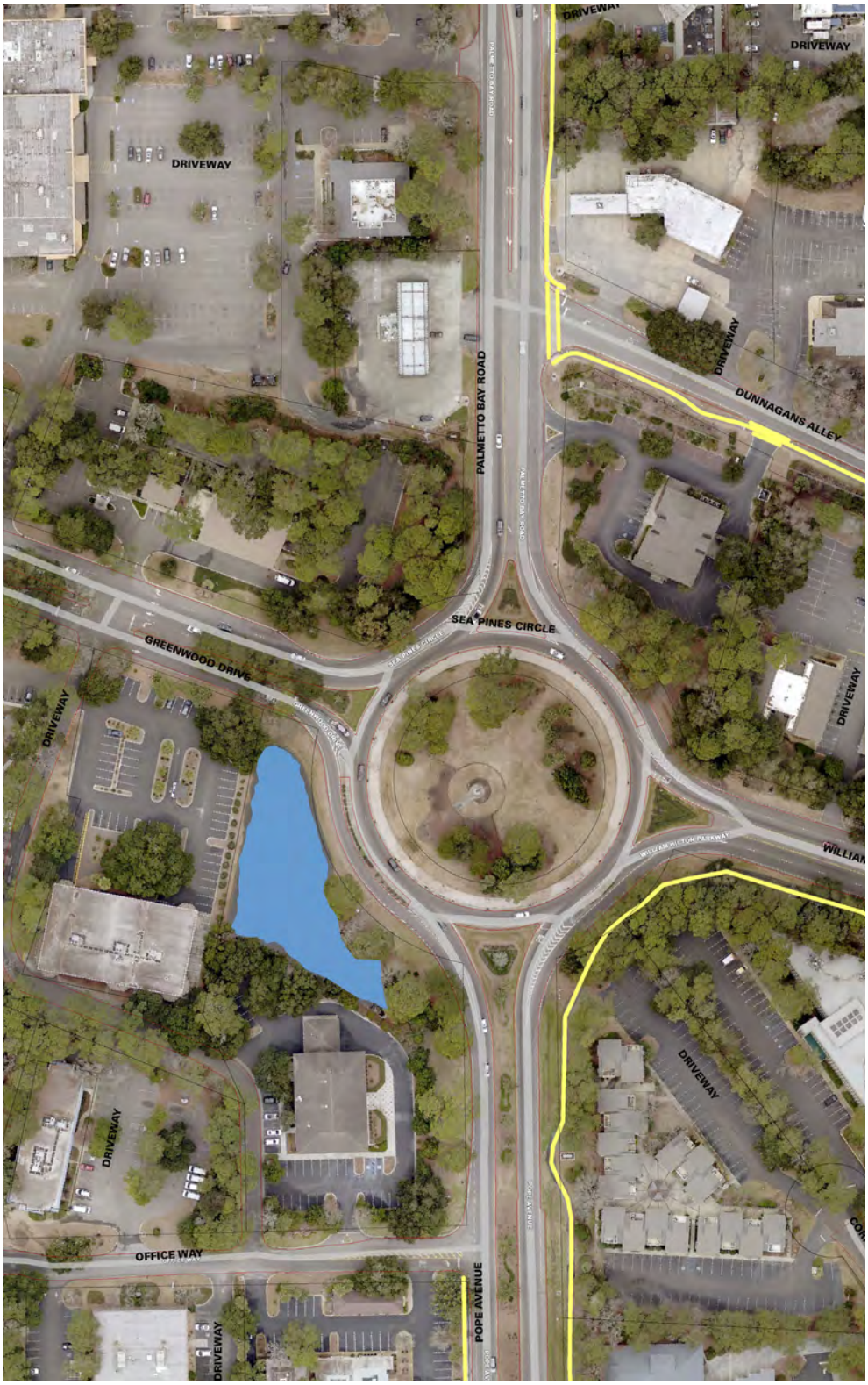
Clearwater Beach Circle:
2 lane circle with no free right turns. 6 points of entry.
Manages +/- 35-58K ADT
Inscribed Circle - 209-243 feet (oval). Recently re-designed

Jacaranda Circle, Venice FL:
No free right turns. Planned for 60K but operates at 30K ADT. Integrates bike lanes near circle.
Inscribed Circle - 262 feet.

Aspen Circle:
No free rights, but two rights do not enter circle due to tight geometry. Manages +/- 20- 25K ADT
Inscribed Circle - 203 ft.

Increase Capacity in the Circle:

The existing Circle, shown below, has a single travel lane and dedicated right hand turns. It currently does not meet the 150 second delay standard of the LMO.



Evaluation:

- Sea Pines Circle does not handle LMO target of 150' delay.
- Is part of Hilton Heads history and sense of place.
- Familiar to residents and guests.
- Increased traffic from visitors and off island beachgoers.

2015 Noon Peak Delay:

Greenwood Drive	= 157"
US 278B	= 190"
Pope Avenue	= 84"
Palmetto Bay Rd.	= 180"

Signalized Intersection:

A signalized Intersection would require an expansion of the current lanes to 7 lanes with a landscaped median. It would present a dramatic change to the image of this part of the Corridor. It would, however, meet the requirements of the LMO.

Evaluation:

- Handles volume projections through 2030.
- Meets LMO objective of 55 second delay .
- Dramatically alters image and sense of place.
- Reasonable cost - $2-3M.
- Conflicts / crashes are more dangerous than roundabout.
- Very understandable and approvable for SCDOT.

Two Lane Circle with Dedicated Right Turns:

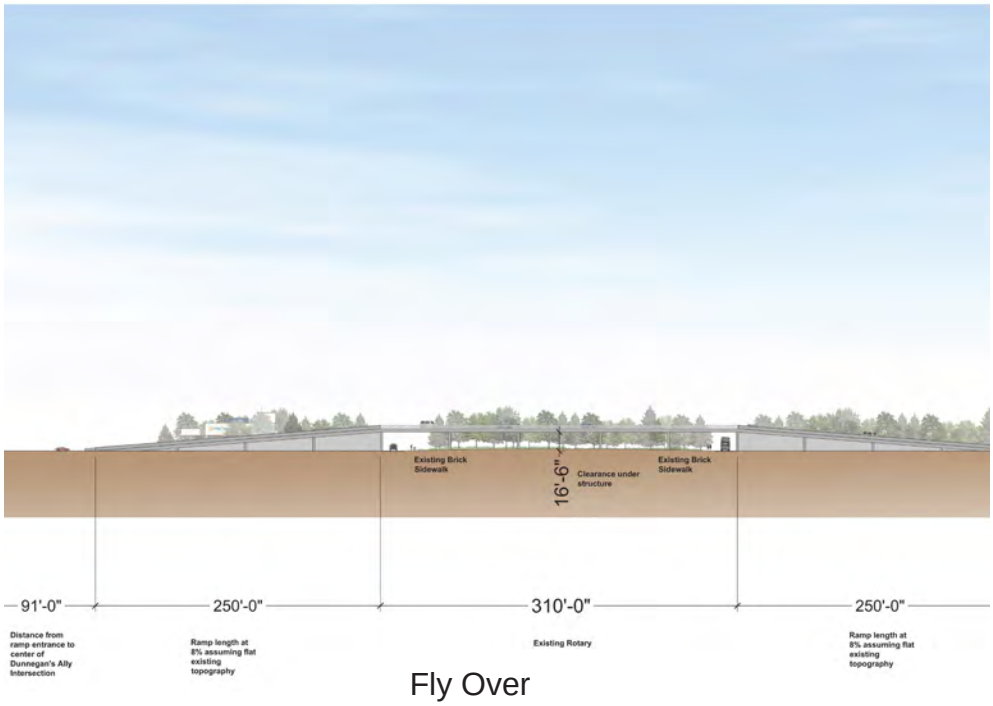
A two land circle would meet the requirements of the LMO now and in the future. It would also more closely mirror the existing sense of place and image. A two lane circle, however, is generally considered more prone to side to side collisions.

Evaluation:

- **Manages LMO traffic delays** through 2030
- Meets all peak measurement targets
- Mirrors current image and sense of place
- Reasonable cost to construct - $3-5M
- **Conflicts / crashes more** possible than single lane circle
- **Conflicts / crashes less dangerous than with Traffic** Signal
- Second lane can be built inside current lane
- Proven workable in **communities with similar traffic** and demographics
- Best long term solution if volumes grow as expected

Fly Over / Fly Under:

Flying over the intersection in the North /South direction, as well as flying under it from the opposite direction would resolve delays. However, these improvements would be very expensive and complicated to construct. They would also dramatically alter the image and sense of place of the intersection.



Fly Over

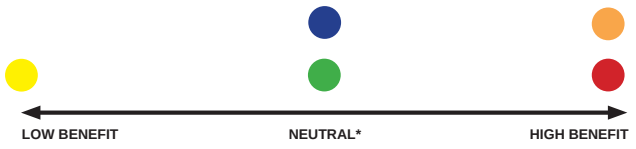
Evaluation:

- Both manage LMO targets in 2030
- Dramatically alters image and sense of place
- Very costly - $20-30M
- Complicated to design and construct
- Not likely to be supported by SCDOT

Fly Under

Evaluation Matrix:

A decision matrix was prepared that allowed the Committee to consider which improvement created the most benefit to key criteria.

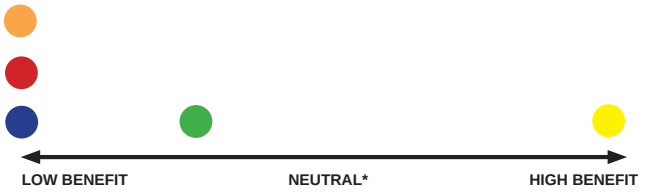


EXISTING CONDITION - DO NOTHING

The existing condition has clear advantages from a cost standpoint, but does not resolve the traffic issues. The sense of place and the ease of use remains as it is currently, which has advantages.

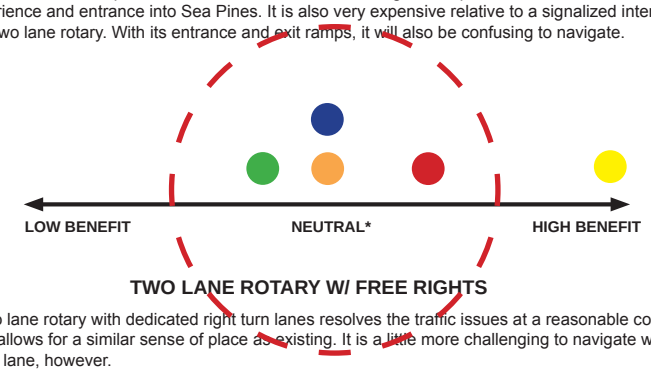
SIGNALIZED INTERSECTION

A signalized intersection improves the traffic issues and has a reasonable cost compared to a fly over/under but detracts from the image of the Hilton Head experience. It is more challenging for bikes and pedestrians to navigate across such a large intersection.



FLY OVER / FLY UNDER

A flyover or under improves the traffic issues, but has a negative impact on the Hilton Head experience and entrance into Sea Pines. It is also very expensive relative to a signalized intersection or a two lane rotary. With its entrance and exit ramps, it will also be confusing to navigate.



TWO LANE ROTARY W/ FREE RIGHTS

A two lane rotary with dedicated right turn lanes resolves the traffic issues at a reasonable cost. It also allows for a similar sense of place as existing. It is a little more challenging to navigate with the extra lane, however.

- CONSTRUCTION COST
- RESOLVING TRAFFIC ISSUES
- EASE OF USE FOR CARS/ BIKE /PEDESTRIANS
- IMAGE / SENSE OF PLACE
- CONSTRUCTION COMPLEXITY / IMPACT

* Neutral means that the existing condition remains essentially unchanged OR that it is on a scale between the highest and lowest benefit. For instance, the sense of place between the existing rotary and with a two lane rotary won't be significantly different.

Evaluation

More and more, two lane circles are being designed across the country as an effective intersection alternative. The evaluation, however, recognizes that a two lane circle has negative aspects in terms of current public perception, a lack of confidence by the public that a two lane circle will work and the potential for more side to side collisions than what might happen in a single lane circle. In summary, the two lane circle with dedicated right hand turns:

- Manages LMO traffic delays through 2030 and meets all peak measurement targets
- Mirrors current image and sense of place
- Reasonable cost to construct - $3-5M
- Proven workable in communities with similar traffic and demographics
- Best long term solution if volumes grow as expected

Challenges to Implementation

The primary challenge is overcoming public perception against a two lane circle. Many recall the challenges of previous two lane circle, which did not, however, have dedicated right hand turns and it wasn't designed with current best practices in roundabout design, which is advancing all the time. A new design would resolve traffic delays while also being designed for safety. One of the important methods is to design the circle so that the traffic speeds are reduced, which creates "gap capacity" that enables cars to move into and out of lanes easier, which increases the capacity of the circle and helps reduce the potential for side to side collisions.

Implementation Steps

- Council approval to proceed with detailed study of a two lane traffic circle that resolves traffic and safety.
- SCDOT approval of the design.
- Design and Engineering, which includes a public input process
- Funding
- Land acquisition (if applicable). Currently, it appears that the two lane circle can fit within the existing space. There may be a need, however, for additional ROW for the dedicated right hand turns.

Committee Recommendations

The Committee agrees that the two lane circle with dedicated right hand turns presents the best alternative to resolving traffic issues long term. There is also a lot to overcome from a perception standpoint that makes a commitment to the two lane circle difficult. It therefore recommends proceeding incrementally and only making a commitment to the redesign after other improvements, such as the Safety and Function improvements and the Connectivity improvements are implemented and evaluated, and based on the impacts, or not, of actual growth rather than projected growth. Steps for implementation should include:

1. Pilot signal synchronization of traffic signals to improve Circle clearing as soon as possible.
2. Implement shuttle parking and beach marketing/destination plan as defined under Parking.
3. Develop implementation plan and timing for proposed Access Management improvements addressing priorities of median extensions on Palmetto Bay and William Hilton Parkway, and left turn prohibitions in C2C corridor.
4. Build landscaped medians for Sea Pines Circle approaches on Palmetto Bay Road and William Hilton Parkway to limit left turns and to improve visual appeal.
5. Assign staff to:

- evaluate entry alignment of roads into Sea Pines Circle to determine if changes would improve flow
- propose any lane markings or speed restrictions that would improve flow
- evaluate new technology approaches to island wide traffic management
- determine if traffic officers could help improve flow

5

INCREASE ROADWAY CONNECTIVITY

Most of the islands roadway networks were created prior to a reawakening to the value of connectivity and complete streets. This has created a challenge since a few roads have to carry a large share of the traffic burden. Over time, a new pattern can be created that enables more distribution of traffic.

CHAPTER 5: CREATE NEW ROADWAY CONNECTIVITY

Increasing alternative routes within the Corridor would reduce congestion. Providing connectivity, with roadways designed consistent with the principles and standards associated with “Complete Streets”, would allow the Corridor to evolve into the walkable, bike and pedestrian friendly place that the community is asking for.

One of the challenges associated with the existing roadway pattern is that a few roads are tasked to handle much of the traffic, which has impacts on congestion, ease of use, image and aesthetics, the environment and quality of life. Had the island been planned originally with more connectivity, many of the issues being addressed with this Vision Plan would not be as drastic or difficult to resolve. Roadway connectivity allows for a natural evolution which doesn’t require retrofitting each time the market changes - a grid like pattern allows new uses to plug onto the established grid network. Creating new roadway connections is challenging, however, since they impact existing properties. After considering several options, the roadways that the Committee felt were the most important to pursue include:

- Connecting Target Road to Greenwood Drive through the Publix Shopping Center, which would enable residents of Sea Pines, in particular, to avoid the Circle and would complete the last leg of the Circle “bypass”. According to the Traffic Analysis it would have a significant benefit on delays at the Circle. Achieving this connection requires participation and cooperation from the property owner of the shopping center as well as Sea Pines. This roadway would also necessitate a traffic signal on Greenwood Drive.
- Connecting Office Park Road to De Allyon Road through the natural area west of Pope Avenue and adjacent to the Boggy Gut would allow Sea Pines residents, in particular, the opportunity to travel south to Coligny without having to enter the Circle. It would allow residents south of the Circle to access the shopping centers west of the Circle without having to enter onto Pope Avenue or having to use the Circle. This road would have to be carefully designed to minimize environmental impacts and would need to consider impact on traffic turning left onto Greenwood Drive.
- Connecting New Orleans Road to Lagoon Road on the east side of Pope Avenue would enable residents of South Forest Beach and Shipyard, amongst others, to travel north and then east on William Hilton Parkway without having to enter onto Pope Avenue or into the Circle. It would provide an alternative route from north to south for those going to Coligny from William Hilton Parkway. This road will be difficult to execute since it impacts private property and also affects Shipyard’s gate on Cordillo Drive. This option is strongly opposed by Shipyard residents, but should be evaluated in light of any commercial redevelopment of the Bank of America property to see if the option becomes more attractive.
- Extending Lagoon Road through the new park is already part of the park plans and will be accomplished with it’s construction.
- Redesigning New Orleans Road to include a middle turn lane would expand its capacity and make this alternative route even more viable.
- Accessing “Barmuda Triangle” and other establishments from Office Park Road.

Evaluation

The benefits to traffic from these roads would be significant according to the traffic analysis. They would reduce congestion in the Circle and on Pope Avenue. Each of these roads, however, is costly and will require negotiations with the community and property owners. As such, they are long term strategies that can be implemented as properties redevelop over time.

Challenges to Implementation

Although the benefits associated with increased connectivity is significant, each of these roads has implementation challenges:

- The "North West Connector" passes through private property. Its implementation will impact parking spaces at the Publix as well to the Sea Pines Welcome Center. However, future redevelopment of this site would allow this connection to more easily occur.
- The "Road Through Boggy Gut" passes through an environmentally sensitive area and wetlands. Its design requires mitigation of environmental impacts. The open space acquisition strategy recommended in the Vision and Character section of this report could provide wetland mitigation for this improvement.
- The road east of Pope Avenue passes over Cordillo Drive, which impacts the Shipyard Entrance Gate. The residents of Shipyard expressed significant concern over these impacts.

Implementation Steps

- Design new roads to "Complete Streets" design so that they can be evaluated further and incorporated onto long range master plans and funding plans.
- Working with existing land owners and bordering properties to address their potential impact on existing property entrances, such as at Shipyard and at Sea Pines.
- Design and Engineering should include a public process.
- Funding through the CIP
- Land Acquisition (if applicable)

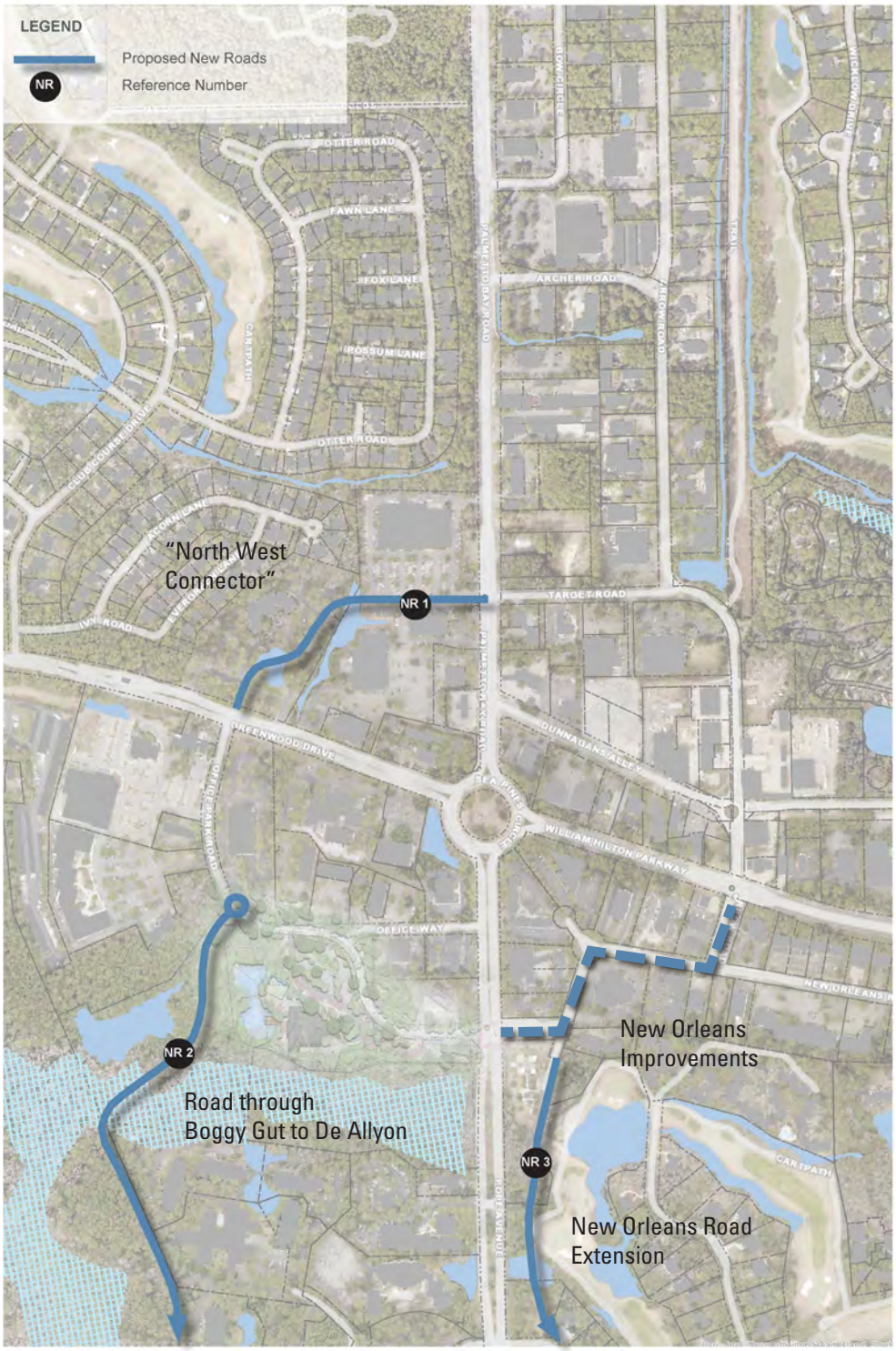
Committee Recommendations

The Committee recommends these roadway improvements become part of the Town's transportation plan and implemented over time as funding is available and redevelopment occurs. Near term, the Committee recommends:

1. Work with business owners to improve access to southwest quadrant of Sea Pines Circle, eliminating left turn accesses from Greenwood Drive.
2. Develop implementation plan and time line to build center turn lane for New Orleans Road and incorporate in Capital Improvement Plan.
3. Develop implementation plan and time line to build connector road between DeAllyon, Office Park and Cordillo Drive including Greenwood Drive intersection improvements and incorporate in Capital Improvement Plan.
4. Explore opportunities for Northwest Connector and connector on east side of Pope as redevelopment occurs.

Increase Roadway Connectivity:

Increasing the opportunity to travel around the Circle without having to get in it would greatly enhance the travel delays in the Circle, while providing convenient alternative routes for locals and visitors in the know.

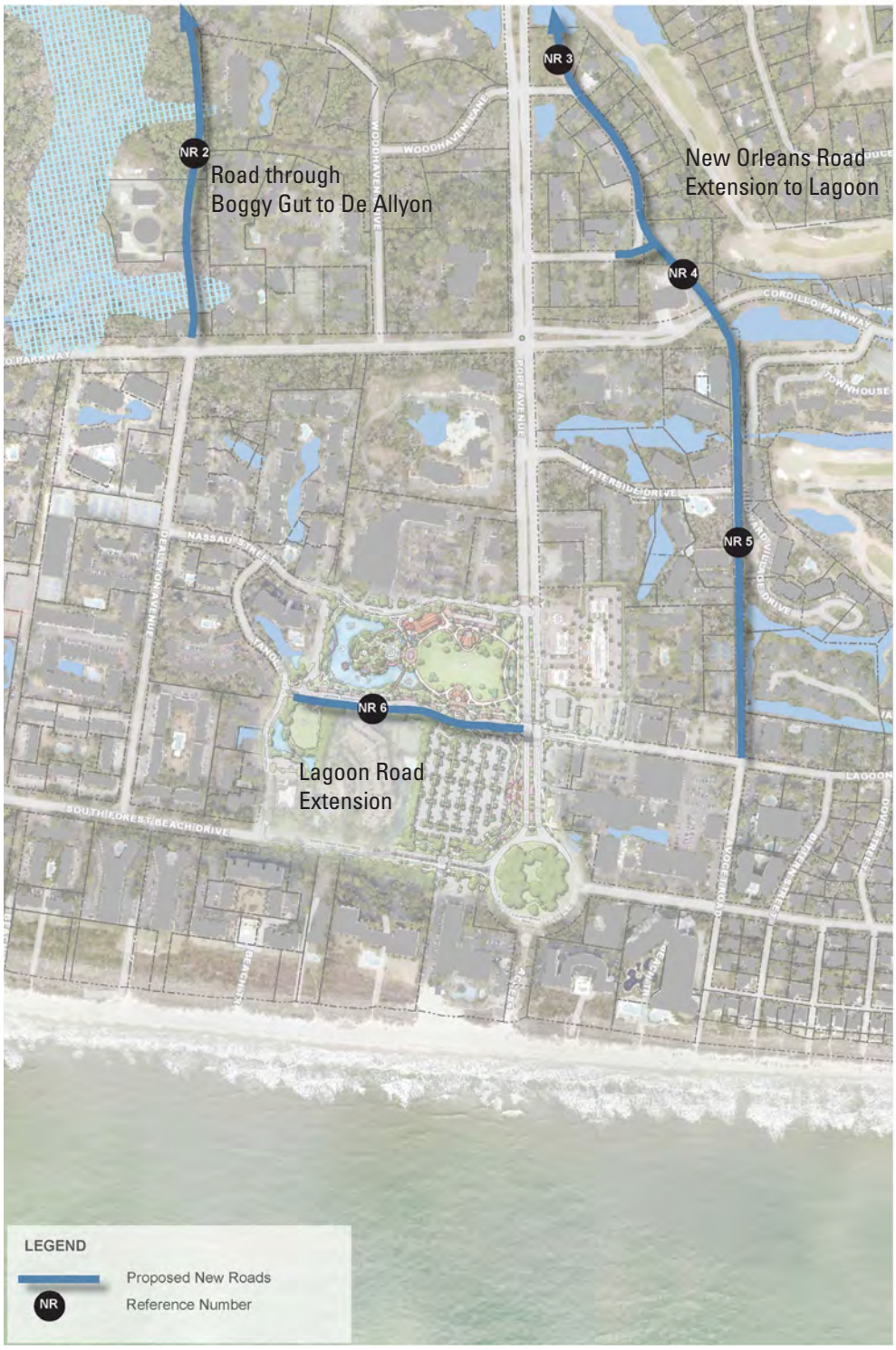


Alternatives:

- Northwest Connector
- Road through Boggy Gut
- Turn Lane within New Orleans
- Extending New Orleans to the South.

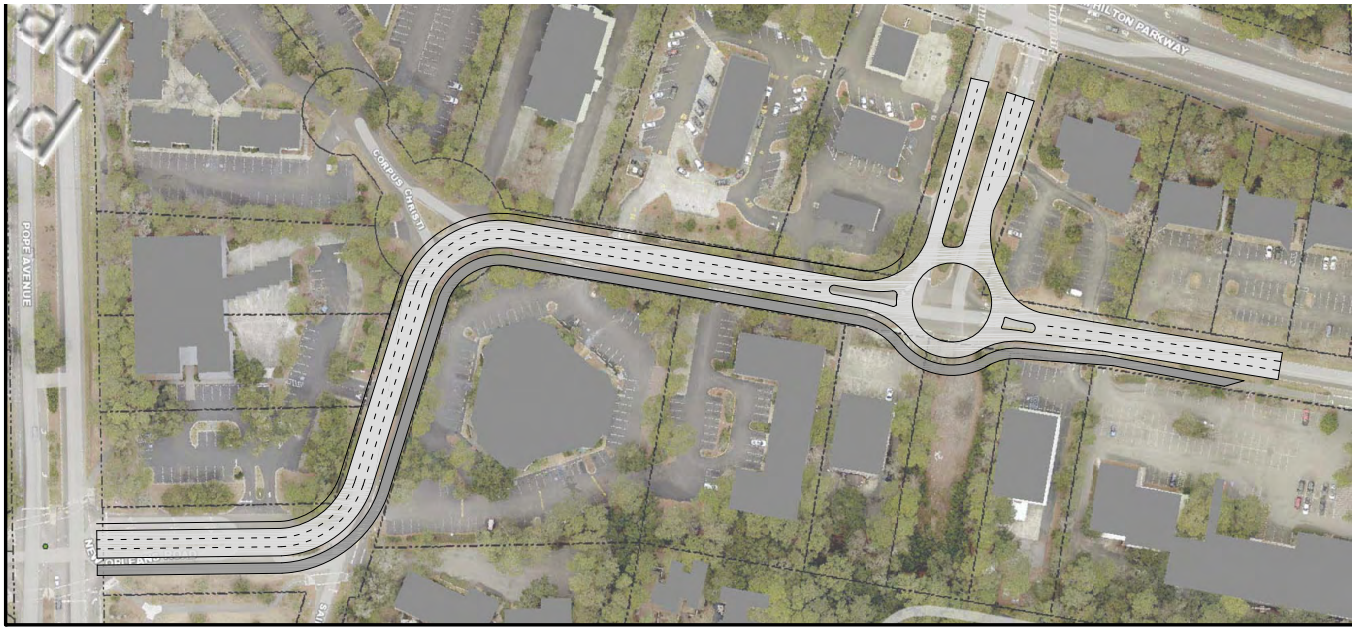
Increase Roadway Connectivity:

These new streets should be designed as complete streets with adequate bicycle and pedestrian infrastructure, street trees, and consider on street parking within walking distance of major attractions.



Alternatives:

- Road through Boggy Gut
- Extending New Orleans to the South.
- Lagoon road Extension



Cross Section:
3 10' 6" lanes (one each direction, one center turn lane)
8' planting strips/open drainage each side
12' multi-use path on South side
Fits within Existing 60' ROW

Alternate Cross Section:
3 10' 6" lanes (one each direction, one center turn lane)
Curb and Gutter
6' Planting strip both sides
6' Sidewalk both sides

*Traffic circle dimensions based on Arrow Road Ci

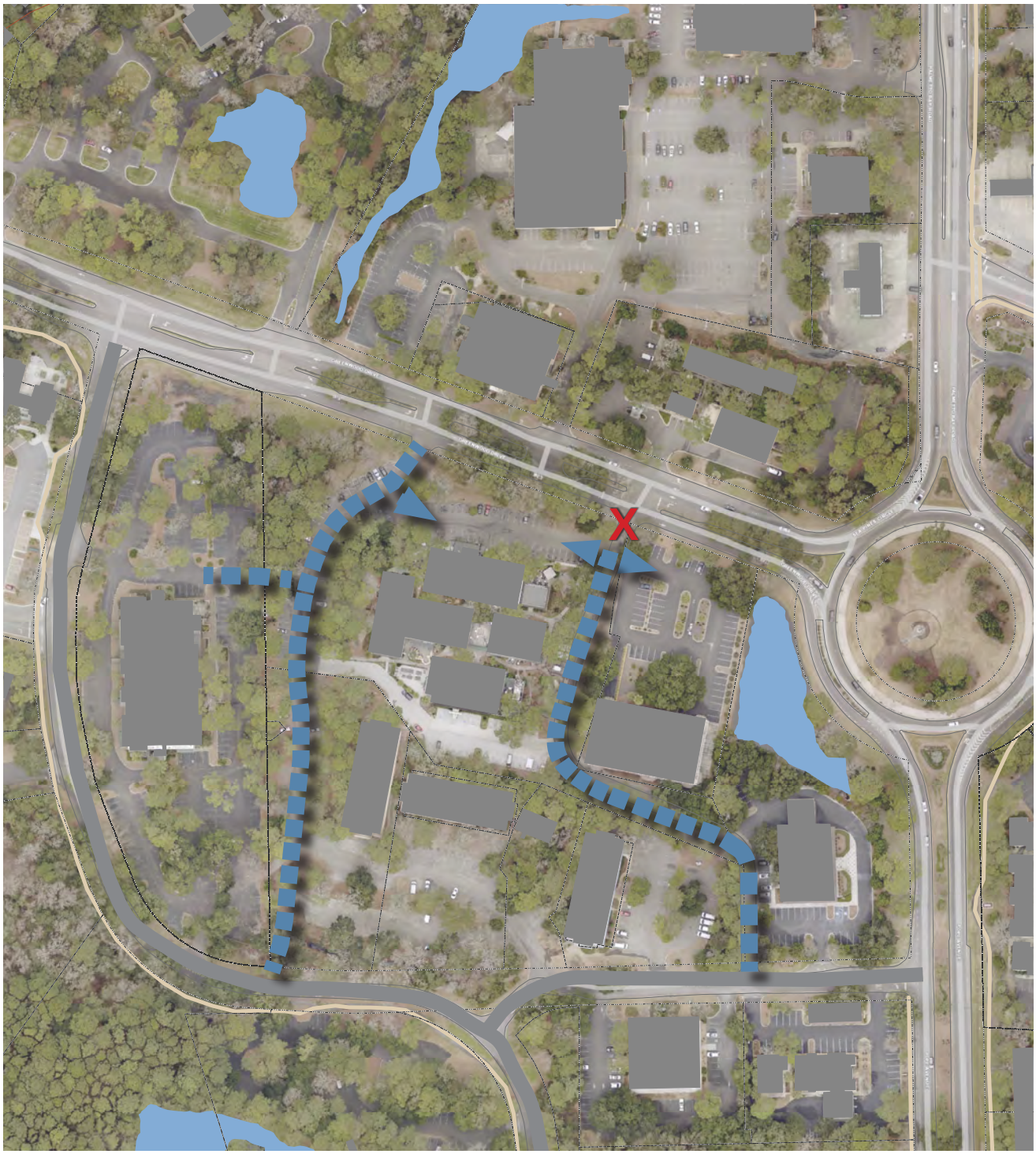
Adding a center turn lane on New Orleans would enhance its capacity.

IMPROVE NETWORK - ROADS	IMPROVEMENT	COST ASSUMPTION	DIMENSION ASSUMPTION	POTENTIAL COST
PALMETO BAY ROAD CORRIDOR - NORTH OF THE CIRCLE				
TARGET ROAD TO GREENWOOD DRIVE	NEW 2-4 LANE ROAD	$450 PER LIN FT.	1,350 LIN FT	$472,500 (1)
POPE AVENUE CORRIDOR - SOUTH OF THE CIRCLE				
OFFICE PARK ROAD TO DEALLYON (BOGGY GUT CONNECTOR)	TWO LANE ROAD	$350 PER LIN FT.	3,350 LIN FT	$1.2M (1)
NEW ORLEANS TO EXECUTIVE PARK ROAD	TWO LANE ROAD	$350 PER LIN FT.	2,010 LIN FT	$703,500 (1)
EXECUTIVE PARK ROAD TO TO CORDILLO	TWO LANE ROAD WITH PARKING	$450 PER LIN FT.	1,340 LIN FT	$603,000 (1)
CORDILLO TO AVOCET	TWO LANE ROAD WITH PARKING	$450 PER LIN FT.	2,700 LIN FT	$1,215,000 (1)
LAGOON ROAD EXTENSION THROUGH PARK	TWO LANE ROAD WITH PARKING	$450 PER LIN FT.	1,100 LIN FT.	$495,000

NOTE (1): COST DOES NOT INCLLUDE COST OF RIGHT OF WAY

Potential Costs for new roads based on “high level” cost estimates.

Access to the 'Barmuda Triangle' site and other commercial uses north of Office Park Way might be better handled from Office Park Way, rather than from Greenwood Drive to reduce traffic on Greenwood Drive and to reduce cross traffic turning movements.



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6

INCREASE TRAIL CONNECTIVITY

Hilton Head is a leader in promoting bicycling as a way to see the Islands sites, to get exercise, and to share special time with family and friends. Continuing to support and expand upon this amenity makes sense from an environmental, economic and social standpoint.

CHAPTER 6: INCREASE TRAIL CONNECTIVITY

One of the most highly valued elements of the Hilton Head Experience is the award winning trail network that links the island together. The bikeway network has been part of the Hilton Head Experience since its inception and was one of the first places to promote biking as a way to enjoy the islands landscape and amenities. It offers visitors, many who don't bike where they came from, an opportunity to enjoy being on a bicycle with their family and friends, taking in the landscape of Hilton Head Island. At last count, the Town provides approximately 60 miles of trails that encircle the island and connect to the trails located within the planned communities. The trails are mostly asphalt and include kiosks with maps that show the trail system. The Town has continued to fund repair, replacement and new trails for many years. It also provides and maintains a help line, which is posted on town-provided bike maps and information kiosks for pathway users to report unsafe conditions.

Considering new trails that further elevate the experience of moving about the Corridor is a logical and fundamental component of the Vision. The committee worked with bicycle enthusiasts to compromise on a plan that it feels provides value to the bicycling experience within the Corridor. It includes ideas for:

- Extending bike trails into the public land next to the Boggy Gut natural area to provide opportunities for an educational experience in nature.
- Connecting the northern and southern portions of the Corridor more completely.
- Creating a higher level of trail design, not yet seen on the island, on both sides of Pope avenue between Cordillo Parkway and Coligny Beach. This trail would become larger than the current trail and include more features and amenities to respond to this highly pedestrian area.
- A more celebrated approach to signing and describing the beach trail. This would include making the beach access more visible as bike access, locating signage such as mile markers along the beach, and making the beach access easier to navigate for bikers.
- Connecting trails that currently aren't connected in their entirety, such as along 278B.
- Providing bike lanes and pavement markings or "Sharrows" on key streets that are acceptable for in street biking.

Evaluation

Continuing to support the expansion and evolution of the trail network is considered to be value added to the future of the Corridor. More and more people are using bicycles as transportation and getting more people on bikes and out of cars will help with traffic issues in addition to offering a better quality of life for locals and a rich experience for visitors. Providing bicycle infrastructure has proven to benefit the communities that have them by:

- It creates jobs associated with bike rentals, bike purchases, merchandise, etc.
- It provides the opportunity for a healthy lifestyle.
- It provides access to nature.
- It is a social activity and families enjoy biking together on Hilton Head.
- It is a step toward protecting or environment.

- It creates tourism.
- It allows households to own fewer cars, which enables other types of spending or saving.

The continued investment in bike infrastructure enables a return on investment as Hilton Head has enjoyed and other competing locations are getting wise to. As described by Darren Flusche Policy Director League of American Bicyclists in his publication "Bicycling Means Business: The Economic Benefits of Bicycle Infrastructure" describes the benefits that the Outer Banks has enjoyed by promoting bicycle tourism which includes:

- *$60 million in economic activity through bicycle tourism. The one-time investment of $6.7 million on bicycle infrastructure has resulted in an annual nine-to-one return.*
- *Expenditures by the 680,000 annual visiting bicyclists support 1,400 jobs in the area.*
- *The quality of bicycling influenced vacation planning: More than half of survey respondents said bicycling had a strong influence on their decision to return to the area.*

http://bikeleague.org/sites/default/files/Bicycling_and_the_Economy-con_Impact_Studies_web.pdf

Challenges to Implementation

There are some spatial issues that may require compromises to the program or right of way expansion, so working with neighboring property owners will most likely be part of the process moving forward. There is also a cost to providing these trails, so phasing them in as funds are available will be necessary. Finally, some of the trails are located alongside roadways that currently don't exist, so they will need to be phased in when these roadways become a reality.

Implementation Steps

- Council Approval to proceed with planned improvements.
- Working with Land Owners where spatial issues may exist.
- Design and Engineering the path systems
- Funding
- Land Acquisition (if applicable)
- Construction

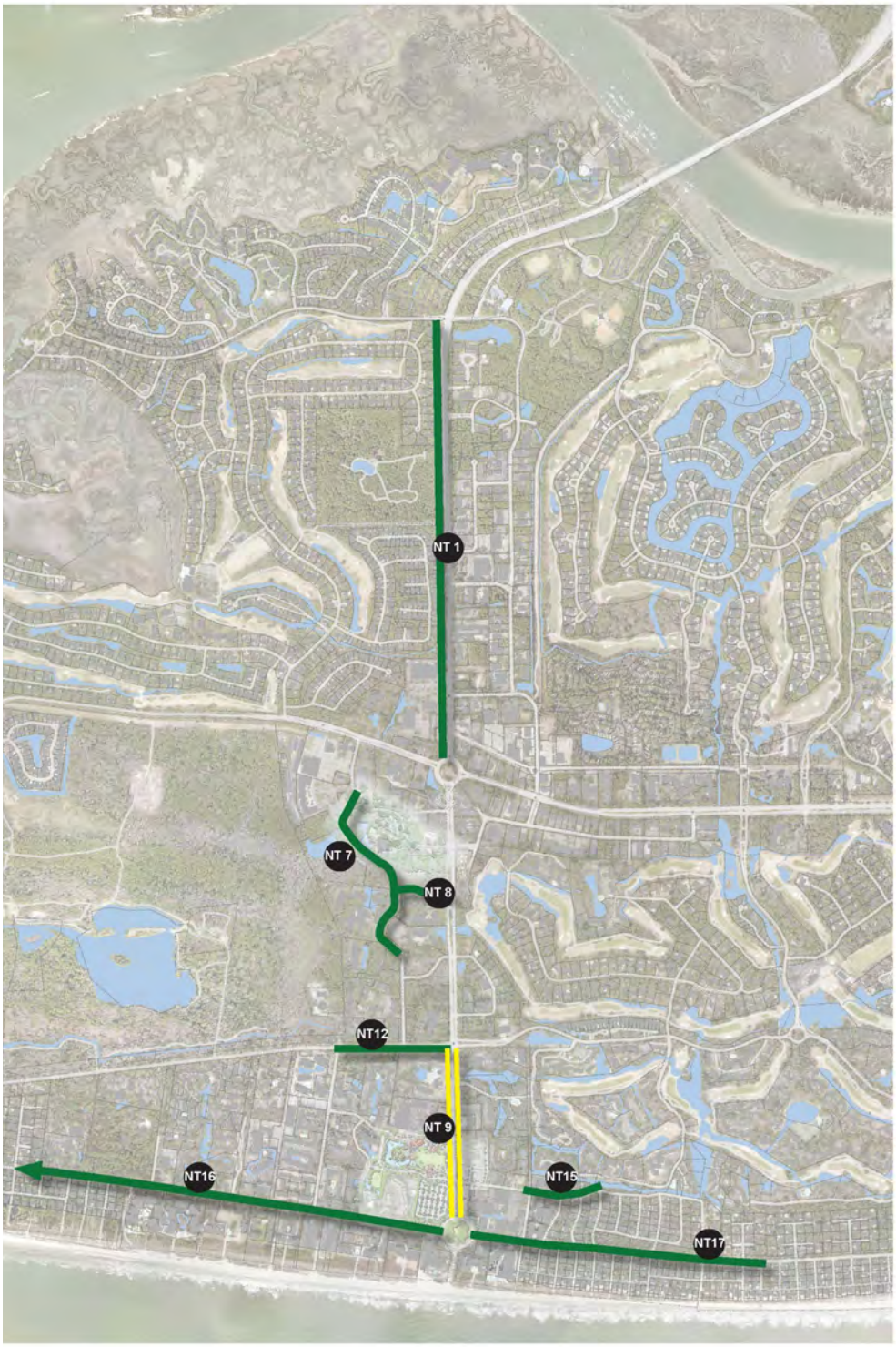
Committee Recommendations

The Committee supports expanding upon the existing bike trails within the Corridor based on the proposed plans, with the following recommendations:

- Implement signage and wayfaring for beach access.
- Provide adequate bike parking at key points on the trail system.
- Develop implementation plan and time line to build a trail between DeAllyon and Office Park Roads and incorporate in Capital Improvement Plan.
- Develop implementation plan and time line to build trail on Lagoon Road between Pope Avenue and Ibis and incorporate in Capital Improvement Plan.

Increase Trail Connectivity:

Increasing the opportunity to travel around the Corridor by bicycle without having getting into their car would greatly enhance the visitor experience and enable locals more safe routes to do their day to day activities, which hopefully will reduce car trips in the Corridor.



Alternatives:

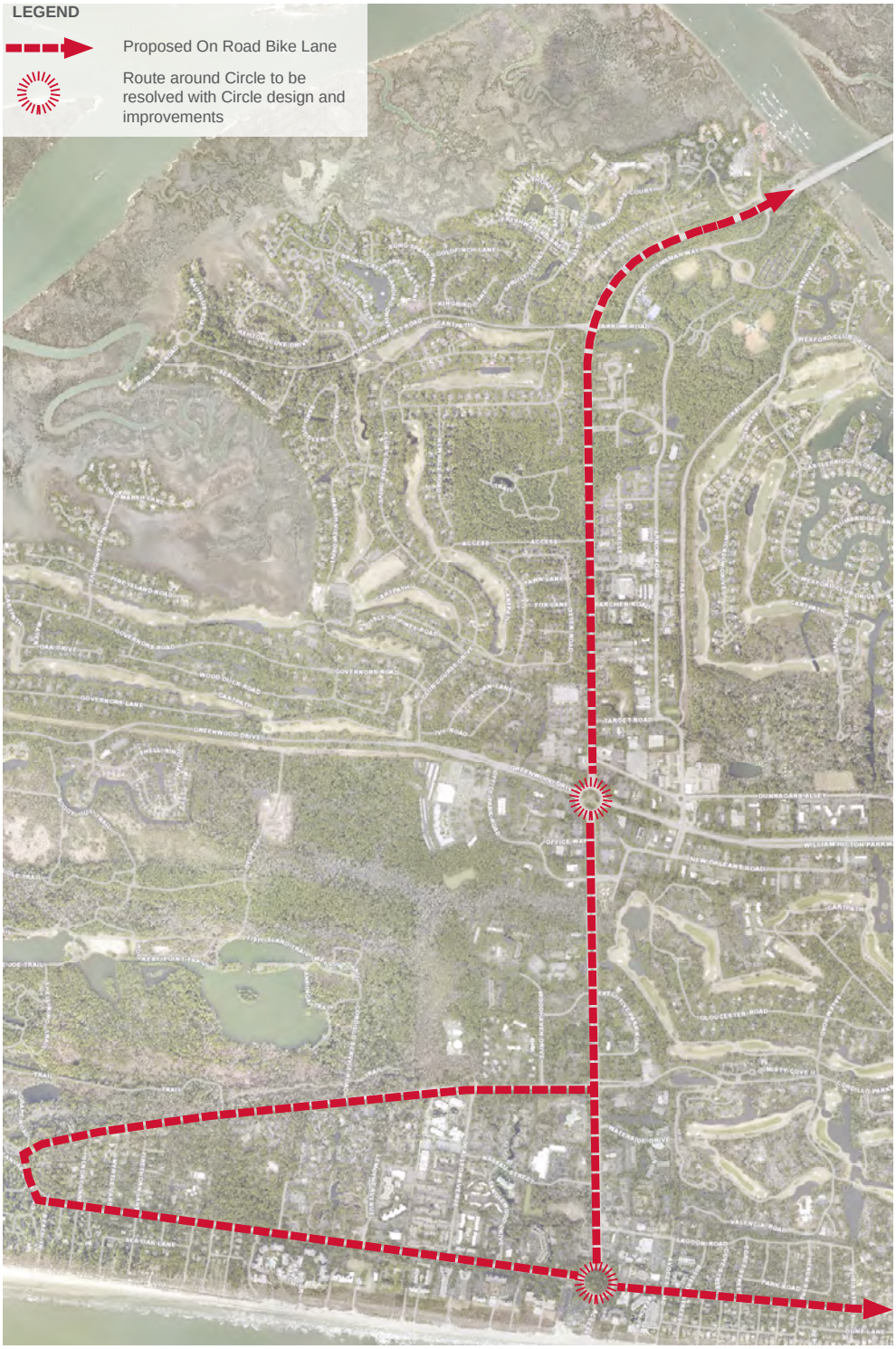
- Expand network over next 10-15 Years
- Reduce congestion / Increase safety
- Expose visitors to nature and unique environments

Committee Priorities:

- Scenic Trail - Cordillo to Office Park Road
- Pope Road to Ibis Road on Lagoon Road for Safety
- Wider separated trail on Pope Avenue
- Complete Street concept with separate systems for Bikes and Pedestrians
- "On Road" markings for serious cyclists
- Additional Trails over time as required by need and volume

Increase Trail Connectivity:

In addition to off road bike and multipurpose trails, the plan calls for the expansion of on road bike lanes to be installed over time. A key consideration will be to route them safely around the areas where the Circles are.



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7

REDUCE TRIPS WITH TRANSIT

More and more resort communities are elevating their transit systems to provide an environmentally responsible way for employees, residents and visitors to get to work, shopping and amenities. Younger generations in particular are expanding ridership and using public transportation as a matte of choice.

CHAPTER 7: REDUCE TRIPS WITH TRANSIT

More and more commuters are realizing the benefit of using public transportation as a means to get from place to place. It provides a clean environmentally friendly chance for commuters to be more productive by using their mobile devices, to read, or rest during their commute. Many young people use public transportation, “Uber” and their bicycle exclusively so that they don’t have the cost burden of a car. It is also a sign of their commitment to environmental responsibility and equality.

Given Hilton Heads legacy of being environmentally friendly and providing people a great experience in a unique landscape, considering transit as part of the Islands future seems logical. Doing so will enable Hilton Head to: keep up with other environmentally conscious resort communities that are making deeper commitments to transit; reduce car trips through the Corridor, which has convenience, experience and environmental benefits; enable more employees to access their jobs via transit; reduce the need for more parking; lower the cost for getting to work for employees; reduce car trips; provide a unique and fun experience for visitors to access the islands amenities.

Public transportation has provided access to jobs on Hilton Head from the region via the Palmetto Breeze system. It has proven to be a successful transit option for people living off island and according to Palmetto Breeze, they could provide even more service than they currently do. Additionally, the community in its visioning workshops listed a shuttle or trolley system as something that would value. Finally, Sea Pines and Palmetto Dunes have trolley or shuttle systems that work well for them, which provides evidence that visitors might choose this form of transportation over their car if a convenient and attractive system was provided. The ability to interconnect these systems with an island wide network holds great promise.

The Committee considered public transportation options based on presentations from the Consultant team. The discussion ranged beyond the geography of the Corridor, since transit systems work best when they are connected to more systems and provide more opportunities. In summary, the Committee reviewed concepts for:

- A trolley system that worked within the Corridor and connected to satellite parking lots, entertainment, restaurants, and Coligny Beach. This system would include a charming vehicle that promoted its use. It would allow locals and day users to park away from Coligny Beach and enable locals and visitors to enjoy the various spots within the Corridor without using their car.
- An “On Island” transit system that primarily worked along William Hilton Parkway with various tops along the way to provide residents and visitors the opportunity to visit the islands attractions and amenities, such as the North Beaches, without getting in their car.
- An “Off Island” transit system that is an expansion of the current Palmetto Breeze system that would enable off island access, enable more employees to access their jobs, thus removing cars and parking from the Corridor, and access to the islands beaches from off island tourists.

Evaluation

The idea of transit does have some negative connotations for some, which are slowly beginning to change with each generation. Many resort communities are investing in transit as a way for employees to get to work at minimum and more and more to promote a tourism experience that is 'outside of the car". Like the bike system, a well-designed transit system can add to the Hilton Head Experience by allowing people who currently sit in their car all day to be able to allow the car to sit in the parking lot while they are on vacation. Providing a holistic approach to transit will provide many benefits to the Corridor. According to Gordon Shaw, a renowned transportation consultant that specializes in transit systems, particularly in resort communities, implementing the three concepts with a total of three to four buses at a net operating cost of approximately $340,000 has the potential to:

- Generate approximately $100,000 in fare revenues if a fee is charged for riding, or conversely fund with parking fees at Coligny
- Remove over 2,600 daily one-way car trips from the Corridor
- Serve over 1,100 intercept parking spaces
- Serve over 124,000 riders

Additionally, Palmetto Breeze has the infrastructure and potential ability to obtain funds that would enable an expansion of their system, which would help to jump start the expansion of transit on the island much easier than if Hilton Head was starting from scratch. Preliminary discussions with them suggest that they would be enthusiastic partners in a more comprehensive transit solution for the island.

Increasingly, higher-quality resorts are finding that destination visitors want to take "a vacation from their car" as part of their resort experience. Rather than the inconvenience of navigating an unfamiliar roadway system, a transit service designed with the visitor in mind can provide an amenity for the entire resort community. Design features that make a transit/shuttle system appealing to visitors include unique vehicles or branding schemes (such as rubber-tired trolley replica vehicles), high-amenity transit stops, frequent service, and provision of smartphone apps to track the arrival of buses. Evidence of the success of resort public transit systems in serving the guests can be found in many areas. As an example, fully 30 percent of overnight visitors to Park City, Utah arrive by transit and never use a car as part of their stay.

Many resort communities, small town and universities are implementing a "No Fare" approach that is changing attitudes and habits about transit and is increasing ridership, which is benefitting the community. According to Monique Whaba, who is a proponent of transportation equity, stemming from her work in transportation planning in Portland, Oregon and in neighborhood revitalization in Albany, New York, Zero Fare transit approaches have provided the following benefits:

- Lower administrative costs: The costs associated with charging and collecting fares, like acquiring fare boxes, issuing various tickets (transfer passes and monthly passes, for example) and enforcing the payment of fares.
- Savings in travel time: With no fares to collect, passengers can board more quickly. Less time spent at the stops (known in planning lingo as "dwell time"), in turn, helps reduce travel time.
- Fuller buses: As current customers ride more often, ridership in the off-peak hours increases.
- Improved quality of life: Reductions in traffic yield less pollution and congestion, improving overall health and quality of life.
- Enhanced community pride: More than just an amenity, having fare-free transit service is a source of community pride. It has even helped communities earn recognition, like state and national awards as "best places to live." Missoula Mayor John Engen called the fare-free service "a feather in the community's cap."
- Modal shift: Up to 30 percent of the additional trips generated from operating with no fares come from people switching from other motorized modes. This is really significant because in my experience, transportation planners seem to always be talking about attracting "choice riders," that is, riders who can afford to drive but choose to use other modes like transit. Typical suggestions center around providing nicer buses or more amenities at transit stops, but I've never heard anyone suggest offering reduced fares, let alone free ones. Isn't it ironic that the way to entice those who have money to use transit is to offer them free service?
- Transit equity: By removing the fare requirement, transit service becomes accessible to everyone, regardless of income. I have heard of transit systems providing reduced fares for their low-income residents. To qualify, a person must submit documentation to prove their income falls below the stated threshold and must provide verification of income periodically to remain eligible for the subsidy. Just think about the bureaucracy this generates and the humiliation for the recipient. A fare-free system disposes of all of this.
- Improved transit image: According to Mountain Line, "When zero-fare community bus services are properly funded and maintained, the image of the buses changes from being the clunky transportation choice of last resort to the service that connects all elements of the community and provides equal opportunity to access all that a community offers."
- Increased productivity of public investment: With zero-fare, the funding per passenger drops significantly and the effectiveness and productivity of public investments in transit are enhanced.
- •Increased support from bus operators: Bus operators are reportedly very supportive of zero-fare policies in almost all locations where such service exists. Not having to collect and enforce fares frees them to answer passengers' questions and focus on safe bus operation.

http://mobilitylab.org/2015/09/03/free-transit-attracts-riders-and-helps-communities-in-more-ways-than-one/

Based on the above, input from the community and the popularity of the Palmetto Breeze and the Sea Pines Trolley, for example, there is a high potential that current and future residents and visitors will use a transit/trolley network to offset a significant amount of car travel in the Corridor. Investing in a system will enhance Hilton Heads image as an environmentally responsible place and it will contribute to making the experience and lifestyle of the island more complete. Finally, failure to pursuing transit could hurt the islands businesses to attract and retain employees.

Challenges to Implementation

The biggest challenge, beyond initial funding, relates to changing people's habits. Like many places, the island grew up with the car culture and their remains a bias toward the automobile from older generations. Fortunately, the public voiced very positive support for the concept in its responses to the polling questions that were presented at the public workshops, so old attitudes appear to be changing. Additionally, one of the limitations that the island wide system will have will be to overcome is being able to link with or access the gated communities so that people can access the transit system conveniently, without having to get in their car to do so.

Implementation Steps

- Council Approval to initiate a trolley / transit program within the Corridor and on the Island.
- Working with regional and island transit providers, such as Palmetto Breeze and Sea Pines Trolley to create synergies and the potential for shared resources and transit linkages.
- Designing the appropriate system for the Corridor that is in scale with the number of potential riders, links with parking lots, and one that reflects the vision of this being Hilton Heads Beach Village.
- Explore federal and state funding options, potentially with Palmetto Breeze, who has suggested there may be funds available.
- Initiate a pilot trolley program within the Corridor to test feasibility to expand to a larger system.

Committee Recommendations:

The Committee, based on community input and the potential impact and benefits that a Trolley / Transit network could provide, encourages Town Council to approve the concept of shuttle parking and develop an implementation plan for the spring of 2017 to pilot the trolley program so that can be tested for ridership, cost, revenue and benefit.

Reduce Trips with Transit:

Implementing a trolley/transit system that links the Corridor and the Island together would significantly reduce car trips in the Corridor and promote an environmentally friendly alternative for employees, locals, vacationers and day beach goers.

Local Transit Options

Alternatives:

- A C2C Trolley that links with satellite parking lots.
- **An "on island" transit system** to link the islands assets.
- An off island system that enables employees and off island beachgoers to access the island.

An Attractive Trolley for the Corridor:

A charming trolley that works within the Corridor creates the potential to locate parking away from the Circle to reduce car trips within the Circle to the beach. Parking opportunities include lots on town owned land and at cooperating institutions, such as churches and USCB.

Shared Parking and C2C Shuttle Feasibility

Alternatives:

- A link that goes to the north and accesses parking at Crossings Park and other locations.
- A link that picks up at the USCB site and Town Hall.
- A link that loops the Coligny Area.

C2C Shuttle Scenarios	Route Scenario			
	Coligny-Target Rd	**Coligny - Crossing Park**	**Coligny-Honey Horn Extension**	**Total With Extension**
Service Frequency (Minutes)	20	20	20	20
Miles per Loop	4.4	7.5	15.3	--
Required Buses in Operation	1	2	1	3
Season	June-October	June-October	Peak 20 Days	June-October
Days of Operation	7 Days/Week	7 Days/Week		7 Days/Week
Service Start Time	8:00 AM	8:00 AM	8:00 AM	8:00 AM
Service End Time	11:00 PM	11:00 PM	8:00 PM	11:00 PM
Total Annual Operating Cost	$161,000	$321,000	$17,000	$338,000
Estimated Ridership	64,750	105,000	19,800	124,800
Estimated Fare Revenues	$51,800	$84,000	$15,840	$99,840
Total Annual Operating Subsidy	$109,200	$237,000	$1,160	$238,160
Intercept Parking Spaces Served	475	800	300	1,100
Daily 1-Way Vehicle-Trips Eliminated	1,167	1,943	660	2,603

Note: Ridership will depend in large part on employer incentives, marketing, and auto disincentives.
Note: Costs based upon $70 per vehicle-hour rate.

Working with Gordon Shaw and Palmetto Breeze, an initial economic estimate was created to better understand the length of the system, buses required, operating costs and potential impact on car travel trips. Creating a transit system has the

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8

ADDRESS COMMERCIAL AND BEACH PARKING

Ensuring adequate parking to serve the shops and businesses as well as for beach goers requires a balanced and comprehensive approach. Providing more parking than currently exists at the beach has the potential to increase traffic within the Corridor, especially during the busy beach season.

CHAPTER 8: ADDRESS PUBLIC PARKING

Parking within the Corridor, particularly at Coligny, is one of the more important and contentious items that the Committee has had to consider. Business owners need and want sufficient parking to serve their customers. Beachgoers seek free parking to go to the most marketed beach on the Island. Employees also consume parking and create traffic on the roadways. With these conundrums in mind, the Committee's focus was to find a solution that balances the need for accessible parking with the impact that parking creates on the congestion in the Corridor. Several strategies were considered:

Reduce Demand:

- Shift demand to the "North Beaches" by marketing them and providing needed facilities to make them an attractive alternative to Coligny, albeit with their own character.
- In conjunction with a trolley/transit service, locate a large intercept parking lot near the bridge as you come onto the island, similar to how Honey Horn is used during the Heritage Golf Tournament to capture day users coming from off island.
- Charge higher fees for parking at Coligny Beach than at other beach parks to shift demand.

Manage with Technology:

- Provide digital signage with parking alerts as you come on island so that day users are made aware that Coligny Parking is full and that North Beach parking is available.
- Consider "Apps" and website to make finding parking spaces and paying easier and Apps that monitor the number of parking spaces in use.
- Create parking awareness messages on TV and print media so that visitors and locals are made aware that during certain months, parking will be a challenge and that there are alternatives to brining a car all the way into Coligny Beach.

Modify Policies:

- Consider "District" parking within the Coligny area, whereby fees for parking go toward financing improvements within the district.
- Consider graduated parking fees that would distinguish between people going to shop vs. people going to the beach. Graduated parking can also be something that is applied seasonally during the busy beach months.
- Work with employers to require employees to park outside of the Corridor during the busy season and use public transportation to get to work so as to reduce car trips within the Corridor and to free up parking spaces.

Add Parking:

- Consider on street parking within a walking distance of Coligny Beach park as part of a "complete street" design.
- Work with Provident Church to determine if a grass parking lot can be developed and leased.
- Explore other options for seasonal parking such as at other churches or USCB.
- Utilize the grass area of the new park located along Pope Avenue, Lagoon Road and Nassau Street as overflow parking on peak days.

- Consider a parking structure at the existing beach parking lot - either as a stand-alone structure or wrapped with development in a public / private partnership that could finance the structure.

Evaluation

The various concepts to balance parking,needs range in terms of cost and complexity. Some ideas are synergistic, such as locating intercept parking lots and connecting them with a trolley/shuttle system. Some ideas would be policy decisions, such as creating higher seasonal beach parking fees and implementing a seasonal graduated fee at Coligny. Other ideas require the introduction of new technology, such as managing parking through a computer based application (App), creating digital signage. Some items are rather simple to execute, such as creating a public information message focused on the challenges associated with beach parking. Finally, the creation of new parking would require design and construction processes.

Challenges to Implementation

Most of the ideas created to resolve parking issues at Coligny Beach received support from the Community. The more challenging concepts related to providing new parking spaces on street and new parking spaces within a parking structure at the beach park. There were concerns related to aesthetics in both cases and many felt that adding new parking to the area was counterproductive to resolving the traffic issues of the Corridor.

Implementation Steps

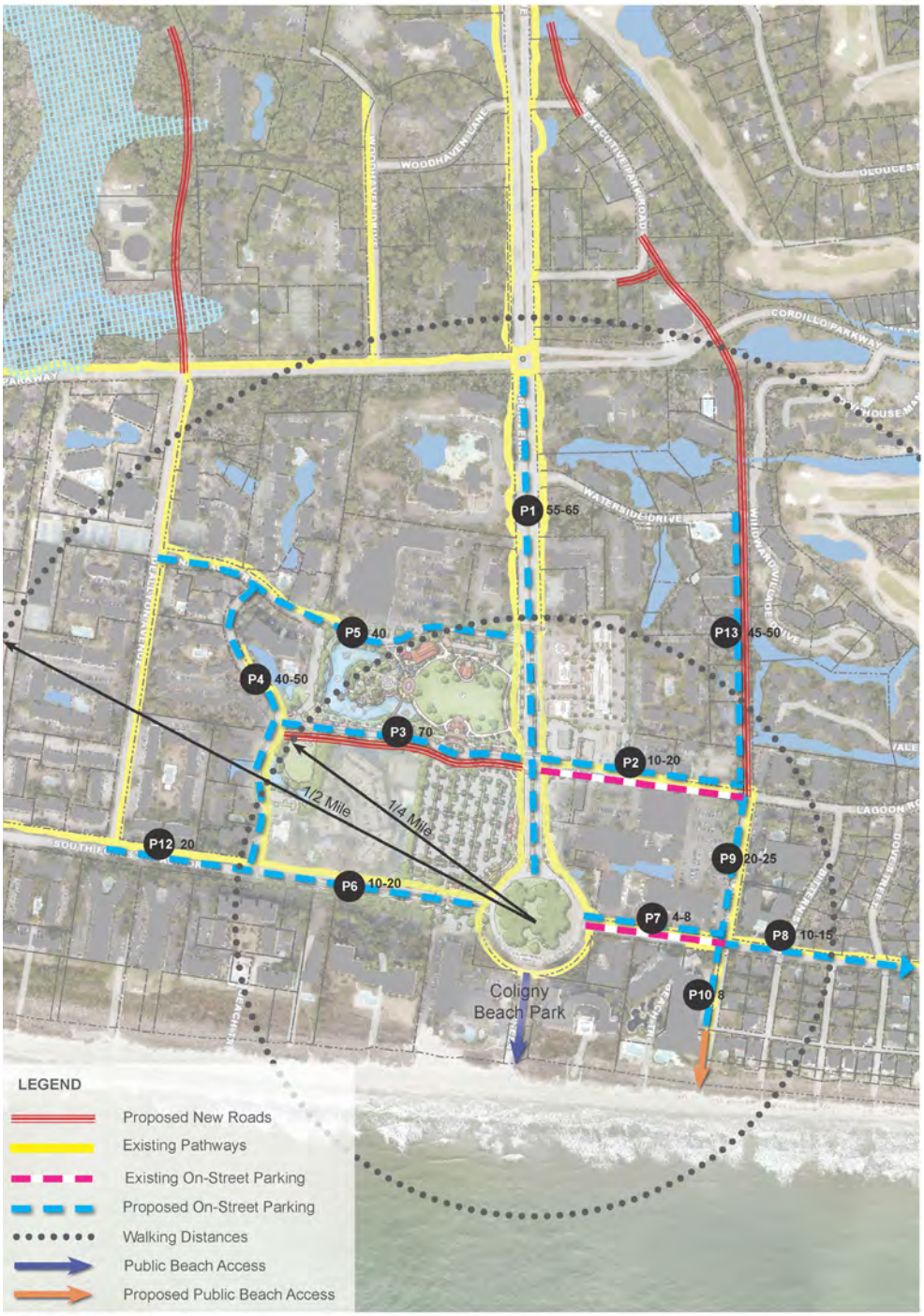
- The Town should consider a thorough parking analysis process that considers cost, revenue and actual space needs for businesses, beach goers and employees. This study would also consider technology and management tools, fee structures, policies and the potential of financing a parking structure.
- Proceed with the recommendations listed below in “Committee Recommendations”.

Committee Recommendations

1. Assign marketing firm to develop marketing plan for north beaches for implementation prior to 2017 season.
2. Approve concept of shuttle parking and develop implementation plan for spring 2017 pilot.
3. Engage in discussions with Provident Church to determine if additional surface parking space can be leased, or at other surface parking lots in Coligny area.
4. Assess parking fee structure differences between Coligny and other beaches and develop strategy to incent use of other beaches.
5. Develop strategy and implementation plan for north beach destination, including parking, amenities.
6. Change ordinance to allow food trucks for north beach destinations as soon as possible.
7. Explore public/private partnership for structured parking to determine feasibility and cost.

Consider Alternative Parking Concepts:

Providing on street parking, as part of evolving into “Complete Streets”, within walking distance (1/4 mile) of Coligny Beach Park would add to the parking supply and make the streets and this important node more pedestrian oriented. On street parking has a traffic calming effect which reduces auto speed. Parked cars also shield the pedestrian from passing cars.



On-Street Parking Feasibility

Alternatives:

- A C2C Trolley that links with satellite parking lots.
- **An “on island” transit system** to link the islands assets.
- An off island system that enables employees and off island beachgoers to access the island.

Consider Options for Beach Parking Lot:

The new beach park between Nassau and Lagoon Road offers the opportunity for public parking that can serve the beach and the commercial users. A large lot can provide approximately 428 spaces. On street parking on Lagoon and Nassau can provide an additional 90 spaces. Should it be needed, the large grass field that is part of the park design could provide 125 overflow parking spaces.

Coligny Public Parking Alternative A: As currently planned in WPI Coligny Master Plan

TOTAL PERMANENT SURFACE PARKING SPACES: +/- 553

TEMPORARY GRASS PARKING SPACES +/- 125

Alternatives:

- Consider metered parking spaces.
- Consider an App that helps manages and helps users locate parking spaces.
- Consider a graduated parking fee that balances seasonality and the difference between people going to the store versus people parking all day at the beach.
- Parking fees at Coligny should be higher than the fees at the North Beaches to help shift demand.

Construct a Parking Structure:

A parking structure could be created instead of a surface parking lot, which would significantly increase the number of parking spaces within walking distance of the beach. A two story structure has the potential to provide over 975 spaces vs 485 today. Financing such a structure, however, may be challenging since it will only be heavily used during the busy beach season.

Coligny Public Parking Alternative B: 2-Story Parking Structure

TOTAL SPACES IN STRUCTURED FACILITY +/- 978 (485 Per Floor)
TOTAL MUSEUM AND STREET PARKING +/- 125
TEMPORARY GRASS PARKING SPACES +/- 125

Alternatives:

- Consider an attractive facade, landscaping and art to make the structure an attractive architectural element.
- Set the parking structure well back from the sidewalk to allow for dense landscape screening.

Finance a Structure with Development:

Wrapping the parking structure with supportive development such as residential or institutional uses would enable the potential for a public / private partnership that could aid financing. Promoting long term residential use would allow residents to walk to the beach and shops. Having more people living within walking distance of the shops would support retail revenues.

Coligny Public Parking Alternative C: 2-Story Parking Structure with 3-Story Commercial Wrap

SQUARE FOOTAGE OF NEW COMMERCIAL/LODGING SPACE +/- 175,000 SF (3 Floors)
TOTAL SPACES IN STRUCTURED FACILITY +/- 790 (395 per Floor)
TOTAL MUSEUM AND STREET PARKING +/- 125

Alternatives:

- A public/private partnership that has the development **financing the parking** structure.
- Nice architecture hides the structure and provides an attractive building to frame Coligny Circle.
- Residential units would be attractively located next to a park, great shopping and the beach.
- More and more, empty nesters are seeking this sort of living arrangement.

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9

PROMOTE OTHER BEACHES

Promoting the other beaches and beach parks on the island would reduce pressure on Coligny Beach Park, which would lower traffic and reduce demand for parking during the busy beach seasons.

CHAPTER 9: PROMOTE OTHER BEACH PARKS

As part of relieving congestion and parking issues at Coligny Beach during the peak season and to promote other parts of the island, a strategy was created to promote the "North Beaches" on par with Coligny Beach, which bears the brunt of day trip and local beach traffic. The beach parks considered for this strategy, since they are located within reasonable proximity to each other and since there are investments in beach accesses, bathroom facilities, amenities, ball fields, playgrounds and parking. In fact, within these four parks there are 675 parking spaces, many of which remain empty while the Coligny Beach parking is full during the busy season. For instance, on June 13, 2015, which was a Saturday during the high beach season, over 400 spaces remained empty. The parks studied include:

- Burkes Beach
- Chaplin Community Park
- Driesen Beach Park
- Folly Field Beach Park
- Islanders Beach Park

The parks currently are quite nice and offer a variety of beach and recreational experiences. None of them, however, have some of the things that makes Coligny Beach an attractive destination. This includes food and beverage, convenience retail, a splash pad, and other amenities. However, it might be acceptable to allow these beaches to have their own charm and become something different but equal to Coligny Beach Park. Several methods were considered to make other beaches more attractive to locals and guests and to direct day visitors to them during the busy season so that their impact is dispersed. These include:

- Expanding the marketing of these other beaches on par with what happens for Coligny Beach so that visitors are enticed to go there.
- Provide more visible signage to these beaches so that they are a more obvious choice when people come onto the island.
- Consider creating a spot for one or more food trucks to locate there seasonally to provide food and beverage in a regional, funky, island style. Food trucks are increasingly popular in many towns and cities and provide a convenient way to provide food and beverage service.
- Consider a simple multiple seat golf cart type shuttle system that can connect beach goers with parking and to connect the beaches together so that they all can be accessed.
- More amenities like Coligny Beach Park, such as a splash pad.
- Seasonal festivals at Chaplin Park
- Convenience Retail, possibly in a "truck" initially or along 278B at a convenient spot.
- Transit Service from Off Island
- Lower Parking Cost
- Create a cell phone "App" that describes current beach parking on island

Evaluation

The strategy to reduce demand on the transportation network, parking and environmental quality by elevating the North Beaches is well supported by the community who were engaged in the C2C process and could have a positive effect on the Corridor. There are certainly up-front costs that will need to be incurred, but these expenditures can start out small. For instance, the first step or two might include conducting a market and branding study to determine how best to promote the beaches, creating a more visible signage program. The Council could also consider allowing food trucks seasonally and then the City could recruit appropriate vendors and a suitable location for a food truck "court". Over time, more permanent and costly improvements could be considered based on how the parks are used and what the needs are.

Challenges to Implementation

There are not many issues that need to be overcome, besides adequate funding, that would be required to make the North Beaches a more viable option for day users, visitors and locals. In many respects it simply takes creativity and investment. A few things need to be allowed, which may not currently be allowed, such the allowance for food trucks as well as a tiered parking pricing strategy so that the north beaches aren't the only beaches that are required to pay for parking. One item that needs to be explored further is the impact on the adjacent residential neighborhoods that surround the North Beaches. While the citizens who took the poll supported the idea, since the geography of the Corridor is on South Island, specific input wasn't obtained from North Beach residents.

Implementation Steps

- Conduct programming and needs assessment to determine what amenities and facilities are needed.
- A community input process with residents of the North Beach area.
- Planning and Design
- Funding
- Construction
- Proceed with "Committee Recommendations listed below.

Committee Recommendations:

The Committee supports the idea that making the North Beaches more visible, more highly marketed and outfitted with unique amenities would make them a more viable destination for beach goers, which would disperse the impact to the Corridor, especially during the busy beach season. It therefore recommends proceeding with:

1. Assign marketing firm to develop marketing plan for north beaches for implementation prior to 2017 season.
2. Approve concept of shuttle parking and develop implementation plan for spring 2017 pilot.
3. Develop strategy and implementation plan for north beach destination, including parking and amenities.

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10

CLOSING SUMMARY

Parking Recommendations

Objectives: Balance increased parking with ability to reduce traffic congestion.

1. Assign marketing firm to develop marketing plan for north beaches for implementation prior to 2017 season.
2. Approve concept of shuttle parking and develop implementation plan for spring 2017 pilot.
3. Engage in discussions with Provident Church to determine if additional surface parking space can be leased, or at other surface parking lots in Coligny area.
4. Assess parking fee structure differences between Coligny and other beaches and develop strategy to incent use of other beaches.
5. Develop strategy and implementation plan for north beach destination, including parking and amenities.
6. Change ordinance to allow food trucks for north beach destinations as soon as possible.
7. Explore public/private partnership for structured parking to determine feasibility and cost.

I support the following parking strategies within the Coligny area (choose all that apply):

Choices	Forum	On Line	F. Beach
Intercept Lot with Shuttle for Visitors	21%	56%	17%
On street Parking	6%	10%	7%
More Surface Parking	11%	22%	13%
Intercept Lot with Shuttle for Employees	22%	39%	16%
Keep Lot As Is - Make It Paid Parking	11%	19%	9%
Parking Structure	8%	24%	14%
Public / Private Parking Structure with Development	11%	19%	14%
Don't Add More Parking	10%	22%	8%

Capture from Public and Online Polling

Connectivity Recommendations

Objectives:

- **Reduce Circle congestion with alternative accesses**
- **Improve traffic flow on existing roads**

1. Work with business owners to improve access to the southwest quadrant of Sea Pines Circle, eliminating left turn accesses from Greenwood Drive.
2. Develop implementation plan and time line to build center turn lane for New Orleans Road and incorporate in Capital Improvement Plan.
3. Develop implementation plan and time line to build connector road between DeAllyon and Office Park/Cordillo including Greenwood Dr. intersection improvements and incorporate in Capital Improvement Plan.
4. Explore opportunities for Northwest Connector and connector on east side of Pope Avenue as redevelopment occurs.

I support the following Connectivity Improvements to reduce traffic and enhance flow (Choose all that apply):

Choices	Forum	On Line	Shipyard
Northwest Connectors	20%	44%	24%
Road Behind Churches to Office Park	17%	43%	20%
Add Center Turn Lane to New Orleans	14%	26%	19%
Road Parallel to Pope - Shipyard	12%	22%	5%
Access Barmuda Triangle from Office Park Rd.	15%	32%	19%
All of the Above	17%	8%	6%

Capture from Public and Online Polling

Traffic at Sea Pines Circle Recommendations

Objectives:

- **Reduce volume of traffic using Circle**
- **Improve operation of existing Circle**
- **Position future decision for two lane rotary if needed**

1. Pilot signal synchronization of traffic signals to improve Circle clearing as soon as possible.
2. Implement shuttle parking and beach marketing /destination plan as defined under Parking.
3. Develop implementation plan and timing for proposed Access Management improvements addressing priorities of median extensions on Palmetto Bay and William Hilton Parkway, and left turn prohibitions in C2C corridor.
4. Build landscaped medians for Sea Pines Circle approaches on Palmetto Bay Road and William Hilton Parkway to limit left turns and to improve visual appeal.
5. Assign staff to:
- evaluate entry alignment of roads into Sea Pines Circle to determine if changes would improve flow.
- propose any lane markings or speed restrictions that would improve flow
- evaluate new technology approaches to island wide traffic management
- determine if traffic officers could help improve flow
6. Measure traffic volumes at Circles every 2 years to assess volume growth and impact of improvements starting in 2018. Based on results develop further mitigation options including 2 lane rotary when needed.

I support the following improvements to Sea Pines Circle (choose one):

Choices	Forum	On Line	Shipyard
Make Safety Improvements	20%	44%	24%
Make Safety AND Connectivity Improvements	17%	43%	20%
Well Designed Two Lane Rotary	14%	26%	19%
Signalized Intersection	12%	22%	5%
Fly Under	15%	32%	19%
Fly Over	17%	8%	6%
Leave Circle As Is	20%	44%	24%
None of the Above	17%	43%	20%

Capture from Public and Online Polling

Trail System Expansion Recommendations

Objectives:

- **Reduce bike and pedestrian congestion on Pope Avenue**
- **Improve bike and pedestrian safety**

1. Implement signage and wayfaring for beach access
2. Provide adequate bike parking at key points on trail system.
3. Develop implementation plan and time line to build a trail between DeAllyon and Office Park Roads and incorporate in Capital Improvement Plan.
4. Develop implementation plan and time line to build trail on Lagoon between Pope and Ibis and incorporate in Capital Improvement Plan.
5. Develop implementation plan and time line to widen trail on both sides of Pope between Cordillo and Coligny Circle to create separate space for bikes and pedestrians (utilize Complete Streets concepts).
6. Implement on road "sharrow" markings on shoulder of Pope, Cordillo and South Forest Beach to create route for serious bikers.
7. Assign Planning Commission to propose additional trails as demand requires for Cordillo, South and North Forest Beach.

I support the following considerations for trails expansion (choose all that apply):

Choices	Forum	On Line
Wider, More Highly Designed Trail - Cordillo to Coligny	26%	27%
Beach Trail Marking	22%	27%
All Shown New Trails	28%	30%
No More Trails	10%	24%
More Trails Than Shown On Plan	10%	6%
Don't Know - Need More Information	2%	30%

I support the following as it relates to transit (choose all that apply):

Choices	Forum	On Line
Transit System from Off Island	28%	41%
On Island Transit System	32%	63%
Parking Lot Shuttle	34%	59%
Not in Favor of Transit	4%	14%

Policy Recommendations:

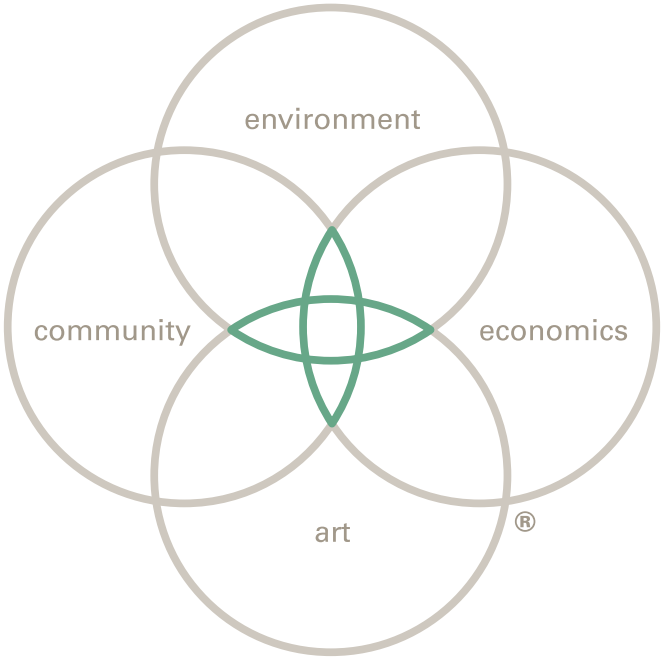
Objectives:

- **Encourage aesthetic values and appearance standards throughout the community**

1. Adopt the proposed Vision and guiding principles for the Circle to Circle area.
2. Further develop design guidelines (built form, public space and landscape) consistent with village character
3. Prepare land use master plan in conjunction with island wide visioning.
4. Assign Parks & Rec Commission to develop implementation plans and time line for small parks on Town owned land and incorporate in Capital Improvement Plan based on neighborhood input on need and content.
5. Assign Planning Commission to propose ordinance changes required to enable district/ shared storm water and shared open space in order to encourage small village type redevelopment.
6. Assign Planning Commission to re-assess LMO usage and density provisions in light of traffic volumes and vision and make recommendations for changes to LMO.
7. Further develop guidelines and land use strategy to support walkable village character in Coligny and Sea Pines (though combination of Island Visioning process, and follow on consulting engagements.) Envision how would the Town want this area redeveloped if a major hurricane wiped out all existing structures and it needed to be rebuilt.
8. Assign Planning Commission to develop a redevelopment strategy for under utilized commercial space in the area.
9. Assign responsibility to Planning Commission to follow up and report annually on status of recommendations. Incorporate recommendations into CIP and Comprehensive Plan.

I support the following as it relates to transit (choose all that apply):

Choices	Forum	On Line
Transit System from Off Island	28%	41%
On Island Transit System	32%	63%
Parking Lot Shuttle	34%	59%
Not in Favor of Transit	4%	14%


environment
community
economics
art
®

DESIGNWORKSHOP

THE CIRCLE TO CIRCLE VISION PLAN

Hilton Head Island, July 2016

DOCUMENT APPENDIX

DESIGNWORKSHOP

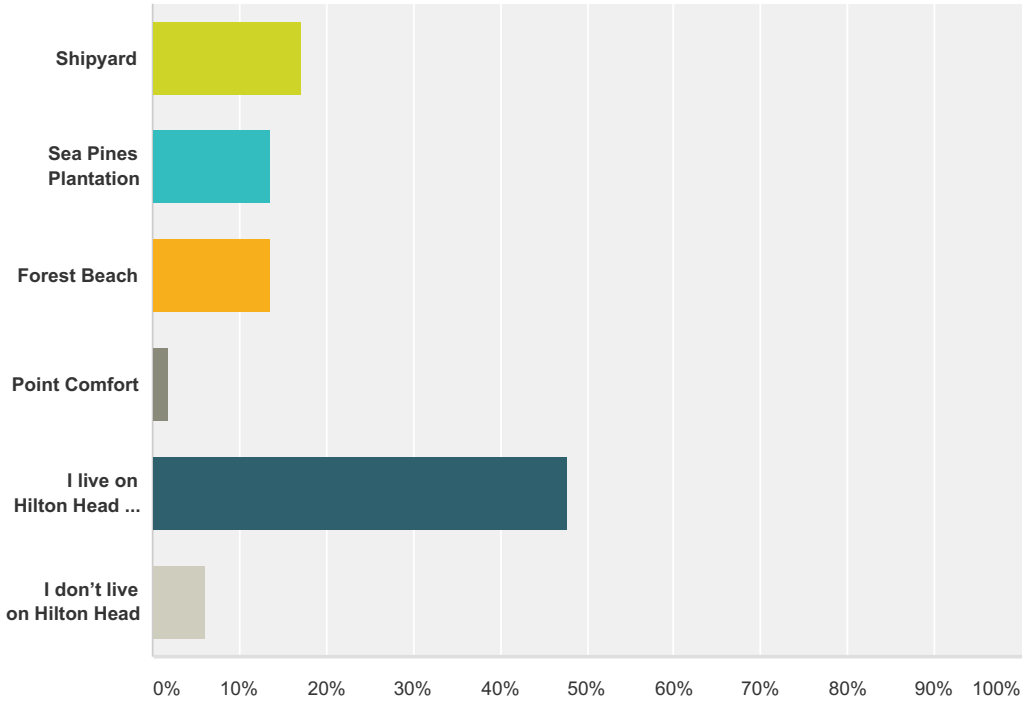
A1

PUBLIC POLLING RESULTS

The following pages are the data captured from the public polling sessions of June 2016, which included polling at the open meetings and the polling that was part of the web based survey.

Q1 Where do you live?

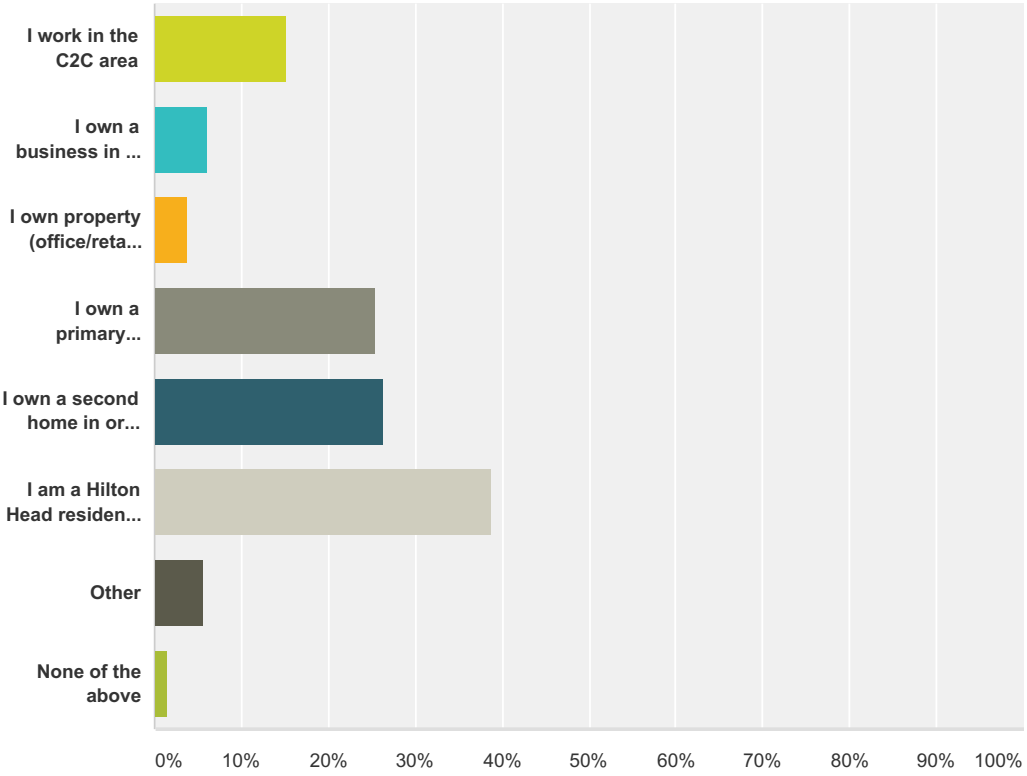
Answered: 215 Skipped: 2



Answer Choices	Responses	
Shipyard	**17.21%**	37
Sea Pines Plantation	**13.49%**	29
Forest Beach	**13.49%**	29
Point Comfort	**1.86%**	4
I live on Hilton Head but in another area	**47.91%**	103
I don't live on Hilton Head	**6.05%**	13
Total		**215**

Q2 My interest in the Circle to Circle Areas: (choose all that apply)

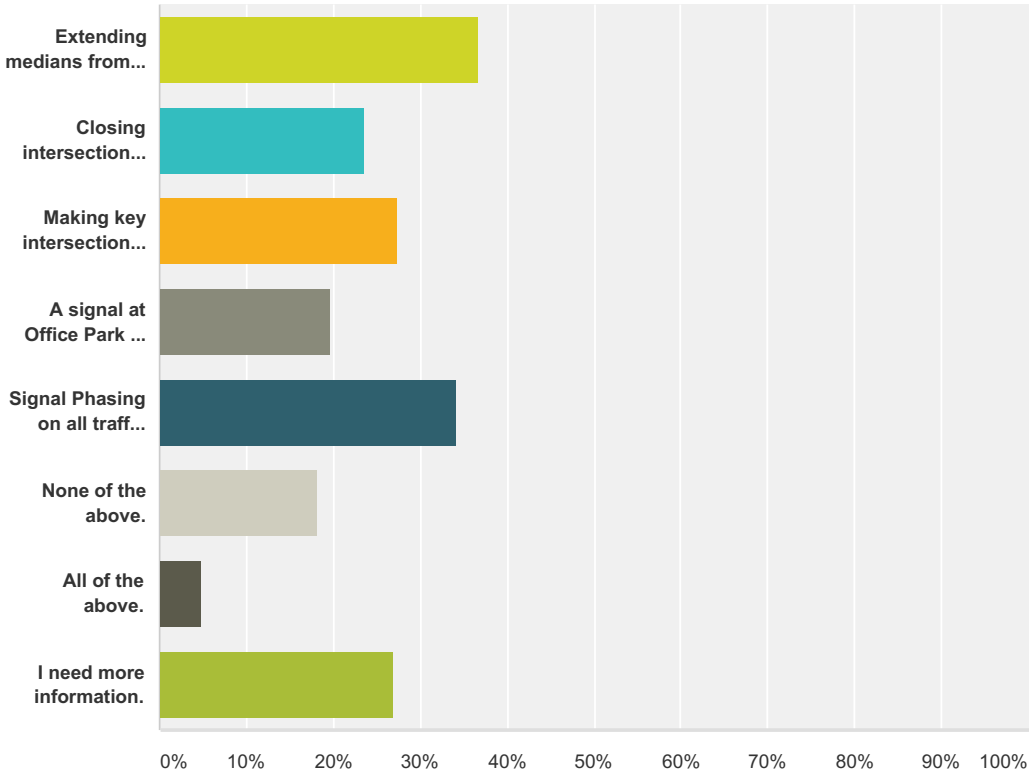
Answered: 216 Skipped: 1



Answer Choices	Responses	
I work in the C2C area	**15.28%**	33
I own a business in the C2C area	**6.02%**	13
I own property (office/retail/vacant) in the C2C area	**3.70%**	8
I own a primary residence in or adjacent to the C2C area	**25.46%**	55
I own a second home in or adjacent to the C2C area	**26.39%**	57
I am a Hilton Head resident, but live outside the C2C area	**38.89%**	84
Other	**5.56%**	12
None of the above	**1.39%**	3
Total Respondents: 216		

Q3 I support the following Access Management Strategies around SP Circle: (choose all that apply)

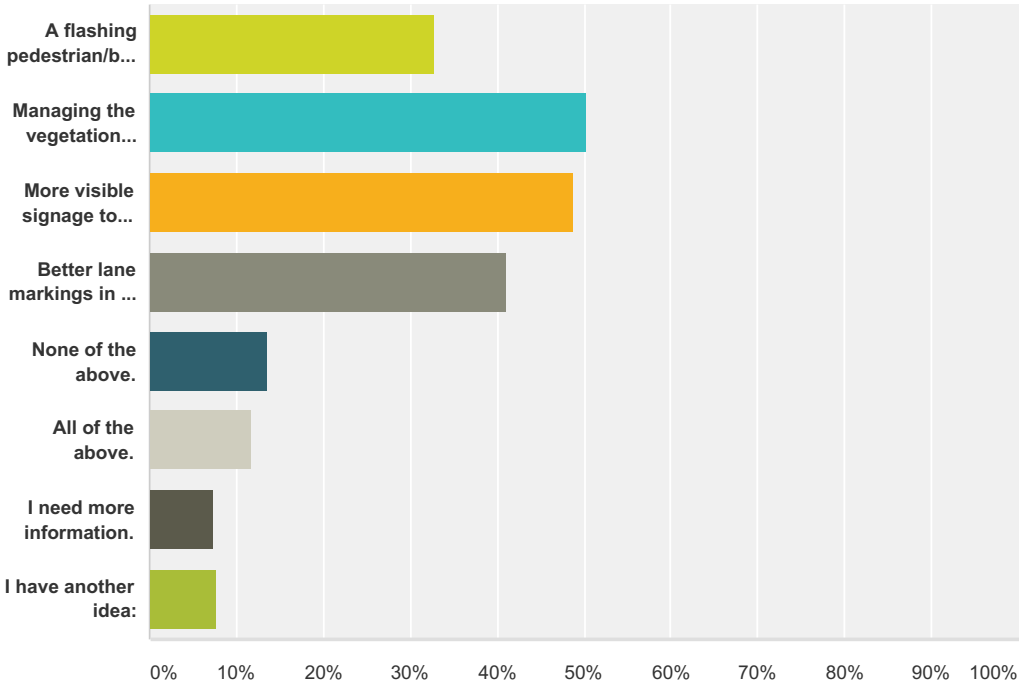
Answered: 204 Skipped: 13



Answer Choices	Responses	
Extending medians from the circle in each direction to the next major intersection to eliminate turns across traffic.	**36.76%**	75
Closing intersections where needed and possible.	**23.53%**	48
Making key intersections right in/out of the circle where needed and possible.	**27.45%**	56
A signal at Office Park and Greenwood Drive.	**19.61%**	40
Signal Phasing on all traffic signals.	**34.31%**	70
None of the above.	**18.14%**	37
All of the above.	**4.90%**	10
I need more information.	**26.96%**	55
Total Respondents: 204		

Q4 I support the following Safety improvements in SP Circle area: (choose all that apply)

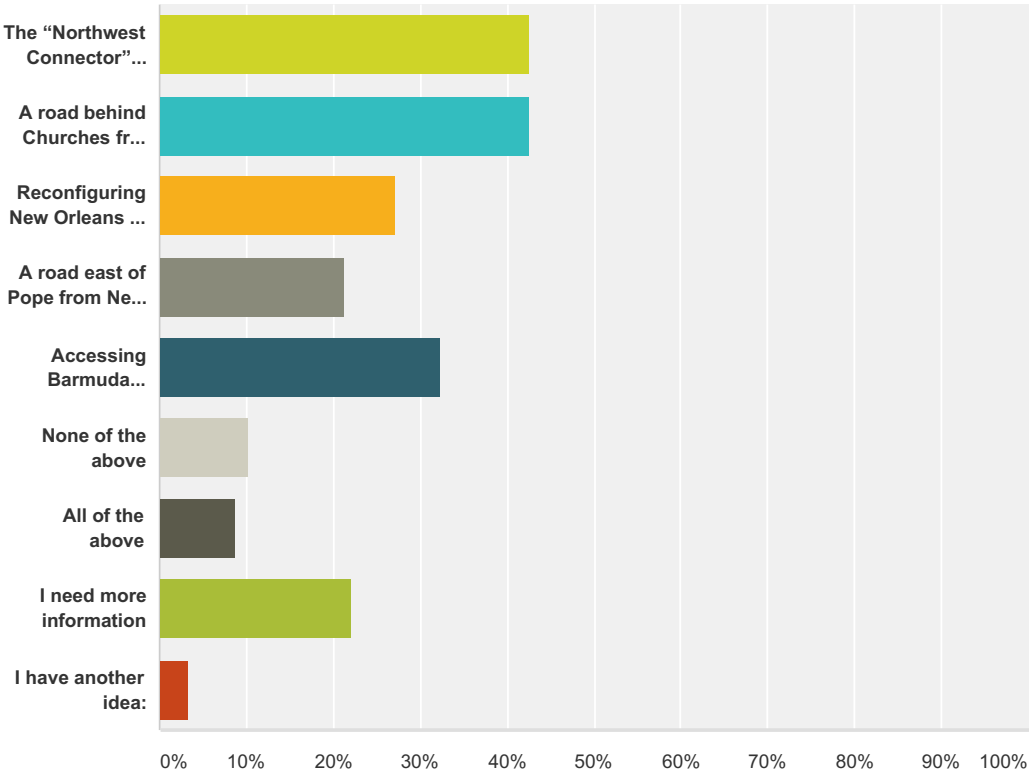
Answered: 207 Skipped: 10



Answer Choices	Responses	
A flashing pedestrian/bike signal at Greenwood & Office Park to cross Greenwood DR.	**32.85%**	68
Managing the vegetation around Sea Pines Circle to enhance sight distance.	**50.24%**	104
More visible signage to direct entering & within Sea Pines Circle.	**48.79%**	101
Better lane markings in Sea Pines Circle.	**41.06%**	85
None of the above.	**13.53%**	28
All of the above.	**11.59%**	24
I need more information.	**7.25%**	15
I have another idea:	**7.73%**	16
Total Respondents: 207		

Q5 I support the following Connectivity Improvements to reduce traffic and enhance flow: (choose all that apply)

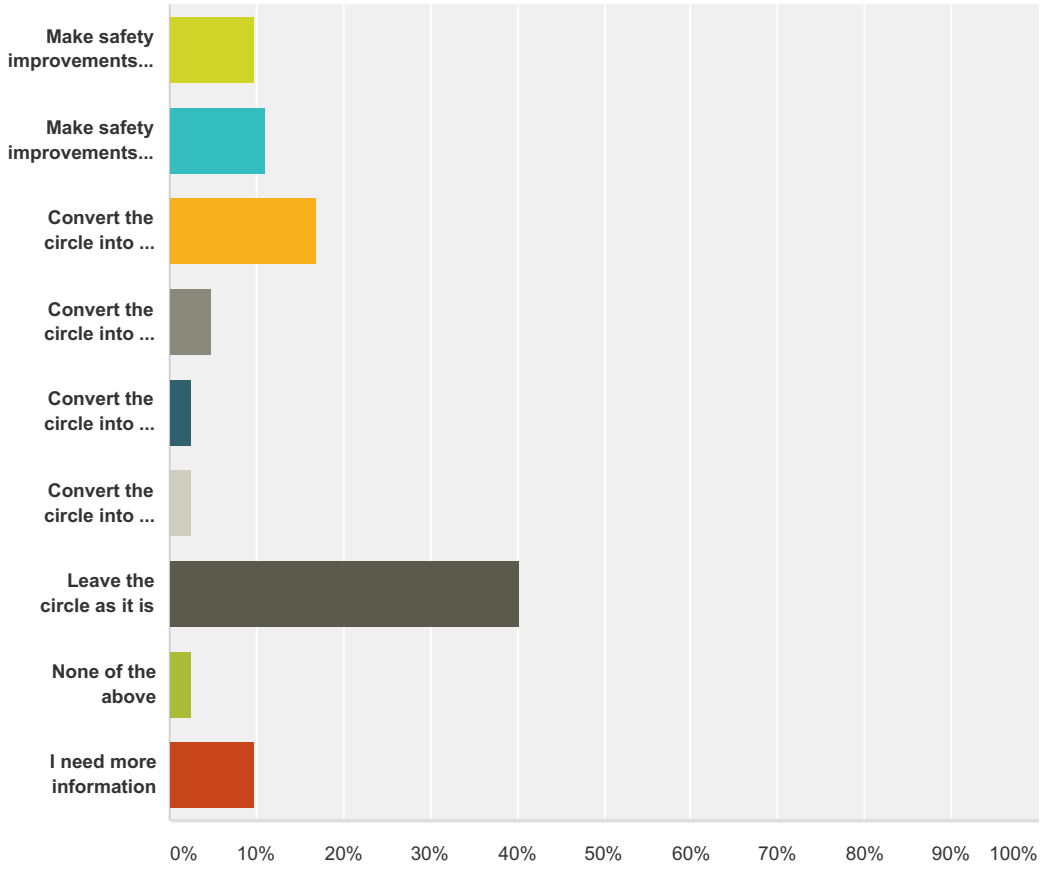
Answered: 207 Skipped: 10



Answer Choices	Responses	
The "Northwest Connector" connecting Greenwood Drive Palmetto Bay Road	**42.51%**	88
A road behind Churches from De Allyon to Office Park	**42.51%**	88
Reconfiguring New Orleans to provide a center turn lane	**27.05%**	56
A road east of Pope from New Orleans to Avocet	**21.26%**	44
Accessing Barmuda Triangle and commercial from Office Park Way	**32.37%**	67
None of the above	**10.14%**	21
All of the above	**8.70%**	18
I need more information	**22.22%**	46
I have another idea:	**3.38%**	7
Total Respondents: 207		

Q6 I support the following improvement to Sea Pines Circle to remedy identified traffic capacity issues now and in the future: (choose one)

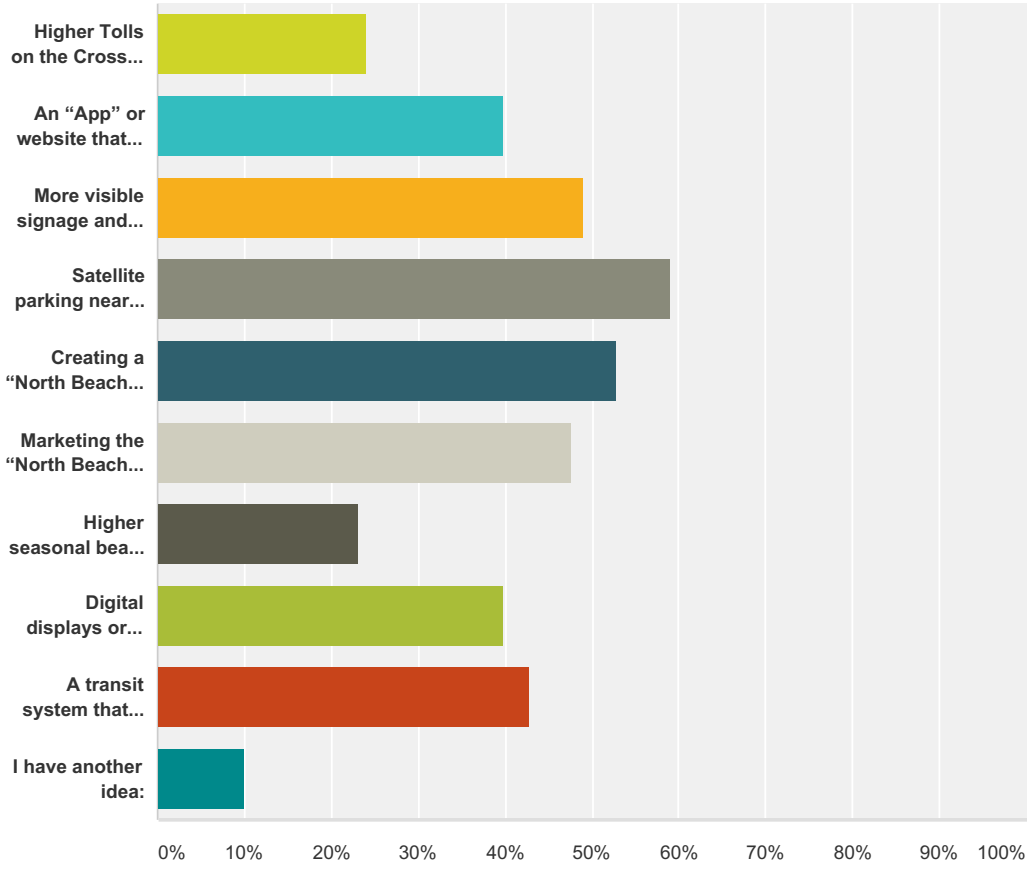
Answered: 206 Skipped: 11



Answer Choices	Responses	
Make safety improvements referenced earlier only	**9.71%**	20
Make safety improvements and connectivity improvements only	**11.17%**	23
Convert the circle into a well-designed two lane circle	**16.99%**	35
Convert the circle into a signalized intersection	**4.85%**	10
Convert the circle into a fly under	**2.43%**	5
Convert the circle into a fly over	**2.43%**	5
Leave the circle as it is	**40.29%**	83
None of the above	**2.43%**	5
I need more information	**9.71%**	20
Total		**206**

Q7 I support the following strategies for seasonal parking: (choose all that apply)

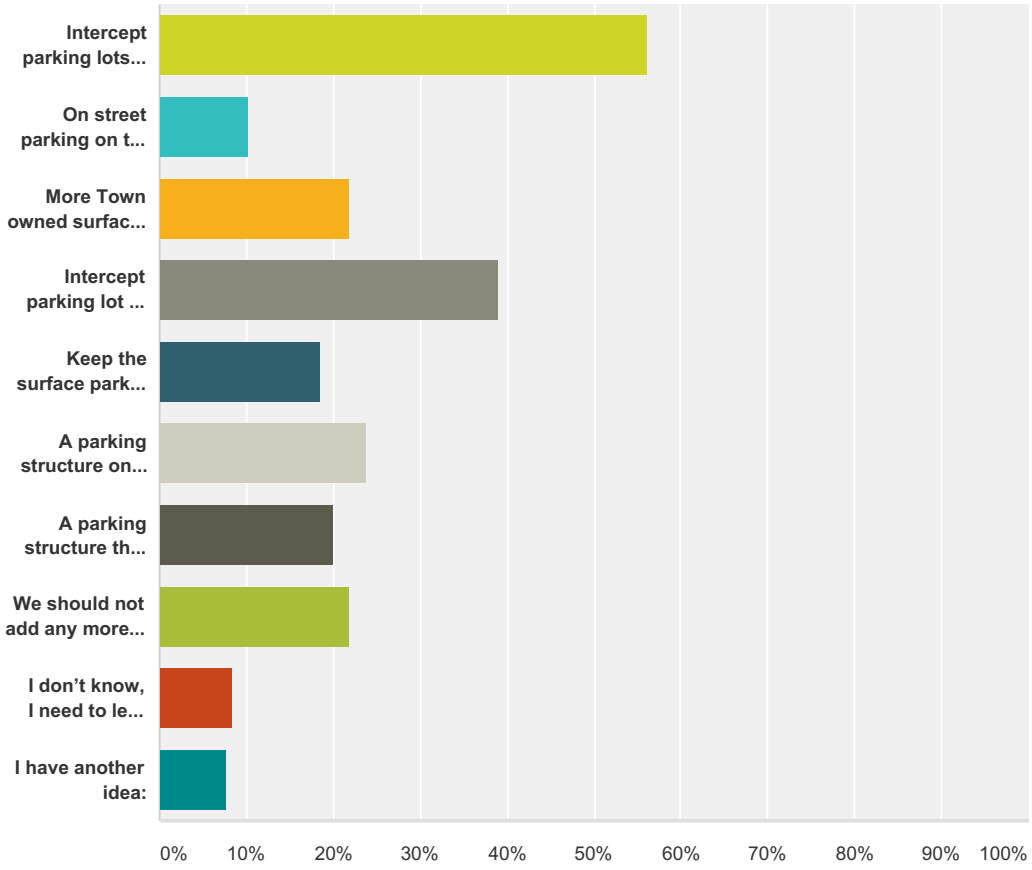
Answered: 208 Skipped: 9



Answer Choices	Responses	
Higher Tolls on the Cross Island during the high season for cash tolls (not transponders).	**24.04%**	50
An "App" or website that directs day users to other beaches.	**39.90%**	83
More visible signage and wayfinding to direct people to other beaches.	**49.04%**	102
Satellite parking near the C2C area and a trolley system on island.	**59.13%**	123
Creating a "North Beaches" destination with appropriate amenities.	**52.88%**	110
Marketing the "North Beaches" as well as Coligny Beach is marketed.	**47.60%**	99
Higher seasonal beach parking fees at Coligny than at other beaches.	**23.08%**	48
Digital displays or "App" that describes current beach parking availability.	**39.90%**	83
A transit system that enables day trips to the beach.	**42.79%**	89
I have another idea:	**10.10%**	21
Total Respondents: 208		

Q8 I support the following Parking Strategies within the Coligny area of the C2C: (choose all that apply)

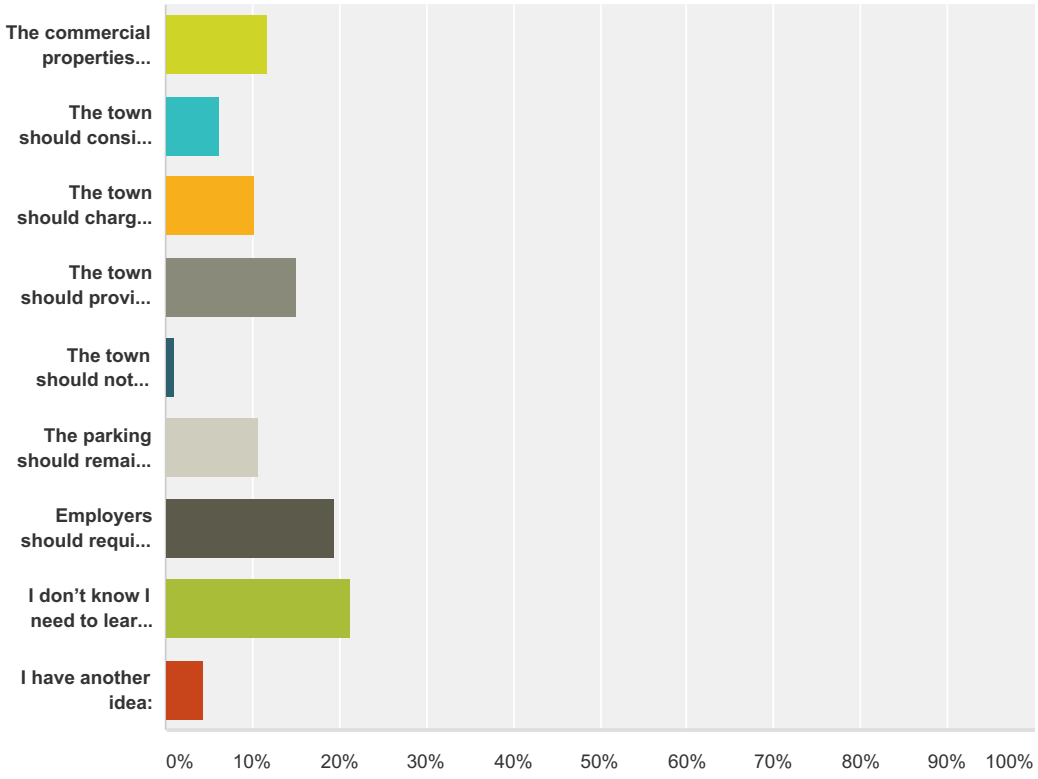
Answered: 205 Skipped: 12



Answer Choices	Responses	
Intercept parking lots for day visitors on land off Palmetto Bay Rd linked with a trolley.	**56.10%**	115
On street parking on town streets.	**10.24%**	21
More Town owned surface parking in Coligny area.	**21.95%**	45
Intercept parking lot for Coligny area employees linked with a trolley.	**39.02%**	80
Keep the surface parking lot as is but make it a paid parking lot.	**18.54%**	38
A parking structure on the town owned land adjacent to the park.	**23.90%**	49
A parking structure that is wrapped with a development opportunity.	**20.00%**	41
We should not add any more parking to the Coligny area.	**21.95%**	45
I don't know, I need to learn more.	**8.29%**	17
I have another idea:	**7.80%**	16
Total Respondents: 205		

Q9 To accommodate beach and commercial parking within the Coligny Area: (choose one)

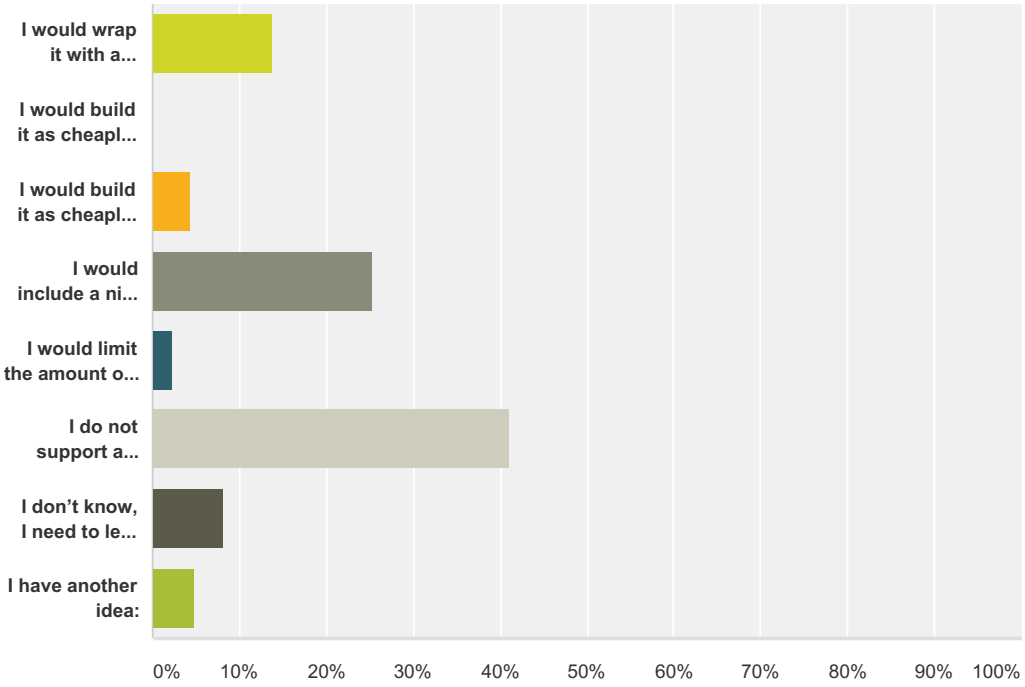
Answered: 206 Skipped: 11



Answer Choices	Responses	
The commercial properties should provide all of their parking needs on their site.	**11.65%**	24
The town should consider "District Parking" to incentivize re-development.	**6.31%**	13
The town should charge for parking in the Coligny Area.	**10.19%**	21
The town should provide beach parking only.	**15.05%**	31
The town should not provide any parking.	**0.97%**	2
The parking should remain the same at Coligny Beach area.	**10.68%**	22
Employers should require employee parking off property in intercept parking lots.	**19.42%**	40
I don't know I need to learn more.	**21.36%**	44
I have another idea:	**4.37%**	9
Total		**206**

Q10 If a parking structure were to be built at Coligny Character Area: (choose one)

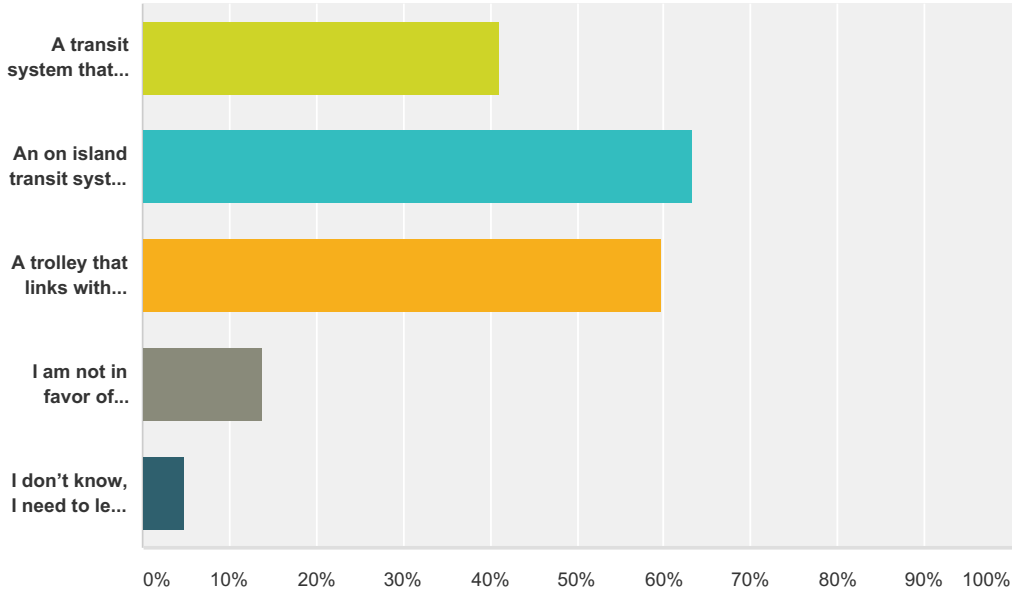
Answered: 209 Skipped: 8



Answer Choices	Responses	
I would wrap it with a "public /private partnership" development that enabled shared funding.	**13.88%**	29
I would build it as cheaply as possible regardless of the looks.	**0.00%**	0
I would build it as cheaply as possible & use landscape to hide it.	**4.31%**	9
I would include a nice façade and landscape to make it attractive.	**25.36%**	53
I would limit the amount of beach parking allowed within it.	**2.39%**	5
I do not support a parking structure.	**41.15%**	86
I don't know, I need to learn more.	**8.13%**	17
I have another idea:	**4.78%**	10
Total		**209**

Q11 I support the following as it relates to transit and trolleys: (choose all that apply)

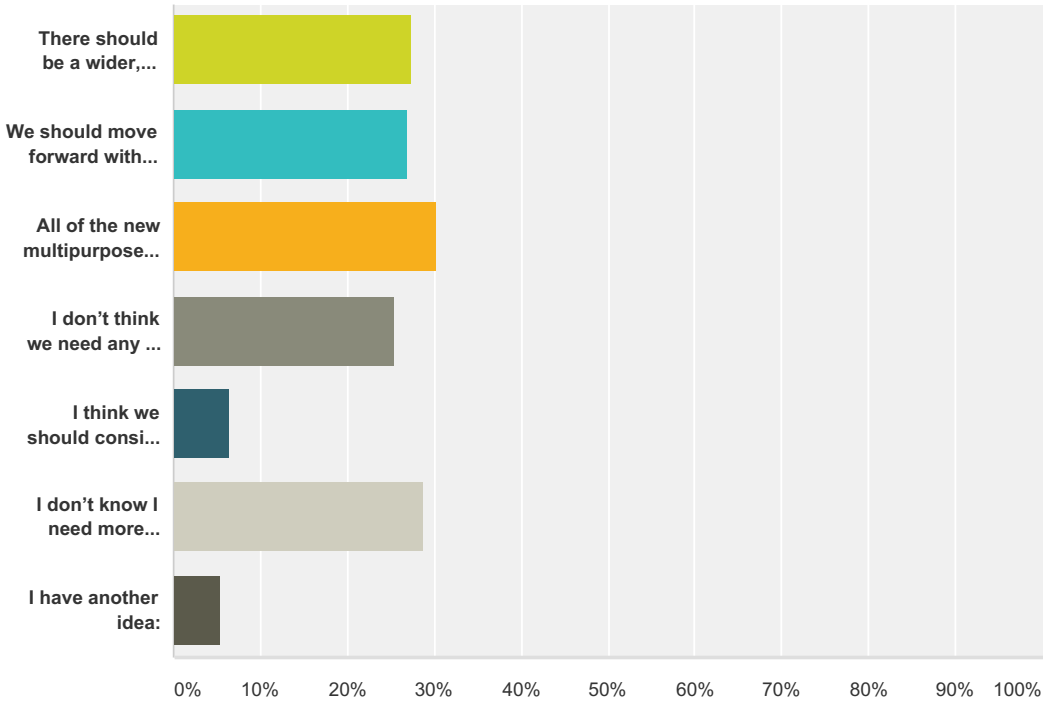
Answered: 209 Skipped: 8



Answer Choices	Responses	
A transit system that reduces cars (visitors, day visitors, employees) from coming on island.	**41.15%**	86
An on island transit system that links the islands amenities and centers.	**63.16%**	132
A trolley that links with satellite parking lots.	**59.81%**	125
I am not in favor of transit on Hilton Head.	**13.88%**	29
I don't know, I need to learn more.	**4.78%**	10
Total Respondents: 209		

Q12 I support the following considerations for Trails expansions: (choose all that apply)

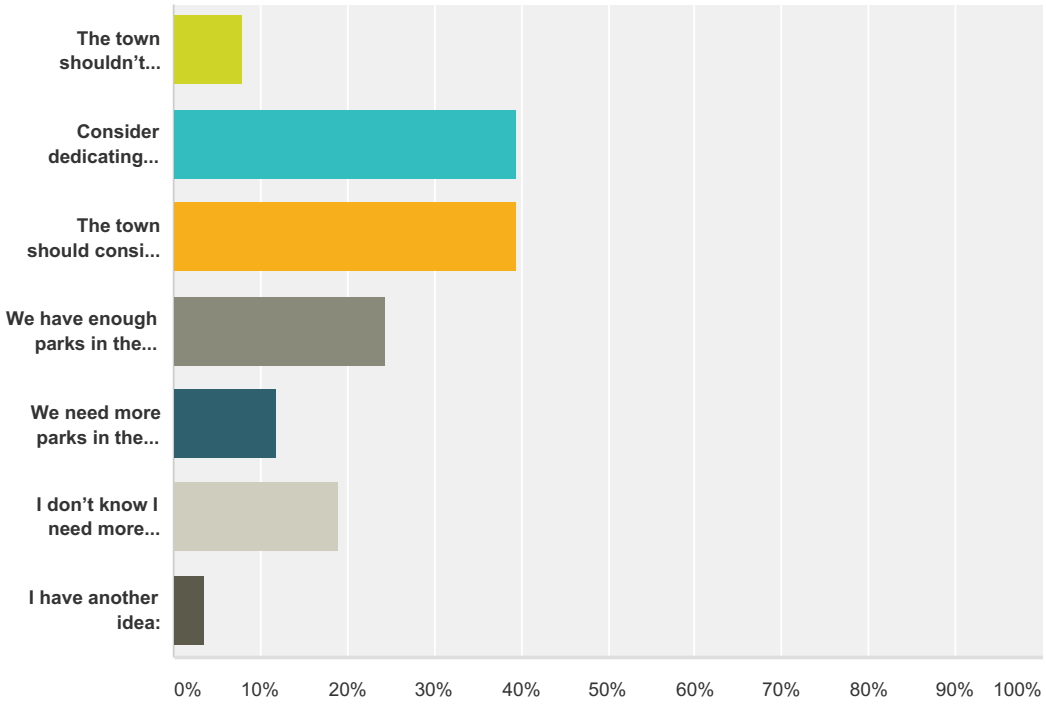
Answered: 201 Skipped: 16



Answer Choices	Responses	
There should be a wider, more highly designed trail between Cordillo & Coligny Circle.	**27.36%**	55
We should move forward with the beach trail concept.	**26.87%**	54
All of the new multipurpose/bike trails shown on the plan should be considered.	**30.35%**	61
I don't think we need any new trails – we have enough.	**25.37%**	51
I think we should consider even more trails than shown.	**6.47%**	13
I don't know I need more information.	**28.86%**	58
I have another idea:	**5.47%**	11
Total Respondents: 201		

Q13 I support the following for Open Space, Parks and Storm Water: (choose all that apply)

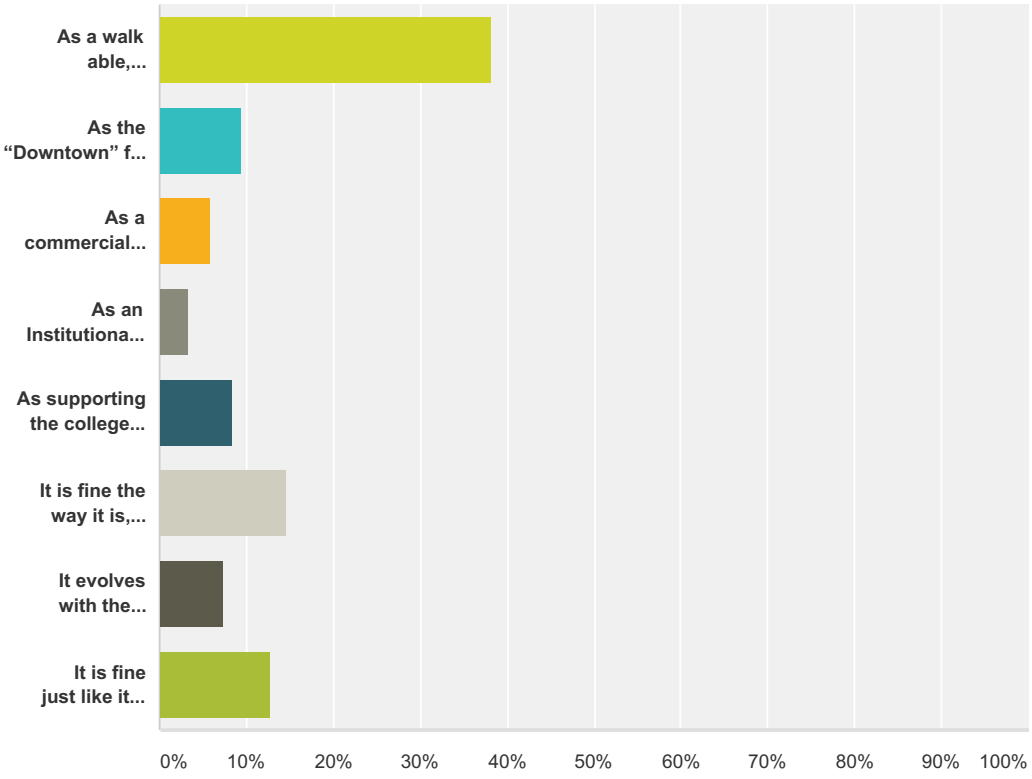
Answered: 200 Skipped: 17



Answer Choices	Responses	
The town shouldn't consider district storm water: it should happen on development property.	**8.00%**	16
Consider dedicating town-owned land for district open space, parks & storm water.	**39.50%**	79
The town should consider purchasing more land for open space, parks & storm water.	**39.50%**	79
We have enough parks in the C2C area.	**24.50%**	49
We need more parks in the C2C area.	**12.00%**	24
I don't know I need more information.	**19.00%**	38
I have another idea:	**3.50%**	7
Total Respondents: 200		

Q14 I envision the Sea Pines Character Area as: I envision the Sea Pines Character Area as: (choose one)

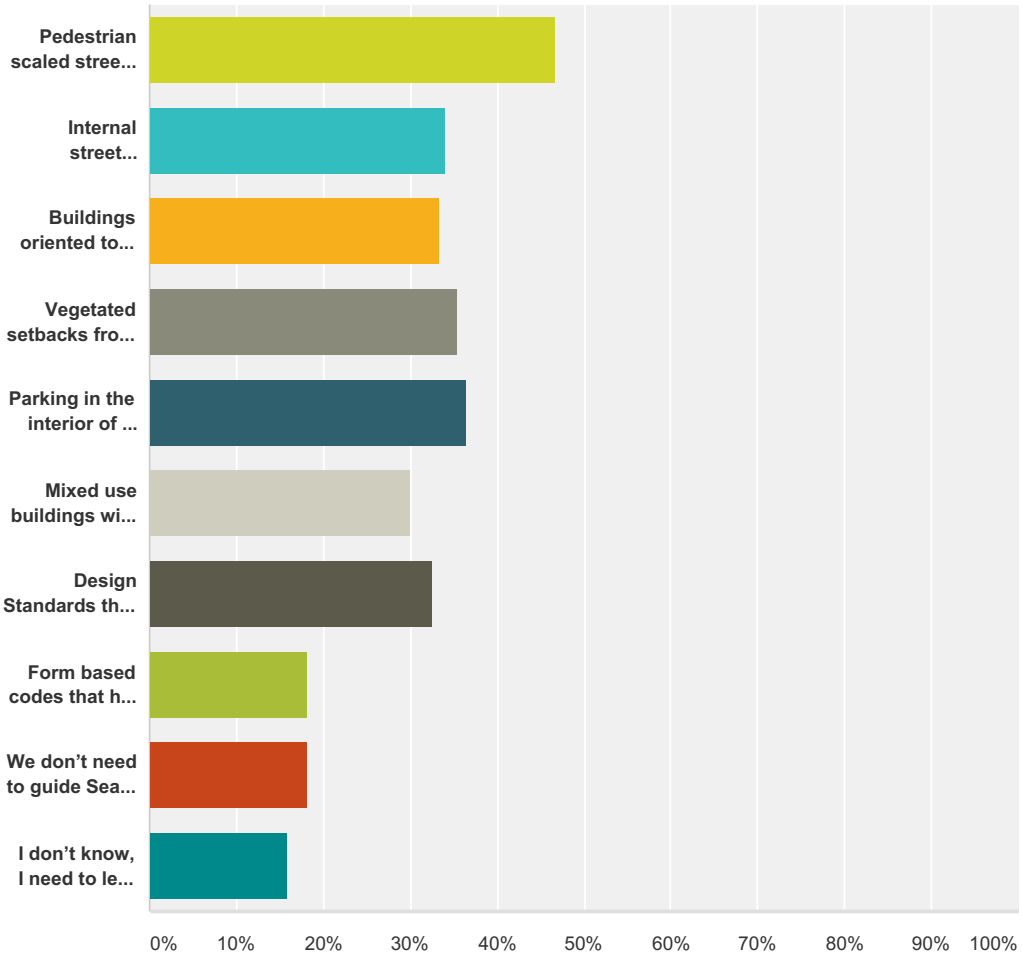
Answered: 204 Skipped: 13



Answer Choices	Responses	
As a walk able, pedestrian scaled mixed use village.	38.24%	78
As the "Downtown" for the Head Island with a mix of uses.	9.31%	19
As a commercial center like Shelter Cover Towne Centre.	5.88%	12
As an Institutional / Educational hub of Hilton Head.	3.43%	7
As supporting the college campus with housing, shopping & recreation.	8.33%	17
It is fine the way it is, period.	14.71%	30
It evolves with the market, without it pointing to a vision.	7.35%	15
It is fine just like it is, but it would be great if buildings were painted and better kept up with more landscape color.	12.75%	26
Total		**204**

Q15 The planning principles that should guide Sea Pines Character Area are: (choose all that apply)

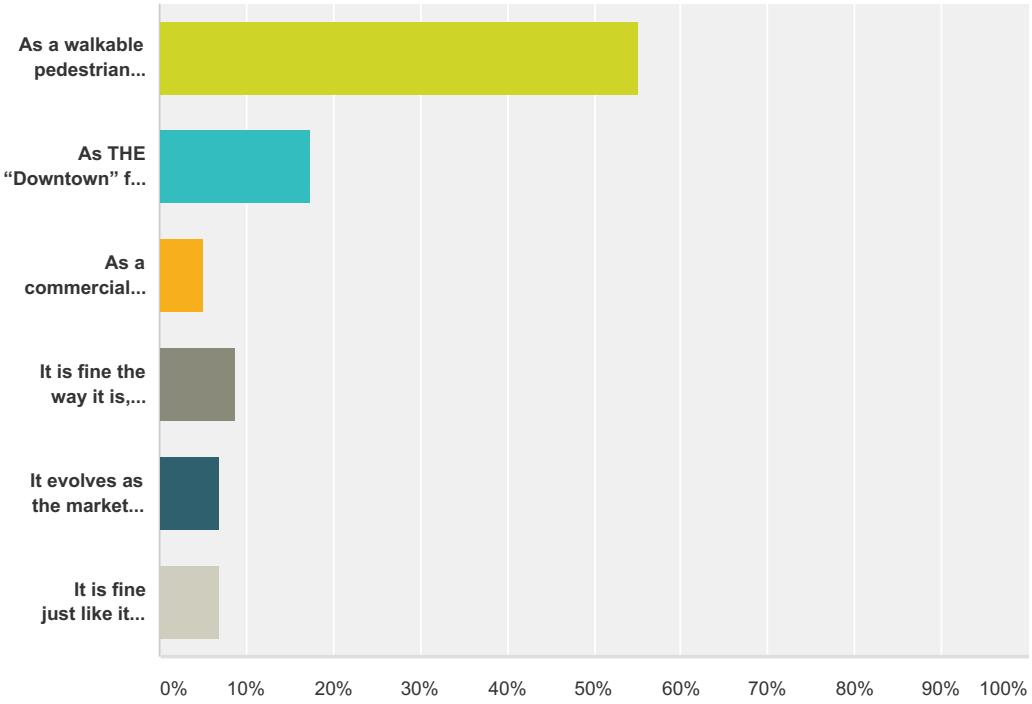
Answered: 203 Skipped: 14



Answer Choices	Responses	
Pedestrian scaled streets and blocks.	**46.80%**	95
Internal street connectivity between parcels.	**33.99%**	69
Buildings oriented to pedestrian scaled streets.	**33.50%**	68
Vegetated setbacks from major streets.	**35.47%**	72
Parking in the interior of the property – behind the buildings.	**36.45%**	74
Mixed use buildings with retail below and residential above.	**30.05%**	61
Design Standards that describe building & landscape.	**32.51%**	66
Form based codes that help ensure development outcome.	**18.23%**	37
We don't need to guide Sea Pines Circle to be anything different.	**18.23%**	37
I don't know, I need to learn more.	**15.76%**	32

Q16 I envision the Coligny Character Area as: (choose one)

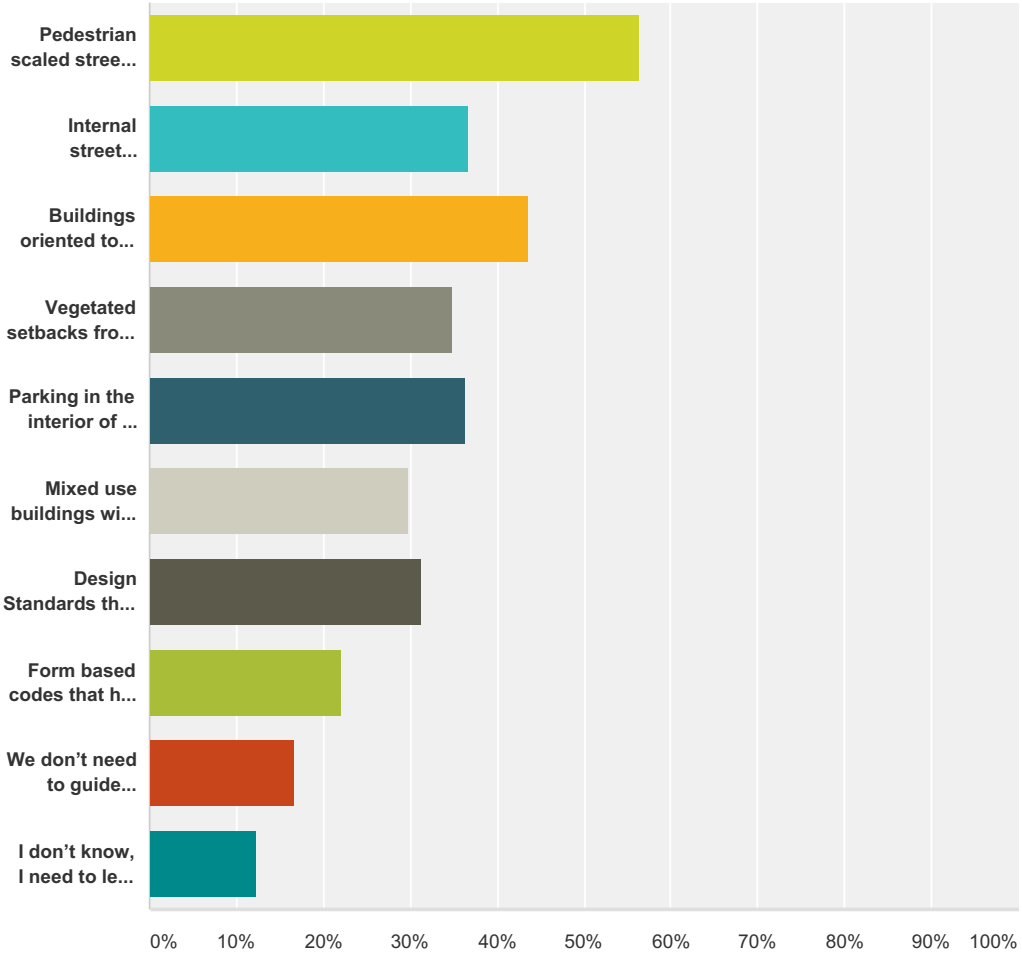
Answered: 203 Skipped: 14



Answer Choices	Responses	
As a walkable pedestrian scaled "seaside village" with a mix of uses.	**55.17%**	112
As THE "Downtown" for Hilton Head Island with a mix of uses.	**17.24%**	35
As a commercial shopping center like Shelter Cover Towne Centre.	**4.93%**	10
It is fine the way it is, period.	**8.87%**	18
It evolves as the market wants it to, without it pointing to a vision.	**6.90%**	14
It is fine just like it is, but it would be great if the area had more flowering foliage and landscaping.	**6.90%**	14
Total		**203**

Q17 The planning principles that should guide Coligny Character Area are: (choose all that apply)

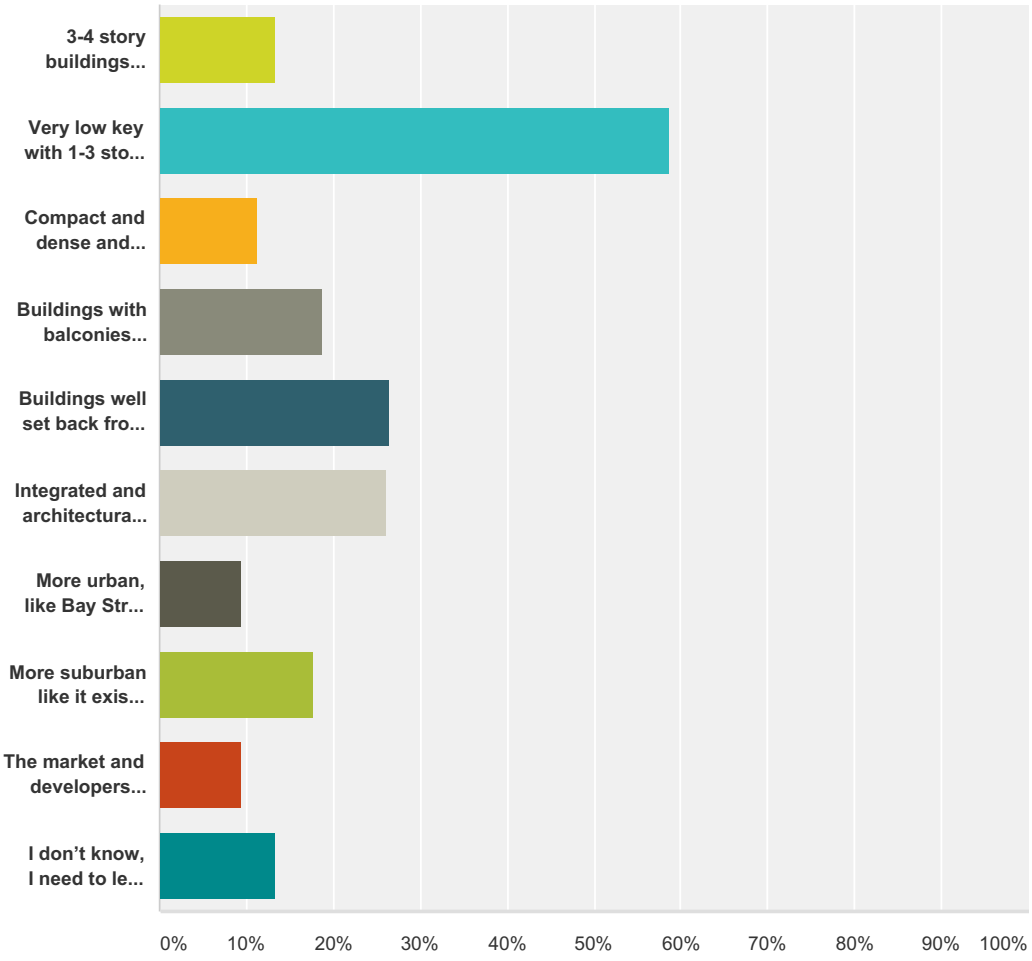
Answered: 204 Skipped: 13



Answer Choices	Responses	
Pedestrian scaled streets and blocks.	**56.37%**	115
Internal street connectivity between parcels.	**36.76%**	75
Buildings oriented to pedestrian scaled streets.	**43.63%**	89
Vegetated setbacks from Pope Avenue.	**34.80%**	71
Parking in the interior of the property – behind the buildings.	**36.27%**	74
Mixed use buildings with retail below and residential above.	**29.90%**	61
Design Standards that describe building and landscape.	**31.37%**	64
Form based codes that help ensure development outcome.	**22.06%**	45
We don't need to guide Coligny Circle to be anything different.	**16.67%**	34
I don't know, I need to learn more.	**12.25%**	25

Q18 The visual character of Coligny Character Area should be: (choose all that apply)

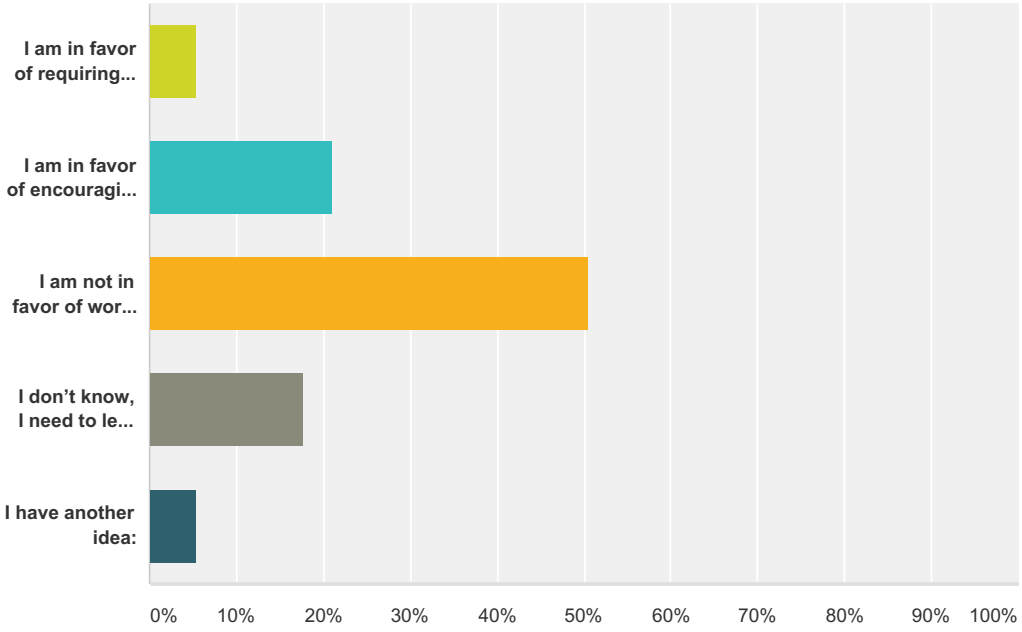
Answered: 203 Skipped: 14



Answer Choices	Responses	
3-4 story buildings located close to well-designed tree-lined streets.	**13.30%**	27
Very low key with 1-3 story buildings behind lush landscaping.	**58.62%**	119
Compact and dense and maximizing the building footprints.	**11.33%**	23
Buildings with balconies overhanging the smaller streets.	**18.72%**	38
Buildings well set back from the street behind landscape.	**26.60%**	54
Integrated and architectural, like Seaside, Habersham or Rosewood.	**26.11%**	53
More urban, like Bay Street in Beaufort.	**9.36%**	19
More suburban like it exists right now.	**17.73%**	36
The market and developers should decide the visual character.	**9.36%**	19
I don't know, I need to learn more.	**13.30%**	27

Q19 My opinion on work force housing: (choose one)

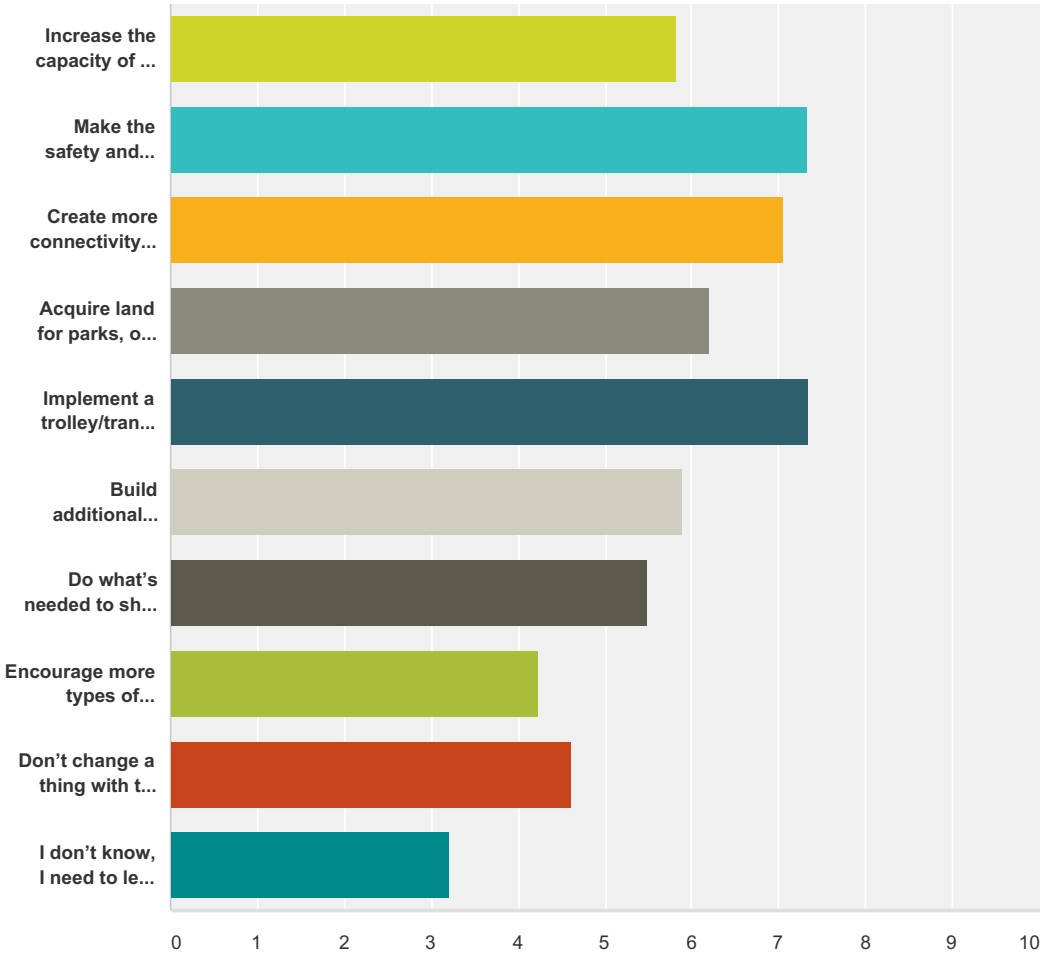
Answered: 204 Skipped: 13



Answer Choices	Responses	
I am in favor of requiring, as part of new development, work force housing within the C2C area.	**5.39%**	11
I am in favor of encouraging work force housing within the C2C area.	**21.08%**	43
I am not in favor of work force housing within the C2C area.	**50.49%**	103
I don't know, I need to learn more.	**17.65%**	36
I have another idea:	**5.39%**	11
Total		**204**

Q20 My top priorities for the Circle to Circle Area are: (rank in order)

Answered: 193 Skipped: 24



	1	2	3	4	5	6	7	8	9	10	Total	Score
Increase the capacity of Sea Pines Circle to handle more traffic.	**17.22%** 26	**10.60%** 16	**9.27%** 14	**5.96%** 9	**6.62%** 10	**14.57%** 22	**11.92%** 18	**5.96%** 9	**3.31%** 5	**14.57%** 22	151	5.83
Make the safety and access management improvements.	**23.72%** 37	**16.03%** 25	**13.46%** 21	**13.46%** 21	**8.33%** 13	**12.82%** 20	**5.13%** 8	**1.92%** 3	**3.85%** 6	**1.28%** 2	156	7.33
Create more connectivity with streets and trails.	**16.23%** 25	**15.58%** 24	**14.29%** 22	**18.83%** 29	**12.34%** 19	**7.79%** 12	**6.49%** 10	**3.90%** 6	**1.30%** 2	**3.25%** 5	154	7.05
Acquire land for parks, open space and stormwater.	**9.74%** 15	**14.94%** 23	**9.09%** 14	**15.58%** 24	**14.29%** 22	**11.04%** 17	**7.79%** 12	**5.19%** 8	**5.84%** 9	**6.49%** 10	154	6.19
Implement a trolley/transit system.	**18.52%** 30	**19.75%** 32	**22.22%** 36	**9.88%** 16	**10.49%** 17	**5.56%** 9	**3.70%** 6	**3.09%** 5	**3.70%** 6	**3.09%** 5	162	7.35
Build additional parking and mange parking better.	**2.01%** 3	**11.41%** 17	**16.11%** 24	**13.42%** 20	**16.78%** 25	**10.74%** 16	**10.74%** 16	**10.07%** 15	**7.38%** 11	**1.34%** 2	149	5.89

Do what's needed to shift demand to north beach parks.	**8.39%** 13	**13.55%** 21	**11.61%** 18	**5.16%** 8	**7.74%** 12	**11.61%** 18	**12.90%** 20	**11.61%** 18	**7.10%** 11	**10.32%** 16	155	5.50
Encourage more types of housing options within the Corridor.	**4.86%** 7	**2.08%** 3	**2.08%** 3	**6.94%** 10	**9.72%** 14	**7.64%** 11	**18.06%** 26	**31.25%** 45	**11.81%** 17	**5.56%** 8	144	4.24
Don't change a thing with the C2C Area, we can live with it.	**16.31%** 23	**5.67%** 8	**5.67%** 8	**5.67%** 8	**2.84%** 4	**3.55%** 5	**5.67%** 8	**9.22%** 13	**31.21%** 44	**14.18%** 20	141	4.61
I don't know, I need to learn more.	**8.57%** 9	**0.95%** 1	**1.90%** 2	**4.76%** 5	**3.81%** 4	**2.86%** 3	**8.57%** 9	**12.38%** 13	**14.29%** 15	**41.90%** 44	105	3.22

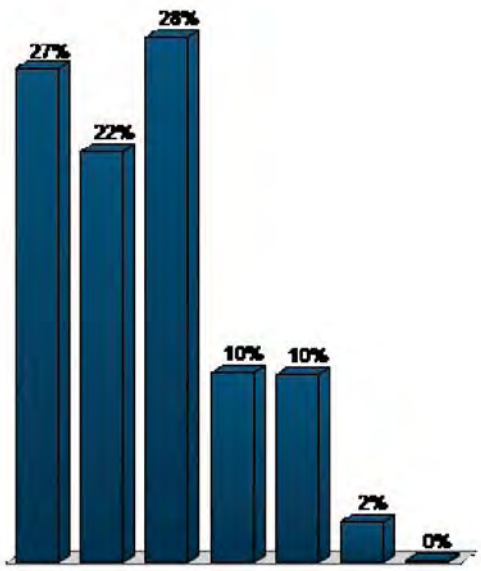
Session Name: Merged Sessions 6-6-2016 1-54 PM

Date Created:	6/6/2016 1:54:43 PM	**Active Participants:**	329 of 329
Average Score:	0.00%	**Questions:**	20

Results by Question

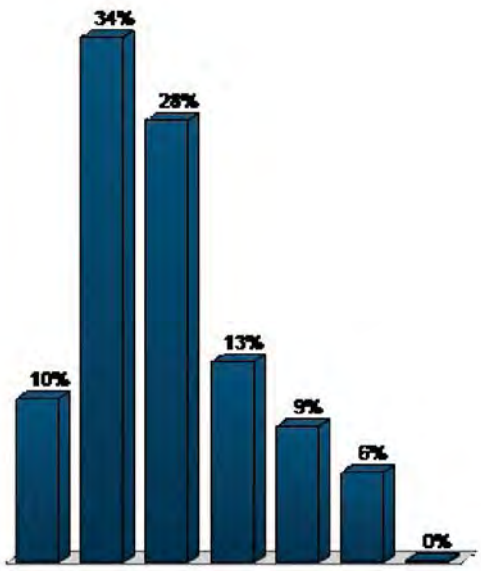
1. 12. I support the following considerations for Trails expansions: (choose all that apply) (Multiple Choice - Multiple Response)

	Responses	
	Percent	**Count**
There should be a wider, more highly designed trail between Cordillo & Coligny Circle	26.62%	181
We should move forward with the beach trail concept	22.21%	151
All of the new multipurpose/bike trails shown on the plan should be considered	28.38%	193
I don't think we need any new trails – we have enough	10.29%	70
I think we should consider even more trails than shown	10.15%	69
I don't know I need more information	2.21%	15
I have another idea (use note card)	0.15%	1
Totals	**100%**	**680**



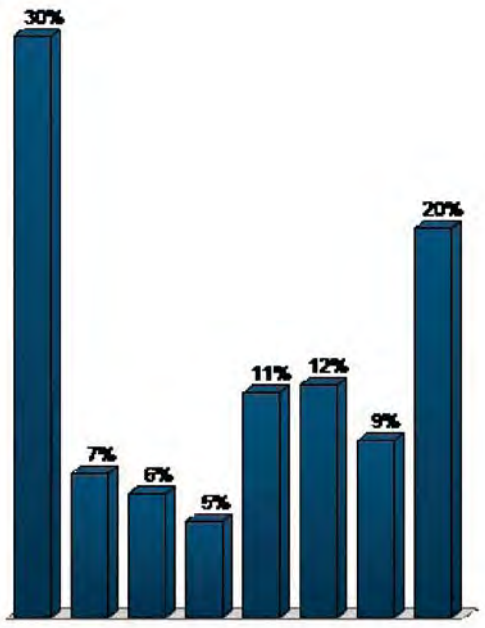
2. 13. I support the following for Open Space, Parks and Storm Water: (choose all that apply) (Multiple Choice - Multiple Response)

	Responses	
	Percent	**Count**
The town shouldn't consider district storm water: it should happen on development property	10.49%	67
Consider dedicating town-owned land for district open space, parks & storm water	33.65%	215
The town should consider purchasing more land for open space, parks & storm water	28.33%	181
We have enough parks in the C2C area	12.83%	82
We need more parks in the C2C area	8.76%	56
I don't know I need more information	5.79%	37
I have another idea (use note card)	0.16%	1
Totals	**100%**	**639**



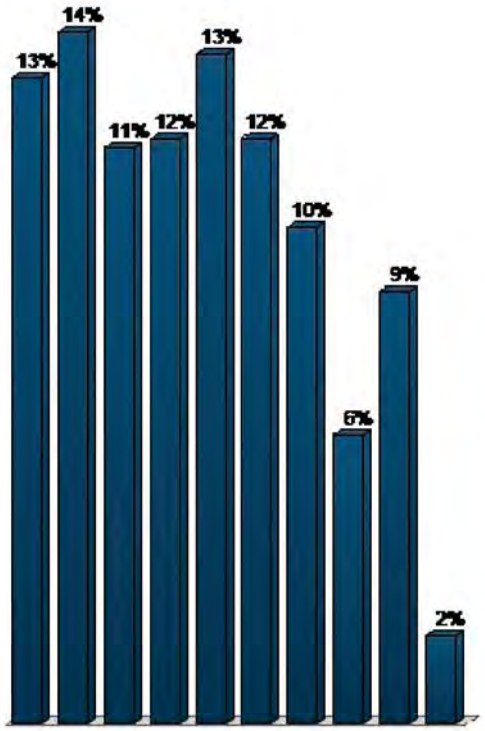
3. 14. I envision the Sea Pines Character Area as: (choose one) (Multiple Choice)

	Responses	
	Percent	**Count**
As a walk able, pedestrian scaled mixed use village	29.51%	85
As the "Downtown" for the Head Island with a mix of uses	7.29%	21
As a commercial center like Shelter Cover Towne Centre	6.25%	18
As an Institutional / Educational hub of Hilton Head	4.86%	14
As supporting the college campus with housing, shopping & recreation	11.46%	33
It is fine the way it is, period	11.81%	34
It evolves with the market, without it pointing to a vision	9.03%	26
It is fine just like it is, but it would be great if buildings were painted and better kept up with more landscape color	19.79%	57
Totals	**100%**	**288**



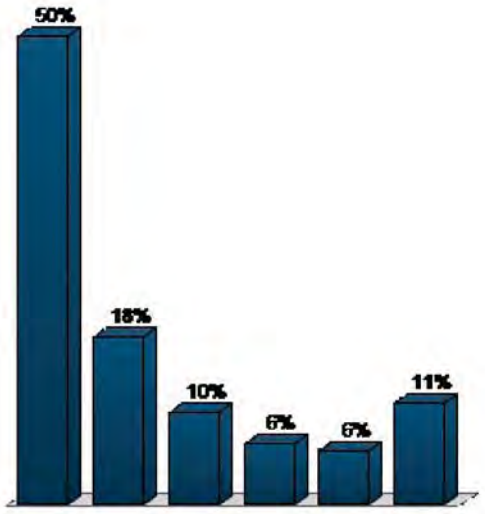
4. 15. The planning principles that should guide Sea Pines Character Area are: (choose all that apply) (Multiple Choice - Multiple Response)

	Responses	
	Percent	**Count**
Pedestrian scaled streets and blocks	12.76%	139
Internal street connectivity between parcels	13.68%	149
Buildings oriented to pedestrian scaled streets	11.39%	124
Vegetated setbacks from major streets	11.57%	126
Parking in the interior of the property – behind the buildings	13.22%	144
Mixed use buildings with retail below and residential above	11.57%	126
Design Standards that describe building & landscape	9.83%	107
Form based codes that help ensure development outcome	5.69%	62
We don't need to guide Sea Pines Circle to be anything different	8.54%	93
I don't know, I need to learn more	1.74%	19
Totals	**100%**	**1089**



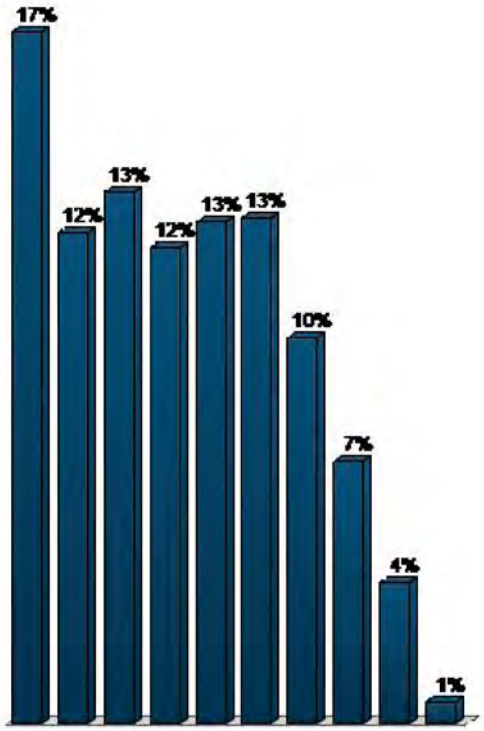
5. 16. I envision the Coligny Character Area as: (choose one) (Multiple Choice)

	Responses	
	Percent	**Count**
As a walkable pedestrian scaled "seaside village" with a mix of uses	49.66%	148
As THE "Downtown" for Hilton Head Island with a mix of uses	17.79%	53
As a commercial shopping center like Shelter Cover Towne Centre	9.73%	29
It is fine the way it is, period	6.38%	19
It evolves as the market wants it to, without it pointing to a vision	5.7%	17
It is fine just like it is, but it would be great if the area had more flowering foliage and landscaping	10.74%	32
Totals	**100%**	**298**



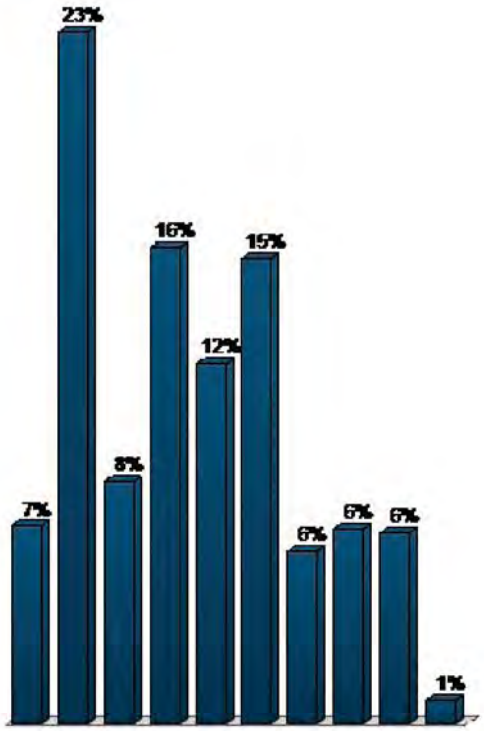
6. 17. The planning principles that should guide Coligny Character Area are: (choose all that apply) (Multiple Choice - Multiple Response)

	Responses	
	Percent	**Count**
Pedestrian scaled streets and blocks	17.24%	190
Internal street connectivity between parcels	12.25%	135
Buildings oriented to pedestrian scaled streets	13.25%	146
Vegetated setbacks from Pope Avenue	11.89%	131
Parking in the interior of the property – behind the buildings	12.52%	138
Mixed use buildings with retail below and residential above	12.61%	139
Design Standards that describe building and landscape	9.62%	106
Form based codes that help ensure development outcome	6.53%	72
We don't need to guide Coligny Circle to be anything different	3.54%	39
I don't know, I need to learn more	0.54%	6
Totals	**100%**	**1102**



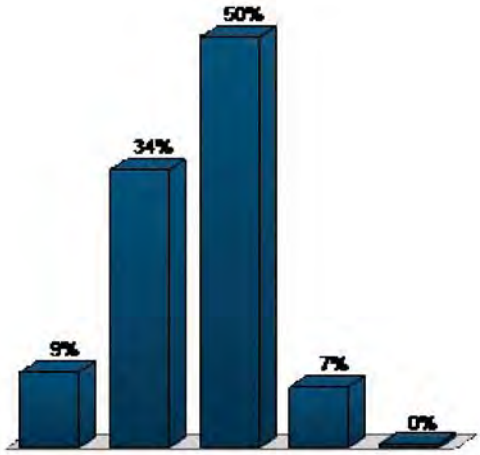
7. 18. The visual character of Coligny Character Area should be: (choose all that apply) (Multiple Choice - Multiple Response)

	Responses	
	Percent	**Count**
3-4 story buildings located close to well-designed tree-lined streets.	6.55%	56
Very low key with 1-3 story buildings behind lush landscaping	22.92%	196
Compact and dense and maximizing the building footprints	8.07%	69
Buildings with balconies overhanging the smaller streets	15.79%	135
Buildings well set back from the street behind landscape	11.93%	102
Integrated and architectural, like Seaside, Habersham or Rosewood	15.44%	132
More urban, like Bay Street in Beaufort.	5.73%	49
More suburban like it exists right now.	6.43%	55
The market and developers should decide the visual character	6.32%	54
I don't know, I need to learn more	0.82%	7
Totals	**100%**	**855**



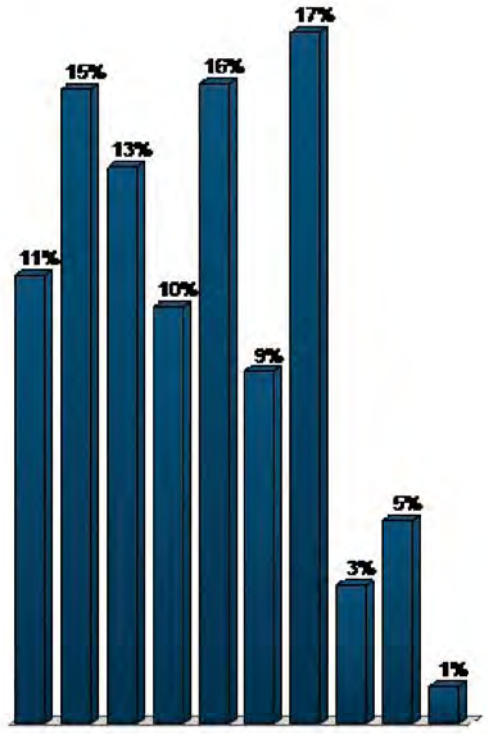
8. 19. My opinion on work force housing: (choose one) (Multiple Choice)

	Responses	
	Percent	**Count**
I am in favor of requiring, as part of new development, work force housing within the C2C area	9.06%	27
I am in favor of encouraging work force housing within the C2C area	33.56%	100
I am not in favor of work force housing within the C2C area	49.66%	148
I don't know, I need to learn more	7.38%	22
I have another idea (use note card)	0.34%	1
Totals	**100%**	**298**



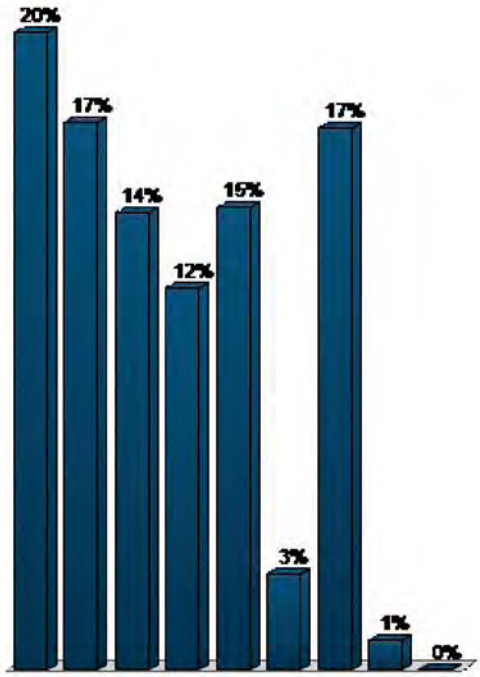
9. 20. My top priorities for the Circle to Circle Area are: (rank in order) (Priority Ranking)

	Responses	
	Percent	**Weighted Count**
Increase the capacity of Sea Pines Circle to handle more traffic	10.88%	1228
Make the safety and access management improvements	15.38%	1736
Create more connectivity with streets and trails	13.49%	1523
Acquire land for parks, open space and stormwater	10.12%	1142
Implement a trolley/transit system	15.51%	1751
Build additional parking and mange parking better	8.54%	964
Do what's needed to shift demand to north beach parks	16.78%	1894
Encourage more types of housing options within the Corridor	3.39%	383
Don't change a thing with the C2C Area, we can live with it	4.96%	560
I don't know, I need to learn more	0.94%	106
Totals	**100%**	**11287**



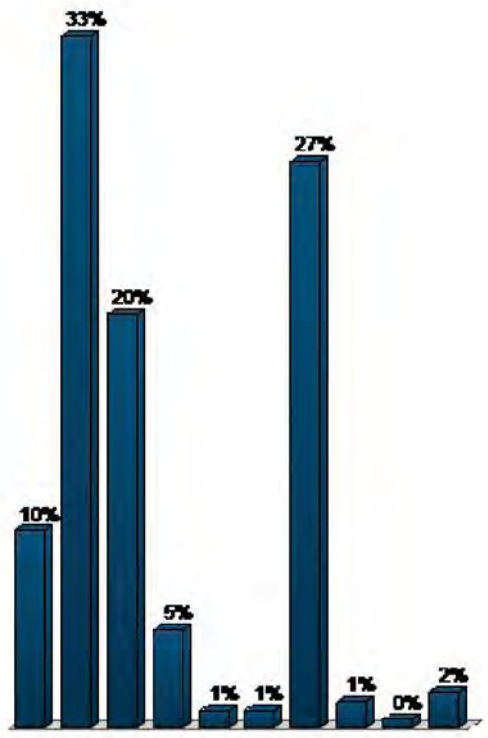
10. 5. I support the following Connectivity Improvements to reduce traffic and enhance flow: (choose all that apply) (Multiple Choice - Multiple Response)

	Responses	
	Percent	**Count**
The "Northwest Connector" connecting Greenwood Drive Palmetto Bay Road	20.22%	127
A road behind Churches from De Allyon to Office Park	17.36%	109
Reconfiguring New Orleans to provide a center turn lane	14.49%	91
A road east of Pope from New Orleans to Avocet	12.1%	76
Accessing Barmuda Triangle and commercial from Office Park Way	14.65%	92
None of the above	3.03%	19
All of the above	17.2%	108
I need more information	0.96%	6
I have another idea (use note card)	0%	0
Totals	**100%**	**628**



11. 6. I support the following improvement to Sea Pines Circle to remedy identified traffic capacity issues now and in the future: (choose one) (Multiple Choice)

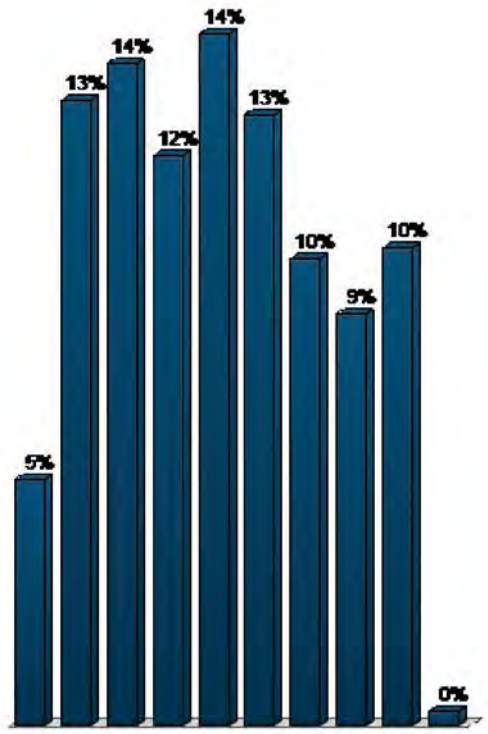
	Responses	
	Percent	**Count**
Make safety improvements referenced earlier only	9.52%	22
Make safety improvements and connectivity improvements only	33.33%	77
Convert the circle into a well-designed two lane circle	19.91%	46
Convert the circle into a signalized intersection	4.76%	11
Convert the circle into a fly under	0.87%	2
Convert the circle into a fly over	0.87%	2
Leave the circle as it is	27.27%	63
None of the above	1.3%	3
I need more information	0.43%	1
I have another idea (use note card)	1.73%	4
Totals	**100%**	**231**



12. 7. I support the following strategies for seasonal parking: (choose all that apply) (Multiple Choice - Multiple Response)

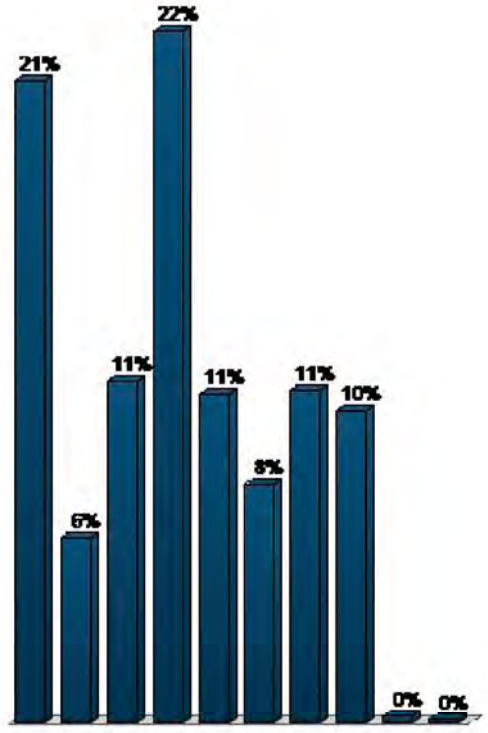
	Responses	
	Percent	**Count**
Higher Tolls on the	5.16%	67

Cross Island during the high season for cash tolls (not transponders)		
An “App” or website that directs day users to other beaches	13.09%	170
More visible signage and wayfinding to direct people to other beaches	13.86%	180
Satellite parking near the C2C area and a trolley system on island	11.93%	155
Creating a “North Beaches” destination with appropriate amenities	14.47%	188
Marketing the “North Beaches” as well as Coligny Beach is marketed	12.78%	166
Higher seasonal beach parking fees at Coligny than at other beaches	9.78%	127
Digital displays or “App” that describes current beach parking availability	8.62%	112
A transit system that enables day trips to the beach	10.01%	130
I have another idea (use note card)	0.31%	4
Totals	**100%**	**1299**



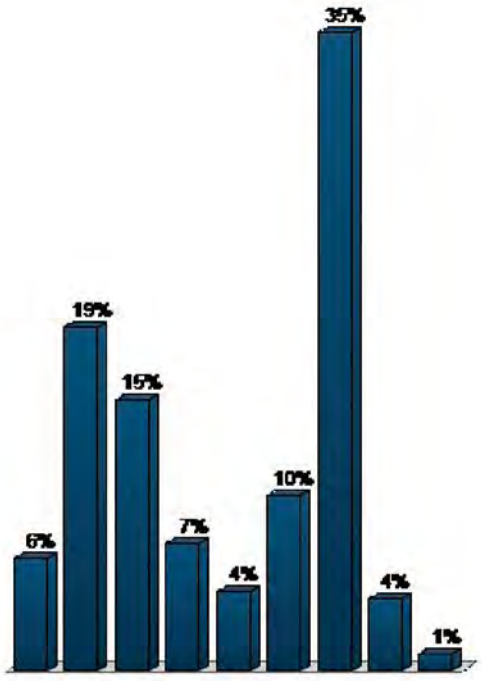
13. 8. I support the following Parking Strategies within the Coligny area of the C2C: (choose all that apply) (Multiple Choice - Multiple Response)

	Responses	
	Percent	**Count**
Intercept parking lots for day visitors on land off Palmetto Bay Rd linked with a trolley	20.8%	156
On street parking on town streets	6%	45
More Town owned surface parking in Coligny area	11.07%	83
Intercept parking lot for Coligny area employees linked with a trolley	22.4%	168
Keep the surface parking lot as is but make it a paid parking lot	10.67%	80
A parking structure on the town owned land adjacent to the park	7.73%	58
A parking structure that is wrapped with a development opportunity	10.8%	81
We should not add any more parking to the Coligny area	10.13%	76
I don't know, I need to learn more	0.27%	2
I have another idea (use note card)	0.13%	1
Totals	**100%**	**750**



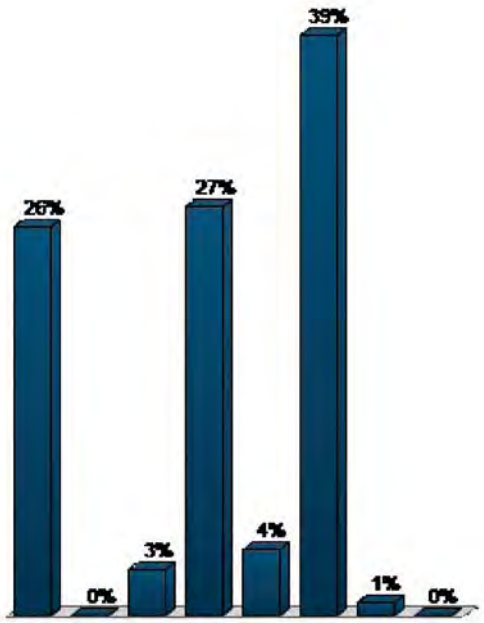
14. 9. To accommodate beach and commercial parking within the Coligny Area: (choose one) (Multiple Choice)

	Responses	
	Percent	**Count**
The commercial properties should provide all of their parking needs on their site	6.09%	14
The town should consider "District Parking" to incentivize re-development	18.7%	43
The town should charge for parking in the Coligny Area	14.78%	34
The town should provide beach parking only	6.96%	16
The town should not provide any parking	4.35%	10
The parking should remain the same at Coligny Beach area	9.57%	22
Employers should require employee parking off property in intercept parking lots	34.78%	80
I don't know I need to learn more.	3.91%	9
I have another idea (use note card)	0.87%	2
Totals	**100%**	**230**



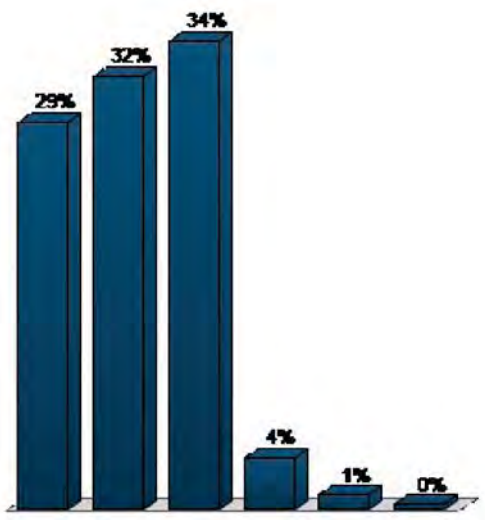
15. 10. If a parking structure were to be built at Coligny Character Area: (choose one) (Multiple Choice)

	Responses	
	Percent	**Count**
I would wrap it with a "public /private partnership" development that enabled shared funding	25.88%	59
I would build it as cheaply as possible regardless of the looks	0%	0
I would build it as cheaply as possible & use landscape to hide it	3.07%	7
I would include a nice façade and landscape to make it attractive	27.19%	62
I would limit the amount of beach parking allowed within it	4.39%	10
I do not support a parking structure	38.6%	88
I don't know, I need to learn more	0.88%	2
I have another idea (use note card)	0%	0
Totals	**100%**	**228**



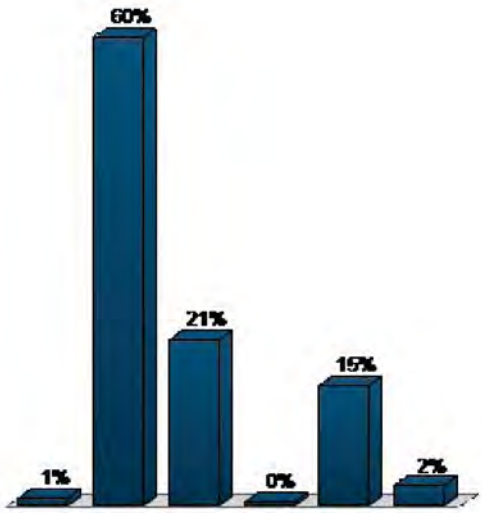
16. 11. I support the following as it relates to transit and trolleys: (choose all that apply) (Multiple Choice - Multiple Response)

	Responses	
	Percent	**Count**
A transit system that reduces cars (visitors, day visitors, employees) from coming on island	28.52%	168
An on island transit system that links the islands amenities and centers	31.92%	188
A trolley that links with satellite parking lots	34.47%	203
I am not in favor of transit on Hilton Head	3.74%	22
I don't know, I need to learn more	1.02%	6
I have another idea (use note cards)	0.34%	2
Totals	**100%**	**589**



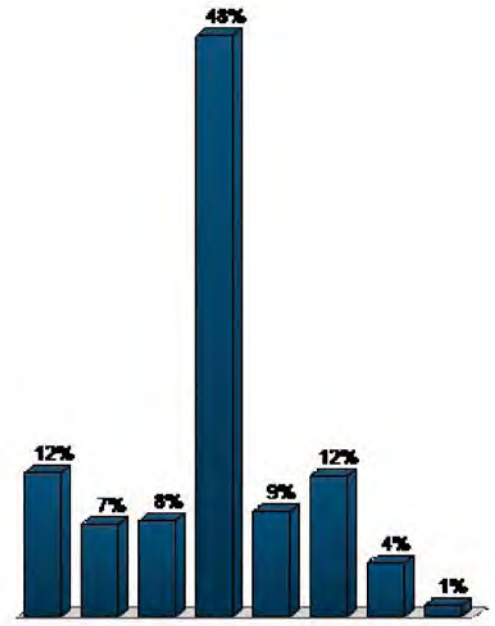
17. 1. Where do you live? (Demographic Assignment)

	Responses	
	Percent	**Count**
Shipyard	0.99%	2
Sea Pines Plantation	59.61%	121
Forest Beach	21.18%	43
Point Comfort	0.49%	1
I live on Hilton Head but in another area	15.27%	31
I don't live on Hilton Head	2.46%	5
Totals	**100%**	**203**



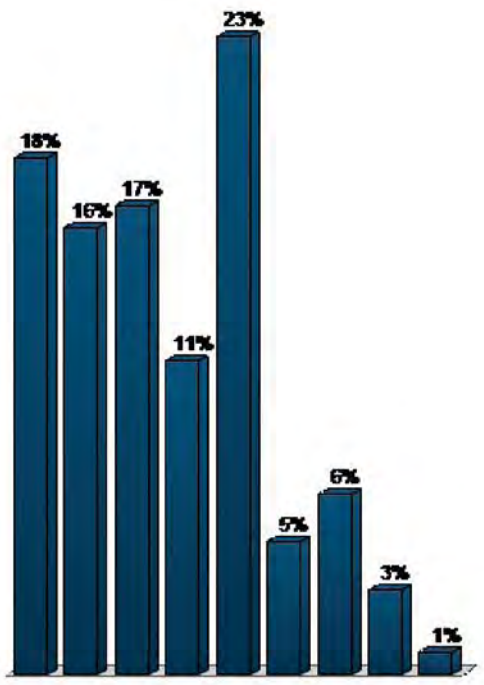
18. 2. My interest in the Circle to Circle Areas: (choose all that apply) (Multiple Choice - Multiple Response)

	Responses	
	Percent	**Count**
I work in the C2C area	11.82%	41
I own a business in the C2C area	7.49%	26
I own property (office/retail/vacant) in the C2C area	7.78%	27
I own a primary residence in or adjacent to the C2C area	47.55%	165
I own a second home in or adjacent to the C2C area	8.65%	30
I am a Hilton Head resident, but live outside the C2C area	11.53%	40
Other	4.32%	15
None of the above	0.86%	3
Totals	**100%**	**347**



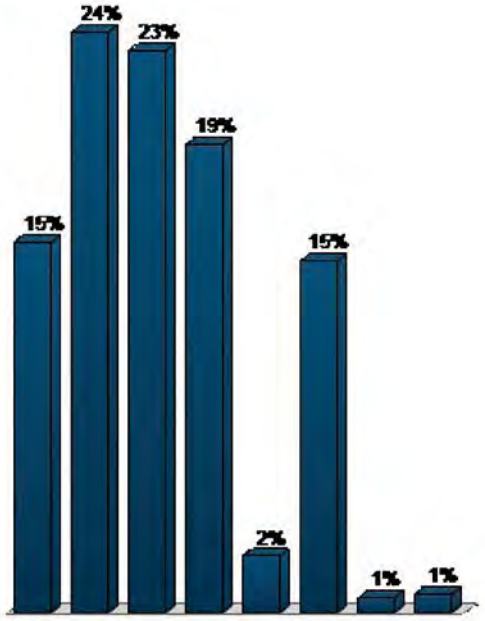
19. 3. I support the following Access Management Strategies around SP Circle: (choose all that apply) (Multiple Choice - Multiple Response)

	Responses	
	Percent	**Count**
Extending medians from the circle in each direction to the next major intersection to eliminate turns across traffic	18.41%	97
Closing intersections where needed and possible	15.94%	84
Making key intersections right in/out of the circle where needed and possible	16.7%	88
A signal at Office Park and Greenwood Drive	11.2%	59
Signal Phasing on all traffic signals	22.77%	120
None of the above	4.74%	25
All of the above	6.45%	34
I need more information	3.04%	16
I have another idea (use note card)	0.76%	4
Totals	**100%**	**527**



20. 4. I support the following Safety improvements in SP Circle area:(choose all that apply) (Multiple Choice - Multiple Response)

	Responses	
	Percent	**Count**
A flashing pedestrian/bike signal at Greenwood & Office Park to cross Greenwood DR –	15.28%	79
Managing the vegetation around Sea Pines Circle to enhance sight distance	23.98%	124
More visible signage to direct entering & within Sea Pines Circle	23.21%	120
Better lane markings in Sea Pines Circle	19.34%	100
None of the above	2.32%	12
All of the above	14.51%	75
I need more information	0.58%	3
I have another idea (use note card)	0.77%	4
Totals	**100%**	**517**



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TRAFFIC ANALYSIS

The following pages are the Traffic Analysis prepared by SRS Engineering, LLC.

TRAFFIC & TRANSPORTATION STUDY

SOUTH ISLAND PLANNING AREA

Prepared for:

THE TOWN OF HILTON HEAD ISLAND
1 Town Center Court
Hilton Head Island, SC 29928

Prepared by:

SRS ENGINEERING, LLC
801 Mohawk Drive
West Columbia, SC 29169

JUNE 2016

TRAFFIC & TRANSPORTATION STUDY

SOUTH ISLAND PLANNING AREA

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THE TOWN OF HILTON HEAD ISLAND
1 Town Center Court
Hilton Head Island, SC 29928

Prepared by:

Traffic, Transportation, & Parking Consultants

SRS ENGINEERING, LLC
801 Mohawk Drive
West Columbia, SC 29169

SOUTH CAROLINA
SRS ENGINEERING, LLC
No. C02853
CERTIFICATE OF AUTHORIZATION

SOUTH CAROLINA
LICENSED PROFESSIONAL ENGINEER
No. 25815
MATT SHORT
6/28/16

JUNE 2016

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EXECUTIVE SUMMARY

The Town of Hilton Head Island has engaged SRS Engineering, LLC (SRS) to conduct a traffic assessment of the corridors and intersections that generally make up the southern area of Hilton Head Island concentrating on the major arterials of William Hilton Parkway, Palmetto Bay Road and Pope Avenue. Generally, referred to as the South Island Planning Area, the study area also includes minor arterials such as Cordillo Parkway, Greenwood Drive (Sea Pines Plantation main access), New Orleans Road, Arrow Road, North and South Forest Drive as well as collectors including Lagoon Road, Tanglewood Drive, Deallyon Avenue and Avocet Road.

This task as well as the result of this study is to measure intersections and or roadway segments within the study area as it relates to operational characteristics and compare these results to the standards as set forth in the Town's Land Management Ordnances (LMO). For the purposes of this study, three conditions have been identified, Existing Conditions, a 5-Year 2020 condition and a 15-Year 2030 condition. Once compared to the LMO, recommendations will be provided for intersections and/or roadways that are found to be deficient in order to bring these deficiencies back into compliance.

Throughout the process of conducting of this study, both Town Planning and Engineering staff, Sea Pines leaders and members of the Circle-to-Circle Transportation Committee have been instrumental. Localized knowledge has helped in the identification of deficiencies and history of the roadway system which have resulted in potential alternatives in infra-structure proposals which have been tested in order to determine resultant service levels as well as acceptability to the public.

Throughout the duration of this project, meetings with staff, committee members have aided in the definition of roadway alternatives which have then been presented in public forums via the Circle-to-Circle committee meetings.

STUDY AREA

The study area has been defined as a total of 39 intersections within the South Island Planning Area. These intersections have included signalized, unsignalized as round-a-bouts located along the corridors of US 278B, Pope Avenue, Palmetto Bay Road (PBR), Greenwood Drive, Cordillo Parkway, Arrow Road and N/S Forest Beach Drives.

As directed by the LMO, these intersections have been studied during the time of the year which represents the 45th highest day of the year which has been defined as the second and third weeks in June. Traffic data for the 39 intersections was either provided by the Town via their annual count program, or gathered by SRS during this defined time period for use in this study.

Collected volume data for these intersections have been collected for a combination of a weekday AM (7-9), Noon (11-1) and PM (4-6) time periods and included vehicles as well as pedestrians and bicyclists. Other data provided by Town staff included historical accident data for intersections and roadway corridors throughout the study area as traffic signal timing/phasing.

Analysis were conducted for current 2015 Existing conditions as well as the two future year conditions of the 5-Year (2020) and 15-Year (2030). Development of the 2030 traffic volumes have been based on the Low Country Council of Governments (LCOG) Transportation Model.

TRAFFIC OPERATIONS

The Town's LMO defines criteria for signalized intersections as well as round-a-bouts. No definition for an intersection under STOP sign control is currently provided. Using the criteria for a signalized intersection, the seven signalized intersection as defined below currently under Existing and both Future Year conditions, operate acceptable LMO levels:

Signalized Intersections

1. US 278B at Wexford Drive/Shipyard;
2. US 278B at Wexford Village/New Orleans Road;
3. US 278B at Arrow Road;
4. PBR at Point Comfort Road/Arrow Road;
5. PBR at Target Road/EnMark;
6. Pope Avenue at Office Park Road/New Orleans Road; and
7. Pope Avenue at Cordillo Parkway.

Four traffic circle were part of the study area of which three operate acceptably under the definition of the LMO and one (Sea Pines Circle) fails.

Traffic Circles

1. Sea Pines Circle (Failure under LMO definition for all peak-hour conditions);
2. Coligny Circle;
3. Dunnagans Alley at Arrow Road; and
4. Dunnagans Alley at Wexford Drive/Town Hall.

Twenty-eight unsignalized intersections are included in the study area. Generally the majority of traffic movements at these intersections operate with little delay except for the minor street left-turn movement. Left-turn movements from a minor street to a multi-lane arterial such as Pope Avenue or PBR typically have delays during the peak hours which in some cases can be significant for the left-turn movements.

The Town's current LMO does not have a criteria for an unsignalized intersection in order to define whether an intersection or movement is acceptable. Definition of service levels has been provided for each of the unsignalized intersections which is typically the minor street left-turn movement (not an intersection over-all average) and recommendations have been made which can range from access management concepts to additional storage lane lengths to better accommodate the demand.

STOP Sign Control Intersections

1. Palmetto Bay Road at Bow Circle;
2. Palmetto Bay Road at Archer Road;
3. Palmetto Bay Road at Dunnagans Alley;
4. Pope Avenue at Executive Park Road (north)/Woodhaven Lane;
5. Pope Avenue at Executive Park Road (south);
6. Pope Avenue at Waterside Drive;
7. Pope Avenue at Nassau Street (Southern Circle Center);
8. Pope Avenue at Lagoon Road;
9. Greenwood Drive at Carolina Center/Eastern Reilly's Plaza;
10. Greenwood Drive at Island Crossings;
11. Greenwood Drive at Western Reilly's Plaza;
12. Greenwood Drive at Eastern Sea Pines Resort Welcome Center;
13. Greenwood Drive at Office Park Road;
14. Greenwood Drive at Western (egress only) Welcome Center;
15. Greenwood Drive at Sea Pines Main Gate;
16. Arrow Road at New Orleans Road;
17. Arrow Road at Target Road;
18. Arrow Road at Archer Road;
19. Cordillo Parkway at Woodhaven Drive;
20. Cordillo Parkway at Deallyon Avenue;
21. North Forest Beach Drive at Avocet Road;
22. South Forest Beach Drive at Tanglewood Drive;
23. South Forest Beach Drive at Deallyon Avenue;
24. South Forest Beach Drive at Lemoyne Avenue;
25. Lagoon Road at Avocet Road;
26. Office Park Road at Office Way;
27. Nassau Street at Tanglewood Drive; and
28. Nassau Street at Deallyon Avenue.

RECOMMENDATIONS

US 278B

- Access Management

    1. From Sea Pines Circle in an easterly direction of US 278B (approx. 1,700-feet), install a raised landscaped median which will provide a continuous median with in the study area. This median will aid in access management issues along this section of US 278B and prohibit left-turn at private access drives located along the north and south sides of US 278B

- Wexford Drive at Shipyard Drive:

    1. As needed under future conditions, signal timing changes maybe needed to reduce the vehicles stacking on the southbound approach of Wexford Drive.

- New Orleans Road at Wexford Village:

    1. Signal timing changes and/or extension of the westbound left-turn storage lane within US 278B in order to reduce potential vehicle stacking issues.
    2. Signal timing changes and/or extension of the northbound right-turn storage lane along New Orleans Road in order to reduce potential vehicle stacking issues.

- US 278B at Arrow Road:

    1. Once the proposed signal phasing changes by the Town are implemented, vehicle stacking on the southbound approach of Arrow Road should be reviewed in order to determine if queuing issues continue to be evident. If excessive vehicle stacking continues, consider minor signal timing modification to reduce the southbound left-turn queue.

<u>PALMETTO BAY ROAD</u>

- PBR at Point Comfort Road/Arrow Road:

    1. As needed under future conditions, signal timing changes maybe needed to reduce the eastbound queue on Point Comfort Road. Review warrants/need for possible protected/permissive phasing as traffic volumes increase on the minor street approach.
    2. As volumes increase on the side street approach of Point Comfort Road, review the possibility of adding a separate eastbound right-turn lane.

- PBR at Island Crossing/Target Road:

    1. Increase the northbound left-turn storage volume to 200-feet which will result in a back-to-back left-turn pockets with this intersection and Dunnagans Alley to the south.
    2. Creation of the Northwest Connector through Island Crossing will necessitate that geometry at this intersection be changes to accommodate greater cross-section approaches on both Island Crossing as well as Target Road.
    3. Modification to signal phasing and timing as needed to accommodate the new intersection geometry.

- PBR at Dunnagans Alley/EnMark:

    1. Extend a raised median from the Sea Pines Circle to the Dunnagans Alley/EnMark intersection.
    2. Prohibit the eastbound, westbound and northbound left-turn movements.
    3. Allow southbound left-turn movements from PBR to Dunnagans Alley.
    4. Close access drives in close proximity of intersection, one accessing PBR (First Federal) and one accessing Island Tire.

POPE AVE

- Pope Avenue at New Orleans Road/Office Park Road

    1. Modified as part of the USCB project. Expected modifications will provide a new alignment of the eastbound and westbound approach as well as additional turning lanes.
    2. Increase the length of storage for the westbound left-turn movement from New Orleans Road to southbound Pope Avenue.

- Pope Avenue at Executive Circle South

    1. Modified to allow southbound left-turn movements and prohibit westbound left-turn exiting Executive Circle South.

- Pope Avenue at Cordillo Parkway at Shipyard

    1. Modify the multi-use path of the eastside of Pope Avenue to provide separation of through lane.
    2. If possible due to access drives, extend storage length for eastbound left-turn movements.

- Pope Avenue at Nassau Street

    1. To be modified as part of the Town Park project to add a second eastbound approach lane.
    2. Create a southbound left-turn lane for U-turns within the Pope Avenue median.

- Pope Avenue at Lagoon Road at Town Beach Parking

    1. Northbound Approach (Pope Avenue) modify the landscaped median within Pope Avenue to provide a separate left-turn lane and taper.
    2. Eastbound Approach (Town Parking), widen approach to provide a separate left-turn lane and a shared through/right-turn lane.
    3. Westbound Approach (Lagoon Road), widen approach to provide a separate left-turn lane and a shared through/right-turn lane.
    4. Traffic Control, place intersection under multi-phased traffic signal control with provisions for protected/permissive southbound left-turn phasing and pedestrian actuation

- New Roadways

    1. Review the potential of providing a new parallel north/south roadway system to Pope Avenue. Two consideration are the west side of Pope Avenue connecting Office Park Road to Cordillo Parkway through Boggy Gut and/or a new roadway on the east side of Pope Avenue between New Orleans Road and Lagoon Road.

- Multi-Use Path

    1. The current high usage of the multi-use paths along this corridor is very high. Widening both the east and west sides of Pope Avenue from the current 10-foot width to 12-feet or greater is recommended. If widening both side are not possible due to right-of-way issues, etc, widen only the multi-use path on the western side which has the greater pedestrian and bike usage.

GREENWOOD DRIVE

- Greenwood Approach Sea Pines Gate to Sea Pines Circle

    1. Re-alignment of the Greenwood Drive approach to the Sea Pines Circle order to improve the length of the merge/weave section of the Circle travel way (circumference) between PBR and Greenwood Drive.

    2. Construction of a continuous raised median from Sea Pine Circle to the new signalized intersection of Office Park Road/Northwest Connector. This median will result in the prohibition of all left-turn movements at the following intersection:

        i. Reilly's East/Suntrust (four-legged intersection);
        ii. Island Crossing (three-legged intersection); and
        iii. Reilly's West/Galleria (four-legged intersection).

- Office Park Road Intersection

    1. Re-alignment of the Sea Pines Welcome Center access and Office Park Road to create a new four-legged intersection which will operate under traffic signal control. The northerly leg of this intersection will traverse in a north/eastern direction and align with the current access on PBR creating the North West Connector completing a perimeter roadway/connector around the Sea Pines Circle.

ARROW ROAD

- Access modification to gas/c-store located adjacent to US 278. Closure of closest access to US 278 located along Arrow Road.

- Widen the cross-section of Arrow Road between PBR (to the north) and Dunnagans Alley to provide a wider shoulder in each direction. This addition shoulder/cross-section may aid in the reduction of fixed-object accidents which are of a high frequency along this corridor.

- Enhanced signage warning of roadway curvature in the area east of Helmsman Way.

CORDILLO PARKWAY

- Construct an 8-foot multi-use path along the south side of Cordillo Parkway between Pope Avenue and Deallyon Avenue.

- Widening of Cordillo Parkway between South Forest Beach/Sea Pine back gate and Pope Avenue to provide a wider shoulder in each direction which may aid in the reduction of accidents.

- At the Deallyon Avenue intersection, re-locate private access drive located on the north side of Cordillo Parkway to align with Deallyon Avenue. Provide a westbound left-turn lane for vehicles entering Deallyon Avenue from Cordillo Parkway.

North & South FOREST BEACH DRIVES

- As part of the Town Park improvements and the Beach Parking lot improvements, an 8-foot multi-use path be constructed along the south side of South Forest Beach extending from Coligny Circle to Tanglewood Drive or Deallyon Avenue.

- In combination with the development of the Time Share Development opposite Lemoyne Avenue, widening South Forest Beach Drive to provide a westbound left-turn lane entering the new development.

- Installation of traffic signal control for pedestrians as well as vehicles is planned for the South Forest Beach at Town Beach Parking/Beach Resort Access drive. This signal will entail pedestrian areas on both side of South Forest Beach Road and replace the existing pedestrian crossing that is currently adjacent to Coligny Circle. Further details of this planned improvement will be discussed in the Coligny Circle section of this report.

SEA PINES CIRCLE

- Reduce vehicle operating speeds with the Circle by reducing the diameter of the circle. Reduction of vehicular speeds within the circle will provide additional gaps in traffic to allow additional entry/merge movements into the circle resulting in an increased efficiency.

- Internal circumference of the landscaped center of the Circle is currently a raised curb; this should be replaced with rolled curb in order to become a formal truck skirt.

- Improve the approach angle of Greenwood Drive in order to improve the weaving distance/separation between the Greenwood Approach and the southbound approach of PBR.

- Improve sight distance throughout the Circle and its approaches by maintaining/cutting back landscaping.

- Currently only the Pope Avenue approach provides a raised median separating directional traffic flow entering and exiting the Sea Pines Circle. The remaining three approaches of US 278B, PBR and Greenwood Drive should convert the existing TWLTL to raised landscaped medians which will enhance access management as well as improve vehicular flow just outside of the Circle by reducing vehicle weaving movements.

- Currently on US278B, PBR and Pope Avenue a combination of over-head, side mounted and over-head signage is provided. On Greenwood Drive (private road) no over-head signage is provide and one side mounted directional sign is provided orientated toward Pope Avenue. Directional signage on each approach leg of the Circle should be enhanced in order to indicate features such as Beach, Toll Road (Cross Island Parkway) Sea Pines. Additionally, the designation of US 278B verses US 278 (Cross Island/PBR) should be evaluated as new visitors maybe confused by these designations. Additional side-mounted signage should be provided along Greenwood Drive.

- Roadway stripping on each approach leg immediately entering the Circle as well as the right-turn only lanes should also assist drivers.

SEA PINES CIRCLE ALTERNATIVES

Being that the Sea Pines Circle intersection is one of the focal points of the South Island area and is one of the few intersections that do not meet the LMO standards, multiple scenarios for infra-structure improvements have been investigated. The investigated alternative range from minor modifications intended to aid in traffic flow, safety, access management, etc. to more intense infra-structure changes to in include alternative route(s), directional fly-over, removal of the circle in order to construct a signalized four-legged intersection and the potential of reverting back to a 2-lane circle in part or whole.

Northwest Connector (Through Island Crossing)

A new planned two-lane divided roadway would begin at Greenwood Drive via a new signalized intersection where Office Park Road and the Sea Pines Welcome Center would be aligned to create the new intersection along Greenwood Drive. This new roadway would then extend in a northern direction and then eastern direction to align through the Island Crossing Center and align opposite Target Road.

This new roadway would provide left-turn lanes for strategically placed access drives including Sea Pines Welcome Center, Island Crossing Center as well as a potential new gated access for "residences only" to/from the Sea Pines PUD for residential areas along Club Course Drive.

With the planning of this new intersection of Greenwood Drive at Office Park Road/Northern Connector, access management along Greenwood Drive can be implemented. The construction/continuation of the center landscaped median would remove all left-turn movements between Sea Pines Circle and this new intersection. Connectivity access drives to Reilly's and Island Crossing would provide for the relocated left-turn movements into these business. Existing access drives are planned to remain as right-in/right-out movements only.

Analysis indicated that under both the 5-Year 2020 and 15-Year 2030, the connector will reduce delays for the Sea Pines Circle but will not reduce delays sufficient to meet the LMO standards. Delays expected in the 5-Year 2020 timeframe are in the range of 4-5 minutes (greatest delay of any approach) and under the 15-Year 2030, 7-8 minutes.

Directional Fly-Over/Under

Construction of a grade-separated alignment allowing the opportunity of northbound and southbound through traffic on Pope Avenue and PBR to not enter the circle by either passing over the circle, or under the circle. Prior to entering the circle from either direction (northbound and southbound) ramps would allow a through vehicles to maneuver the grade-separation and then merge into the traffic stream once past the circle.

The Sea Pines Circle would remain as a single-lane circle with the separate right-turn lanes on each approach however the volume of traffic entering the Circle from Pope Avenue and PBR would be reduced due to the availability of drivers to avoid the circle via the grade-separation.

Under the 5-Year 2020 condition delays are below the 150-second LMO guideline which would result in an acceptable conditions. Under the 15-Year 2030 condition, delays of 3-4 minutes can be expected for eastbound Greenwood Avenue and westbound US 278B approaches.

Traffic Signalization

This alternative would replace the Sea Pines Circle with a four-legged intersection resulting in total removal of the traffic circle configuration. Given the peak-hour traffic flows that exist and are projects, each approach to the new intersection would provide a significant cross-section on each approach including dual left-turn lanes, two through lanes and separate right-turn lane, a median separating directional flow and two receiving lanes.

Analyses conducted indicated that both the 5-Year 2020 and 15-Year 2030 conditions would be at or less than the LMO standard of 55-seconds average delay (or V/C ratio of 0.90 or less) for the intersection.

Partial Two-Lane Circle (North/South)

This alternative would modify the existing Circle to provide two operating lanes in a north to south (PBR to Pope Avenue) and south to north (Pope Avenue to PBR) directions. Each of these approaches would provide a three-lane approach where the inside lane provides for U-turns, left-turn and through movements, the middle lane provides for through movements and the outside lane continues to serve as a free right-turn lane.

Analysis indicated that under the 15-Year 2030, the connector will reduce delays for the Sea Pines Circle but will not reduce delays sufficient to meet the LMO standards. Delays expected in the 15-Year 2030 timeframe are in the range of 3-4 minutes (greatest delay of any approach) which are reflected on the eastbound Greenwood Drive and westbound US 278B approaches.

Two-Lane Circle

This alternative would modify the existing Circle to provide two operating lanes around the entire Circle. Each approach to the Circle (Pope Avenue, US 278B, Greenwood and PBR) must provide a three-lane approach in order to accommodate desired traffic movements. The outside lane on each approach must maintain the ability to accommodate the free right-turn movement separate from entering the Circles weaving movements by a barrier/raised median as well as providing a receiving lane departing the Circle on each approach, i.e. each approach to the circle would be a 6-lane divided cross-section.

Analyses conducted indicated that under the 15-Year 2030 conditions, each approach delay would be less than the LMO standard of 150-seconds.

INTRODUCTION

This study has been conducted to assess the transportation system located/serving the Southern area of Hilton Head Island concentrating on the major arterials of William Hilton Parkway, Palmetto Bay Road and Pope Avenue. Generally, referred to as the South Island Planning Area, the study area also includes minor arterials such as Cordillo Parkway, Greenwood Drive (Sea Pine Plantation main access), New Orleans Road, Arrow Road, North and South Forest Beach Drive as well as collectors including Lagoon Road, Tanglewood Drive, Deallyon Avenue and Avocet Road.

The study's main purpose is to define what traffic conditions are currently, develop anticipated traffic projections for two conditions; a 5-Year 2020 and a 15-Year 2030. This information will be used to report operational characteristics for intersections and roadway segments when compared to the goals outlined in the Town's Land Management Ordnance (LMO). Once compared to the LMO, recommendations will be provided for intersections and/or roadways that are found to be deficient in order to bring these deficiencies back into compliance.

The preparation of this report has been completed in individual sections for each of the corridors and separate intersections which make up the defined South Island Planning Area. This method will allow individual sections or chapters of the report to be separately utilized for specific interests. For instance, the Pope Avenue Corridor along with the Sea Pines and Coligny Circles may be separated for use by the Circle-to-Circle Committee, Greenwood Drive for the Sea Pines CSA, and so forth.

Each section of the report will present free-standing information on the subject intersection/corridor, however the general methodologies utilized in the preparation of the analyses, growth trends, modeling, etc. will be described in the front section of the report so as to avoid redundancy in each corridor report section.

STUDY AREA

The study area has been defined as a total of 39 intersections within the South Island Planning Area. These intersections are:

William Hilton Parkway (US 278B) Corridor:

1. US 278B at Shipyard Drive/Wexford Drive
2. US 278B at New Orleans Road
3. US 278B at Arrow Road

US 278 (Palmetto Bay Road (PBR)) Corridor:

4. Palmetto Bay Road with Arrow Road/Point Comfort Road
5. Palmetto Bay Road at Bow Circle
6. Palmetto Bay Road at Archer Road
7. Palmetto Bay Road at Target Road
8. Palmetto Bay Road at Dunnagans Alley

Pope Avenue Corridor:

9. Pope Avenue at New Orleans/Office Park Roads
10. Pope Avenue at Executive Park Road (north)/Woodhaven Lane
11. Pope Avenue at Executive Park Road (south)
12. Pope Avenue at Cordillo Parkway
13. Pope Avenue at Waterside Drive
14. Pope Avenue at Nassau Street (Southern Circle Center)
15. Pope Avenue at Lagoon Road

Greenwood Drive Corridor:

16. Greenwood Drive at Carolina Center/Eastern Reilly's Plaza
17. Greenwood Drive at Island Crossings
18. Greenwood Drive at Western Reilly's Plaza
19. Greenwood Drive at Eastern Sea Pines Resort Welcome Center
20. Greenwood Drive at Office Park Road
21. Greenwood Drive at Western (egress only) Welcome Center
22. Greenwood Drive at Sea Pines Main Gate

Traffic Circles:

23. Sea Pines Circle
24. Coligny Circle
25. Arrow Road at Dunnagans Alley
26. Dunnagans Alley at Wexford Drive

Arrow Road Corridor:

27. Arrow Road at New Orleans Road
28. Arrow Road at Target Road
29. Arrow Road at Archer Road

Cordillo Parkway:

30. Cordillo Parkway at Woodhaven Drive
31. Cordillo Parkway at Deallyon Avenue

North/South Forest Beach Road Corridor:

32. North Forest Beach Drive at Avocet Road
33. South Forest Beach Drive at Tanglewood Drive
34. South Forest Beach Drive at Deallyon Avenue
35. South Forest Beach Drive at Lemoyne Avenue

Other Intersections:

36. Lagoon Road at Avocet Road
37. Office Park Road at Office Way
38. Nassau Street at Tanglewood Drive
39. Nassau Street at Deallyon Avenue

EXISTING CONDITIONS

Traffic Volume Data

Traffic volume data has been either gathered in the field or obtained from the Town for each of the previously referenced intersections. Turning movement counts were conducted for up to three peak-hour time periods, the Morning Peak (7:00 - 9:00 AM), Noon Peak (11:00 AM- 1:00 PM) and Afternoon Peak (4:00 - 6:00 PM) time periods. **Figures 1a, 1B** and **1c** depict the summarized traffic volume data for the respective AM, NOON and PM peak hours for the entire study area. These figures provide a composite look at the entire study area. Traffic volumes will also be illustrated in the sections of this report for individual intersections. The volumes presented in the intersection sections will also include bicycle and pedestrian crossing volumes for each intersection approach which have also been gathered for the same peak periods.

Accident Data

Accident data has been provided by the Town via completed TR-310 *South Carolina Traffic Collision Report Forms* which were provided for each of the study area intersections as well as for roadway segments of the major corridors that make up the South Island Planning Area. This data has been provided for a three (3) year period beginning June/July 2012 through June 2015.

Each of these accident reports were reviewed and summarized into categories defining type of accident, date of accident (summer months or non-summer months) and if accident involved a pedestrian or bicyclist. Once summarized, average number of accidents per year for the intersection has been defined, average number of accidents per year for each type of accident, as well as average per year during the summer.

This summarization has been completed for not only each intersection, but also for each major roadway corridor. It should be noted that a corridor summary includes accidents for each individual intersection, as well as accidents that were reported between intersections (roadway segments) which were not defined to a specific intersection during the reporting process. It should be noted that for a small sampling of the study area intersections, the accident data reflects a very minor number of crashes over the three-year period. For these specific intersections, data was not summarized in the individual intersection due the data not being statistically relevant.

FUTURE CONDITIONS

Two future year conditions have been selected for study of the Circle-to-Circle and Southern Island area. First, a near term 5-year condition (2020) has been selected which concentrates on immediate needs of the study area intersections. This five-year conditions includes an annual 1-percent growth increase in traffic as well as three specific approved developments located within the planning area. These include the:

- Heritage Plaza Renovation: 104 Key Hotel & 37,695 sf retail (Removal of 58,395 sf retail)
- Time Share Project (41 S. Forest Beach Drive): 125 Units
- USCB and OLLI: 400 student Facility

A second scenario selected is for the future 15-Year 2030 which has utilized the Low Country Council of Governments (LCOG)Transportation Model. This transportation model was specifically prepared for the Town utilizing the new LMO zoning amendments and land-use designations which were then programmed into the model as changes in socio-economic characteristics for each of the trip area zones.

Based on the LCOG model output, a summary of roadways throughout the study area result in an average annual growth rate of 1.2-percent for the roadways throughout the network between 2015 and 2030. This annual growth rate was used to upwardly adjust the peak-hour traffic volumes which make up the study area in order to reflect anticipated 15-Year 2030 peak-hour volumes.

OPERATIONAL METHODOLOGY

Operational analysis conducted for this report have included intersection (signal and unsignalized), traffic circles/round-a-bouts, accident/crashes as well as roadway segment analysis utilizing two-way daily volumes. Methodologies utilized for each of these transportation facilities are as follows:

Methodologies

Signalized, Unsignalized & Round-a-bout Intersections

A primary result of capacity analyses is the assignment of level-of-service (LOS) to traffic facilities under various traffic flow conditions[1]. The concept of level-of-service is defined as a qualitative measure describing operational conditions within a traffic stream and their perception by motorists and/or passengers. A level-of-service definition provides an index to quality of traffic flow in terms of such factors as speed, travel time, freedom to maneuver, traffic interruptions, comfort, convenience, and safety.

Six levels-of-service are defined for each type of facility. They are given letter designations from A to F, with LOS A representing the best operating conditions and LOS F the worst.

Since the level-of-service of a traffic facility is a function of the traffic flows placed upon it, such a facility may operate at a wide range of levels-of-service, depending on the time of day, day of week, or period of a year.

Levels-of-service for signalized and unsignalized intersections are calculated using the operational analysis methodology of the 2010 *Highway Capacity Manual.* This method assesses the effects of, traffic stream volumes, intersection geometrics, traffic control, timing, phasing, and progression (signalized intersections); service level designations are based solely on the criterion of calculated control delay per vehicle, since delay is a measure of driver discomfort, frustration, fuel consumption, and increased travel time.

The following table summarizes the relationship between level-of-service and delay for both signalized and unsignalized intersections. The tabulated delay criterion may be applied in assigning level-of-service designations to individual lane groups, to individual intersection approaches, or to entire intersections. It should be noted that for an unsignalized intersection, delay is representative of typically the minor/side street left-turn movement which do not have the right-of-way and must wait for an acceptable gap in major street through movements.

[1] The capacity analysis methodology is based on the concepts and procedures in the *Highway Capacity Manual*; Transportation Research Board; Washington, DC; 2010.

LEVEL-OF-SERVICE CRITERIA[1]

Level-of-Service	Signalized Intersection[2]	Unsignalized Intersection[2]
A	0.0 to 10.0	0.0 to 10.0
B	10.1 to 20.0	10.1 to 15.0
C	20.1 to 35.0	15.1 to 25.0
D	35.1 to 55.0	25.1 to 35.0
E	55.1 to 80.0	35.1 to 50.0
F	>80.0	>50.0

1. Source: Highway Capacity Manual, Transportation Research Board; Washington, DC; 2010.
2. Delay in seconds-per-vehicle.

It should be noted in accordance with the Towns Land Management Ordinance (LMO), signalized intersections as well as round-a-bouts have a local goal of the following:

- Signalized Intersection: Over-all intersection average delay (seconds) of 55.0 seconds or less AND the over-all intersection volume-to-capacity ratio (V/C) of 0.90 or less.
- Round-a-bout/Circle: Any approach to a round-a-bout or circle that exceeds 150-seconds is deemed as failing conditions. Acceptable is measured at less than 150-seconds.
- Unsignalized Intersections: No LMO goal is provided.

Vehicle queuing analysis has also been prepared which reviews the 95th percentile queue as stated in the HCM analysis and compares it to the available turning lane length as provided. This will determine potential intersections or turning lanes that need to be expanded/lengthened or provided in the event that a separate lane is not currently available.

Accident/Crash History

Using the Accident data provided by the Town (TR-310 *South Carolina Traffic Collision Report Forms)* data for each corridor or intersection has been summarized into accident types as defined within the Highway Capacity Manual (HCM). For the purposes of this report, five basic categories have been selected as follows:

1. Cross-movement/angular;
2. Rear-end;
3. Sideswipe;
4. Hit fixed object; and
5. Other.

Once categorized, a review of average number of accidents per year, majority of accident types, seasonal accidents as well involvement of pedestrians and/or bicyclists has been performed in order to determine where significant accident rates exists for an intersection or corridor. A general rule is a high accident intersection averages greater than 10 accidents per year.

Additionally, a roadway segment or intersection that may not exhibit a high accident rate but rather a lower volume with a consistent frequency of a particular accident type. Identification of these re-occurring accidents can lead to the suggestion of mitigation measure also.

Roadway Segments

Daily traffic volumes as provided either via actual counts collected by the Town or volumes as stated in the LCOG transportation model analysis have been analyzed utilizing the "MAXIMUM ADT by LEVEL of SERVICE for URBAN FACILITIES for SCDOT Travel Demand Models. This analytical procedure develops a level of service for a roadway segment based on the functional classification, number of lanes, divided traffic flow (or not) and the two-way daily volume.

Daily traffic volumes for the purposes of this report, have been reported for two conditions when data is available. First, the volumes reflected in the LCOG transportation model reflect average annual daily traffic (AADT) conditions which are average conditions over 365 days of a year. These LCOG volumes tend to be less than the data collected by the Town which reflect summer season conditions typically the 45th highest day of the year. As such, traffic volumes data collected by the Town is typically greater as it accounts for higher summer season variations. When possible, both the AADT numbers as well as Town's summer seasonal have been presented in this report.

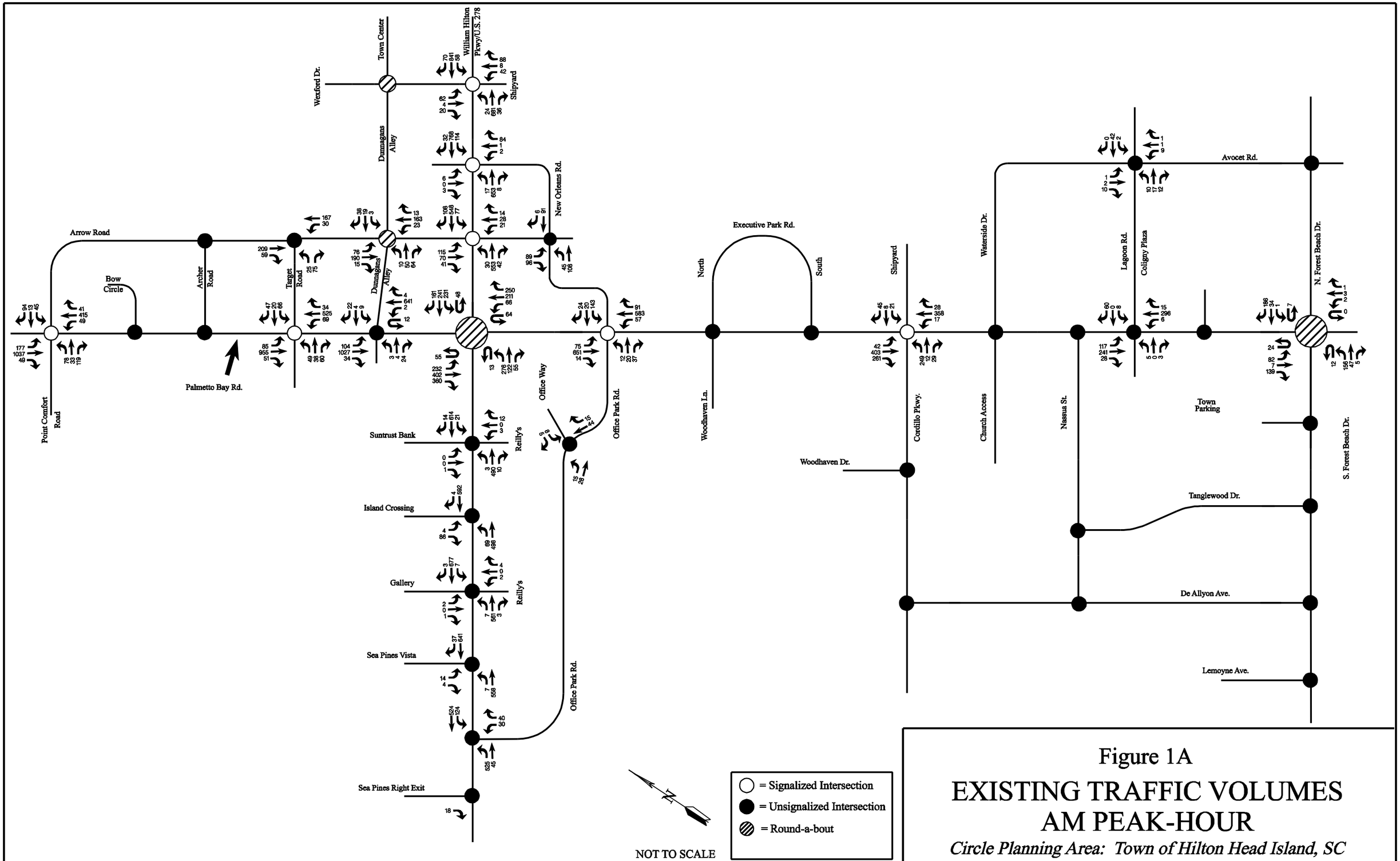


Figure 1A

EXISTING TRAFFIC VOLUMES
AM PEAK-HOUR

Circle Planning Area: Town of Hilton Head Island, SC

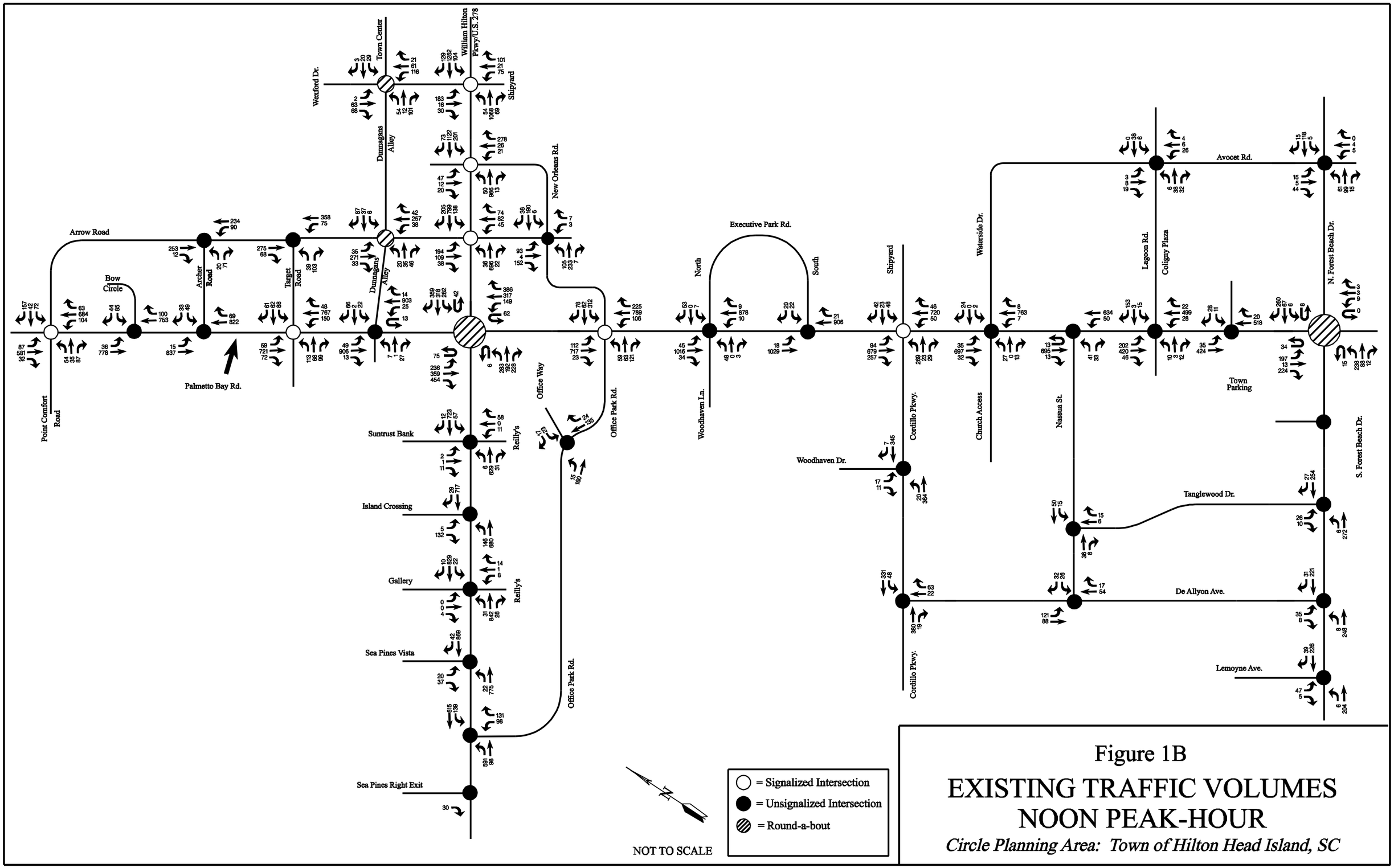


Figure 1B

EXISTING TRAFFIC VOLUMES
NOON PEAK-HOUR

Circle Planning Area: Town of Hilton Head Island, SC

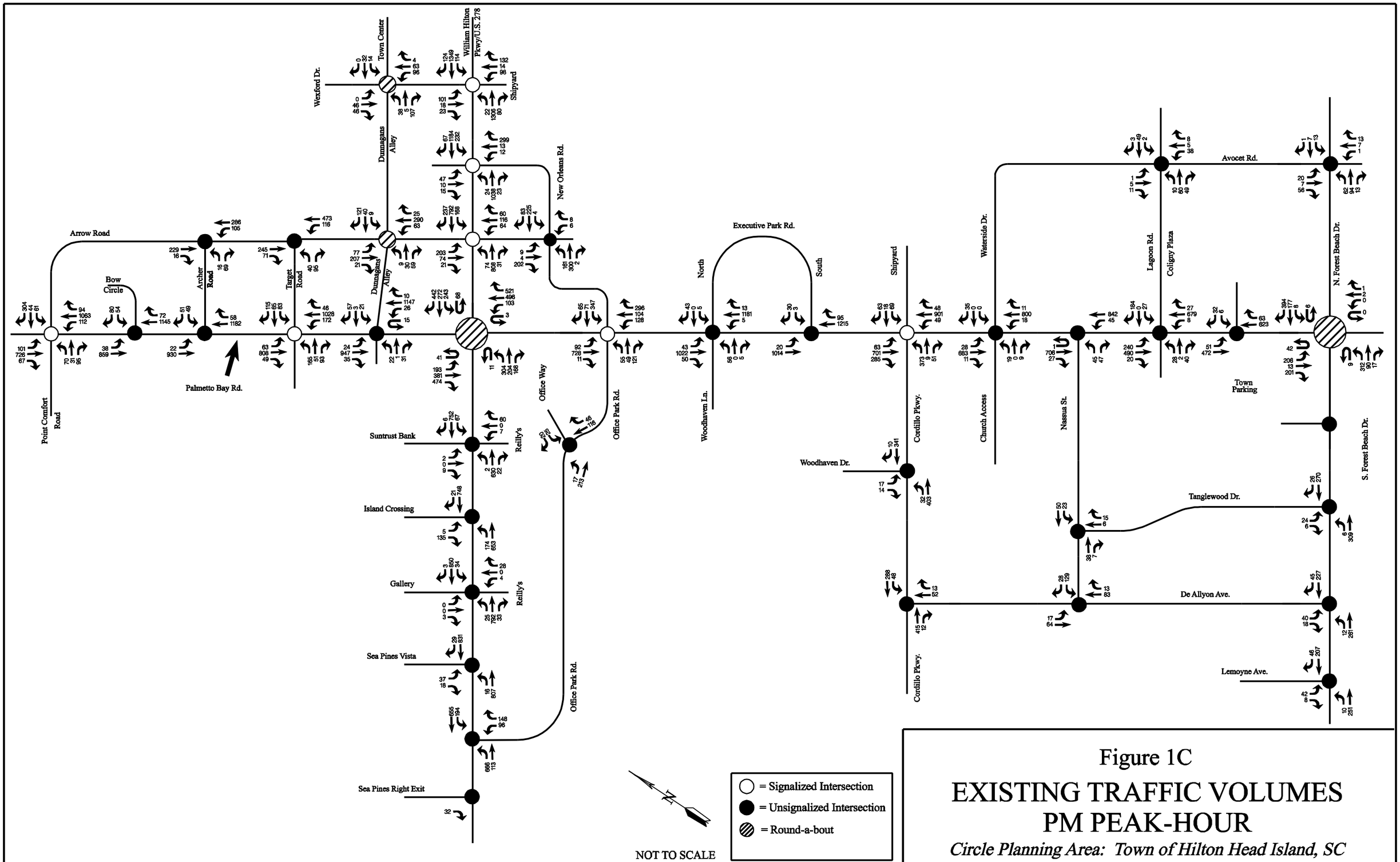


Figure 1C

EXISTING TRAFFIC VOLUMES PM PEAK-HOUR

Circle Planning Area: Town of Hilton Head Island, SC

CORRIDOR of WILLIAM HILTON PARKWAY (278 Business)

This section of William Hilton Parkway (US 278B) consists of the three intersections of Wexford Drive/Shipyard Drive, New Orleans Road/Villages at Wexford and Arrow Road. Total length of this corridor is approximately 3,625-feet (0.7-miles) which extends from the Sea Pines Circle to Wexford Drive/Shipyard.

EXISTING CONDITIONS

Geometrics

In general, US 278B provides a four-lane divided cross-section where directional traffic flow is separated by a landscaped median. The study area section provides a landscaped median between Wexford/Shipyard Drive and New Orleans Road, however west of New Orleans Road (at the Panera Bread/Grayco drives), through Arrow Road to the Sea Pines Circle; traffic is divided by combination of separate left-turn/deceleration lanes and a center two-way left-turn lane.

Along the south side of US 278B, a 8-foot wide off-street multi-use bike/pedestrian pathway is provided for the entire length of this segment. On the north side, an off-street multi-use pathway is provided through Wexford Drive terminating at the New Orleans Road intersection.

Traffic Volumes

Daily traffic volumes as indicated by the 2015 LCOG Transportation model indicate a two-way average annual daily traffic volume (AADT) of 20,900 vehicles at point east of Arrow Road. Daily traffic volumes collected along this section of US 278B during the second week of June 2015 indicates a two-way daily volume of 25,500 vehicles-per-day (vpd). These volumes correlate to a LOS B under the average condition and a LOS C during the seasonal counts in accordance with the Minimum ADT (max. 38,640 LOS D for a divided Principal Arterial) by Level-of-Service for Urban Facilities provided by the SCDOT.

Accident History

Three years of summarized accident data for this entire corridor has been provided which include all accidents at the three signalized intersections contained within the segment as well as accidents that were in between intersections.

Corridor of US 278B

Year	Annual # Accidents	Angle[a]	Rear End	Sideswipe	Fixed Obj[b]	Other	Summer Months (June-Aug)	Involved Bike or Ped
2015 (Jan-June)	20	4	16				6	
2014	58	24	27	6	1		24	2
2013	23	9	21	2	2	2	17	3
2012 (July-Dec)	9	5	9		1	1	8	
Total Crashes	110	42	73	8	4	3	55	5
Avg. Per Year	***36.7***						***18.3***	

Note: Information provided by Town of Hilton Head.

a. Angle or cross-movement type collision.

b. Vehicle collided with fixed object, typically ran off roadway.

As shown, this 7/10ths of a mile section totaled 110 accidents over the three year period were recorded resulting in an average of nearly 37 accidents per year. The majority of accident types are rear-end with a total of 73 while the second greatest accident type is angle (42). On average, nearly half of these accidents occur during the summer months. Five accidents involved a pedestrian and/or bike.

FUTURE 2030 CONDITIONS

Future traffic demands as expected by the LCOG transportation model indicate that US 278B will serve an AADT (average) of 22,300 vpd under 2030 conditions. Summer daily volumes are anticipated at 27,200 vpd based on application of the annual growth rate to the collected 2015 summer collected data. These volumes result in a LOS B for the average daily condition and a LOS C for the summer conditions.

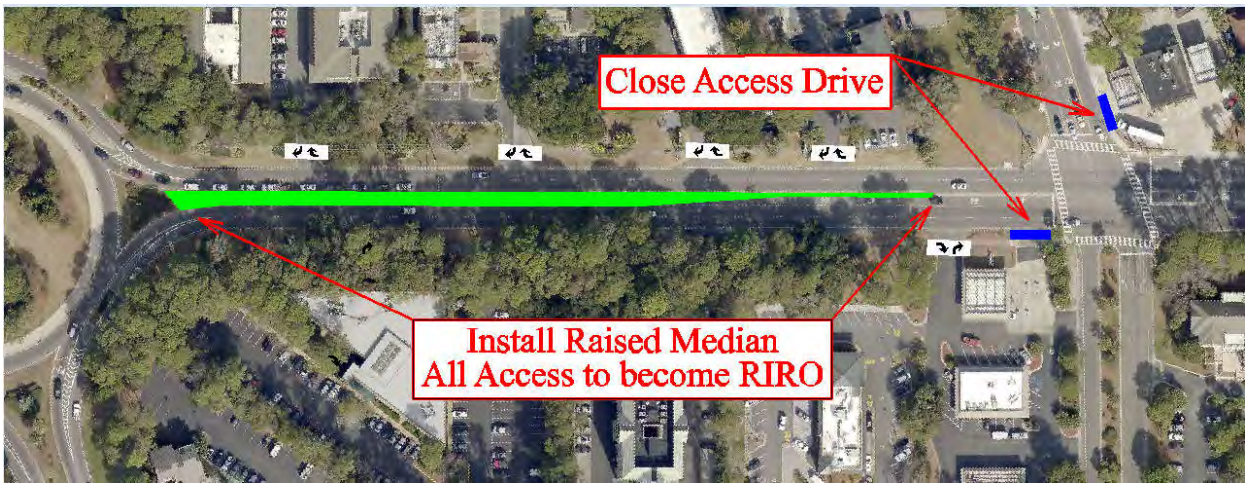
RECOMMENDATIONS

Operationally, this section of roadway operates at good conditions with service levels, delays and V/C ratios that are better than the stated LMO standards. Accident frequency is a concern which is why the Town plans on implementing signal phasing and timing changes at the intersections of US 278B at Wexford Drive/Shipyard Drive as well at the US 278B at Arrow Road intersections. The changes are scheduled in an effort to reduce accident frequency at these intersections.

Review of accidents not associated with an intersection indicate that the section of US 278B between Arrow Road and Sea Pines Circle has a fair number of cross-movement accidents. This section of US 278B is where there is a two-way left-turn lane (TWLTL) rather than a raised median.

It is suggested that this section of US 278B between Sea Pines Circle and Arrow Road have the TWLTL replaced with a raised landscaped median (section length approximately 900-feet) which will effectively eliminate all left-turn movements for access drives along this section of US 278B. Left-turn movements would be eliminated from four access drives along the northern curb-face of US 278B and no access drives along the south side of US 278B would be impacted. Each of the businesses access drives that would be affected are already provided alternatives for the left-turn movements via Dunnagan's Alley which can then access signalized locations at Arrow Road, or Wexford Drive or access Palmetto Bay Road via Dunnagans Alley, or alternatives to the north along Arrow Road. Additionally, U-turns can be accommodated at the Sea Pines Circle or the signalized intersection of Arrow Road.

Concept Plan



US 278B AT WEXFORD DRIVE/SHIPYARD DRIVE

As part of the William Hilton Parkway (US 278B) corridor, this is a four-legged signalized intersection which operates within the Town's traffic signal system along US 278B. To the north, this intersection provides access to Wexford Plantation and the Town Hall. To the south, access to Shipyard Plantation is provided which is a gated community just south of US 278B.

EXISTING CONDITIONS

Geometrics

The following provides a graphic and description of the existing intersection geometrics:

Description

Approach:	Northbound	
Name:	**Shipyard Drive**	
	# Lanes	Storage (ft)
Left	1	>300
Through	1	>300
Right	1	50

Approach:	Southbound	
Name:	**Wexford Drive**	
	# Lanes	Storage (ft)
Left	1	>300
Thru/Rt	1	280

Approach:	Eastbound	
Name:	**US 278B**	
	# Lanes	Storage (ft)
Left	1	175
Through	2	
Right	1	200

Approach:	Westbound	
Name:	**US 278B**	
	# Lanes	Storage (ft)
Left	1	200
Through	2	
Right	1	>300

Accident History

US 278B at Wexford Drive/Shipyard Drive

Year	Annual # Accidents	Angle[a]	Rear End	Sideswipe	Fixed Obj[b]	Other	Summer Months (June-Aug)	Involved Bike or Ped
2015 (Jan-June)	8	2	6				1	
2014	12	4	6	2			6	
2013	7	2	4	1			3	
2012 (July-Dec)	3	1			1	1		
Total Crashes	30	9	16	3	1	1	10	0
Avg. Per Year	***10.0***						***3.3***	

Note: Information provided by Town of Hilton Head.

a. Angle or cross-movement type collision.

b. Vehicle collided with fixed object, typically ran off roadway.

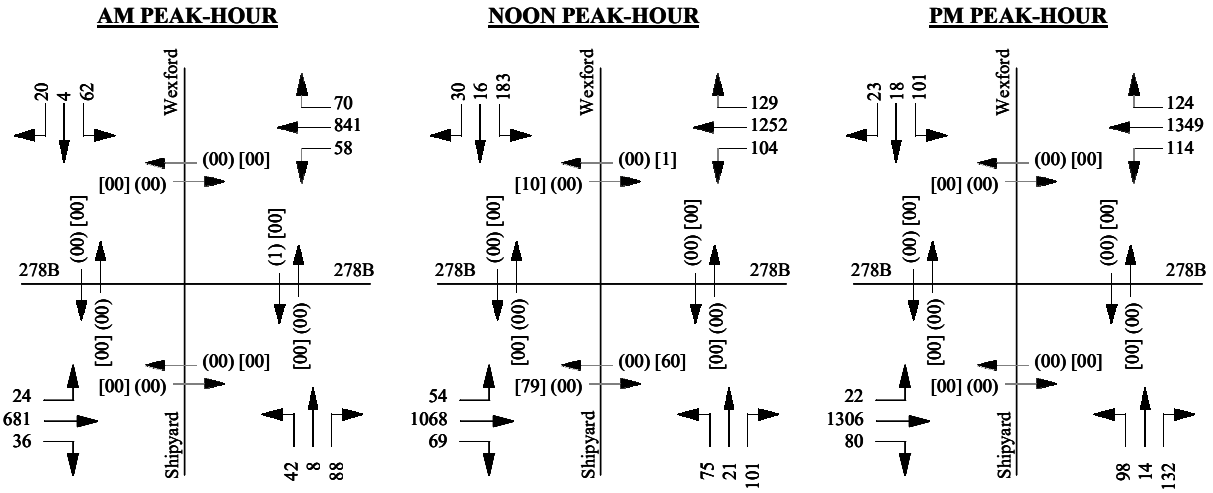
As indicated, an average of 10 accidents per year have occurred with approximately half being rear-end type likely due to drivers following to close and/or inattention. These rear-end accident types can also be attributed to the fact that vehicle queues were observed to extend through his intersection from the Sea Pines Circle located 3,600-feet to the west.

A total of ten accidents (33.3-percent of the accident total) occurred during the summer months and there were no reported accidents that involved either a pedestrian or bicyclist.

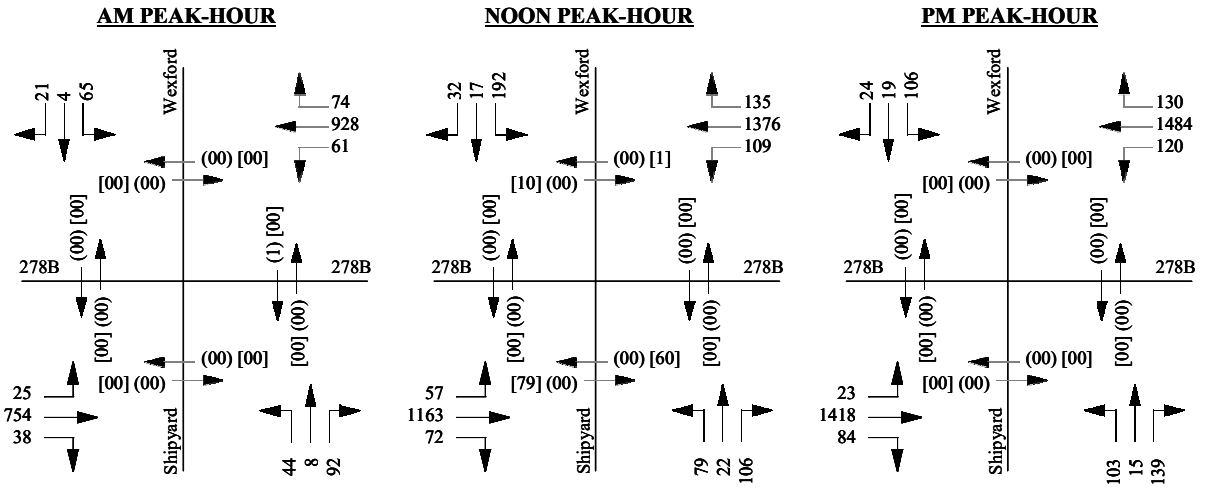
Traffic Volumes

Existing peak-hour volumes gathered during the second week of June 2015 are presented below which represent the AM, NOON and PM peak-hours time periods. Following the 2015 peak-hour volumes are the two Future year conditions which reflect 2020 (5-year) and 2030 (15-year) peak-hour volume projections.

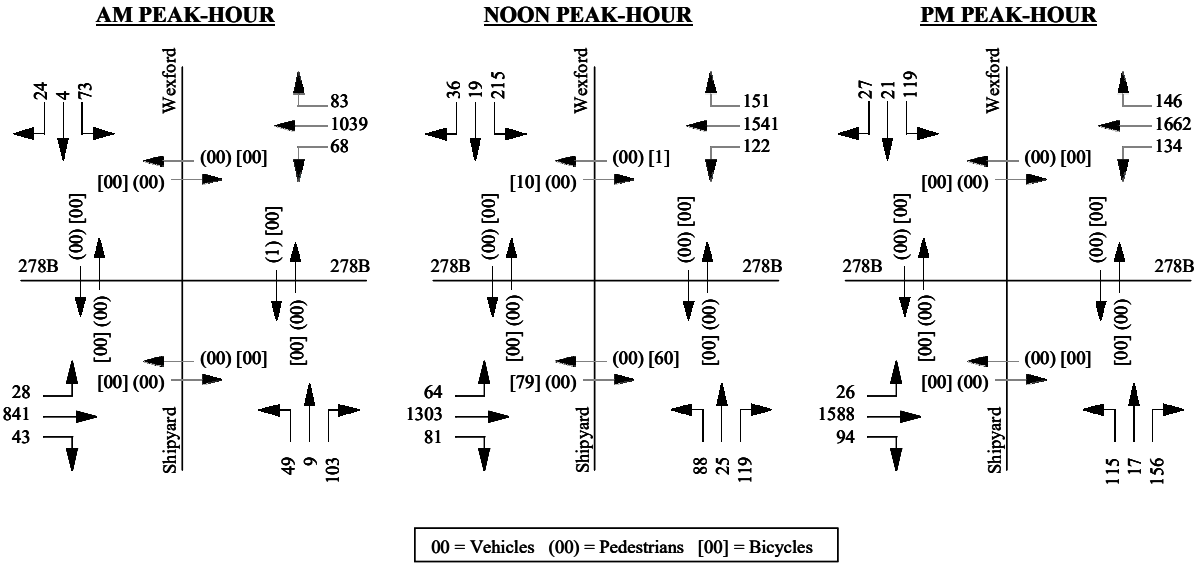
2015 Existing Peak-Hour Volumes



2020 Peak-Hour Volumes



2030 Peak-Hour Volumes



Intersection Operations

Operations for this intersection are indicated below. It should be noted that both Future year 2020 and 2030 analysis reflect the Town's recent modifications (completed March 16, 2016) of this intersection to provide protected only left-turn phasing for the minor street approaches of Wexford Drive and Shipyard Drive. Currently these left-turn movements are permissive only however the Town has this modification scheduled and recently completed due to intersection alignment issues and accident history statistics.

Service Levels:

Intersection	Peak Hour	2015 Existing V/C[2]	2015 Existing Delay[3]	2015 Existing LOS[4]	5-Year (2020) V/C	5-Year (2020) Delay	5-Year (2020) LOS	15-Year (2030) V/C	15-Year (2030) Delay	15-Year (2030) LOS
William Hilton Parkway (US 278B) @ Wexford Drive/Shipyard Dr	AM	0.37	10.2	B	0.41	14.6	B	0.47	15.9	B
	NOON	0.60	16.1	B	0.64	23.3	C	0.73	27.1	C
	PM	0.56	15.4	B	0.64	23.6	C	0.73	27.9	C

1. Calculations completed using the 2010 HCM methodology.
2. V/C=Volume-to-capacity ratio, basis HCM 2000.
3. Delay in seconds-per-vehicle.
4. Level-of-Service.

GENERAL NOTES:

1. For signalized intersections, delay is representative of the over-all intersection weighted average of all approaches.

As shown, under Existing and both Future 5-year (2020) and 15-year (2030) conditions, operations at this intersection are currently acceptable based on the LMO guidelines; V/C ratios for each peak hour are less than 0.90 and over-all average intersection delays are less than 55.0 seconds.

It should be noted that it was observed during the peak summer months, vehicle queues through/across this intersection. This was evident and during the noon and PM peak time periods. These conditions are not caused by the operations of this signalized intersection but rather are due to the Sea Pines Circle which is located 3,600-feet to the west.

Storage Lane Queues:

William Hilton Parkway at Wexford Drive/Shipyard Drive

			2015 Existing			5-Year (2020)			15-Year (2030)		
		Stacking	AM	Noon	PM	AM	Noon	PM	AM	Noon	PM
NB	Left	>300	39	113	137	54	139	163	62	153	180
	Right	>300	25	50	55	0	38	57	18	50	72
SB	Left	>300	52	257	141	77	17	203	83	391	234
	Right	280	17	48	47	24	16	50	26	51	54
EB	Left	175	19	26	15	24	61	21	24	86	23
	Right	200	0	11	27	0	1	19	0	9	26
WB	Left	200	36	54	55	56	85	108	56	120	192
	Right	>300	10	35	42	7	44	48	7	56	58

Lengths represented in feet.

Review of the vehicle queues at this intersection indicate one potential issue under the 2030 condition being the southbound left-turn from Wexford Drive to eastbound US 278B during the Noon peak-hour. A queue of nearly 400-feet has been calculated for this movement where the separation between this intersection and the adjacent round-a-bout with Dunnagans Alley is approximately 400-feet. The expected left-turn volume during this Noon time period is approximately 250 vehicles.

If this movement does become a problem under actual conditions, a slight modification to signal timing to provide more green time to the protected southbound left-turn movement would reduce this queue while maintaining operations acceptable under the LMO.

RECOMMENDATIONS

The analyses for this intersection indicate no capacity constraints caused by the geometry of this intersection. A minor modification may be pertinent in the future to help reduce back-ups on the southbound Wexford Drive approach if stacking begins to approach the adjacent Dunnagans Alley Round-a-bout.

US 278B AT NEW ORLEANS ROAD/WEXFORD VILLAGE

Part of the William Hilton Parkway (US 278B) corridor this is a four-legged signalized intersection which operates within the Town's traffic signal system along US 278B. To the north, this intersection provides access to the retail shops with in The Village at Wexford. To the south is New Orleans Road which provides access to commercial uses along both side of the roadway. New Orleans Road extends from US 278B to Pope Avenue and provides an alternative routing which can be used to by-pass the Sea Pines Circle.

EXISTING CONDITIONS

Geometrics

The following provides a graphic of the existing intersection geometrics:

Description

Approach:	Northbound	
Name:	**New Orleans Road**	
	# Lanes	Storage (ft)
Left/Thru	1	>300
Right	1	100

Approach:	Southbound	
Name:	**Wexford Village**	
	# Lanes	Storage (ft)
Left	1	70
Thru/Right	1	70

Approach:	Eastbound	
Name:	**US 278B**	
	# Lanes	Storage (ft)
Left	1	160
Through	2	
Right	1	200

Approach:	Westbound	
Name:	**US 278B**	
	# Lanes	Storage (ft)
Left	1	200
Through	2	
Right	1	>300

Accident History

US 278B at Wexford Village/New Orleans Road

Year	Annual # Accidents	Angle[a]	Rear End	Sideswipe	Fixed Obj[b]	Other	Summer Months (June-Aug)	Involved Bike or Ped
2015 (Jan-June)	3		3				1	
2014	12	5	6	1			3	1
2013	6	1	4		1		2	1
2012 (July-Dec)	2		2				2	
Total Crashes	23	6	15	1	1	0	8	2
Avg. Per Year	***7.7***						***2.7***	

Note: Information provided by Town of Hilton Head.

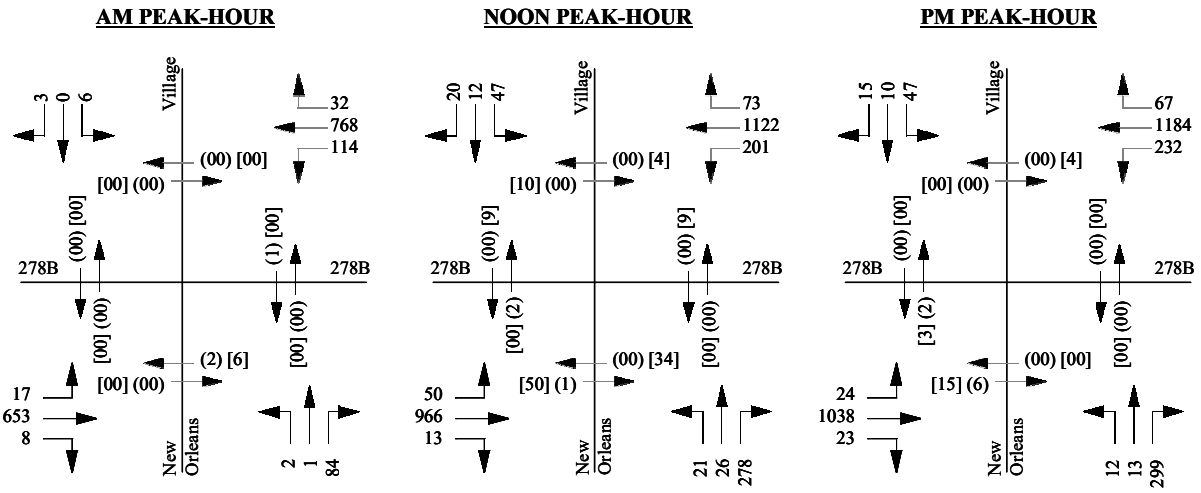
a. Angle or cross-movement type collision.

b. Vehicle collided with fixed object, typically ran off roadway.

Traffic Volumes

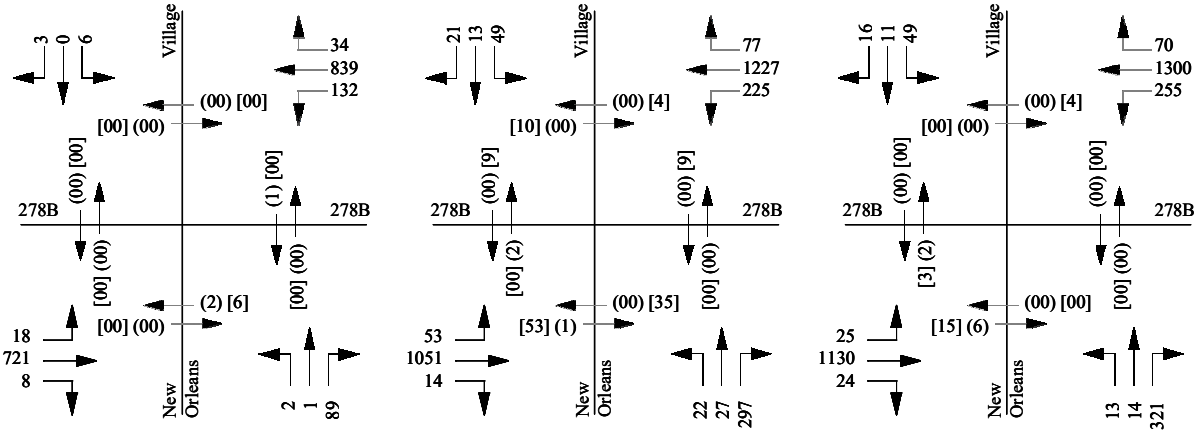
Existing peak-hour volumes gathered during the second week of June 2015 are present below which represent the AM, NOON and PM peak-hours time periods. Following the 2015 peak-hour volumes are the two Future year conditions which reflect 2020 (5-year) and 2030 (15-year) peak-hour volume projections.

2015 Existing Peak-Hour Volumes



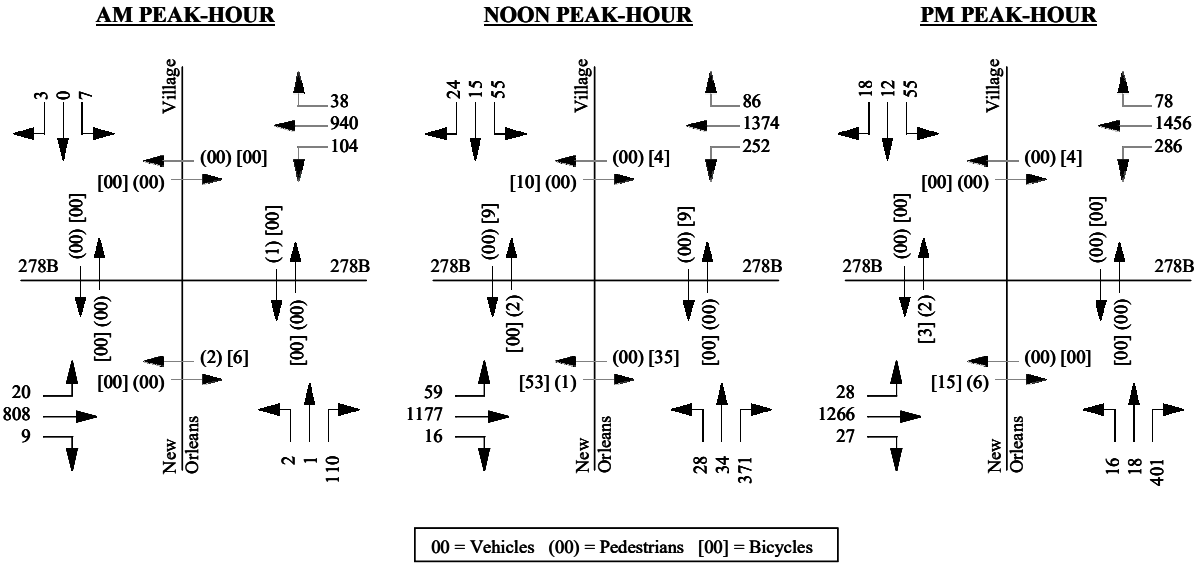
00 = Vehicles (00) = Pedestrians [00] = Bicycles

2020 Peak-Hour Volumes



00 = Vehicles (00) = Pedestrians [00] = Bicycles

2030 Peak-Hour Volumes



Intersection Operations

Service Levels:

Intersection	Peak Hour	2015 Existing V/C[2]	2015 Existing Delay[3]	2015 Existing LOS[4]	5-Year (2020) V/C	5-Year (2020) Delay	5-Year (2020) LOS	15-Year (2030) V/C	15-Year (2030) Delay	15-Year (2030) LOS
William Hilton Parkway (US 278B) @ New Orleans Road/Wexford Plaza	AM	0.30	13.8	B	0.33	14.1	B	0.37	14.8	B
	NOON	0.52	12.1	B	0.58	12.6	B	0.65	14.1	B
	PM	0.57	19.9	B	0.62	21.3	C	0.70	24.1	C

1. Calculations completed using the 2010 HCM methodology.
2. V/C=Volume-to-capacity ratio, basis HCM 2000.
3. Delay in seconds-per-vehicle.
4. Level-of-Service.

GENERAL NOTES:

1. For signalized intersections, delay is representative of the over-all intersection weighted average of all approaches.

As shown, under Existing and both Future 5-year (2020) and 15-year (2030) conditions, operations at this intersection are currently acceptable based on the LMO guidelines; V/C ratios for each peak hour are less than 0.90 and over-all average intersection delays are less than 55.0 seconds.

It should be noted that it was observed during the peak summer months, vehicle queues through/across this intersection. This was evident and during the noon and PM peak time periods. These conditions are not caused by the operations of this signalized intersection but rather are due to the Sea Pines Circle which is located 3,000-feet to the west.

Storage Lane Queues:

William Hilton Parkway at New Orleans/Wexford Village

			2015 Existing			5-Year (2020)			15-Year (2030)		
		Stacking	AM	Noon	PM	AM	Noon	PM	AM	Noon	PM
NB	Left	>300	14	81	48	14	85	51	14	92	54
	Right	100	52	244	235	53	291	246	55	334	273
SB	Left	70	24	43	79	24	83	82	24	93	89
	Right	70	0	14	0	0	43	38	0	46	39
EB	Left	160	10	43	31	11	51	34	12	56	39
	Right	200	0	0	0	0	0	0	0	0	0
WB	Left	200	51	137	153	59	203	207	65	235	281
	Right	>300	2	8	20	2	7	23	4	7	27

Lengths represented in feet.

As shown, queues at this intersection under Existing Conditions queue issues occur on both minor street approaches, the northbound right-turn movement from New Orleans Road to eastbound US 278B and the southbound left-turn movement exiting Wexford Village.

Under both Future 2020 and 2030 condition, these constraints are expected to continue as well as the westbound left-turn from US 278B onto New Orleans Road is expected to exceed the available storage length of the left-turn lane within the US 278B median.

It should be noted that both the northbound right-turn movement from New Orleans Road and the westbound left-turn movement from US 278B provide access to/from New Orleans Road which is an alternative route to using the Sea Pines Circle.

RECOMMENDATIONS

The analyses for this intersection indicate no capacity constraints caused by either the geometry or signal timing/phasing of this intersection. In accordance with the LMO, this intersection meets the stated criteria.

Storage lengths for the northbound right-turn movement and the westbound left-turn movement may need to be addressed in the future. A combination of extending storage lengths as well as signal timing changes will help reduce the expected queuing issues.

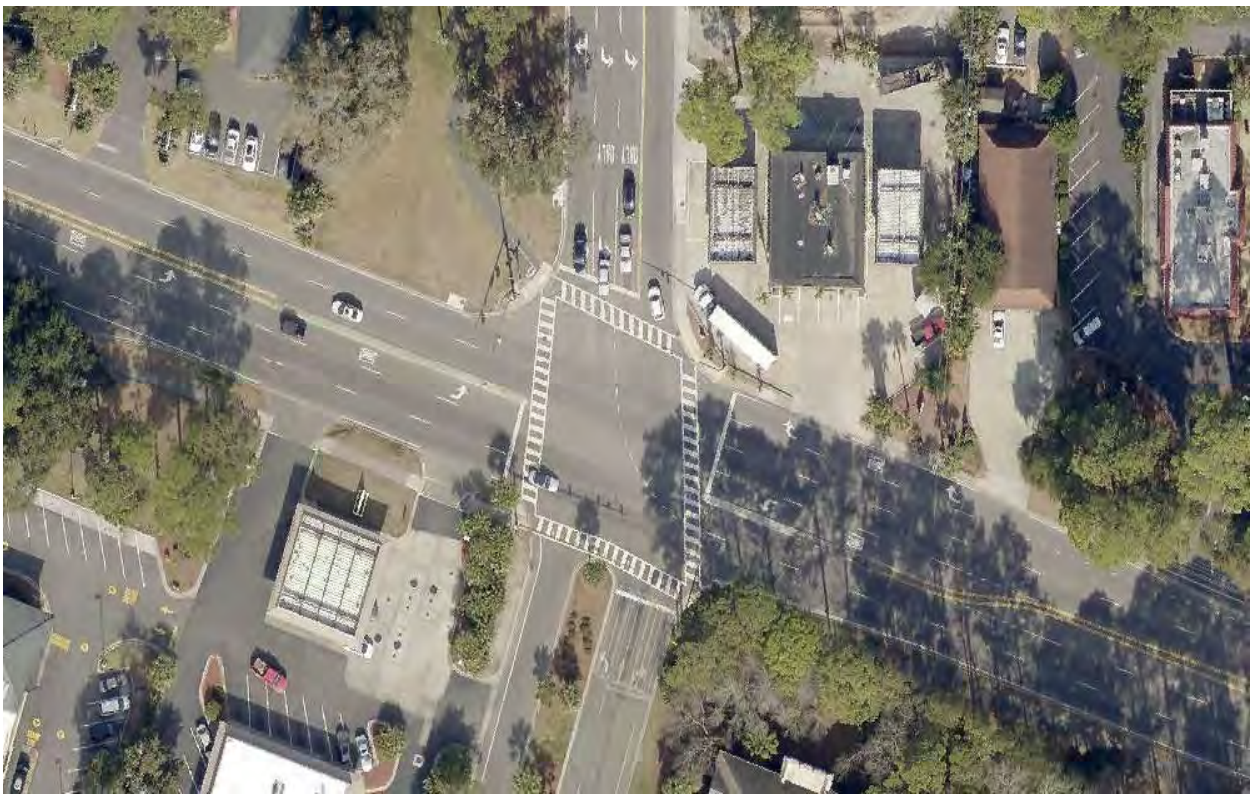
US 278B AT ARROW ROAD

Part of the William Hilton Parkway (US 278B) corridor this is a four-legged signalized intersection which operates within the Town's traffic signal system. To the north, Arrow Road intersects with Dunnagans Alley and then extends to the north where it terminates at Palmetto Bay Road opposite Point Comfort Road. To the south Arrow Road terminates at New Orleans Road approximately 330-feet south of US 278B.

EXISTING CONDITIONS

Geometrics

The following provides a graphic of the existing intersection geometrics:



Description

Approach:	Northbound	
Name:	**Arrow Road**	
	# Lanes	Storage (ft)
Left	1	190
Through	1	
Right	1	130

Approach:	Southbound	
Name:	**Arrow Road**	
	# Lanes	Storage (ft)
Left	2	135
Thru/Right	1	

Approach:	Eastbound	
Name:	**US 278B**	
	# Lanes	Storage (ft)
Left	1	250
Through	2	
Right	NA	

Approach:	Westbound	
Name:	**US 278B**	
	# Lanes	Storage (ft)
Left	1	130
Through	2	
Right	1	150

Accident History

Three years of summarized accident data specific for this intersection indicated 31 total accidents occurred during the three years with a majority being rear-end followed by angle/cross-movement. The volume of rear-end accidents are likely due to the vehicle queue that extends from the Sea Pines Circle through this intersection during all three of the peak hours studied. The cross-movement accidents may be due to the minor street movements as well as access drives that are located on close proximity to the signalized intersection on both approaches of Arrow Road.

US 278B at Arrow Road

Year	Annual # Accidents	Angle[a]	Rear End	Sideswipe	Fixed Obj[b]	Other	Summer Months (June-Aug)	Involved Bike or Ped
2015 (Jan-June)	1	1						
2014	16	6	8	1	1		8	
2013	10	3	5	1		1	5	2
2012 (July-Dec)	4	2	2				1	
Total Crashes	31	12	15	2	1	1	14	2
Avg. Per Year	***10.3***						***4.7***	

Note: Information provided by Town of Hilton Head.

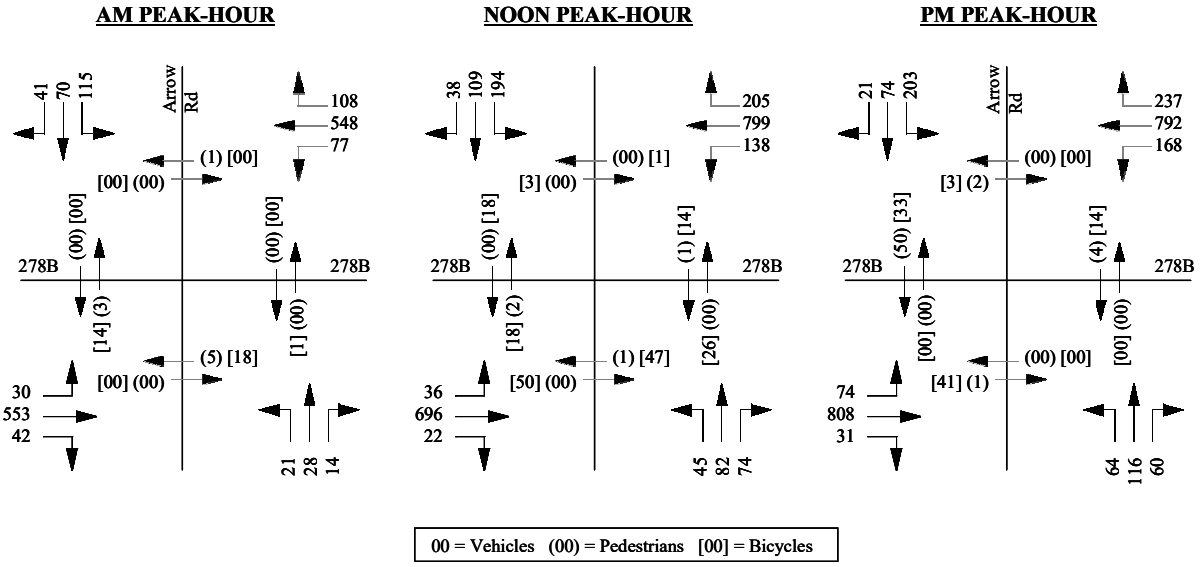
a. Angle or cross-movement type collision.

b. Vehicle collided with fixed object, typically ran off roadway.

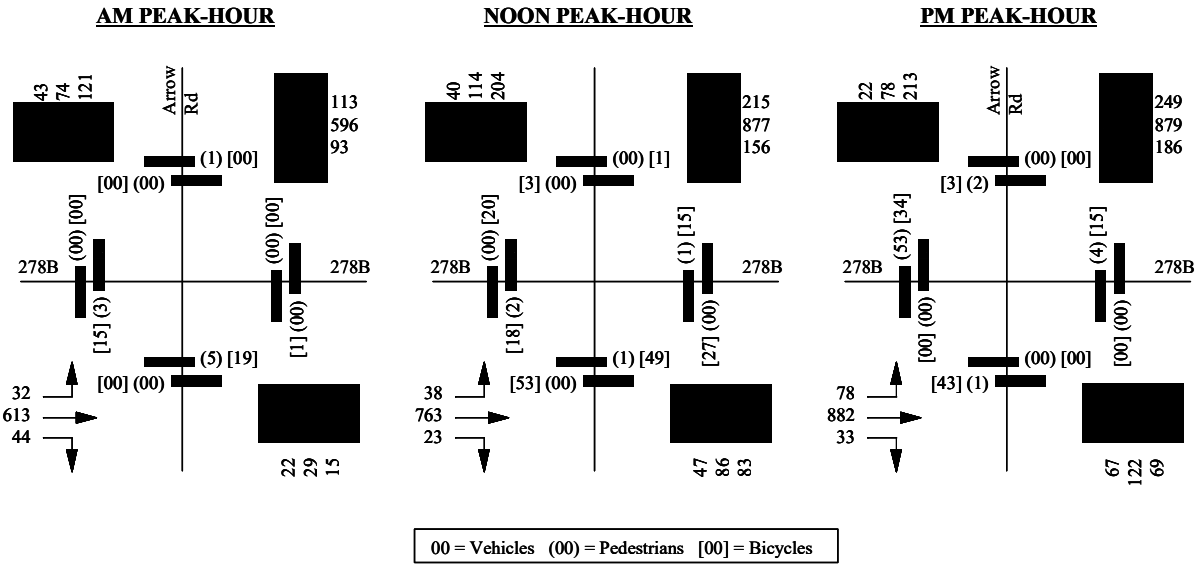
Traffic Volumes

Existing peak-hour volumes gathered during the second week of June 2015 are present below which represent the AM, NOON and PM peak-hours time periods. Following the 2015 peak-hour volumes are the two Future year conditions which reflect 2020 (5-year) and 2030 (15-year) peak-hour volume projections.

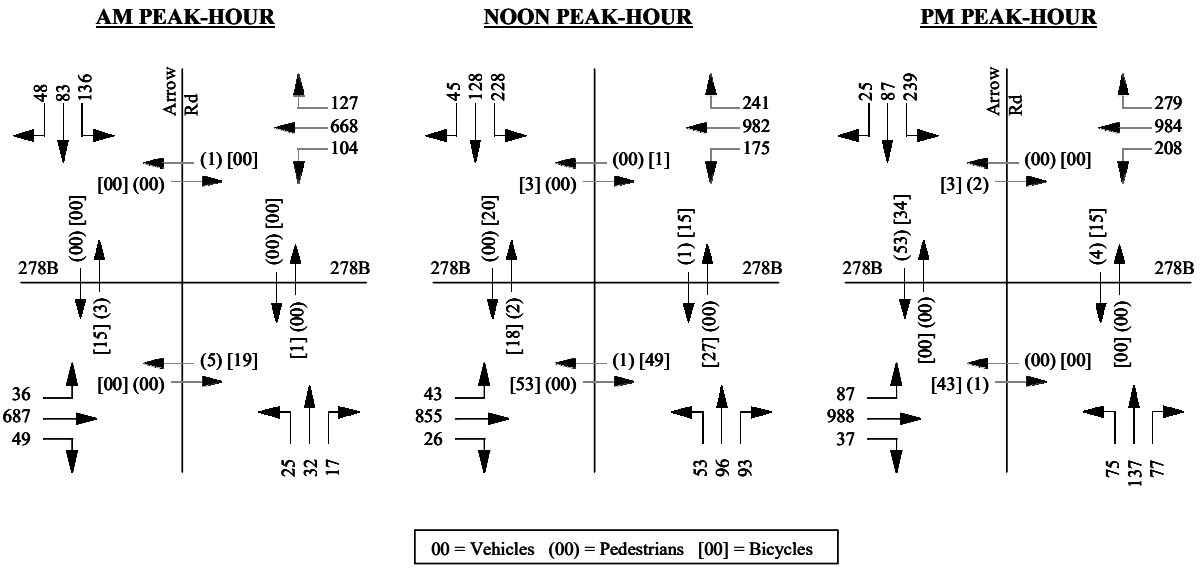
2015 Existing Peak-Hour Volumes



2020 Peak-Hour Volumes



2030 Peak-Hour Volumes



Intersection Operations

Operations for this intersection are indicated below. It should be noted that both Future year 2020 and 2030 analysis reflect the Town's planned modification of this intersection to provide split phasing for the northbound and southbound minor street approaches of Arrow Road. This signal phasing will allow the minor street approaches to operate under their own phase and therefore have protected only left-turn movements. Currently these left-turn movements are protected only for the southbound movements (dual left-turn lanes) and permissive for the northbound approach. These modifications are scheduled by the Town due to intersection accident history statistics.

Service Levels:

Intersection	Peak Hour	2015 Existing V/C[2]	2015 Existing Delay[3]	2015 Existing LOS[4]	5-Year (2020) V/C	5-Year (2020) Delay	5-Year (2020) LOS	15-Year (2030) V/C	15-Year (2030) Delay	15-Year (2030) LOS
William Hilton Parkway (US 278B) @ Arrow Road	AM	0.30	17.7	B	0.35	19.7	B	0.40	20.5	C
	NOON	0.43	21.2	C	0.50	24.1	C	0.57	26.0	C
	PM	0.48	22.3	C	0.53	25.0	C	0.62	26.6	C

1. Calculations completed using the 2010 HCM methodology.
2. V/C=Volume-to-capacity ratio, basis HCM 2000.
3. Delay in seconds-per-vehicle.
4. Level-of-Service.

GENERAL NOTES:

1. For signalized intersections, delay is representative of the over-all intersection weighted average of all approaches.

As shown, under Existing and both Future 5-year (2020) and 15-year (2030) conditions, operations at this intersection are currently acceptable based on the LMO guidelines; V/C ratios for each peak hour are less than 0.90 and over-all average intersection delays are less than 55.0 seconds.

It should be noted that it was observed during the peak summer months, vehicle queues through/across this intersection. This was evident and during the noon and PM peak time periods. These conditions are not caused by the operations of this signalized intersection but rather are due to the Sea Pines Circle which is located 1,000-feet to the west. It should be noted that at this intersection, DO NOT BLOCK INTERSECTION signage is provided orientated towards westbound through traffic headed towards Sea Pines Circle, however the effectiveness of this signage is marginal at best.

Storage Lane Queues:

William Hilton Parkway at Arrow Road

			2015 Existing			5-Year (2020)			15-Year (2030)		
		Stacking	AM	Noon	PM	AM	Noon	PM	AM	Noon	PM
NB	Left	190	55	79	103	54	81	102	59	89	112
	Right	130	0	15	0	0	24	0	0	36	0
SB	Left	125	135	127	129	92	125	94	101	138	151
	Right	NA									
EB	Left	250	18	27	46	24	31	48	28	34	53
	Right	NA									
WB	Left	130	39	81	95	56	101	104	66	112	121
	Right	150	14	24	26	7	14	17	8	36	19

Lengths represented in feet.

As shown by the above, a stacking issue for the southbound left-turn movement from Arrow Road to eastbound US 278B currently occurs resulting in back-ups to the Dunnagans Alley round-a-bout. Under the 2020 conditions, the towns signal phasing changes will aid operations slightly which indicate that the expected queue length and storage length is approximately equal. Future 2030 conditions reflect a stacking constraint for the southbound left-turn movement.

RECOMMENDATIONS

Intersection analysis indicate that this intersection from an operations standpoint meets the LMO standard of both V/C ratio and delay. Queue/stacking constraints are expected for the southbound left-turn movement due to proximity of the Dunnagans Alley round-a-bout to the north which may be mitigated by timing changes under the future conditions. It should also be noted that the access management recommendation of closing the gas/c-store access drives that are closest to the intersection will aid in vehicle circulation.

SUMMARY of IMPROVEMENTS: 278 Business

- From Sea Pines Circle in an easterly direction of US 278B (approx. 1,700-feet), install a raised landscaped median which will provide a continuous median with in the study area. This median will aid in access management issues along this section of US 278B and prohibit left-turn at private access drives located along the north and south sides of US 278B.

- Wexford Drive at Shipyard Drive:

    1. As needed under future conditions, signal timing changes maybe needed to reduce the vehicles stacking on the southbound approach of Wexford Drive.

- New Orleans Road at Wexford Village:

    1. Signal timing changes and/or extension of the westbound left-turn storage lane within US 278B in order to reduce potential vehicle stacking issues.
    2. Signal timing changes and/or extension of the northbound right-turn storage lane along New Orleans Road in order to reduce potential vehicle stacking issues.

- US 278B at Arrow Road:

    1. Once the proposed signal phasing changes by the Town are implemented, vehicle stacking on the southbound approach of Arrow Road should be reviewed in order to determine if queuing issues continue to be evident. If excessive vehicle stacking continues, consider minor signal timing modification to reduce the southbound left-turn queue.

CORRIDOR of US 278/PALMETTO BAY ROAD (PBR)

This section of Palmetto Bay Road (US 278) consists of the five intersections of Point Comfort Road/Arrow Road, Bow Circle, Archer Road, Target Road/Island Crossing and Dunnagans Alley. Total length of this corridor is approximately 5,700-feet (1.1-miles) which encompasses the above referenced intersections of which Target Road and Point Comfort Road are under traffic signal control and the remaining three intersections of Dunnagans Alley, Archer Road and Bow Circle are under STOP sign control

EXISTING CONDITIONS

Geometrics

In general, Palmetto Bay Road (PBR) provides two operating lanes in each direction where directional traffic flow is separated by landscaped median between Point Comfort Road and Bow Circle. South of Bow Circle to the Sea Pine Circle, directional traffic is separated by a center left-turn lane.

Along the east side of Palmetto Bay Road, an 8-foot wide off-street multi-use bike/pedestrian pathway is provided for the entire length of this segment. No multi-use facility is provided on the west side of this roadway.

Traffic Volumes

Daily traffic volumes as indicated by the 2015 LCOG Transportation model indicate a two-way AADT of 30,700 vehicles at a point north of Target Road. This volumes correlate to a LOS C in accordance with the Minimum ADT (max. 38,640 LOS D divided Principal Arterial) by Level-of-Service for Urban Facilities provided by the SCDOT.

Accident History

Three years of summarized accident data for this entire corridor has been provided which include all accidents at the intersections contained within the segment as well as accidents that were in between intersections.

Corridor of Palmetto Bay Road

Year	Annual # Accidents	Angle[a]	Rear End	Sideswipe	Fixed Obj[b]	Other	Summer Months (June-Aug)	Involved Bike or Ped
2015 (Jan-June)	22	9	11		2		4	
2014	46	20	15	7	4		22	1
2013	33	15	8	5	4	1	14	1
2012 (July-Dec)	24	13	5	2	3	1	10	1
Total Crashes	125	57	39	14	13	2	50	3
Avg. Per Year	***41.7***						***16.7***	

Note: Information provided by Town of Hilton Head.

a. Angle or cross-movement type collision.

b. Vehicle collided with fixed object, typically ran off roadway.

As shown, this approximate one-mile section totaled 125 accidents over the three-year period resulting in an average of nearly 42 accidents per year. The majority of accident types are angle or cross-movement type which is typical of unsignalized intersection/access to private access drives which are not signalized. Rear-end type accidents totaled 39 (second most frequent) with sideswipe and fixed object being 14 and 13 respectively. On average, 40-percent of these accidents occur during the summer months and three involved pedestrians and/or bicyclists.

FUTURE 2030 CONDITIONS

Traffic Volumes

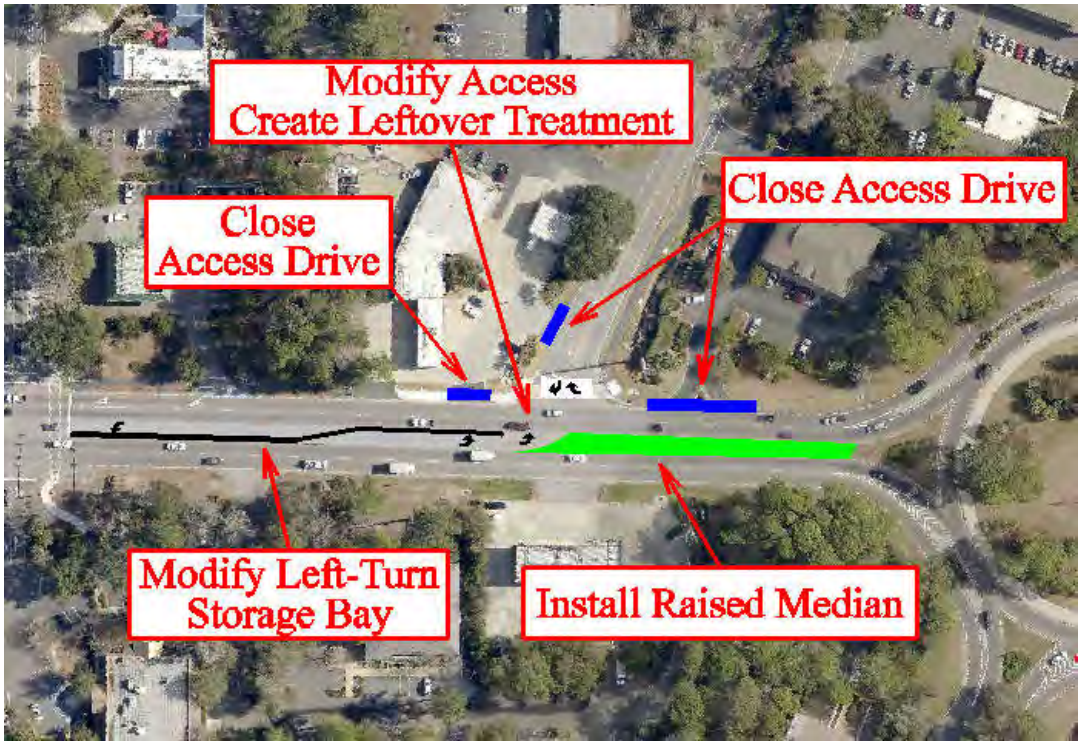
Future traffic demands as expected by the LCOG transportation model indicate that PBR will serve an AADT of 32,900 vpd. This volume would correspond to a LOS C based on the SCDOT methodology.

RECOMMENDATIONS

Operationally, this section of roadway operates at good conditions with service levels, delays and V/C ratios that are better than the stated LMO standards. Review of accidents not associated with an intersection indicate that the section of PBR just north of the Pines Circle extending to Dunnagans Alley has a fair number of accidents. This section of PBR is where there is a two-way left-turn lane (TWLTL) rather than a raised median.

It is suggested that this section of PBR between Sea Pines Circle and Dunnagans Alley have the TWLTL replaced with a raised landscaped median (section length approximately 275-feet) which will effectively eliminate all left-turn movements for access drives along this section of PBR.

Concept


Modify Access
Create Leftover Treatment
Close Access Drive
Close
Access Drive
Modify Left-Turn
Storage Bay
Install Raised Median

PBR AT POINT COMFORT ROAD/ARROW ROAD

Part of the Palmetto Bay Road corridor this is a four-legged signalized intersection which operates within the Town's traffic signal system and is also the last signal in the system due to being the last signal prior to entering the Cross Island Parkway. To the west, this intersection provides access to residential areas along Point Comfort Road and to the east accesses Arrow Road which serves as a parallel service Road to PBR providing access to commercial uses where it eventually intersects William Hilton Parkway (US 278B).

EXISTING CONDITIONS

Geometrics

The following provides a graphic of the existing intersection geometrics:

Description

Approach:	Northbound	
Name:	**Palmetto Bay Road**	
	# Lanes	Storage (ft)
Left	1	200
Through	2	
Right	1	280

Approach:	Southbound	
Name:	**Palmetto Bay Road**	
	# Lanes	Storage (ft)
Left	1	200
Through	2	
Right	1	180

Approach:	Eastbound	
Name:	**Point Comfort Road**	
	# Lanes	Storage (ft)
Left	1	150
Thru/Right	1	

Approach:	Westbound	
Name:	**Arrow Road**	
	# Lanes	Storage (ft)
Left	1	400
Thru/Right	1	

Accident History

Palmetto Bay Road at Arrow Road

Year	Annual # Accidents	Angle[a]	Rear End	Sideswipe	Fixed Obj[b]	Other	Summer Months (June-Aug)	Involved Bike or Ped
2015 (Jan-June)	6	2	3		1		2	
2014	6	4	2					
2013	5	4			1		2	
2012 (July-Dec)	3	1	1		1		1	1
Total Crashes	20	11	6	0	3	0	5	1
Avg. Per Year	***6.7***							

Note: Information provided by Town of Hilton Head.

a. Angle or cross-movement type collision.

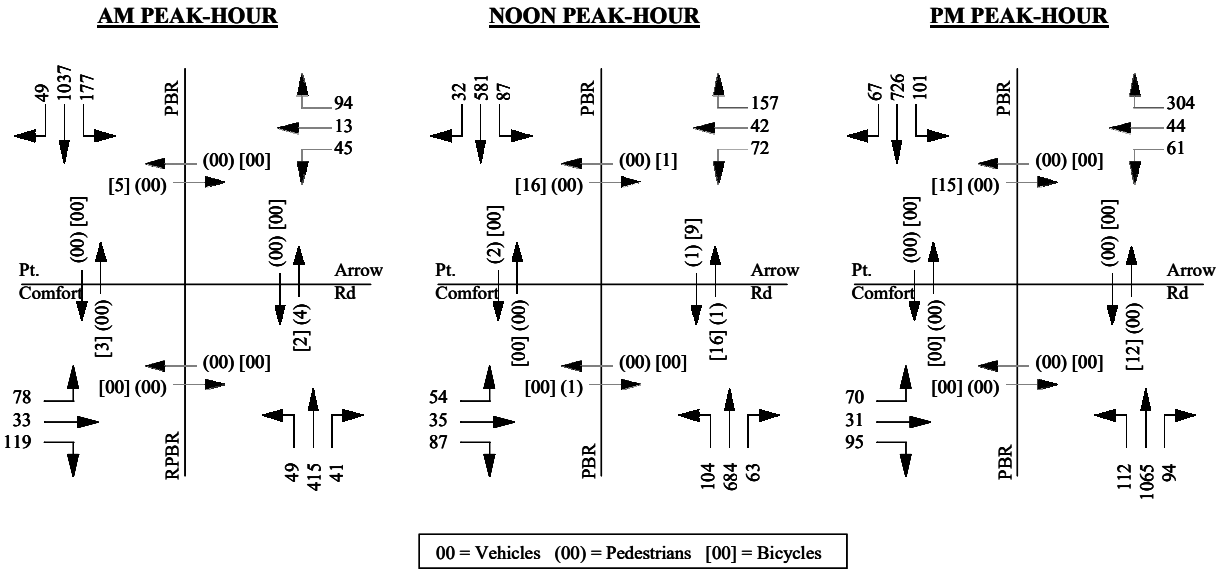
b. Vehicle collided with fixed object, typically ran off roadway.

The frequency of accidents at this intersection is slightly less than seven accidents per year with a three year total of 20 accidents. A majority of these accidents were angle or cross-movement accidents with slightly less than four angled accidents per year. Summer month registered 25-percent of the three year total and one accident involved a pedestrian and/or bicyclist.

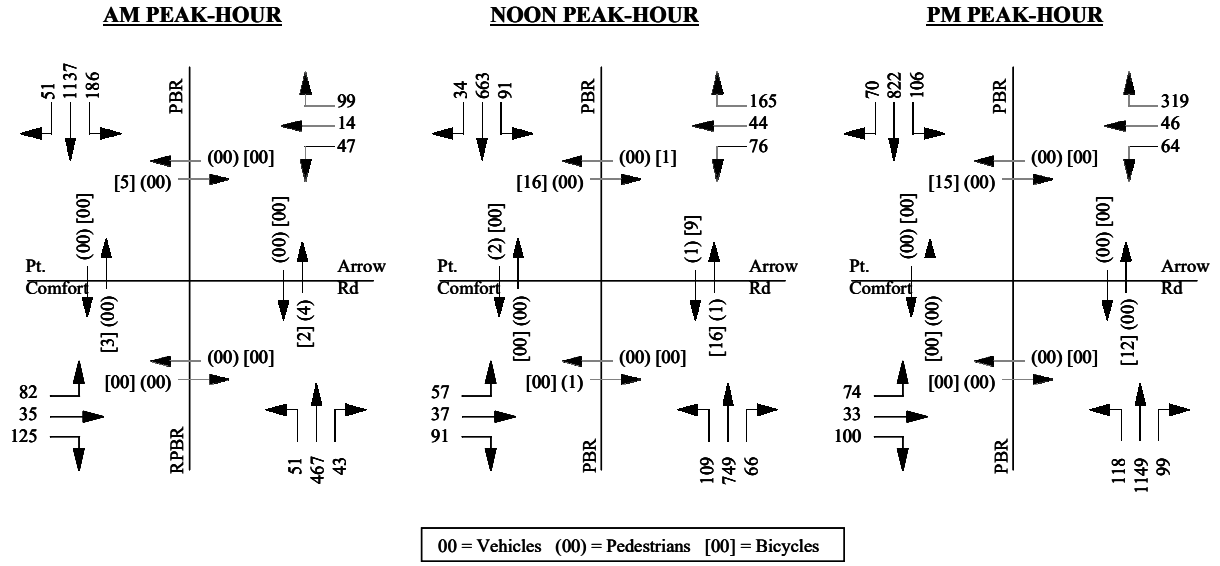
Traffic Volumes

Existing peak-hour volumes gathered during the second week of June 2015 are present below which represent the AM, NOON and PM peak-hours time periods. Following the 2015 peak-hour volumes are the two Future year conditions which reflect 2020 (5-year) and 2030 (15-year) peak-hour volume projections.

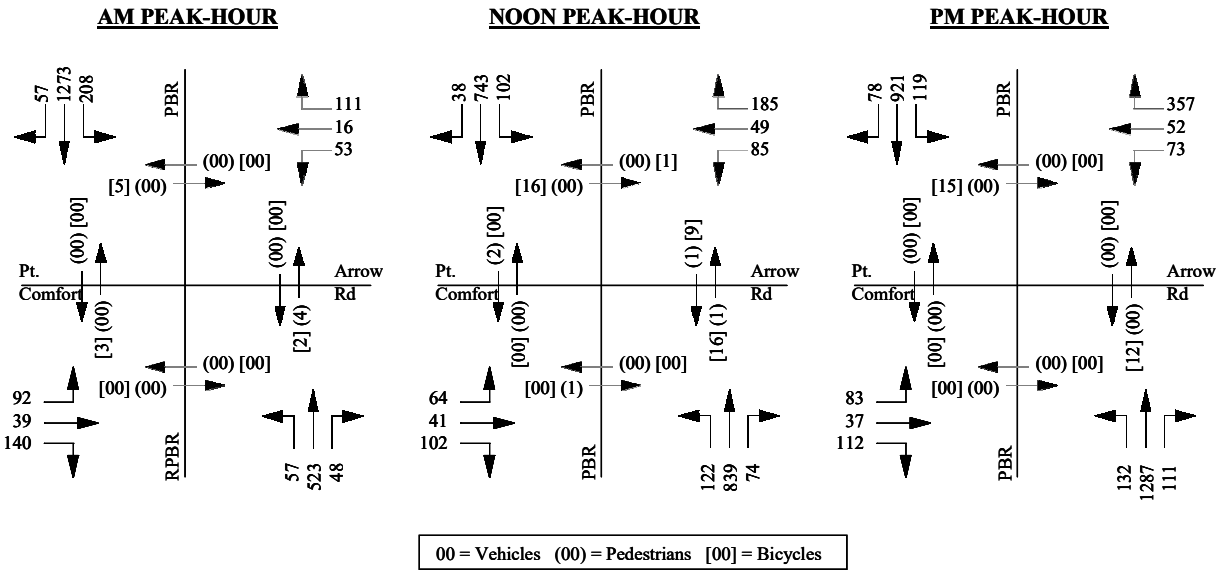
2015 Existing Peak-Hour Volumes



2020 Peak-Hour Volumes



2030 Peak-Hour Volumes



Intersection Operations

Service Levels:

Intersection	Peak Hour	2015 Existing V/C[2]	2015 Existing Delay[3]	2015 Existing LOS[4]	5-Year (2020) V/C	5-Year (2020) Delay	5-Year (2020) LOS	15-Year (2030) V/C	15-Year (2030) Delay	15-Year (2030) LOS
Palmetto Bay Road at Point Comfort/Arrow Road	AM	0.49	16.6	B	0.54	17.1	B	0.61	18.9	B
	NOON	0.39	18.3	B	0.43	18.8	B	0.52	20.1	C
	PM	0.72	26.1	C	0.80	28.1	C	0.99	32.5	C

1. Calculations completed using the 2010 HCM methodology.
2. V/C=Volume-to-capacity ratio, basis HCM 2000.
3. Delay in seconds-per-vehicle.
4. Level-of-Service.

GENERAL NOTES:

1. For signalized intersections, delay is representative of the over-all intersection weighted average of all approaches.

As shown, under Existing and the Future 5-year (2020) conditions, operations at this intersection are currently acceptable based on the LMO guidelines; V/C ratios for each peak hour are less than 0.90 and over-all average intersection delays are less than 55.0 seconds.

Future 2030 conditions indicate a V/C ratio of greater than 0.90 during the PM peak-hour. The capacity constraint during this time period is the eastbound left-turn movement from Point Comfort Road to northbound PBR which currently operates as a permissive only movement.

Storage Lane Queues:

Palmetto Bay Road at Point Comfort Road/Arrow Road

			2015 Existing			5-Year (2020)			15-Year (2030)		
		Stacking	AM	Noon	PM	AM	Noon	PM	AM	Noon	PM
NB	Left	200	24	44	60	25	46	68	27	51	78
	Right	280	5	33	32	6	18	38	9	23	47
SB	Left	200	78	41	57	82	42	65	91	46	111
	Right	180	9	0	22	9	0	26	13	2	33
EB	Left	150	106	51	154	110	101	162	124	131	195
	Right	NA									
WB	Left	400	70	66	79	73	105	78	82	118	85
	Right	NA									

Lengths represented in feet.

As indicated by the calculated vehicle queuing, the eastbound left-turn from Point Comfort Road to northbound PBR currently provides 150-feet of storage with PM peak-hour demands that exceed the available storage length. This turning lane begins at the Point Comfort Club (private neighborhood) intersection with Point Comfort Road and extends to PBR which is likely the reasoning for the length of 150-feet.

RECOMMENDATIONS

With exception of the eastbound left-turn movement, the analyses for this intersection indicates no capacity constraints caused by either the geometry or signal timing/phasing of this intersection. The eastbound left-turn is not excessive in lane movement delay currently, nor under the future year2020 or 2030 conditions; therefore no recommendations are suggested at this time.

The operations of the eastbound left-turn movement should be monitored and if found to be excessive in delay or vehicles queues become significant, operations should be reviewed which may include the addition of a protected/permissive eastbound left-turn phase if volumes warrant implementation.

The eastbound right-turn movement is currently greater than 100 vehicles during the AM peak-hour and slightly less than100 vehicles during both the Noon and PM peak hours. Consideration of a separate right-turn lane serving this movement should be reviewed under future conditions as traffic volumes increase at this intersection. Recommendation of a 100-foot turning lane and a 150-foot taper is suggested if this auxiliary lane is installed.

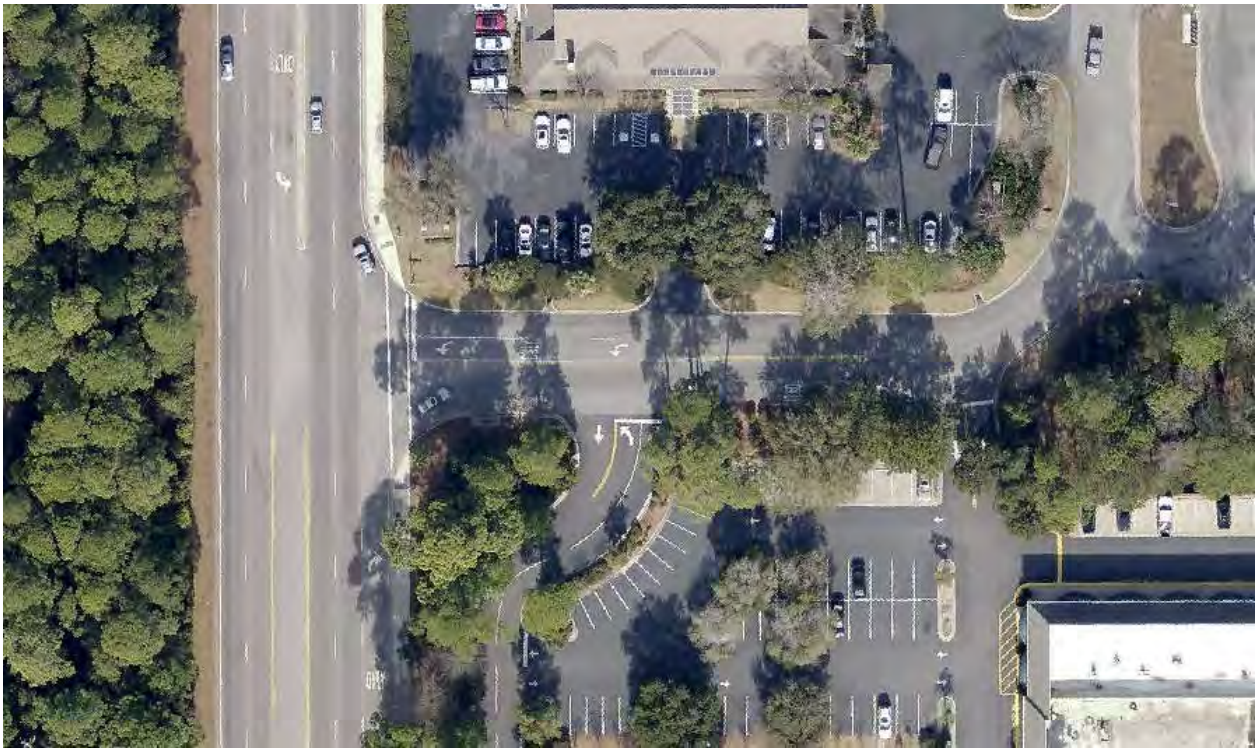
PBR AT BOW CIRCLE

Part of the PBR corridor this is a three-legged unsignalized intersection that eventually connects with Arrow Road to the east via a circuitous path of right angle intersections. Bow Circle provides access to multiple business including the Post Office as well as provides back loaded access to businesses that front PBR.

EXISTING CONDITIONS

Geometrics

The following provides a graphic of the existing intersection geometrics:



Description

Approach:	Northbound	
Name:	**Palmetto Bay Road**	
	# Lanes	Storage (ft)
Left	NA	
Through	2	
Right	1	200

Approach:	Southbound	
Name:	**Palmetto Bay Road**	
	# Lanes	Storage (ft)
Left	1	175
Through	2	
Right	NA	

Approach:	Westbound	
Name:	**Bow Circle**	
	# Lanes	Storage (ft)
Left	1	125
Through	NA	
Right	1	>300

Accident History

Palmetto Bay Road at Bow Circle

Year	Annual # Accidents	Angle[a]	Rear End	Sideswipe	Fixed Obj[b]	Other	Summer Months (June-Aug)	Involved Bike or Ped
2015 (Jan-June)	2	11	1					
2014	2	1		1			1	
2013	1	1					1	
2012 (July-Dec)	3	3					2	
Total Crashes	8	16	1	1	0	0	4	0
Avg. Per Year	***2.7***						***1.3***	

Note: Information provided by Town of Hilton Head.

a. Angle or cross-movement type collision.

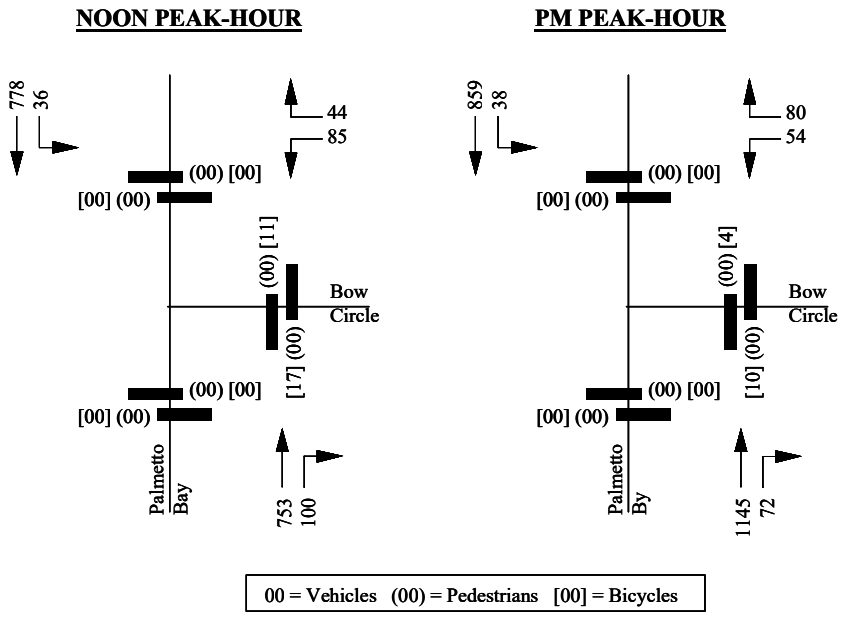
b. Vehicle collided with fixed object, typically ran off roadway.

The frequency of accidents at this intersection is slightly less than three accidents per year with a three year total of 8 accidents. A majority of these accidents were angle with approximately five angled accidents per year. Summer month registered nearly 50-percent of the three year total. No reported accidents involving a pedestrian and/or bicyclist.

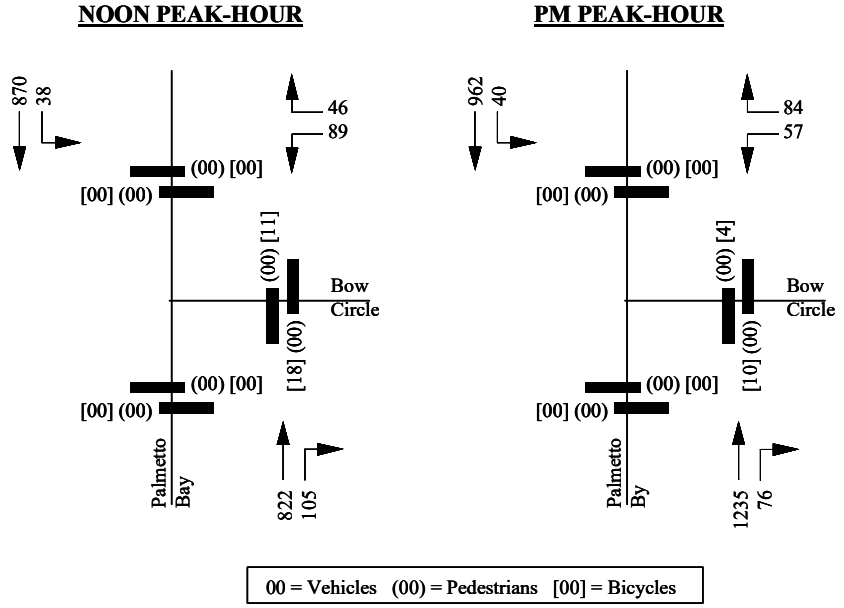
Traffic Volumes

Existing peak-hour volumes gathered during the second week of June 2015 are present below which represent the NOON and PM peak-hours time periods. Following the 2015 peak-hour volumes are the two Future year conditions which reflect 2020 (5-year) and 2030 (15-year) peak-hour volume projections.

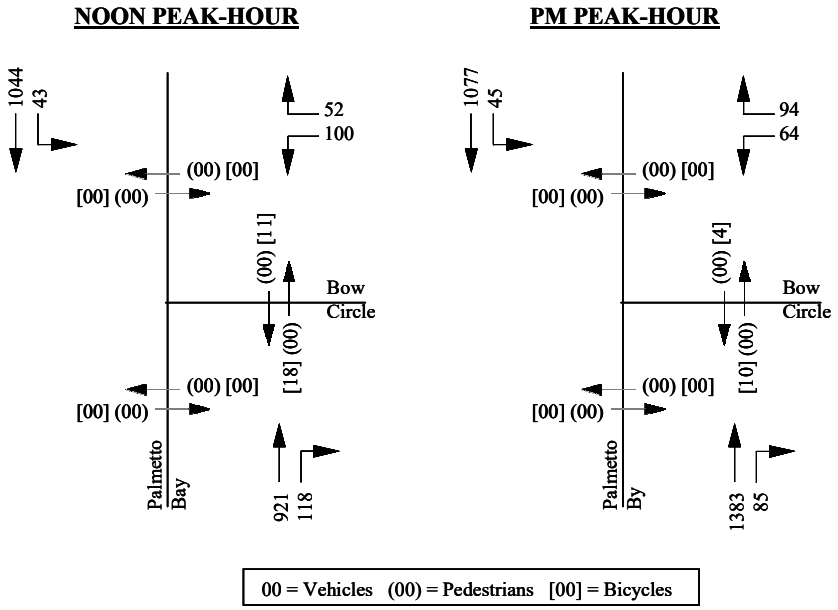
2015 Existing Peak-Hour Volumes



2020 Peak-Hour Volumes



2030 Peak-Hour Volumes



Intersection Operations

Service Levels:

Intersection	Peak Hour	2015 Existing V/C[2]	2015 Existing Delay[3]	2015 Existing LOS[4]	5-Year (2020) V/C	5-Year (2020) Delay	5-Year (2020) LOS	15-Year (2030) V/C	15-Year (2030) Delay	15-Year (2030) LOS
Palmetto Bay Road at Bow Circle	NOON	-	25.6	D	-	31.0	D	-	42.4	E
	PM	-	36.3	E	-	46.3	E	-	70.8	F

1. Calculations completed using the 2010 HCM methodology.
2. V/C=Volume-to-capacity ratio, basis HCM 2000.
3. Delay in seconds-per-vehicle.
4. Level-of-Service.

GENERAL NOTES:

1. For unsignalized intersections, delay is representative of the minor street worst approach.

As shown, operations at this intersection are currently a LOS D during the NOON peak-hour and a LOS E during the PM peak-hour and a delay of 36.3 seconds. The same service levels are expected under the Future 5-Year 2020 conditions with slightly greater delays. Future 2030 conditions reflect a LOS E during the NOON time period and a LOS F during the PM Peak-hour.

These poor service levels are due to the minor street left-turn movement and are not representative of the over-all intersection operations. Through traffic northbound and southbound on PBR (major street traffic) is not affected and typically not impacted by the minor street left movement.

Operations along an arterial such as PBR for unsignalized intersection typically have incur delays simply due to the traffic flow on the major street. This intersection does provide a center two-way left-turn lane (TWLTL) within PBR to the south of Bow Circle which does provide an advantage for the minor street left-turn which can utilize the center TWLTL for a two step minor street left-turn movement.

Storage Lane Queues:

Palmetto Bay Road at Bow Circle

			2015 Existing		5-Year (2020)		15-Year (2030)	
		Stacking	Noon	PM	Noon	PM	Noon	PM
NB	Left	NA						
	Right	200	0	0	0	0	0	0
SB	Left	175	4	7	5	8	6	11
	Right	NA						
EB	Left	NA						
	Right	NA						
WB	Left	125	93	24	35	142	49	196
	Right	>300	7	19	7	22	9	30

Lengths represented in feet.

As indicated by the calculated vehicle queuing, the westbound left-turn from Bow Circle to southbound PBR is anticipated to exceed the available storage length under the 5-Year 2020 and 15-Year 2030 conditions during the PM peak-hour.

RECOMMENDATIONS

Intersection operations indicate some delay for the minor street left-turn movement from Bow Circle. This delay is not excessive during any of the conditions analyzed and is typical of unsignalized intersections along a major arterial. Based on this, no improvements are suggested for this intersection at this time.

PBR AT ARCHER ROAD

Part of the PBR corridor this Archer Road is also a three-legged unsignalized intersection similar to Bow Circle in that it provides access to Arrow Road to the east. Archer Road is an east/west oriented local roadway approximately 730-feet in length between PBR and Arrow Road and serves multiple business which are located between PBR and Arrow Road.

EXISTING CONDITIONS

Geometrics

The following provides a graphic of the existing intersection geometrics:

Description

Approach:	Northbound	
Name:	**Palmetto Bay Road**	
	# Lanes	Storage (ft)
Left	NA	
Through	2	
Right	1	170

Approach:	Southbound	
Name:	**Palmetto Bay Road**	
	# Lanes	Storage (ft)
Left	1	200
Through	2	
Right	NA	

Approach:	Westbound	
Name:	**Archer Road**	
	# Lanes	Storage (ft)
Left	1	>300
Through	NA	
Right	1	280

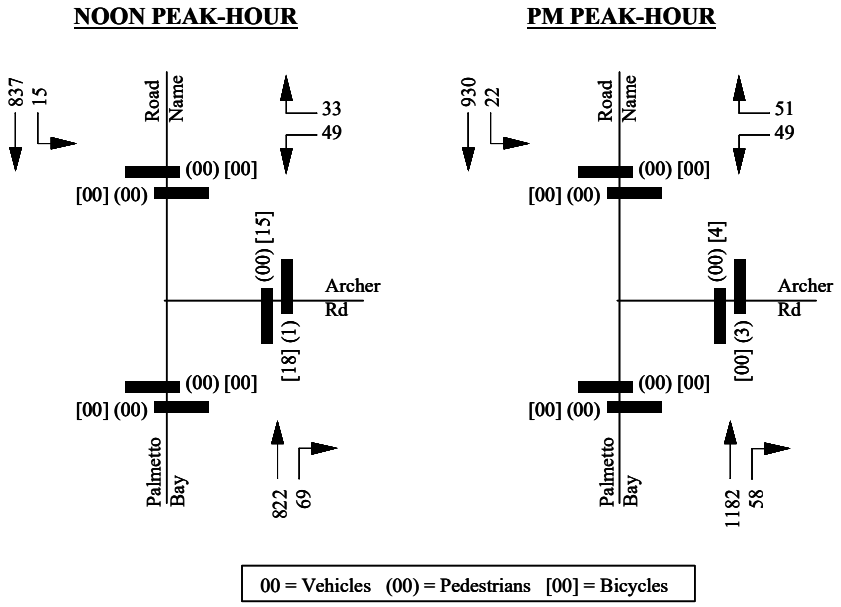
Accident History

Reported accident data specific to this intersection for the three-year period reflect an insignificant number of crashes.

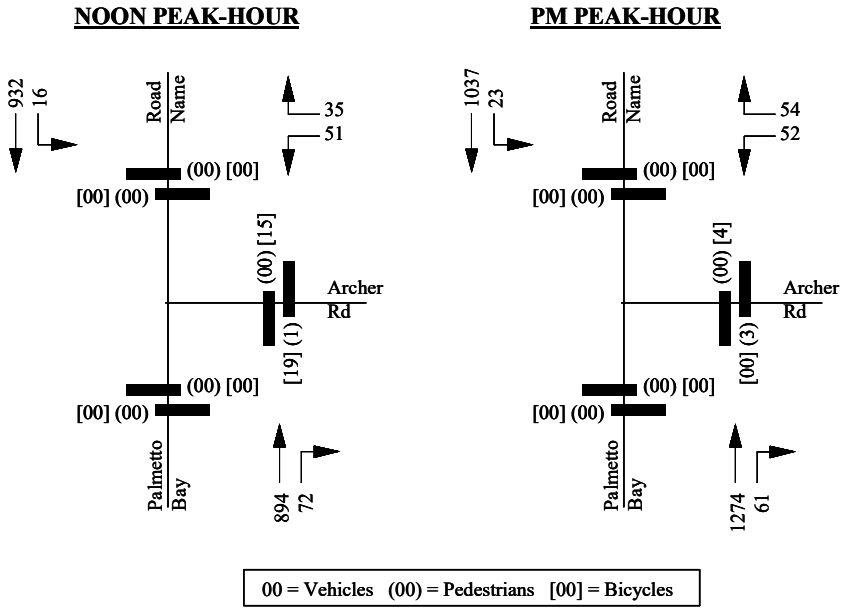
Traffic Volumes

Existing peak-hour volumes gathered during the second week of June 2015 are present below which represent the NOON and PM peak-hours time periods. Following the 2015 peak-hour volumes are the two Future year conditions which reflect 2020 (5-year) and 2030 (15-year) peak-hour volume projections.

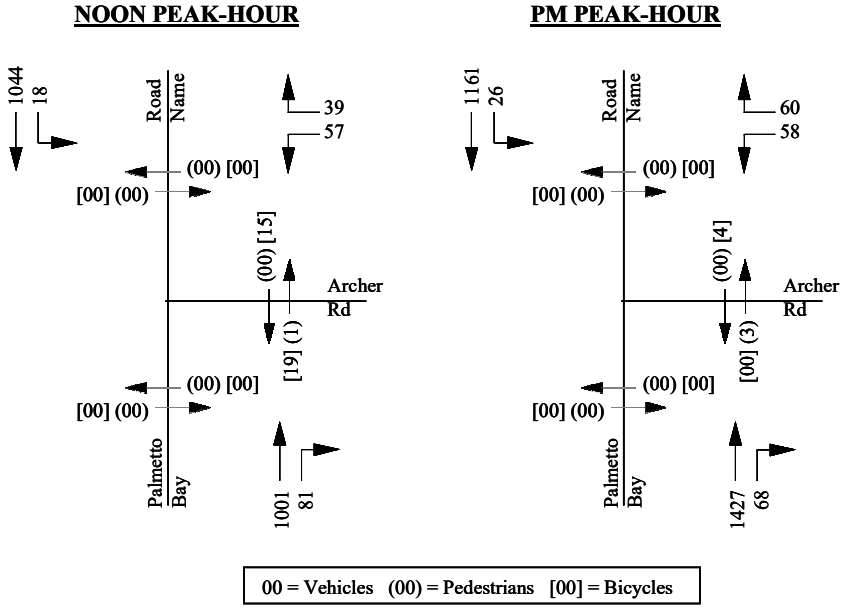
2015 Existing Peak-Hour Volumes



2020 Peak-Hour Volumes



2030 Peak-Hour Volumes



Intersection Operations

Service Levels:

Intersection	Peak Hour	2015 Existing V/C[2]	2015 Existing Delay[3]	2015 Existing LOS[4]	5-Year (2020) V/C	5-Year (2020) Delay	5-Year (2020) LOS	15-Year (2030) V/C	15-Year (2030) Delay	15-Year (2030) LOS
Palmetto Bay Road at Archer Road	NOON	-	23.1	C	-	26.0	D	-	32.3	D
	PM	-	37.7	E	-	46.7	E	-	69.3	F

1. Calculations completed using the 2010 HCM methodology.
2. V/C=Volume-to-capacity ratio, basis HCM 2000.
3. Delay in seconds-per-vehicle.
4. Level-of-Service.

GENERAL NOTES:

1. For unsignalized intersections, delay is representative of the minor street worst approach.

The operations of this intersection are very similar to that of Bow Circle which was previously addressed. These poor service levels are due to the minor street left-turn movement and are not representative of the over-all intersection operations. Through traffic northbound and southbound on PBR (major street traffic) is not affected and typically not impacted by the minor street left movement.

Operations along an arterial such as PBR for unsignalized intersection typically incur delays simply due to the traffic flow on the major street. This intersection does provide a center two-way left-turn lane (TWLTL) within PBR to the south of Archer which does provide an advantage for the minor street left-turn which can utilize the center TWLTL for a two step minor street left-turn movement.

Storage Lane Queues:

Palmetto Bay Road at Archer Road

			2015 Existing		5-Year (2020)		15-Year (2030)	
		Stacking	Noon	PM	Noon	PM	Noon	PM
NB	Left	NA						
	Right	170	0	0	0	0	0	0
SB	Left	200	2	4	2	4	3	6
	Right	NA						
EB	Left	NA						
	Right	NA						
WB	Left	>300	15	26	18	33	25	49
	Right	280	5	12	6	14	7	18

Lengths represented in feet.

As shown, stacking operations at this intersection under Existing Conditions are very good and no queue issues

RECOMMENDATIONS

Intersection operations indicate some delay for the minor street left-turn movement from Bow Circle. This delay is not excessive during any of the conditions analyzed and is typical of unsignalized intersections along a major arterial. Based on this, no improvements are suggested for this intersection at this time.

PBR AT TARGET ROAD/ISLAND CROSSINGS

Part of the Palmetto Bay Road corridor this is a four-legged signalized intersection which operates within the Town's traffic signal system. To the west, this intersection provides access to the Island Crossing Shopping Center. To the east, Target Road is approximately 780-feet in length and terminates at the intersection with Arrow Road.

EXISTING CONDITIONS

Geometrics

The following provides a graphic of the existing intersection geometrics:

Description

Approach:	Northbound	
Name:	**Palmetto Bay Road**	
	# Lanes	Storage (ft)
Left	1	90
Through	2	
Right	NA	

Approach:	Southbound	
Name:	**Palmetto Bay Road**	
	# Lanes	Storage (ft)
Left	1	210
Through	2	
Right	NA	

Approach:	Eastbound	
Name:	**Island Crossing**	
	# Lanes	Storage (ft)
Left	1	90
Thru/Right	1	90

Approach:	Westbound	
Name:	**Target Road**	
	# Lanes	Storage (ft)
Left	1	100
Through	1	
Right	1	100

Accident History

Palmetto Bay Road at Target Road/Island Crossing

Year	Annual # Accidents	Angle[a]	Rear End	Sideswipe	Fixed Obj.[b]	Other	Summer Months (June-Aug)	Involved Bike or Ped
2015 (Jan-June)	5	3	2				1	
2014	11	3	7		1		6	1
2013	8	4	3			1		1
2012 (July-Dec)	4	2	1	1				
Total Crashes	28	12	13	1	1	1	7	2
Avg. Per Year	***9.3***						***2.3***	

Note: Information provided by Town of Hilton Head.

a. Angle or cross-movement type collision.

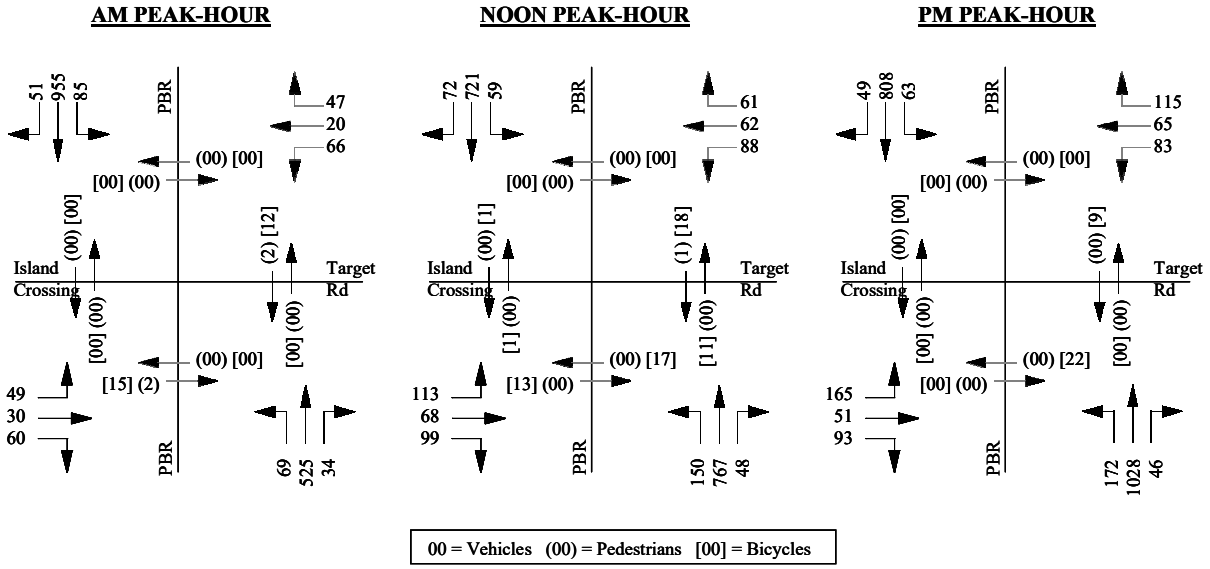
b. Vehicle collided with fixed object, typically ran off roadway.

The frequency of accidents at this intersection is slightly greater than nine accidents per year with a three year total of 28 accidents. A majority of these accidents were rear-end accidents and second were angle with 12 recorded in the three year period. Summer month registered 7 accidents and two accidents involved a pedestrian and/or bicyclist.

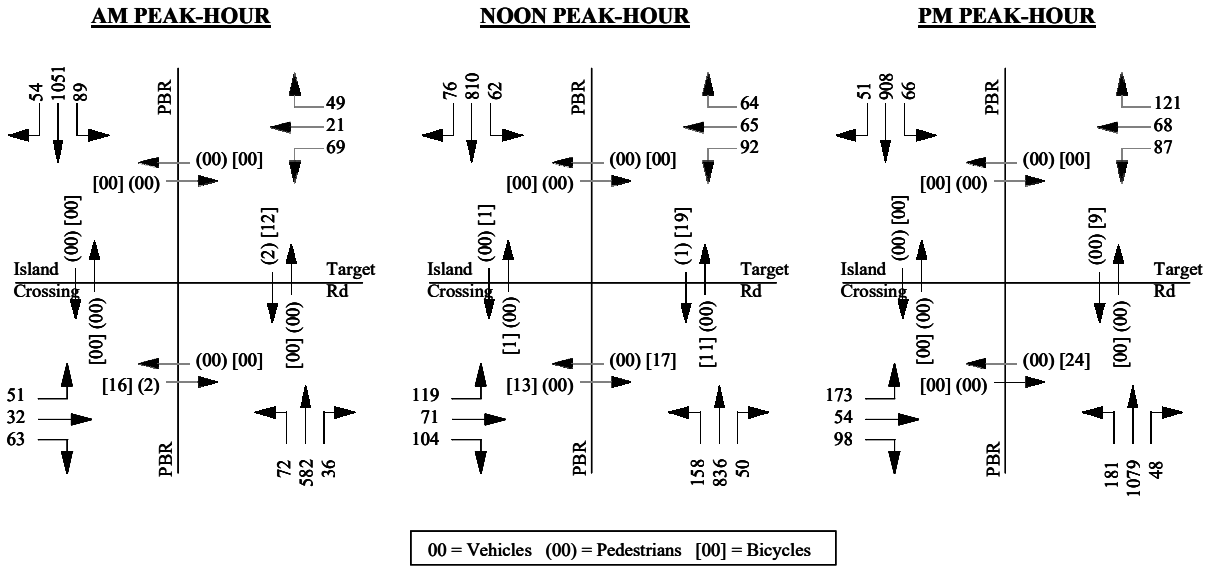
Traffic Volumes

Existing peak-hour volumes gathered during the second week of June 2015 are present below which represent the AM, NOON and PM peak-hours time periods. Following the 2015 peak-hour volumes are the two Future year conditions which reflect 2020 (5-year) and 2030 (15-year) peak-hour volume projections.

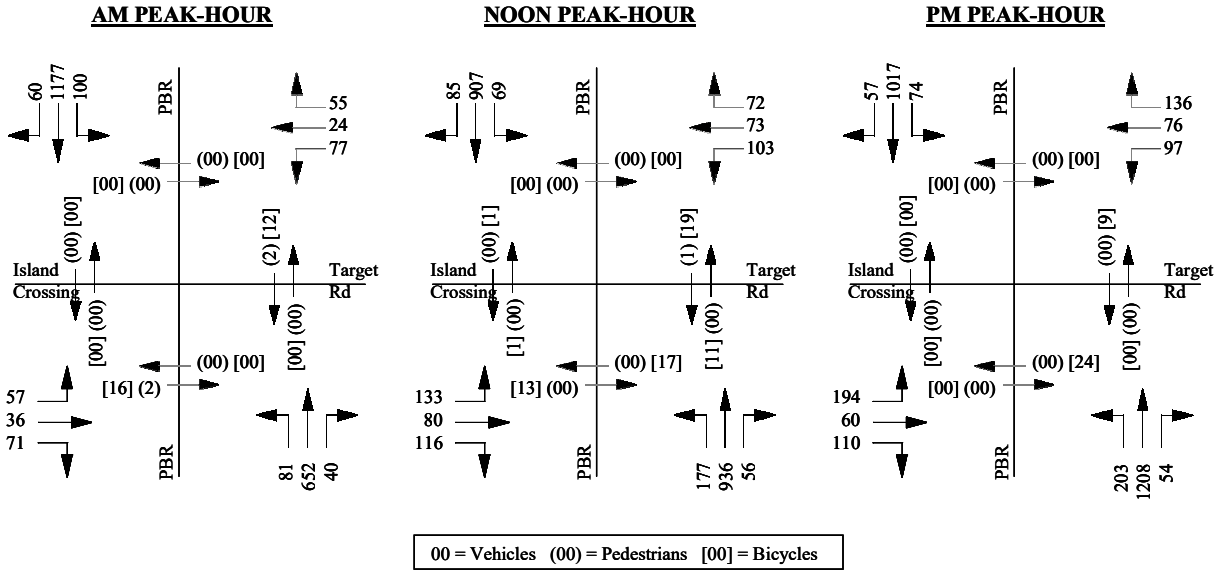
2015 Existing Peak-Hour Volumes



2020 Peak-Hour Volumes



2030 Peak-Hour Volumes



Intersection Operations

Service Levels:

Intersection	Peak Hour	2015 Existing V/C[2]	2015 Existing Delay[3]	2015 Existing LOS[4]	5-Year (2020) V/C	5-Year (2020) Delay	5-Year (2020) LOS	15-Year (2030) V/C	15-Year (2030) Delay	15-Year (2030) LOS
Palmetto Bay Road at Target Road/Island Crossing	AM	0.49	14.3	B	0.54	15.0	B	0.61	16.7	B
	NOON	0.49	22.1	C	0.54	22.9	C	0.62	24.6	C
	PM	0.59	23.5	C	0.63	24.7	C	0.71	27.2	C

1. Calculations completed using the 2010 HCM methodology.
2. V/C=Volume-to-capacity ratio, basis HCM 2000.
3. Delay in seconds-per-vehicle.
4. Level-of-Service.

GENERAL NOTES:

1. For signalized intersections, delay is representative of the over-all intersection weighted average of all approaches.

As shown, operations at this intersection are currently acceptable based on the LMO guidelines. Service levels B during the AM and Noon peak hours currently existing and the PM peak-hour is a LOS C. The same conditions are expected under the Future 2020 and 2030 conditions with a slight increase in V/C ratio and delays.

Storage Lane Queues:

Palmetto Bay Road at Target Road/Island Crossing

			2015 Existing			5-Year (2020)			15-Year (2030)		
		Stacking	AM	Noon	PM	AM	Noon	PM	AM	Noon	PM
NB	Left	90	34	91	104	22	96	111	39	107	124
	Right	NA									
SB	Left	210	39	47	50	24	49	52	44	53	57
	Right	NA									
EB	Left	90	62	122	176	41	128	185	71	116	207
	Right	NA									
WB	Left	100	82	107	98	59	112	104	94	99	114
	Right	100	12	0	32	4	0	30	19	5	68

Lengths represented in feet.

As shown, under the Existing, 5-Year (2020) and 15-Year (2030) conditions, the major street northbound left-turn from PBR entering Island Crossing currently exceeds the available storage length. Additionally, both minor street left-turn movements (eastbound from Island Crossing and westbound from Target Road also indicate storage length capacity issues.

RECOMMENDATIONS

From an intersection capacity standpoint, no improvements are needed to meet the LMO standards however the northbound left-turn movement needs to be addressed.

Currently back-to-back left-turn pockets are provided between this intersection and Dunnagans Alley to the south. This intersection is provided a 90-foot pocket while Dunnagans Alley is provided a 230-foot pocket.

It is suggested that the existing back-to-back left-turn lane be revises in order to provide 160-foot left-turn lanes for both the northbound approach for this intersection (northbound left entering Island Crossing) and southbound left-turn at the adjacent intersection at Dunnagans Alley.

Northwest Connector

A proposal for the provision of a new northwest connector through the Island Crossing Center will be discussed in detail later in this report as it pertains to operations of the Sea Pines Circle as well as Greenwood Drive. This connector is proposed to intersect PBR at this intersection and become the eastbound approach. This would require additional capacity in the form of turning lanes as well as up-grading of the traffic signal control.

The recommendations needed as part of the northwest connector are as follows:

Eastbound Approach (Island Crossing):

- Dual left-turn lanes, separate through lane and a separate right-turn lane;

Westbound Approach (Target Road):

- Single left-turn lane, separate through lane and a separate right-turn lane;

Southbound Approach (PBR):

- Add a separate right-turn lane.

Traffic Control:

- New signal control should incorporate a protected only eastbound left-turn phase for the dual left-turn lanes as well as right-turn over-lap phases where appropriate.

Intersection operations for this up-graded signalized intersection under the 5-Year (2020) and 15-Year (2030) conditions assuming the northwest connector are as follows:

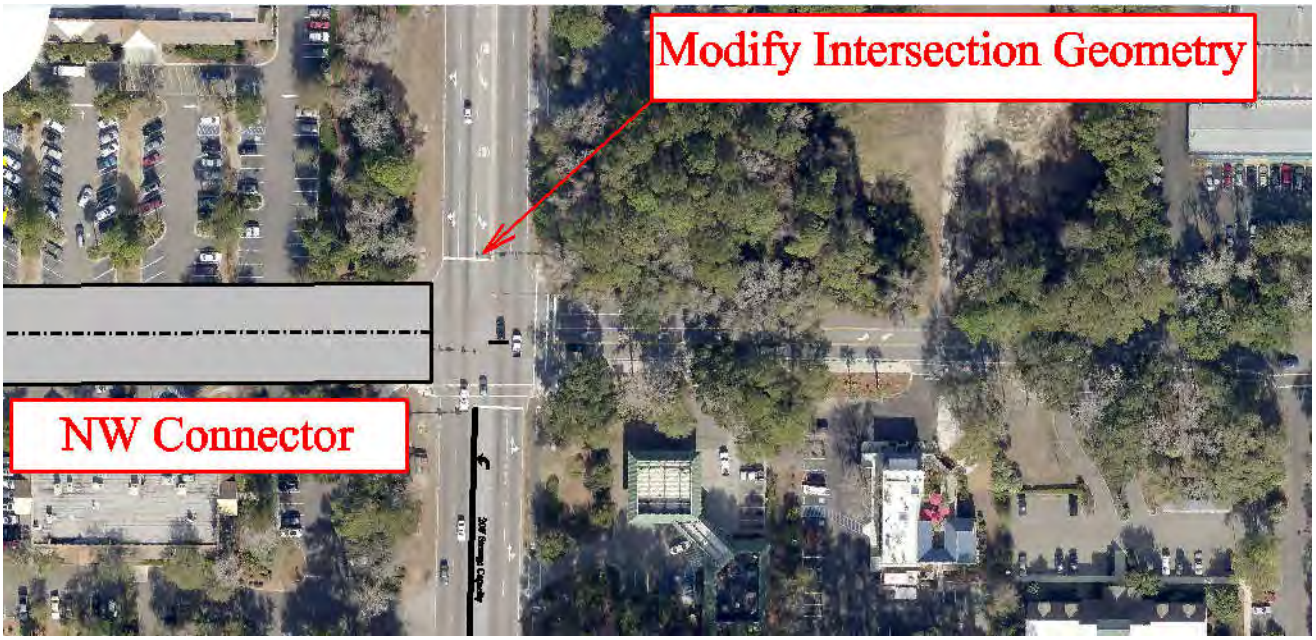
	5-Year (2020) NW Connector			15-Year (2030) NW Connector		
Intersection	**V/C**	**Delay**	**LOS**	**V/C**	**Delay**	**LOS**
Palmetto Bay Road at Target Road/Island Crossing	0.53	17.6	B	0.60	18.9	B
	0.51	26.6	C	0.58	27.9	C
	0.64	28.0	C	0.72	30.5	C

1. Calculations completed using the 2010 HCM methodology.
2. V/C=Volume-to-capacity ratio, basis HCM 2000.
3. Delay in seconds-per-vehicle.
4. Level-of-Service.

GENERAL NOTES:

1. For signalized intersections, delay is representative of the over-all intersection weighted average of all approaches.

Concept Plan



PBR AT DUNNAGANS ALLEY/ENMARK ACCESS

Part of the PBR corridor this is a four-legged unsignalized intersection which provided access to the EnMark Gas/Convenience-store to the west and Dunnagans Alley to the east which serves as a service roadway paralleling US 278B where it terminates at the Town Hall.

EXISTING CONDITIONS

Geometrics

The following provides a graphic of the existing intersection geometrics:

Description

Approach:	Northbound	
Name:	**Palmetto Bay Road**	
	# Lanes	Storage (ft)
Left	TWLTL	25
Through	2	
Right	NA	

Approach:	Southbound	
Name:	**Palmetto Bay Road**	
	# Lanes	Storage (ft)
Left	1	230
Through	2	
Right	NA	

Approach:	Eastbound	
Name:	**EnMark**	
	# Lanes	Storage (ft)
Left	1	25
Thru/Right	1	25

Approach:	Westbound	
Name:	**Dunnagans Alley**	
	# Lanes	Storage (ft)
Left	1	125
Thru/Right	1	

Accident History

Palmetto Bay Road at Dunnagans Alley/EnMark

Year	Annual # Accidents	Angle[a]	Rear End	Sideswipe	Fixed Obj[b]	Other	Summer Months (June-Aug)	Involved Bike or Ped
2015 (Jan-June)	3	1	1		1		1	
2014	16	8	4	2	2		10	
2013	8	3	3	2			4	
2012 (July-Dec)	4		2	2			2	
Total Crashes	31	12	10	6	3	0	17	0
Avg. Per Year	***10.3***						***5.7***	

Note: Information provided by Town of Hilton Head.

a. Angle or cross-movement type collision.

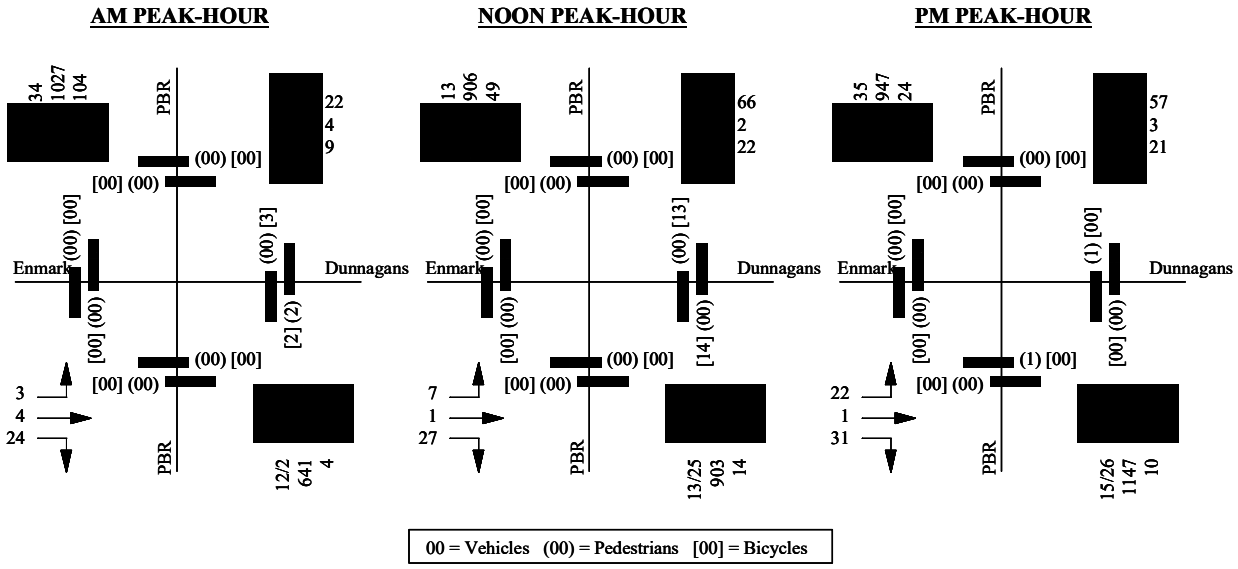
b. Vehicle collided with fixed object, typically ran off roadway.

The frequency of accidents at this intersection is slightly greater than ten accidents per year with a three year total of 31 accidents. A majority of these accidents were angle with 12 recorded in the three year period. followed by rear-end type accidents. Summer month registered 17 accidents. None of the recorded accident involved either a pedestrian and/or bicyclist.

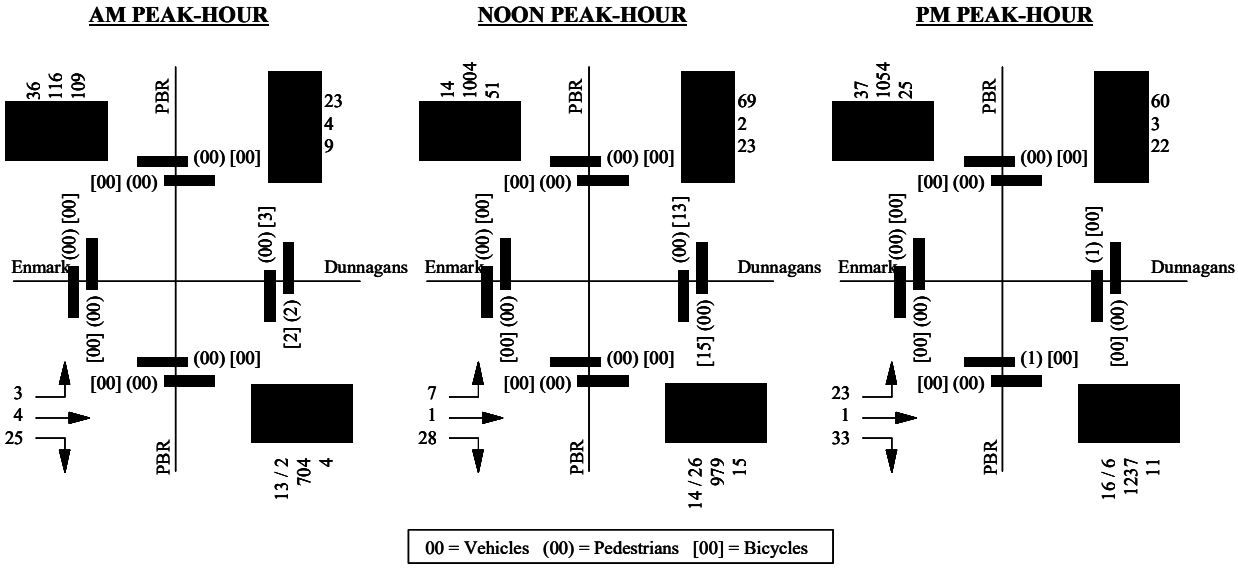
Traffic Volumes

Existing peak-hour volumes gathered during the second week of June 2015 are present below which represent the AM, NOON and PM peak-hours time periods. Following the 2015 peak-hour volumes are the two Future year conditions which reflect 2020 (5-year) and 2030 (15-year) peak-hour volume projections.

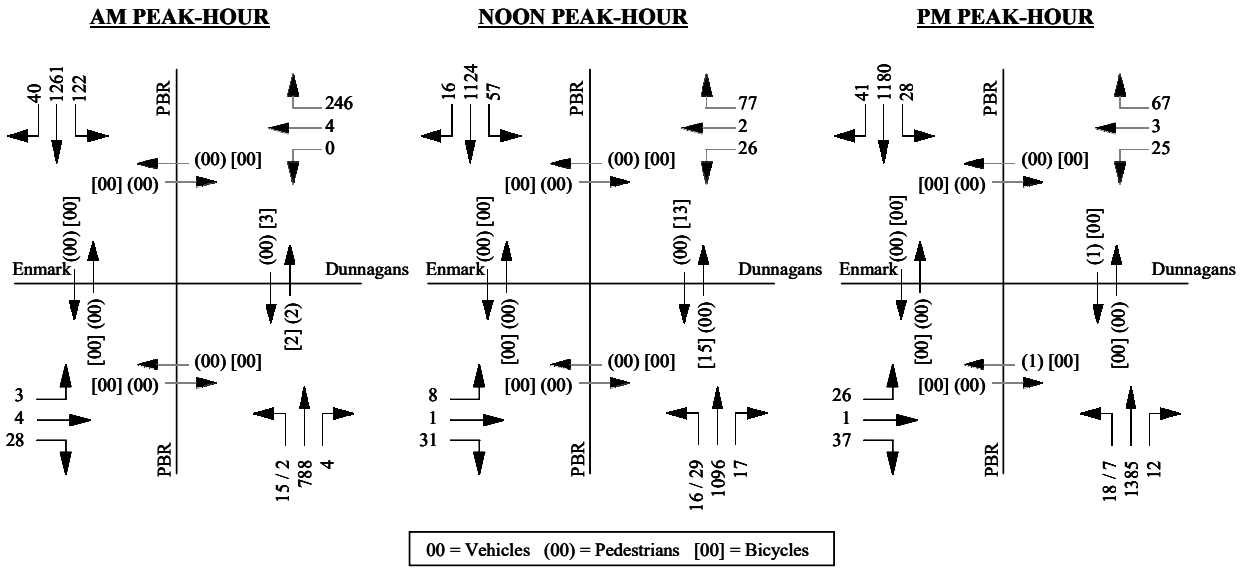
2015 Existing Peak-Hour Volumes



2020 Peak-Hour Volumes



2030 Peak-Hour Volumes



Intersection Operations

Service Levels:

Intersection	Peak Hour	2015 Existing V/C[2]	2015 Existing Delay[3]	2015 Existing LOS[4]	5-Year (2020) V/C	5-Year (2020) Delay	5-Year (2020) LOS	15-Year (2030) V/C	15-Year (2030) Delay	15-Year (2030) LOS
Palmetto Bay Road at Dunnigans Alley/EnMark	AM	-	95.6	F	-	134.3	F	-	250.2	F
	NOON	-	119.9	F	-	190.7	F	-	420.4	F
	PM	-	201.7	F	-	>500.0	F	-	>500.0	F

1. Calculations completed using the 2010 HCM methodology.
2. V/C=Volume-to-capacity ratio, basis HCM 2000.
3. Delay in seconds-per-vehicle.
4. Level-of-Service.

GENERAL NOTES:

1. For signalized intersections, delay is representative of the over-all intersection weighted average of all approaches.

As shown, under Existing, operations at this intersection are currently a LOS F for each of the peak hours studied with delays ranging from slightly less than 100-seconds during the AM peak hour to over 200-seconds during the PM peak-hour. These delays are due to the minor street left-turn movement and are not representative of the over-all intersection operations. Through traffic northbound and southbound on PBR (major street traffic) is not affected and typically is not impacted.

Future 5-Year 2020 and 15-Year 2030 conditions indicate the same poor service levels for the minor street left-turn movements.

Storage Lane Queues:

Palmetto Bay Road at Dunnagans Alley/EnMark

			2015 Existing			5-Year (2020)			15-Year (2030)		
		Stacking	AM	Noon	PM	AM	Noon	PM	AM	Noon	PM
NB	Left	25	0	3	1	0	3	1	0	4	1
	Right	NA									
SB	Left	230	11	6	4	13	7	4	16	9	6
	Right	NA									
EB	Left	25	1	3	10	2	4	12	3	5	17
	Right	25	3	3	3	3	3	3	3	3	4
WB	Left	125	3	9	12	3	11	15	4	16	22
	Right	>300	5	13	15	5	15	17	7	19	24

Lengths represented in feet.

As indicated by the calculated vehicle queuing, there are no expected stacking issues at this intersection. Even the minor street left-turn movements (eastbound from EnMark and westbound from Dunnagans Alley) do not indicate queuing issues which is due to the relatively low volume of minor street left-turns.

RECOMMENDATIONS

This intersection currently operates with capacity issues for the minor street left-turn movements from both Dunnagans Alley as well as existing the EnMark Gas/C-Store. Combined with the high frequency of angle type accidents (12 in three years), it is suggested that geometrics changes occur which will aid in both operations as well as reduce the angle type accidents.

A raised median between Sea Pines Circle and through this intersection should be constructed. This median will allow the southbound left-turn movement from PBR into Dunnagans Alley but will eliminate all remaining left-turn movements (no left-turns entering or exiting EnMark, nor no left-turn exiting Dunnagans Alley). Modification to both the Dunnagans Alley and EnMark approaches would also be needed in order to geometrically prohibit the desired left-turn movements and allow the left-turn into Dunnagans Alley from southbound PBR. This displaced minor street left-turn movement can be accommodated by the immediate roadway layout/system with minor diversions.

In combination with this median, revise the raised median between Dunnagans Alley and Target Road in order to reduce the current 230-feet of storage for the southbound left-turn into Dunnagans Alley and increase the northbound left-turn storage (currently only 90-feet) for the northbound left-turn movement into Island Crossing. This "back-to-back" left-turn design should provide a new storage increase to 200-feet for Island Crossing leaving 120-feet for the southbound left-turn into Dunnagans Alley.

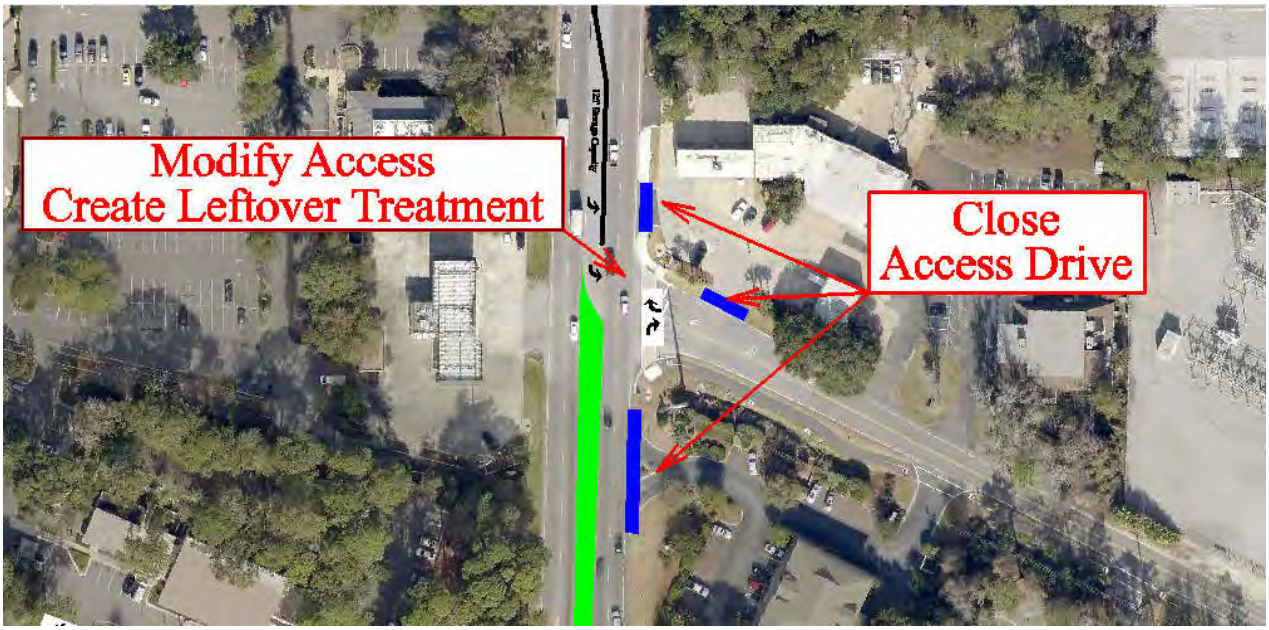
Also, the closure of the First Federal access to/from PBR should be considered. This access is currently a RIRO drive (delta median located within access) however drivers were observed to not fully obey this restriction. Additionally, accident history suggests weaving maneuvers as well as rear-end type accidents occur when drivers entered this access from PBR. This site currently has access to/from Dunnagans Alley 230-feet east of PBR which would serve as traffic if this access is closed.

Another access management suggestion is to review access to the adjacent Island Tire facility located in the northeast corner of this intersection. Currently this site has two RIRO access drives to PBR and one full-movement access to Dunnagans Alley and a connectivity drive to the next site to the east (Millennium Club). It is suggested that the RIRO access drive closest to Dunnagans Alley (approx. 25-feet north of Dunnagans

Alley), and the drive on Dunnagans Alley (approx. 50-feet east of PBR) both be closed. Access would continue to be provided via the RIRO access on PBR (110-feet north of Dunnagans Alley) as well as the cross-access to the east which provided full-access to Dunnagans Alley (approx. 175-feet to the east).

Implementation of the improvements for the Dunnagans Alley intersection will drastically improve operations from the LOS F that was presented above to acceptable service levels during all peak hours studied; LOS C or better.

Concept Plan



SUMMARY of IMPROVEMENTS: Palmetto Bay Road

- PBR at Point Comfort Road/Arrow Road:

    1. As needed under future conditions, signal timing changes maybe needed to reduce the eastbound queue on Point Comfort Road. Review warrants/need for possible protected/permissive phasing as traffic volumes increase on the minor street approach.

- PBR at Island Crossing/Target Road:

    1. Increase the northbound left-turn storage volume to 200-feet which will result in a back-to-back left-turn pockets with this intersection and Dunnagans Alley to the south.
    2. Creation of the Northwest Connector through Island Crossing will necessitate that geometry at this intersection be changes to accommodate greater cross-section approaches on both Island Crossing as well as Target Road.
    3. Modification to signal phasing and timing as needed to accommodate the new intersection geometry.

- PBR at Dunnagans Alley/EnMark:

    1. Extend a raised median from the Sea Pines Circle to the Dunnagans Alley/EnMark intersection.
    2. Prohibit the eastbound, westbound and northbound left-turn movements.
    3. Allow southbound left-turn movements from PBR to Dunnagans Alley.
    4. Close access drives in close proximity of intersection, one accessing PBR (First Federal) and one accessing Island Tire.

CORRIDOR of POPE AVENUE

Pope Avenue is designated as a Principal Arterial and consists of the seven intersections of Office Park Road/New Orleans Road, Executive Circle North, Executive Circle South, Cordillo Parkway, Waterside Drive, Nassau Street and Lagoon Road. Total length of this corridor is approximately 5,600-feet (1.06-miles) which encompasses the above referenced intersections of which Office Park Road/New Orleans Road and Cordillo Parkway are under traffic signal control and the remaining five intersections operate as unsignalized/STOP sign control intersections.

EXISTING CONDITIONS

Geometrics

Pope Avenue through the entire corridor provides a four-lane divided cross-section where directional traffic flow is separated by a landscaped median. Median breaks typically provide separate left-turn lanes and provide access to roadways/collectors as well as local businesses.

Along both the east and west sides of Pope Avenue, a 10-foot wide off-street multi-use bike/pedestrian pathway is provided for the entire length of this segment with exception of a short segment on the west side between Sea Pines Circle and Office Way. This segment of the multi-use lane is directed onto Office Way and/or Office Park Road in order to avoid bikes and pedestrians from entering or crossing roadways (US 278B, PBR, Pope Avenue or Greenwood Drive) within the vicinity of the Sea Pines Circle.

Traffic Volumes

Daily traffic volumes as indicated by the 2015 LCOG Transportation model indicate a two-way average annual daily traffic volume (AADT) of 30,100 vpd at a point just north of Cordillo Parkway. Daily traffic volumes collected along this section of US 278B during the second week of June 2015 indicate a two-way daily volume of 32,000 vpd. These volumes correlate to a LOS C under both the average condition and seasonal condition in accordance with the Minimum ADT (max. 38,640 LOS D divided Principal Arterial) by Level-of-Service for Urban Facilities provided by the SCDOT.

The existing multi-use paths along both sides of Pope Avenue are highly utilized and serve significant volumes of both bicyclists and pedestrians. Counts conducted between the hours of 11AM- 3PM during the second week in June 2015 indicate a total volume of 543 bicyclists and 141 pedestrians utilizing the pathway on the eastside of Pope Avenue and on the west side, 330 bicyclists and 133 pedestrians. Total for both pathways along Pope Avenue are 873 bicyclists and 264 pedestrians during this 4-hour period.

Accident History

Three years of summarized accident data for this entire corridor has been provided which include all accidents at the three signalized intersections contained within the segment as well as accidents that were in between intersections.

Corridor of Pope Avenue

Year	Annual # Accidents	Angle[a]	Rear End	Sideswipe	Fixed Obj[b]	Other	Summer Months (June-Aug)	Involved Bike or Ped
2015 (Jan-June)	39	15	16	4	4		9	1
2014	72	33	5	5		1	36	9
2013	55	21	30	1	2	1	20	4
2012 (July-Dec)	21	13	6	1		1	12	1
Total Crashes	187	82	57	11	6	3	77	15
Avg. Per Year	***62.3***						***25.7***	

Note: Information provided by Town of Hilton Head.

a. Angle or cross-movement type collision.

b. Vehicle collided with fixed object, typically ran off roadway.

As shown, this approximate one-mile section totaled 187 accidents over the three-year period resulting in an average of 62 accidents per year. The majority of accident types are angle/cross-movement type with a total of 82 while the second greatest accident type is rear-end (57). On average, 41-percent of these accidents occur during the summer months and 15 involved pedestrians and/or bicyclists.

FUTURE 2030 CONDITIONS

Future traffic demands as expected by the LCOG transportation model indicate that Pope Avenue will serve an AADT of 34,500 vpd under 2030 conditions. Summer daily volumes are anticipated at 36,700 daily vehicles. These volumes correlate to a LOS D in accordance with the Minimum ADT (max. 38,640 LOS D divided Principal Arterial) by Level-of-Service for Urban Facilities provided by the SCDOT.

RECOMMENDATIONS

Parallel Roadway Alternatives

Two alternate concepts have been reviewed in an attempt to address the volume of daily traffic expected to be utilizing Pope Avenue which is expected to be significant under the 2030 condition resulting in a LOS E. Both of these roadway alternatives were estimated by utilizing the LCOG transportation model for the 15-Year 2030 conditions and provide an alternate north/south route to Pope Avenue which are intended to relieve a portion of the expected traffic loading

Roadway Eastside of Pope Avenue: A new roadway paralleling Pope Avenue on the east side connecting from New Orleans Road south to Executive Circle, extending through Cordillo Parkway to Lagoon presumably aligning opposite Avocet Road. This new parallel roadway is intended to provide an alternative route from US 278B to the Coligny Plaza/North Forest Beach area resulting in the relieve the growing traffic volumes on Pope. Specifics of this new roadway alternative are as follows:

- Expected daily traffic volume on new parallel roadway: 5,600-9,500 vpd;
- 2030 Future daily traffic volumes Pope Ave. (No parallel roadway): 34,500 vpd (North of Shipyard Plantationn);
- Expected daily traffic volume on Pope Avenue (With Parallel roadway): 24,100 vpd; and
- Reduction in daily traffic volumes on Pope Avenue: 9,600 vpd (a 28% reduction).

This new north/south roadway would provide a marginal relief to Pope Avenue in that the new expected daily volume has been reduced from 34,500 vpd to 24,100 vpd. It is anticipated that this roadway would serve as more a localized collector providing connectivity for drivers familiar with the area. This net reduction would correlate to a LOS B for Pope Avenue under both conditions with and without the eastern parallel roadway.

Roadway Westside of Pope Avenue: A new roadway paralleling Pope Avenue to the west side connecting Office Park Road through Boggy Gut and connecting to Cordillo Parkway presumably aligning opposite DeAllyon Avenue. This new parallel roadway is intended to provide an alternative route from the Sea Pines area to South Forest Beach resulting in the relieve the growing traffic volumes on Pope. Specifics of this new roadway alternative are as follows:

- Expected daily traffic volume on this roadway: 8,330 vpd;
- 2030 Future daily traffic volumes Pope Ave. (No parallel roadway): 34,500 vpd
- Expected daily traffic volume on Pope Avenue (With Parallel roadway): 20,850 vpd;
- Reduction in daily traffic volumes on Pope Avenue: 10,200 vpd (a 30% reduction); and
- Expected daily traffic volume on Northwest Connector (Greenwood to PBR): 16,550 vpd.

As shown, this new roadway would provide a significant relief to Pope Avenue in that the new expected daily volume has been reduced from over 34,500 vpd to 20,800 vpd. This net reduction would correlate to an improvement in service level (LOS B) for Pope in accordance with the Minimum ADT (max. 38,640 LOS D divided Principal Arterial) by Level-of-Service for Urban Facilities provided by the SCDOT.

Multi-Use Paths

Given the current high usage of the multi-use paths along Pope Avenue, review the potential of widening the both the east and west sides of Pope Avenue from the current 10-foot width to 12-feet or greater. If widening both sides are not possible due to right-of-way issues, etc, widen only the multi-use path on the western side which has the greater pedestrian and bike usage.

POPE AVENUE AT OFFICE PARK & NEW ORLEANS ROADS

Part of the Pope Avenue corridor, this is a four-legged signalized intersection which operates within the Town's traffic signal system. To the west, this intersection provides access to commercial uses including the proposed USCB/OLLI facility and then terminates at Greenwood Drive in close proximity to the Sea Pines PUD front gate. To the east, New Orleans Road access to commercial uses and then terminates into US 278B at a four-legged signalized intersection opposite Wexford Drive.

EXISTING CONDITIONS

Geometrics

The following provides a graphic and description of the existing intersection geometrics:

Description

Approach:	Northbound	
Name:	**Pope Avenue**	
	# Lanes	Storage (ft)
Left	1	180
Through	2	
Right	NA	

Approach:	Southbound	
Name:	**Pope Avenue**	
	# Lanes	Storage (ft)
Left	1	125
Through	2	
Right	NA	

Approach:	Eastbound	
Name:	**Office Park Road**	
	# Lanes	Storage (ft)
Left/Thru	1	200
Right	1	110

Approach:	Westbound	
Name:	**New Orleans Road**	
	# Lanes	Storage (ft)
Left	1	>300
Left/Thru	1	200
Right	1	200

It should be noted that this intersection is planned to be improved as part of the USCB/OLLI project which will modify three approaches to the intersection by adding turning lanes as described below:

1. Eastbound Approach (Office Park Road):
    - Widen approach to provide a separate left-turn lane, through lane and a separate right-turn lane;

2. Westbound Approach (New Orleans Road):
    - Relocated approach to the south to align opposing roadways;
    - New approach to provide dual left-turn lanes, a through lane and a separate right-turn lane.

3. Southbound Approach (Pope Avenue):
    - Widen to provide a separate right-turn lane entering Office Park Road.

4. Traffic Signal Control:
    - Modify signal to remove existing split phasing eastbound and westbound. Optimize operations as well as corridor synchronization.

Accident History

Pope Avenue at New Orleans Road

Year	Annual # Accidents	Angle[a]	Rear End	Sideswipe	Fixed Obj[b]	Other	Summer Months (June-Aug)	Involved Bike or Ped
2015 (Jan-June)	9	5	1	1	2		4	1
2014	19	8	10	1			6	
2013	9	2	6		1		5	
2012 (July-Dec)	5	2	3				3	
Total Crashes	42	17	20	2	3	0	18	1
Avg. Per Year	***14.0***						***6.0***	

Note: Information provided by Town of Hilton Head.

a. Angle or cross-movement type collision.

b. Vehicle collided with fixed object, typically ran off roadway.

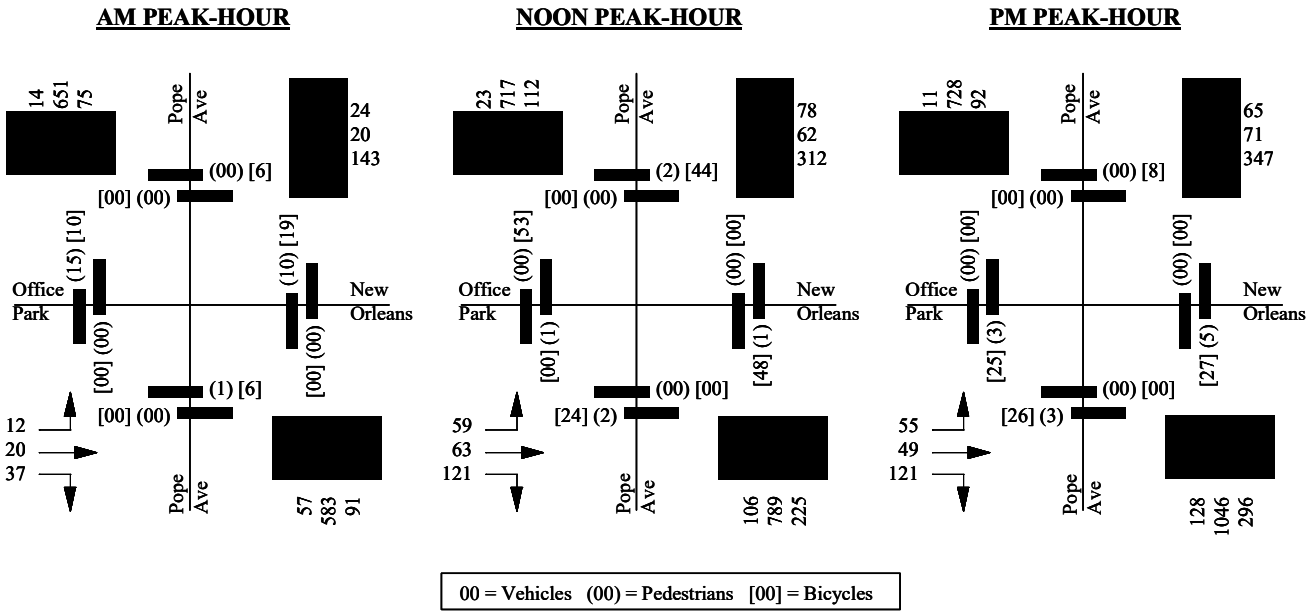
As indicated, an average of 14 accidents per year have occurred with approximately half being rear-end type likely due to drivers following to close and/or inattention. These rear-end accident types can also be attributed to the fact that vehicle queues can extend through his intersection from the Sea Pines Circle located 800-feet to the north.

A total of 18 accidents (43-percent of the accident total) occurred during the summer months and one accident was reported involved either a pedestrian or bicyclist.

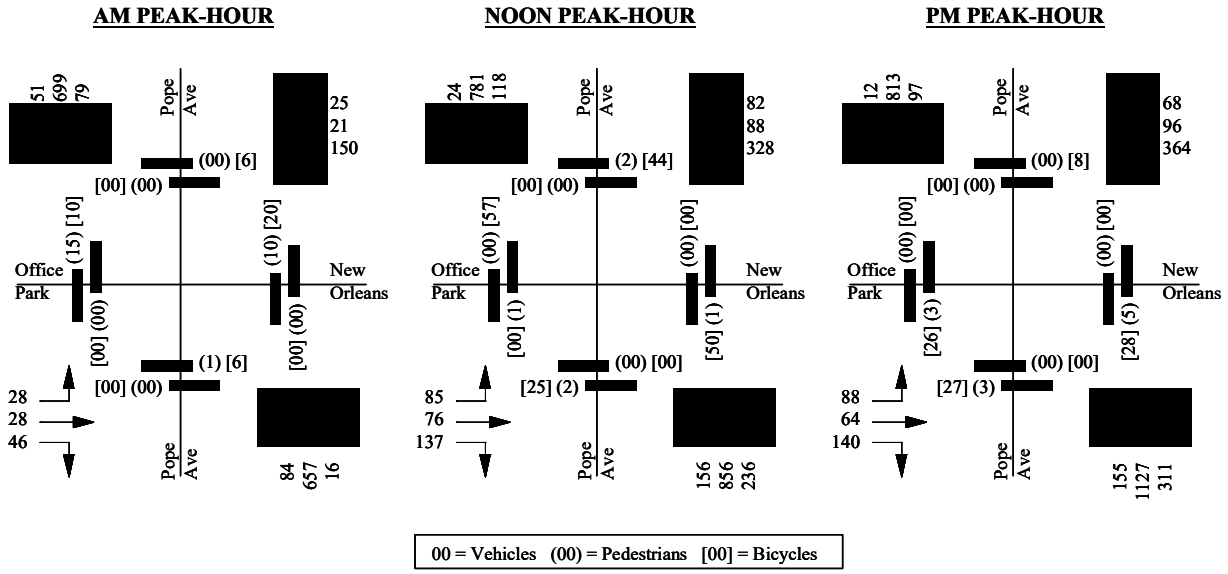
Traffic Volumes

Existing peak-hour volumes gathered during the second week of June 2015 are present below which represent the AM, NOON and PM peak-hours time periods. Following the 2015 peak-hour volumes are the two Future year conditions which reflect 2020 (5-year) and 2030 (15-year) peak-hour volume projections.

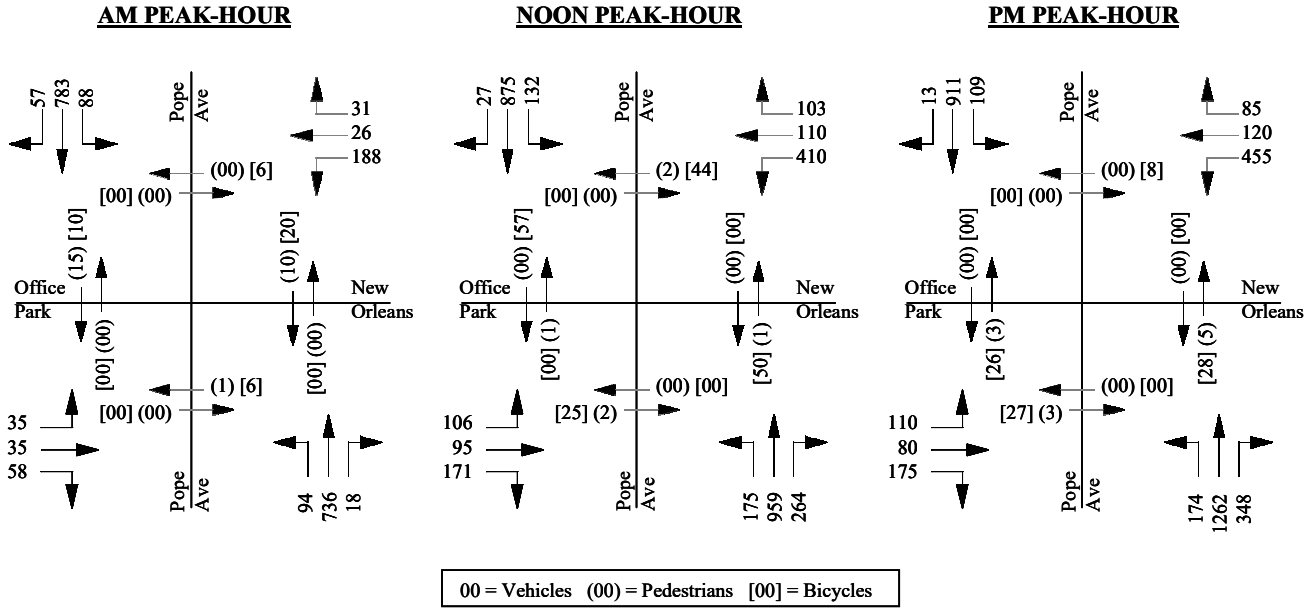
2015 Existing Peak-Hour Volumes



2020 Peak-Hour Volumes



2030 Peak-Hour Volumes



Intersection Operations

Operations for this intersection are indicated below. It should be noted that both Future year 2020 and 2030 analysis reflect the planned improvements described earlier as part of the USCB/OLLI project.

Service Levels:

Intersection	Peak Hour	2015 Existing V/C[2]	2015 Existing Delay[3]	2015 Existing LOS[4]	5-Year (2020) V/C	5-Year (2020) Delay	5-Year (2020) LOS	15-Year (2030) V/C	15-Year (2030) Delay	15-Year (2030) LOS
Pope Avenue at Office Park Road/New Orleans Road	AM	0.36	18.2	B	0.37	18.3	B	0.41	19.0	B
	NOON	0.54	29.7	C	0.52	29.0	C	0.59	31.3	C
	PM	0.62	29.6	C	0.60	29.4	C	0.69	32.4	C

1. Calculations completed using the 2010 HCM methodology.
2. V/C=Volume-to-capacity ratio, basis HCM 2000.
3. Delay in seconds-per-vehicle.
4. Level-of-Service.

GENERAL NOTES:

1. For signalized intersections, delay is representative of the over-all intersection weighted average of all approaches.

As shown, operations at this intersection are currently acceptable based on the LMO guidelines. Under the Future 2020 conditions, operations are expected to be nearly the same or slightly better even through growth over the 5-year period has been included in the analysis. This is due to the inclusion of the scheduled lane additions and signal modifications as planned by the USCB/OLLI development.

Future 15-Year 2030 analysis indicate that this intersection will continue to operate a acceptable standards based on the LMO guidelines.

It should be noted that it was observed during the peak summer months, vehicle queues through/across this intersection were evident and occurred during the noon and PM peak time periods. These conditions are not caused by this signalized intersection but rather the Sea Pines Circle.

Storage Lane Queues:

Pope Avenue at Office Park Road/New Orleans Road

			2015 Existing			5-Year (2020)			15-Year (2030)		
		Stacking	AM	Noon	PM	AM	Noon	PM	AM	Noon	PM
NB	Left	180	16	47	56	45	107	95	51	122	107
	Right	175	3	9	11	0	27	36	0	30	53
SB	Left	125	22	51	39	44	83	63	51	94	70
	Right	125	2020 Improvement			12	0	0	15	0	0
EB	Left	200	69	186	164	54	107	115	56	117	126
	Right	110	0	61	62	13	105	85	20	16	130
WB	Left	200	74	266	301	115	213	235	156	22	264
	Right	200	0	13	0	0	43	31	0	52	40

Lengths represented in feet.

As shown, each of the turning lanes currently provide adequate storage length with only the exception of the westbound left-turn movement which indicates a queue demand of 301-feet (per lane) with a 200-foot storage lane length per lane during the PM peak-hour. This queue issue was observed during the data collection process and confirmed to back-up beyond the bend in New Orleans Road during peak times.

The improvement planned for this intersection will significantly lower the expected queue demand to 235-feet per lane during the PM peak-hour as is shown by the 5-Year 2020 conditions.

Future year 2030 queuing calculations indicate a slight issue for the eastbound right-turn movement from Office Park Road to southbound Pope Avenue as well as the westbound left-turn from New Orleans Road to southbound Pope Avenue.

RECOMMENDATIONS

The analyses for this intersection indicate that with improvements planned as part of the USCB campus, operations at this intersection meet the criteria of the LMO. Some minor queue constraints are anticipated during the PM peak-hour under the 15-Year 2030 condition however the constraints are on the minor street approaches and not Pope Avenue.

Extending the length of the stacking approach of New Orleans Road to Pope Avenue is recommended. This would require that multiple lanes extend around the "knuckle" of New Orleans Road (adjacent to TD Bank) in order to provide additional stacking for the left-turn movement.

It should be noted that while the northbound and southbound (Pope Avenue) left-turn lanes indicate adequate storage lengths, the queues from the respective through movements extend back past the length of the left-turn lanes resulting in the inability for a left-turning vehicle to get into the separate left-turn lane. Extension of both the northbound and southbound left-turn lanes to add additional storage length should be considered.

POPE AVENUE AT EXECUTIVE CIRCLE /WOODHAVEN LANE

Part of the Pope Avenue corridor this is a four-legged unsignalized intersection located approximately 750-feet north of Executive Circle South. Executive Circle is a semi-circle loop beginning and ending at Pope Avenue and has an over-all length of approximately 1,450-feet and provides access to commercial office space and two restaurants. Woodhaven Lane to the west provides access to/from residential uses as well as Holy Family Catholic Church and eventually extends in a southern direction to intersect with Cordillo Parkway.

EXISTING CONDITIONS

Geometrics

The following provides a graphic and description of the existing intersection geometrics:

Description

Approach:	Northbound	
Name:	**Pope Avenue**	
	# Lanes	Storage (ft)
Left	1	215
Through	2	
Right	NA	

Approach:	Southbound	
Name:	**Pope Avenue**	
	# Lanes	Storage (ft)
Left	1	170
Through	2	
Right	NA	

Approach:	Eastbound	
Name:	**Woodhaven Lane**	
	# Lanes	Storage (ft)
Left/Thru/RT	1	>300

Approach:	Westbound	
Name:	**Executive Circle North**	
	# Lanes	Storage (ft)
Left/Thru/RT	1	>300

Accident History

Pope Avenue at Executive Circle (N)/ Woodhaven Lane

Year	Annual # Accidents	Angle[a]	Rear End	Sideswipe	Fixed Obj[b]	Other	Summer Months (June-Aug)	Involved Bike or Ped
2015 (Jan-June)	4	1	1	1	1			
2014	3	2	1				2	1
2013	1		1					
2012 (July-Dec)	1	1						
Total Crashes	9	4	3	1	1	0	2	1
Avg. Per Year	***3.0***						***0.7***	

Note: Information provided by Town of Hilton Head.

a. Angle or cross-movement type collision.

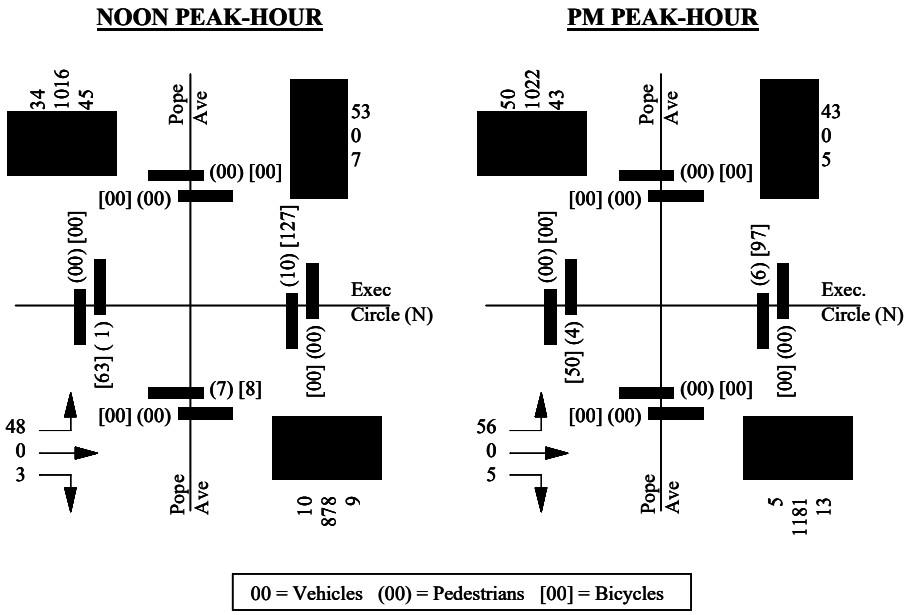
b. Vehicle collided with fixed object, typically ran off roadway.

As indicated, an average of 3 accidents per year have occurred with approximately half being angle or cross-movement type which is mainly due to the left-turn movement from either minor street approach (Executive Circle North or Woodhaven Lane). A total of two accidents (22-percent of the accident total) occurred during the summer months and one accident was reported involved either a pedestrian or bicyclist.

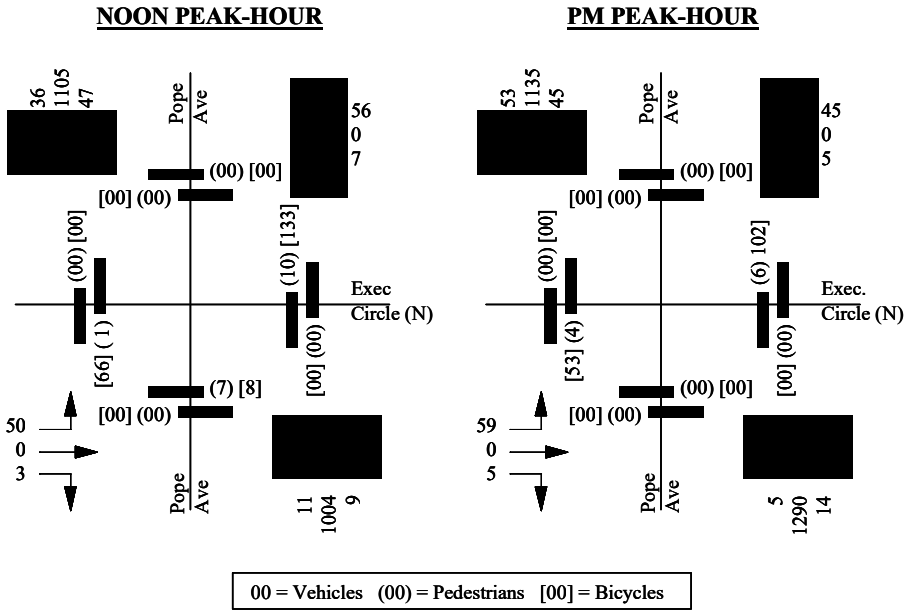
Traffic Volumes

Existing peak-hour volumes gathered during the second week of June 2015 are present below which represent the NOON and PM peak-hours time periods. Following the 2015 peak-hour volumes are the two Future year conditions which reflect 2020 (5-year) and 2030 (15-year) peak-hour volume projections.

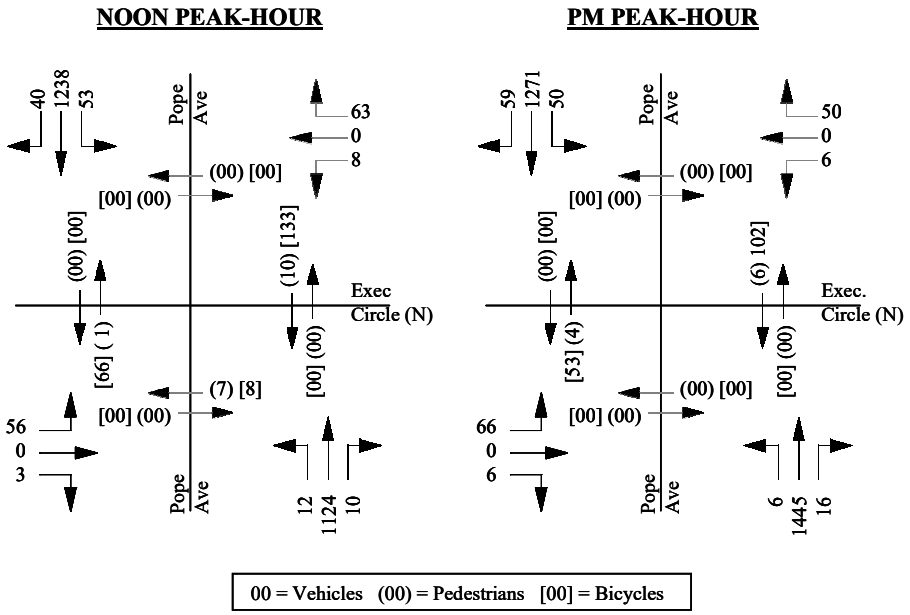
2015 Existing Peak-Hour Volumes



2020 Peak-Hour Volumes



2030 Peak-Hour Volumes



Intersection Operations

Service Levels:

Intersection	Peak Hour	2015 Existing V/C[2]	2015 Existing Delay[3]	2015 Existing LOS[4]	5-Year (2020) V/C	5-Year (2020) Delay	5-Year (2020) LOS	15-Year (2030) V/C	15-Year (2030) Delay	15-Year (2030) LOS
Pope Avenue at Executive Circle North and Woodhaven	NOON	-	>500.0	F	-	>500.0	F	-	>500.0	F
	PM	-	>500.0	F	-	>500.0	F	-	>500.0	F

1. Calculations completed using the 2010 HCM methodology.
2. V/C=Volume-to-capacity ratio, basis HCM 2000.
3. Delay in seconds-per-vehicle.
4. Level-of-Service.

GENERAL NOTES:

1. For unsignalized intersections, delay is representative of the minor street worst approach.

As shown, under Existing, 5-Year 2020 and the 15-Year 2030 conditions, this intersection operations poorly with LOS F during both the NOON and PM peak time periods. These poor service levels are not on the northbound or southbound approaches of Pope Avenue but rather are due to the minor street left-turn movement from Woodhaven Lane which is in the magnitude of 60 or less vehicles during either of the peak hours. (approx. one car per minute).

It should be noted that drivers making a left-turn from Woodhaven Lane are provided an alternative to making the critical left-turn movement at this intersection by diverting to Cordillo Parkway to the south (1,500-feet) which then allows access to Pope Avenue at a signalized intersection.

Storage Lane Queues

Pope Avenue at Executive Circle (N)/Woodhaven Lane

			2015 Existing		5-Year (2020)		15-Year (2030)	
		Stacking	Noon	PM	Noon	PM	Noon	PM
NB	Left	215	1	1	2	1	2	1
	Right	NA						
SB	Left	170	5	6	6	7	7	10
	Right	NA						
EB	Left	>300	116	161	147	200	202	300
	Right	NA						
WB	Left	>300	18	16	23	22	39	50
	Right	NA						

Lengths represented in feet.

As shown, each of the turning lanes currently provide adequate storage length for the existing and expected queue lengths. While the eastbound left-turn movement from Woodhaven Lane is the greatest, stacking length is provided via the single approach lane. This will cause delays on this minor street approach but will not impact Pope Avenue.

RECOMMENDATIONS

The analyses for this intersection indicate no capacity constraints caused by the geometry of this unsignalized intersection. While the analyses for this intersection indicate some minor capacity issues for the left-turn movement from Woodhaven Lane, this volume is currently less than 60 vehicles during either the NOON or PM peak-hour which are relatively low in comparison to the volumes northbound and southbound on Pope Avenue which are unaffected by the minor street delays. Based on the relatively low volume that is being affected by the presented delays, no improvements are recommended at this intersection at this time.

POPE AVENUE AT EXECUTIVE CIRCLE SOUTH

Part of the Pope Avenue corridor this is a three-legged unsignalized intersection which accesses Executive Park Circle (southerly intersection) to the east.

EXISTING CONDITIONS

Geometrics

The following provides a graphic and description of the existing intersection geometrics:

Description

Approach:	Northbound	
Name:	**Pope Avenue**	
	# Lanes	Storage (ft)
Left	NA	
Through	2	
Right	NA	

Approach:	Southbound	
Name:	**Pope Avenue**	
	# Lanes	Storage (ft)
Left	1	170
Through	2	
Right	NA	

Approach:	Westbound	
Name:	**Executive Circle South**	
	# Lanes	Storage (ft)
Left/Thru/RT	1	>300

Accident History

Pope Avenue at Executive Circle South

Year	Annual # Accidents	Angle[a]	Rear End	Sideswipe	Fixed Obj[b]	Other	Summer Months (June-Aug)	Involved Bike or Ped
2015 (Jan-June)	2	1	1				2	
2014	6	2	3	1			4	1
2013	2	1	1					
2012 (July-Dec)								
Total Crashes	10	4	5	1	0	0	6	1
Avg. Per Year	***3.3***						***2.0***	

Note: Information provided by Town of Hilton Head.

a. Angle or cross-movement type collision.

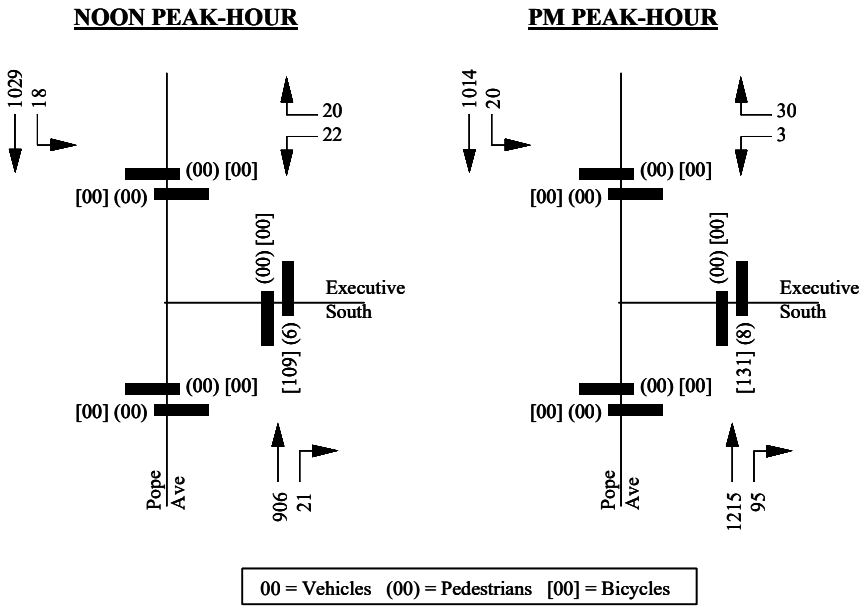
b. Vehicle collided with fixed object, typically ran off roadway.

As indicated, an average slightly greater than three accidents per year have occurred with half being rear-end and four being angle or cross-movement type which is mainly due to the left-turn movement from the minor street approach of Executive Circle South. A total of six accidents (60-percent of the accident total) occurred during the summer months and one accident was reported involved either a pedestrian or bicyclist.

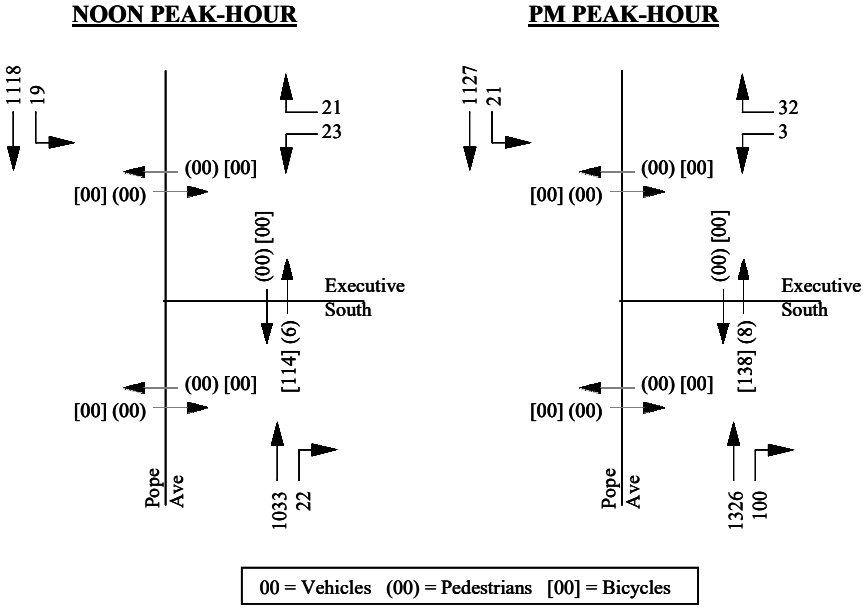
Traffic Volumes

Existing peak-hour volumes gathered during the second week of June 2015 are present below which represent the NOON and PM peak-hours time periods. Following the 2015 peak-hour volumes are the two Future year conditions which reflect 2020 (5-year) and 2030 (15-year) peak-hour volume projections.

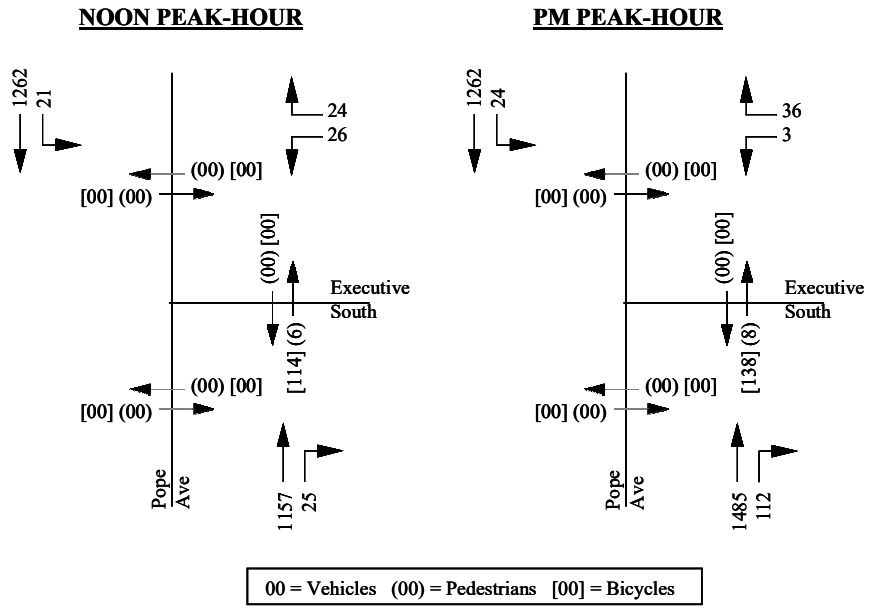
2015 Existing Peak-Hour Volumes



2020 Peak-Hour Volumes



2030 Peak-Hour Volumes



Intersection Operations

Service Levels:

Intersection	Peak Hour	2015 Existing V/C[2]	2015 Existing Delay[3]	2015 Existing LOS[4]	5-Year (2020) V/C	5-Year (2020) Delay	5-Year (2020) LOS	15-Year (2030) V/C	15-Year (2030) Delay	15-Year (2030) LOS
Pope Avenue at Executive Circle South	NOON	-	39.2	E	-	57.7	F	-	106.3	F
	PM	-	23.4	C	-	27.7	D	-	39.2	E

1. Calculations completed using the 2010 HCM methodology.
2. V/C=Volume-to-capacity ratio, basis HCM 2000.
3. Delay in seconds-per-vehicle.
4. Level-of-Service.

GENERAL NOTES:

1. For unsignalized intersections, delay is representative of the minor street worst approach.

As shown, under both Existing and 5-Year 2020 conditions, this intersection operation operates with delays from the minor street approach (westbound left-turn) during the Noon peak-hour. The PM peak-hour operates at acceptable service levels due to the westbound left-turn volume being less than 25 vehicles.

Future 15-Year 2030 conditions continue to reflect a LOS F during the NOON peak-hour and a LOS E during the PM peak-hour.

Storage Lane Queues

Pope Avenue at Executive Circle South

			2015 Existing		5-Year (2020)		15-Year (2030)	
		Stacking	Noon	PM	Noon	PM	Noon	PM
NB	Left	NA						
	Right	NA						
SB	Left	170	2	3	2	4	3	5
	Right	NA						
EB	Left	NA						
	Right	NA						
WB	Left	>300	22	8	33	10	58	20
	Right	NA						

Lengths represented in feet.

As shown, each of the turning lanes currently provide adequate storage length for the existing and expected queue lengths. Based on this, no queuing issues are expected at this intersection.

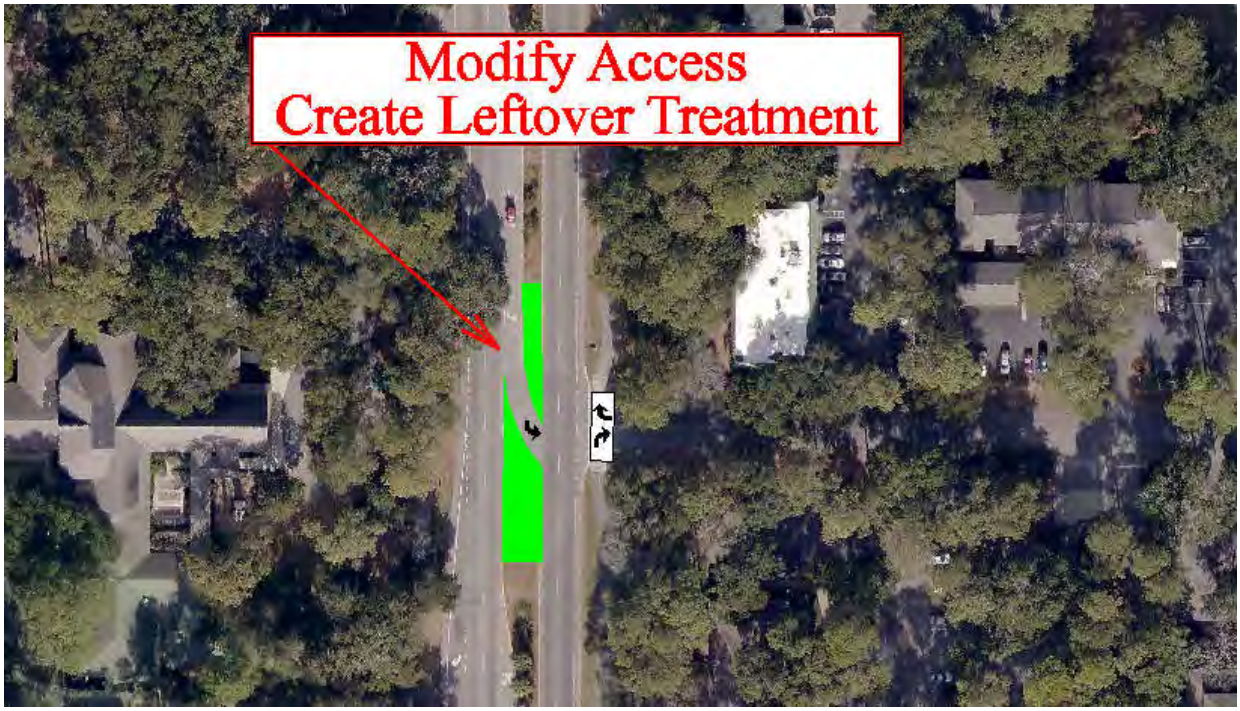
RECOMMENDATIONS

The analyses for this intersection indicate minimal capacity constraints for the minor street left-turn (Executive Circle South, westbound approach). The current traffic volume/demand for the left-turn movement from Executive Circle South is currently 22 vehicles during the NOON peak-hour and 3 during the PM peak-hour.

Given that the proximity of Executive Circle North, it is possible to relocate these small number of left-turn movements to this adjacent intersection to the north and prohibit the minor street left-turn movement at this intersection. By restricting this minor street left-turn movement, the majority of angle/cross-movement accidents at this intersection would be geometrically prohibited resulting in fewer crashes at this location.

It is suggested that the median cross-over at this intersection be modified such that the critical left-turn from the minor street (Executive Circle South) be geometrically prohibited. Southbound left-turn movements into Executive Circle South would continue and would be provided a short 100-foot storage lane within the median.

Concept Plan



POPE AVENUE AT CORDILLO PARKWAY/SHIPYARD

Part of the Pope Avenue corridor this is a four-legged signalized intersection which operates within the Town's traffic signal system. To the east, this intersection provides access to the Shipyard PUD and is gated/secured just to the east of Pope Avenue. To the west, Cordillo Parkway provides access to residential areas and terminates at the back gate of Sea Pines PUD.

EXISTING CONDITIONS

Geometrics

The following provides a graphic and description of the existing intersection geometrics:

Description

Approach:	Northbound	
Name:	**Pope Avenue**	
	# Lanes	Storage (ft)
Left	1	160
Through	2	
Right	NA	

Approach:	Southbound	
Name:	**Pope Avenue**	
	# Lanes	Storage (ft)
Left	1	150
Through	2	
Right	1	150

Approach:	Eastbound	
Name:	**Cordillo Parkway**	
	# Lanes	Storage (ft)
Left	1	220
Left/Thru/Rt	1	>300
Right	NA	

Approach:	Westbound	
Name:	**Cordillo/Shipyard Gate**	
	# Lanes	Storage (ft)
Left	NA	
Left/Thru	1	>300
Right	1	>300

Accident History

Pope Avenue at Cordillo Parkway

Year	Annual # Accidents	Angle[a]	Rear End	Sideswipe	Fixed Obj[b]	Other	Summer Months (June-Aug)	Involved Bike or Ped
2015 (Jan-June)	7		6	1				
2014	6	2	4				2	2
2013	14	6	8				4	3
2012 (July-Dec)	3	2	1				1	
Total Crashes	30	10	19	1	0	0	7	5
Avg. Per Year	***10.0***						***2.3***	

Note: Information provided by Town of Hilton Head.

a. Angle or cross-movement type collision.

b. Vehicle collided with fixed object, typically ran off roadway.

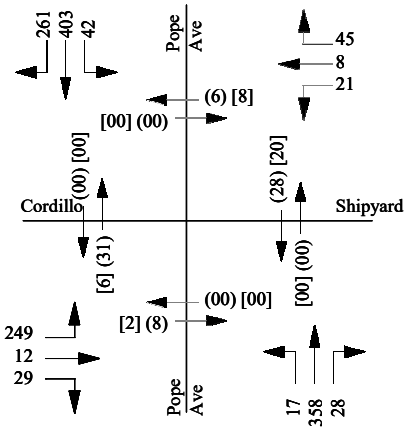
As indicated, an average of 10 accidents per year have occurred with over half being rear-end type likely due to drivers following to close and/or inattention. A total of seven accidents (23-percent of the accident total) occurred during the summer months with five accidents reported involved either a pedestrian or bicyclist.

Traffic Volumes

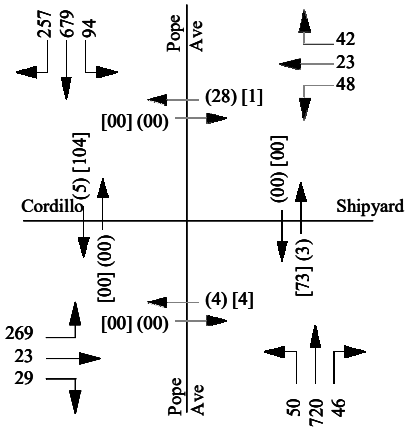
Existing peak-hour volumes gathered during the second week of June 2015 are present below which represent the AM, NOON and PM peak-hours time periods. Following the 2015 peak-hour volumes are the two Future year conditions which reflect 2020 (5-year) and 2030 (15-year) peak-hour volume projections.

2015 Existing Peak-Hour Volumes

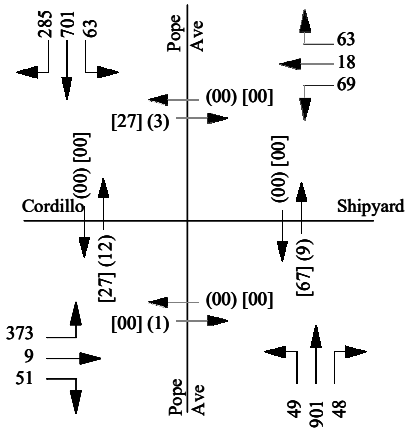
AM PEAK-HOUR



NOON PEAK-HOUR



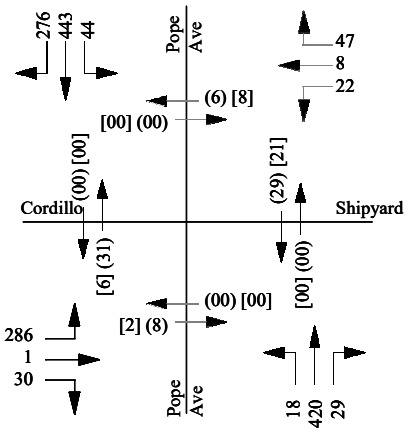
PM PEAK-HOUR



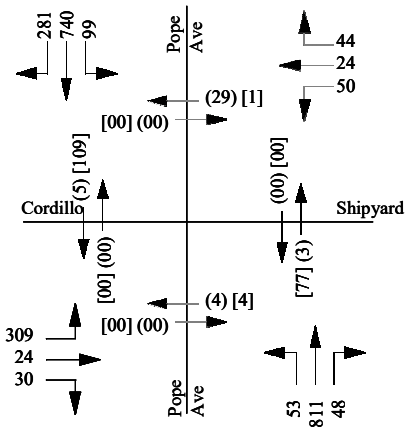
00 = Vehicles (00) = Pedestrians [00] = Bicycles

2020 Peak-Hour Volumes

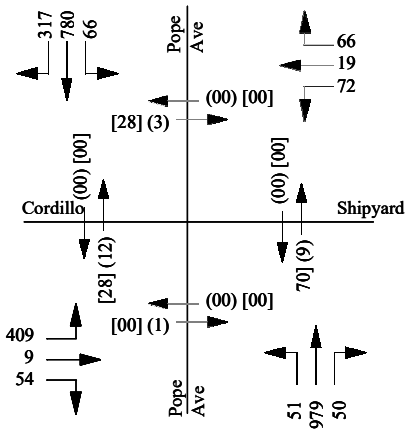
AM PEAK-HOUR



NOON PEAK-HOUR

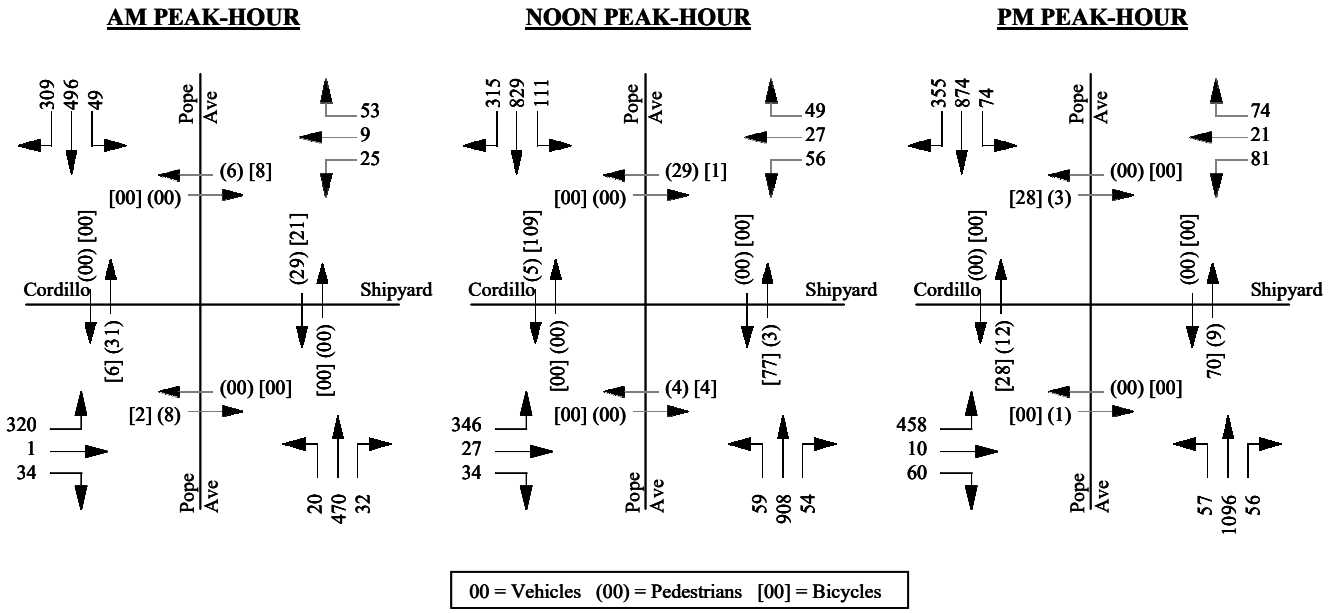


PM PEAK-HOUR



00 = Vehicles (00) = Pedestrians [00] = Bicycles

2030 Peak-Hour Volumes



Intersection Operations

Service Levels:

Intersection	Peak Hour	2015 Existing V/C[2]	2015 Existing Delay[3]	2015 Existing LOS[4]	5-Year (2020) V/C	5-Year (2020) Delay	5-Year (2020) LOS	15-Year (2030) V/C	15-Year (2030) Delay	15-Year (2030) LOS
Pope Avenue at Cordillo Parkway/Shipyard	AM	0.30	19.6	B	0.33	20.5	C	0.37	21.5	C
	NOON	0.49	23.8	C	0.55	25.1	C	0.62	27.0	C
	PM	0.61	24.1	C	0.66	25.6	C	0.75	28.8	C

1. Calculations completed using the 2010 HCM methodology.
2. V/C=Volume-to-capacity ratio, basis HCM 2000.
3. Delay in seconds-per-vehicle.
4. Level-of-Service.

GENERAL NOTES:

1. For signalized intersections, delay is representative of the over-all intersection weighted average of all approaches.

As shown, under Existing, 5-Year (2020) and 15-Year (2030) operations at this intersection are acceptable based on the LMO guidelines

Storage Lane Queues:

Pope Avenue at Cordillo Parkway/Shipyard

			2015 Existing			5-Year (2020)			15-Year (2030)		
		Stacking	AM	Noon	PM	AM	Noon	PM	AM	Noon	PM
NB	Left	160	22	52	56	24	54	58	27	59	64
	Right	NA									
SB	Left	150	45	86	68	47	91	72	51	100	78
	Right	150	29	31	31	29	32	32	30	33	34
EB	Left	220	227	257	327	254	291	355	285	329	402
	Lft/Thru/Rt	>300	212	48	308	242	284	343	272	321	390
WB	Left	>300	61	126	152	63	131	163	69	72	183
	Right	>300	0	0	11	0	0	15	2	0	25

Lengths represented in feet.

As shown, all queue calculations indicate no capacity issues with exception of the eastbound left-turn movement from Cordillo Parkway to northbound Pope Avenue. This movement is currently provide a separate left-turn lane and a shared left/through/right-turn lane which must operate under split phase traffic signal control.

Volumes are significant for the eastbound left-turn movement, in the magnitude of 300-400 vehicles during any of the peak hours studied. Potential extension of the two-lane approach cross-section to Pope Avenue maybe considered however, access drives do exist along this section which would make any the possible additional stacking/storage problematic.

RECOMMENDATIONS

Operationally, this intersection meets the LMO standards but has two issues that should be addressed as follows:

i. Queue issue for the eastbound left-turn movement; and
ii. Accident occurrence involving pedestrian/bikes at this intersection.

The queue issue is a combination of the high volume of eastbound left-turn movements (300-400 during the three peak hours studied) as well as operations of the traffic signal being that is must operate under minor street split phase due to the geometry of the eastbound approach (left, left/through/right) and the alignment of eastbound and westbound through movements across the intersection.

The majority of pedestrian/bike accidents have occurred on the eastside of Pope Avenue (Shipyard side). One issue that is evident is that the #2 (outside) through lane is inadequately separated from the designated cross-walk. Standard separation is 7-feet (clearance area) between travel lane and cross-walk of which in the northeast corner of the intersection there is nearly no clearance/separation. Modification of this cross-walk by moving it to the east is recommended. This would require that the landscaped median separating the entering and exiting lanes to Shipyard PUD be modified.

Concept Plan

POPE AVENUE AT WATERSIDE DRIVE

Part of the Pope Avenue corridor this is a four-legged unsignalized intersection which to the west provides access to Coral Islands and to the east access to Waterside by Spinnaker

EXISTING CONDITIONS

Geometrics

The following provides a graphic and description of the existing intersection geometrics:

Description

Approach:	Northbound	
Name:	**Pope Avenue**	
	# Lanes	Storage (ft)
Left	1	170
Through	2	
Right	NA	

Approach:	Southbound	
Name:	**Pope Avenue**	
	# Lanes	Storage (ft)
Left	1	160
Through	2	
Right	NA	

Approach:	Eastbound	
Name:	**Coral Islands**	
	# Lanes	Storage (ft)
Left	NA	
Left/Thru/RT	1	75

Approach:	Westbound	
Name:	**Waterside Dr**	
	# Lanes	Storage (ft)
Left	1	50
Thru/RT	1	>300

Accident History

Pope Avenue at Waterside Drive

Year	Annual # Accidents	Angle[a]	Rear End	Sideswipe	Fixed Obj[b]	Other	Summer Months (June-Aug)	Involved Bike or Ped
2015 (Jan-June)	1	1						
2014	2	1	1				1	1
2013	3	1	2				2	
2012 (July-Dec)								
Total Crashes	6	3	3	0	0	0	3	1
Avg. Per Year	***2.0***						***1.0***	

Note: Information provided by Town of Hilton Head.

a. Angle or cross-movement type collision.

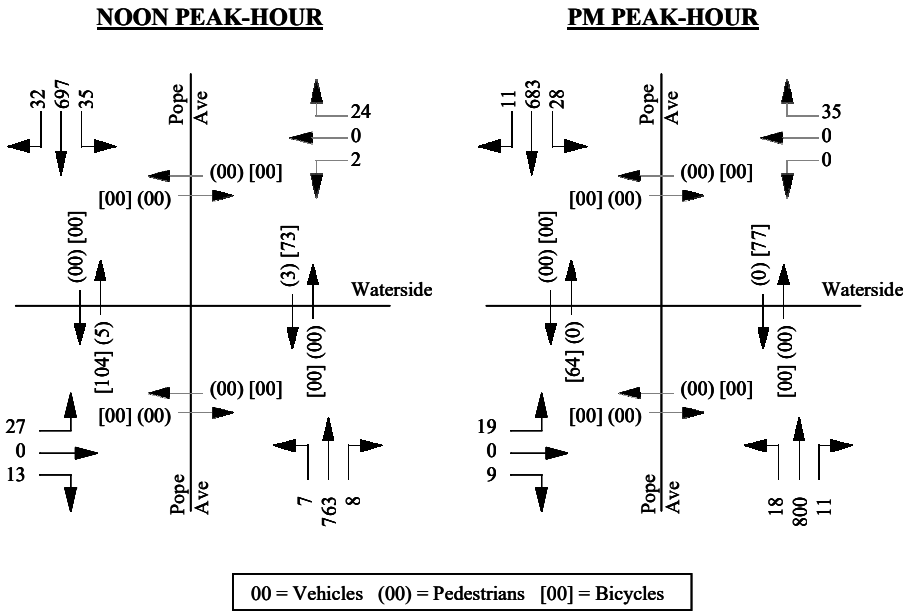
b. Vehicle collided with fixed object, typically ran off roadway.

As indicated, an average of two accidents per year have occurred with three each being angle/cross-movement and being rear-end. A total of three accidents (50-percent of the accident total) occurred during the summer months and one accident was reported involved either a pedestrian or bicyclist.

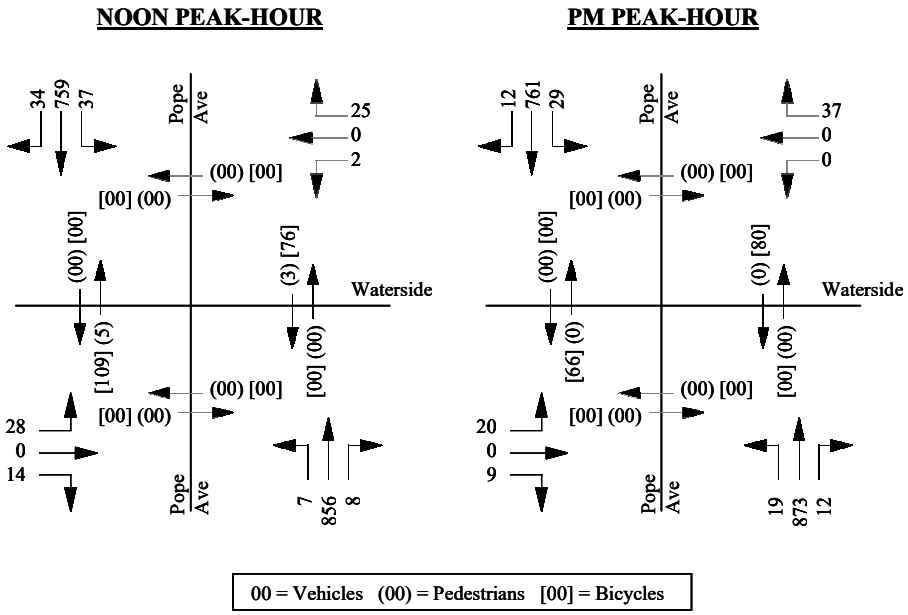
Traffic Volumes

Existing peak-hour volumes gathered during the second week of June 2015 are present below which represent the NOON and PM peak-hours time periods. Following the 2015 peak-hour volumes are the two Future year conditions which reflect 2020 (5-year) and 2030 (15-year) peak-hour volume projections.

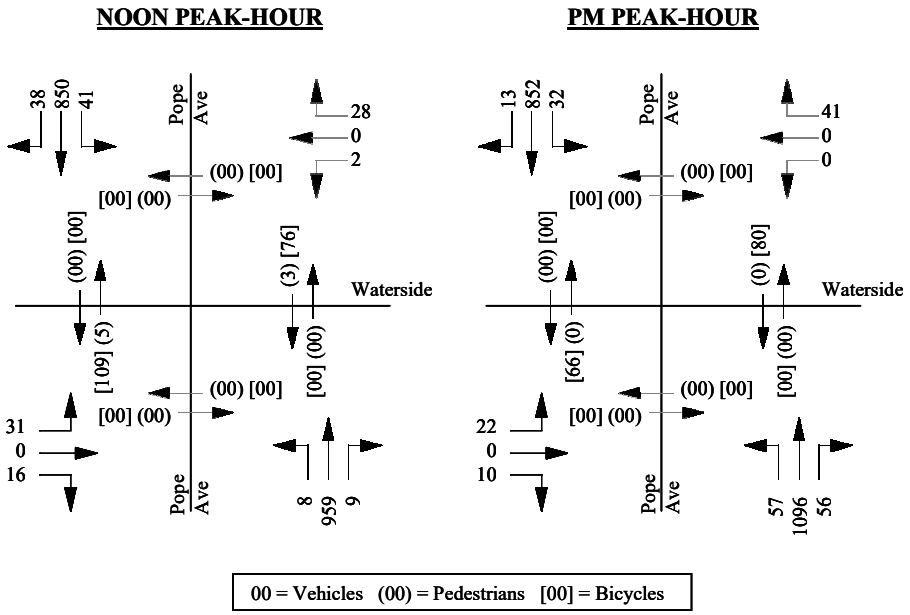
2015 Existing Peak-Hour Volumes



2020 Peak-Hour Volumes



2030 Peak-Hour Volumes



Intersection Operations

Service Levels:

Intersection	Peak Hour	2015 Existing V/C[2]	2015 Existing Delay[3]	2015 Existing LOS[4]	5-Year (2020) V/C	5-Year (2020) Delay	5-Year (2020) LOS	15-Year (2030) V/C	15-Year (2030) Delay	15-Year (2030) LOS
Pope Avenue at Waterside Drive	NOON	-	49.8	E	-	67.2	F	-	115.6	F
	PM	-	47.5	E	-	63.1	F	-	101.1	F

1. Calculations completed using the 2010 HCM methodology.
2. V/C=Volume-to-capacity ratio, basis HCM 2000.
3. Delay in seconds-per-vehicle.
4. Level-of-Service.

GENERAL NOTES:

1. For unsignalized intersections, delay is representative of the minor street worst approach.

As shown, under Existing, 5-Year 2020 and 15-Year 2030 conditions, this intersection operation operates with delays from the eastbound minor street approach (Coral Islands) during both the NOON and PM peak-hours. Waterside Drive has an insignificant volume of left-turn movements exiting the facility and therefore does not operate with delays.

Storage Lane Queues:

Pope Avenue at Waterside Drive

			2015 Existing		5-Year (2020)		15-Year (2030)	
		Stacking	Noon	PM	Noon	PM	Noon	PM
NB	Left	170	1	2	1	2	1	2
	Right	NA						
SB	Left	160	4	3	5	4	6	4
	Right	NA						
EB	Left	50	19	13	25	18	42	28
	Right	NA						
WB	Left	100	1	0	1	0	2	0
	Right	NA						

Lengths represented in feet.

As shown, each of the turning lanes currently provide adequate storage length for the existing and expected queue lengths. Based on this, no queuing issues are expected at this intersection. As noted, the eastbound left-turn from Coral Islands will operate with delays however, the left-turn movements are relatively low (approx. 30 or less) during the peak-hours and are not expected to cause excessive backups.

RECOMMENDATIONS

The analyses for this intersection indicate no capacity constraints caused by the geometry of this unsignalized intersection. While the analyses for this intersection indicate some minor capacity issues for the left-turn movement from Coral Islands which currently has a volume of less than 30 during both the NOON and PM peak-hours; these are relatively low in comparison to the volumes northbound and southbound on Pope Avenue which are unaffected by the minor street delays. Based on the relatively low volume that is being affected by the presented delays, no improvements are recommended at this intersection at this time.

POPE AVENUE AT NASSAU STREET

Part of the Pope Avenue corridor this is a three-legged unsignalized intersection which provided access to the Circle Center and Legendary Golf to the west of Pope Avenue. A section of this roadway (from Pope Avenue to the back of the Circle Center) is private and west of this point to DeAllyon Avenue is the Town's jurisdiction. East of Pope Avenue opposite Nassau Street, Heritage Plaza is provided one of its many access drives to/from Pope Avenue. This access drive is a one-way "exit only" (westbound directional flow only) drive which currently serves a visitors center.

EXISTING CONDITIONS

Geometrics

The following provides a graphic and description of the existing intersection geometrics:

Description

Approach:	Northbound	
Name:	**Pope Avenue**	
	# Lanes	Storage (ft)
Left	1	125
Through	2	
Right	NA	

Approach:	Southbound	
Name:	**Pope Avenue**	
	# Lanes	Storage (ft)
Left	NA	
Through	2	
Right	1	150

Approach:	Eastbound	
Name:	**Nassau Drive**	
	# Lanes	Storage (ft)
Left/Thru/RT	1	>300

Accident History

Pope Avenue at Nassau Street

Year	Annual # Accidents	Angle[a]	Rear End	Sideswipe	Fixed Obj[b]	Other	Summer Months (June-Aug)	Involved Bike or Ped
2015 (Jan-June)	2	1	1				1	
2014	6	4	2				4	
2013	2	2					1	
2012 (July-Dec)	2	2					2	
Total Crashes	12	9	3	0	0	0	8	0
Avg. Per Year	***4.0***						***2.7***	

Note: Information provided by Town of Hilton Head.

a. Angle or cross-movement type collision.

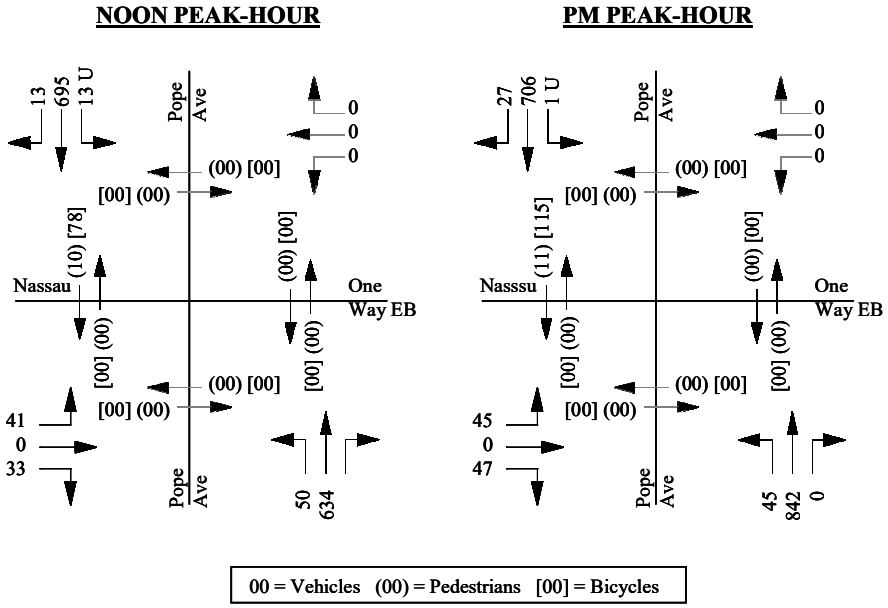
b. Vehicle collided with fixed object, typically ran off roadway.

As indicated, an average of 4 accidents per year have occurred with over half being angled type due to left-turn movements from the minor street or major street approaches. A total of eight accidents (67-percent of the accident total) occurred during the summer months. No reported accidents involved either a pedestrian or bicyclist.

Traffic Volumes

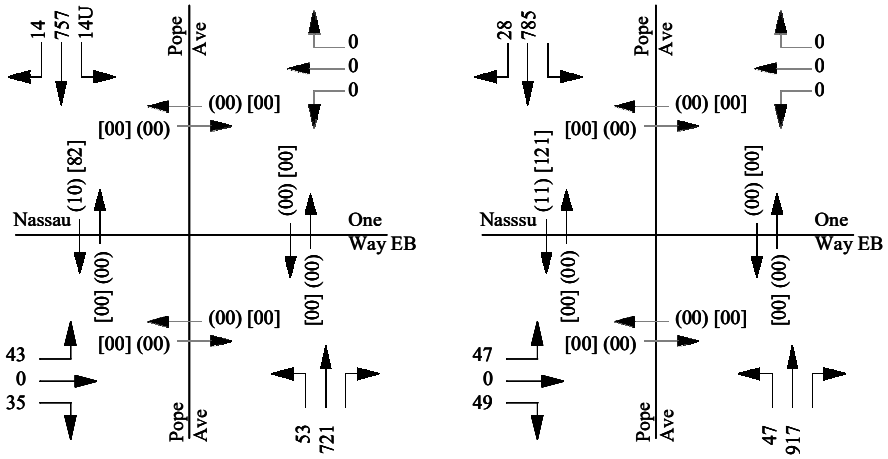
Existing peak-hour volumes gathered during the second week of June 2015 are present below which represent the NOON and PM peak-hours time periods. Following the 2015 peak-hour volumes are the two Future year conditions which reflect 2020 (5-year) and 2030 (15-year) peak-hour volume projections.

2015 Existing Peak-Hour Volumes



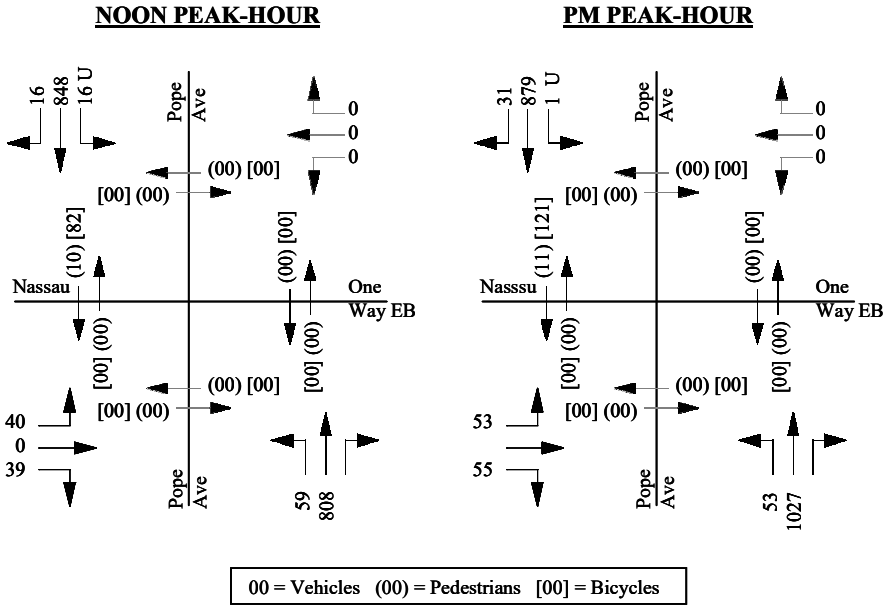
00 = Vehicles (00) = Pedestrians [00] = Bicycles

2020 Peak-Hour Volumes



00 = Vehicles (00) = Pedestrians [00] = Bicycles

2030 Peak-Hour Volumes



Intersection Operations

Service Levels:

Intersection	Peak Hour	2015 Existing V/C[2]	2015 Existing Delay[3]	2015 Existing LOS[4]	5-Year (2020) V/C	5-Year (2020) Delay	5-Year (2020) LOS	15-Year (2030) V/C	15-Year (2030) Delay	15-Year (2030) LOS
Pope Avenue at Nassua Street	NOON	-	38.6	E	-	39.0	E	-	65.9	F
	PM	-	35.3	E	-	46.6	E	-	89.2	F

1. Calculations completed using the 2010 HCM methodology.
2. V/C=Volume-to-capacity ratio, basis HCM 2000.
3. Delay in seconds-per-vehicle.
4. Level-of-Service.

GENERAL NOTES:

1. For unsignalized intersections, delay is representative of the minor street worst approach.

As shown, under Existing conditions, this intersection operation operates with delays from the minor street approach (eastbound left-turn) during PM peak-hour and a LOS D during the NOON peak-hour. Future 5-year 2020 conditions reflect LOS E on the minor street left-turn during both the NOON and PM peak-hours and 15-Year 2030 analysis reflect a LOS F during both peak time periods.

Storage Lane Queues:

Pope Avenue at Nassau Street

			2015 Existing		5-Year (2020)		15-Year (2030)	
		Stacking	Noon	PM	Noon	PM	Noon	PM
NB	Left	125	5	5	6	6	8	7
	Right	NA						
SB	Left	0	1	1	1	1	1	1
	Right	150						
EB	Left	>300	48	71	67	101	113	173
	Right	NA						

Lengths represented in feet.

As shown, under all conditions and time periods, no queue/stacking issues are anticipated.

RECOMMENDATIONS

The analyses for this intersection indicate no capacity constraints caused by the geometry of this unsignalized intersection. While the analyses for this intersection indicate some minor capacity issues for the left-turn movement from Nassau Street which currently has a volume of less than 50 during both the NOON and PM peak-hours; these are relatively low in comparison to the volumes northbound and southbound on Pope Avenue which are unaffected by the minor street delays.

With development of the planned Coligny Park Project, Nassua Street will be become a Town roadway extending from Pope Avenue to Tanglewood Drive. Modifications to access drives serving the Circle Center along Nassua Street are planned as well as the provision of on-street parking.

The intersection of Pope Avenue at Nassau Street is planned to have some minor improvements including the addition of second approach lane to Pope Avenue providing a separate lane for right-turns.. This intersection will continue to operate under STOP sign control. Coordination of this improvement as well as the over-all intersection will be required when information of the Heritage Plaza re-construction becomes available which should include the appropriate alignment of the minor street approaches/lanes.

When under taking improvements to this intersection, it is suggested that a southbound left-turn lane be created within the existing landscaped median. This new lane should be coordinated with the Heritage Plaza access if modifications are to be made resulting in two-way flow at this intersection. If Heritage is not changing this access, the left-turn lane should be provided for the ability of U-turns reversing direction on Pope Avenue. This short storage lane of 100-feet will allow U-turning vehicles to stack in a separate lane therefore reducing the impedance to through vehicles southbound on Pope Avenue.

Concept

POPE AVENUE AT LAGOON ROAD

Part of the Pope Avenue corridor this is a four-legged unsignalized intersection which to the west provides access to the Town's Beach Parking area and to the east Lagoon Road extends to Ibis Street and serves commercial uses in the area of and including Coligny Plaza and residential area east of Coligny Plaza.

This intersection has been included in the planning of the Town's Coligny Park area which is located between Nassua Street and the Towns Beach parking area west of Pope Avenue and has been identified as being placed under traffic signal control at some point in the future as part of the Park's phased development approach.

EXISTING CONDITIONS

Geometrics

The following provides a graphic and description of the existing intersection geometrics:

Description

Approach:	Northbound	
Name:	**Pope Avenue**	
	# Lanes	Storage (ft)
Left	NA	
Through	2	
Right	NA	

Approach:	Southbound	
Name:	**Pope Avenue**	
	# Lanes	Storage (ft)
Left	1	190
Through	2	
Right	1	180

Approach:	Eastbound	
Name:	**Town Beach Parking**	
	# Lanes	Storage (ft)
Left	1	150
Thru/RT	1	>300

Approach:	Westbound	
Name:	**Lagoon Road**	
	# Lanes	Storage (ft)
Left	NA	
Left/Thru/RT	1	>300

Accident History

Pope Avenue at Lagoon Road/Town Beach Parking

Year	Annual # Accidents	Angle[a]	Rear End	Sideswipe	Fixed Obj[b]	Other	Summer Months (June-Aug)	Involved Bike or Ped
2015 (Jan-June)	2	1	1					
2014	5	3	1	1			2	
2013	7	4	2			1	1	
2012 (July-Dec)	1	1					1	
Total Crashes	15	9	4	1	0	1	4	0
Avg. Per Year	***5.0***						***1.3***	

Note: Information provided by Town of Hilton Head.

a. Angle or cross-movement type collision.

b. Vehicle collided with fixed object, typically ran off roadway.

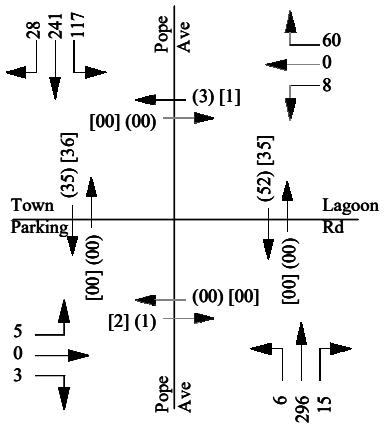
As indicated, a total of 15 accidents were report (average of 5/year) with over half being angle type which is typical for an unsignalized intersection. A total of four accidents (25-percent of the accident total) occurred during the summer months with no accidents involving a pedestrian or bicyclist.

Traffic Volumes

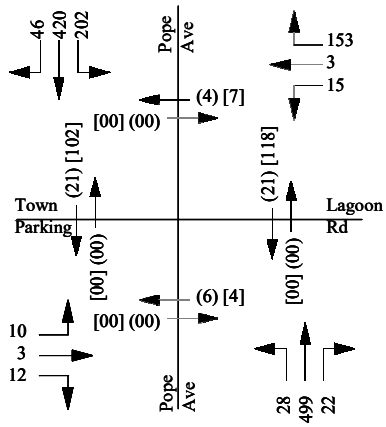
Existing peak-hour volumes gathered during the second week of June 2015 are present below which represent the AM, NOON and PM peak-hours time periods. Following the 2015 peak-hour volumes are the two Future year conditions which reflect 2020 (5-year) and 2030 (15-year) peak-hour volume projections.

2015 Existing Peak-Hour Volumes

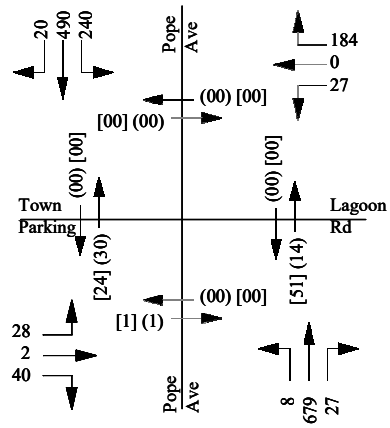
AM PEAK-HOUR



NOON PEAK-HOUR



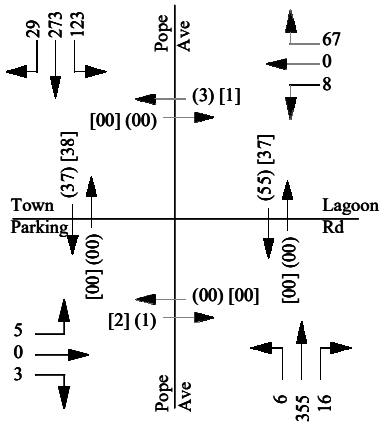
PM PEAK-HOUR



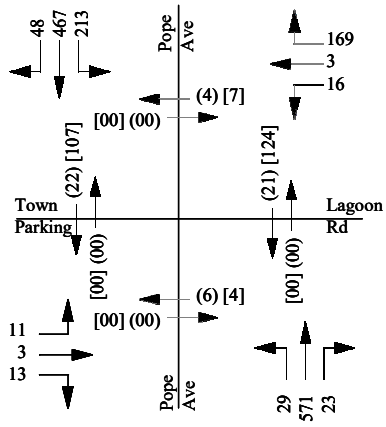
00 = Vehicles (00) = Pedestrians [00] = Bicycles

2020 Peak-Hour Volumes

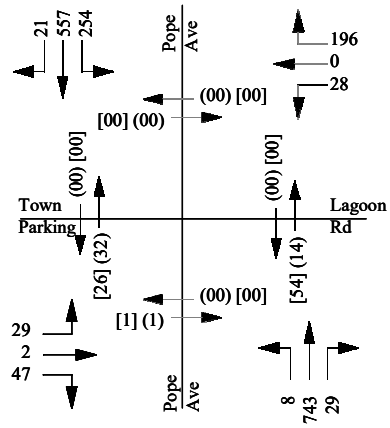
AM PEAK-HOUR



NOON PEAK-HOUR

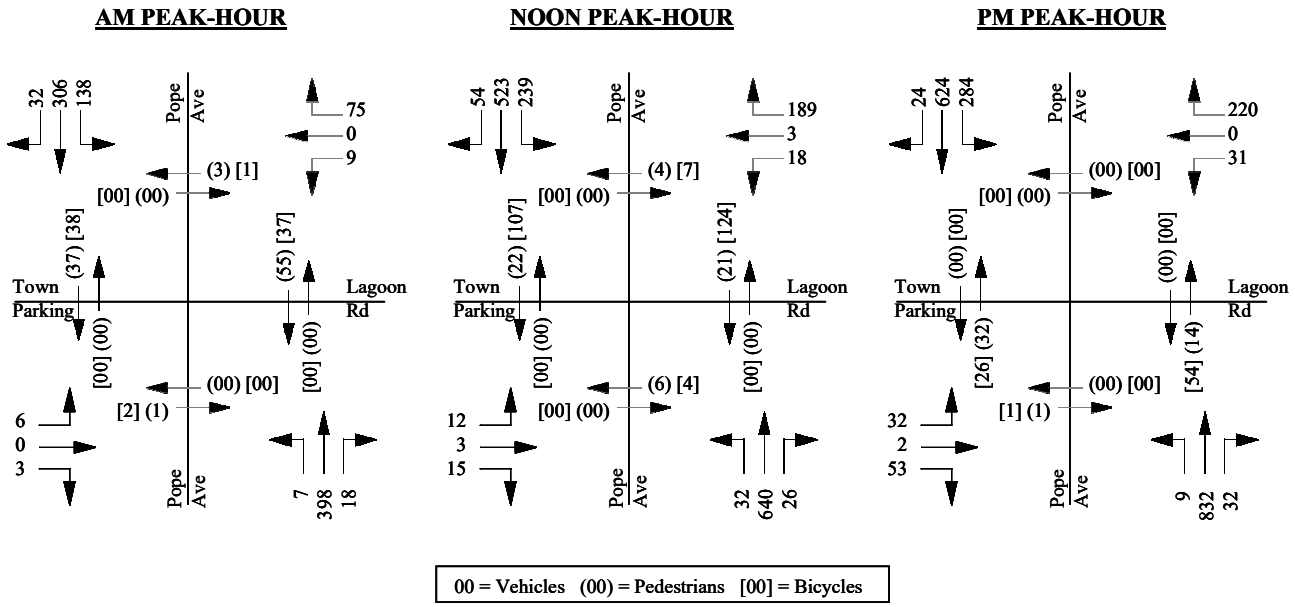


PM PEAK-HOUR



00 = Vehicles (00) = Pedestrians [00] = Bicycles

2030 Peak-Hour Volumes



Intersection Operations

Service Levels:

Intersection	Peak Hour	2015 Existing V/C[2]	2015 Existing Delay[3]	2015 Existing LOS[4]	5-Year (2020) V/C	5-Year (2020) Delay	5-Year (2020) LOS	15-Year (2030) V/C	15-Year (2030) Delay	15-Year (2030) LOS
Pope Avenue at Lagoon Road	AM	-	19.5	C	-	22.2	C	-	26.1	D
	NOON	-	63.7	F	-	91.7	F	-	167.8	F
	PM	-	184.4	F	-	>500	F	-	>500	F

1. Calculations completed using the 2010 HCM methodology.
2. V/C=Volume-to-capacity ratio, basis HCM 2000.
3. Delay in seconds-per-vehicle.
4. Level-of-Service.

GENERAL NOTES:

1. For unsignalized intersections, delay is representative of the minor street worst approach.

As shown, under Existing condition, this intersection operation operates poorly during both the NOON and PM peak-hour time periods. Delays are two fold, from the minor street left-turn movements from the Town Beach Parking area as well as Lagoon Road. Of a greater issue are the volume of southbound left-turn movements from Pope Avenue to Lagoon Road which is over 100 during the AM peak-hour and greater than 200 during both the NOON and PM peak hours.

Future 5-Year 2020 as well as 15-Year 2030 conditions continue to reflect poor conditions just as Existing had with greater delays due to expected 5-year growth. Based on these significantly poor conditions, improvements to this intersection have been investigated as part of the Coligny Park project which includes geometric changes as well as the addition of traffic signal control. A description of these improvements is in Recommendations section of this report.

Storage Lane Queues:

Pope Avenue at Lagoon Road

			2015 Existing			5-Year (2020)			15-Year (2030)		
		Stacking	AM	Noon	PM	AM	Noon	PM	AM	Noon	PM
NB	Left	0	0	2	1	0	3	1	0	3	1
	Right	NA									
SB	Left	190	10	23	34	11	26	41	13	34	56
	Right	180	0	0	0	0	0	0	0	0	0
EB	Left	100	2	18	81	2	27	103	3	42	133
	Right	NA									
WB	Left	300	11	65	213	13	100	329	17	200	563
	Right	NA									

Lengths represented in feet.

As shown, each of the turning lanes currently provide adequate storage length for the existing vehicle queue lengths. Without improvements, 5-Year and 15-Year future conditions reflect stacking issues for both the eastbound (Town Parking area) and westbound (Lagoon Road) approaches.

RECOMMENDATIONS

This intersection operates poorly and is part of the planning effort of the Coligny Park. Geometric enhancements as well as signalization are expected as described below which have been included in the 5-Year 2020 analysis timeframe:

i. Northbound Approach (Pope Avenue):
   - Modify the landscaped median within Pope Avenue to provide a 150-foot long separate left-turn lane and a 180-foot taper; and
   - New left-turn lane will necessitate the modification of the median cross-over to the south currently serving Coligny Plaza. This modification could be either a closure to limit movements to right-in/right-out or continuing to allow the southbound left-turn into Coligny Plaza.

ii. Southbound Approach (Pope Avenue):
   - No improvements needed.

iii. Eastbound Approach (Town Parking):
   - Widen approach to provide a separate left-turn lane and a shared through/right-turn lane.

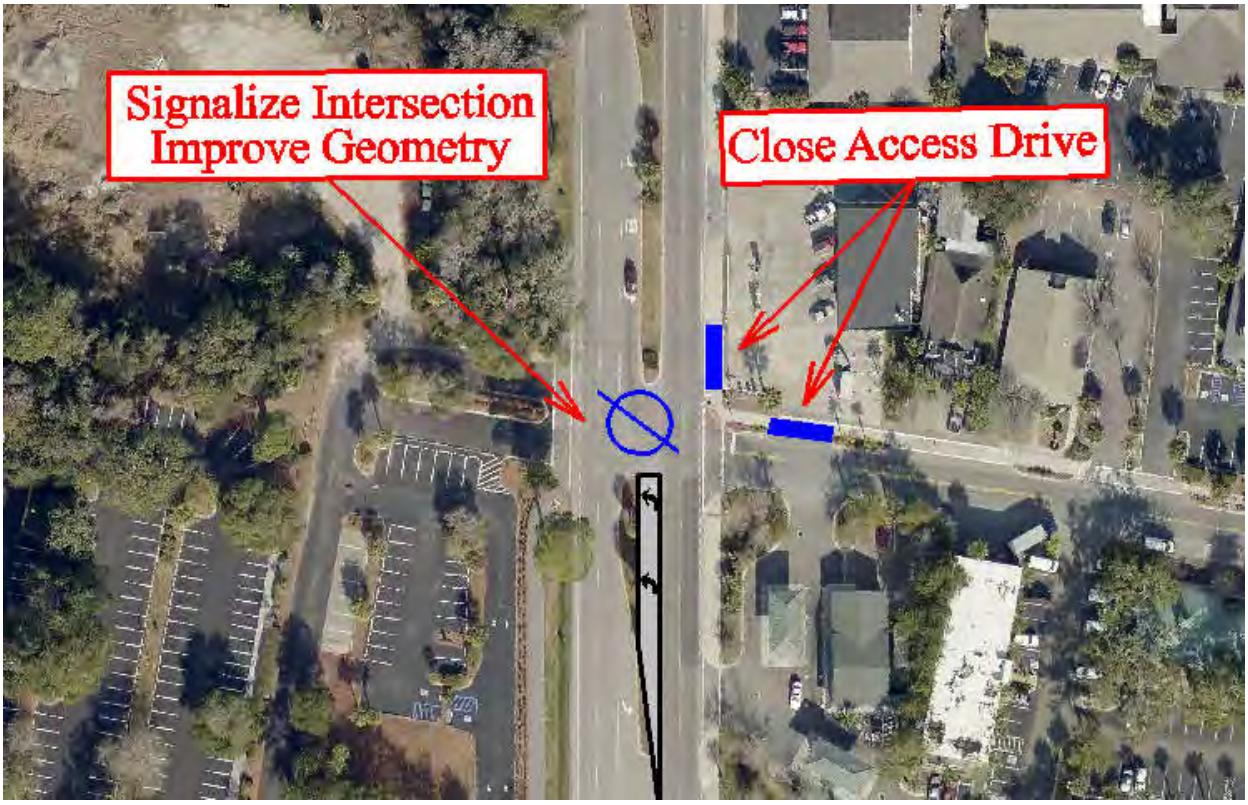
iv. Westbound Approach (Lagoon Road):
   - Widen approach to provide a separate left-turn lane and a shared through/right-turn lane.

v. Traffic Control:
   - Place intersection under multi-phased traffic signal control with provisions for protected/permissive southbound left-turn phasing and pedestrian actuation.

vi. Adjacent Access Drives:

- Closure of the two access drives in the northeast corner of the intersection is recommended in order to provide improved vehicular circulation and safety with implementation of traffic signal control.

Concept



SUMMARY of IMPROVEMENTS: Pope Avenue

- New Orleans Road at Office Park Road to be modified as part of the USCB project. Expected modifications are:

  1. Eastbound Approach (Office Park Road):

     - Widen approach to provide a separate left-turn lane, through lane and a separate right-turn lane;

  2. Westbound Approach (New Orleans Road):

     - Relocated approach to the south to align opposing roadways;
     - New approach to provide dual left-turn lanes, a through lane and a separate right-turn lane; and
     - Extend storage of the westbound dual left-turn lanes.

  3. Southbound Approach (Pope Avenue):

     - Widen to provide a separate right-turn lane entering Office Park Road.

- Executive Circle South to be modified to allow southbound left-turn movements and prohibit westbound left-turn exiting Executive Circle South.

- Cordillo Parkway at Shipyard

  1. Modify the multi-use path of the eastside of Pope Avenue to provide separation of through lane; and
  2. If possible due to access drives, extend storage length for eastbound left-turn movements.

- Nassau Street to be modified as part of the Town Park project to add a second eastbound approach lane. Create a southbound left-turn lane for U-turns within the Pope Avenue median.

- Lagoon Road at Town Beach Parking

  1. Northbound Approach (Pope Avenue) modify the landscaped median within Pope Avenue to provide a 150-foot long separate left-turn lane and a 180-foot taper. New left-turn lane will necessitate the modification of the median cross-over to the south currently serving Coligny Plaza. This modification could be either a closure to limit movements to right-in/right-out or counting to allow the southbound left-turn into Coligny Plaza.

2. Eastbound Approach (Town Parking), widen approach to provide a separate left-turn lane and a shared through/right-turn lane.

3. Westbound Approach (Lagoon Road), widen approach to provide a separate left-turn lane and a shared through/right-turn lane.

4. Traffic Control, place intersection under multi-phased traffic signal control with provisions for protected/permissive southbound left-turn phasing and pedestrian actuation.

5. Close access drives located in close proximity to newly signalized intersection.

- Review the potential of providing a parallel north/south roadway system to Pope Avenue. Based on the projected future 2030 traffic volumes, the roadway to the west side of Pope Avenue connecting Office Park Road to Cordillo Parkway provides the greatest benefit/reduction in daily traffic volumes along Pope Avenue by providing this alternative routing.

- Given the current high usage of the multi-use paths along this corridor, review the potential of widening the both the east and west sides of Pope Avenue from the current 10-foot width to 12-feet or greater. If widening both side are not possible due to right-of-way issues, etc, widen only the multi-use path on the western side which has the greater pedestrian and bike usage.

CORRIDOR of GREENWOOD DRIVE

Greenwood Drive is a private roadway which consists of the six intersections of Reilly's East/Suntrust, Island Crossing, Reilly's West/Galleria, Sea Pine Visitor Center, Office Park Road and Sea Pines Visitor Center right-turn exit. To the west, controlled entrance to Sea Pines PUD is provided which serves as the main access serving the PUD. Total length of this corridor is approximately 1,550-feet (.3-miles) which encompasses the above referenced intersections which are each under STOP sign control

EXISTING CONDITIONS

Geometrics

In general, Greenwood Drive provides a four-lane divided cross-section where directional traffic flow is separated by landscaped median an/or sub-standard left-turn lanes developed for access to the many existing curb-cuts.

No pedestrian or bike pathway is provided along the entire length of this segment. A minor number of pedestrians and bicyclists were observed however they typical did not travel along Greenwood Drive but rather traveled onto Office Park Road or into the Island Crossing Center.

Traffic Volumes

Daily traffic volumes as indicated by the 2015 LCOG Transportation model indicate a two-way average annual daily traffic volume (AADT) of 15,600 vpd. This volume correlates to a LOS B for the average condition in accordance with the Minimum ADT (max. 28,520 LOS D) by Level-of-Service for Urban Facilities provided by the SCDOT.

Accident History

Three years of summarized accident data for this entire corridor has been provided which include all accidents at the six unsignalized intersections contained within the segment as well as accidents that were in between intersections as well as accidents just prior to entering the Sea Pines Circle.

Corridor of Greenwood Drive

Year	Annual # Accidents	Angle[a]	Rear End	Sideswipe	Fixed Obj[b]	Other	Summer Months (June-Aug)	Involved Bike or Ped
2015 (Jan-June)	6	5		1			4	
2014	13	12			1		5	
2013	22	21	1				10	
2012 (July-Dec)	4	4					2	
Total Crashes	45	42	1	1	1	0	21	0
Avg. Per Year	***15.0***						***7.0***	

Note: Information provided by Town of Hilton Head.

a. Angle or cross-movement type collision.

b. Vehicle collided with fixed object, typically ran off roadway.

As shown, this 3/10^{ths} of a mile section totaled 45 accidents over the three-year period resulting in an average of nearly 15 accidents per year. The majority of accident types are angle or cross-movement. On average, slightly less than half of these accidents occur during the summer months.

Further review of the accidents along this corridor confirm that the cross-movement type accident is indicative of the left-turn movements both entering and existing the multiple curb-cuts along this short section of roadway. Specifics for the intersection accidents will be covered in each specific intersections' section.

FUTURE 2030 CONDITIONS

Future traffic demands as expected by the LCOG transportation model indicate that Greenwood Drive will serve an AADT of 17,900 vpd under 2030 conditions; this volume correlates to a LOS B for the AADT condition.

RECOMMENDATIONS

Construction of a formal new "northwestern connector" roadway connecting Greenwood to Palmetto Bay Road should be completed. This new by-pass roadway will circumvent the Sea Pines Circle not only benefiting operations of the Circle but also intersections along Greenwood Drive as these intersection would likely see a diversion in traffic resulting in lower volumes along this roadway.

This connector to a lesser degree is currently provided however is encumbered by a circuitous route, speed humps and retail parking lot activity through the Island Crossing Center. The plan would be to formalize a new roadway which would provide an enhanced substitute to the use of the current cut-through of Island Crossing.

Concept of this new roadway would begin at Greenwood Drive via a new signalized intersection where Office Park Road and the Sea Pines Welcome Center would be aligned to create the new intersection along Greenwood Drive. This new roadway would then extend in a northern direction and then eastern direction to align through the Island Crossing Center and align opposite Target Road.

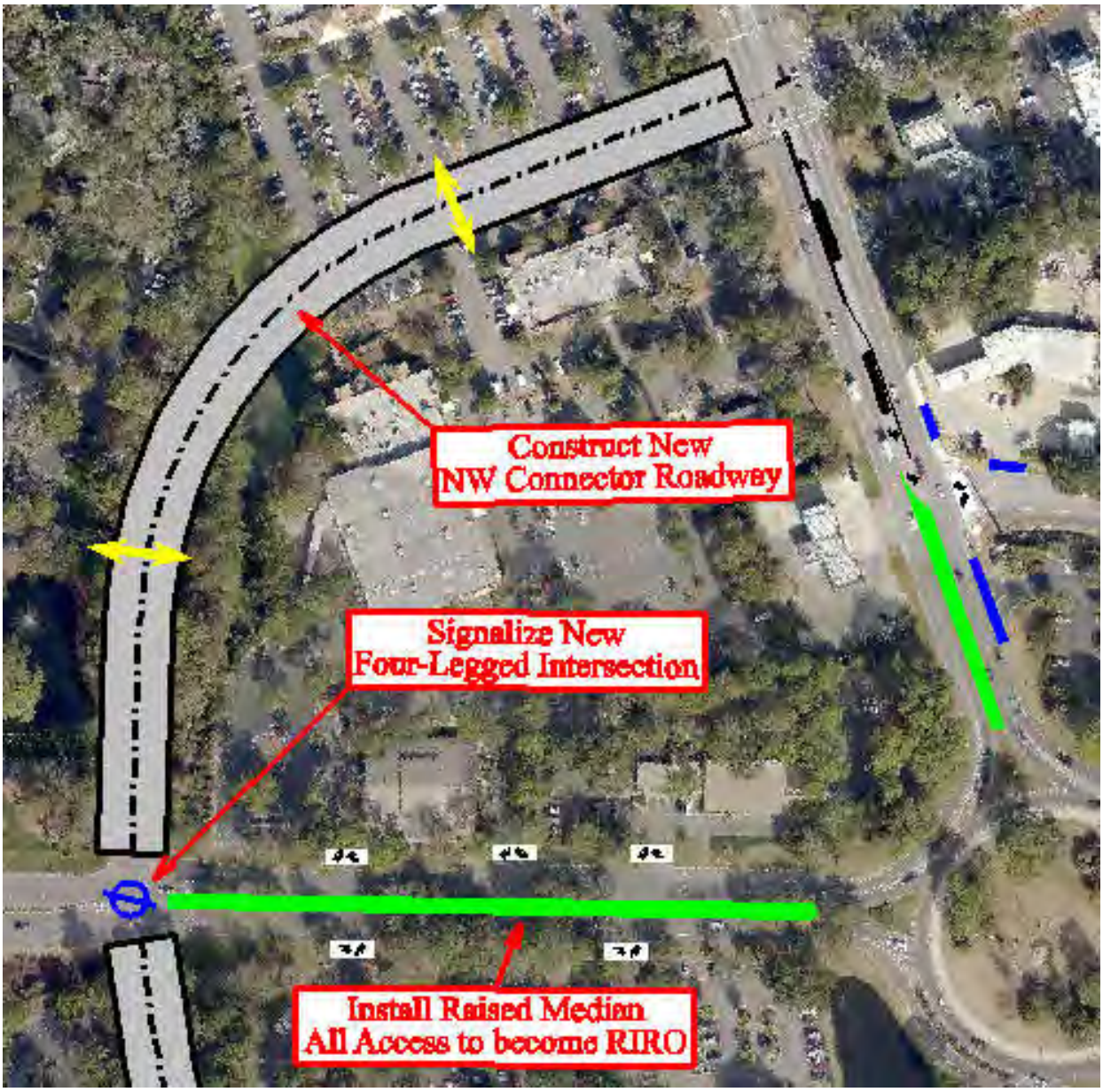
This new roadway should be constructed as a two-lane facility with a median which would provide left-turn lanes for strategically placed access drives. Access to the Sea Pines Welcome Center would be provided to/from this new roadway as well access drives serving the Island Crossing Center. In addition, a potential new gated access for "residences only" to/from the Sea Pines PUD for residential areas along Club Course Drive

could be provided and would further assist in the diversion of traffic away from Sea Pines Circle and Greenwood Drive) which would aid in operations of not only the Sea Pines main gate but also operations along Greenwood Drive.

With the planning of this new intersection of Greenwood Drive at Office Park Road/Northwestern Connector, access management along the remaining intersections can be implemented. The construction/continuation of the center landscaped median would remove all left-turn movements between Sea Pines Circle and this new intersection. Connectivity access drives to Reilly's and Island Crossing would provide for the relocated left-turn movements into these business. Existing access drives are planned to remain, however each will now be limited to right-in/right-out movements only.

Analysis conducted for the northern connector by the LCOG indicates that under 15-Year 2030 conditions, the Northwestern Connector could serve a two-way daily volume of 10,500 vpd of which a large portion of these trips would be remove from Greenwood Drive and the Sea Pines Circle. This would correlate to a LOS C for the average condition in accordance with the Minimum ADT (max. 12,420 LOS D) by Level-of-Service for Urban Facilities provided by the SCDOT.

Concept


Construct New
NW Connector Roadway
Signalize New
Four-Legged Intersection
Install Raised Median
All Access to become RIRO

GREENWOOD DRIVE AT REILLY'S EAST/SUNTRUST

Part of the Greenwood Drive corridor closest to the Sea Pines Circle, this is a four-legged unsignalized intersection. To the north, this intersection provides access to Island Crossing, specifically Suntrust Financial and to the south, access to Reilly's Plaza containing popular restaurants/lounges. Intersection is located approximately 230-feet west of the circumference of the Sea Pines Circle.

EXISTING CONDITIONS

Geometrics

The following provides a graphic and description of the existing intersection geometrics:

Description

Approach:	Northbound	
Name:	**Reilly's East Access**	
	# Lanes	Storage (ft)
Left/Thru/Right	1	25

Approach:	Southbound	
Name:	**Suntrust**	
	# Lanes	Storage (ft)
Left/Thru/Right	1	25

Approach:	Eastbound	
Name:	**Greenwood Drive**	
	# Lanes	Storage (ft)
Left	1	75
Through	2	
Right	1	170

Approach:	Westbound	
Name:	**Greenwood Drive**	
	# Lanes	Storage (ft)
Left	1	50
Through	2	
Right	NA	

Accident History

Greenwood Drive at Reilly's East/Suntrust

Year	Annual # Accidents	Angle[a]	Rear End	Sideswipe	Fixed Obj[b]	Other	Summer Months (June-Aug)	Involved Bike or Ped
2015 (Jan-June)	5	5					4	
2014	11	11					5	
2013	16	16					6	
2012 (July-Dec)	4	4					2	
Total Crashes	36	36	0	0	0	0	17	0
Avg. Per Year	***12.0***						***5.7***	

Note: Information provided by Town of Hilton Head.

a. Angle or cross-movement type collision.

b. Vehicle collided with fixed object, typically ran off roadway.

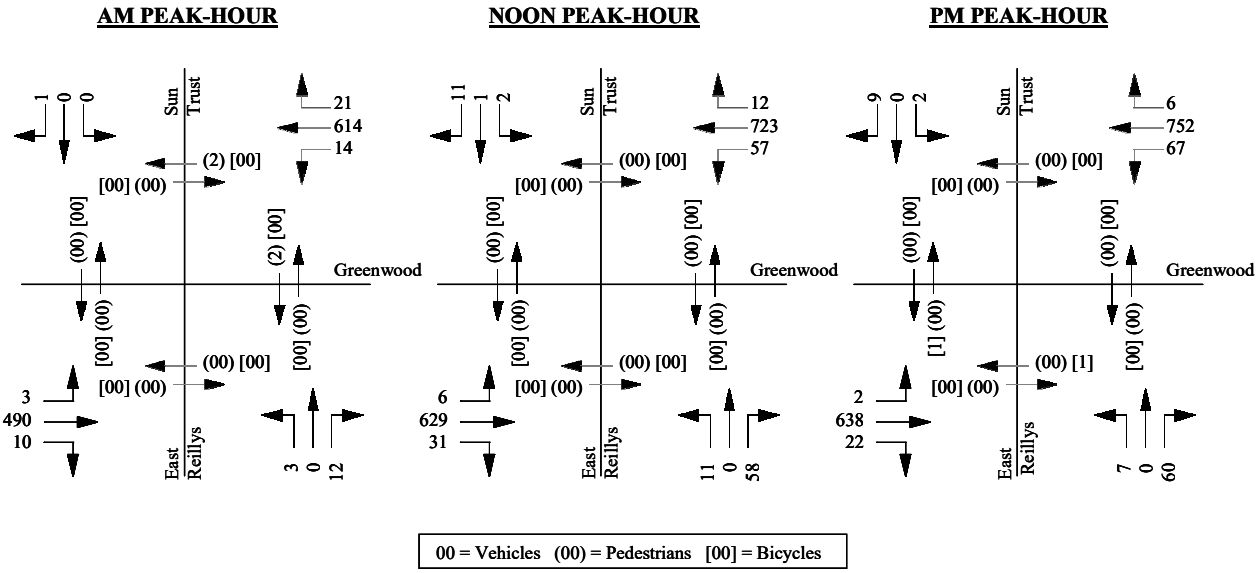
As indicated, a total of 36 accidents were reported at this intersection over the three year period (average of 12 accidents per year) with all collisions reported being angle or cross-movement type. These accident types can be attributed to the proximity of this intersection to Sea Pines Circle and the vehicular queues that occur. Another factor is the fact that this intersection provides for all applicable vehicular movements which when exiting the Circle provides a short weaving section for drivers entering the southerly approach (Reilly's).

A total of 17 accidents (50-percent of the accident total) occurred during the summer months. No accidents reported involved either a pedestrian or bicyclist.

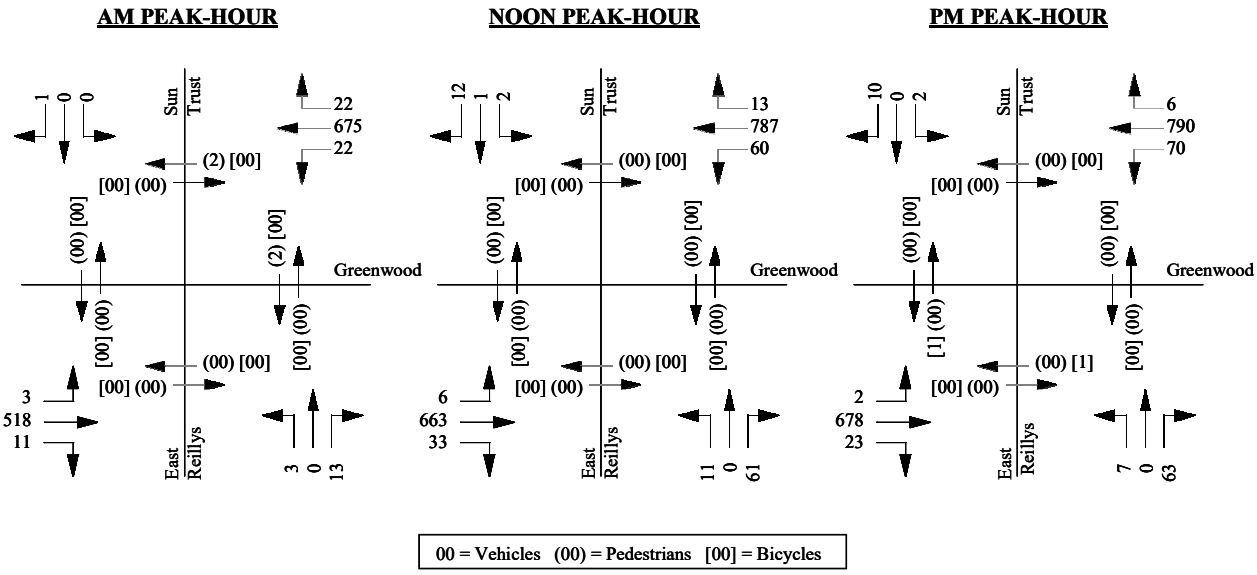
Traffic Volumes

Existing peak-hour volumes gathered during the second week of June 2015 are present below which represent the AM, NOON and PM peak-hours time periods. Following the 2015 peak-hour volumes are the two Future year conditions which reflect 2020 (5-year) and 2030 (15-year) peak-hour volume projections.

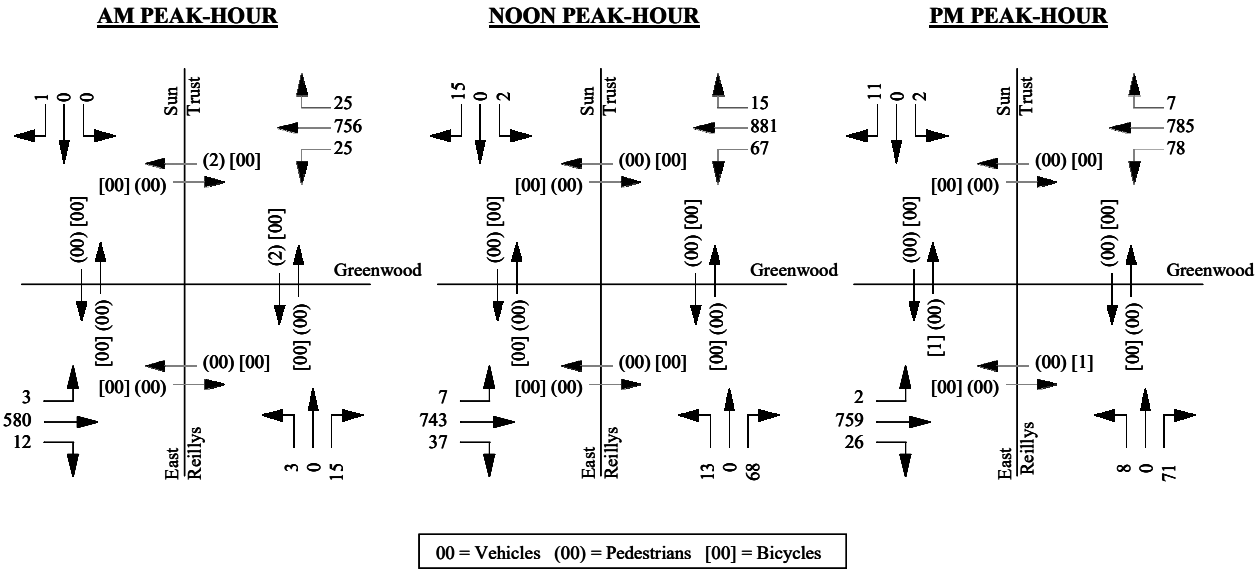
2015 Existing Peak-Hour Volumes



2020 Peak-Hour Volumes



2030 Peak-Hour Volumes



Intersection Operations

Service Levels:

Intersection	Peak Hour	2015 Existing Delay[2]	2015 Existing LOS[3]	5-Year (2020) Delay	5-Year (2020) LOS	15-Year (2030) Delay	15-Year (2030) LOS
Greenwood Drive at Reilly's East/Suntrust	AM	12.7	B	13.1	B	14.3	B
	NOON	18.3	C	19.7	C	24.3	C
	PM	17.5	C	18.2	C	22.0	C

1. Calculations completed using the 2010 HCM methodology.
2. Delay in seconds-per-vehicle.
3. Level-of-Service.

GENERAL NOTES:

1. For unsignalized intersections, delay is representative of the minor street worst approach.

As shown, operations at this unsignalized intersection are acceptable during the Existing, 5-Year 2020 and 15-Year 2030 conditions. These service levels are not indicative of actual conditions based on the impact that the adjacent Sea Pines Circle (230-feet separation to the east) has on this intersection when vehicles queue across/block this intersection. Even though through traffic on Greenwood Drive is significant during the peak-hours, most notably the NOON and PM peaks, service levels are good because very few drivers attempt to make left-turn from either the Reilly's or Suntrust minor street approaches.

It should be noted that it was observed during the peak summer months, vehicle queues through/across this intersection were evident and occurred during the NOON and PM peak time periods. These conditions are not caused by this signalized intersection but rather the Sea Pines Circle.

Storage Lane Queues:

Greenwood Drive at Reilly's East/Suntrust

			2015 Existing			5-Year (2020)			15-Year (2030)		
		Stacking	AM	Noon	PM	AM	Noon	PM	AM	Noon	PM
NB	Left	25	2	19	16	3	23	18	4	35	26
	Right	NA									
SB	Left	25	2	4	3	0	5	4	0	7	5
	Right	NA									
EB	Left	50	0	1	0	0	1	0	0	1	0
	Right	NA									
WB	Left	75	2	6	7	2	6	8	2	8	9
	Right	170	0	0	0	0	0	0	0	0	0

Lengths represented in feet.

As shown, each of the turning lanes currently provide adequate storage length. Observations however indicate that the westbound left-turn into Reilly's does have a queuing problem when vehicles stack through this intersection from the Circle. The short storage lane of 75-feet did indeed back into the through lanes which caused constraints for vehicles exiting the Circle. These constraints were observed during both the NOON and PM peak time periods.

RECOMMENDATIONS

This intersection has a historical accident issue due to the short weave between the Sea Pines Circle and the left-turn into Reilly's access and the fact that queues occur from the Circle through this intersection and left-turn movements into Reilly's cross this stationary queue in lane #1 and have a collision with a vehicle in lane #2.

To improve this situation, it is suggested that the median cross-over within Greenwood Drive be closed which will eliminate all left-turn movements to/from both Reilly's to the south side and Suntrust to the north side. Left-turn movements can be made at alternative connections to the west which will be provided as part of the new northern connector and the signalized intersection or Office Park Way and Office Park Road.

With the restriction of all left-turn movements at this intersection, operations are expected to improve to a LOS B for the minor street right-turn movements during all peak-hour time periods studied.

GREENWOOD DRIVE AT ISLAND CROSSING

Part of the Greenwood Drive corridor, this is a three-legged unsignalized intersection which is located approximately 370-feet west of the Sea Pines Circle. To the north, this intersection provides access to the Island Crossing Center.

EXISTING CONDITIONS

Geometrics

The following provides a graphic and description of the existing intersection geometrics:

Description

Approach:	Southbound	
Name:	**Island Crossing**	
	# Lanes	Storage (ft)
Left/Thru/Right	1	100

Approach:	Eastbound	
Name:	**Greenwood Drive**	
	# Lanes	Storage (ft)
Left	1	50
Through	2	
Right	NA	

Approach:	Westbound	
Name:	**Greenwood Drive**	
	# Lanes	Storage (ft)
Left	NA	0
Through	2	
Right	1	110

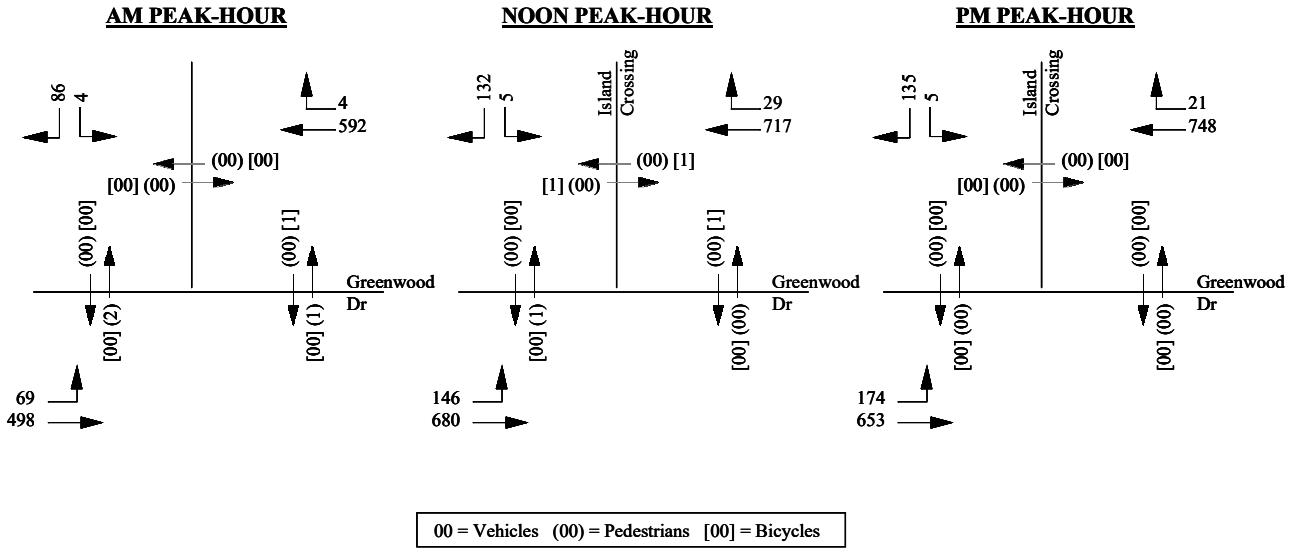
Accident History

No accidents were summarily reported at this intersection during the three-year period analyzed in this report likely due to a combination of accidents were report and included in the Sea Pines Circle data, or due to the fact that this is a private roadway.

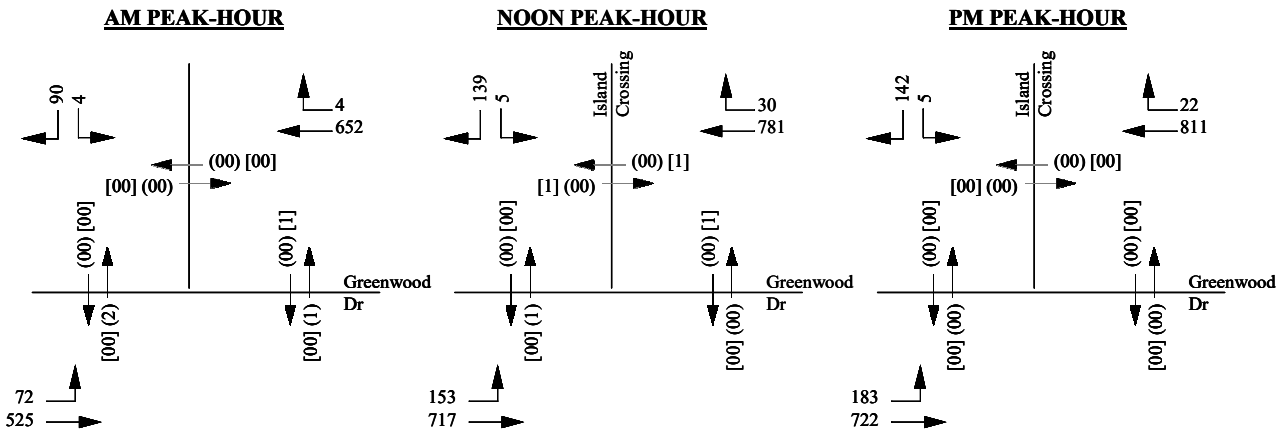
Traffic Volumes

Existing peak-hour volumes gathered during the second week of June 2015 are present below which represent the AM, NOON and PM peak-hours time periods. Following the 2015 peak-hour volumes are the two Future year conditions which reflect 2020 (5-year) and 2030 (15-year) peak-hour volume projections.

2015 Existing Peak-Hour Volumes

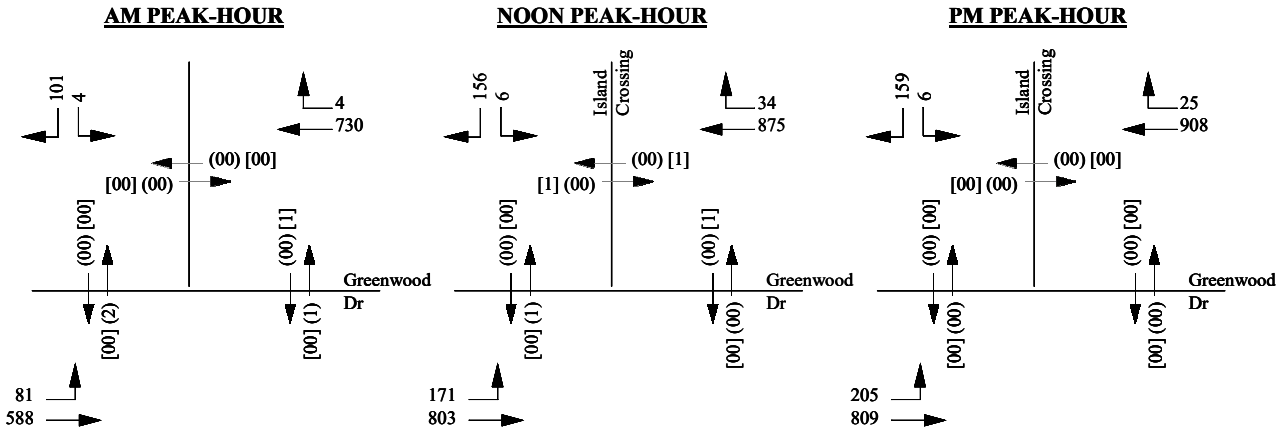


2020 Peak-Hour Volumes



00 = Vehicles (00) = Pedestrians [00] = Bicycles

2030 Peak-Hour Volumes



00 = Vehicles (00) = Pedestrians [00] = Bicycles

Intersection Operations

Service Levels:

Intersection	Peak Hour	2015 Existing Delay[2]	2015 Existing LOS[3]	5-Year (2020) Delay	5-Year (2020) LOS	15-Year (2030) Delay	15-Year (2030) LOS
Greenwood Drive at Island Crossing Access	AM	12.2	B	12.8	B	14.0	B
	NOON	15.3	C	16.6	C	20.7	C
	PM	16.2	C	17.9	C	23.6	C

1. Calculations completed using the 2010 HCM methodology.
2. Delay in seconds-per-vehicle.
3. Level-of-Service.

GENERAL NOTES:

1. For unsignalized intersections, delay is representative of the minor street worst approach.

As shown, operations at this unsignalized intersection are acceptable during the Existing, 5-Year 2020 and 15-Year 2030 conditions. These service levels are not indicative of actual conditions based on the impact that the adjacent Sea Pines Circle (370-feet separation to the east) has on this intersection when vehicles queues in the eastbound direction block this intersection. Even though through traffic on Greenwood Drive is significant during the peak-hours, most notably the NOON and PM peaks, service levels are good because very few drivers attempt to make a left-turn from Island Crossing towards Sea Pines Circle.

The strategy of implementing the new by-pass roadway show an improvement in operations at this intersection by reduced delays which would be indicative of a reduction in through traffic on Greenwood Drive and a reduction of left-turn traffic entering Island Crossing which would be diverted to the new by-pass roadway. Combined with the prohibiting of all left-turns movements at this intersection, operations are expected to improve as indicated above.

Storage Lane Queues:

Greenwood Drive at Island Crossing

			2015 Existing			5-Year (2020)			15-Year (2030)		
		Stacking	AM	Noon	PM	AM	Noon	PM	AM	Noon	PM
NB	Left	NA									
	Right	NA									
SB	Left	100	14	30	34	16	36	40	21	53	64
	Right	NA									
EB	Left	50	7	19	24	7	21	28	9	28	37
	Right	NA									
WB	Left	NA									
	Right	110	0	0	0	0	0	0	0	0	0

Lengths represented in feet.

As shown, each of the turning lanes currently provide adequate storage length. Observations indicate that the eastbound left did queue during peak times greater than the provided 50-feet of storage (greater than two vehicles). A portion of this traffic is likely cutting through the Island Crossing Center to PBR at the Target Road traffic signal. The recommended northern connector as has been discussed earlier will improve this situation by diverting traffic from this location to the new planned signalized intersection/by-pass.

RECOMMENDATIONS

To improve this situation, it is suggested that the median cross-over within Greenwood Drive be closed which will eliminate all left-turn movements to/from Island Crossing. Left-turn movements can be made at alternative connections to the west which will be provided as part of the new northern connector.

With the restriction of all left-turn movements at this intersection, operations are expected to improve to a LOS B for the southbound (Island Crossing approach) right-turn movements during all peak-hour time periods studied.

GREENWOOD DRIVE AT REILLY'S WEST

Part of the Greenwood Drive corridor, this is a four-legged unsignalized intersection located approximately 525-feet west of the Sea Pines Circle. To the north this intersection provides access into the Island Crossing Center at the Galleria and to the south provides access to the Reilly's Center.

EXISTING CONDITIONS

Geometrics

The following provides a graphic and description of the existing intersection geometrics:

Description

Approach:	Northbound	
Name:	**West Reilly's**	
	# Lanes	Storage (ft)
Left/Thru/Right	1	25

Approach:	Southbound	
Name:	**Galleria**	
	# Lanes	Storage (ft)
Left/Thru/Right	1	50

Approach:	Eastbound	
Name:	**Greenwood Drive**	
	# Lanes	Storage (ft)
Left	1	25
Through	2	
Right	NA	

Approach:	Westbound	
Name:	**Greenwood Drive**	
	# Lanes	Storage (ft)
Left	NA	0
Through	2	
Right	NA	

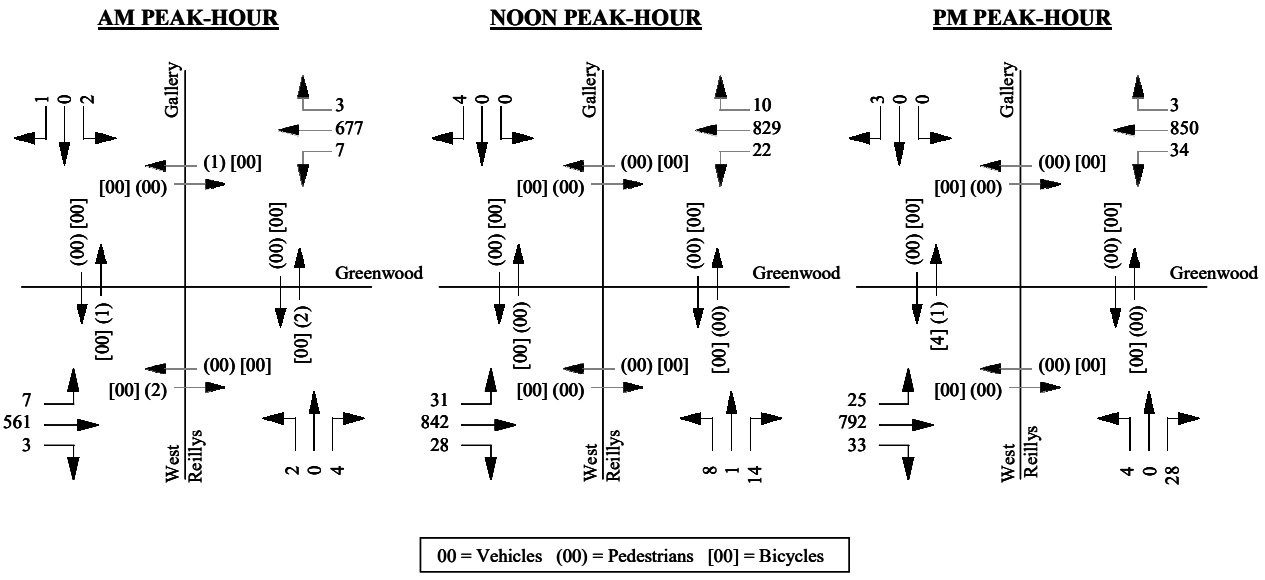
Accident History

No accidents were summarily reported at this intersection during the three-year period analyzed in this report likely due to a combination of accidents were report and included in the Sea Pines Circle data, or due to the fact that this is a private roadway.

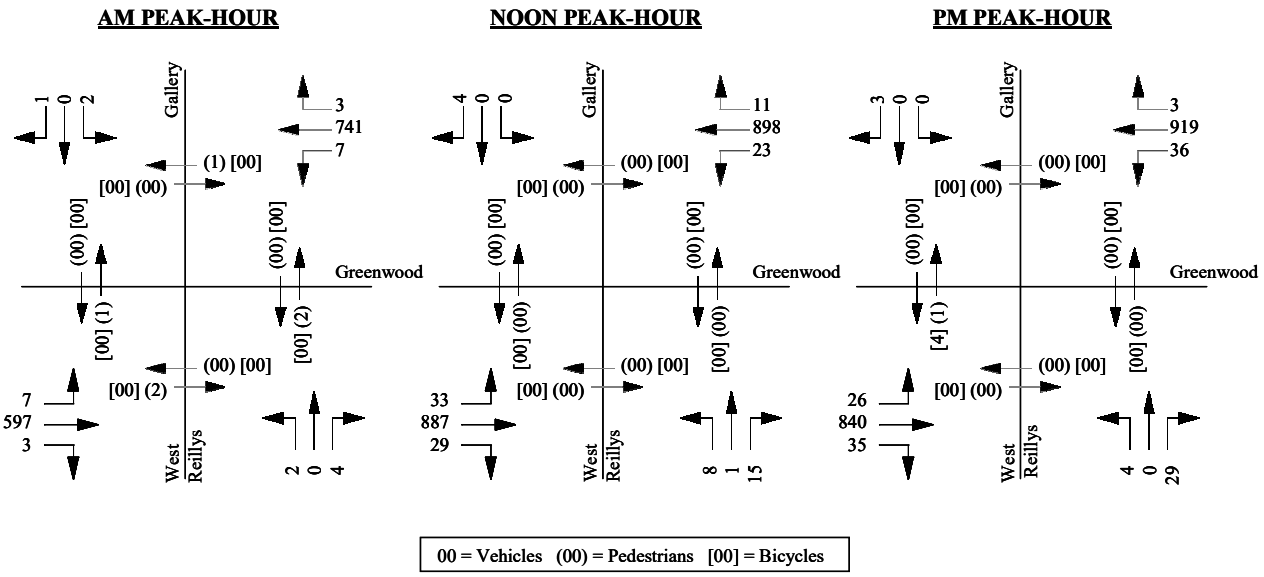
Traffic Volumes

Existing peak-hour volumes gathered during the second week of June 2015 are present below which represent the AM, NOON and PM peak-hours time periods. Following the 2015 peak-hour volumes are the two Future year conditions which reflect 2020 (5-year) and 2030 (15-year) peak-hour volume projections.

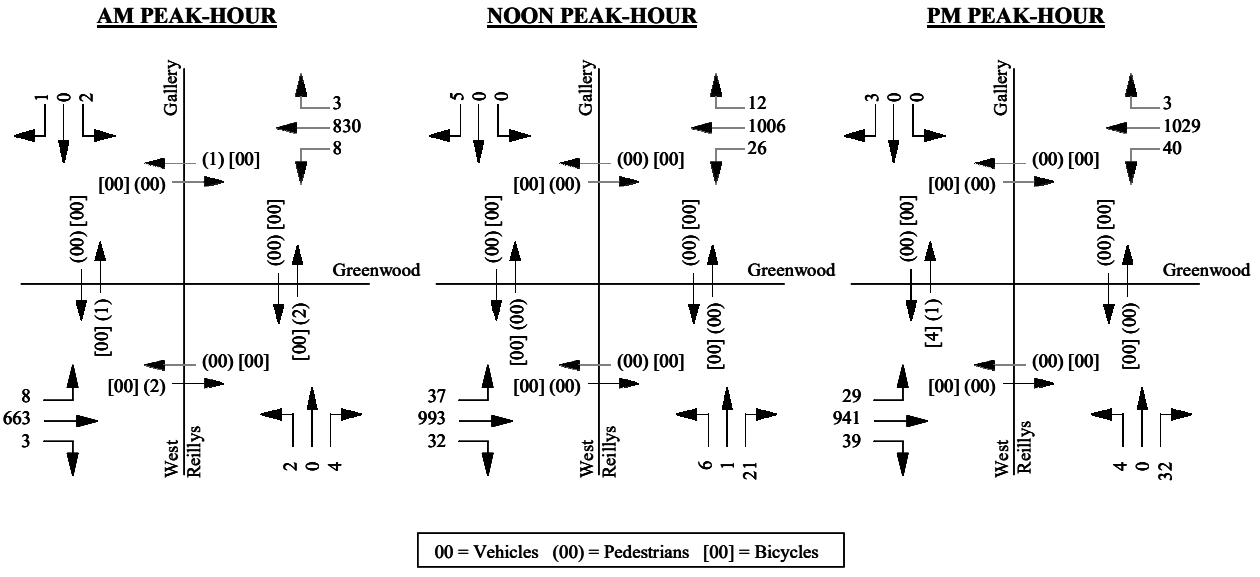
2015 Existing Peak-Hour Volumes



2020 Peak-Hour Volumes



2030 Peak-Hour Volumes



Intersection Operations

Service Levels:

Intersection	Peak Hour	2015 Existing Delay[2]	2015 Existing LOS[3]	5-Year (2020) Delay	5-Year (2020) LOS	15-Year (2030) Delay	15-Year (2030) LOS
Greenwood Drive at Reilly's West/Gallery	AM	21.8	C	24.3	C	29.4	D
	NOON	33.7	D	38.9	E	58.9	F
	PM	18.1	C	19.9	C	25.8	D

1. Calculations completed using the 2010 HCM methodology.
2. Delay in seconds-per-vehicle.
3. Level-of-Service.

GENERAL NOTES:

1. For unsignalized intersections, delay is representative of the minor street worst approach.

As shown, operations at this unsignalized intersection are currently acceptable during the Existing conditions. Under the 5-Year 2020 and 15-Year 2030 conditions, the AM and PM peak-hours are acceptable however the NOON peak-hour will degrade to a LOS E or F. These service levels are not indicative of actual conditions based on the impact that the adjacent Sea Pines Circle (525-feet separation to the east) has on this intersection when vehicles queues in the eastbound direction block this intersection. Even though through traffic on Greenwood Drive is significant during the peak-hours, most notably the NOON and PM peaks, service levels are good because very few drivers attempt to make a left-turn from either Reilly's or Island Crossing.

The strategy of implementing the new by-pass roadway show an improvement in operations at this intersection by reduced delays which would be indicative of a reduction in through traffic on Greenwood Drive and a reduction of left-turn traffic would be diverted to the new by-pass roadway. Combined with the prohibiting of all left-turns movements at this intersection, operations are expected to improve as indicated above.

Storage Lane Queues:

Greenwood Drive at Reilly's West/Galleria

			2015 Existing			5-Year (2020)			15-Year (2030)		
		Stacking	AM	Noon	PM	AM	Noon	PM	AM	Noon	PM
NB	Left	25	1	14	9	1	17	10	2	28	16
	Right	NA									
SB	Left	25	1	1	0	1	1	0	2	1	1
	Right	NA									
EB	Left	25	1	4	3	1	4	3	1	5	4
	Right	NA									
WB	Left	0	1	3	4	1	3	4	1	4	6
	Right	NA									

Lengths represented in feet.

Queue capacity issues are indicated under Existing conditions for the westbound left-turn movement into Reilly's West based on the fact that no separate turning lane is provided. Under the scenario of the northern connector, no median cross-over will be provided hence the left-turn queue issue will be mitigated.

RECOMMENDATIONS

To improve this situation, it is suggested that the median cross-over within Greenwood Drive be closed which will eliminate all left-turn movements to/from Island Crossing. Left-turn movements can be made at alternative connections to the west which will be provided as part of the new northern connector.

With the restriction of all left-turn movements at this intersection, operations are expected to improve to a LOS B for the minor street right-turn movements during all peak-hour time periods studied.

GREENWOOD DRIVE AT SEA PINES WELCOME CENTER

Part of the Greenwood Drive corridor, this is a three-legged unsignalized intersection which services the Sea Pines Welcome Center office to the north. Intersection is located approximately 150-feet west of the Reilly's West/Galleria intersection and 160-feet east of Office Park Road. To the west of the main Welcome Center access (approx 400-feet), a right-out only egress is provided which gives access into the Sea Pines PUD only for visitors whom have checked-in at the Center.

EXISTING CONDITIONS

Geometrics

The following provides a graphic and description of the existing intersection geometrics:

Description

Approach:	Southbound	
Name:	**Sea Pines Welcome**	
	# Lanes	Storage (ft)
Left/Thru/Right	1	70

Approach:	Eastbound	
Name:	**Greenwood Drive**	
	# Lanes	Storage (ft)
Left	1	20
Through	2	
Right	NA	

Approach:	Westbound	
Name:	**Greenwood Drive**	
	# Lanes	Storage (ft)
Left	NA	
Through	2	
Right	1	25

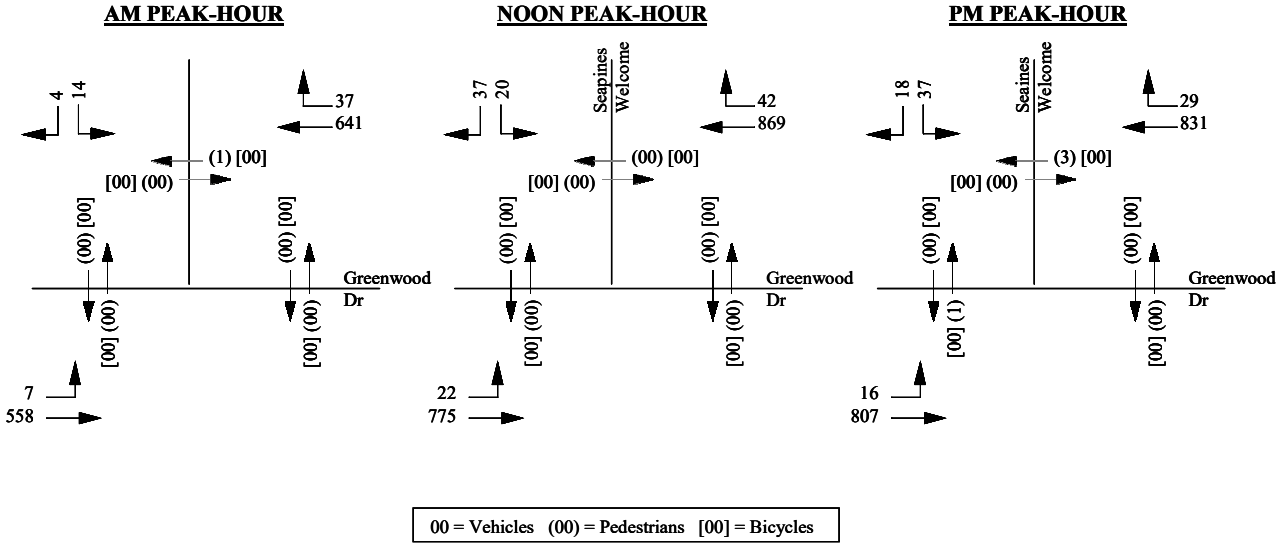
Accident History

No accidents were summarily reported at this intersection during the three-year period analyzed in this report likely due to a combination of accidents were report and included in the Sea Pines Circle data, or due to the fact that this is a private roadway.

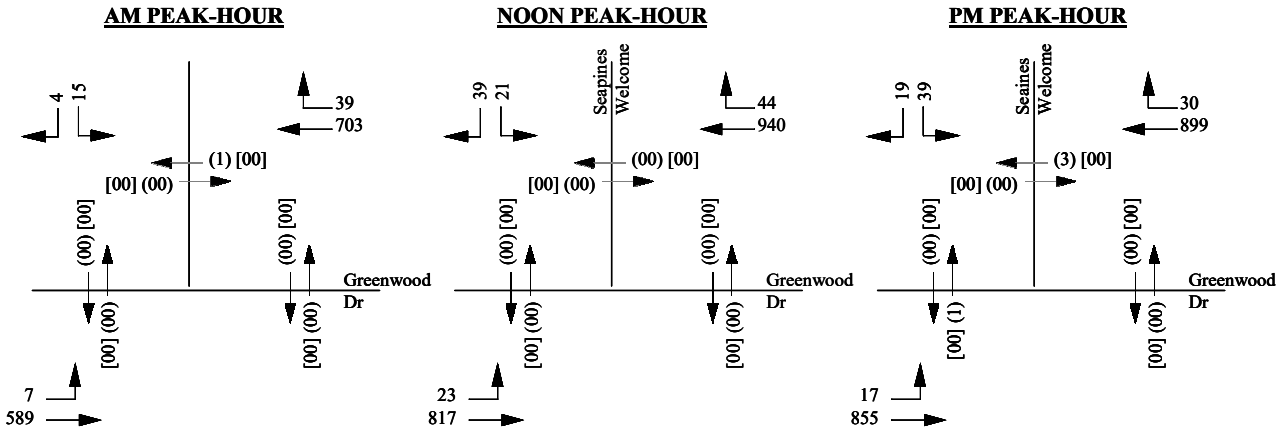
Traffic Volumes

Existing peak-hour volumes gathered during the second week of June 2015 are present below which represent the AM, NOON and PM peak-hours time periods. Following the 2015 peak-hour volumes are the two Future year conditions which reflect 2020 (5-year) and 2030 (15-year) peak-hour volume projections.

2015 Existing Peak-Hour Volumes

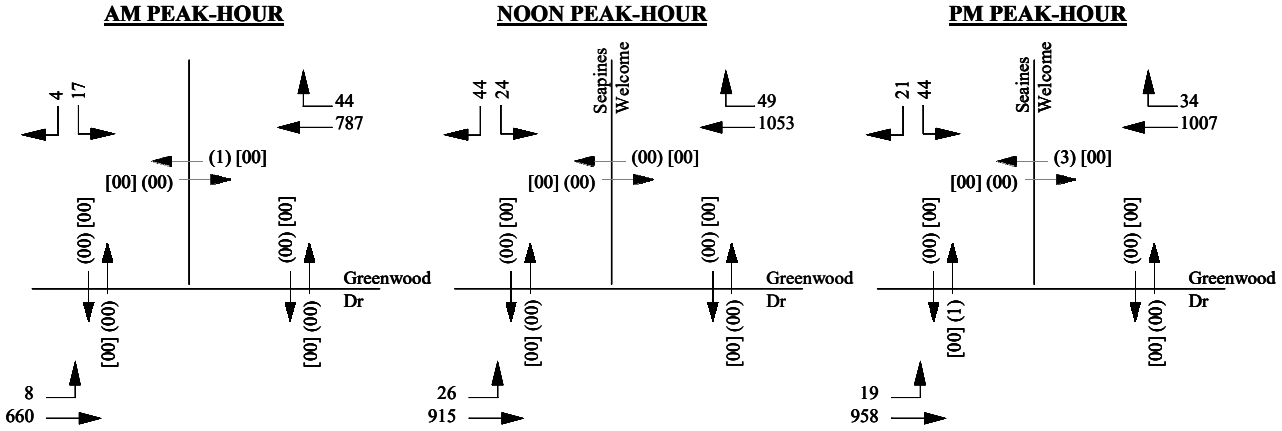


2020 Peak-Hour Volumes



00 = Vehicles (00) = Pedestrians [00] = Bicycles

2030 Peak-Hour Volumes



00 = Vehicles (00) = Pedestrians [00] = Bicycles

Intersection Operations

Service Levels:

Intersection	Peak Hour	2015 Existing Delay[2]	2015 Existing LOS[3]	5-Year (2020) Delay	5-Year (2020) LOS	15-Year (2030) Delay	15-Year (2030) LOS
Greenwood Drive at Seapines Welcome Center	AM	17.0	C	18.5	C	21.3	C
	NOON	20.2	C	22.7	C	29.3	D
	PM	26.7	D	31.1	D	44.2	E

1. Calculations completed using the 2010 HCM methodology.
2. Delay in seconds-per-vehicle.
3. Level-of-Service.

GENERAL NOTES:

1. For unsignalized intersections, delay is representative of the minor street worst approach.

As shown, operations at this unsignalized intersection are currently acceptable during both the Existing and 5-Year 2020 conditions. Under the 15-Year 2030 condition, the PM peak-hour is expected to operate at a LOS E while the AM and NOON will continue to operate at a LOS C and LOS D respectively.

These service levels are not indicative of actual conditions based on the impact that the adjacent Sea Pines Circle (760-feet separation to the east) has on this intersection when vehicles queue across/block this intersection. Even though through traffic on Greenwood Drive is significant during the peak-hours, most notably the NOON and PM peaks, service levels are good because very few drivers attempt to make a left-turn from the Welcome Center to Sea Pines Circle.

The strategy of implementing the new northern connector as well as modifications to this intersection is expected to result in a new four-legged intersection (opposite a relocated Office Park Road) which will operate under traffic signal control. A complete discussion of this will be presented in the next section of this report.

GREENWOOD DRIVE AT OFFICE PARK ROAD

Part of the Greenwood Drive corridor, this is a three-legged unsignalized intersection which services the development along Office Park Road to the south. It is also the main connection to the by-pass road around Sea Pines Circle making up the southwest quadrant of the circumferential roadway around the Circle. Intersection is located approximately 160-feet west of the Welcome Center access and 400-feet east of the Sea Pines main gate.

EXISTING CONDITIONS

Geometrics

The following provides a graphic and description of the existing intersection geometrics:

Description

Approach:	Northbound	
Name:	**Office Park Road**	
	# Lanes	Storage (ft)
Left	1	>300
Through	NA	
Right	1	35

Approach:	Eastbound	
Name:	**Greenwood Drive**	
	# Lanes	Storage (ft)
Left	NA	
Through	2	
Right	1	100

Approach:	Westbound	
Name:	**Greenwood Drive**	
	# Lanes	Storage (ft)
Left	1	90
Through	2	
Right	NA	

Accident History

Greenwood Drive at Office Park Road

Year	Annual # Accidents	Angle[a]	Rear End	Sideswipe	Fixed Obj[b]	Other	Summer Months (June-Aug)	Involved Bike or Ped
2015 (Jan-June)	1			1				
2014	1				1			
2013	4	3	1				2	
2012 (July-Dec)								
Total Crashes	6	3	1	1	1	0	2	0
Avg. Per Year	***2.0***						***0.7***	

Note: Information provided by Town of Hilton Head.

a. Angle or cross-movement type collision.

b. Vehicle collided with fixed object, typically ran off roadway.

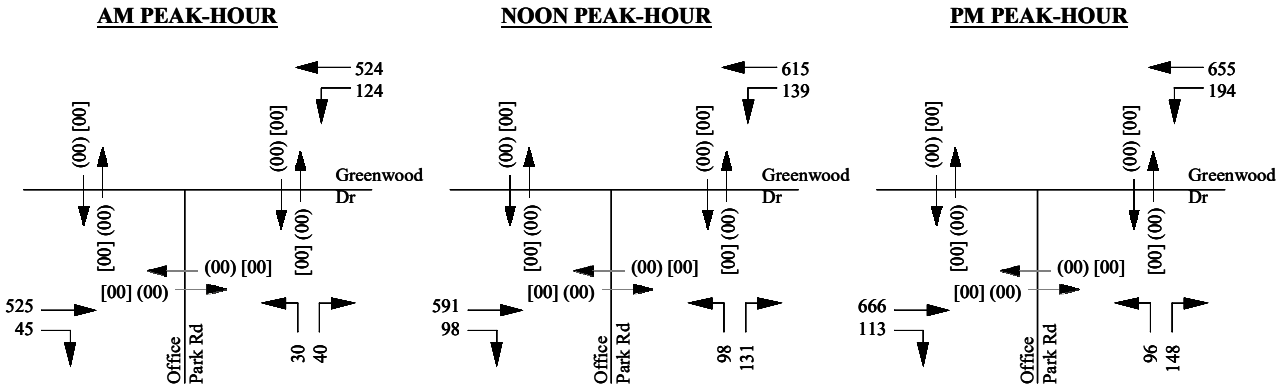
As indicated, an average of two accidents have been reported where the majority of them were angle type accidents which is indicative on an unsignalized intersection. Other accidents were one each for rear-end, sideswipe and fixed object. Rear end was in the eastbound direction which is likely due to the queue that cab backup from the Circle and the sideswipe was in the eastbound right-turn merge lane just to the east of Office Park.

A third of these report accident occurred during the summer months. No accidents reported involved either a pedestrian or bicyclist.

Traffic Volumes

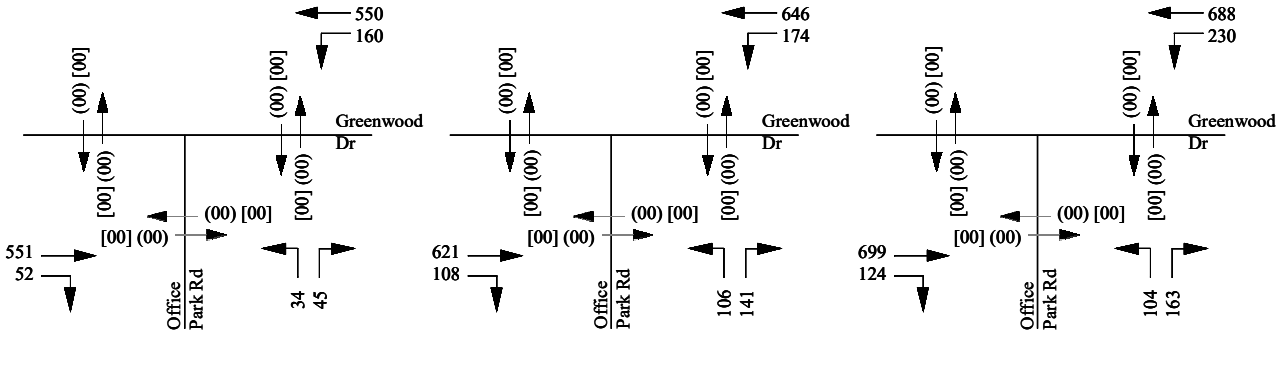
Existing peak-hour volumes gathered during the second week of June 2015 are present below which represent the AM, NOON and PM peak-hours time periods. Following the 2015 peak-hour volumes are the two Future year conditions which reflect 2020 (5-year) and 2030 (15-year) peak-hour volume projections.

2015 Existing Peak-Hour Volumes



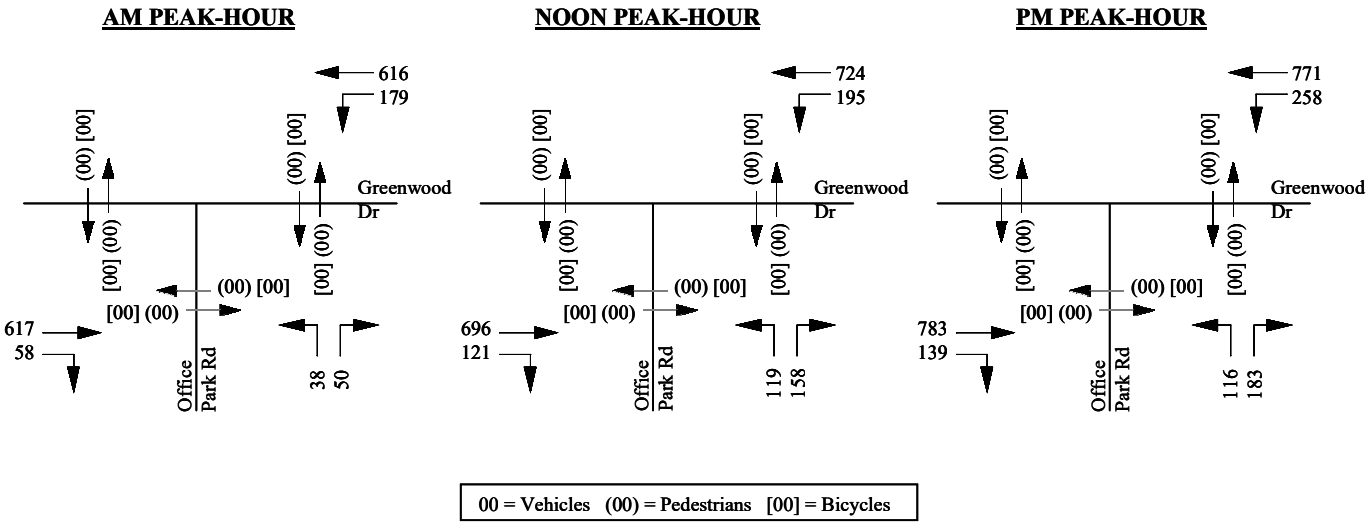
00 = Vehicles (00) = Pedestrians [00] = Bicycles

2020 Peak-Hour Volumes



00 = Vehicles (00) = Pedestrians [00] = Bicycles

2030 Peak-Hour Volumes



Intersection Operations

Service Levels:

Intersection	Peak Hour	2015 Existing Delay[2]	2015 Existing LOS[3]	5-Year (2020) Delay	5-Year (2020) LOS	15-Year (2030) Delay	15-Year (2030) LOS
Greenwood Drive at Office Park Road	AM	31.7	D	42.6	E	63.4	F
	NOON	102.8	F	216.1	F	>500.0	F
	PM	280.2	F	>500.0	F	>500.0	F

1. Calculations completed using the 2010 HCM methodology.
2. Delay in seconds-per-vehicle.
3. Level-of-Service.

GENERAL NOTES:

1. For unsignalized intersections, delay is representative of the minor street worst approach.

As shown, operations at this unsignalized intersection are poor under the Existing NOON and PM peak hours and are then projected to be poor during all three peak hours under the Future 5-Year 2020 and 15-Year 2030 conditions. The main reason for the poor operations is due to the northbound left-turn movement from Office Park Road entering the Sea Pine PUD.

Storage Lane Queues:

Greenwood Drive at Office Park Road

			2015 Existing			5-Year (2020)			15-Year (2030)		
		Stacking	AM	Noon	PM	AM	Noon	PM	AM	Noon	PM
NB	Left	300	18	234	419	28	382	>500	53	>500	>500
	Right	35	18	234	419	28	382	>500	53	>500	>500
SB	Left	NA									
	Right	NA									
EB	Left	NA									
	Right	100	0	0	0	0	0	0	0	0	0
WB	Left	90	12	15	24	17	20	32	21	25	42
	Right	NA									

Lengths represented in feet.

As shown, given the current lane geometry as well as traffic control, the northbound approach of Greenwood Drive has queuing capacity issues.

RECOMMENDATIONS

This intersection and the adjacent intersection of the Sea Pines Welcome Center and Office Park Road should be consolidated to aligned opposite each other in the approximate location of the Welcome Center. This will result in a new four-legged intersection which will serve a multitude of land-uses on both sides of Greenwood Drive as well as be one of the focal intersections associated with the new Northwest Connector. Geometrics suggested for this new intersection are as follows:

i. Northbound Approach (Re-located Office Park Road):
   - Separate left-turn lane, storage length of 200-feet;
   - Through lane; and
   - Separate right-turn lane, storage length of 250-feet.

ii. Southbound Approach (Welcome Center/New By-Pass):
   - Separate left-turn lane, storage length of 150-feet;
   - Through lane;
   - Separate right-turn lane, storage length of 300-feet.

iii. Eastbound Approach (Greenwood Drive):
   - Separate left-turn lane, storage length of 250-feet;
   - Two through lanes;
   - Separate right-turn lane, storage length of 200-feet.

iv. Westbound Approach (Greenwood Drive):
   - Separate left-turn lane, storage length of 200-feet;
   - Two through lanes; and
   - Separate right-turn lane, storage length of 100-feet.

v. Traffic Control:

- Place intersection under multi-phased traffic signal control with provisions for protected/permitted left-turn-phasing as well as right-turn over-lap phasing.

Access to the Welcome Center is provided from the new Northwest Connector roadway and should be provided a separate northbound left-turn lane for traffic entering the Welcome Center.

Island Crossing access will be provided and if possible should align opposite the Welcome Center resulting in a four-legged unsignalized intersection along the by-pass. This will not be the sole access into Island Crossing as other connections are likely towards the intersection with PBR. Along this section of the Northwest Connector, a new access to/from Sea Pines PUD could be considered which will provide a gated facility likely oriented towards residences only (potentially automated) which would provide a significant benefit to operations at the Sea Pines main gate as well as operations along Greenwood Drive.

South of Greenwood Drive, Office Park Road (relocated) will provide access to the commercial uses to both the east and west of the Office Park Road alignment. New access drives will be required given the re-location of Office Park Road to the east as well as connectivity to Reilly's Plaza.

As a new four-legged signalized intersection, operations are expected as follows:

Intersection	Peak Hour	5-Year 2020 NW Connector Loop		15-Year 2030 NW Connector Loop	
		Delay	LOS	Delay	LOS
Greenwood Drive at Office Park Road/ NW Connector	AM	16.9	B	17.3	B
	NOON	17.3	B	18.0	B
	PM	16.5	B	17.7	B

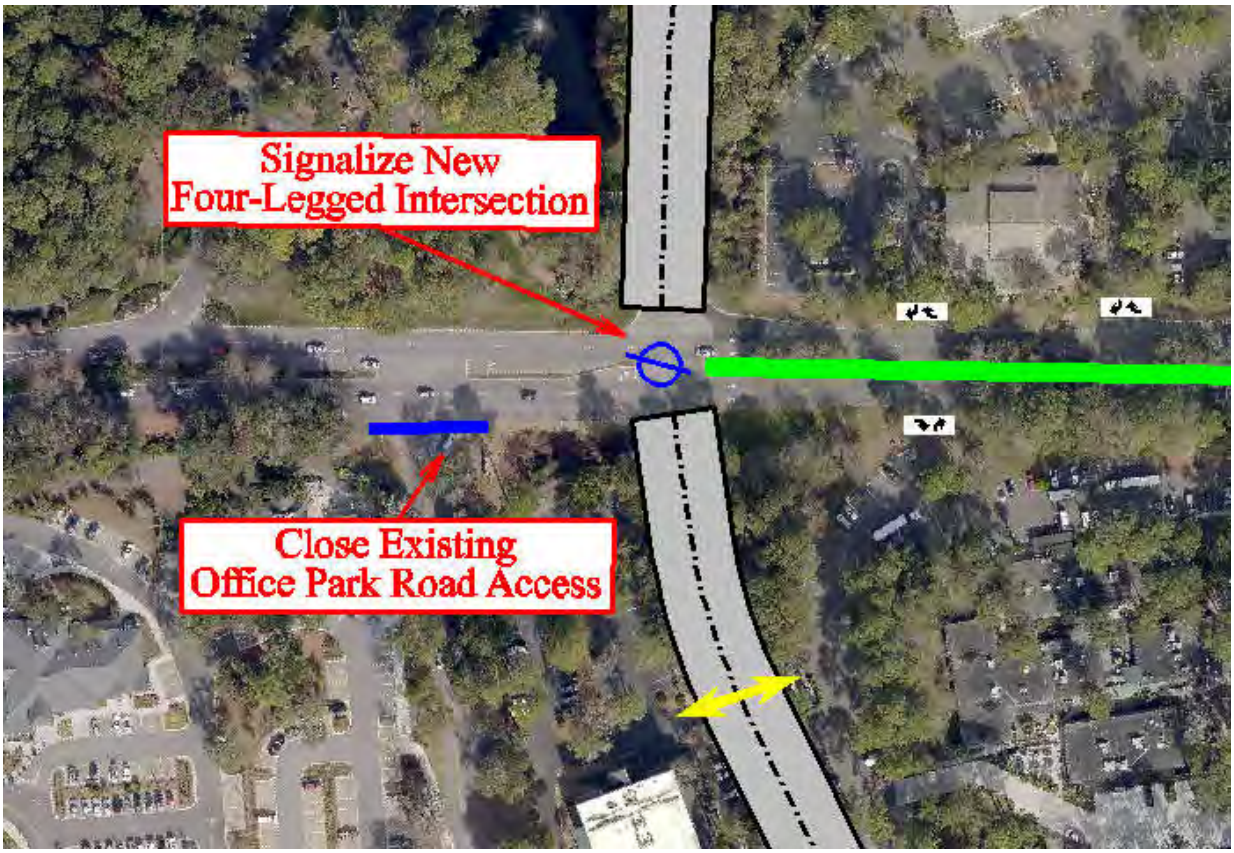
1. Calculations completed using the 2010 HCM methodology.
2. Delay in seconds-per-vehicle.
3. Level-of-Service.

GENERAL NOTES:

1. For unsignalized intersections, delay is representative of the minor street worst approach.

It should be noted that the location of this intersection will necessitate the review of the access gate entering/exiting Sea Pines PUD in order to increase the separation of this new intersection from the gate.

Concept


Signalize New
Four-Legged Intersection
Close Existing
Office Park Road Access

SUMMARY of IMPROVEMENTS: Greenwood Drive

- Re-alignment of the Greenwood Drive approach to the Sea Pines Circle order to improve the length of the merge/weave section of the Circle travel way between PBR and Greenwood Drive.

- Construction of a continuous raised median from Sea Pine Circle to the new signalized intersection of Office Park Road/Northwest Connector. This median will result in the prohibition of all left-turn movements at the following intersection:

    1. Reilly's East/Suntrust (four-legged intersection);
    2. Island Crossing (three-legged intersection); and
    3. Reilly's West/Galleria (four-legged intersection).

- Re-alignment of the Sea Pines Welcome Center access and Office Park Road to create a new four-legged intersection which will operate under traffic signal control. The northerly leg of this intersection will traverse in a north/eastern direction and align with the current access on PBR creating the Northwest Connector completing a perimeter roadway/connector around the Sea Pines Circle.

SEA PINES CIRCLE (US 278B/PBR/POPE/GREENWOOD)

Sea Pines Circle is a single-lane facility which provides one lane entering the circle as well as a right-turn lane on each of the four approach legs. The Sea Pines Circle is a focal point on the Island which brings together three major arterials together being William Hilton Parkway (US 278B), Palmetto Bay Road and Pope Avenue. The fourth approach being Greenwood Drive is a privately owned collector roadway that provides access to the main/front gate of Sea Pines PUD. The current circle has a diameter of approximately 310-feet which exclude the separate "free" right-turn lanes that are provided for each approach. If accounting for these right-turn lanes, the diameter is nearly 370-feet. The inside landscaped portion of the circle is approximately 250-feet and a decorative truck skirt of 14-feet is provided which is concentric to the center landscaped circle.

Each approach to the Circle provides one lane entering the circle for U-turn, left and through movements; a free-flow right-turn lane is provided on each approach which is separate from the internal weaving of the Circle by a slender raised landscaped median. Departing the circle on each roadway; two lanes are provided which accommodate the single-lane exiting the circle as well as the free-flow right-turn movement lane.

To the north, Palmetto Bay Road provides access to the Cross-Island Parkway (off Island), to the south Pope Avenue provides access to the Coligny area and one of the largest public beach areas on the Island, east US 278B eventually provides access off Island and to the west Greenwood Drive provides the main access to/from Sea Pines PUD.

It should be noted that Greenwood Drive as well as the center of the Sea Pines Circle are privately owned/maintained by the Sea Pines PUD.

EXISTING CONDITIONS

Geometrics

The following provides a graphic and description of the existing intersection geometrics:

Description

- Single-lane circle with free-flow right-turn lanes on each approach and departure;
- External diameter including right-turn movements is 370-feet;
- Internal landscaped circle: 250-feet;
- Concentric 14-foot width truck shirt (raised curb not rolled separating travel lane);
- Stacking/queue distances for each approach/lane are >300-feet;
- Weaving sections as follows:

    1. US 278B to PBR: 161-feet
    2. PBR to Greenwood: 103-feet
    3. Greenwood to Pope: 226-feet
    4. Pope to US 278B: 110-feet

Accident History

Sea Pines Circle

Year	Annual # Accidents	Angle[a]	Rear End	Sideswipe	Fixed Obj[b]	Other	Summer Months (June-Aug)	Involved Bike or Ped
2015 (Jan-June)	11	1	3	2	4	1		
2014	22	2	15	2	3		9	
2013	25	2	14	5	4		6	
2012 (July-Dec)	14	5	6	3			3	
Total Crashes	72	10	38	12	11	1	18	0
Avg. Per Year	***24.0***						***6.0***	

Note: Information provided by Town of Hilton Head.

a. Angle or cross-movement type collision.

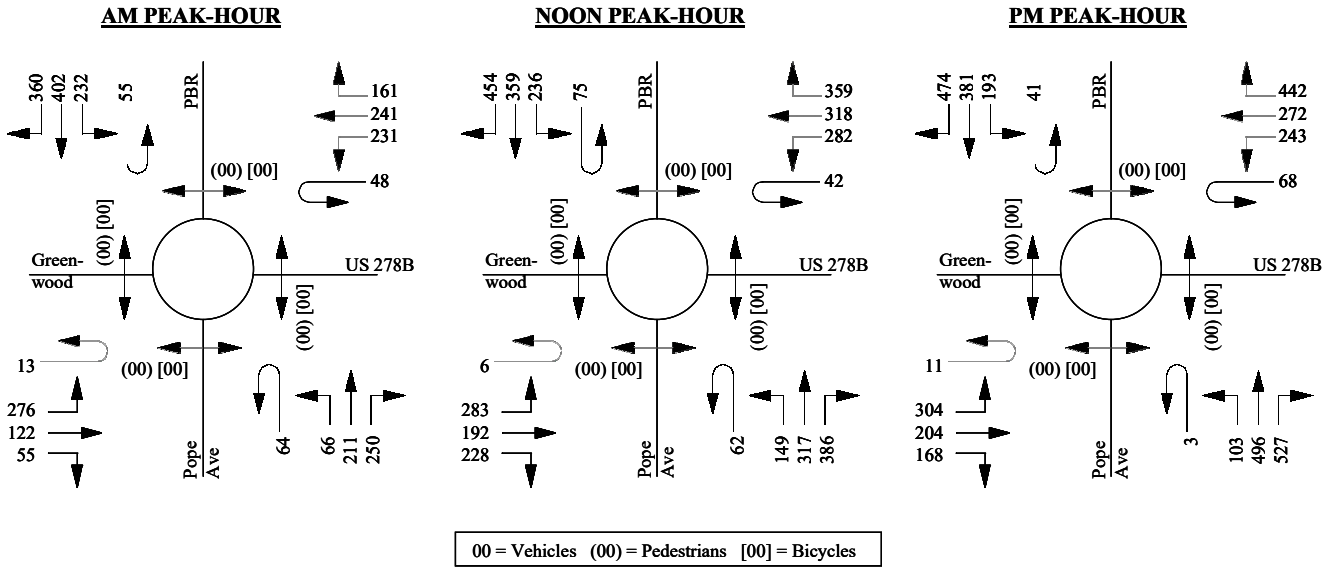
b. Vehicle collided with fixed object, typically ran off roadway.

Accident history for this circle are significant at a total of 72 accidents reported within the three year period. Average of 24 accidents per year. More than half of these accidents are rear-end type accidents which typically occur on the approach lanes to the circle followed by sideswipes which occur within the circle or on the approach lanes as drivers weave/merge into lanes. Fixed objects are the third greatest which are typically vehicles striking the medians, or driving into the center of the circle and the fourth most frequent are angle type.

Traffic Volumes

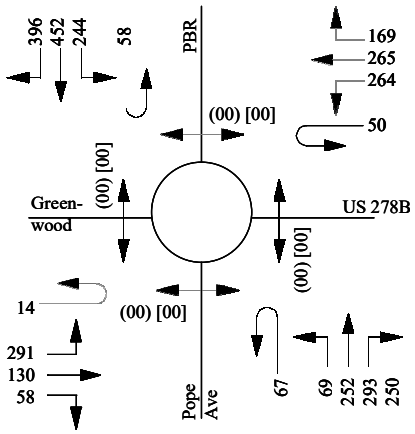
Existing peak-hour volumes gathered during the second week of June 2015 are present below which represent the AM, NOON and PM peak-hours time periods. Following the 2015 peak-hour volumes are the two Future year conditions which reflect 2020 (5-year) and 2030 (15-year) peak-hour volume projections.

2015 Existing Peak-Hour Volumes

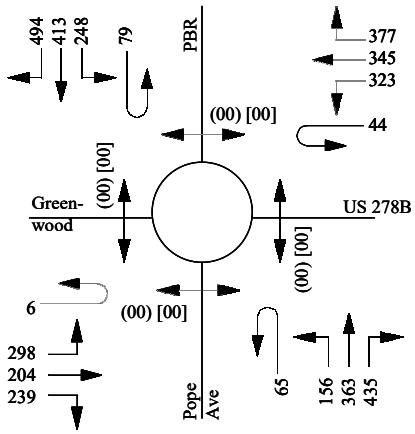


2020 Peak-Hour Volumes

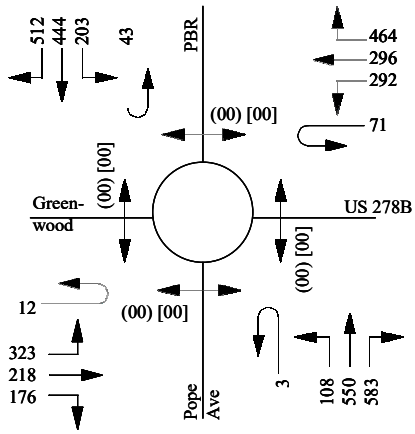
AM PEAK-HOUR



NOON PEAK-HOUR



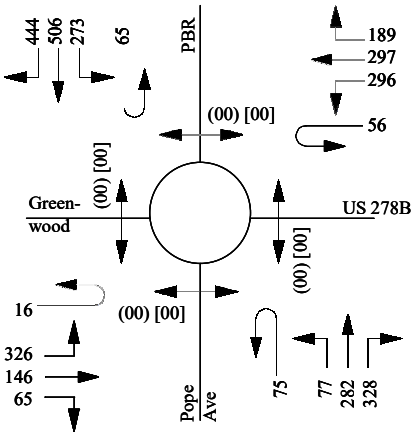
PM PEAK-HOUR



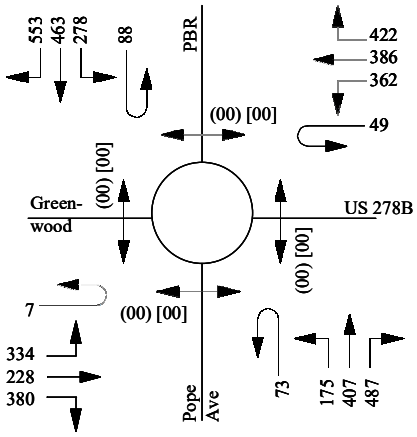
00 = Vehicles (00) = Pedestrians [00] = Bicycles

2030 Peak-Hour Volumes

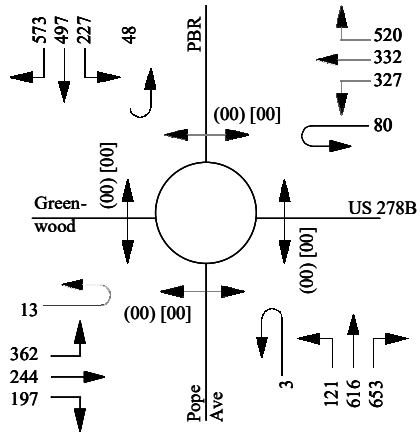
AM PEAK-HOUR



NOON PEAK-HOUR



PM PEAK-HOUR



00 = Vehicles (00) = Pedestrians [00] = Bicycles

Intersection Operations

Service Levels:

Intersection	Peak Hour	Approach	2015 Existing Delay[2]	5-Year (2020) Delay	15-Year (2030) Delay
Sea Pines Circle	AM	EB	184.1	280.3	540.1
		WB	88.5	160.8	354.0
		NB	21.7	37.1	143.2
		SB	164.9	240.5	554.8
	NOON	EB	156.9	210.8	581.6
		WB	190.2	286.3	667.1
		NB	84.8	129.4	385.5
		SB	179.5	267.0	670.5
	PM	EB	174.9	280.9	596.9
		WB	183.6	294.5	760.6
		NB	129.6	183.7	539.0
		SB	98.7	174.5	475.3

1. Calculations completed using the 2010 HCM methodology.
2. Delay in seconds-per-vehicle.
EB= Greenwood Drive
WB=US 278B William Hilton Parkway
NB=Pope Avenue
SB=US 278 Palmetto Bay Road

As shown, operations at the Sea Pines Circle indicate delays that are typically over 100-seconds for every approach during each of the time periods studied. According to the Town's LMO, a delay of greater than 150-seconds reflect non-compliance with the Town's stated goals, for any single approach to a circle during any peak-hour. According to the calculated data, every peak-hour has one or more approaches that exceed this defined delay.

The 5-Year 2020 conditions reflect the same operations with greater delays for the approaches to the circle. Now a total of ten approaches exceed the 150-second delay goal during the three peak hours studied.

Future 15-Year 2030 conditions reflect that every approach during all three time periods, with exception of the northbound approach of Pope Avenue during the AM peak-hour, will exceed the LMO 150-second guideline

Storage Lane Queues:

Sea Pines Circle (Palmetto Bay Road, Pope Avenue, US 278 B, Greenwood Drive)

		2015 Existing			5-Year (2020)			15-Year (2030)		
		AM	Noon	PM	AM	Noon	PM	AM	Noon	PM
NB	Left	200	925	800	300	725	1,050	475	1,050	1,425
	Right	0	25	25	25	25	25	25	25	50
SB	Left	950	550	700	1,250	1,275	105	1,675	1,675	1,400
	Right	25	25	25	25	25	25	25	25	25
EB	Left	550	950	700	700	800	925	1,000	1,100	1,250
	Right	0	0	0	0	25	0	0	25	0
WB	Left	500	625	900	750	1,225	1,225	1,075	1,600	1,600
	Right	0	0	25	0	25	25	0	25	25

Lengths represented in feet.

NB= Pope Avenue

SB=Palmetto Bay Road (US 278)

EB=Greenwood Drive

WB=US 278B, William Hilton Parkway

As shown, each of the entry lanes into the Circle indicate significant queue length for each of the approaches during the peak hours. For example the eastbound approach of Greenwood Drive indicates queues of 950-feet during the NOON peak hour which is basically stacking back to and through the Office Park Road intersection. The same can be said for the westbound approach of US 278B which indicates a queue of 900-feet which backs into the Arrow Road intersection.

Future 5-Year 2020 conditions indicate an increase in queue lengths which continue to expand on the same issues that Existing conditions indicated; approaches are now calculated to be greater than 1,000-feet under this condition.

Future 15-Year 2030 conditions reflect queues that are now each greater than 1,000-feet with only the exception of the northbound Pope Avenue approach during the AM peak-hour.

GENERAL RECOMMENDATIONS

To better serve traffic entering and exiting the Circle, some general improvements are suggested which will aid in vehicular traffic flow as well as safety and operations.

1. Reduce vehicle operating speeds within the Circle by implementing signage on each approach with the supplementary yellow warning of 20 or 25MPH .
2. Internal circumference of the landscaped center of the Circle is currently a raised curb; this should be replaced with rolled curb in order to become a formal truck skirt.
3. Improve the approach angle of Greenwood Drive in order to improve the weaving distance/separation between the Greenwood Approach and the southbound approach of PBR.
4. Improve sight distance throughout the Circle and its approaches by maintaining/cutting back landscaping.
5. Currently both the Pope Avenue and Greenwood Drive approaches provides a raised median separating directional traffic flow entering and exiting the Sea Pines Circle. The remaining two approaches of US 278B and PBR should convert the existing TWLTL to

raised landscaped medians which will enhance access management as well as improve vehicular flow just outside of the Circle by reducing vehicle weaving movements. Modifications to Greenwood Drive resulting in the closure of multiple dedicated left-turn bulb-outs should also be planned (indicated as part of the Northwest Connector) closed in order to reduce weaving movements.

6. Currently on US278B, PBR and Pope Avenue a combination of over-head, side mounted and over-head signage is provided. On Greenwood Drive (private road) no over-head signage is provided and one side mounted directional sign is provided orientated toward Pope Avenue. Directional signage on each approach leg of the Circle should be enhanced in order to indicate features such as Beach, Toll Road (Cross Island Parkway) Sea Pines. Additionally, the designation of US 278B verses US 278 (Cross Island/PBR) should be evaluated as new visitors maybe confused by these designations. Additional side-mounted signage should be provided along Greenwood Drive.
7. Roadway striping on each approach leg immediately entering the Circle as well as the right-turn only lanes should also assist drivers.

ALTERNATIVES

The Sea Pines Circle intersection is one of the focal points of the South Island area. Based on its current poor operations, it creates not only a capacity constraint itself, but also impacts surrounding intersections up and down stream along all of the connecting roadways (US 278B, PBR, Greenwood Drive and Pope Avenue).

Multiple scenarios for infra-structure improvements have been investigated for the Sea Pines Circle which range from minor modifications intended to aid in traffic flow, safety access management etc, to more intense infra-structure changes to in include reverting back to a 2-lane circle, directional fly-over and removal of the circle in order to construct a signalized four-legged intersection.

One potential scenario has already been presented which results in an improvement to the Circle is the construction of the Northwest Connector through the Island Crossing Center which was presented in a prior section of this report (Greenwood Drive Corridor). This section will concentrate on the reduction of traffic the Northwest Connector creates on the Circle and its resulting improvement in operations.

NORTHWEST CONNECTOR

As was presented earlier in this report, the connector is expected to serve a two-way daily volume of 10,500 vpd based on the LCOG transportation model under 2030 conditions. Based on the reduction of trips through the Circle by the model, a 20-percent reduction in two movements entering the Circle has been estimated. Specifically the southbound right-turn from PBR to westbound Greenwood Drive has been reduced as well as the eastbound left-turn movement from Greenwood Drive to northbound PBR has been reduced.

Operations of the Circle assuming this reduction if Future traffic entering the circle are presented below:

Northwest Connector Levels-of-Service

Intersection	Peak Hour	Approach	2015 Existing Delay[2]	5-Year (2020) Delay	15-Year (2030) Delay	5-Year (2020) Connector Delay	15-Year (2030) Connector Delay
Seapines Circle	AM	EB	184.1	280.3	540.1	**198.1**	**361.8**
		WB	88.5	160.8	354.0	**131.4**	**231.3**
		NB	21.7	37.1	143.2	**28.6**	**62.6**
		SB	164.9	240.5	554.8	**266.1**	**402.7**
	NOON	EB	156.9	210.8	581.6	**174.1**	**304.9**
		WB	190.2	286.3	667.1	**251.4**	**386.0**
		NB	84.8	129.4	385.5	**107.5**	**188.9**
		SB	179.5	267.0	670.5	**299.3**	**450.4**
	PM	EB	174.9	280.9	596.9	**173.7**	**305.1**
		WB	183.6	294.5	760.6	**239.3**	**366.4**
		NB	129.6	183.7	539.0	**142.6**	**227.7**
		SB	98.7	174.5	475.3	**198.7**	**310.7**

1. Calculations completed using the 2010 HCM methodology.
2. Delay in seconds-per-vehicle.

As shown, assuming implementation of the connector, operations will generally improve for each approach entering the Circle as compared to the 5-Year or 15-Year delays without the connector. Results of the analysis indicate delays that continue to be greater than the 150-second LMO guidelines.

DIRECTIONAL FLY-OVER

An alternative of a two-lane fly-over (or under) has been analyzed which would allow the opportunity of northbound and southbound through traffic on Pope Avenue and PBR to not enter the circle. Prior to entering the circle from either direction (northbound and southbound) ramps would allow through vehicles to maneuver over the circle and then merge into the traffic stream once past the circle.

The Sea Pines Circle would remain as a single-lane circle with the separate right-turn lanes on each approach however the volume of traffic entering the Circle from Pope Avenue and PBR would be reduced due to the availability of the over-pass section.

Operations of the Circle assuming this configuration are presented below:

Fly-Over Levels-of-Service

Intersection	Peak Hour	Approach	2015 Existing Delay[2]	5-Year (2020) Delay	15-Year (2030) Delay	5-Year (2020) Flyover	15-Year (2030) Flyover
Sea Pines Circle	AM	EB	184.1	280.3	540.1	**88.2**	**182.7**
		WB	88.5	160.8	354.0	**75.5**	**147.5**
		NB	21.7	37.1	143.2	**7.4**	**10.5**
		SB	164.9	240.5	554.8	**31.8**	**70.8**
	NOON	EB	156.9	210.8	581.6	**85.7**	**162.7**
		WB	190.2	286.3	667.1	**145.7**	**153.6**
		NB	84.8	129.4	385.5	**14.4**	**28.3**
		SB	179.5	267.0	670.5	**52.3**	**66.5**
	PM	EB	174.9	280.9	596.9	**103.2**	**193.0**
		WB	183.6	294.5	760.6	**98.2**	**168.3**
		NB	129.6	183.7	539.0	**7.8**	**13.0**
		SB	98.7	174.5	475.3	**16.7**	**35.0**

1. Calculations completed using the 2010 HCM methodology.
2. Delay in seconds-per-vehicle.

As indicated, the two-lane fly-over provides a significant relief in delays for the approaches of the Circle. This is due to the reduction of traffic entering the Circle in both the northbound and southbound directions.

Under the 5-Year 2020 condition delays are below the 150-second LMO guideline which would result in an acceptable condition. Under the 15-Year 2030 condition, the 150-second LMO guideline is exceeded on the eastbound Greenwood Avenue and westbound US 278B approaches.

TRAFFIC SIGNALIZATION

This alternative would replace the Circle with a four-legged intersection resulting in total removal of the traffic circle configuration. Given the peak-hour traffic flows that exist and are projected, each approach to the new intersection would provide the following geometrics:

1. Dual left-turn lanes, minimum of 300-feet storage each;
2. Two through lanes;
3. Separate right-turn lane;
4. Median separating directional flow; and
5. Two receiving lanes.

Operations of the Circle assuming this configuration and traffic signal control are presented below:

Traffic Signalization Levels-of-Service

Intersection	Peak Hour	5-Year (2020) Signalization V/C[2]	Delay[3]	LOS[4]	15-Year (2030) Signalization V/C	Delay	LOS
Sea Pines Circle	AM	**0.43**	**47.1**	**D**	**0.51**	**49.6**	**D**
	NOON	**0.59**	**53.6**	**D**	**0.66**	**55.1**	**E**
	PM	**0.71**	**47.6**	**D**	**0.81**	**50.1**	**D**

1. Calculations completed using the 2010 HCM methodology.
2. V/C=Volume-to-capacity ratio, basis HCM 2000.
3. Delay in seconds-per-vehicle.
4. Level-of-Service.

As a signalized intersection, the LMO guidelines call out an acceptable condition as an intersection with an over-all average delay of 55-seconds or less as well as a V/C ratio less than 0.90. As shown, the 5-Year 2020 condition would meet the guideline and be deemed as acceptable under the LMO. The 15-Year 2030 condition is just barely above the criteria during only the NOON peak-hour and acceptable during both the AM and PM peak hours.

PARTIAL TWO-LANE CIRCLE (NORTH/SOUTH)

This alternative would modify the existing Circle to provide two operating lanes in both the north to south (PBR to Pope Avenue) and the south to north (Pope Avenue to PBR) directions. Each of these approaches would provide a three-lane approach where the inside lane provides for U-turns, left-turn and through movements, the middle lane provides for through movements and the outside lane continues to serve as a free right-turn lane.

Partial Two-Lane Circle (N/S) Levels-of-Service

Intersection	Peak Hour	Approach	2015 Existing Delay[2]	5-Year (2020) Delay	15-Year (2030) Delay	15-Year (2030) Partial Two-Lane Circle (N/S)
Sea Pines Circle	AM	EB	184.1	280.3	540.1	**182.3**
		WB	88.5	160.8	354.0	**127.5**
		NB	21.7	37.1	143.2	**8.5**
		SB	164.9	240.5	554.8	**24.0**
	NOON	EB	156.9	210.8	581.6	**143.3**
		WB	190.2	286.3	667.1	**225.5**
		NB	84.8	129.4	385.5	**13.6**
		SB	179.5	267.0	670.5	**28.5**
	PM	EB	174.9	280.9	596.9	**202.6**
		WB	183.6	294.5	760.6	**222.7**
		NB	129.6	183.7	539.0	**17.9**
		SB	98.7	174.5	475.3	**16.7**

1. Calculations completed using the 2010 HCM methodology.
2. Delay in seconds-per-vehicle.

TWO-LANE CIRCLE

This alternative would modify the existing Circle to provide two operating lanes around the entire Circle. Each approach to the Circle (Pope Avenue, US 278B, Greenwood and PBR) must provide a three-lane approach in order to accommodate desired traffic movements. The outside lane on each approach must maintain the ability to accommodate the free right-turn movement separate from entering the Circles weaving movements by a barrier/raised median as well as providing a receiving lane departing the Circle on each approach.

Two-Lane Circle Levels-of-Service

Intersection	Peak Hour	Approach	2015 Existing Delay[2]	5-Year (2020) Delay	15-Year (2030) Delay	15-Year (2030) Two-Lane Circle Delay
Sea Pines Circle	AM	EB	184.1	280.3	540.1	**59.4**
		WB	88.5	160.8	354.0	**17.9**
		NB	21.7	37.1	143.2	**8.5**
		SB	164.9	240.5	554.8	**24.0**
	NOON	EB	156.9	210.8	581.6	**28.2**
		WB	190.2	286.3	667.1	**31.0**
		NB	84.8	129.4	385.5	**13.6**
		SB	179.5	267.0	670.5	**28.5**
	PM	EB	174.9	280.9	596.9	**39.9**
		WB	183.6	294.5	760.6	**38.4**
		NB	129.6	183.7	539.0	**17.9**
		SB	98.7	174.5	475.3	**16.7**

1. Calculations completed using the 2010 HCM methodology.
2. Delay in seconds-per-vehicle.

As shown, by modifying the Circle to provide two operating lanes around the entire circle as well as maintaining the free-right-turn movements on each approach, operations can be expected to have delays of less than 60-seconds on any approach. This signifies a drastic improvement/reduction in delays as compared to the 15-Year 2030 condition which reflects the existing geometry.

COLIGNY CIRCLE (POPE/ N & S FOREST BEACH ROADS)

Coligny Circle is a single-lane facility which brings one major arterial and two collectors together being Pope Avenue, North Forest Beach Drive and South Forest Beach Drive. There is a fourth approach to the Circle which provides access to a limited number of parking stalls associated with the access to Coligny Beach. The current circle has a diameter of approximately 390-feet. The inside landscaped portion of the circle is approximately 340-feet; no truck skirt is provided at this location.

Each approach to the circle provides one lane entering the circle for u-turn, left and through movements; with exception of the southbound approach of Pope Avenue which also provides a separate right-turn only lane which is not geometrically separated from the Circle but is striped with a double white dividing lane line. Departing the circle a single-lane is provided on each approach with exception of the northbound departure to Pope Avenue and the westbound departure to South Forest Beach Drive which both have two-lanes.

To the north, Pope Avenue provides access towards Sea Pines Circle, Cross Island Parkway, etc. to the east North Forest Beach Drives provide access to Coligny Plaza as well as residential areas and to the west, South Forest Beach provides access to residential area and the back gate of Sea Pines PUD.

EXISTING CONDITIONS

Geometrics

The following provides a graphic and description of the existing intersection geometrics:

Description

- Single-lane circle with free-flow right-turn lane from southbound Pope Avenue to westbound North Forest Beach Drive;
- Right-turn lane is added within Circle between North Forest Beach Drive and Pope Avenue;
- External diameter is 390-feet;
- Internal landscaped circle: 340-feet;
- No truck skirt provided;
- Stacking/queue distances for each approach/lane are >300-feet.
- Weaving Sections as follows:

    1. Pope to S Forest Beach: 180-feet
    2. S Forest Beach to Parking: 203-feet
    3. Parking to N Forest Beach: 150-feet
    4. N Forest Beach to Pope: 230-feet

Accident History

Coligny Circle

Year	Annual # Accidents	Angle[a]	Rear End	Sideswipe	Fixed Obj[b]	Other	Summer Months (June-Aug)	Involved Bike or Ped
2015 (Jan-June)	2	1			1			
2014	1				1			
2013	4		3		1		1	
2012 (July-Dec)	4	1		1	1	1	1	1
Total Crashes	11	2	3	1	4	1	2	1
Avg. Per Year	***3.7***						***0.7***	

Note: Information provided by Town of Hilton Head.

a. Angle or cross-movement type collision.

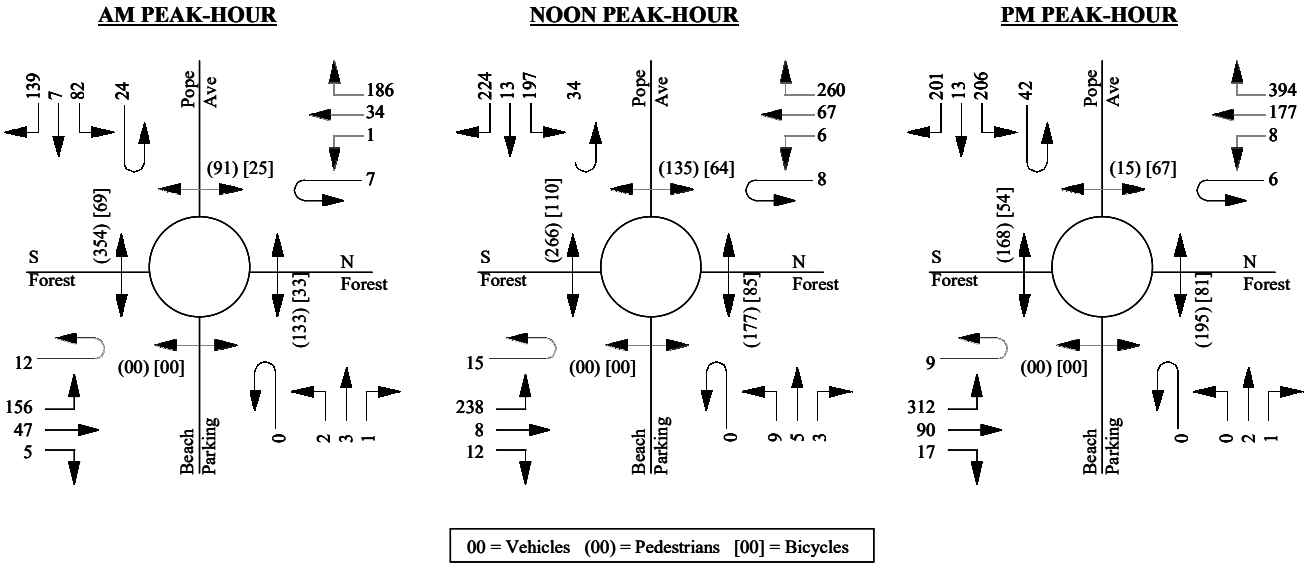
b. Vehicle collided with fixed object, typically ran off roadway.

Accident history for this circle are a total of 11 accidents reported within the three year period which results in an annual average of 3.7 accidents per year. Fixed object is the greatest number of accidents at this location with four, which are drivers hitting diverter islands or running into the center of the Circle. The second most frequent are rear-end types followed by angle. Two accidents occurred during the summer months and one involved a ped/bike.

Traffic Volumes

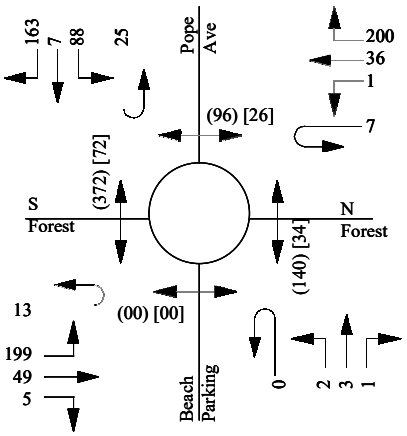
Existing peak-hour volumes gathered during the second week of June 2015 are present below which represent the AM, NOON and PM peak-hours time periods. Following the 2015 peak-hour volumes are the two Future year conditions which reflect 2020 (5-year) and 2030 (15-year) peak-hour volume projections.

2015 Existing Peak-Hour Volumes

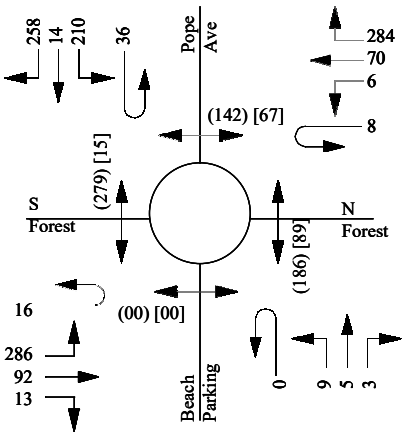


2020 Peak-Hour Volumes

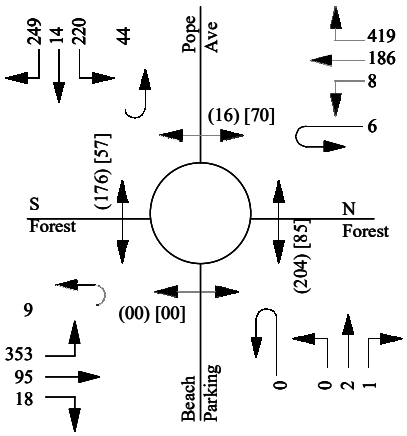
AM PEAK-HOUR



NOON PEAK-HOUR



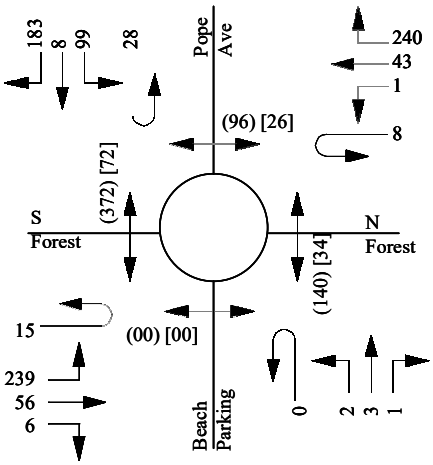
PM PEAK-HOUR



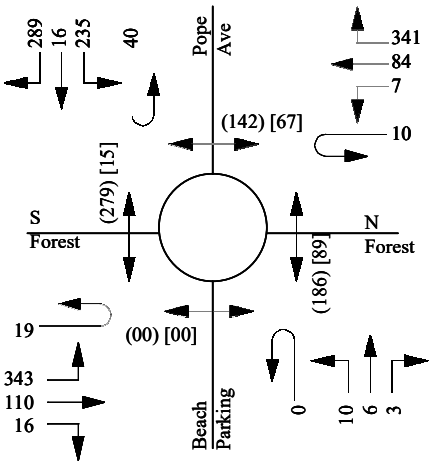
00 = Vehicles (00) = Pedestrians [00] = Bicycles

2030 Peak-Hour Volumes

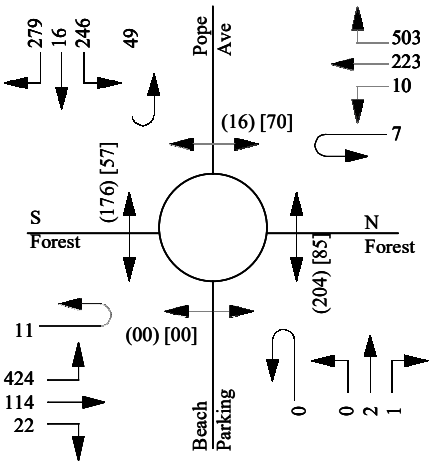
AM PEAK-HOUR



NOON PEAK-HOUR



PM PEAK-HOUR



00 = Vehicles (00) = Pedestrians [00] = Bicycles

Intersection Operations

Service Levels:

Intersection	Peak Hour	Approach	2015 Existing Delay[2]	5-Year (2020) Delay	15-Year (2030) Delay
Coligny Circle	AM	EB	8.0	9.0	10.0
		WB	7.6	8.4	9.5
		NB	4.8	5.1	5.4
		SB	2.0	2.0	5.0
	NOON	EB	13.0	15.9	20.8
		WB	11.7	14.1	18.2
		NB	6.6	7.2	8.3
		SB	3.6	3.6	7.8
	PM	EB	15.3	18.9	27.6
		WB	44.1	69.3	135.7
		NB	7.1	7.6	8.4
		SB	4.5	4.4	9.4

1. Calculations completed using the 2010 HCM methodology.
2. Delay in seconds-per-vehicle.

As shown, operations at the Coligny Circle are very good during all peak-hour and traffic volume conditions analyzed. The greatest delay during any of the peak hours occurs during the PM peak-hour for the westbound (North Forest Beach) approach with a delay of 44.1-seconds for Existing Conditions which will increase to 69.3 seconds under the 5-Year 2020 conditions. All delays are less than the defined LMO standard of 150-seconds delay for any single approach.

Based on counts conducted in the field as well as observations, pedestrians and bicyclists play a large role in the operations at this Circle. The pedestrian crossing located to the west of the circle crossing South Forest Beach Drive is highly utilized due to the connection between the Coligny Beach access and the Town's Beach parking area. During a 60-minute periods, a combination of ped/bike volumes were gathered at over 400 at this location. This high volume of ped/bike crossing occurs just outside of the circles circumference and can cause backups both entering the Circle from South Forest Beach Road as well as vehicles exiting the Circle to South Forest Beach Road when pedestrian volumes are greatest.

Recommendations to accommodate the high volume of pedestrian/bike flow have been identified as part of the Coligny Park planning and include the addition of a new multi-use path along the south side of South Forest Beach which will connect to Coligny Beach access as well as an improved pedestrian crossing with traffic signal control which will be located 200-feet to the west.

Future 5-Year 2020 and 15-Year 2030 conditions reflect operations that continue to be less than the 150-second criteria as stated by the LMO. The westbound approach (North Forest Beach entering the Circle) during the PM peak-hour reflects the greatest delay with nearly a 136-second delay.

Storage Lane Queues:

Coligny Circle (Pope Avenue, North & South Forest Drive)

		2015 Existing			5-Year (2020)			15-Year (2030)		
		AM	Noon	PM	AM	Noon	PM	AM	Noon	PM
NB	Left	0	0	0	0	0	0	0	0	0
	Right									
SB	Left	0	25	25	0	25	50	25	50	50
	Right	0	0	0	0	25	0	0	25	25
EB	Left	25	75	100	50	100	150	50	150	225
	Right									
WB	Left	25	75	325	25	100	425	50	125	675
	Right									

Lengths represented in feet.

As shown, each of the entry lanes into the circle indicate only one queue greater than 300-feet being the westbound approach of North Forest Beach during the PM peak-hour.

RECOMMENDATIONS

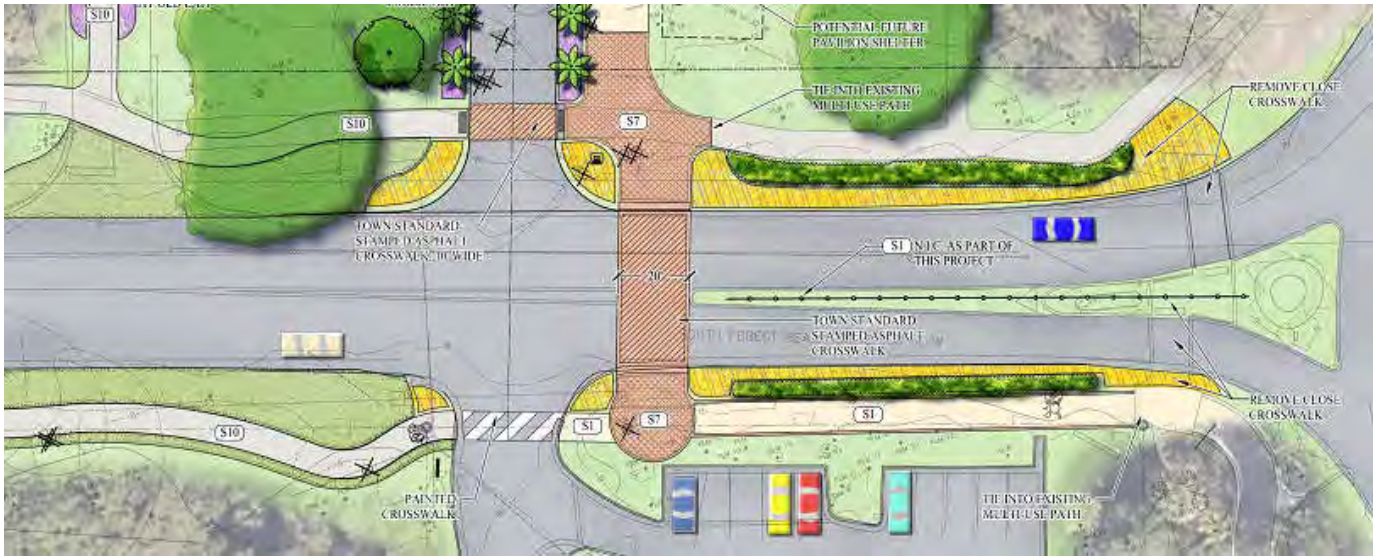
This Circle accommodates the movement of vehicular traffic well through the merge and diverge segments. The greatest capacity issue are the volume of pedestrians and bikes that cross South Forest Beach Road between the beach and the Town Parking area. Each peak-hour gathered is over 200-ped/bike movements crossing South Forest Beach with the AM peak-hour being over 400 ped/bike movements.

Recommendations to better accommodate the large non-vehicular movements are to separate this volume from the Circle and re-locate the pedestrian/bike volumes to another location. To the west, the access/egress for the Town Beach Parking (to be re-located) and the Holiday Inn provide a four-legged intersection.

Improvements are recommended as follows:

1. Installing a raised barrier within South Forest Drive between this intersection and the Circle which will restrict ped/bike movements at the current crossing at the Circle.
2. Install a minimum of a 12-foot wide cross-walk crossing South Forest Beach Drive.
3. Install a multi-use path on the south side of South Forest Beach Drive between the Coligny Beach access and Deallyon Avenue. This multi-use path will intersect with the pedestrian crossing at the proposed signal at the Town Beach parking area.
4. Install traffic signal control at the Town Beach parking/Resort access. This access will provide actuation for pedestrian and bike movements. Pedestrian/bike crossing times will be sensitive to seasonal volumes with minimal crossing times needed during non-summer time periods as well as time of day during the summer time.
5. Install directional signage via on the three main approaches side mounted signs.
6. Roadway stripping on each approach leg immediately entering the Circle as well as the right-turn only lanes should also assist drivers.

Concept


S10
S10
S7
POTENTIAL FUTURE PAVILION SHELTER
TIE INTO EXISTING MULTI USE PATH
REMOVE CLOSE CROSSWALK
TOWN STANDARD STAMPED ASPHALT CROSSWALK 10' WIDE
S1 N.I.C. AS PART OF THIS PROJECT
30'
TOWN STANDARD STAMPED ASPHALT CROSSWALK
REMOVE CLOSE CROSSWALK
S10
S1
S7
S1
PAINTED CROSSWALK
TIE INTO EXISTING MULTI USE PATH

DUNNAGANS ALLEY AT WEXFORD DRIVE/TOWN HALL

The Dunnagans Alley at Wexford Drive/Town Hall Circle is a single-lane facility which is the eastern termini of Dunnagans Alley, provided access to Wexford PUD and the Town Hall and provides a connection to US 278B via Wexford Drive. The Circle has a diameter of approximately 130-feet with an inside landscaped circle of approximately 80 to 90-feet; and a truck skirt providing a width of 12-feet.

Each approach to the circle provides one lane entering the circle for u-turn, left, through and right-turn movements. A single lane for departing the circle is provided on each approach. Pedestrian/multi-use path crossing are provided on the two approach legs of Wexford Drive and Wexford PUD access (north side and south sides of Circle).

To the north, this Circle provides access to Wexford PUD and is a gated facility. To the south (approx 350-feet), Wexford Drive intersections with US 278B at a signalized intersection. East is the access to Town Hall and to the west Dunnagans Alley provides access to multiple commercial uses.

EXISTING CONDITIONS

Geometrics

The following provides a graphic and description of the existing intersection geometrics:

Description

- Single-lane circle providing one entering and exiting lane from each approach;
- Stacking/queue distances for each approach/lane are >300-feet with exception of the northbound approach.
- Weaving Sections as follows:

    1. Wexford PUD to Dunnagans: 50-feet
    2. Dunnagans to Wexford Dr: 50-feet
    3. Wexford Dr to Town Hall: 70-feet
    4. Town Hall to Wexford PUD: 65-feet

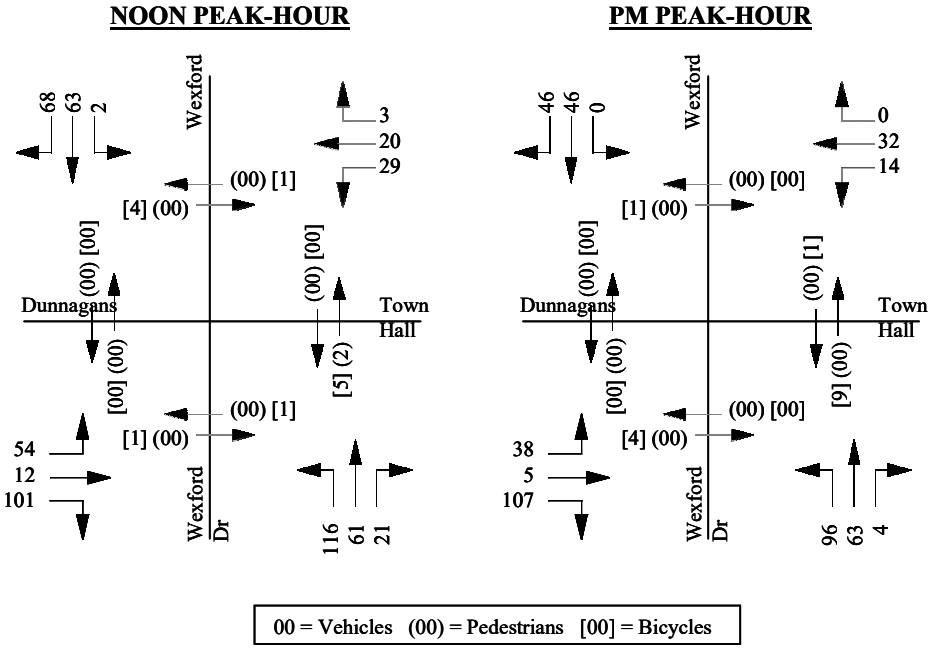
Accident History

No accident data specific to this intersection was provided for the three year period.

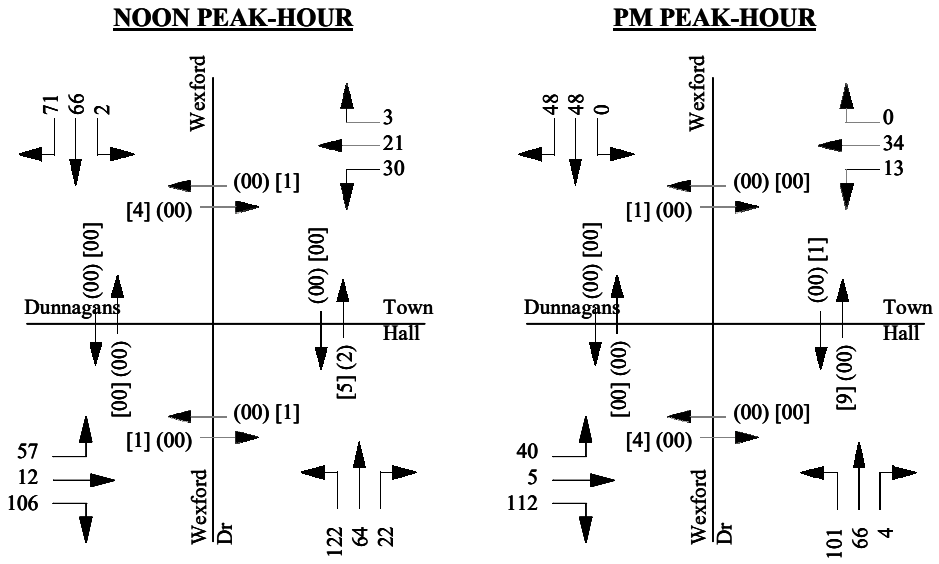
Traffic Volumes

Existing peak-hour volumes gathered during the second week of June 2015 are present below which represent the NOON and PM peak-hours time periods. Following the 2015 peak-hour volumes are the two Future year conditions which reflect 2020 (5-year) and 2030 (15-year) peak-hour volume projections.

2015 Existing Peak-Hour Volumes

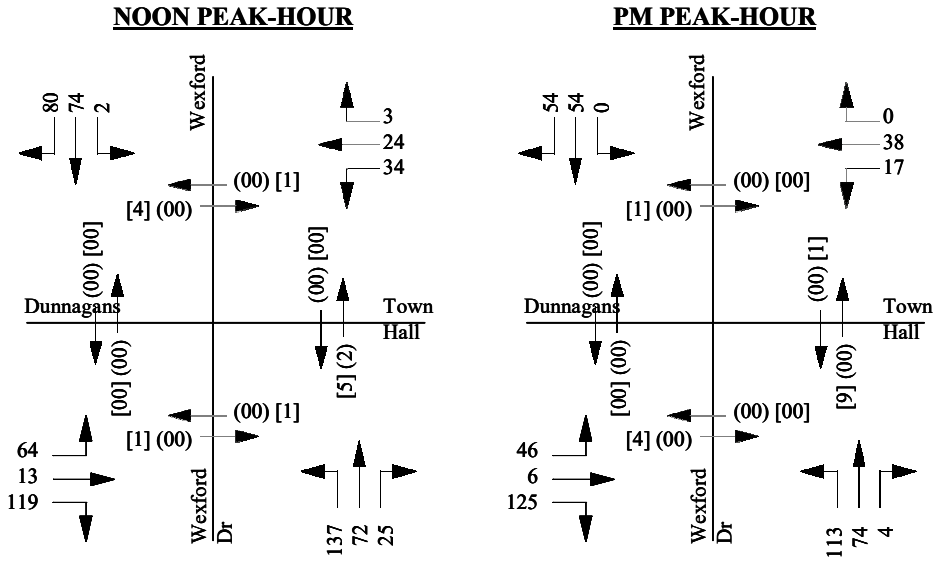


2020 Peak-Hour Volumes



00 = Vehicles (00) = Pedestrians [00] = Bicycles

2030 Peak-Hour Volumes



00 = Vehicles (00) = Pedestrians [00] = Bicycles

Intersection Operations

Service Levels:

Intersection	Peak Hour	Approach	2015 Existing Delay[2]	5-Year (2020) Delay	15-Year (2030) Delay
Dunnagans Alley at Wexford and Town Hall	NOON	EB	5.5	5.7	6.0
		WB	5	5.1	5.4
		NB	5.7	5.9	6.2
		SB	5.6	5.8	6.1
	PM	EB	5.1	5.2	5.4
		WB	4.8	4.8	5.1
		NB	5.1	5.2	5.5
		SB	4.9	5.1	5.3

1. Calculations completed using the 2010 HCM methodology.
2. Delay in seconds-per-vehicle.

As shown, under Existing, future 5-Year 2020 and 15-Year 2030, operating conditions at the Dunnagans Alley at Wexford Drive/Town Hall are very good during all peak-hour and traffic volume conditions analyzed. Delays are all below 10-seconds and therefore acceptable in comparison to the Town's LMO.

Storage Lane Queues:

Circle at Dunnagans Alley and Wexford Drive (Town Hall)

		2015 Existing		5-Year (2020)		15-Year (2030)	
		Noon	PM	Noon	PM	Noon	PM
NB	Left	25	25	25	25	25	25
	Right						
SB	Left	25	0	25	0	25	0
	Right						
EB	Left	25	25	25	25	25	25
	Right						
WB	Left	0	0	0	0	0	0
	Right						

Lengths represented in feet.

As shown, each of the entry lanes into the circle indicate queue lengths of 50-feet or less. No queue/stacking capacity issue for any of the approaches are calculated nor where there any observed during the data collection process.

RECOMMENDATIONS

The analyses for this Circle indicate no capacity constraints caused by either the geometry or traffic flow under any of the conditions studied. In accordance with the LMO, this intersection meets the stated criteria and therefore, no recommendations are suggested at this time.

ARROW ROAD AT DUNNAGAN'S ALLEY

The Dunnagans Alley at Arrow Road Circle is a single-lane round-a-bout facility which makes up the intersection of two collectors. The Circle has a diameter of approximately 128-feet with an inside landscaped circle of approximately 70-feet; and a truck skirt providing a width of 14-feet.

Each approach to the circle provides one lane entering the circle for u-turn, left, through and right-turn movements. A single lane for departing the circle is provided on each approach. Pedestrian/multi-use path crossing are provided on all four approach legs.

To the north, Arrow Road provides access to commercial uses and then intersects with PBR opposite Point Comfort Road at a signalized intersection. To the south (approx 200-feet), Arrow Road intersections US 278B at a signalized intersection. Along this section, access to a gas/convenience store is provided. Dunnagans Alley extends from PBR to the Town Hall/Wexford Plantation and provides access to multiple commercial and residential uses many of which front US 278B.

EXISTING CONDITIONS

Geometrics

The following provides a graphic and description of the existing intersection geometrics:

Description

- Single-lane circle providing one entering and exiting lane from each approach;
- Stacking/queue distances for each approach/lane are >300-feet with exception of the northbound approach (210-feet to US 278B).
- Weaving Sections as follows:

    1. SB Arrow to Dunnagans: 70-feet
    2. EB Dunnagans to Arrow: 117-feet
    3. NB Arrow to Dunnagans: 65-feet
    4. EB Dunnagans to Arrow: 55-feet

Accident History

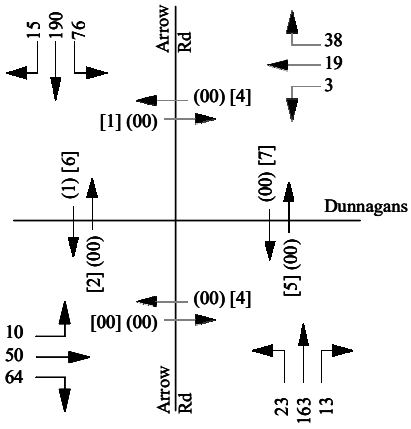
No accident data specific to this intersection was provided for the three-year period. Accident data was provided for Arrow Road as a corridor and this data will be presented in this section of the report.

Traffic Volumes

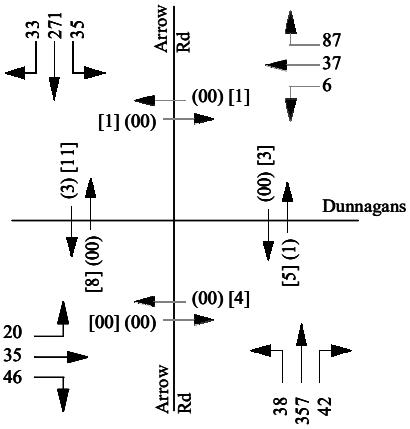
Existing peak-hour volumes gathered during the second week of June 2015 are present below which represent the AM, NOON and PM peak-hours time periods. Following the 2015 peak-hour volumes are the two Future year conditions which reflect 2020 (5-year) and 2030 (15-year) peak-hour volume projections.

2015 Existing Peak-Hour Volumes

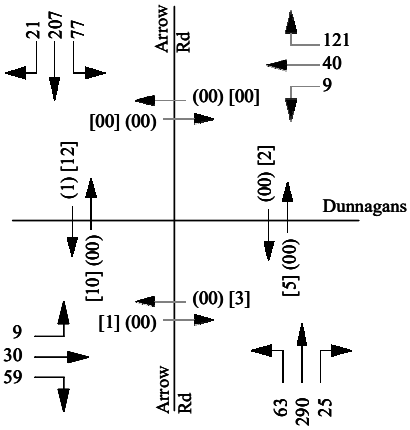
AM PEAK-HOUR



NOON PEAK-HOUR



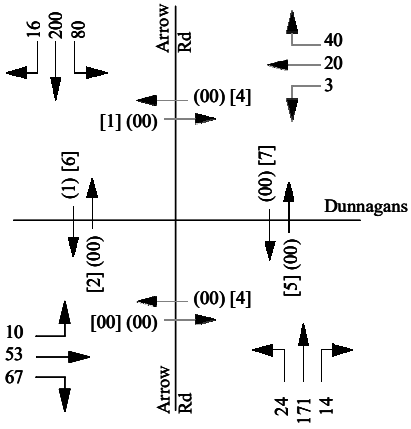
PM PEAK-HOUR



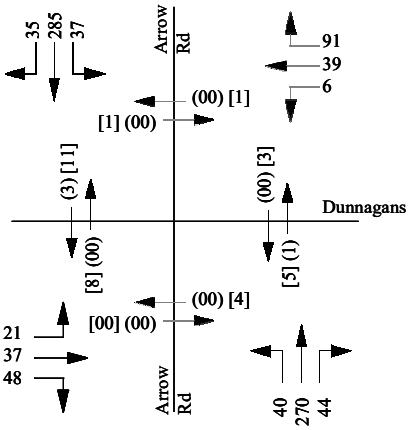
00 = Vehicles (00) = Pedestrians [00] = Bicycles

2020 Peak-Hour Volumes

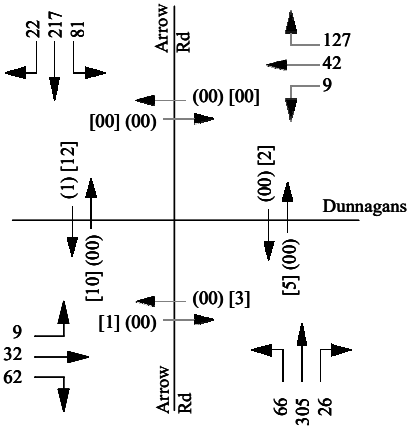
AM PEAK-HOUR



NOON PEAK-HOUR

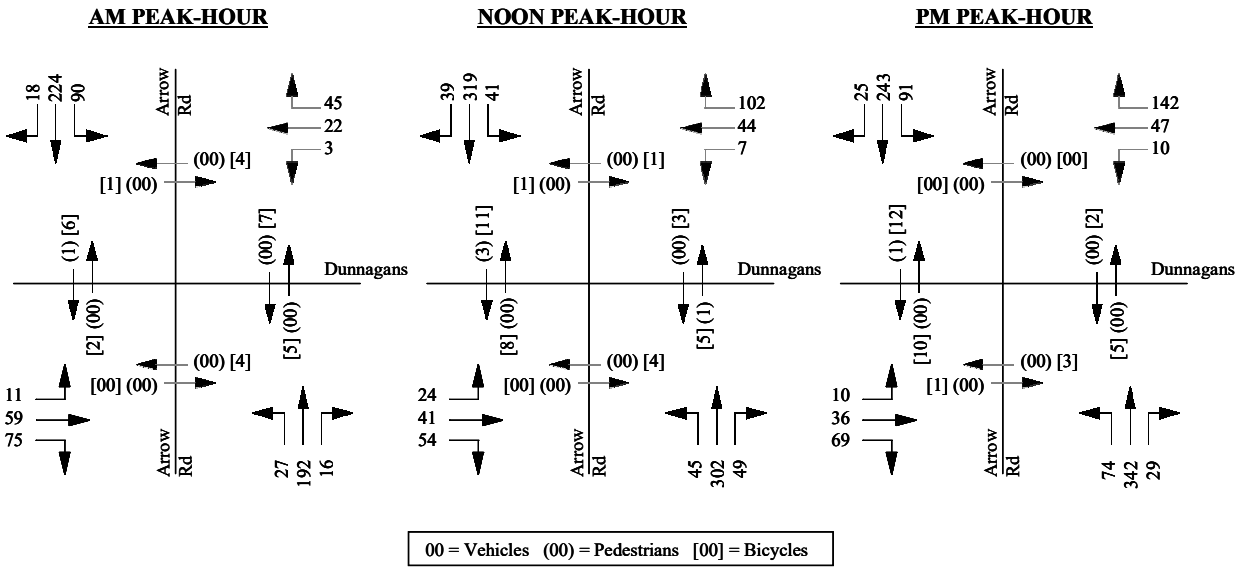


PM PEAK-HOUR



00 = Vehicles (00) = Pedestrians [00] = Bicycles

2030 Peak-Hour Volumes



Intersection Operations

Service Levels:

Intersection	Peak Hour	Approach	2015 Existing Delay[2]	5-Year (2020) Delay	15-Year (2030) Delay
Dunnagans Alley at Arrow Road	AM	EB	6.4	6.6	7.2
		WB	4.9	5.0	5.2
		NB	6.3	6.5	7.0
		SB	6.5	6.7	7.3
	NOON	EB	6.3	6.6	7.1
		WB	6.8	7.1	7.8
		NB	7.8	8.1	9.1
		SB	7.8	8.1	9.0
	PM	EB	6.1	6.3	6.9
		WB	8.1	8.5	9.8
		NB	8.9	9.4	10.8
		SB	7.6	7.9	8.8

1. Calculations completed using the 2010 HCM methodology.
2. Delay in seconds-per-vehicle.

As shown, operations at the Dunnagans Alley at Arrow Road Circle are very good during all peak-hour and traffic volume conditions analyzed. Delays are all below 15-seconds under all conditions during all peak hours and therefore acceptable in comparison to the Town's LMO.

Storage Lane Queues:

Circle at Dunnagans Alley and Arrow Road

		2015 Existing			5-Year (2020)			15-Year (2030)		
		AM	Noon	PM	AM	Noon	PM	AM	Noon	PM
NB	Left	25	25	50	25	50	50	25	50	75
	Right									
SB	Left	25	25	50	25	50	50	50	50	50
	Right									
EB	Left	25	25	0	25	25	25	25	25	25
	Right									
WB	Left	0	25	25	0	25	25	0	25	25
	Right									

Lengths represented in feet.

As shown, each of the entry lanes into the circle indicate queue lengths of 100-feet or less. No queue/stacking capacity issue for any of the approaches are calculated nor where there any observed during the data collection process.

RECOMMENDATIONS

The analyses for this Circle indicate no capacity constraints caused by either the geometry or traffic flow under any of the conditions studied. In accordance with the LMO, this intersection meets the stated criteria and therefore, no recommendations are suggested at this time.

One improvement is suggested just south of this Circle, two full-movement access drives serving the Kangaroo are provided which are in close proximity to each of the as well as this Circle and the signalized intersection of US 278B and Arrow Road. Closure of the access closest to US 278B is recommended in order to improve access management.

CORRIDOR of ARROW ROAD

Arrow Road, considered a collector road, consists of the six intersections of New Orleans Road, US 278B, Dunnagan's Alley, Target Road Archer Road and PBR. Total length of this corridor is approximately 7,400-feet (1.4-miles) which encompasses the above referenced intersections of which US 278B and PBR/Point Comfort Road are under traffic signal control. The remaining four intersections are unsignalized with the Dunnagan's Alley intersection being a round-a-bout.

EXISTING CONDITIONS

Geometrics

Arrow Road generally provides a two-lane cross-section where directional traffic flow is separated by a double-yellow center-line with exception of a small segment between US 278B and New Orleans Road which has a raised landscaped median.

Along the west side Arrow Road, a multi-use bike/pedestrian pathway is provided between US 278B and Dunnagan's Alley. On the east side, along this same section, a contiguous sidewalk (separate from the travel lanes) is provided . North of Dunnagans Alley, a 5-foot on-street bike lane is provided on each side of Arrow Road as is a concrete side-walk. Just to the north of the Motor Coach Resort, the on-street bike lanes end and a connection to a multi-use path is provided which goes off the roadway system. A separated multi-use pathway along only the west side of Arrow Road continues to the intersection with Target Road. North of Target Road for a distance of approximately 4,100-feet, no sidewalk, bike-lane or multi-use path exists until a connection to a multi-use path is re-introduced on the east side of Arrow Road extending to the intersection with PBR.

Traffic Volumes

Daily traffic volumes as indicated by the 2015 LCOG Transportation model indicate a two-way average annual daily traffic volume (AADT) of 6,000 vpd. This volume correlates to a LOS B under the average condition in accordance with the Minimum ADT (max. 9,890 LOS D) by Level-of-Service for Urban Facilities provided by the SCDOT.

Accident History

Three years of summarized accident data for this corridor has been provided which include accidents at the unsignalized intersections contained within the segment as well as accidents that were in between intersections. Accident statistics for the signalized intersections of US 278B and PBR have not been included in this information as this data has already been included in the respective accident information for these two corridors in prior sections of this report.

Corridor of Arrow Road

Year	Annual # Accidents	Angle[a]	Rear End	Sideswipe	Fixed Obj[b]	Other	Summer Months (June-Aug)	Involved Bike or Ped
2015 (Jan-June)	5				5		1	
2014	5	2			3		2	1
2013	11	5	3		2	2		2
2012 (July-Dec)	4	2		1	1		1	
Total Crashes	25	9	3	1	11	2	4	3
Avg. Per Year	***8.3***						***1.3***	

Note: Information provided by Town of Hilton Head.

a. Angle or cross-movement type collision.

b. Vehicle collided with fixed object, typically ran off roadway.

As shown, this approximate 1.4-mile section totaled 25 accidents over the three-year period resulting in an average of 8.3 accidents per year. The majority of accident types are fixed-object type with a total of 11 while the second greatest accident type is angle/cross-movement (9). On average, approximately 15-percent of these accidents occur during the summer months and three involved pedestrians and/or bicyclists.

Fixed-object accident types accidents are caused by drivers running off the roadway, striking a sign/tree or hitting an object in the roadway. A high percentage of the fixed-object accidents occurred in the area of Helmsman Way and just to the east where the existing alignment of Arrow Road is a 90-degree curve.

FUTURE 2030 CONDITIONS

Future traffic demands as expected by the LCOG transportation model indicate that Arrow Road is expected to serve an AADT of 7,400 vpd under the 15-Year 2030 conditions; this volume correlates to a LOS C for this average condition.

RECOMMENDATIONS

Operationally, this section of roadway operates at good conditions. The higher than normal frequency of fixed-object accidents is a minor concern which may be caused by the curvature in Arrow Road. Warning signs are installed to warn motorist about the up coming alignment/curvature. This section of Arrow Road has an approximate width of 24-feet with minimal shoulders (1-foot or less). Widening of this roadway to provide a wider shoulder in each direction may aid in the reduction of accidents as well as possible enhanced signage warning of the curvature.

ARROW ROAD AT NEW ORLEANS ROAD

This intersection is at the southern end of Arrow Road and is a three-legged unsignalized intersection where New Orleans Road provides an east/west orientation and accesses commercial uses as well as provides a by-pass roadway (southeast quadrant) around the Sea Pines Circle. Arrow Road makes up the southbound approach leg and provides access to commercial uses prior to intersecting US 278B 290-feet to the north.

EXISTING CONDITIONS

Geometrics

The following provides a graphic and description of the existing intersection geometrics:

Description

Approach:	Southbound	
Name:	**Arrow Road**	
	# Lanes	Storage (ft)
Left	1	100
Through	NA	
Right	1	250

Approach:	Eastbound	
Name:	**New Orleans Road**	
	# Lanes	Storage (ft)
Left	1	110
Through	1	
Right	NA	

Approach:	Westbound	
Name:	**New Orleans Road**	
	# Lanes	Storage (ft)
Left	NA	
Through	1	
Right	1	185

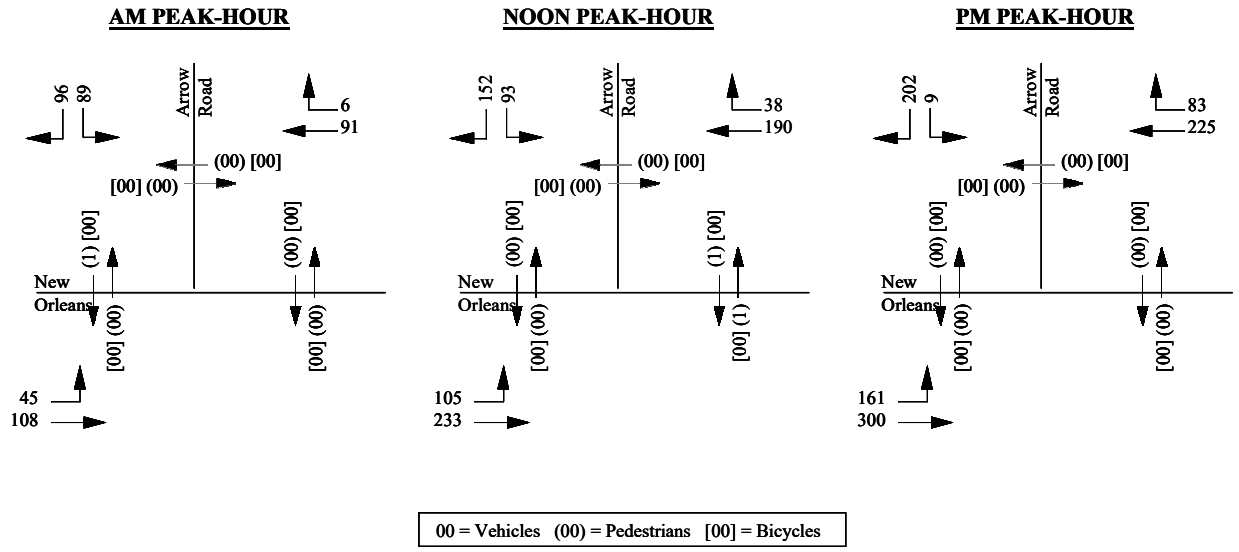
Accident History

No accidents were summarily reported at this intersection during the three-year period analyzed in this report.

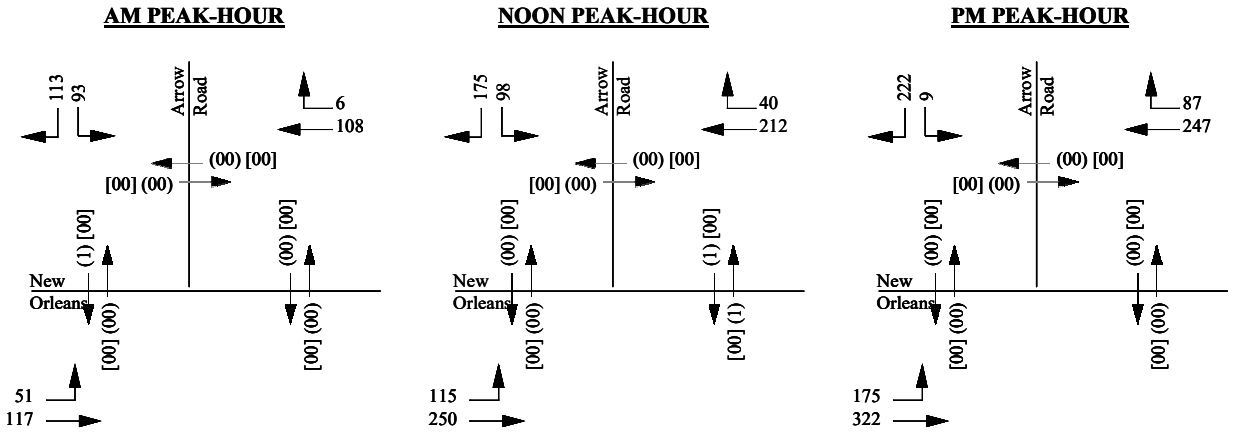
Traffic Volumes

Existing peak-hour volumes gathered during the second week of June 2015 are present below which represent the AM, NOON and PM peak-hours time periods. Following the 2015 peak-hour volumes are the two Future year conditions which reflect 2020 (5-year) and 2030 (15-year) peak-hour volume projections.

2015 Existing Peak-Hour Volumes

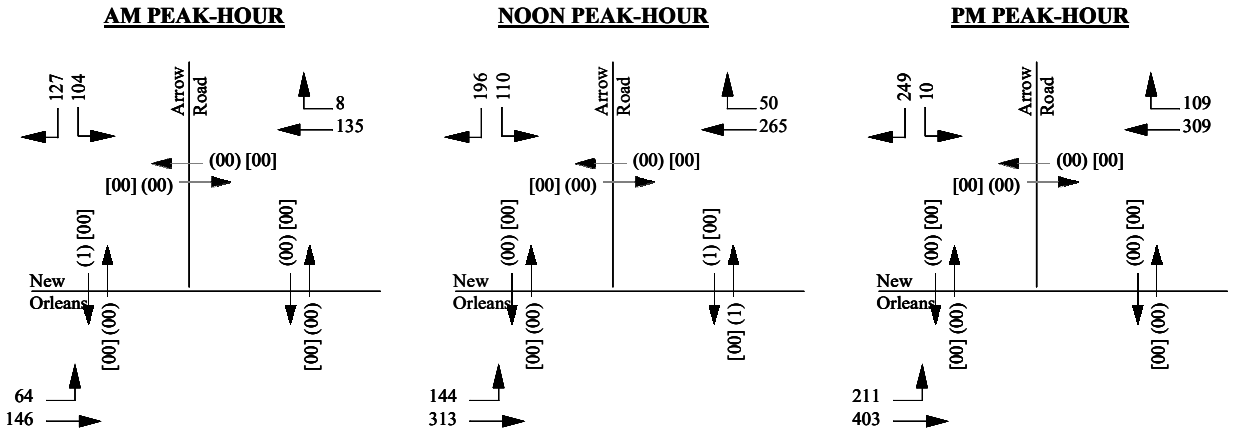


2020 Peak-Hour Volumes



00 = Vehicles (00) = Pedestrians [00] = Bicycles

2030 Peak-Hour Volumes



00 = Vehicles (00) = Pedestrians [00] = Bicycles

Intersection Operations

Service Levels:

Intersection	Peak Hour	2015 Existing Delay[2]	2015 Existing LOS[3]	5-Year (2020) Delay	5-Year (2020) LOS	15-Year (2030) Delay	15-Year (2030) LOS
New Orleans Road at Arrow Road	AM	11.5	B	12.1	B	12.9	B
	NOON	18.2	C	20.4	C	25.2	D
	PM	19.6	C	21.6	C	25.4	D

1. Calculations completed using the 2010 HCM methodology.
2. Delay in seconds-per-vehicle.
3. Level-of-Service.

GENERAL NOTES:

1. For unsignalized intersections, delay is representative of the minor street worst approach.

As shown, under Existing and both future 5-Year 2020 and 15-Year 2030 conditions, this intersection operations at acceptable service levels during the AM, NOON and PM peak time periods. These good operations are due to the relatively low volume of minor street left-turn movements as well as the moderate through movements on New Orleans Road.

Storage Lane Queues:

New Orleans Road at Arrow Road

			2015 Existing			5-Year (2020)			15-Year (2030)		
		Stacking	AM	Noon	PM	AM	Noon	PM	AM	Noon	PM
NB	Left	NA									
	Right	NA									
SB	Left	100	13	27	3	15	33	3	18	47	5
	Right	250	9	19	29	11	23	34	13	28	43
EB	Left	110	3	7	13	3	8	14	3	10	17
	Right	NA									
WB	Left	NA									
	Right	185	0	0	0	0	0	0	0	0	0

Lengths represented in feet.

As shown, each of the turning lanes currently provide adequate storage length for the existing and expected queue lengths.

RECOMMENDATIONS

The analyses for this intersection indicate no capacity constraints caused by the geometry of this unsignalized intersection. Based on this, no improvements are recommended at this intersection at this time.

ARROW ROAD AT TARGET ROAD

Part of the Arrow Road corridor this is a three-legged skewed unsignalized intersection. West of this intersection, Target Road extends approximately 770-feet to the west, terminates at PBR and provides access to a mix of commercial land-uses including the Island Crossing Center on the opposite side of Palmetto Bay Road.

EXISTING CONDITIONS

Geometrics

The following provides a graphic and description of the existing intersection geometrics:

Description

Approach:	Northbound	
Name:	**Arrow Road**	
	# Lanes	Storage (ft)
Left	1	100
Through	1	

Approach:	Southbound	
Name:	**Arrow Road**	
	# Lanes	Storage (ft)
Left	NA	
Thru/Right	1	

Approach:	Eastbound	
Name:	**Target Road**	
	# Lanes	Storage (ft)
Left	NA	90
Right	NA	>300

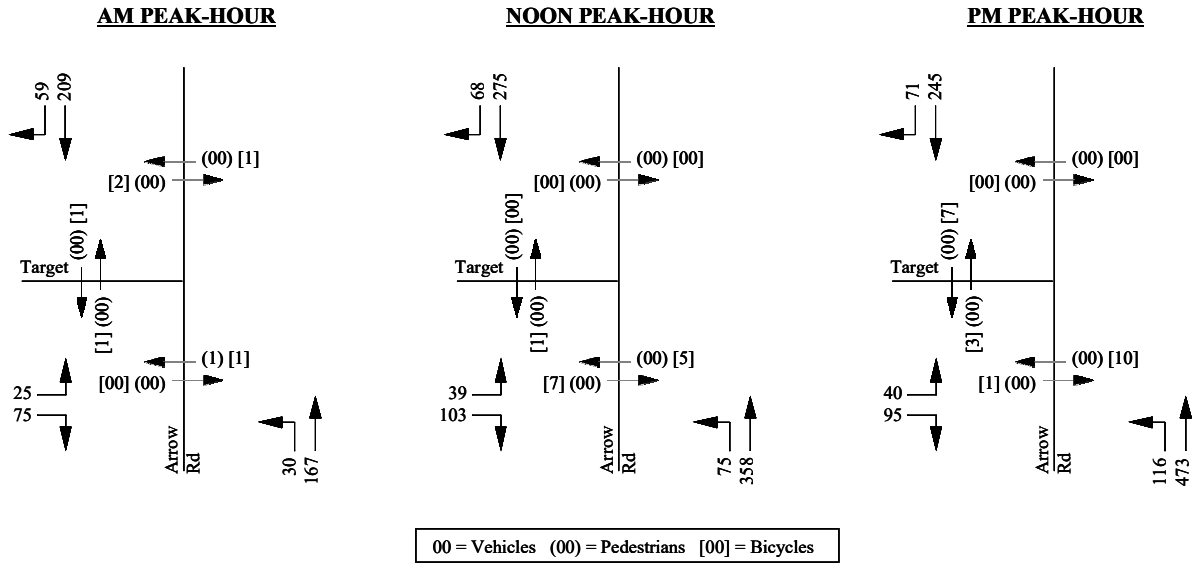
Accident History

Reported accident data specific to this intersection for the three-year period reflect an insignificant number of crashes.

Traffic Volumes

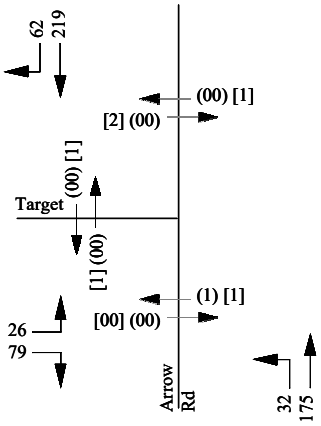
Existing peak-hour volumes gathered during the second week of June 2015 are present below which represent the AM, NOON and PM peak-hours time periods. Following the 2015 peak-hour volumes are the two Future year conditions which reflect 2020 (5-year) and 2030 (15-year) peak-hour volume projections.

2015 Existing Peak-Hour Volumes

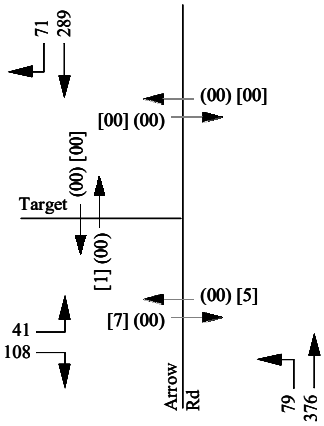


2020 Peak-Hour Volumes

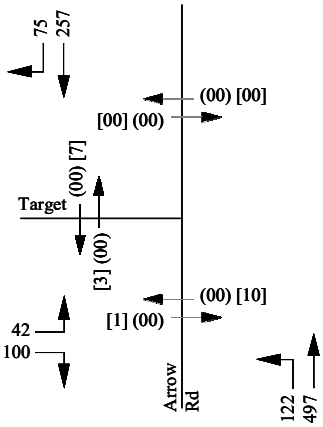
AM PEAK-HOUR



NOON PEAK-HOUR



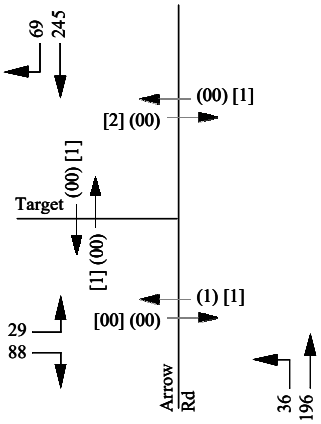
PM PEAK-HOUR



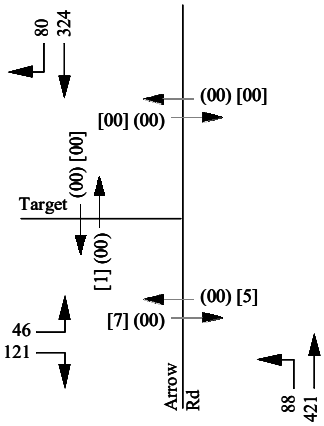
00 = Vehicles (00) = Pedestrians [00] = Bicycles

2030 Peak-Hour Volumes

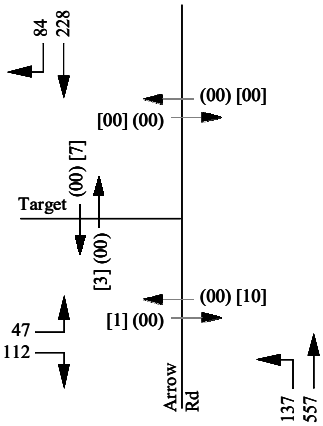
AM PEAK-HOUR



NOON PEAK-HOUR



PM PEAK-HOUR



00 = Vehicles (00) = Pedestrians [00] = Bicycles

Intersection Operations

Service Levels:

Intersection	Peak Hour	2015 Existing Delay[2]	2015 Existing LOS[3]	5-Year (2020) Delay	5-Year (2020) LOS	15-Year (2030) Delay	15-Year (2030) LOS
Arrow Road at Target Road	AM	12.5	B	12.8	B	13.7	B
	NOON	11.1	B	21.0	C	25.2	D
	PM	25.9	D	28.4	D	37.4	E

1. Calculations completed using the 2010 HCM methodology.
2. Delay in seconds-per-vehicle.
3. Level-of-Service.

GENERAL NOTES:

1. For unsignalized intersections, delay is representative of the minor street worst approach.

As shown, under both Existing and 5-Year 2020 conditions, this intersection operations at acceptable service levels during the AM, NOON and PM peak time periods. A LOS D does exist during the PM peak-hour which is due to the minor street left-turn movement from Target Road to northbound Arrow Road.

Future 15-Year 2030 conditions reflect continued good service levels during the AM and NOON time periods and a LOS E during the PM peak-hour which indicates some delay for the minor street left-turn movement.

Storage Lane Queues:

Arrow Roadat Target Road

			2015 Existing			5-Year (2020)			15-Year (2030)		
		Stacking	AM	Noon	PM	AM	Noon	PM	AM	Noon	PM
NB	Left	100	2	6	9	2	6	10	3	7	11
	Right	NA									
SB	Left	NA									
	Right	NA									
EB	Left	90	4	13	18	5	15	22	6	20	32
	Right	>300	9	14	2	10	15	14	11	19	16
WB	Left	NA									
	Right	NA									

Lengths represented in feet.

As shown, each of the turning lanes currently provide adequate storage length for the existing and expected queue lengths. While the eastbound left-turn movement from Target is the greatest, more than sufficient stacking length is provided. This will cause delays on this minor street approach but will not impact Arrow Road.

RECOMMENDATIONS

The analyses for this intersection indicate no capacity constraints caused by the geometry of this unsignalized intersection. Based on this, no improvements are recommended at this intersection at this time.

ARROW ROAD AT ARCHER ROAD

Part of the Arrow Road corridor this is a three-legged unsignalized intersection where Archer Road extends to the west of this intersection and terminates at PBR in approximately 710-feet. Between Arrow Road and PBR, Archer Road serves a variety of commercial land-uses.

EXISTING CONDITIONS

Geometrics

The following provides a graphic and description of the existing intersection geometrics:

Description

Approach:	Northbound	
Name:	**Arrow Road**	
	# Lanes	Storage (ft)
Left	1	100
Through	1	
Right	NA	

Approach:	Southbound	
Name:	**Arrow Road**	
	# Lanes	Storage (ft)
Left	NA	
Through	1	
Right	1	80

Approach:	Eastbound	
Name:	**Archer Road**	
	# Lanes	Storage (ft)
Left/Thru/Right	1	>300

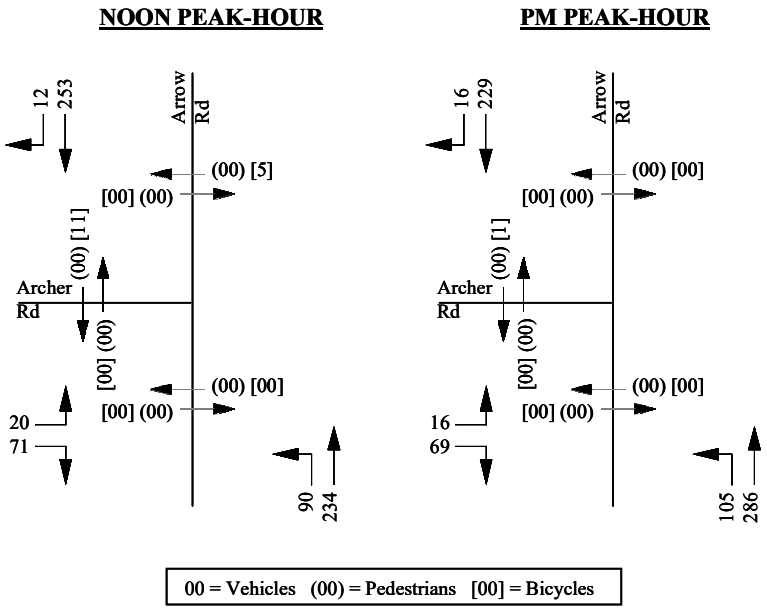
Accident History

Reported accident data specific to this intersection for the three-year period reflect an insignificant number of crashes.

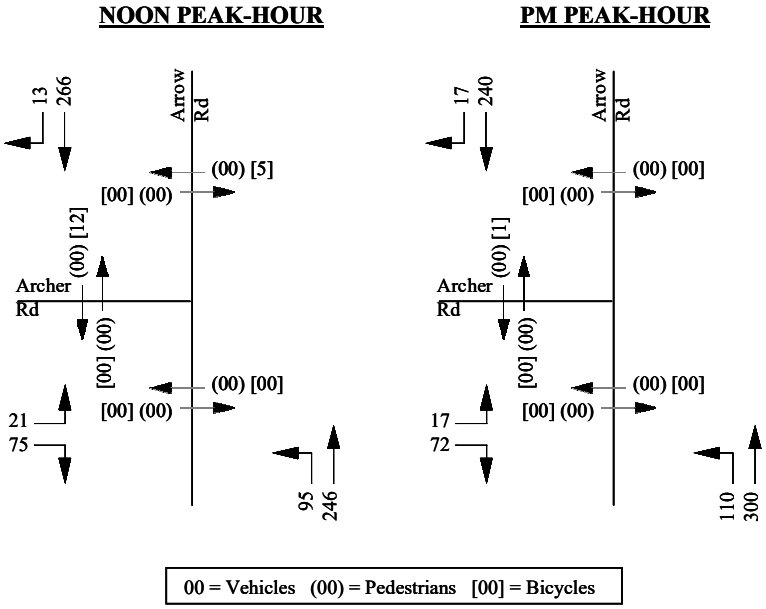
Traffic Volumes

Existing peak-hour volumes gathered during the second week of June 2015 are present below which represent the NOON and PM peak-hours time periods. Following the 2015 peak-hour volumes are the two Future year conditions which reflect 2020 (5-year) and 2030 (15-year) peak-hour volume projections.

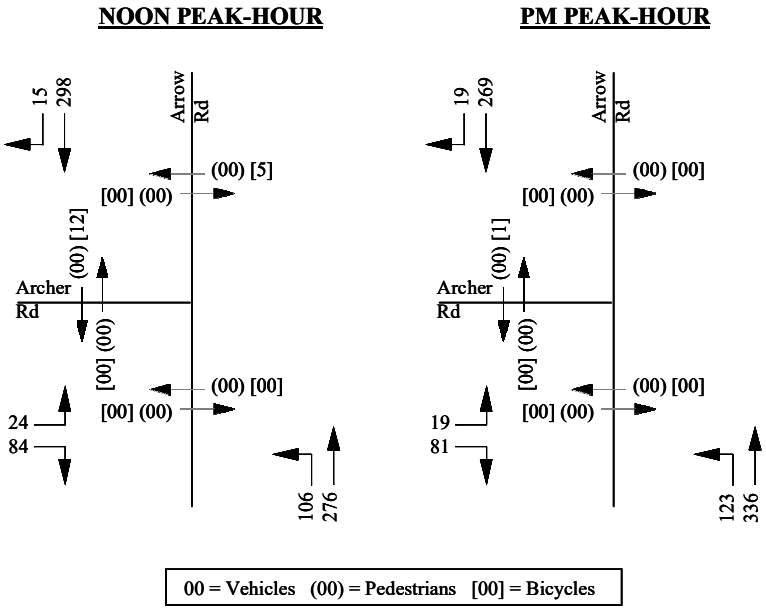
2015 Existing Peak-Hour Volumes



2020 Peak-Hour Volumes



2030 Peak-Hour Volumes



Intersection Operations

Service Levels:

Intersection	Peak Hour	2015 Existing Delay[2]	2015 Existing LOS[3]	5-Year (2020) Delay	5-Year (2020) LOS	15-Year (2030) Delay	15-Year (2030) LOS
Arrow Road at Archer Road	NOON	12.1	B	12.4	B	13.5	B
	PM	11.8	B	12.2	B	13.1	B

1. Calculations completed using the 2010 HCM methodology.
2. Delay in seconds-per-vehicle.
3. Level-of-Service.

GENERAL NOTES:

1. For unsignalized intersections, delay is representative of the minor street worst approach.

As shown, under Existing and both future 5-Year 2020 and 15-Year 2030 conditions, this intersection operations at acceptable service levels during both the NOON and PM peak time periods.

Storage Lane Queues:

Arrow Road at Archer Road

			2015 Existing		5-Year (2020)		15-Year (2030)	
		Stacking	Noon	PM	Noon	PM	Noon	PM
NB	Left	100	6	7	7	8	8	9
	Right	NA						
SB	Left	NA						
	Right	80	0	0	0	0	0	0
EB	Left	>300	15	13	16	14	20	18
	Right	NA						
WB	Left	NA						
	Right	NA						

Lengths represented in feet.

As shown, each of the turning lanes currently provide adequate storage length for the existing and expected queue lengths.

RECOMMENDATIONS

The analyses for this intersection indicate no capacity constraints caused by the geometry of this unsignalized intersection. Based on this, no improvements are recommended at this intersection at this time.

SUMMARY of IMPROVEMENTS: Arrow Road

- Access modification to gas/c-store located adjacent to US 278B. Closure of closest access to US 278B located along Arrow Road.

- Widen the cross-section of Arrow Road between PBR (to the north opposite Point Comfort Road) and Dunnagan's Alley to provide a wider roadway shoulder in each direction. This addition shoulder/cross-section may aid in the reduction of fixed-object accidents which are of a high frequency along this corridor.

- Enhanced signage warning of roadway curvature in the area east of Helmsman Way.

CORRIDOR of CORDILLO PARKWAY

Cordillo Parkway is considered a minor arterial which consists of the three intersections of Pope Avenue, Woodhaven Drive and Deallyon Avenue within the defined study area. Total length of this corridor within the study area is approximately 1,450-feet which encompasses the above referenced intersections of which only the intersection with Pope Avenue is under traffic signal control. The remaining two intersections operate under STOP sign control.

EXISTING CONDITIONS

Geometrics

Cordillo Parkway generally provides a two-lane cross-section where directional traffic flow is separated by a double-yellow center-line. Separate turning are provided at the Pope Avenue intersection.

Within the study area, an 8-foot multi-use bike/pedestrian pathway is provided on the north side of Cordillo Parkway. Outside of the study area, in the vicinity of Treetops and Ocean Breeze Resort, this path crosses Cordillo Parkway and continues to the back gate of Sea Pines/South Forest Beach on the south side of Cordillo Parkway.

Traffic Volumes

Daily traffic volumes as indicated by the 2015 LCOG Transportation model indicate a two-way AADT of 10,600 vpd. This volumes correlate to a LOS C under the average condition in accordance with the Minimum ADT (max. 12,420 LOS D Minor Arterial undivided) by Level-of-Service for Urban Facilities provided by the SCDOT.

Accident History

Three years of summarized accident data for this corridor has been provided which include accidents at the unsignalized intersections contained within the segment as well as accidents that were in between intersections. Accident statistics for the signalized intersection of Pope Avenue has not been included in this information as this data has already been included in the respective accident information for this corridor in a prior section of this report.

Corridor of Cordillo Parkway

Year	Annual # Accidents	Angle[a]	Rear End	Sideswipe	Fixed Obj[b]	Other	Summer Months (June-Aug)	Involved Bike or Ped
2015 (Jan-June)								
2014	4	3			1		2	
2013	13	3	2		6	2	1	1
2012 (July-Dec)								
Total Crashes	17	6	2	0	7	2	3	1
Avg. Per Year	***5.7***						***1.0***	

Note: Information provided by Town of Hilton Head.

a. Angle or cross-movement type collision.

b. Vehicle collided with fixed object, typically ran off roadway.

As shown, this approximate .25-mile section totaled 17 accidents over the three-year period resulting in an average of 5.7 accidents per year. The majority of accident types are fixed-object type with a total of 7 while the second greatest accident type is angle/cross-movement (6). On average, approximately 18-percent of these accidents occur during the summer months and one involved pedestrians and/or bicyclists.

Fixed-object accident types accidents are caused by drivers running off the roadway, striking a sign/tree or hitting an object in the roadway. This maybe due to the narrow cross-section of Cordillo Parkway which has limited shoulder widths (less than 1-foot) throughout the study area corridor.

FUTURE 2030 CONDITIONS

Future traffic demands as expected by the LCOG transportation model indicate that Cordillo Parkway will serve an AADT of 11,400 vpd under 2030 conditions; this volume correlates to a LOS D for the AADT condition under the average condition in accordance with the Minimum ADT (max. 12,420 LOS D Minor Arterial undivided) by Level-of-Service for Urban Facilities provided by the SCDOT.

RECOMMENDATIONS

Operationally, this section of roadway operates at good conditions with acceptable service levels. The higher than normal frequency of fixed-object accidents is a minor concern which may be caused by the narrow cross-section of this roadway. Widening of this roadway to provide a greater shoulder width n each direction may aid in the reduction of accidents.

This roadway has the third greatest usage of the multi-use path by peds/bikes in the project study area. This is evident by the collected data as well as the dirt paths observed along the south side of Cordillo Parkway. It is suggested that an 8-foot multi-use path be constructed along the south side of Cordillo Parkway between Pope Avenue and Deallyon Avenue.

CORDILLO PARKWAY AT WOODHAVEN DRIVE

Part of the Cordillo Parkway corridor this is a three-legged unsignalized intersection located 570-feet west of Pope Avenue. Woodhaven Drive makes up the southbound approach provides access to residential uses as well as the Holy Family Catholic Church. All approaches to this intersection provide a single-lane where the southbound approach of Woodhaven Drive operates under STOP sign control.

EXISTING CONDITIONS

Geometrics

The following provides a graphic and description of the existing intersection geometrics:

Description

Approach:	Southbound	
Name:	**Woodhaven Drive**	
	# Lanes	Storage (ft)
Left	NA	
Left/Right	1	>300
Right	NA	

Approach:	Eastbound	
Name:	**Cordillo Parkway**	
	# Lanes	Storage (ft)
Left	NA	
Left/Thru	1	>300
Right	NA	

Approach:	Westbound	
Name:	**Cordillo Parkway**	
	# Lanes	Storage (ft)
Left	NA	
Thru/Right	1	>300
Right	NA	

Accident History

Cordillo Parkway at Woodhaven Drive

Year	Annual # Accidents	Angle[a]	Rear End	Sideswipe	Fixed Obj[b]	Other	Summer Months (June-Aug)	Involved Bike or Ped
2015 (Jan-June)	1		1					
2014	1	1						
2013	2	1			1		1	1
2012 (July-Dec)								
Total Crashes	4	2	1	0	1	0	1	1
Avg. Per Year	***1.3***						***0.3***	

Note: Information provided by Town of Hilton Head.

a. Angle or cross-movement type collision.

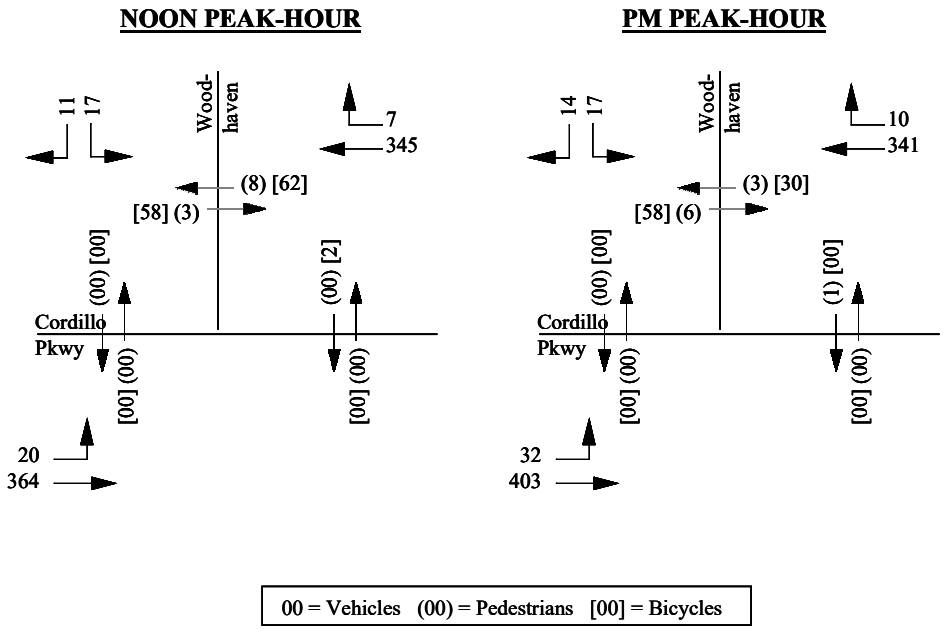
b. Vehicle collided with fixed object, typically ran off roadway.

As indicated, an average of slightly greater than one accident per year have occurred with two of the accidents being angle/cross-movement of left-turn movements exiting Woodhaven Drive onto Cordillo Parkway. One accident occurred during the summer months and one accident involved a bicyclist being struck within a designated cross-walk.

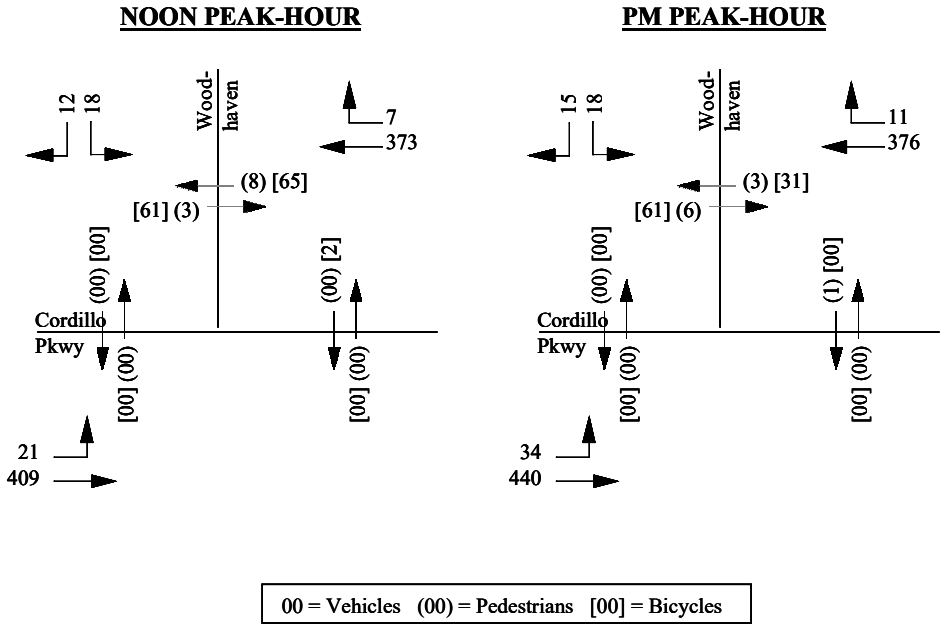
Traffic Volumes

Existing peak-hour volumes gathered during the second week of June 2015 are present below which represent the NOON and PM peak-hours time periods. Following the 2015 peak-hour volumes are the two Future year conditions which reflect 2020 (5-year) and 2030 (15-year) peak-hour volume projections.

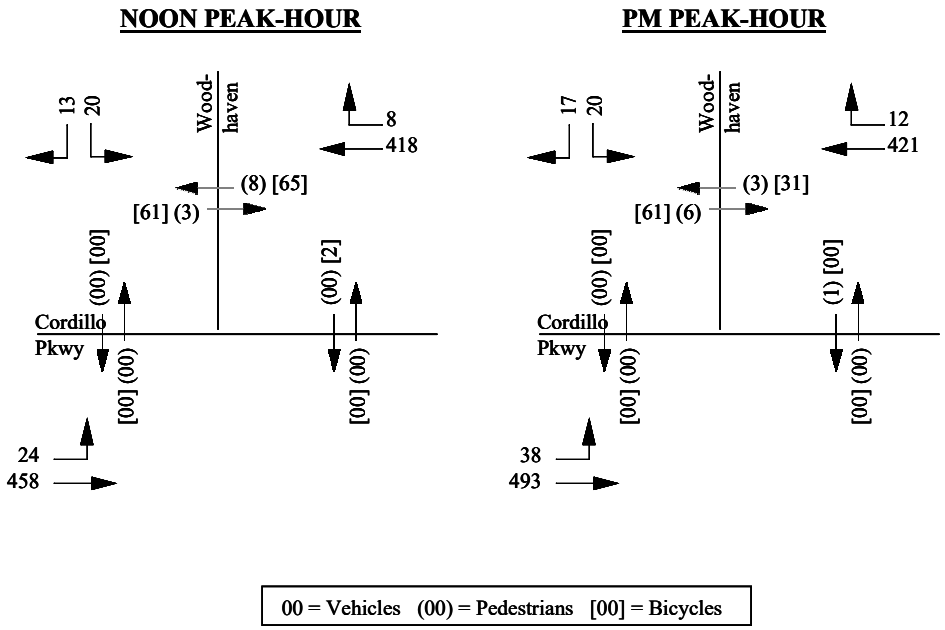
2015 Existing Peak-Hour Volumes



2020 Peak-Hour Volumes



2030 Peak-Hour Volumes



Intersection Operations

Service Levels:

Intersection	Peak Hour	2015 Existing Delay[2]	2015 Existing LOS[3]	5-Year (2020) Delay	5-Year (2020) LOS	15-Year (2030) Delay	15-Year (2030) LOS
Cordillo Parkway at Woodhaven Drive	NOON	14.5	B	15.5	C	17.3	C
	PM	14.9	B	16.0	C	18.2	C

1. Calculations completed using the 2010 HCM methodology.
2. Delay in seconds-per-vehicle.
3. Level-of-Service.

GENERAL NOTES:

1. For unsignalized intersections, delay is representative of the minor street worst approach.

As shown, under all conditions and peak hours, this intersection operation operates at good service levels. It should be noted that with this intersection being located 560-feet west of Pope Avenue, on occasion vehicular queues from the adjacent Pope Avenue at Cordillo Parkway intersection back-up through this intersection. Typically the NOON and PM peak-hour time periods provide the greatest potential of backing across this intersection.

Storage Lane Queues:

Cordillo Parkway at Woodhaven Drive

			2015 Existing		5-Year (2020)		15-Year (2030)	
		Stacking	Noon	PM	Noon	PM	Noon	PM
NB	Left	NA						
	Right	NA						
SB	Left	0	6	7	7	8	10	11
	Right	NA						
EB	Left	0	1	2	2	3	2	3
	Right	NA						
WB	Left	NA	0	0	0	0	0	0
	Right	NA						

Lengths represented in feet.

As shown, each of the turning lanes currently provide adequate storage length for the existing and expected queue lengths. Based on this, no queuing issues are expected at this intersection.

RECOMMENDATIONS

The analyses for this intersection indicate no capacity constraints caused by the geometry of this unsignalized intersection. Based on this, no improvements are recommended at this intersection at this time. Improvements to the adjacent Pope Avenue and Cordillo intersection may aid in the stacking constraint that occurs across this intersection during the NOON and PM peak hours.

CORDILLO PARKWAY AT DEALLYON AVENUE

Part of the Cordillo Parkway corridor this is a three-legged unsignalized intersection which to the south along Deallyon Avenue which provides access to residential uses and connectivity to South Forest Beach Road. On the north side of Cordillo Parkway, a private access drive is provided which provides access to limited commercial and residential uses. This approach intersects Cordillo Parkway with an off-set from Deallyon Avenue of approximately 30-feet. Within this off-set, a multi-use path crossing is provided.

EXISTING CONDITIONS

Geometrics

The following provides a graphic and description of the existing intersection geometrics:

Description

Approach:	Northbound	
Name:	**Deallyon Avenue**	
	# Lanes	Storage (ft)
Left	NA	
Left/Right	1	>300

Approach:	Eastbound	
Name:	**Cordillo Parkway**	
	# Lanes	Storage (ft)
Thru/Right	1	>300

Approach:	Westbound	
Name:	**Cordillo Parkway**	
	# Lanes	Storage (ft)
Left/Thru	1	>300

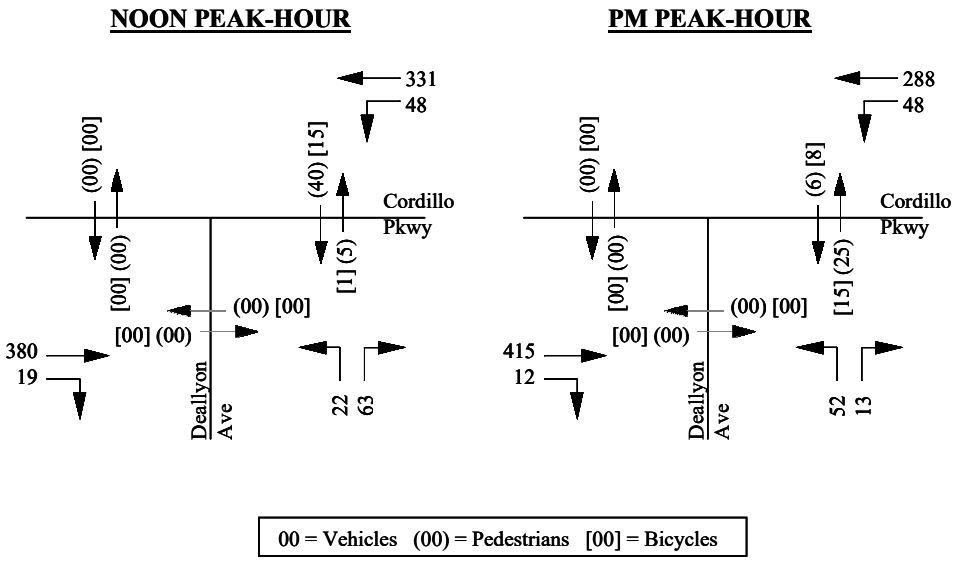
Accident History

Reported accident data specific to this intersection for the three-year period reflect an insignificant number of crashes.

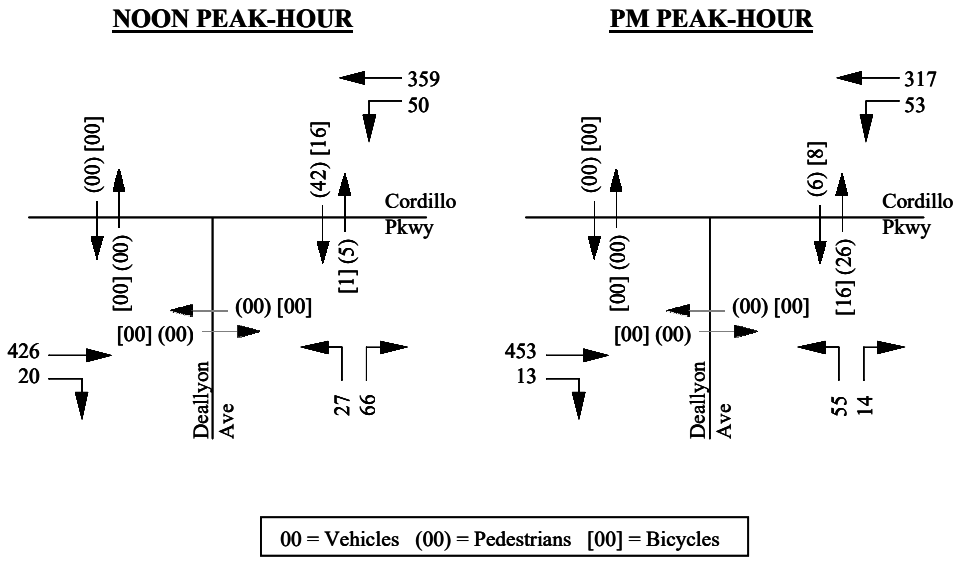
Traffic Volumes

Existing peak-hour volumes gathered during the second week of June 2015 are present below which represent the NOON and PM peak-hours time periods. Following the 2015 peak-hour volumes are the two Future year conditions which reflect 2020 (5-year) and 2030 (15-year) peak-hour volume projections.

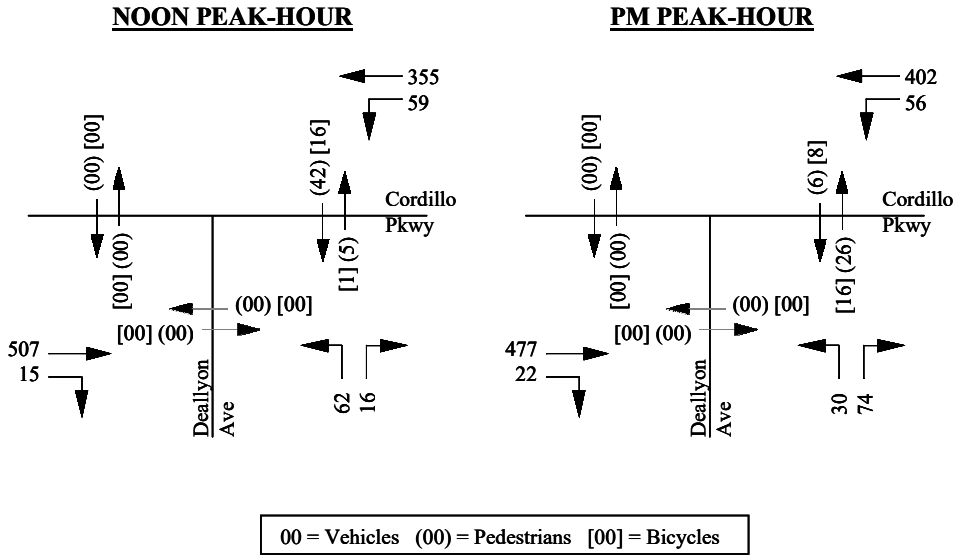
2015 Existing Peak-Hour Volumes



2020 Peak-Hour Volumes



2030 Peak-Hour Volumes



Intersection Operations

Service Levels:

Intersection	Peak Hour	2015 Existing Delay[2]	2015 Existing LOS[3]	5-Year (2020) Delay	5-Year (2020) LOS	15-Year (2030) Delay	15-Year (2030) LOS
Cordillo Parkway at Deallyon Drive	NOON	14.7	B	19.0	C	19.5	C
	PM	18.8	C	21.3	C	26.6	D

1. Calculations completed using the 2010 HCM methodology.
2. Delay in seconds-per-vehicle.
3. Level-of-Service.

GENERAL NOTES:

1. For unsignalized intersections, delay is representative of the minor street worst approach.

As shown, under Existing and both future 5-Year 2020 and 15-Year 2030 conditions, this intersection operation operates at good service levels.

Storage Lane Queues:

Cordillo Parkway at Deallyon Avenue

			2015 Existing		5-Year (2020)		15-Year (2030)	
		Stacking	Noon	PM	Noon	PM	Noon	PM
NB	Left/RT	>300	19	20	22	24	31	35
SB	Left	NA						
	Right	NA						
EB	Left	NA						
	Right	NA						
WB	Left	0	4	4	4	4	5	5
	Right	NA						

Lengths represented in feet.

As shown, each of the turning lanes currently provide adequate storage length for the existing and expected queue lengths. Based on this, no queuing issues are expected at this intersection.

RECOMMENDATIONS

Re-alignment of the private access drive opposite Deallyon Avenue to create a four-legged unsignalized intersection. This will allow the multi-use path crossing to be located to the east of the intersection rather than "between" the intersections.

Analyses for this intersection indicate no capacity constraints caused by the geometry of this unsignalized intersection. The westbound left-turn movement from Cordillo Parkway to southbound Deallyon Avenue is done so from the single through lane. In review of the SCDOT guidelines for a separate left-turn lane, (*Fig. 15.5g of the SCDOT Design Manual*) a separate left-turn lane is warranted.

Recommendation of a 150-foot left-turn lane with a 150-foot taper should be considered. Exact taper will depend on the method chosen to widen the mainline roadway whether it be symmetrical or a-symmetrical about the center-line.

Concept

SUMMARY of IMPROVEMENTS: Cordillo Parkway

- This roadway has the third greatest use of the multi-path by peds/bikes. It is suggested that an 8-foot multi-use path be constructed along the south side of Cordillo Parkway between Pope Avenue and Deallyon Avenue.

- Widening of Cordillo Parkway between South Forest Beach/Sea Pine back gate and Pope Avenue to provide a wider shoulder in each direction may aid in the reduction of accidents.

- At the Deallyon Avenue intersection, re-locate private access drive located on the north side of Cordillo Parkway to align with Deallyon Avenue. Provide a westbound left-turn lane for vehicles entering Deallyon Avenue from Cordillo Parkway.

CORRIDOR of NORTH AND SOUTH FOREST BEACH DRIVE

North and South Forest Beach Drives are considered a minor arterial and consist of the five intersections of Avocet Road, Coligny Circle, Tanglewood Drive, Deallyon Avenue and Lemoyne Avenue. Total length of this corridor within the study area is approximately 3,750-feet which encompasses the above referenced intersections which each operate as unsignalized intersections with the Pope Avenue at Forest Beach Drive (Coligny) operating as a traffic circle.

Public beach access points are located along North Forest Beach Drive at Avocet Road and at the Coligny Circle intersection. Along South Forest Beach Drive, access to public beach areas are provided in the vicinity of Deallyon Avenue and areas west of Lemoyne Avenue. These public access areas are provided cross-walks across South Forest Beach Drive, typically in mid-block locations.

EXISTING CONDITIONS

Geometrics

North Forest Drive generally provides a two-lane cross-section where directional traffic flow is separated by a double-yellow center-line. South of the Coligny Circle, South Forest Beach is generally a four-lane roadway where directional traffic flow continues to separated by a double-yellow center-line.

Within the study area, the section of North Forest Beach Drive (Avocet Road to Coligny Circle) provides an 8-foot multi-use bike/pedestrian pathway on the north side of the roadway, and a concrete sidewalk on the south side. West of Coligny Circle (South Forest Beach Drive), the 8-foot wide multi-use path continues to the intersection with Cordillo Parkway/Sea Pines back gate. No multi-use path or sidewalk is provided along the south side of South Forest Beach Drive with exception of a short area directly at the Coligny Beach access (south side of Coligny Circle).

Traffic Volumes

Daily traffic volumes as indicated by the 2015 LCOG Transportation model indicate a two-way AADT of 8,300 vpd for a section of South Forest Beach Road just west of the Coligny Circle. This volumes correlate to a LOS A under the average condition in accordance with the Minimum ADT (max. 19,780 LOS D Minor Arterial undivided) by Level-of-Service for Urban Facilities provided by the SCDOT.

Daily volumes for the section of North Forest Beach Road just east of the Coligny Circle indicate a 2015 LCOG Transportation model volume of 3,300 vpd. This volumes correlates to a LOS A under the average condition in accordance with the Minimum ADT (max. 9,890 LOS D Collector undivided) by Level-of-Service for Urban Facilities provided by the SCDOT.

Accident History

Three years of summarized accident data for this corridor has been provided which include accidents at the unsignalized intersections contained within the segment as well as accidents that were in between intersections. Accident statistics for the Coligny Circle have not been included in this information as this data has already been included in the respective accident information (Pope Avenue) for this circle in a prior section of this report.

Corridor of North & South Forest Beach Drive

Year	Annual # Accidents	Angle[a]	Rear End	Sideswipe	Fixed Obj[b]	Other	Summer Months (June-Aug)	Involved Bike or Ped
2015 (Jan-June)	2	1			1		1	
2014	7	1	2	1	2	1		
2013	12	3	3	1	3		9	1
2012 (July-Dec)	3	1			2		3	
Total Crashes	24	6	5	2	8	1	13	1
Avg. Per Year	***8.0***						***4.3***	

Note: Information provided by Town of Hilton Head.

a. Angle or cross-movement type collision.

b. Vehicle collided with fixed object, typically ran off roadway.

As shown, this approximate .75-mile section totaled 24 accidents over the three year period resulting in an average of 8 accidents per year. The majority of accident types are fixed-object type with a total of 8while the second greatest accident type is angle/cross-movement (6). On average, over 50-percent of these accidents occur during the summer months and one involved pedestrians and/or bicyclists. Further review of this data indicates that a vast majority of the crashes occurred mid-block or at private access drives rather than occurring at a defined study area intersection.

FUTURE 2030 CONDITIONS

Future traffic demands as expected by the LCOG transportation model indicate that South Forest Beach Drive will serve a two-way volume of 10,600 vpd while North Forest Beach Drive will serve 3,400 vpd. This would correlate to a LOS B for the four-lane cross-section of South Forest Beach Drive and a LOS A for the two-lane section of North Forest Beach Drive in accordance with the Minimum ADT by Level-of-Service for Urban Facilities provided by the SCDOT.

RECOMMENDATIONS

Operationally, this section of roadway operates at good conditions. The higher than normal frequency of fixed-object accidents is a minor concern which may be caused by narrow cross-section of this roadway. Widening of this roadway to provide a wider shoulder in each direction may aid in the reduction of accidents.

This roadway a high usage of the existing multi-use path by peds/bikes in the project study area concentrated between Deallyon Avenue through the Coligny Circle/Beach area and up North Forest Beach Drive to Avocet Road. Proposal for a new multi-use path along the south side of South Forest Beach Drive from the Tanglewood Drive connecting to the Coligny Circle/Beach area are being proposed by the Towns Park project.

NORTH FOREST BEACH DRIVE AT AVOCET ROAD

Part of Forest Beach Drive corridor this is a four-legged unsignalized intersection and is the only studied intersection along North Forest Beach Drive (east of Coligny Circle). This intersection provides access to residential areas to the east along Forest Beach Drive, to the Beach (and limited residential/commercial uses) to the south along Avocet Road, to commercial and residential to the north along Avocet Road and commercial uses to the west towards Coligny Circle.

EXISTING CONDITIONS

Geometrics

The following provides a graphic and description of the existing intersection geometrics:

Description

Approach:	Northbound	
Name:	**Avocet Drive**	
	# Lanes	Storage (ft)
Left/Thru/Right	1	>300

Approach:	Southbound	
Name:	**Avocet Drive**	
	# Lanes	Storage (ft)
Left/Thru/Right	1	>300

Approach:	Eastbound	
Name:	**N. Forest Beach Drive**	
	# Lanes	Storage (ft)
Left/Thru/Right	1	>300

Approach:	Westbound	
Name:	**N. Forest Beach Drive**	
	# Lanes	Storage (ft)
Left/Thru/Right	1	>300

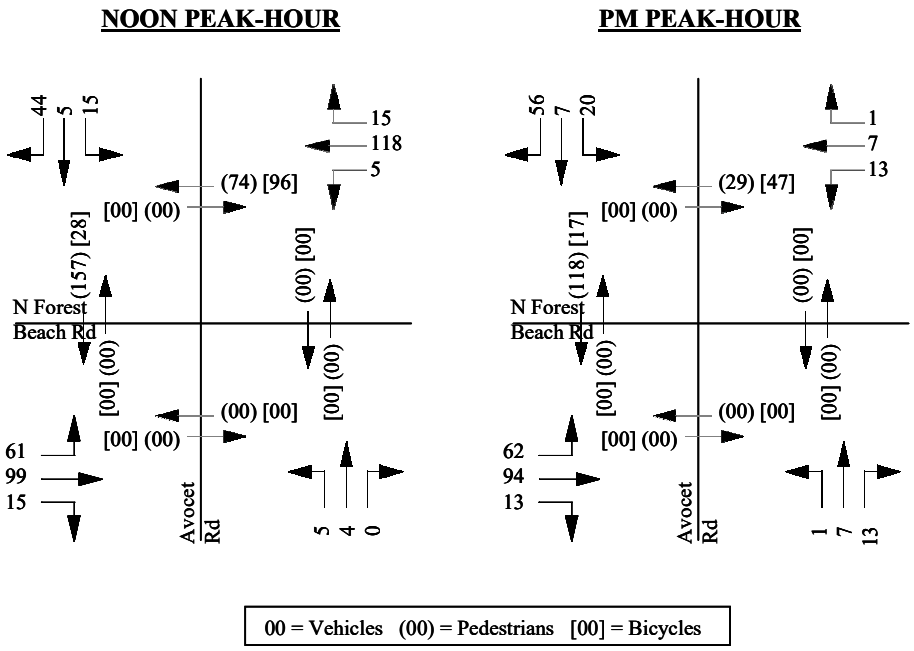
Accident History

Reported accident data specific to this intersection for the three-year period reflect an insignificant number of crashes.

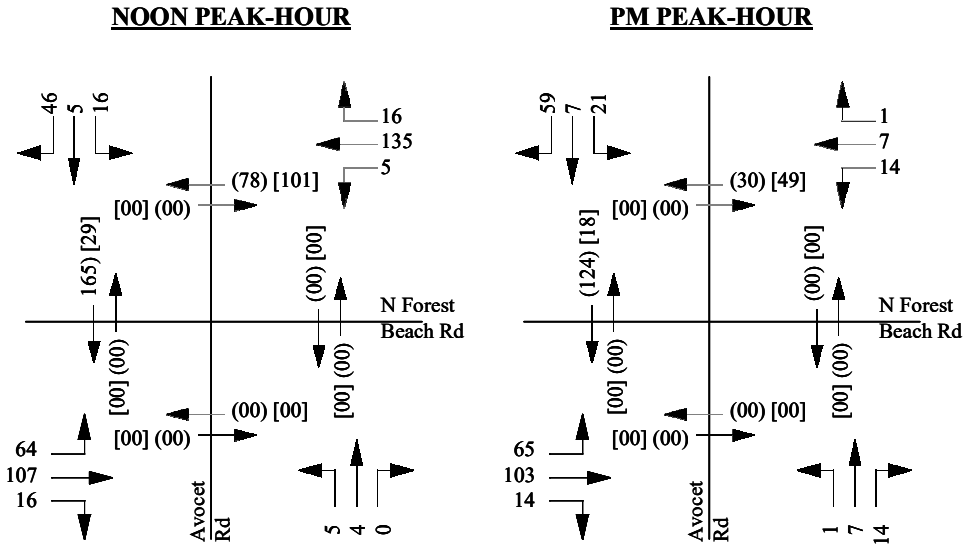
Traffic Volumes

Existing peak-hour volumes gathered during the second week of June 2015 are present below which represent the NOON and PM peak-hours time periods. Following the 2015 peak-hour volumes are the two Future year conditions which reflect 2020 (5-year) and 2030 (15-year) peak-hour volume projections.

2015 Existing Peak-Hour Volumes

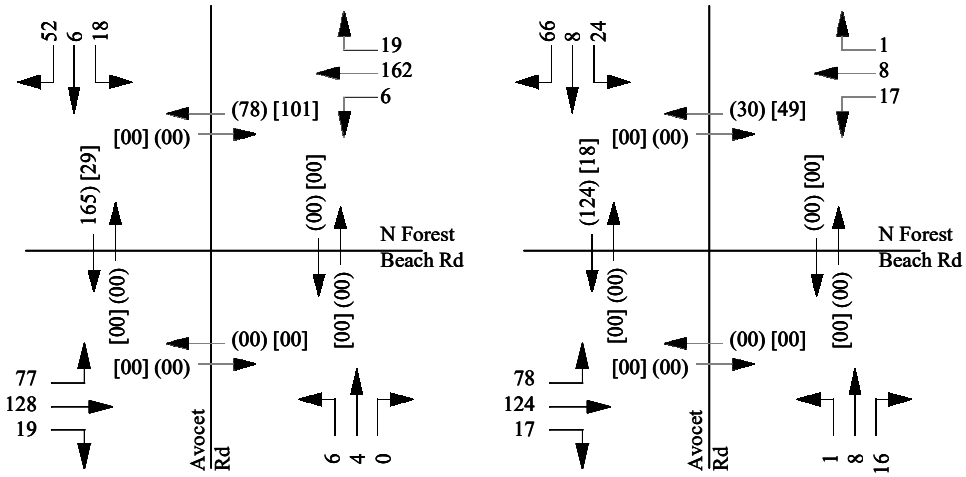


2020 Peak-Hour Volumes



00 = Vehicles (00) = Pedestrians [00] = Bicycles

2030 Peak-Hour Volumes



00 = Vehicles (00) = Pedestrians [00] = Bicycles

Intersection Operations

Service Levels:

Intersection	Peak Hour	2015 Existing Delay[2]	2015 Existing LOS[3]	5-Year (2020) Delay	5-Year (2020) LOS	15-Year (2030) Delay	15-Year (2030) LOS
North Forest Beach at Avocet Road	NOON	21.4	C	22.5	C	24.7	C
	PM	10.9	B	11.7	B	12.2	B

1. Calculations completed using the 2010 HCM methodology.
2. Delay in seconds-per-vehicle.
3. Level-of-Service.

GENERAL NOTES:

1. For unsignalized intersections, delay is representative of the minor street worst approach.

As shown, under Existing and both future 5-Year 2020 and 15-Year 2030condition, this intersection operation operates at good service levels during both the NOON and PM peak-hour time periods.

Storage Lane Queues:

North Forest Beach Road at Avocet Road

			2015 Existing		5-Year (2020)		15-Year (2030)	
		Stacking	Noon	PM	Noon	PM	Noon	PM
NB	Left	>300	2	2	3	6	3	3
	Right	NA						
SB	Left	>300	12	11	13	12	16	15
	Right	NA						
EB	Left	>300	4	0	5	4	5	4
	Right	NA						
WB	Left	>300	0	1	0	1	0	1
	Right	NA						

Lengths represented in feet.

No separate turning lanes are provided at this intersection, all approaches provide a single lane from which all turning movements are made. No queuing issues are expected at this intersection as the greatest queue is the southbound approach of Avocet Road which is not a capacity issue.

RECOMMENDATIONS

The analyses for this intersection indicate no capacity constraints caused by the geometry of this unsignalized intersection. Based on this, no improvements are recommended at this intersection at this time.

SOUTH FOREST BEACH DRIVE AT TANGLEWOOD DRIVE

Part of Forest Beach Drive corridor this is a three-legged unsignalized intersection which provides access to residential areas to the west and north. To the east South Forest Beach extends to Coligny Circle and commercial uses as well as public beach access.

EXISTING CONDITIONS

Geometrics

The following provides a graphic and description of the existing intersection geometrics:

Description

Approach:	Southbound	
Name:	**Tanglewood Drive**	
	# Lanes	Storage (ft)
Left	NA	
Left/Right	1	>300
Right	NA	

Approach:	Eastbound	
Name:	**S. Forest Beach Drive**	
	# Lanes	Storage (ft)
Left	NA	
Through	2	
Right	NA	

Approach:	Westbound	
Name:	**S. Forest Beach Drive**	
	# Lanes	Storage (ft)
Left	NA	
Through	2	
Right	1	190

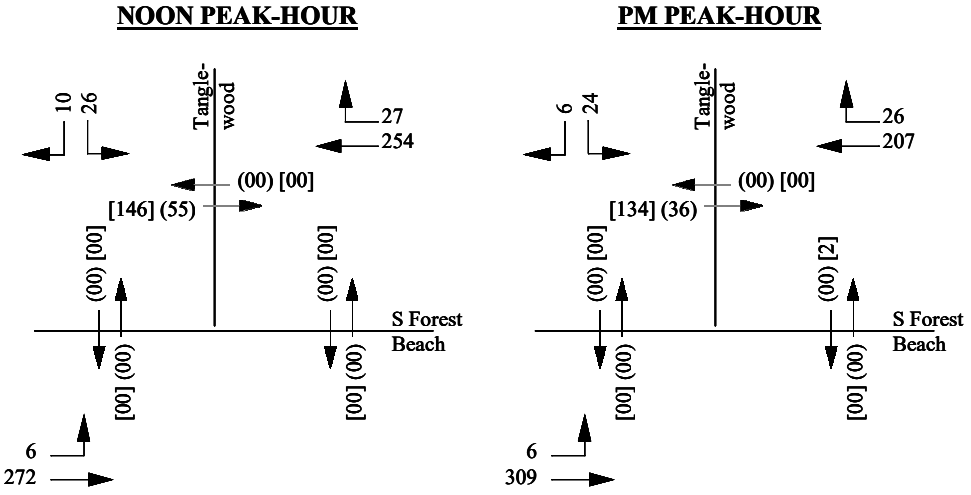
Accident History

Reported accident data specific to this intersection for the three-year period reflect an insignificant number of crashes.

Traffic Volumes

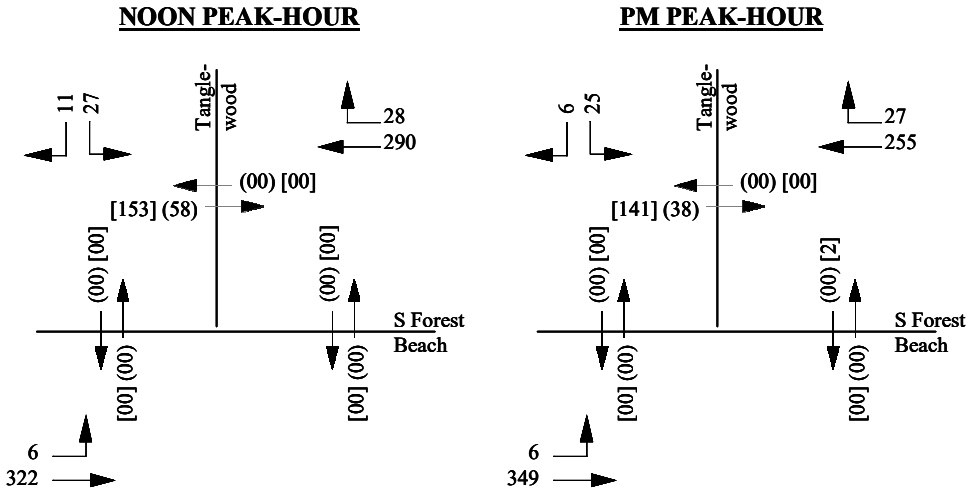
Existing peak-hour volumes gathered during the second week of June 2015 are present below which represent the NOON and PM peak-hours time periods. Following the 2015 peak-hour volumes are the two Future year conditions which reflect 2020 (5-year) and 2030 (15-year) peak-hour volume projections.

2015 Existing Peak-Hour Volumes



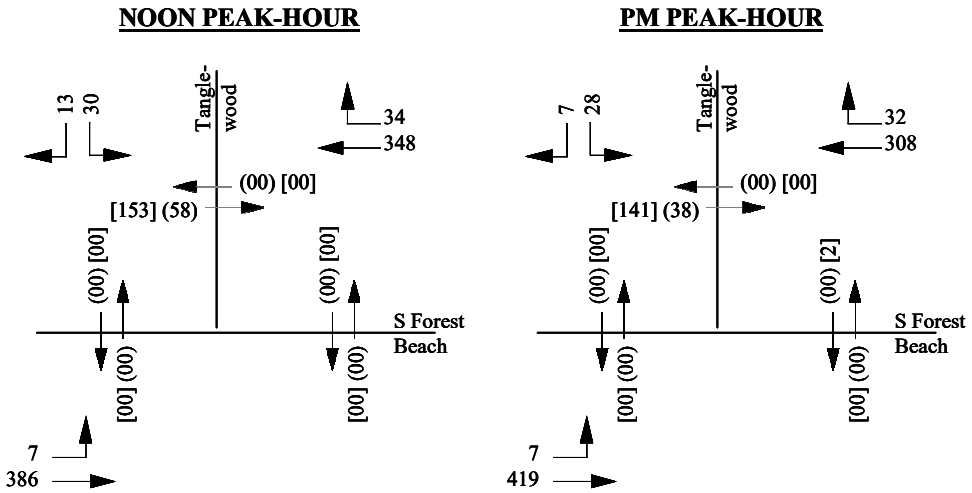
00 = Vehicles (00) = Pedestrians [00] = Bicycles

2020 Peak-Hour Volumes



00 = Vehicles (00) = Pedestrians [00] = Bicycles

2030 Peak-Hour Volumes



00 = Vehicles (00) = Pedestrians [00] = Bicycles

Intersection Operations

Service Levels:

Intersection	Peak Hour	2015 Existing Delay[2]	2015 Existing LOS[3]	5-Year (2020) Delay	5-Year (2020) LOS	15-Year (2030) Delay	15-Year (2030) LOS
South Forest Beach at Tanglewood Drive	NOON	10.1	B	12.2	B	12.9	B
	PM	9.7	A	10.1	B	12.7	B

1. Calculations completed using the 2010 HCM methodology.
2. Delay in seconds-per-vehicle.
3. Level-of-Service.

GENERAL NOTES:

1. For unsignalized intersections, delay is representative of the minor street worst approach.

As shown, under Existing and both future 5-Year 2020 and 15-Year 2030 conditions, this intersection operation operates at good service levels during both the NOON and PM peak-hour time periods.

Storage Lane Queues:

South Forest Beach Road at Tanglewood Drive

			2015 Existing		5-Year (2020)		15-Year (2030)	
		Stacking	Noon	PM	Noon	PM	Noon	PM
NB	Left	NA						
	Right	NA						
SB	Left	>300	6	5	7	6	9	6
	Right	NA						
EB	Left	0	0	0	0	0	1	0
	Right	NA						
WB	Left	NA						
	Right	190	0	0	0	0	0	0

Lengths represented in feet.

No separate turning lanes are provided at this intersection, all approaches provide a single lane from which all turning movements are made. No queuing issues are expected at this intersection.

RECOMMENDATIONS

The analyses for this intersection indicate no capacity constraints caused by the geometry of this unsignalized intersection. Based on this, no improvements are recommended at this intersection at this time.

SOUTH FOREST BEACH DRIVE AT DEALLYON AVENUE

Part of Forest Beach Drive corridor this is a three-legged unsignalized intersection which provides access to residential areas along all approaches. To the north, Deallyon Avenue intersects with Cordillo Parkway.

EXISTING CONDITIONS

Geometrics

The following provides a graphic and description of the existing intersection geometrics:

Description

Approach:	Southbound	
Name:	**Deallyon Avenue**	
	# Lanes	Storage (ft)
Left/Right	1	>300

Approach:	Eastbound	
Name:	**S. Forest Beach Drive**	
	# Lanes	Storage (ft)
Left	NA	
Through	2	
Right	NA	

Approach:	Westbound	
Name:	**S. Forest Beach Drive**	
	# Lanes	Storage (ft)
Left	NA	
Through	2	
Right	NA	

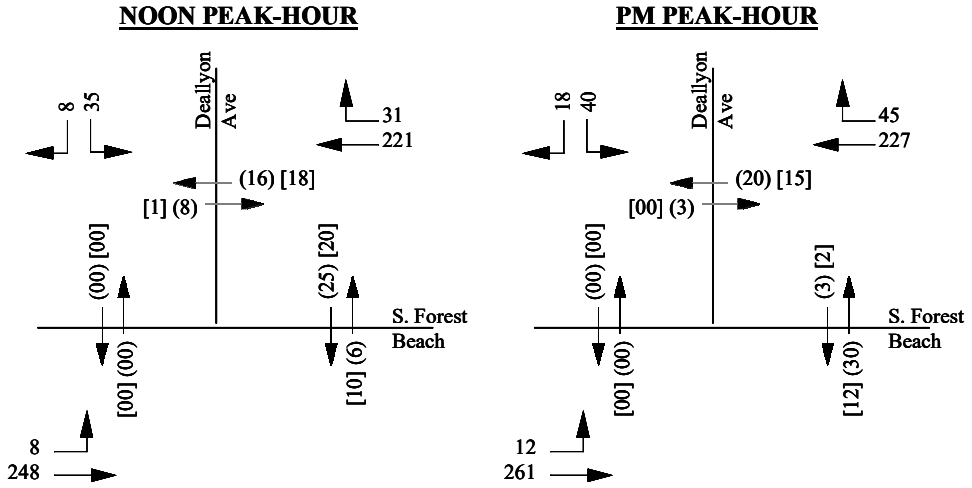
Accident History

Reported accident data specific to this intersection for the three-year period reflect an insignificant number of crashes.

Traffic Volumes

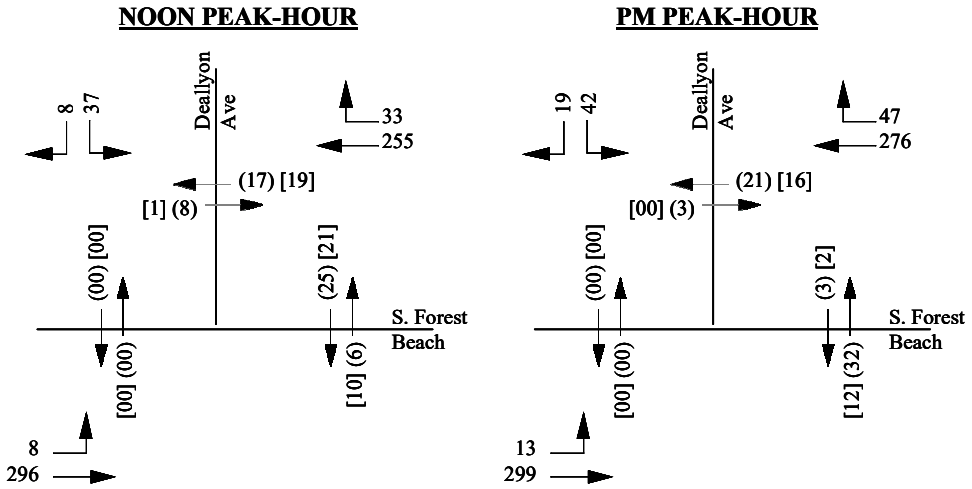
Existing peak-hour volumes gathered during the second week of June 2015 are present below which represent the NOON and PM peak-hours time periods. Following the 2015 peak-hour volumes are the two Future year conditions which reflect 2020 (5-year) and 2030 (15-year) peak-hour volume projections.

2015 Existing Peak-Hour Volumes



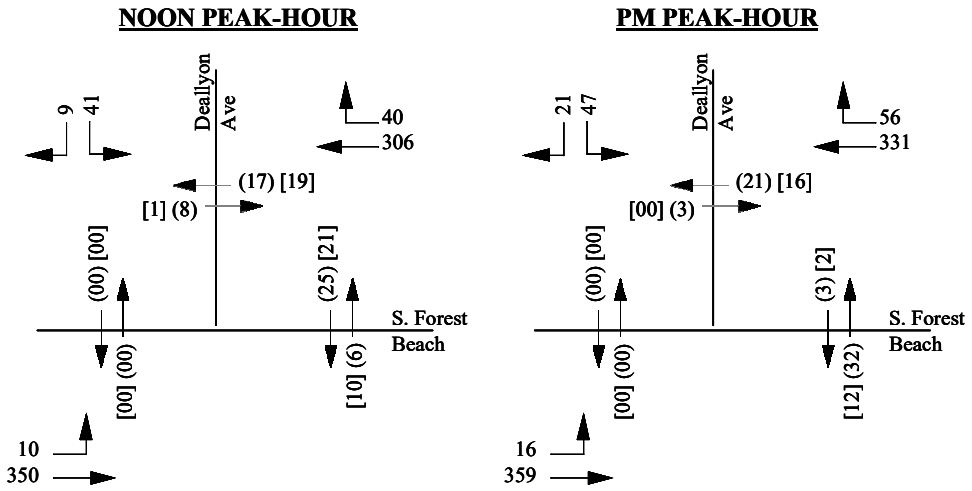
00 = Vehicles (00) = Pedestrians [00] = Bicycles

2020 Peak-Hour Volumes



00 = Vehicles (00) = Pedestrians [00] = Bicycles

2030 Peak-Hour Volumes



00 = Vehicles (00) = Pedestrians [00] = Bicycles

Intersection Operations

Service Levels:

Intersection	Peak Hour	2015 Existing Delay[2]	2015 Existing LOS[3]	5-Year (2020) Delay	5-Year (2020) LOS	15-Year (2030) Delay	15-Year (2030) LOS
South Forest Beach at Deallyon Avenue	NOON	11.5	B	12.2	B	13.0	B
	PM	11.6	B	10.4	B	13.4	B

1. Calculations completed using the 2010 HCM methodology.
2. Delay in seconds-per-vehicle.
3. Level-of-Service.

GENERAL NOTES:

1. For unsignalized intersections, delay is representative of the minor street worst approach.

As shown, under Existing and both future 5-Year 2020and 15-Year 2030 conditions, this intersection operation operates at good service levels during both the NOON and PM peak-hour time periods.

Storage Lane Queues:

South Forest Beach Road at Deallyon Avenue

		Stacking	2015 Existing Noon	2015 Existing PM	5-Year (2020) Noon	5-Year (2020) PM	15-Year (2030) Noon	15-Year (2030) PM
NB	Left	NA						
	Right	NA						
SB	Left	>300	6	9	7	10	9	13
	Right	NA						
EB	Left	>300	1	1	1	1	1	1
	Right	NA						
WB	Left	NA						
	Right	NA						

Lengths represented in feet.

No separate turning lanes are provided at this intersection, left-turns from South Forest Beach Road are made from the #1 inside through lane which reflect a very minor queue requirement. Southbound Deallyon Avenue is a single-lane (left/right) which is expected to have greatest queue which is not anticipated to be a capacity issue.

RECOMMENDATIONS

The analyses for this intersection indicate no capacity constraints caused by the geometry of this unsignalized intersection. With the planned extension of a new multi-use path along the south side of South Forest Beach, it is suggested to relocate the cross-walk that is currently separated from the intersection (80-feet east) to be on the east side/corner as a more traditional intersection crossing.

SOUTH FOREST BEACH DRIVE AT LEMOYNE AVENUE

Part of Forest Beach Drive corridor this is a three-legged unsignalized intersection which provides access to residential areas along all approaches. To the south, the development of a new time-share project will result in a new fourth-leg (northbound) approach to this intersection.

EXISTING CONDITIONS

Geometrics

The following provides a graphic and description of the existing intersection geometrics:

Description

Approach:	Southbound	
Name:	**Lemoyne Avenue**	
	# Lanes	Storage (ft)
Left	NA	
Left/Thru/Right	1	>300
Right	NA	

Approach:	Eastbound	
Name:	**S. Forest Beach Drive**	
	# Lanes	Storage (ft)
Left	NA	
Through	2	
Right	NA	

Approach:	Westbound	
Name:	**S. Forest Beach Drive**	
	# Lanes	Storage (ft)
Left	NA	
Through	2	
Right	NA	

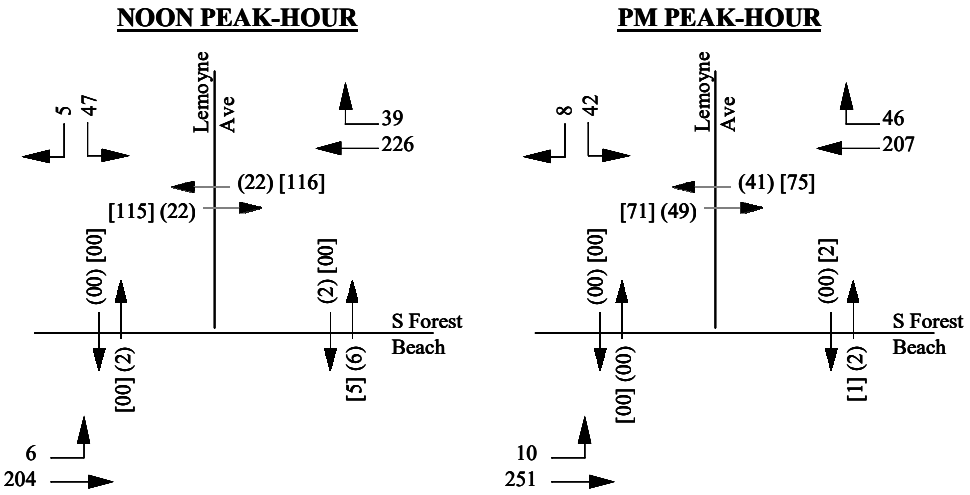
Accident History

Reported accident data specific to this intersection for the three-year period reflect an insignificant number of crashes.

Traffic Volumes

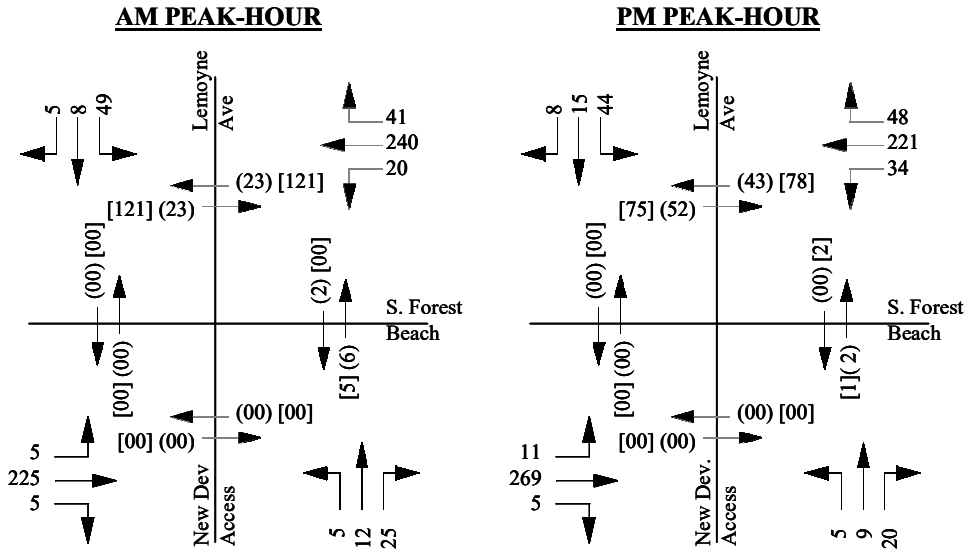
Existing peak-hour volumes gathered during the second week of June 2015 are present below which represent the NOON and PM peak-hours time periods. Following the 2015 peak-hour volumes are the two Future year conditions which reflect 2020 (5-year) and 2030 (15-year) peak-hour volume projections.

2015 Existing Peak-Hour Volumes



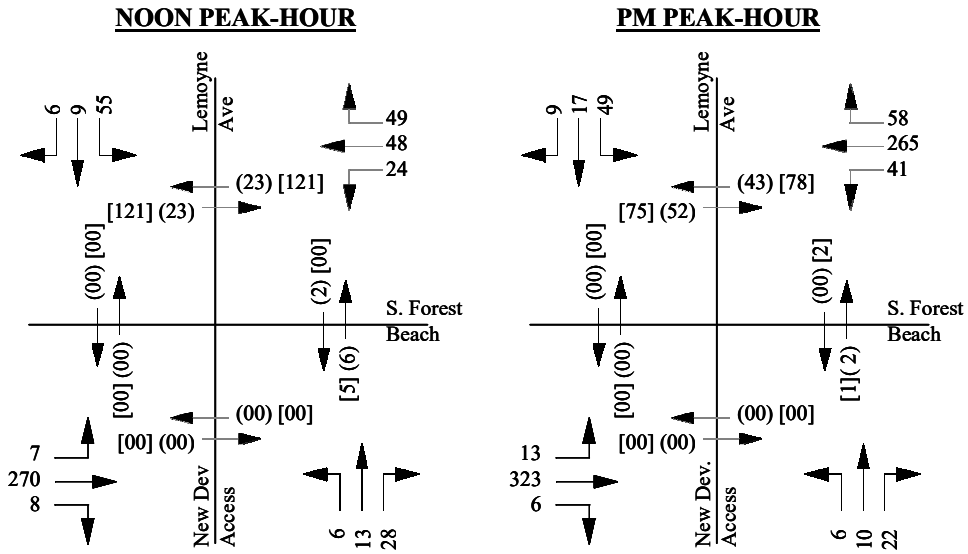
00 = Vehicles (00) = Pedestrians [00] = Bicycles

2020 Peak-Hour Volumes



00 = Vehicles (00) = Pedestrians [00] = Bicycles

2030 Peak-Hour Volumes



00 = Vehicles (00) = Pedestrians [00] = Bicycles

Intersection Operations

Service Levels:

Intersection	Peak Hour	2015 Existing Delay[2]	2015 Existing LOS[3]	5-Year (2020) Delay	5-Year (2020) LOS	15-Year (2030) Delay	15-Year (2030) LOS
South Forest Beach at Lemoyne Avenue	NOON	11.7	B	11.3	B	11.9	B
	PM	11.0	B	16.0	C	18.0	C

1. Calculations completed using the 2010 HCM methodology.
2. Delay in seconds-per-vehicle.
3. Level-of-Service.

GENERAL NOTES:

1. For unsignalized intersections, delay is representative of the minor street worst approach.

As shown, under Existing and both future 5-Year 2020 and 15-Year conditions, this intersection operation operates at good service levels during both the NOON and PM peak-hour time periods.

Storage Lane Queues:

South Forest Beach Road at Lemoyne Avenue

			2015 Existing		5-Year (2020)		15-Year (2030)	
		Stacking	Noon	PM	Noon	PM	Noon	PM
NB	Left	300	Time Share Access		5	6	6	7
	Right	NA						
SB	Left	>300	8	9	9	19	11	25
	Right	NA						
EB	Left	>300	0	1	0	1	0	1
	Right	NA						
WB	Left	0	Time Share Access		1	2	1	3
	Right	NA						

Lengths represented in feet.

No separate turning lanes are provided at this intersection, left-turns from South Forest Beach Road are made from the #1 inside through lane which reflect a very minor queue requirement. Southbound Lemoyne Avenue is a single-lane (left/right) which is expected to have greatest queue which is not anticipated to be a capacity issue.

RECOMMENDATIONS

The analyses for this intersection indicate no capacity constraints caused by the geometry of this unsignalized intersection. Review of the westbound left-turn entering the future time-share development from South Forest Beach Road indicates the possible need for a separate left-turn lane.

SUMMARY of IMPROVEMENTS: N. and S. Forest Beach Drives

- This roadway has the third greatest use of the multi-path by peds/bikes. As part of the Town Park improvements and the Beach Parking lot improvements, an 8-foot multi-use path be constructed along the south side of South Forest Beach basically extending from Coligny Circle to Tanglewood Drive or Deallyon Avenue.

- In combination with the development of the Time Share Development opposite Lemoyne Avenue, widening South Forest Beach Drive to provide a westbound left-turn lane entering the new development.

- Installation of traffic signal control for pedestrians as well as vehicles is planned for the South Forest Beach at Town Beach Parking/Beach Resort Access drive. This signal will entail pedestrian areas on both side of South Forest Beach Road and replace the existing pedestrian crossing that is currently adjacent to Coligny Circle. Further details of this planned improvement will be discussed in the Coligny Circle section of this report.

TANGLEWOOD DRIVE AT NASSAU STREET

This is a three-legged intersection located within a residential area of the South Island study area generally located between Cordillo Parkway and South Forest Beach Drive. To the east, Nassau Street extends to the Circle Center retail center and is a privately owned roadway. To the south Tanglewood Drive terminates at South Forest Beach Drive. All approaches to this intersection are a single-lane from which all applicable turning movements are made. All approaches to this intersection are under STOP sign control resulting in an ALL-WAY-STOP controlled location.

There is a cross-walk across Nassau Street just east of Tanglewood Drive which connects to a multi-use path system along the east side of Tanglewood Drive (extends to South Forest Beach Drive) as well as an east/west multi-use path that is located on the north side of Nassau Street which extends to DeAllyon Avenue and to the back of the Circle Center.

EXISTING CONDITIONS

Geometrics

The following provides a graphic and description of the existing intersection geometrics:

Description

Approach:	Northbound	
Name:	**Tanglewood Drive**	
	# Lanes	Storage (ft)
Left	NA	
Left/Right	1	>300
Right	NA	

Approach:	Eastbound	
Name:	**Nassau Street**	
	# Lanes	Storage (ft)
Left	NA	
Thru/Right	1	>300
Right	NA	

Approach:	Westbound	
Name:	**Nassau Street**	
	# Lanes	Storage (ft)
Left	NA	
Left/Thru	1	
Right	NA	

Accident History

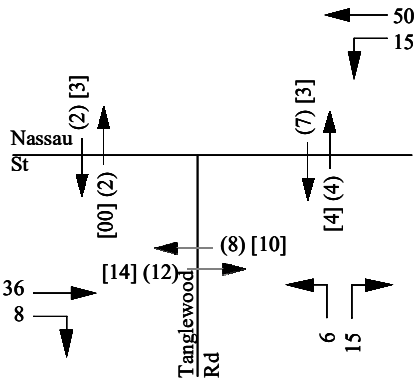
Reported accident data specific to this intersection for the three-year period reflect an insignificant number of crashes.

Traffic Volumes

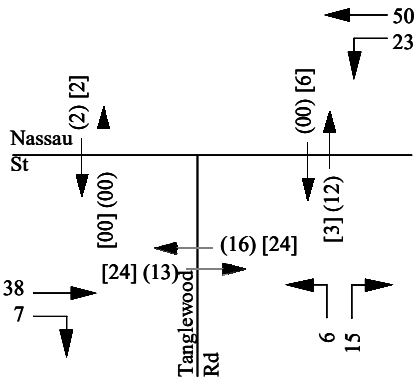
Existing peak-hour volumes gathered during the second week of June 2015 are present below which represent the NOON and PM peak-hours time periods. Following the 2015 peak-hour volumes are the two Future year conditions which reflect 2020 (5-year) and 2030 (15-year) peak-hour volume projections.

2015 Existing Peak-Hour Volumes

NOON PEAK-HOUR

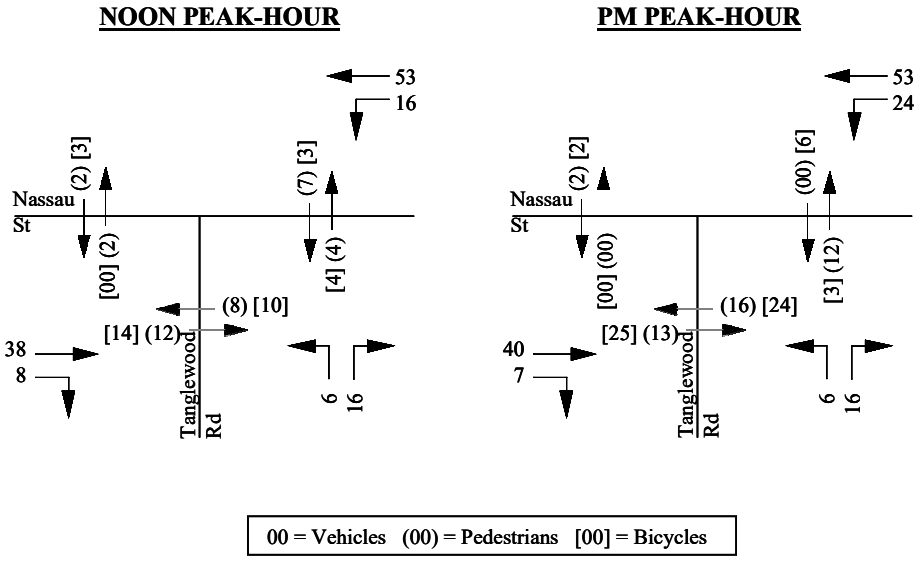


PM PEAK-HOUR

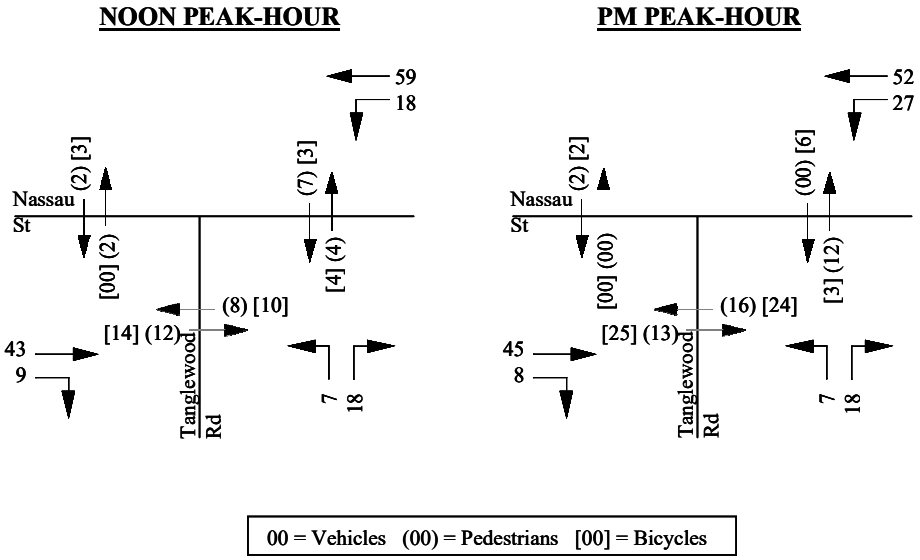


00 = Vehicles (00) = Pedestrians [00] = Bicycles

2020 Peak-Hour Volumes



2030 Peak-Hour Volumes



Intersection Operations

Service Levels:

Intersection	Peak Hour	2015 Existing Delay[2]	2015 Existing LOS[3]	5-Year (2020) Delay	5-Year (2020) LOS	15-Year (2030) Delay	15-Year (2030) LOS
Nassau Street at Tanglewood Drive	NOON	9.0	A	9.0	A	9.1	A
	PM	9.1	A	9.1	A	9.2	A

1. Calculations completed using the 2010 HCM methodology.
2. Delay in seconds-per-vehicle.
3. Level-of-Service.

GENERAL NOTES:

1. For unsignalized intersections, delay is representative of the minor street worst approach.

As shown, under Existing and both future 5-Year 2020 and 15-Year 2030 conditions, this intersection operations at acceptable service levels during both the NOON and PM peak time periods.

Storage Lane Queues:

Nassau Street at Tanglewood Drive

			2015 Existing		5-Year (2020)		15-Year (2030)	
		Stacking	Noon	PM	Noon	PM	Noon	PM
NB	Left	>300	2	2	2	2	2	2
	Right	NA						
SB	Left	NA						
	Right	NA						
EB	Left	NA						
	Right	>300	0	0	0	0	0	0
WB	Left	>300	1	1	1	1	1	2
	Right	NA						

Lengths represented in feet.

As shown, each of the turning lanes currently provide adequate storage length for the existing and expected queue lengths.

RECOMMENDATIONS

The analyses for this intersection indicate no capacity constraints caused by the geometry of this unsignalized intersection. Based on this, no improvements are recommended at this intersection at this time.

DeALLYON AVENUE AT NASSAU STREET

This is a three-legged intersection located within the middle of commercial/timeshare residential units. To the east, Nassau Street extends to the Circle Center retail center and is a privately owned roadway where it terminates at Pope Avenue. To the south DeAllyon Avenue terminates at South Forest Beach Drive. To the north, DeAllyon Avenue extends to Cordillo Parkway ending at an unsignalized intersection. The northbound and southbound approaches of DeAllyon Avenue provide a single-lane from which all applicable turning movements are made. The westbound approach of Nassau Street provides a left-turn lane and a right-turn lane which are under STOP sign control.

There is a cross-walk across Nassau Street just east of DeAllyon Avenue which connects to a multi-use path system along the east side of DeAllyon Avenue. This pathway extends to both South Forest Beach Drive to the south and Cordillo Parkway to the north.

EXISTING CONDITIONS

Geometrics

The following provides a graphic and description of the existing intersection geometrics:

Description

Approach:	Northbound	
Name:	**DeAllyon Drive**	
	# Lanes	Storage (ft)
Left	NA	
Thru/Right	1	>300
Right	NA	

Approach:	Southbound	
Name:	**DeAllyon Drive**	
	# Lanes	Storage (ft)
Left	NA	
Left/Thru	1	>300
Right	NA	

Approach:	Westbound	
Name:	**Nassau Street**	
	# Lanes	Storage (ft)
Left	1	>300
Through	NA	
Right	1	100

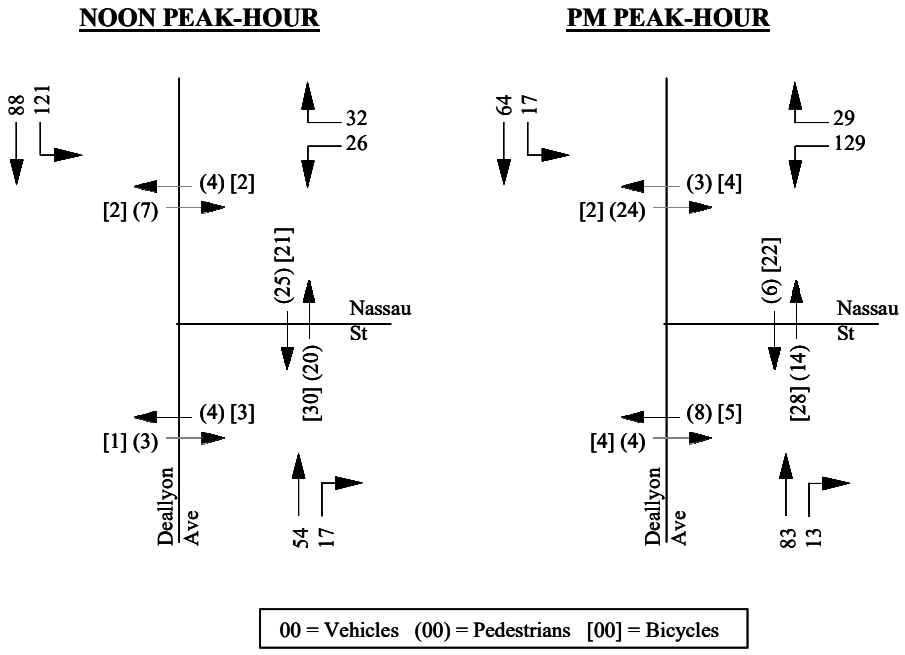
Accident History

Reported accident data specific to this intersection for the three-year period reflect an insignificant number of crashes.

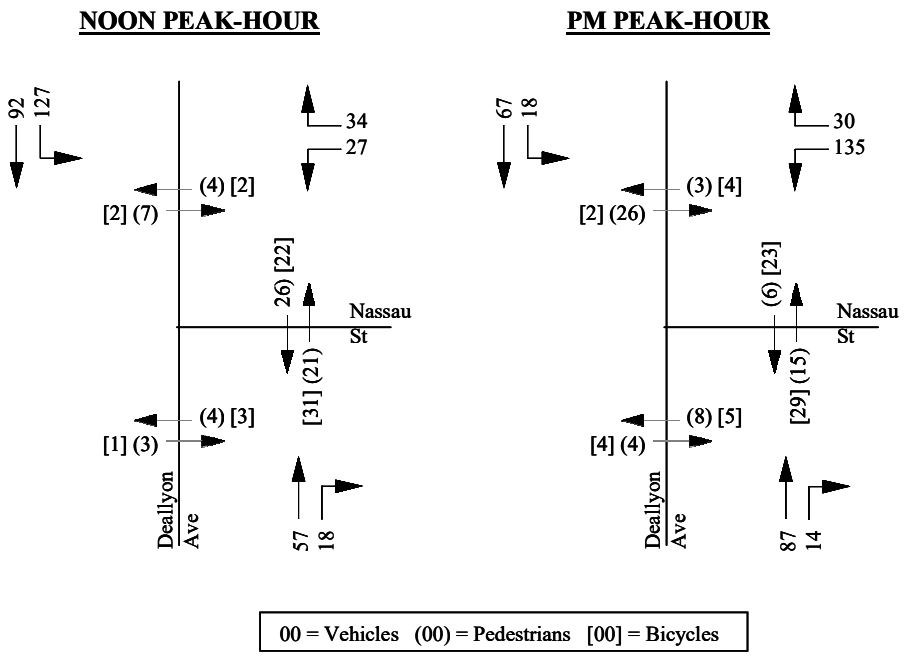
Traffic Volumes

Existing peak-hour volumes gathered during the second week of June 2015 are present below which represent the NOON and PM peak-hours time periods. Following the 2015 peak-hour volumes are the two Future year conditions which reflect 2020 (5-year) and 2030 (15-year) peak-hour volume projections.

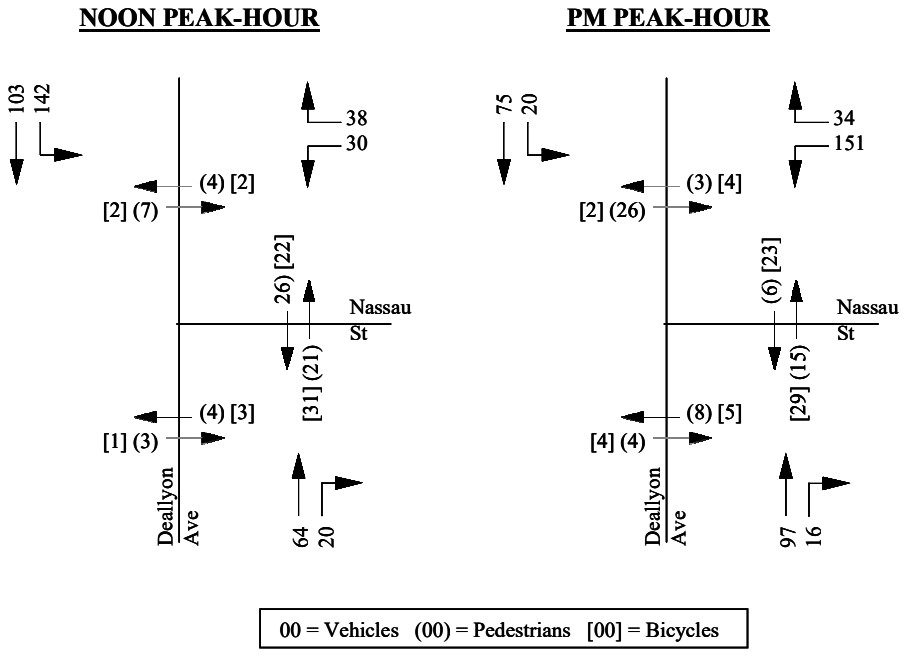
2015 Existing Peak-Hour Volumes



2020 Peak-Hour Volumes



2030 Peak-Hour Volumes



Intersection Operations

Service Levels:

Intersection	Peak Hour	2015 Existing Delay[2]	2015 Existing LOS[3]	5-Year (2020) Delay	5-Year (2020) LOS	15-Year (2030) Delay	15-Year (2030) LOS
Nassau Street at DeAllyon Drive	NOON	11.2	B	11.4	B	11.9	B
	PM	11.4	B	11.6	B	12.2	B

1. Calculations completed using the 2010 HCM methodology.
2. Delay in seconds-per-vehicle.
3. Level-of-Service.

GENERAL NOTES:

1. For unsignalized intersections, delay is representative of the minor street worst approach.

As shown, under Existing and both future 5-Year 2020 and 15-Year 2030 conditions, this intersection operations at acceptable service levels during both the NOON and PM peak time periods.

Storage Lane Queues:

Nassau Street at DeAllyon Avenue

			2015 Existing		5-Year (2020)		15-Year (2030)	
		Stacking	Noon	PM	Noon	PM	Noon	PM
NB	Left	NA						
	Right	>300						
SB	Left	>300	8	1	8	1	10	1
	Right	NA						
EB	Left	NA						
	Right	NA						
WB	Left	>300	8	23	9	24	11	29
	Right	100						

Lengths represented in feet.

As shown, each of the turning lanes currently provide adequate storage length for the existing and expected queue lengths.

RECOMMENDATIONS

The analyses for this intersection indicate no capacity constraints caused by the geometry of this unsignalized intersection. Based on this, no improvements are recommended at this intersection at this time.

LAGOON ROAD AT AVOCET ROAD

This is a four-legged unsignalized intersection located within along the northeast boundary of Coligny Plaza, and to the south of Waterside. To the east, Lagoon Road extends to Ibis Street and serves residential areas. To the west, Lagoon Road terminates at Pope Avenue and serves commercial areas including Coligny Plaza. North along Avocet Road, this roadway serves residential units and to the south Avocet Road serves commercial areas (Coligny Plaza to the west) and then extends to a public beach access adjacent to the Seacrest development. All approaches of this intersection provide a single-lane approach from which all applicable turning movements are made. The northbound and south approaches (Avocet Road) are under STOP sign control.

There is a cross-walk across Lagoon Road just west of Avocet Road which connects to a multi-use path system along the west side of Avocet Road as it extends north into Waterside and south to North Forest Beach Drive as well as connects to the multi-use path along the north side of Lagoon Road.

EXISTING CONDITIONS

Geometrics

The following provides a graphic and description of the existing intersection geometrics:

Description

Approach:	Northbound	
Name:	**Avocet Road**	
	# Lanes	Storage (ft)
Left/Thru/Right	1	>300

Approach:	Southbound	
Name:	**Avocet Road**	
	# Lanes	Storage (ft)
Left/Thru/Right	1	>300

Approach:	Eastbound	
Name:	**Lagoon Road**	
	# Lanes	Storage (ft)
Left/Thru/Right	1	>300

Approach:	Westbound	
Name:	**Lagoon Road**	
	# Lanes	Storage (ft)
Left/Thru/Right	1	>300

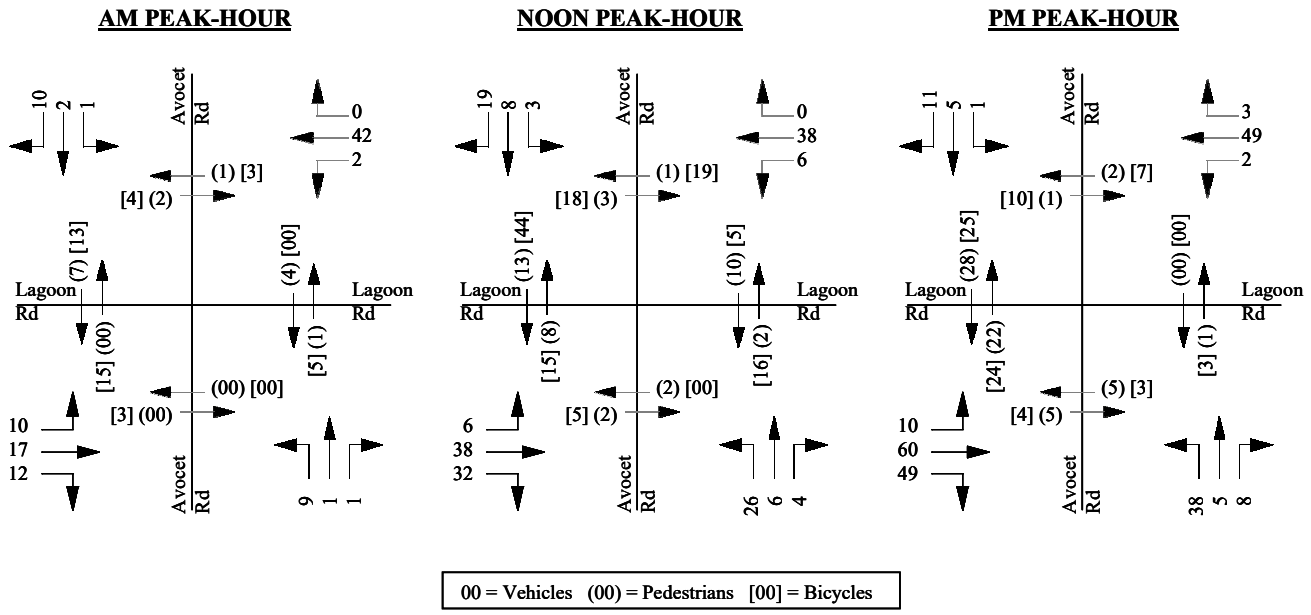
Accident History

Reported accident data specific to this intersection for the three-year period reflect an insignificant number of crashes.

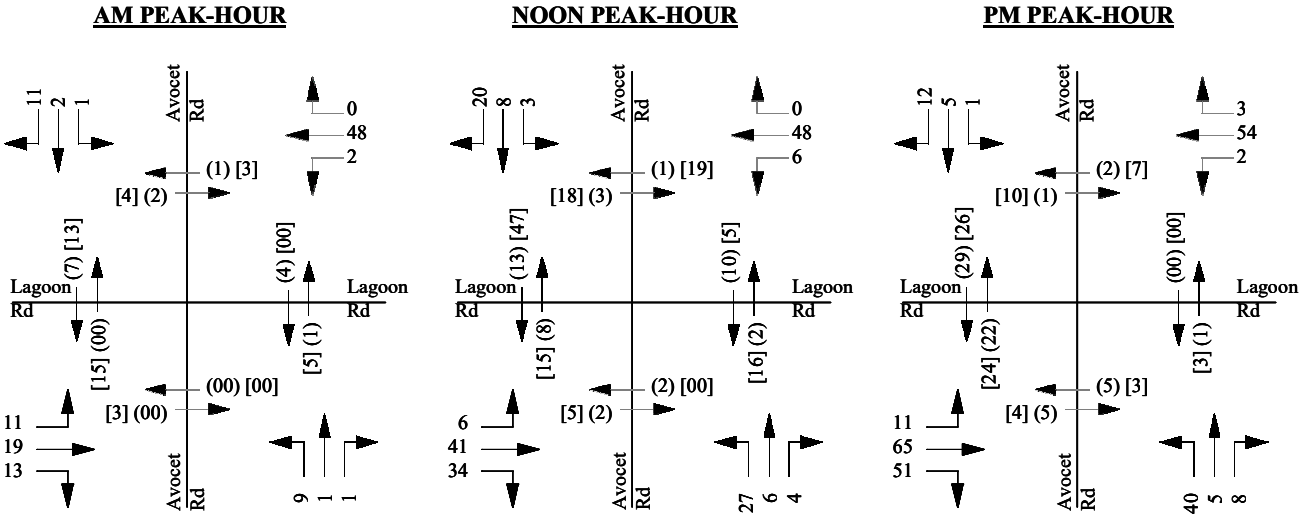
Traffic Volumes

Existing peak-hour volumes gathered during the second week of June 2015 are present below which represent the AM, NOON and PM peak-hours time periods. Following the 2015 peak-hour volumes are the two Future year conditions which reflect 2020 (5-year) and 2030 (15-year) peak-hour volume projections.

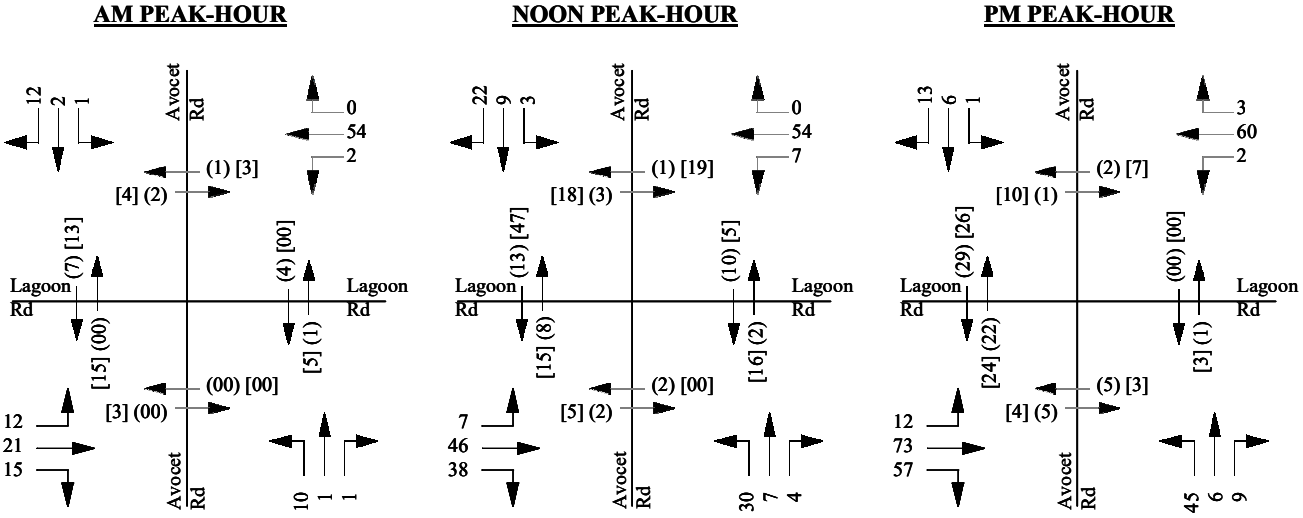
2015 Existing Peak-Hour Volumes



2020 Peak-Hour Volumes



2030 Peak-Hour Volumes



Intersection Operations

Service Levels:

Intersection	Peak Hour	2015 Existing Delay[2]	2015 Existing LOS[3]	5-Year (2020) Delay	5-Year (2020) LOS	15-Year (2030) Delay	15-Year (2030) LOS
Lagoon Road at Avocet Drive	AM	9.4	A	9.5	A	9.6	A
	NOON	10.2	B	10.3	B	10.5	B
	PM	11.3	B	11.4	B	11.8	B

1. Calculations completed using the 2010 HCM methodology.
2. Delay in seconds-per-vehicle.
3. Level-of-Service.

GENERAL NOTES:

1. For unsignalized intersections, delay is representative of the minor street worst approach.

As shown, under Existing and both future 5-Year 2020 and 15-Year 2030 conditions, this intersection operations at acceptable service levels during the AM, NOON and PM peak time periods.

Storage Lane Queues:

As shown, each of the turning lanes currently provide adequate storage length for the existing and expected queue lengths.

Lagoon Road at Avocet Road

			2015 Existing		5-Year (2020)		15-Year (2030)	
		Stacking	Noon	PM	Noon	PM	Noon	PM
NB	Left	>300	4	7	4	7	5	8
	Right	NA						
SB	Left	>300	3	2	3	2	4	2
	Right	NA						
EB	Left	>300	0	1	0	1	0	1
	Right	NA						
WB	Left	>300	0	0	0	0	0	0
	Right	NA						

Lengths represented in feet.

RECOMMENDATIONS

The analyses for this intersection indicate no capacity constraints caused by the geometry of this unsignalized intersection. Based on this, no improvements are recommended at this intersection at this time.

OFFICE PARK ROAD AT OFFICE WAY

This is a three-legged unsignalized intersection located along Office Park Road which provides access to office/commercial uses along all approaches. To the east (Office Park Road) and north (Office Way) extends to and terminate at Pope Avenue. To the west, Office Park Road terminates at Greenwood Drive just outside of the Sea Pines main gate. All approaches of this intersection provide a single-lane from which all applicable turning movements are made. The southbound approach (Office Way) is under STOP sign control.

There is a multi-use path system along the south side of Office Park Road which provides connection to the multi-use path along Pope Avenue as well as the main gate of the Sea Pines PUD.

EXISTING CONDITIONS

Geometrics

The following provides a graphic and description of the existing intersection geometrics:

Description

Approach:	Southbound	
Name:	**Office Way**	
	# Lanes	Storage (ft)
Left	NA	
Left/Right	1	80
Right	NA	

Approach:	Eastbound	
Name:	**Office Park Road**	
	# Lanes	Storage (ft)
Left	NA	
Left/Thru	1	>300
Right	NA	

Approach:	Westbound	
Name:	**Office Park Road**	
	# Lanes	Storage (ft)
Left	NA	
Thru/Right	1	>300
Right	NA	

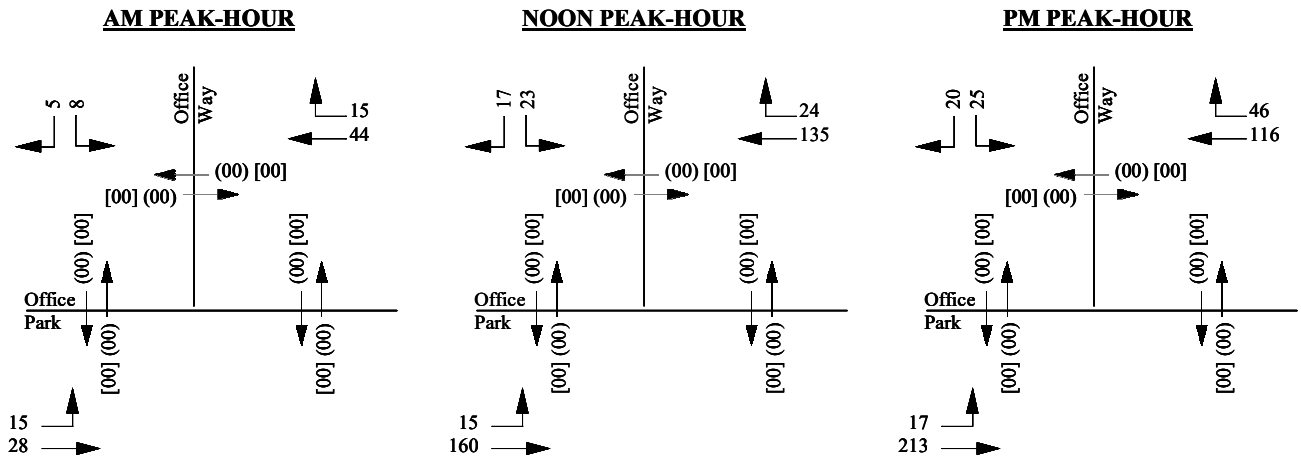
Accident History

Reported accident data specific to this intersection for the three-year period reflect an insignificant number of crashes.

Traffic Volumes

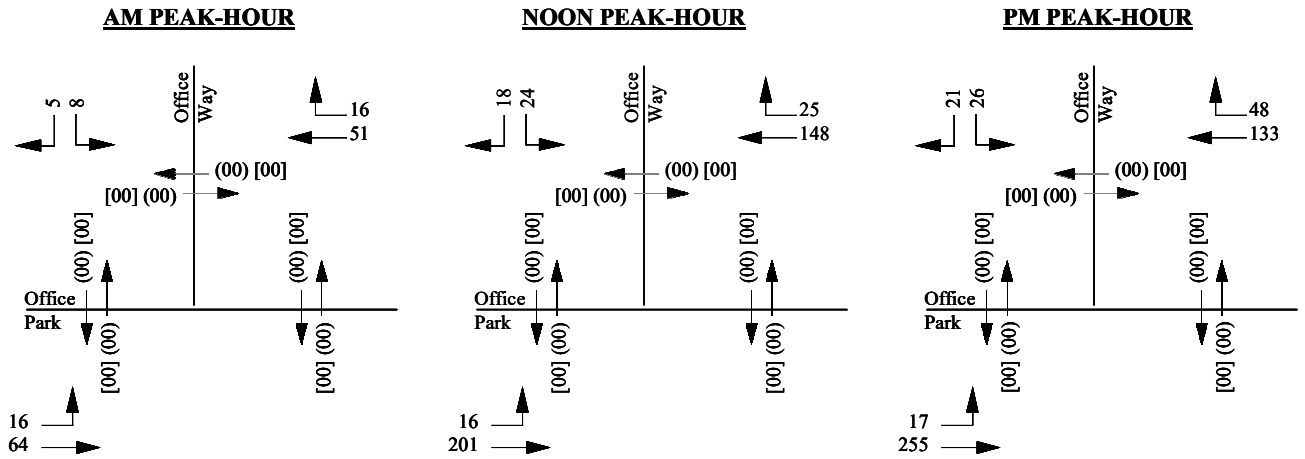
Existing peak-hour volumes gathered during the second week of June 2015 are present below which represent the AM, NOON and PM peak-hours time periods. Following the 2015 peak-hour volumes are the two Future year conditions which reflect 2020 (5-year) and 2030 (15-year) peak-hour volume projections.

2015 Existing Peak-Hour Volumes



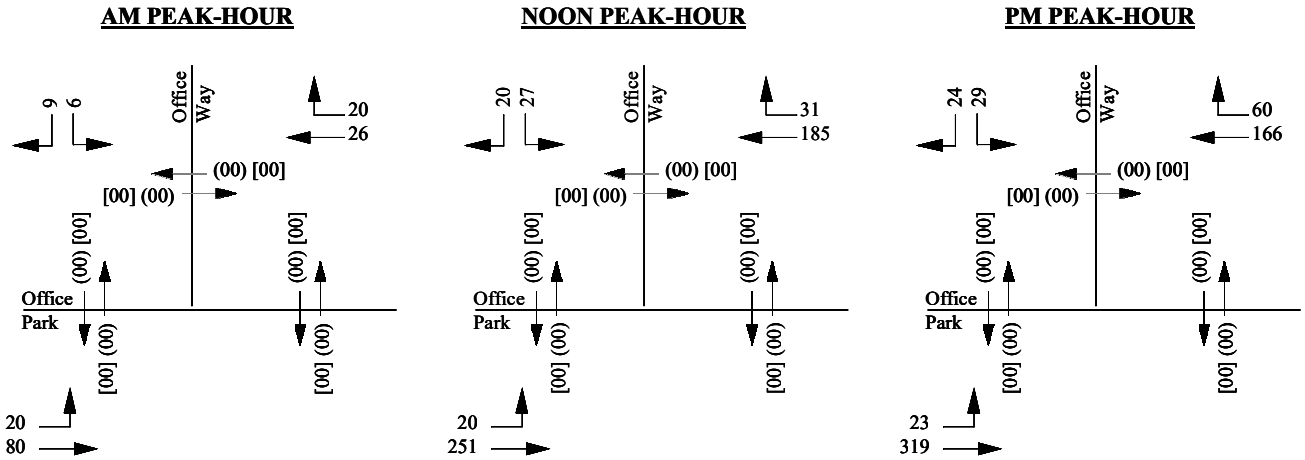
00 = Vehicles (00) = Pedestrians [00] = Bicycles

2020 Peak-Hour Volumes



00 = Vehicles (00) = Pedestrians [00] = Bicycles

2030 Peak-Hour Volumes



00 = Vehicles (00) = Pedestrians [00] = Bicycles

Intersection Operations

Service Levels:

Intersection	Peak Hour	2015 Existing Delay[2]	2015 Existing LOS[3]	5-Year (2020) Delay	5-Year (2020) LOS	15-Year (2030) Delay	15-Year (2030) LOS
Office Park Road at Office Way	NOON	10.4	B	10.8	B	11.7	B
	PM	10.7	B	11.1	B	11.2	B

1. Calculations completed using the 2010 HCM methodology.
2. Delay in seconds-per-vehicle.
3. Level-of-Service.

GENERAL NOTES:

1. For unsignalized intersections, delay is representative of the minor street worst approach.

As shown, under Existing and both future 5-Year 2020 and 15-Year 2030 conditions, this intersection operations at acceptable service levels during the AM, NOON and PM peak time periods.

Storage Lane Queues:

As shown, each of the turning lanes currently provide adequate storage length for the existing and expected queue lengths.

Office Park Road at Office Way

			2015 Existing		5-Year (2020)		15-Year (2030)	
		Stacking	Noon	PM	Noon	PM	Noon	PM
NB	Left	NA						
	Right	NA						
SB	Left	80	5	6	6	6	7	8
	Right	NA						
EB	Left	>300	1	1	1	1	1	1
	Right	NA						
WB	Left	NA						
	Right	>300	0	0	0	0	0	0

Lengths represented in feet.

RECOMMENDATIONS

The analyses for this intersection indicate no capacity constraints caused by the geometry of this unsignalized intersection. Based on this, no improvements are recommended at this intersection at this time.

A3

PARKING ANALYSIS

The following is a Parking Analysis created by SRS Engineering, LLC for Coligny Beach

SRS Engineering, LLC
801 Mohawk Drive
West Columbia, SC 29169

August 19, 2014

Ms. Kyle Theodore
Wood & Partners, Inc.
7 Lafayette Place
Hilton Head, SC 29925

RE: Parking Study
Town of Hilton Head Parking Facility
Coligny Circle Parking Lot
Town of Hilton Head Island, SC

Dear Kyle:

As requested, SRS Engineering, LLC (SRS) has completed an assessment of the Town public beach parking facility located at Coligny Circle just north of South Forest Beach Road and west of Pope Avenue. The purpose of this study is to determine multiple factors; what supply of parking is provided at the existing facility, what parking demand occurs over a typical summer day and potential modifications to mitigate any parking and/or vehicle circulation issues.

PARKING FACILITY DESCRIPTION

The Town's public beach parking lot is a surface lot located in the northwest quadrant of the Pope Avenue at South Forest Beach Road intersection which is commonly referred to as the Coligny Circle. The parking lot is provided access/egress to/from Pope Avenue opposite Lagoon Road and egress only to South Forest Beach Road slightly skewed to the west of the Beach House Resort access drive. Total number of parking spaces (supply) was inventoried at 416 spaces which included both ADA spaces as well as general purpose parking spaces.

EXISTING CONDITIONS

Parking demand observations have been collected for a total of six (6) days; Thursday June 12, Saturday and Sunday June 14 & 15th, Saturday and Sunday June 21st and 22nd and Thursday June 26th. These dates reflect two distinct time periods, the first three days reflect the 45th highest traffic periods which are consistent with the Town's LMO for traffic volumes and the second three days reflect a time period as provided by the Hilton Head Island-Bluffton Chamber of Commerce when the accommodations/hotel rooms have high occupancy rates.

Parking Supply vs. Demand

During the days identified above (both weekday and weekend), counts were conducted within the Town parking lot between 9:00AM and 5:00PM. Actual number of occupied parking stalls were gathered for each 60-minute time intervals at the beginning of each hour of the survey.

These counts included only "legal" parking spaces; during peak time periods when the parking lot was filled (no vacancies), cars where observed to park illegally in the aisles, grassed medians, curbed medians, etc. These illegally parked vehicles were not included in the counts. **Table 1** reflects the summarized results of these parking demand counts.

TABLE 1
Parking Demand Counts
Town Public Parking Coligny Beach

Time Period	Thurs June 12, 2014	Sat June 14, 2014	Sun June 15, 2014	Sat June 21, 2014	Sun June 22, 2014	Thurs June 26, 2014
9AM	40	73	77	229	110	62
10AM	81	137	145	253	222	121
11AM	176	249	249	368	367	201
NOON	243	368	345	**416**	**416**	254
1PM	273	**416**	**416**	**416**	**416**	302
2PM	280	**416**	**416**	**416**	415	316
3PM	245	**416**	**416**	**416**	413	288
4PM	216	404	**416**	410	396	280
5PM	178	251	368	409	355	241

Bolded numbers indicate parking demand equaled or exceeded supply of 416 legal parking stalls.

As shown by this table, supply at this parking lot is satisfactory during the weekday (Thursday) however for weekends (both Saturdays and Sundays), multiple time periods indicate that the parking supply is not sufficient and demand exceeds the current number of provided parking stalls.

Further review of the gathered information indicates that the main peak time periods are between the hours of 12 Noon and 4:00 PM. These peak time periods are to be expected due to the fact that this parking facility is anticipated to serve the adjacent recreational Coligny Beach. To put this demand in an *annual* estimate, during the summer months, demand is exceeding supply for approximately 9-10 hours per week (Saturday June 15, 4-hours & Sunday June 21, 5-hours). During the peak summer months (June, July, August) there are approximately 4 weeks per month, or a total of approximately 40-hours out of the peak summer months that parking demand exceeds supply within the Towns public beach parking lot.

During the completion of the parking surveys, it was observed that during the peak time periods when the all of the legal parking stalls were occupied, many vehicles parked "illegally" on grass medians and islands as well as parked in drive aisles. While these vehicles are not formally accounted for in the above demand numbers, it is worth noting that up to 15 vehicles were observed to be illegally parked throughout the parking facility during peak time periods.

RECOMMENDATIONS

The final phase of the analysis process is to identify potential measures to improve parking and/or traffic circulation within the Coligny parking facility.

1. Standard parking stall size: Currently the supply of parking within the Coligny lot includes a percentage of spaces that are under sized. Length and especially width of a parking stall is important for serving vehicles which are orientated towards recreating at a public beach. It is suggested that the standard parking stall provide a *minimum* width of 9-feet and a length of 18-feet (which is consistent with Town standards). This stall will provide space for the typical user of the parking lot with the loading and unloading of beach supplies, multiple occupants, etc.

2. ADA Parking Spaces: The Town facility currently includes several ADA parking spaces which are typically in close proximity to the southeast corner of the over-all parking lot (adjacent to the walkway crossing South Forest Beach Drive). To the south of Coligny Circle, there is a limited number of parking stalls, both ADA as well as standard size stalls. Given the proximity of the Town parking area to the Beach and the proximity of the Beach to the small parking area located to the south of Coligny Circle, it would be advantageous to re-work the small parking lot adjacent to the Coligny Beach Park to contain ALL of the required ADA spaces. This will provided the most accessible parking for ADA parking stall users and would potentially allow the restriping of the Town's parking lot to remove the current ADA spaces as long as Federal ADA criteria is being met.

3. Re-design Town's Parking Facility: As has been discussed with Planning Commission and Town Council, we are in agreement with the strategy to improve internal circulation of the current lot. This lot is circuitous which results in inefficiencies for not only vehicles circulating within the parking lot, but also parking lot layout. Improvements in the parking area design should remove the "one-way" aisles located in the easterly portion of the parking lot (closest to Pope Avenue) as well as improve the entry and exit aisles, throat and access points to the parking area. As part of this redesign, it is suggested that the exit only access to South Forest Beach become a two-way drive allowing both entry and exit of the parking facility.

4. Additional Parking Supply: The current supply of parking does not meet the demand for a 4-5 hour time period during the summer weekend days (Saturday & Sunday). Additional supply would improve the current deficiencies but the main question is "How many spaces are needed to reasonably meet seasonal parking demand"? The sensitivity of this supply is not to provide parking supply to meet demand 100-percent of the time, but to rather reduce the number of intervals when demand exceeds the supply within the Town facility. In view of the current demand and based on observations at the Towns facility, it is suggested that the parking supply in this Town parking facility be increased by 75-100 additional spaces. This would result in a total supply of between 491 and 516 parking stalls within the Town facility or an 18 to 24-percent increase in supply.

5. Parking Management: During peak seasonal usage, it maybe prudent to staff the facility so that illegally parked vehicles no longer impact the usage of the parking spaces and circulation. Staff can also ensure that the stalls are being fully utilized by directing drivers to vacant parking spaces.

6. Signage: Directional signage for this facility as well as other Town beach parking facilities should be enhanced so that drivers can easily locate this Town facility. Wayfaring signage along US 278 Business as well as along Palmetto Bay Road maybe helpful as well as signage directly identifying the entrances to facilities may help drivers efficiently locate and utilize these public parking areas.

It should be noted that Town staff has been working on concepts to improve parking supply and traffic circulation in the subject parking lot which has presented to Town Planning Commission and Council during prior meetings. This study has been prepared in order to quantify the parking demand as well as provide recommendations which are in concurrence with Town staffs efforts.

If you have any questions or comments regarding any information contained within this report, please contact me at (803) 361 3265.

Regards,

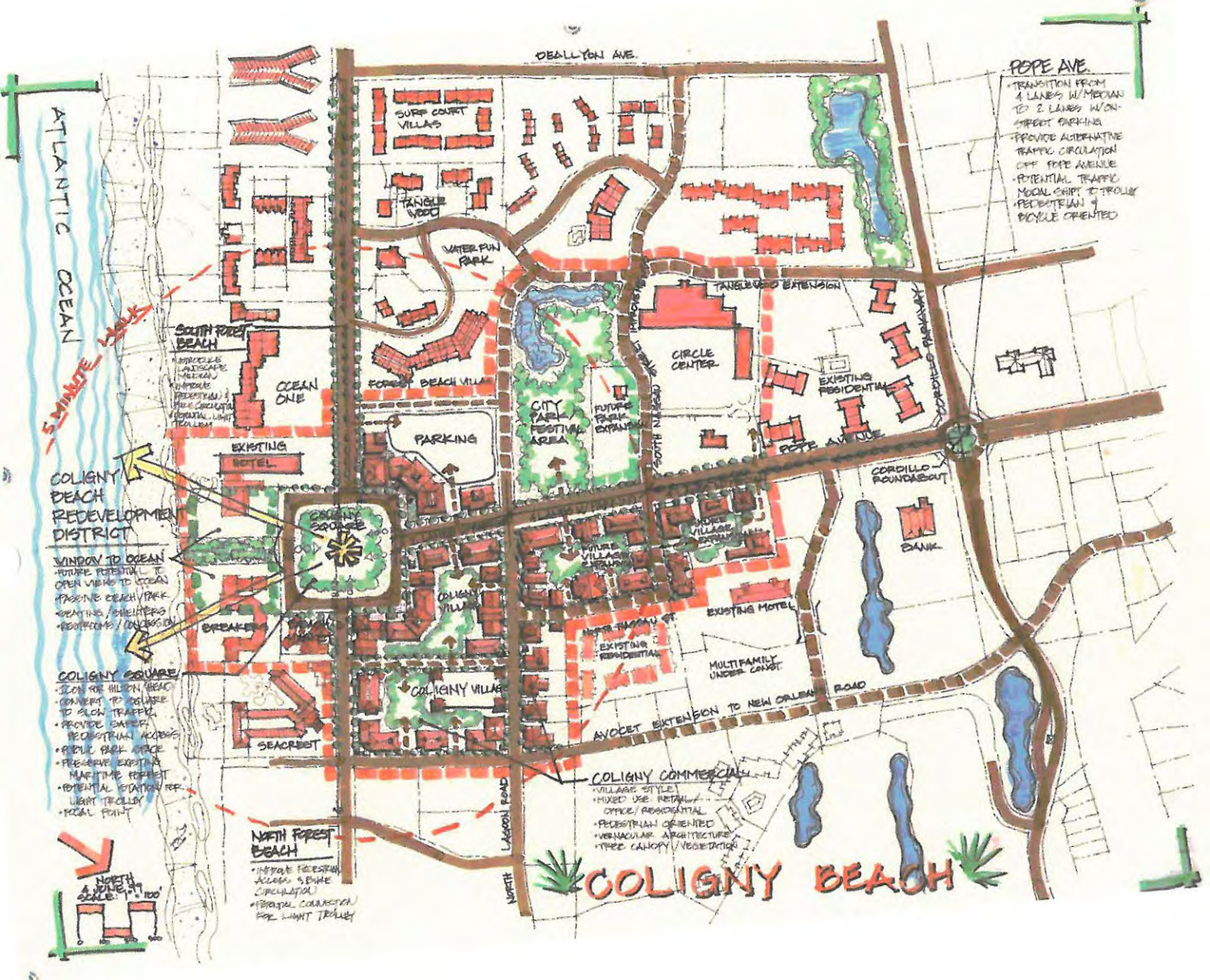
SRS ENGINEERING, LLC
Todd E. Salvagin
Principal

Attachments

A4

PREVIOUS PLANS

Over several years, many plans have been created for the Coligny Area that describe a walkable destination with similar attributes to the vision expressed by the community.


DEALLYON AVE.
ATLANTIC OCEAN
5 MINUTE WALK
SURF COURT VILLAS
TANGLEWOOD
WATER FUN PARK
TANGLEWOOD EXTENSION
SOUTH FOREST BEACH
• IMPROVE LANDSCAPE MEDIAN
• IMPROVE PEDESTRIAN & BIKE CIRCULATION
• POTENTIAL LIGHT TROLLEY
OCEAN ONE
FOREST BEACH VILLAS
CITY PARK/ FESTIVAL AREA
FUTURE PARK EXPANSION
CIRCLE CENTER
EXISTING RESIDENTIAL
CORDILLO PARKWAY
EXISTING HOTEL
PARKING
POPE AVENUE
CORDILLO ROUNDABOUT
COLIGNY BEACH REDEVELOPMENT DISTRICT
COLIGNY SQUARE
WINDOW TO OCEAN
• FUTURE POTENTIAL TO OPEN VIEWS TO OCEAN
• PASSIVE BEACH/PARK
• SEATING / SHELTERS
• RESTROOMS / COLDERS ON
FUTURE VILLAGE EXPANSION
BANK
BREAKERS
COLIGNY VILLAS
EXISTING MOTEL
EXISTING RESIDENTIAL
MULTI FAMILY UNDER CONST.
COLIGNY SQUARE
• SCAN FOR HILTON HEAD
• CONVERT TO SQUARE TO SLOW TRAFFIC
• PROVIDE SAFER PEDESTRIAN ACCESS
• PUBLIC PARK SPACE
• PRESERVE EXISTING MARITIME FOREST
• POTENTIAL STATION FOR LIGHT TROLLEY
• FOCAL POINT
COLIGNY VILLAS
SEACREST
AVOCET EXTENSION TO NEW ORLEANS ROAD
COLIGNY COMMERCIAL
• VILLAGE STYLE
• MIXED USE RETAIL OFFICE/RESIDENTIAL
• PEDESTRIAN ORIENTED
• VERNACULAR ARCHITECTURE
• TREE CANOPY / VEGETATION
NORTH FOREST BEACH
• IMPROVE PEDESTRIAN ACCESS & BIKE CIRCULATION
• POTENTIAL CONNECTION FOR LIGHT TROLLEY
NORTH LAGOON ROAD
COLIGNY BEACH
POPE AVE.
• TRANSITION FROM 4 LANES W/ MEDIAN TO 2 LANES W/ ON-STREET PARKING
• PROVIDE ALTERNATIVE TRAFFIC CIRCULATION OFF POPE AVENUE
• POTENTIAL TRAFFIC MODAL SHIFT TO TROLLY
• PEDESTRIAN & BICYCLE ORIENTED
NORTH
JUNE '97
SCALE: 1" = 100'

CONCEPTUAL SKETCH FOR

COLIGNY AREA PLAN

PREPARED BY

THE TOWN OF HILTON HEAD ISLAND

JANUARY 2006

1"=60'

CONCEPT A- SURFACE PARKING

THIS CONCEPTUAL SKETCH IS USED FOR PLANNING PURPOSES AND NOT FOR USE FOR CONSTRUCTION

CONCEPTUAL SKETCH FOR

COLIGNY AREA PLAN

PREPARED BY

THE TOWN OF HILTON HEAD ISLAND

JANUARY 2006

1"=60'

CONCEPT B- 2-LEVEL STRUCTURE

THIS CONCEPTUAL SKETCH IS USED FOR PLANNING PURPOSES AND NOT FOR USE FOR CONSTRUCTION

CONCEPTUAL SKETCH FOR

COLIGNY AREA PLAN

PREPARED BY

THE TOWN OF HILTON HEAD ISLAND

JANUARY 2006

1"=60'

CONCEPT C- 3-LEVEL STRUCTURE

THIS CONCEPTUAL SKETCH IS USED FOR PLANNING PURPOSES AND NOT FOR USE FOR CONSTRUCTION

0 30 60 120 180 240
SCALE 1"=60'
NORTH
RESTRUCTURED PARKING PROVIDES OPPORTUNITY FOR STREETFRONT GREENSPACE AND OUTDOOR DINING
LAGOON ROAD LANDSCAPED TO ESTABLISH A PEDESTRIAN FRIENDLY AND AESTHETICALLY PLEASING CORRIDOR
CIRCLE CENTER
PARK
PARK
WETLAND
NASSAU EXTENSION
40 SPACES CREATED THROUGH ACQUISITION OR LAND SWAP
PARK CREATED THROUGH ACQUISITION OR LAND SWAP
COLIGNY PLAZA
EXISTING LAGOON
PARK
POPE AVENUE
100 "TURFED" OVERFLOW SPACES
375 SURFACE PARKING SPACES
-SPACES REMOVED AT ADJACENT PROPERTY LINE
-REMAINING SPACES BROUGHT INTO LMO CONFORMITY
-DOUBLE BAY ADDED NEAREST POPE AVENUE
COLIGNY CIRCLE
So. FOREST BEACH
BEACH PARKING RE-CONFIGURED TO PROVIDE 15 HANDICAP SPACES AND EXPAND BEACH PARK
CONCEPT A- SURFACE PARKING
CONCEPTUAL SKETCH
FOR
COLIGNY AREA PLAN
PREPARED BY
THE TOWN OF HILTON HEAD ISLAND
JANUARY 2006
1"=60'
THIS CONCEPTUAL SKETCH IS USED FOR PLANNING PURPOSES AND NOT FOR USE FOR CONSTRUCTION

CONCEPT B- STRUCTURE PARKING
CONCEPTUAL SKETCH
FOR

COLIGNY AREA PLAN

PREPARED BY
THE TOWN OF HILTON HEAD ISLAND
JANUARY 2006
1"=60'

THIS CONCEPTUAL SKETCH IS USED FOR PLANNING PURPOSES AND NOT FOR USE FOR CONSTRUCTION

0 30 60 120 180 240
SCALE 1"=60'
NORTH
RESTRUCTURED PARKING PROVIDES OPPORTUNITY FOR STREETFRONT GREENSPACE AND OUTDOOR DINING
LAGOON ROAD LANDSCAPED TO ESTABLISH A PEDESTRIAN FRIENDLY AND AESTHETICALLY PLEASING CORRIDOR
CIRCLE CENTER
PARK
WETLAND
PARK
NASSAU EXTENSION
40 SPACES CREATED THROUGH ACQUISITION OR LAND SWAP
PARK CREATED THROUGH ACQUISITION OR LAND SWAP
COLIGNY PLAZA
POPE AVENUE
PARK
EXISTING LAGOON
(TO BE MITIGATED IF NECESSARY)
80 PERMANENT SPACES
85 "TURFED" OVERFLOW SPACES
5000 SF BUILDING
-POTENTIAL OFFICE, RESTROOM, AND/OR FOOD SERVICE USE
285 SURFACE PARKING SPACES
-SPACES REMOVED AT ADJACENT PROPERTY LINE
-REMAINING SPACES BROUGHT INTO LMO CONFORMITY
COLIGNY CIRCLE
So. FOREST BEACH
BEACH PARKING RE-CONFIGURED TO PROVIDE 15 HANDICAP SPACES AND EXPAND BEACH PARK
CONCEPT C- SURFACE PARKING
CONCEPTUAL SKETCH
FOR
COLIGNY AREA PLAN
PREPARED BY
THE TOWN OF HILTON HEAD ISLAND
JANUARY 2006
1"=60'
THIS CONCEPTUAL SKETCH IS USED FOR PLANNING PURPOSES AND NOT FOR USE FOR CONSTRUCTION

CONCEPTUAL CAPACITY STUDY SKETCH

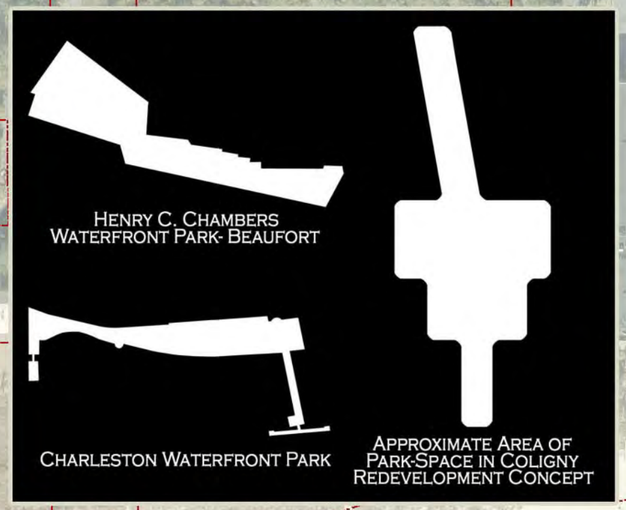
COLIGNY DISTRICT REDEVELOPMENT

0 75 150 300

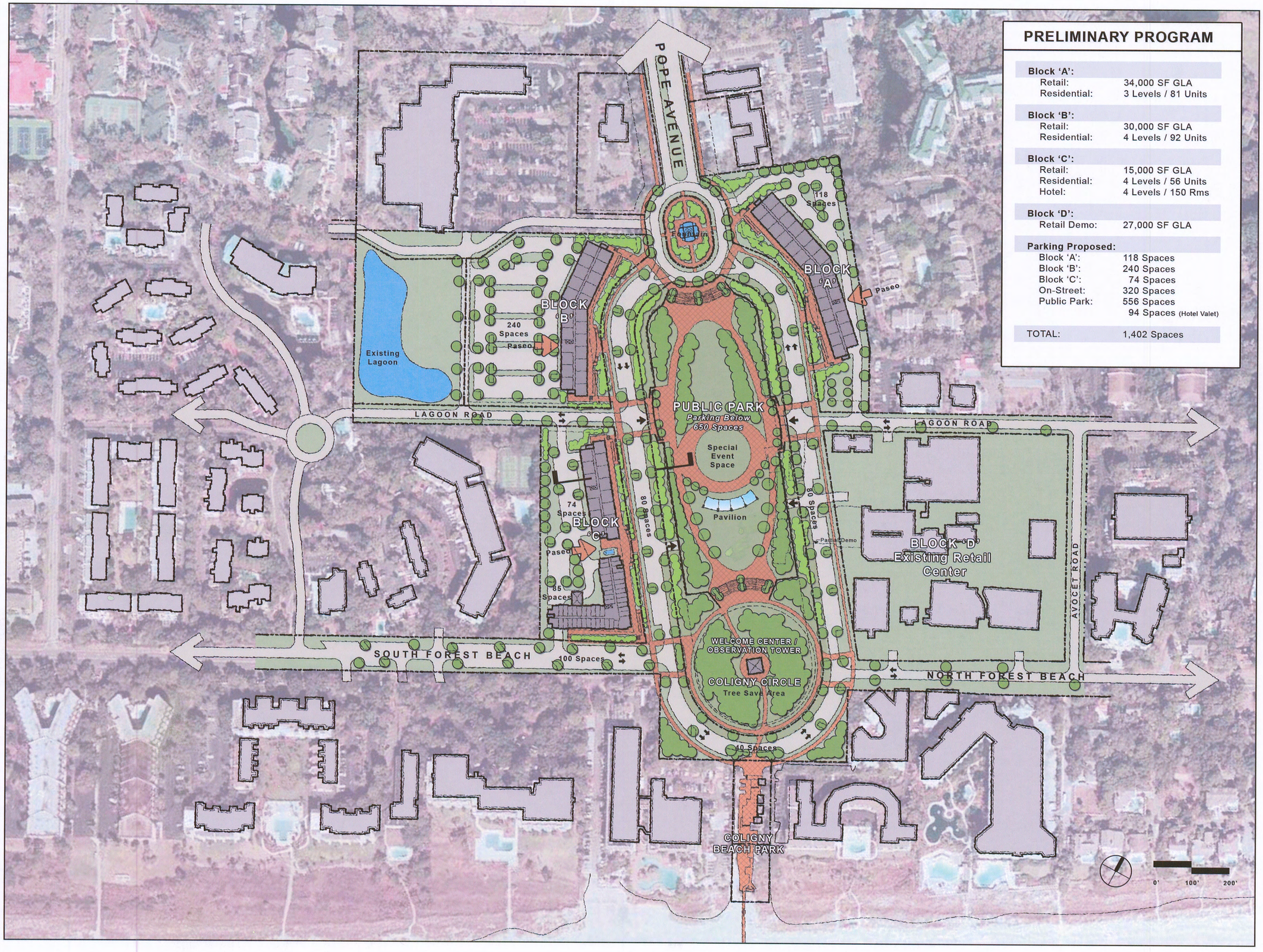
OCTOBER 2010

CAPACITY SUMMARY:

Existing Density- Coligny Plaza	133,000 sf
Existing Density- Heritage Plaza	32,000 sf
Total Density Allowed for Coligny Plaza, Heritage Plaza, Lagoon Road parcels encompassed in plan, and Town Owned land	320,000 sf
Net Gain in distrcit density	145,000 SF
Density Shown in Study	318,000 sf
Existing parking- Coligny Plaza	475 spaces
Existing Parking- Heritage Plaza	180 spaces
Existing Parking- Town Owned Parcels	500 spaces
(includes fulfilling future state mandate associated with beach renourishment funding)	*TOTAL* 1,155 Spaces
Parking Shown in Study	1,200 spaces
Town-owned land remaining for public park/ special event space *(see diagram at right)*	13.16 AC



NOTE: This drawing is not intended for permitting or development. It solely serves as a planning tool to measure the capacity of the identified district, relative to the introduction of buildable square footage, parking requirements, and resultant open space



PRELIMINARY PROGRAM

Block 'A':	
Retail:	34,000 SF GLA
Residential:	3 Levels / 81 Units
Block 'B':	
Retail:	30,000 SF GLA
Residential:	4 Levels / 92 Units
Block 'C':	
Retail:	15,000 SF GLA
Residential:	4 Levels / 56 Units
Hotel:	4 Levels / 150 Rms
Block 'D':	
Retail Demo:	27,000 SF GLA
Parking Proposed:	
Block 'A':	118 Spaces
Block 'B':	240 Spaces
Block 'C':	74 Spaces
On-Street:	320 Spaces
Public Park:	556 Spaces
	94 Spaces (Hotel Valet)
TOTAL:	1,402 Spaces

MSTSD

BLANCHARD & CALHOUN

HILTON HEAD TOWN CENTRE - *Site Plan*

COLIGNY DISTRICT REDEVELOPMENT

11 FEBRUARY 2011

HERITAGE PLAZA AND COLIGNY REDEVELOPMENT

CONCEPTUAL PLAN

PREPARED FOR:

HHI, LLC

HILTON HEAD ISLAND, SOUTH CAROLINA

PREPARED BY:

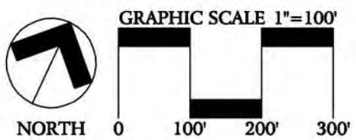
J. K. TILLER ASSOCIATES, INC.

LAND PLANNING LANDSCAPE ARCHITECTURE
TEN PINCKNEY COLONY ROAD SUITE 101 BLUFFTON, SC 29909
Voice 843.815.4800 jktiller@jktiller.com Fax: 843.815.4802

October 2011

HERITAGE PLAZA
COLIGNY CIRCLE REDEVELOPMENT

OPENSPACE / PARK	10.5 ACRES
COMMERCIAL	91,879 SQ. FT. TOTAL
• HERITAGE PLAZA	• 42,064 SQ. FT.
• COLIGNY PLAZA	• 12,450 SQ. FT.
• TOWN OWNED	• 37,365 SQ.FT.
HOTEL	140 ROOMS
PARKING REQUIRED	869 SPACES TOTAL
• COMMERCIAL	• 274 SPACES
• HOTEL	• 145 SPACES
• BEACH	• 450 SPACES
PARKING PROVIDED	916 SPACES TOTAL
• SURFACE PARKING	• 516
• STRUCTURE PARKING	• 400



THIS IS A CONCEPTUAL PLAN AND IS SUBJECT TO CHANGE. ALL SURVEY INFORMATION AND SITE BOUNDARIES WERE COMPILED FROM A VARIETY OF UNVERIFIED SOURCES AT VARIOUS TIMES AND AS SUCH IS INTENDED TO BE USED ONLY AS A GUIDE. ALL PROPERTY LINES, TRACT DIMENSIONS AND NARRATIVE DESCRIPTIONS ARE FOR GRAPHIC PRESENTATION ONLY, AS AN AID TO SITE LOCATION AND POTENTIAL LAND USE, AND ARE NOT LEGAL REPRESENTATIONS AS TO FUTURES USES OR LOCATIONS. J. K. TILLER ASSOCIATES, INC. ASSUMES NO LIABILITY FOR ITS ACCURACY OR STATE OF COMPLETION, OR FOR ANY DECISIONS (REQUIRING ACCURACY) WHICH THE USER MAY MAKE BASED ON THIS INFORMATION.

JKT Job Number: 201111-01

COLIGNY DISTRICT SUMMARY

CAPACITY:	
RESIDENTIAL	120 UNITS
MIXED-USE RESIDENTIAL	120 UNITS
MIXED-USE COMMERCIAL	235,000 SF
HOTEL	120 ROOMS
PARKING:	
ON-STREET PARKING	445 SPACES
SURFACE PARKING	490 SPACES
LOWER LEVEL PARKING	120 SPACES
STRUCTURED PARKING	765 SPACES
TOTAL PARKING	1820 SPACES

Prepared For:
RICHARDSON GROUP, LLC.

COLIGNY DISTRICT REDEVELOPMENT WORKSHOP

CONCEPTUAL MASTER PLAN - STUDY 1
Hilton Head Island, South Carolina
JUNE 10, 2011

Prepared By:
Wood Partners Inc. WPi
Landscape Architects
Land Planners

PLACEMAKERS L.L.C.
MSTSD INC.
GIBBS PLANNING GROUP

COLIGNY DISTRICT SUMMARY

CAPACITY:	
RESIDENTIAL	120 UNITS
MIXED-USE RESIDENTIAL	110 UNITS
MIXED-USE COMMERCIAL	219,200 SF
HOTEL	150 ROOMS
PARKING:	
ON-STREET PARKING	424 SPACES
SURFACE PARKING	529 SPACES
LOWER LEVEL PARKING	90 SPACES
STRUCTURED PARKING	824 SPACES
TOTAL PARKING	1867 SPACES

Prepared For:
RICHARDSON GROUP, LLC.

PLACEMAKERS L.L.C.

COLIGNY DISTRICT REDEVELOPMENT WORKSHOP

CONCEPTUAL MASTER PLAN - STUDY 2

Hilton Head Island, South Carolina

JUNE 10, 2011

MSTSD INC.

Prepared By:
Wood + Partners Inc. WPi
Landscape Architects
Land Planners

GIBBS PLANNING GROUP

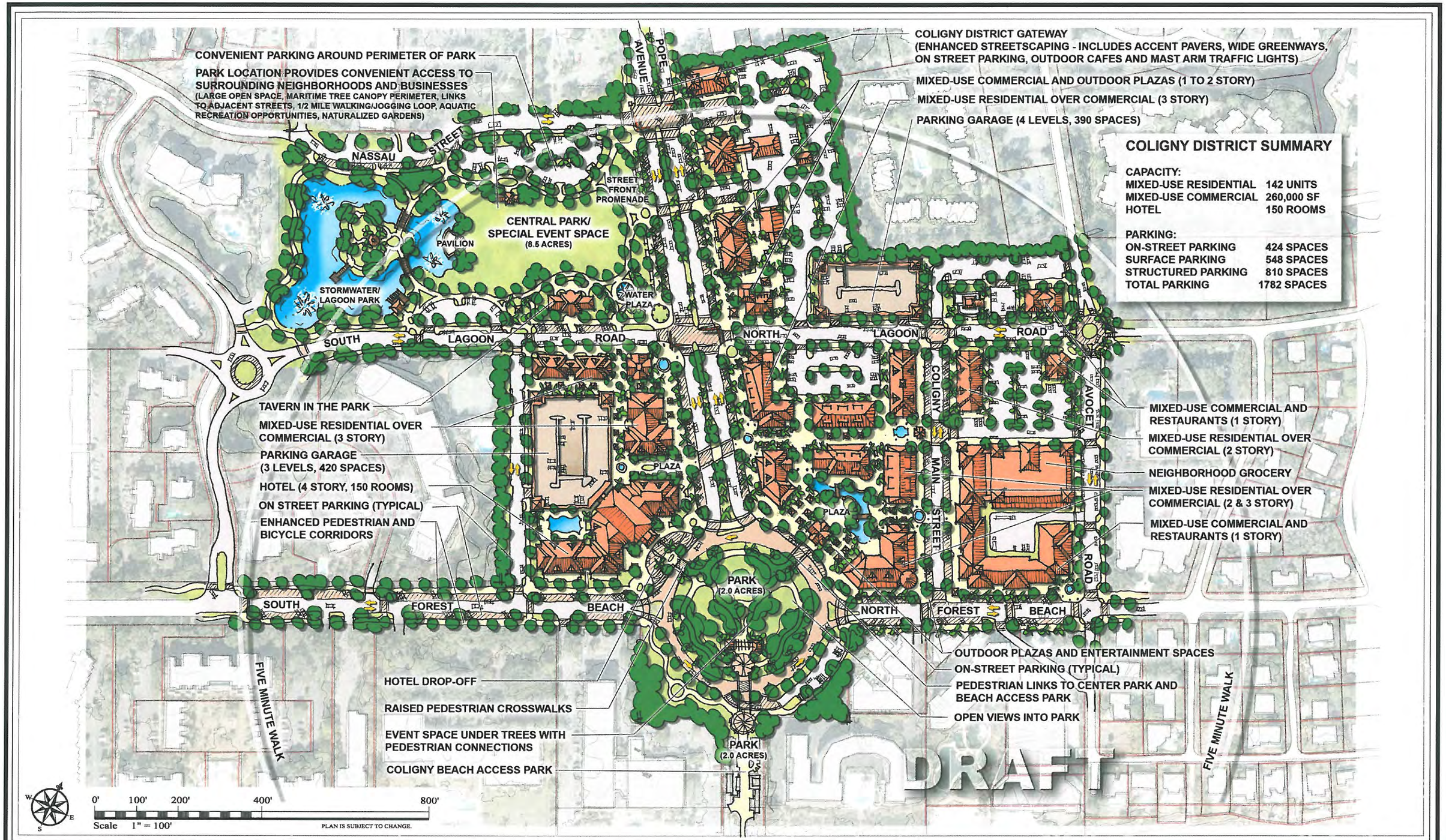
Prepared For:
RICHARDSON GROUP, LLC.

COLIGNY DISTRICT REDEVELOPMENT WORKSHOP

CONCEPTUAL MASTER PLAN - STUDY 3
Hilton Head Island, South Carolina
SEPTEMBER 7, 2011

Prepared By:
Wood Partners Inc. WPi
Landscape Architects
Land Planners

PLACEMAKERS L.L.C.
MSTSD INC.
GIBBS PLANNING GROUP



Prepared For:
RICHARDSON GROUP, LLC.

COLIGNY DISTRICT REDEVELOPMENT WORKSHOP

CONCEPTUAL MASTER PLAN - STUDY 3A

Hilton Head Island, South Carolina

SEPTEMBER 7, 2011

Prepared By:

Wood + Partners Inc. WPI
Landscape Architects
Land Planners

PLACEMAKERS L.L.C.

MSTSD INC.

GIBBS PLANNING GROUP

Prepared For:
RICHARDSON GROUP, LLC.

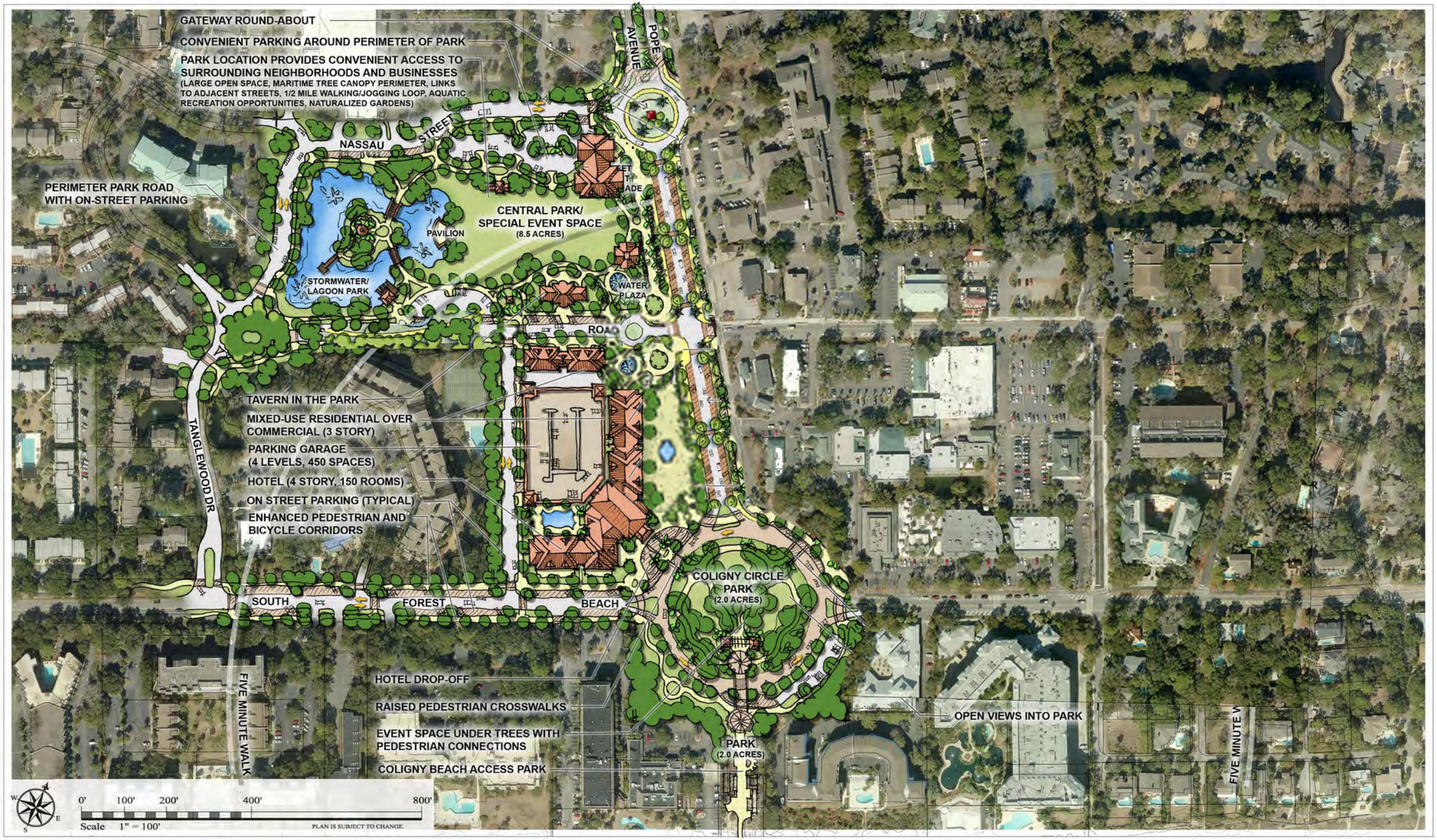
COLIGNY DISTRICT REDEVELOPMENT

CONCEPTUAL MASTER PLAN

HILTON HEAD ISLAND, SOUTH CAROLINA

OCTOBER 20, 2011

Prepared By:
Wood Partners Inc. WPI
Landscape Architects
Land Planners



Prepared For:
RICHARDSON GROUP, LLC.

EXHIBIT- A

COLIGNY DISTRICT REDEVELOPMENT

CONCEPTUAL MASTER PLAN

HILTON HEAD ISLAND, SOUTH CAROLINA

OCTOBER 20, 2011

Prepared By:

Wood + Partners Inc. WPi
Landscape Architects
Land Planners

PREPARED BY:

COMMUNITY DEVELOPMENT DEPARTMENT

INITIAL CONCEPTS FOR COLIGNY DISTRICT IMPROVEMENTS

HILTON HEAD ISLAND, SOUTH CAROLINA

AUGUST 2012

0 50 100 200 300 400