



STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
800 BAY ROAD
P.O. Box 778
DOVER, DELAWARE 19903

August 14, 2013

SHAILEN P. BHATT
SECRETARY

Mr. D.J. Hughes
Davis, Bowen & Friedel, Inc.
Milford Office
23 North Walnut Street
Milford, DE 19963

Dear Mr. Hughes:

The enclosed Traffic Impact Study (TIS) review letter for the **Rehoboth Gateway** commercial development has been completed under the responsible charge of a registered professional engineer whose firm is authorized to work in the State of Delaware. They have found the TIS to conform to DelDOT's Standards and Regulations for Subdivision Streets and State Highway Access and other accepted practices and procedures for such studies. DelDOT accepts this review letter and concurs with the recommendations. If you have any questions concerning this letter or the enclosed review letter, please contact me at (302) 760-2167.

Sincerely,

Troy Brestel
Project Engineer

TEB:km

Enclosures

cc with enclosures:

Ms. Constance C. Holland, Office of State Planning Coordination
Mr. Lawrence Lank, Director, Sussex County Planning and Zoning
Mr. Gregory Ferrese, City Manager, City of Rehoboth
Mr. Andrew Parker, McCormick Taylor, Inc.
DelDOT Distribution

DelDOT Distribution

Frederick H. Schranck, Deputy Attorney General
Natalie Barnhart, Director, Transportation Solutions (DOTS)
Drew Boyce, Director, Planning
Mark Luszcz, Chief Traffic Engineer, Traffic, DOTS
J. Marc Coté, Assistant Director, Development Coordination
T. William Brockenbrough, Jr., County Coordinator, Development Coordination
Thomas E. Meyer, Traffic Studies Manager, Traffic, DOTS
Chris Sylvester, Traffic Engineer, Traffic, DOTS
Jeff Reed, South District Engineer, Central District
Marvin Roberts, South District Public Works Supervisor, Central District
Lisa Collins, Service Development Planner, Delaware Transit Corporation
Steve Sisson, Sussex County Subdivision Coordinator, Development Coordination
John Fiori, Subdivision Manager, Development Coordination
Marco Boyce, Planning Supervisor, Statewide & Regional Planning
Claudy Joinville, Project Engineer, Development Coordination

August 9, 2013

Mr. Troy E. Brestel
Project Engineer
DelDOT Division of Planning
P.O. Box 778
Dover, DE 19903

RE: Agreement No. 1529
Traffic Impact Study Services
Task No. 19A Subtask 2A – Rehoboth Gateway

Dear Mr. Brestel:

McCormick Taylor has completed its review of the Traffic Impact Study (TIS) for the Rehoboth Gateway development prepared by Davis, Bowen & Friedel, Inc. (DBF), dated May 2013. This review was assigned as Task Number 19A (Subtask 2A). DBF prepared the report in a manner generally consistent with DelDOT's *Standards and Regulations for Subdivision Streets and State Highway Access*.

The TIS evaluates impacts of the Rehoboth Gateway, proposed to be located southwest of Delaware Route 1 (Sussex Road 14 / Coastal Highway) and northwest of Country Club Road (Sussex Road 273), just outside of the City of Rehoboth Beach in Sussex County, Delaware. As analyzed in the TIS, the proposed development would consist of 74,965 square feet of retail space, a 5,000 square-foot convenience store with 12 fueling stations, and 12,000 square feet of high-turnover sit-down restaurant space, all on approximately 12 acres of land. Although several land use options are being explored based on the zoning and potential market demand, this TIS was conservatively based upon the potential land use that would generate the highest number of trips. Other possible land uses for the site include a 90-room hotel and a reduced amount of retail, or only the hotel and pad sites without any retail. The TIS evaluated the more conservative land use to ensure that the project is not under-designed and can accommodate any potential future uses permitted by the existing zoning.

Two access points are proposed for Rehoboth Gateway: one rights-in-only access point on southbound Delaware Route 1 and one full access point on Country Club Road. The access point on Country Club Road would be located directly across from the entrance to Jungle Jim's near Delaware Route 1. A proposed interconnection from the site to Shuttle Road (Sussex Road 273D) would also be provided via an extension of the existing driveway that runs between the Holiday Inn and County Bank properties located northwest of the Rehoboth Gateway site. Construction is anticipated to be complete by 2015.

The land is currently zoned as C-1 (General Commercial) within Sussex County, and the developer does not propose to change the zoning.

DelDOT currently has one relevant project in the study area. The SR 1, Rehoboth Canal to North of Five Points, Pedestrian Improvements project (State Contract No. T200612501) will enhance pedestrian safety in the beach area by providing sidewalks along Delaware Route 1 along with new pedestrian crossings of Delaware Route 1 at numerous locations. In the immediate vicinity of the Rehoboth Gateway site, the SR 1 Pedestrian Improvements project includes sidewalk along the southbound Delaware Route 1 site frontage, new crosswalks and pedestrian signals at the intersection of Delaware Route 1 and Shuttle Road, and a crosswalk across Country Club Road. The right-turn lane on the eastbound approach of Shuttle Road will be converted from yield-controlled to signal-controlled and the stop bar will be extended across that lane. The project will also add two new signalized pedestrian crossings across Delaware Route 1 just outside of the Rehoboth Gateway study area; one just over 1,000 feet north of Shuttle Road and one approximately 400 feet south of Country Club Road.

DelDOT has confirmed that this project is designed and fully funded, with construction planned from the spring of 2014 to the fall of 2015. The timing of this DelDOT project may coincide with construction of the Rehoboth Gateway site. If the Rehoboth Gateway development proceeds first, the developer would be required to construct the site frontage sidewalk and the crosswalk across Country Club Road per DelDOT's plans. If the DelDOT project proceeds first, the developer would be required to contribute towards the DelDOT project.

Another significant project in the area is Destination Station, proposed on the site of Delaware Transit Corporation's (DTC's) Rehoboth Park & Ride located on Shuttle Road just west of the Rehoboth Gateway site. Destination Station is planned as a visitor and educational center for the beach resorts. The first phase of this project, which was completed in the spring of 2011, prepared the site for the future construction of the visitor center. The improvements completed at that time consisted of constructing new site entrances, reconfiguring parking areas and adding sidewalks along the property frontage. The schedule for the second phase of the project, which includes construction of the visitor center itself, is unknown at this time.

Regarding DelDOT's Hazard Elimination Program (HEP), three intersections in the study area are within Site F of the 2009 HEP: Delaware Route 1 & Shuttle Road / Sea Blossom Boulevard, Shuttle Road & Northern Adjacent Site Access / Tanger Outlets Bayside Entrance, and Shuttle Road / Country Club Road & Country Club Road / Winner Circle. The HEP committee noted considerable peak hour queuing at the Delaware Route 1 intersection. The committee recommended a number of signing and pavement marking improvements at the unsignalized intersections and driveways along Shuttle Road west of Delaware Route 1, but did not recommend specific improvements for the intersection of Delaware Route 1 and Shuttle Road. They noted that the signalized intersection will be improved as part of DelDOT's SR 1 Pedestrian Improvements project. Most of the remedial improvements identified in the HEP report have since been implemented, but the recommendation to relocate the stop sign on the Holiday Inn / County Bank driveway to a more visible location has not yet been implemented.

Based on our review, we have the following comments and recommendations:

The following intersections exhibit level of service (LOS) deficiencies without the implementation of physical roadway and/or traffic control improvements:

<i>Intersection</i>	<i>Existing Traffic Control</i>	<i>Situations for which deficiencies occur</i>
Country Club Road and Site Entrance / Jungle Jim's Entrance	Unsignalized	2015 Saturday with Rehoboth Gateway (only for Case 3B without access along Delaware Route 1)
Shuttle Road and Northern Adjacent Site Access / Tanger Outlets Bayside Entrance	Unsignalized	2012 Existing Saturday; 2015 Saturday without and with Rehoboth Gateway; 2015 PM with Rehoboth Gateway (only for Case 3B without access along Delaware Route 1)
Delaware Route 1 and Country Club Road	Unsignalized	2015 Saturday with Rehoboth Gateway

For the intersection of Country Club Road and Site Entrance / Jungle Jim's Entrance, there would be no LOS deficiency at this intersection if the rights-in-only entrance is also allowed along southbound Delaware Route 1, which we recommend. Although consideration was given to including separate left-turn lanes on Country Club Road at the proposed Site Entrance / existing Jungle Jim's Entrance, we do not recommend separate left-turn lanes for several reasons. First, DBF conducted ATR counts for this section of Country Club Road in August and September 2012 and found much lower ADT volumes than indicated in the 2012 DelDOT Traffic Summary. Based on these differences, and reviewing past years of the DelDOT Traffic Summary, it is believed that the latest DelDOT Traffic Summary ADT volume is actually for another section of Country Club Road, perhaps south of the Winner Circle intersection in a location that also includes Shuttle Road traffic to and from Delaware Route 1. Using DBF's ADT volumes, left-turn lanes on Country Club Road at the Site Entrance / Jungle Jim's Entrance would only be warranted for the Saturday peak hour, and only when using DelDOT's Auxiliary Lane Worksheet (not when using methods of DelDOT's *Standards and Regulations for Subdivision Streets and State Highway Access*, DelDOT's *Road Design Manual*, or AASHTO's *Policy on Geometric Design of Highways and Streets* (aka Green Book)). Second, Jungle Jim's is a seasonal operation that is open during the summer months only. It generates negligible traffic the rest of the year, which should be a factor when considering the need for left-turn lanes. Third, there are no other intersections along Country Club Road from Delaware Route 1 to Shuttle Road with left-turn lanes on the Country Club Road approaches, including the recently-relocated Rehoboth Park & Ride access (now a four-leg intersection with Duval Boulevard). Fourth, this intersection is located less than 300 feet from Delaware Route 1, which may not leave enough room for a properly designed westbound left-turn lane and taper. Fifth, no crashes have occurred at this intersection in past three years. Finally, our analysis indicates that adding left-turn lanes at this intersection would have negligible benefit on delays or queue lengths.

The intersection of Shuttle Road and Northern Adjacent Site Access / Tanger Outlets Bayside Entrance exhibits LOS deficiencies under existing and future conditions. However, we do not recommend any improvements be implemented by the developer at this intersection other than relocating the stop sign on the northbound driveway approach. The LOS deficiency is only for the summer Saturday condition on the southbound approach exiting the Tanger Outlets (primarily due to left turns heading for Delaware Route 1). The projected increase in delay and queue length on the southbound approach is relatively small when comparing existing conditions to future conditions (without or with Rehoboth Gateway, assuming it has an entrance on Delaware Route 1). Given the proximity of the Tanger Outlets Entrance to the signal at Delaware Route 1 (approximately 300 feet to the east), eastbound queues from the signal (which already has three left-turn lanes) extend past this intersection during the summer Saturday peak hour so potential improvements meant to address the LOS deficiency would have little benefit during that time period. The analysis indicates that the projected delay and queue length on the southbound Tanger Outlets Driveway approach would increase substantially if Rehoboth Gateway were to not have an entrance on Delaware Route 1.

The intersection of Delaware Route 1 and Country Club Road exhibits LOS deficiencies under future conditions. However, we do not recommend any improvements be made by the developer at this intersection. The LOS deficiency is only for the summer Saturday condition with the addition of Rehoboth Gateway. There is no apparent feasible solution to resolve this LOS deficiency. Due to limitations in the HCM methodology and HCS software, the analysis does not take into account the fact that some drivers turning right from eastbound Country Club Road use the continuous bus/bike lane on Delaware Route 1 as an acceleration lane, meaning potentially shorter delays and queues on the side street than the results indicate. Furthermore, if it is assumed that the proposed pedestrian phases at the Delaware Route 1 intersection at Shuttle Road are actuated during almost every cycle during the Summer Saturday peak hour, that should create gaps in southbound Delaware Route 1 traffic that aren't directly accounted for in the analysis, which could mean shorter delays and queues on the side street than the results indicate.

Considering the safety and operational impacts of the proposed rights-in-only site entrance for Rehoboth Gateway along southbound Delaware Route 1, we recommend allowing this entrance on the condition that it be located as far south as possible. We make this recommendation for four reasons. First, DelDOT initially had concerns regarding this proposed entrance due to potential conflicting traffic movements, but these concerns have been alleviated in large part due to the improvements planned for the intersection of Delaware Route 1 and Shuttle Road / Sea Blossom Boulevard as part of DelDOT's SR 1 Pedestrian Improvements project. Specifically, the eastbound Shuttle Road right-turn movement to southbound Delaware Route 1 (and to Delaware Route 1A (Rehoboth Avenue)) will be converted from yield-controlled to signal-controlled and the Shuttle Road stop bar will be extended across the right-turn lane. This change means that fewer drivers will turn right on red from eastbound Shuttle Road, and the ones that do will need to come to a complete stop first. They should only proceed to make a right turn on red if no conflicting vehicles are entering the intersection. Conflicting vehicles would be those from the southbound Delaware Route 1 through movement, northbound Delaware Route 1 u-turn movement, or westbound Sea Blossom Boulevard left-turn movement. While volumes for those

movements would be higher for Case 3A with the rights-in-only access on Delaware Route 1 than they would be for Case 3B without access on Delaware Route 1, they generally are not that much higher than either Case 3B or even Case 2 without Rehoboth Gateway.

Second, any conflicting movement that could possibly occur in Case 3A could still occur in Case 3B (where drivers going to Rehoboth Gateway would turn onto Country Club Road), only the length of the “weaving segment” on southbound Delaware Route 1 would be approximately 300 feet longer in Case 3B.

Third, while the existing volumes turning onto Country Club Road are lower now than they would be in the future, the recent crash history has not indicated any problems in this area of southbound Delaware Route 1.

Finally, due to a different trip distribution pattern, the operational impacts of prohibiting Rehoboth Gateway’s proposed rights-in-only entrance on Delaware Route 1 would be detrimental at the existing Tanger Outlets entrance on Shuttle Road and at the proposed Rehoboth Gateway entrance on Country Club Road. Providing the entrance on Delaware Route 1 would allow those other intersections to operate more efficiently.

Should the County choose to approve the proposed development, the following items should be incorporated into the site design and reflected on the record plan. All applicable agreements (i.e. letter agreements for off-site improvements and traffic signal agreements) should be executed prior to entrance plan approval for the proposed development.

1. The developer should improve Country Club Road along the site frontage as needed in order to meet DelDOT’s local road standards. These standards include but are not limited to eleven-foot travel lanes and five-foot shoulders. The developer should provide a bituminous concrete overlay to the existing travel lanes, at DelDOT’s discretion. DelDOT should analyze the existing lanes’ pavement section and recommend an overlay thickness to the developer’s engineer if necessary.

2. The developer should construct the rights-in-only site entrance on southbound Delaware Route 1. This entrance driveway should be located just south of the start of the existing mountable concrete curb that separates the southbound Delaware Route 1 through lanes from the left-turn lanes for Delaware Route 1A. This is a distance of approximately 305 feet north of the Country Club Road intersection with Delaware Route 1, and approximately 935 feet south of the Shuttle Road intersection with Delaware Route 1. Right turns from southbound Delaware Route 1 into the site will be made from the existing continuous bus/bike/right-turn lane. To further reinforce that this access point is a one-way entrance only (not an exit from the site onto Delaware Route 1), Do Not Enter signs (MUTCD R5-1) and arrow pavement markings shall be installed and oriented to face potential exiting traffic along this entrance driveway. The developer should coordinate with DelDOT’s Subdivision Section to determine the exact location and design details for this rights-in-only entrance.

3. The developer should construct the site entrance on Country Club Road. This entrance should align with the existing Jungle Jim’s entrance on Country Club Road. The proposed configuration is shown in the table below.

Approach	Current Configuration	Proposed Configuration
Northbound Jungle Jim’s Entrance	One shared left/right-turn lane	One shared left/through/right-turn lane
Southbound Site Entrance	Approach does not exist	One shared left/through/right-turn lane
Eastbound Country Club Road	One shared through/right-turn lane	One shared left/through/right-turn lane
Westbound Country Club Road	One shared through/left-turn lane	One shared through/left-turn lane and one right turn lane

Initial recommended minimum turn-lane lengths (excluding tapers) of the separate turn lanes are listed below. The developer should coordinate with DelDOT’s Subdivision Section to determine final turn-lane lengths.

Approach	Left-Turn Lane	Right-Turn Lane
Northbound Jungle Jim’s Entrance	N/A	N/A
Southbound Site Entrance	N/A	N/A
Eastbound Country Club Road	N/A	N/A
Westbound Country Club Road	N/A	85 feet*

* turn-lane length based on DelDOT’s *Auxiliary Lane Worksheet*

4. The developer should construct a vehicular connection leading to the existing driveway that runs between the Holiday Inn and County Bank properties located northwest of the Rehoboth Gateway site, and which connects to Shuttle Road opposite the Tanger Outlets Bayside Entrance. The developer should coordinate with DelDOT’s Subdivision Section to determine design details for this vehicular connection.

5. The developer should relocate the existing stop sign on the northbound approach of the Holiday Inn / County Bank Driveway at the intersection with Shuttle Road, moving it to a location where it can be clearly seen by approaching motorists. Alternatively, the developer could leave the stop sign where it is and instead relocate the tree that obscures the sign. This driveway will serve as an alternate site access for the Rehoboth Gateway development, via an interconnection as described above in Item No. 4. The developer should coordinate with DelDOT’s Subdivision Section and the property owners to determine the most appropriate action to rectify this condition.

6. The following bicycle, pedestrian, and transit improvements should be included and should be consistent with, and installed in coordination with, improvements proposed as part of DeIDOT's SR 1, Rehoboth Canal to North of Five Points, Pedestrian Improvements Project:
- a. A right-turn yield to bikes sign (MUTCD R4-4) should be added at the start of the right-turn lane added to westbound Country Club Road at the site entrance.
 - b. Adjacent to the right-turn lane added to westbound Country Club Road at the site entrance, a minimum of a five-foot bicycle lane should be dedicated and striped with appropriate markings for bicyclists through the turn lane in order to facilitate safe and unimpeded bicycle travel.
 - c. Appropriate bicycle symbols, directional arrows, striping (including stop bars), and signing should be included along bicycle facilities and right-turn lanes within the project limits.
 - d. Utility covers should be made flush with the pavement.
 - e. Bike parking should be provided near the building entrances within this development. Where the building architecture provides for an awning or other overhang, the bike parking should be covered.
 - f. A minimum of a five-foot wide sidewalk (with a minimum of a five-foot buffer from the roadway) that meets current AASHTO and ADA standards should be constructed along the Delaware Route 1 site frontage. This sidewalk is also planned as part of DeIDOT's SR 1, Rehoboth Canal to North of Five Points, Pedestrian Improvements project (State Contract No. 26-125-01), with construction scheduled to begin in the spring of 2014. The sidewalk described herein should be built regardless of whether the DeIDOT project is constructed or not. If Rehoboth Gateway goes to construction first, the developer should be required to construct the sidewalk per DeIDOT's plans. Alternatively, if the DeIDOT project goes to construction first, the developer should be required to contribute towards the DeIDOT project. The developer should coordinate with DeIDOT to determine design details, implementation, and/or contribution towards the construction of this sidewalk.
 - g. A 15-foot wide easement from the edge of the right-of-way should be dedicated to DeIDOT within the site frontage along Country Club Road. Within this easement, a minimum of a five-foot wide sidewalk (with a minimum of a five-foot buffer from the roadway, although a wider buffer is preferred) that meets current AASHTO and ADA standards should be constructed along the site frontage. At the eastern end, the sidewalk should connect to the proposed sidewalk along Delaware Route 1. At the western end, the sidewalk should connect to the DTC Park & Ride property and/or to the shoulder of Country Club Road.
 - h. ADA compliant curb ramps and crosswalks should be provided at all pedestrian crossings, including the rights-in-only site entrance on Delaware Route 1 and the site entrance on Country Club Road. ADA compliant curb ramps and a crosswalk should also be provided across Country Club Road where it intersects with southbound Delaware Route 1, per plans for DeIDOT's SR 1, Rehoboth Canal to North of Five Points, Pedestrian Improvements project. Type 3 curb ramps are discouraged.

- i. Internal sidewalks for pedestrian safety and to promote walking as a viable transportation alternative should be constructed within the development. These sidewalks should each be a minimum of seven feet wide (with a minimum of a five-foot buffer from the roadway) and should meet current AASHTO and ADA standards. These internal sidewalks should connect the building entrances to the frontage sidewalks along Delaware Route 1 and Country Club Road.
- j. The developer should provide pedestrian access between the Rehoboth Gateway site and DTC's adjacent Rehoboth Park & Ride facility. This pedestrian access would likely be in the form of a sidewalk that is a minimum of seven feet wide and meets current AASHTO and ADA standards, and it should be linked to the internal sidewalks on the Rehoboth Gateway site that connect to the frontage sidewalks on Delaware Route 1 and Country Club Road. The developer should coordinate with DeIDOT's Subdivision Section and the DTC regarding the location/alignment and design details for this pedestrian connection to the adjacent Park & Ride facility.
- k. Where internal sidewalks are located alongside of parking spaces, a buffer should be added to eliminate vehicular overhang onto the sidewalk.

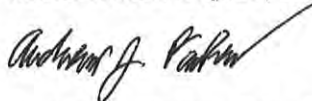
Improvements in this TIS may be considered "significant" under DeIDOT's *Work Zone Safety and Mobility Procedures and Guidelines*. These guidelines are available on DeIDOT's website at http://www.deldot.gov/information/pubs_forms/manuals/de_mutcd/index.shtml. For any additional information regarding the work zone impact and mitigation procedures during construction please contact Mr. Adam Weiser of DeIDOT's Traffic Section. Mr. Weiser can be reached at (302) 659-4073 or by email at Adam.Weiser@state.de.us.

Please note that this review generally focuses on capacity and level of service issues; additional safety and operational issues will be further addressed through DeIDOT's subdivision review process.

Additional details on our review of this TIS are attached. Please contact me at (302) 738-0203 or through e-mail at ajparker@mtmail.biz if you have any questions concerning this review.

Sincerely,

McCormick Taylor, Inc.



Andrew J. Parker, P.E., PTOE
Project Manager

Enclosure

General Information

Report date: May 2013

Prepared by: Davis, Bowen & Friedel, Inc. (DBF)

Prepared for: Jack Lingo Asset Management

Tax parcels: 3-34-13.00-325.18 and 325.44, Sussex County

Generally consistent with DelDOT's Standards and Regulations for Subdivision Streets and State Highway Access: Yes

Project Description and Background

Description: As analyzed in the TIS, the proposed development would consist of 74,965 square feet of retail space, a 5,000 square-foot convenience store with 12 fueling stations, and 12,000 square feet of high-turnover sit-down restaurant space. Although several land use options are being explored based on the zoning and potential market demand, this TIS was conservatively based upon the potential land use that would generate the highest number of trips. Other possible land uses for the site include a 90-room hotel and a reduced amount of retail, or only the hotel and pad sites without any retail. The TIS evaluated the more conservative land use to ensure that the project is not under-designed and can accommodate any potential future uses permitted by the existing zoning.

Location: Rehoboth Gateway is proposed to be located southwest of Delaware Route 1 (Sussex Road 14 / Coastal Highway) and northwest of Country Club Road (Sussex Road 273), just outside of the City of Rehoboth Beach in Sussex County, Delaware. A site location map is included on Page 10.

Amount of land to be developed: 11.7 acres of land

Land use approval(s) needed: Subdivision approval. The land is currently zoned as C-1 (General Commercial) within Sussex County, and the developer does not propose to change the zoning.

Proposed completion date: 2015

Proposed access locations: Two access points are proposed: one rights-in-only access point on southbound Delaware Route 1 and one full access point on Country Club Road. The access point on Country Club Road would be located directly across from the entrance to Jungle Jim's near Delaware Route 1. A proposed interconnection from the site to Shuttle Road (Sussex Road 273D) would also be provided via an extension of the existing driveway that runs between the Holiday Inn and County Bank properties located northwest of the Rehoboth Gateway site.

Daily Traffic Volumes (per DelDOT Traffic Summary 2012):

- 2012 Average Annual Daily Traffic on Delaware Route 1: 53,862 vpd
- 2012 Average Annual Daily Traffic on Country Club Road: 4,568 vpd*
- 2012 Average Annual Daily Traffic on Shuttle Road: 4,879 vpd

* Note: The AADT for Country Club Road as reported by the DelDOT Traffic Summary may be higher than the actual ADT on that section of road. See discussion on Page 3 of this letter.



Delaware Strategies for State Policies and Spending – 2010 Update

Location with respect to the Strategies for State Policies and Spending Map of Delaware:
The proposed Rehoboth Gateway is located within Investment Level 1.

Investment Level 1

Investment Level 1 Areas are areas of the state that are most prepared for growth and where the state can make cost-effective infrastructure investments for schools, roads, and public safety. In these areas, state investments and policies should support and encourage a wide range of uses and densities, promote other transportation options, foster efficient use of existing public and private investments, and enhance community identity and integrity. Investment Level 1 Areas are often municipalities, towns, or urban/urbanizing places in counties. Density is generally higher than in the surrounding areas. Overall, it is the state's intent to use its spending and management tools to maintain and enhance community character, to promote well-designed and efficient new growth, and to facilitate redevelopment in Investment Level 1 Areas.

Proposed Development's Compatibility with Strategies for State Policies and Spending:

The proposed Rehoboth Gateway is located within Investment Level 1 and is to be developed with retail space (or a hotel), restaurants, and a convenience store with gas station. The *Strategies* document generally encourages efficient new growth and redevelopment in Investment Level 1 areas, and the proposed development is consistent with those goals. It is therefore concluded that the proposed development generally complies with the policies stated in the 2010 update of the "Strategies for State Policies and Spending."

Comprehensive Plan

Sussex County Comprehensive Plan:

(Source: Sussex County Comprehensive Plan Update, June 2008)

The Sussex County Comprehensive Plan Future Land Use Map indicates that the proposed development parcel is in within the Environmentally Sensitive Developing Area (categorized as a Growth Area) and within a Protected Lands area (categorized as a Rural Area). However, the Protected Land designation appears to be an error on the map or an out-of-date designation, as Sussex County Zoning Maps produced more recently than 2008, including the current Zoning Map dated May 2013, show these parcels zoned as C-1 General Commercial, which would not be the case if the parcels were truly Protected Land. The property located immediately south of the proposed Rehoboth Gateway site is indeed Protected Land owned by the State of Delaware as the location of the Rehoboth Park & Ride facility operated by the Delaware Transit Corporation (DTC), and the close proximity of that property could explain the apparent error on the map. As such, it appears that the Future Land Use of the proposed Rehoboth Gateway site was intended to be designated as "unprotected land" within the Environmentally Sensitive Developing Area.

Growth Areas, including the Environmentally Sensitive Developing Area, are designed to accommodate concentrated levels of development. The Environmentally Sensitive Developing

Area has been designated by Sussex County for large areas around Rehoboth Bay, Indian River Bay, and Little Assawoman Bay (the inland bays). This designation recognizes two characteristics of these areas. First, these regions are among the most desirable locations in Sussex County for new housing, as reflected in new construction data and real estate prices. Second, these regions contain ecologically important wetlands and other coastal lands that help absorb floodwaters and provide extensive habitat for native flora and fauna. These areas also have great impacts upon the water quality of the bays and inlets and upon natural habitats.

The challenge in these regions is to safeguard genuine natural areas and mitigate roadway congestion without stifling the tourism and real estate markets that: a) provide many jobs; b) create business for local entrepreneurs; and c) help keep local tax rates reasonable. The County has major initiatives to extend public sewer service to replace failing on-site systems in many of these areas. Very careful control of stormwater runoff is an extremely important concern to keep sediment and other pollutants out of the inland bays.

The following major guidelines should apply to future growth in Environmentally Sensitive Developing Areas:

Permitted Uses – Environmentally Sensitive Developing Areas are areas that can accommodate development provided special environmental concerns are addressed. A range of housing types should be permitted in Environmentally Sensitive Areas, including single-family homes, townhouses and multi-family units. Retail and office uses are appropriate but larger shopping centers and office parks should be confined to selected locations with access to arterial roads. Careful mixtures of homes with light commercial and institutional uses can be appropriate to provide for convenient services and to allow people to work close to home. Major new industrial uses are not proposed in these areas. Industrial zones are regulated by the Delaware Coastal Zone Act, which restrict heavy industry and bulk transfer.

Densities – The Environmentally Sensitive Developing Areas function as an “overlay” area to several underlying zoning districts. It may be advisable for legal reasons to convert this overlay area into regular zoning districts, while maintaining the current standards. Most of the Environmental Sensitive Developing Areas should continue to allow 2 homes per acre. The option should exist to go up to 4 units per acre if the developer uses optional density bonuses. Smaller lots and flexibility in dimensional standards should be allowed if the developer uses a cluster option that results in permanent preservation of a substantial percentage of the tract.

The County may also consider an additional layer of protection in the Environmentally Sensitive Developing Areas. Tidal wetland area could be subtracted from the total tract size so that “net” tract size is used as the basis for calculating how much development is allowed.

All applicants for developments of a minimum size (as specified in zoning) should continue to be required to provide information that analyzes the development’s potential environmental impacts, including effects on stormwater runoff, nitrogen and phosphorous loading, wetlands, woodlands, wastewater treatment, water systems, and other matters that affect the ecological sensitivity of the inland bays.

Infrastructure – Central water and sewer facilities are strongly encouraged. If central utilities are not possible, permitted densities should be limited to 2 units per acre.

Proposed Development’s Compatibility with Comprehensive Plan:

The proposed development is a commercial/retail land use that would serve the needs of both nearby residents and visitors. The proposed development appears to comply with the characteristics of Growth Areas in general, as well as the *Permitted Uses* for the Environmentally Sensitive Developing Area. The proposed land use is appropriate for the zoning (C-1 General Commercial). As such, and assuming the Future Land Use designation of Protected Land is indeed an error or out-of-date designation, the proposed development appears to be compatible with the Sussex County Comprehensive Plan.

Transportation Analysis Zones (TAZ)

Transportation Analysis Zones (TAZ) where development would be located: 1222

TAZ Boundaries:



- Current employment estimate for TAZ: 1,762 jobs in 2005**
- Future employment estimate for TAZ: 2,383 jobs in 2030**
- Current population estimate for TAZ: 3,527 people in 2005**
- Future population estimate for TAZ: 4,464 people in 2030**
- Current household estimate for TAZ: 1,705 houses in 2005**
- Future household estimate for TAZ: 2,180 houses in 2030**

Relevant committed developments in TAZ: None

Would the addition of committed developments to current estimates exceed future projections: No

Would the addition of committed developments and the proposed development to current estimates exceed future projections: No for population and households, and unlikely for employment

Relevant Projects in the DelDOT Capital Transportation Program (FY 2013 – FY 2018)

DelDOT currently has one relevant project in the study area. The SR 1, Rehoboth Canal to North of Five Points, Pedestrian Improvements project (State Contract No. T200612501) will enhance pedestrian safety in the beach area by providing sidewalks along Delaware Route 1 along with new pedestrian crossings of Delaware Route 1 at numerous locations. In the immediate vicinity of the Rehoboth Gateway site, the SR 1 Pedestrian Improvements project includes sidewalk along the southbound Delaware Route 1 site frontage, new crosswalks and pedestrian signals at the intersection of Delaware Route 1 and Shuttle Road, and a crosswalk across Country Club Road. The right-turn lane on the eastbound approach of Shuttle Road will be converted from yield-controlled to signal-controlled and the stop bar will be extended across that lane. The project will also add two new signalized pedestrian crossings across Delaware Route 1 just outside of the Rehoboth Gateway study area; one just over 1,000 feet north of Shuttle Road and one approximately 400 feet south of Country Club Road.

DelDOT has confirmed that this project is designed and fully funded, with construction planned from the spring of 2014 to the fall of 2015. The timing of this DelDOT project may coincide with construction of the Rehoboth Gateway site. If the Rehoboth Gateway development proceeds first, the developer would be required to construct the site frontage sidewalk and the crosswalk across Country Club Road per DelDOT's plans. If the DelDOT project proceeds first, the developer would be required to contribute towards the DelDOT project.

Another significant project in the area is Destination Station, proposed on the site of Delaware Transit Corporation's (DTC's) Rehoboth Park & Ride located on Shuttle Road just west of the Rehoboth Gateway site. Destination Station is planned as a visitor and educational center for the beach resorts. The first phase of this project, which was completed in the spring of 2011, prepared the site for the future construction of the visitor center. The improvements completed at that time consisted of constructing new site entrances, reconfiguring parking areas and adding sidewalks along the property frontage. The schedule for the second phase of the project, which includes construction of the visitor center itself, is unknown at this time.

Regarding DelDOT's Hazard Elimination Program (HEP), three intersections in the study area are within Site F of the 2009 HEP: Delaware Route 1 & Shuttle Road / Sea Blossom Boulevard, Shuttle Road & Northern Adjacent Site Access / Tanger Outlets Bayside Entrance, and Shuttle Road / Country Club Road & Country Club Road / Winner Circle. The HEP committee noted considerable peak hour queuing at the Delaware Route 1 intersection. The committee recommended a number of signing and pavement marking improvements at the unsignalized intersections and driveways along Shuttle Road west of Delaware Route 1, but did not recommend specific improvements for the intersection of Delaware Route 1 and Shuttle Road.

They noted that the signalized intersection will be improved as part of DelDOT's SR 1 Pedestrian Improvements project. Most of the remedial improvements identified in the HEP report have since been implemented, but the recommendation to relocate the stop sign on the Holiday Inn / County Bank driveway to a more visible location has not yet been implemented.

Trip Generation

Trip generation for the proposed development was computed using comparable land uses and equations contained in Trip Generation, Eighth and Ninth Editions, published by the Institute of Transportation Engineers (ITE). The ITE Trip Generation Handbook, Second Edition, was used to determine internal capture, pass-by trips, and diverted linked trips. The TIS also assumed a trip reduction/credit due to transit. The following land uses were utilized to estimate the amount of new traffic generated for this development:

- 74,965 square-foot shopping center (ITE Land Use Code 820)
- 5,000 square-foot convenience store with 12 fueling stations (ITE Land Use Code 853)
- 12,000 square feet of high-turnover (sit-down) restaurant space (ITE Land Use Code 932)

Table 1
REHOBOTH GATEWAY PEAK HOUR TRIP GENERATION

Land Use	AM Peak Hour			PM Peak Hour			Saturday Mid-day		
	In	Out	Total	In	Out	Total	In	Out	Total
74,965 sf shopping center	81	49	131	237	257	494	377	348	725
Internal Capture	-	-	-	6	10	16	20	24	44
Pass-by Trips	-	-	-	101	100	201	126	126	252
Diverted Linked Trips	-	-	-	62	62	124	119	119	238
Net External Trips	81	49	131	68	85	153	112	79	191
5,000 sf convenience store with 12 fueling stations	100	99	199	115	114	229	61	59	120
Internal Capture	-	-	-	3	4	7	3	4	7
Pass-by Trips	63	62	125	73	74	147	38	37	75
Diverted Linked Trips	26	26	52	20	20	40	10	10	20
Net External Trips	11	11	22	19	16	35	10	8	18
12,000 sf high-turnover restaurant	72	59	130	71	47	118	90	79	169
Internal Capture	-	-	-	14	9	23	28	23	51
Pass-by Trips	28	28	56	20	21	41	26	25	51
Diverted Linked Trips	17	17	34	12	13	25	15	16	31
Net External Trips	27	14	40	25	4	29	21	15	36
Trip Reduction Due to Transit	4	3	7	4	3	7	12	12	24
TOTAL NEW TRIPS	115	71	186	108	102	210	131	90	221

Table 2
REHOBOTH GATEWAY DAILY TRIP GENERATION

Land Use	Weekday ADT			Saturday ADT		
	In	Out	Total	In	Out	Total
74,965 sf shopping center	2816	2816	5632	3853	3853	7706
5,000 sf convenience store with 12 fueling stations	2114	2114	4228	1227	1227	2454
12,000 sf high-turnover restaurant	763	763	1526	950	950	1900
TOTAL TRIPS	5693	5693	11385	6030	6030	12060

Overview of TIS

Intersections examined:

- 1) Delaware Route 1 & Site Entrance (rights in only)
- 2) Country Club Road & Site Entrance / Jungle Jim's Entrance
- 3) Shuttle Road & Northern Adjacent Site Access / Tanger Outlets Bayside Entrance
- 4) Delaware Route 1 & Shuttle Road / Sea Blossom Boulevard
- 5) Delaware Route 1 & Country Club Road
- 6) Shuttle Road / Country Club Road & Country Club Road / Winner Circle

Conditions examined:

- 1) 2012 existing conditions (Case 1)
- 2) 2015 without Rehoboth Gateway (Case 2)
- 3) 2015 with Rehoboth Gateway and with rights-in only access along Delaware Route 1 (Case 3A)
- 4) 2015 with Rehoboth Gateway but with no access along Delaware Route 1 (Case 3B)

Peak hours evaluated: Weekday morning and evening, and Saturday mid-day peak hours

Committed developments considered:

- 1) Corrado Commercial Property (64,250 square-foot discount superstore, 10,500 square-foot shopping center, and 11,450 square feet of high turn-over restaurants)
- 2) Canal Point (294 single-family detached houses (165 unbuilt/unoccupied), 265 townhouses (117 unbuilt/unoccupied), and a 15,000 square-foot Community Center)

Intersection Descriptions

1) Delaware Route 1 & Site Entrance

Type of Control: proposed rights-in-only T-intersection

Northbound approach: (Delaware Route 1) three through lanes, separated from southbound lanes by grass median

Southbound approach: (Delaware Route 1) two left-turn lanes for downstream Delaware Route 1A intersection, two through lanes and one bus/bike/right-turn lane

Note: At the location of the proposed site entrance, the southbound Delaware Route 1 left-turn lanes for downstream Delaware Route 1A (Rehoboth Avenue) are separated

from the southbound through lanes by a mountable concrete curb. Also, the site entrance is proposed as a one-way street heading away from Delaware Route 1. This intersection would consist only of southbound through and right-turning traffic, and no HCS analysis is conducted for this type of intersection.

- 2) **Country Club Road & Site Entrance / Jungle Jim's Entrance**
Type of Control: existing two-way stop-controlled (T-intersection); proposed two-way stop-controlled (four-legged intersection)
Northbound approach: (Jungle Jim's Entrance) existing one shared left/right-turn lane, stop-controlled; proposed one shared left/through/right-turn lane, stop-controlled
Southbound approach: (Proposed Site Entrance) proposed one shared left/through/right-turn lane, stop-controlled
Eastbound approach: (Country Club Road) existing one shared through/right-turn lane; proposed one shared left/through/right-turn lane
Westbound approach: (Country Club Road) existing one shared through/left-turn lane; proposed one shared through/left-turn lane and one right-turn lane

- 3) **Shuttle Road & Northern Adjacent Site Access / Tanger Outlets Bayside Entrance**
Type of Control: two-way stop-controlled (four-leg intersection)
Northbound approach: (Northern Adjacent Site Access) one shared through/left-turn lane and one right-turn lane, stop controlled
Southbound approach: (Outlets Entrance) one shared through/left-turn lane and one right-turn lane, stop controlled
Eastbound approach: (Shuttle Road) one left-turn lane and one shared through/right-turn lane
Westbound approach: (Shuttle Road) one shared through/left-turn lane and one right-turn lane

- 4) **Delaware Route 1 & Shuttle Road / Sea Blossom Boulevard**
Type of Control: signalized four-leg intersection
Northbound approach: (Delaware Route 1) two left-turn lanes, two exclusive through lanes and one shared through/right-turn lane
Southbound approach: (Delaware Route 1) two left-turn lanes, three through lanes and one bus/bike/right-turn lane
Eastbound approach: (Shuttle Road) two left-turn lanes, one shared through/left-turn lane and one right-turn lane
Westbound approach: (Sea Blossom Boulevard) two left-turn lanes, one through lane and one right-turn lane

5) **Delaware Route 1 & Country Club Road**

Type of Control: two-way stop-controlled (right-in/right-out T-intersection)

Northbound approach: (Delaware Route 1) three through lanes, separated from southbound lanes by grass median

Southbound approach: (Delaware Route 1) two left-turn lanes for downstream Delaware Route 1A intersection, two through lanes and one bus/bike/right-turn lane

Eastbound approach: (Country Club Road) one right-turn-only lane, stop controlled

Note: At this intersection, the southbound Delaware Route 1 left-turn lanes for downstream Delaware Route 1A (Rehoboth Avenue) are separated from the southbound through lanes by a mountable concrete curb.

6) **Shuttle Road / Country Club Road & Country Club Road / Winner Circle**

Type of Control: two-way stop-controlled (four-leg intersection)

Northbound approach: (Country Club Road) one shared left/through/right-turn lane

Southbound approach: (Shuttle Road) one shared left/through/right-turn lane

Eastbound approach: (Winner Circle) one shared left/through/right-turn lane, stop controlled

Westbound approach: (Country Club Road) one shared left/through/right-turn lane, stop controlled

Safety Evaluation

Crash Data: Crash data was obtained for September 2009 through September 2012 for the intersections and roadway segments within the study area. Crash data was not requested for the intersection of Delaware Route 1 & Shuttle Road / Sea Blossom Boulevard because the intersection is included in DelDOT's Hazard Elimination Program (HEP) and improvements are planned as part of DelDOT's SR 1 Pedestrian Improvements Project (State Contract T2006I2501). The crash data request returned a total of five reportable crashes, with two of these occurring at off-site intersections within the study area. Two crashes occurred along Delaware Route 1, one immediately north of Shuttle Road and one immediately south of Country Club Road. The fifth crash was an alcohol-related crash within the Jungle Jim's parking area. No crashes were reported along any of the proposed development's site frontages, including along southbound Delaware Route 1 where the rights-in-only entrance is proposed. None of the five reported crashes involved personal injury, fatality or pedestrians.

- Country Club Road & Jungle Jim's Entrance (proposed Rehoboth Gateway site access)
 - No crashes reported
- Shuttle Road & Northern Adjacent Site Access / Outlets Entrance
 - One crash reported (angle crash)
- Delaware Route 1 & Country Club Road
 - No crashes reported
- Country Club Road & Shuttle Road
 - One crash reported (rear-end crash)
- Delaware Route 1
 - Two crashes reported (same-direction sideswipe crash immediately north of Shuttle Road and rear-end crash immediately south of Country Club Road)

- Country Club Road
 - One crash reported (alcohol involved rear-to-side crash in Jungle Jim's parking area)

Sight Distance: With generally straight and flat roadways, and few potential visual obstructions, sight distance is adequate throughout the study area. No problematic sight distance issues have been reported or indicated by crash data, and no major problems were observed during field observations in the area.

Transit, Pedestrian, and Bicycle Facilities

Existing transit service: The Delaware Transit Corporation (DTC) currently operates one year-round transit route offering weekday service near the proposed Rehoboth Gateway development. DART Route 206 connects Georgetown, Lewes and Rehoboth Beach. During the non-summer months it travels on Delaware Route 1 and turns onto Rehoboth Avenue, making a stop at Tanger Outlets Bayside on the way to the Rehoboth Boardwalk and a stop at CVS (both stops are just north of Shuttle Road) on the return trip. Route 206 makes these stops as many as nine times each weekday, and does not stop at the Rehoboth Park & Ride during the non-summer months.

During the summer months, DTC operates a number of seasonal transit routes in the beach resort area and, in 2012, seven of these (including Route 206 – Summer) operated near Rehoboth Gateway with stops on Shuttle Road just west of the Tanger Outlets Bayside Entrance and at the Rehoboth Park & Ride on Shuttle Road just west of the proposed development. Route 201 makes a stop on Country Club Road at Delaware Route 1, on the way to the Rehoboth Boardwalk. For 2012, the seasonal routes operated on weekdays and weekends from May 24th through September 16th. Seasonal Beach Connection Route 305 also runs during the summer months, connecting Wilmington and other points throughout Delaware to the Rehoboth Park & Ride with service on weekends and holidays.

Planned transit service: DBF contacted Ms. Lisa Collins and Mr. Wayne Henderson, Service Development Planners for the DTC, on September 19th, 2012 to determine whether DTC has any plans to extend the existing transit system in the vicinity of the development. Ms. Collins provided comments on October 2nd and 3rd, 2012 regarding DTC's future plans for transit services in this area. DTC is planning to make some adjustments to existing schedules and routes to add trips on Routes 206 and 208, to serve the new Lewes Maintenance Garage, and to add three new year-round routes: one between Rehoboth and Millsboro, one between Rehoboth and Dover, and one between Georgetown and Millsboro. She requested that the proposed Rehoboth Gateway development include a pedestrian connection to the adjacent Rehoboth Park & Ride facility. She also initially requested improvements to the existing bus stop at the eastern end of Country Club Road near Delaware Route 1, including an 8' x 8' ADA-accessible bus pad, but after discussion with DBF it was agreed that making physical improvements to that bus stop would be too difficult. Instead, she then requested a crosswalk across Country Club Road just west of Delaware Route 1 and a sidewalk or path along the north side of Country Club Road.

Existing bicycle and pedestrian facilities: According to the bicycle level of service (BLOS) calculator developed by the *League of Illinois Bicyclists*, Delaware Route 1 operates at BLOS A and Country Club Road operates at BLOS F. On Delaware Route 1, bikes share a dedicated lane

with buses and right turns, and Delaware Bicycle Route 1 runs along Delaware Route 1 in this area. There is currently a striped bike lane along the west side of Shuttle Road from 300 feet north to 650 feet south of the Country Club Road / Winner Circle intersection. There are no existing sidewalks along either the Delaware Route 1 or Country Club Road site frontage, but there are sidewalks in several locations within the study area. These locations include: along the north/west side of Shuttle Road from Delaware Route 1 to just west of the Tanger Outlets Bayside Entrance, along the south/east side of Shuttle Road from the Rehoboth Park & Ride to the Holiday Inn Entrance (opposite the Outlets Entrance), along the south side of Country Club Road from south of the Shuttle Road intersection to the Jungle Jim's property, and on the south side of Winner Circle. The only existing crosswalks at any of the study area intersections are at the Shuttle Road & Northern Adjacent Site Access / Tanger Outlets Bayside Entrance intersection, on the northern leg (Outlets Entrance) and the western leg (Shuttle Road).

Planned bicycle and pedestrian facilities: DBF contacted Marco Boyce and Anthony Aglio with DeIDOT's Bicycle and Pedestrian Facilities Team via email on September 19, 2012 regarding planned or requested bicycle and pedestrian facilities in the area of this proposed development. Mr. Boyce provided comments via email on September 20, 2012, stating that the developer should provide a five-foot sidewalk and a five-foot buffer (preferably wider) along the Country Club Road site frontage.

Pedestrian improvements are also planned within the study area as part of DeIDOT's SR 1, Rehoboth Canal to North of Five Points, Pedestrian Improvements project (State Contract No. T200612501). These will include sidewalk along the southbound Delaware Route 1 site frontage, a crosswalk across Country Club Road at Delaware Route 1, and improvements at the Delaware Route 1 & Shuttle Road / Sea Blossom Boulevard intersection. Pedestrian improvements at that intersection will include addition of crosswalks across the east, west, and south legs of the intersection along with pedestrian signals. The right-turn lane on the eastbound approach of Shuttle Road will be converted from yield-controlled to signal-controlled and the stop bar will be extended across that lane. The project will also add two new signalized pedestrian crossings across Delaware Route 1 just outside of the Rehoboth Gateway study area; one just over 1,000 feet north of Shuttle Road and one approximately 400 feet south of Country Club Road.

Previous Comments

Extensive coordination and correspondence between DBF and DeIDOT occurred as this TIS was being prepared, which was well-documented in the TIS report. Much of the coordination focused on the proposed right-in only site access along Delaware Route 1. Ultimately, all comments from DeIDOT's Scoping Letter (dated April 30, 2013), Traffic Count Review, and Preliminary TIS (PTIS) Review were addressed in the Final TIS submission.

General HCS Analysis Comments

(see table footnotes on the following pages for specific comments)

- 1) For unsignalized intersections, the TIS and McCormick Taylor applied heavy vehicle factors (HV) by movement using existing data. One exception was for the intersection of Shuttle Road & Northern Adjacent Site Access / Tanger Outlets Bayside Entrance, where the TIS used 3% HV for all movements in their AM and PM peak hour analyses. For signalized intersections, the TIS applied HV by movement while McCormick Taylor applied HV by lane group. For future conditions, the TIS generally assumed a future HV equal to existing HV, but sometimes assumed 3% for movements where existing HV is less than 3% and significant changes in volumes are expected. McCormick Taylor assumed future HV to be the same as existing HV, and assumed 3% HV for future movements to and from the proposed site access point on Country Club Road.
- 2) For existing conditions, the TIS and McCormick Taylor determined, for each intersection, overall intersection peak hour factors (PHF). For future conditions, the TIS and McCormick Taylor assumed future PHF equal to existing PHF. The TIS made minor exceptions to this by using the incorrect PHF (0.88 instead of 0.76) for AM peak hour analyses at the intersection of Country Club Road & Site Entrance / Jungle Jim's Entrance, and by using a future PHF of 0.92 instead of 0.91 for AM peak hour analyses at the Delaware Route 1 intersections with Shuttle Road and Country Club Road.
- 3) For analyses of signalized intersections, the TIS and McCormick Taylor both used a base saturation flow rate of 1,900 pchppl per DeIDOT's direction.
- 4) The HCS analyses included in the TIS did not always reflect the lane widths observed in the field by McCormick Taylor. McCormick Taylor's HCS analyses incorporated our field-measured lane widths.
- 5) The TIS and McCormick Taylor used different signal timings when analyzing the signalized intersections in some cases.
- 6) The TIS and McCormick Taylor input existing Right-Turn-on-Red (RTOR) volumes for existing conditions analyses. Due in part to increased volumes and fewer available gaps, there would likely be fewer vehicles able to make right turns on red, so the TIS and McCormick Taylor conservatively input no RTOR volumes for future conditions analyses, but did analyze right-turn movements as overlapping protected left-turn phases.

Table 3
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Rehoboth Gateway
Report dated May 2013
Prepared by Davis, Bowen & Friedel, Inc.

Unsignalized Intersection ¹ Two-Way Stop Control (T-intersection)	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Saturday Mid-day	Weekday AM	Weekday PM	Saturday Mid-day
Country Club Road & Site Entrance / Jungle Jim's Entrance						
2012 Existing (Case 1)						
Northbound Jungle Jim's Entrance	A (8.5)	N/A	A (9.2)	A (8.6)	N/A	A (9.2)
Westbound Country Club Road – Left	A (7.3)	A (7.3)	A (7.5)	A (7.3)	A (7.3)	A (7.5)
2015 without Rehoboth Gateway (Case 2)						
Northbound Jungle Jim's Entrance	A (8.5)	N/A	A (9.2)	A (8.6)	N/A	A (9.2)
Westbound Country Club Road – Left	A (7.3)	A (7.3)	A (7.5)	A (7.3)	A (7.3)	A (7.5)
2015 with Rehoboth Gateway and rights-in Delaware Route 1 access (Case 3A) ²						
Northbound Jungle Jim's Entrance	A (8.5)	N/A	B (10.7)	A (8.6)	N/A	B (10.7)
Southbound Site Entrance	B (10.5)	B (13.3)	D (28.1)	B (11.0)	B (13.3)	D (28.1)
Eastbound Country Club Road – Left	A (7.3)	A (7.4)	A (7.5)	A (7.3)	A (7.4)	A (7.5)
Westbound Country Club Road – Left	A (7.3)	A (7.3)	A (7.5)	A (7.3)	A (7.3)	A (7.5)
2015 with Rehoboth Gateway and rights-in Delaware Route 1 access (Case 3A) With Improvement Option 1 ³						
Northbound Jungle Jim's Entrance	N/A	N/A	B (10.7)	A (8.6)	N/A	B (10.7)
Southbound Site Entrance	N/A	N/A	D (27.5)	B (10.9)	B (13.1)	D (27.5)
Eastbound Country Club Road – Left	N/A	N/A	A (7.5)	A (7.3)	A (7.4)	A (7.5)
Westbound Country Club Road – Left	N/A	N/A	A (7.5)	A (7.3)	A (7.3)	A (7.5)

¹ For both unsignalized and signalized intersection analyses, the numbers in parentheses following levels of service (LOS) are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

² Assumes one shared left/through/right-turn lane on westbound Country Club Road at Jungle Jim's Entrance.

³ Improvement Option 1 includes a separate right-turn lane on the westbound Country Club Road approach.

Table 3 (continued)
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Rehoboth Gateway
Report dated May 2013
Prepared by Davis, Bowen & Friedel, Inc.

Unsignalized Intersection ⁴ Two-Way Stop Control (T-intersection)	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Saturday Mid-day	Weekday AM	Weekday PM	Saturday Mid-day
Country Club Road & Site Entrance / Jungle Jim's Entrance						
2015 with Rehoboth Gateway and without Delaware Route 1 access (Case 3B) ⁵						
Northbound Jungle Jim's Entrance	A (8.5)	N/A	B (11.6)	A (8.6)	N/A	B (11.6)
Southbound Site Entrance	B (11.1)	C (16.6)	F (58.0)	B (11.9)	C (16.5)	F (58.0) ⁶
Eastbound Country Club Road – Left	A (7.6)	A (7.9)	A (8.2)	A (7.6)	A (7.9)	A (8.2)
Westbound Country Club Road – Left	A (7.3)	A (7.3)	A (7.5)	A (7.3)	A (7.3)	A (7.5)
2015 with Rehoboth Gateway and without Delaware Route 1 access (Case 3B) <i>With Improvement Option 1</i> ⁷						
Northbound Jungle Jim's Entrance	N/A	N/A	B (11.5)	A (8.6)	N/A	B (11.5)
Southbound Site Entrance	N/A	N/A	D (28.6)	B (10.9)	B (13.2)	D (28.6) ⁸
Eastbound Country Club Road – Left	N/A	N/A	A (8.2)	A (7.6)	A (7.9)	A (8.2)
Westbound Country Club Road – Left	N/A	N/A	A (7.5)	A (7.3)	A (7.3)	A (7.5)

⁴ For both unsignalized and signalized intersection analyses, the numbers in parentheses following levels of service (LOS) are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

⁵ Assumes one shared left/through/right-turn lane on westbound Country Club Road at Jungle Jim's Entrance.

⁶ The 95th percentile queue length for the southbound approach during the Case 3B Saturday peak hour (without improvements) is approximately 11 vehicles.

⁷ Improvement Option 1 includes a separate right-turn lane on the westbound Country Club Road approach.

⁸ The 95th percentile queue length for the southbound approach during the Case 3B Saturday peak hour (with Improvement Option 1) is approximately 6 vehicles.

Table 4
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Rehoboth Gateway
Report dated May 2013
Prepared by Davis, Bowen & Friedel, Inc.

Unsignalized Intersection ⁹ Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Saturday Mid-day	Weekday AM	Weekday PM	Saturday Mid-day
Shuttle Road & Northern Adjacent Site Access / Tanger Outlets Bayside Entrance						
2012 Existing (Case 1)						
Northbound Adjacent Site Access	B (10.1)	B (10.2)	B (11.3)	B (10.0+)	B (10.1)	B (11.3)
Southbound Outlets Access	B (12.9)	C (17.3)	F (103.4)	B (12.8)	C (17.1)	F (102.4) ¹⁰
Eastbound Shuttle Road – Left	A (7.6)	A (7.8)	A (8.3)	A (7.6)	A (7.8)	A (8.3)
Westbound Shuttle Road – Left	A (7.7)	A (7.7)	A (7.8)	A (7.6)	A (7.6)	A (7.8)
2015 without Rehoboth Gateway (Case 2)						
Northbound Adjacent Site Access	B (10.1)	B (10.3)	B (11.4)	B (10.1)	B (10.2)	B (11.5)
Southbound Outlets Access	B (13.0)	C (17.7)	F (115.6)	B (12.9)	C (17.6)	F (121.5) ¹¹
Eastbound Shuttle Road – Left	A (7.7)	A (7.8)	A (8.3)	A (7.6)	A (7.8)	A (8.3)
Westbound Shuttle Road – Left	A (7.7)	A (7.7)	A (7.8)	A (7.6)	A (7.7)	A (7.8)
2015 with Rehoboth Gateway and rights-in Delaware Route 1 access (Case 3A)						
Northbound Adjacent Site Access	A (9.6)	B (10.3)	B (10.7)	A (9.6)	B (10.2)	B (10.6)
Southbound Outlets Access	B (13.8)	C (20.9)	F (121.5)	B (13.7)	C (20.7)	F (121.5) ¹¹
Eastbound Shuttle Road – Left	A (7.6)	A (7.7)	A (8.2)	A (7.6)	A (7.7)	A (8.2)
Westbound Shuttle Road – Left	A (7.6)	A (7.6)	A (7.7)	A (7.6)	A (7.6)	A (7.7)
2015 with Rehoboth Gateway and without Delaware Route 1 access (Case 3B)						
Northbound Adjacent Site Access	A (9.7)	B (10.5)	B (11.3)	A (9.7)	B (10.5)	B (11.2)
Southbound Outlets Access	C (18.4)	F (57.2)	F (378.2)	C (18.1)	F (55.3) ¹²	F (378.2) ¹³
Eastbound Shuttle Road – Left	A (7.6)	A (7.7)	A (8.2)	A (7.6)	A (7.7)	A (8.2)
Westbound Shuttle Road – Left	A (7.8)	A (7.9)	A (8.0)	A (7.8)	A (7.9)	A (8.0)

⁹ For both unsignalized and signalized intersection analyses, the numbers in parentheses following levels of service (LOS) are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

¹⁰ The 95th percentile queue length for the shared through/left-turn lane on the southbound approach during the Case 1 Saturday peak hour is approximately 14 vehicles.

¹¹ The 95th percentile queue length for the shared through/left-turn lane on the southbound approach during the Case 2 and Case 3A Saturday peak hour is approximately 16 vehicles.

¹² The 95th percentile queue length for the shared through/left-turn lane on the southbound approach during the Case 3B PM peak hour is approximately 5 vehicles.

¹³ The 95th percentile queue length for the shared through/left-turn lane on the southbound approach during the Case 3B Saturday peak hour is approximately 27 vehicles.

Table 5
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Rehoboth Gateway
Report dated May 2013
Prepared by Davis, Bowen & Friedel, Inc.

Signalized Intersection ¹⁴	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Saturday Mid-day	Weekday AM	Weekday PM	Saturday Mid-day
Delaware Route 1 & Shuttle Road / Sea Blossom Boulevard ^{15, 16}						
2012 Existing (Case 1)	B (15.5)	B (16.9)	D (37.2)	B (19.0)	C (20.4)	D (37.2)
2015 without Rehoboth Gateway (Case 2)	C (27.5)	C (34.4)	D (43.1)	C (31.1)	C (33.4)	D (44.0)
2015 with Rehoboth Gateway and rights-in Delaware Route 1 access (Case 3A)	C (29.1)	D (37.4)	D (49.7)	C (32.1)	D (36.0)	D (48.3)
2015 with Rehoboth Gateway and without Delaware Route 1 access (Case 3B)	C (29.0)	D (36.8)	D (46.7)	C (31.3)	D (35.3)	D (45.5)

¹⁴ For both unsignalized and signalized intersection analyses, the numbers in parentheses following levels of service (LOS) are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

¹⁵ For Cases 2, 3A, and 3B, the TIS and McCormick Taylor analysis results shown here assume completion of DeIDOT's SR 1 Pedestrian Improvements Project (State Contract No. T200612501), meaning there would be crosswalks across the western leg (Shuttle Road), the eastern leg (Sea Blossom Boulevard), and the southern leg (Delaware Route 1). The analysis conservatively assumes that all pedestrian pushbuttons at this intersection would be pushed every cycle, making the pedestrian phases go to their maximum time. Pedestrian phase split times of 40 seconds were used for the crossing of Delaware Route 1 during the eastbound Shuttle Road phase. The appropriate cycle lengths (as determined through analyses and discussion with DeIDOT's Traffic Section) would be 120 seconds for the non-summer AM peak hour, 150 seconds for the non-summer PM peak hour, and 240 seconds for the summer Saturday peak hour, and these cycle lengths were used in this analysis.

¹⁶ Based on the characteristics of this coordinated signal along Delaware Route 1 where nearby signals exist in both directions, the TIS and McCormick Taylor analysis results shown here assume Arrival Type 4 for the northbound and southbound approaches. There was an exception to this where the TIS actually applied Arrival Type 3 in their PM peak hour HCS files for Cases 2, 3A, and 3B. For a fair comparison and a conservative approach, McCormick Taylor also used Arrival Type 3 for analysis of the PM peak hour in Cases 2, 3A, and 3B.

Table 6
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Rehoboth Gateway
Report dated May 2013
Prepared by Davis, Bowen & Friedel, Inc.

Unsignalized Intersection ¹⁷ Two-Way Stop Control (T-Intersection)	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Saturday Mid-day	Weekday AM	Weekday PM	Saturday Mid-day
Delaware Route 1 & Country Club Road						
2012 Existing (Case 1)						
Eastbound Country Club Road – Right	A (9.4)	A (9.6)	C (15.4)	B (10.1)	B (10.7)	C (15.5)
2015 without Rehoboth Gateway (Case 2)						
Eastbound Country Club Road - Right	A (9.5)	A (10.0-)	C (17.6)	A (9.3)	A (9.6)	C (16.7)
2015 with Rehoboth Gateway and rights-in Delaware Route 1 access (Case 3A) ¹⁸						
Eastbound Country Club Road - Right	B (10.6)	C (21.0)	F (91.2)	B (10.0+)	B (11.6)	F (71.3) ¹⁹
2015 with Rehoboth Gateway and without Delaware Route 1 access (Case 3B) ¹⁸						
Eastbound Country Club Road - Right	B (10.3)	B (12.2)	F (89.4)	A (9.7)	B (10.6)	F (71.3) ¹⁹

¹⁷ For both unsignalized and signalized intersection analyses, the numbers in parentheses following levels of service (LOS) are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

¹⁸ While results indicate that the eastbound Country Club Road approach would operate at LOS F during only the Summer Saturday peak hour for Case 3A or Case 3B, there is no apparent feasible improvement option that would resolve the LOS deficiency. However, it should be noted that due to limitations in the HCM methodology and HCS software, the analysis does not take into account the fact that some drivers turning right from eastbound Country Club Road use the continuous bus/bike lane on Delaware Route 1 as an acceleration lane, meaning potentially shorter delays and queues on the side street than the results indicate. Also, the results are very sensitive to the progressed volume and arrival type inputs for upstream signal, which are difficult to predict with certainty for future conditions. Finally, if it is assumed that the pedestrian phases at the Delaware Route 1 intersection at Shuttle Road are actuated during almost every cycle during the Summer Saturday peak hour, that should create gaps in southbound Delaware Route 1 traffic that aren't directly accounted for by this HCS analysis, and again potentially shorter delays and queues on the side street than the results indicate.

¹⁹ The 95th percentile queue length for the eastbound approach during the Case 3A and Case 3B Saturday peak hour is approximately 11 vehicles.

Table 7
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Rehoboth Gateway
Report dated May 2013
Prepared by Davis, Bowen & Friedel, Inc.

Unsignalized Intersection ²⁰ Two-Way Stop Control	LOS per TIS			LOS per McCormick Taylor		
	Weekday AM	Weekday PM	Saturday Mid-day	Weekday AM	Weekday PM	Saturday Mid-day
Shuttle Road / Country Club Road & Country Club Road / Winner Circle						
2012 Existing (Case 1)						
Northbound Country Club Road – left	A (7.5)	A (7.6)	A (7.6)	A (7.5)	A (7.6)	A (7.6)
Southbound Shuttle Road - left	A (7.6)	A (7.6)	A (7.8)	A (7.6)	A (7.6)	A (7.8)
Eastbound Winner Circle	B (10.9)	B (11.5)	B (12.6)	B (10.9)	B (11.5)	B (12.6)
Westbound Country Club Road	A (9.1)	A (9.1)	A (10.0-)	A (9.1)	A (9.1)	A (10.0-)
2015 without Rehoboth Gateway (Case 2)						
Northbound Country Club Road – left	A (7.5)	A (7.6)	A (7.7)	A (7.5)	A (7.6)	A (7.7)
Southbound Shuttle Road - left	A (7.6)	A (7.6)	A (7.8)	A (7.6)	A (7.6)	A (7.8)
Eastbound Winner Circle	B (11.0)	B (11.7)	B (12.9)	B (11.0)	B (11.7)	B (12.9)
Westbound Country Club Road	A (9.2)	A (9.2)	B (10.1)	A (9.2)	A (9.2)	B (10.1)
2015 with Rehoboth Gateway and rights-in Delaware Route 1 access (Case 3A)						
Northbound Country Club Road – left	A (7.4)	A (7.5)	A (7.6)	A (7.4)	A (7.5)	A (7.6)
Southbound Shuttle Road - left	A (7.7)	A (7.7)	A (8.0)	A (7.7)	A (7.7)	A (8.0)
Eastbound Winner Circle	B (11.2)	B (11.6)	B (13.4)	B (11.2)	B (11.6)	B (13.4)
Westbound Country Club Road	B (10.9)	B (11.8)	B (14.2)	B (10.9)	B (11.8)	B (14.1)
2015 with Rehoboth Gateway and without Delaware Route 1 access (Case 3B)						
Northbound Country Club Road – left	A (7.4)	A (7.5)	A (7.6)	A (7.4)	A (7.5)	A (7.6)
Southbound Shuttle Road - left	A (7.7)	A (7.7)	A (8.0)	A (7.7)	A (7.7)	A (8.0)
Eastbound Winner Circle	B (11.2)	B (11.6)	B (13.4)	B (11.2)	B (11.6)	B (13.4)
Westbound Country Club Road	B (10.9)	B (11.8)	B (14.2)	B (10.9)	B (11.8)	B (14.1)

²⁰ For both unsignalized and signalized intersection analyses, the numbers in parentheses following levels of service (LOS) are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.